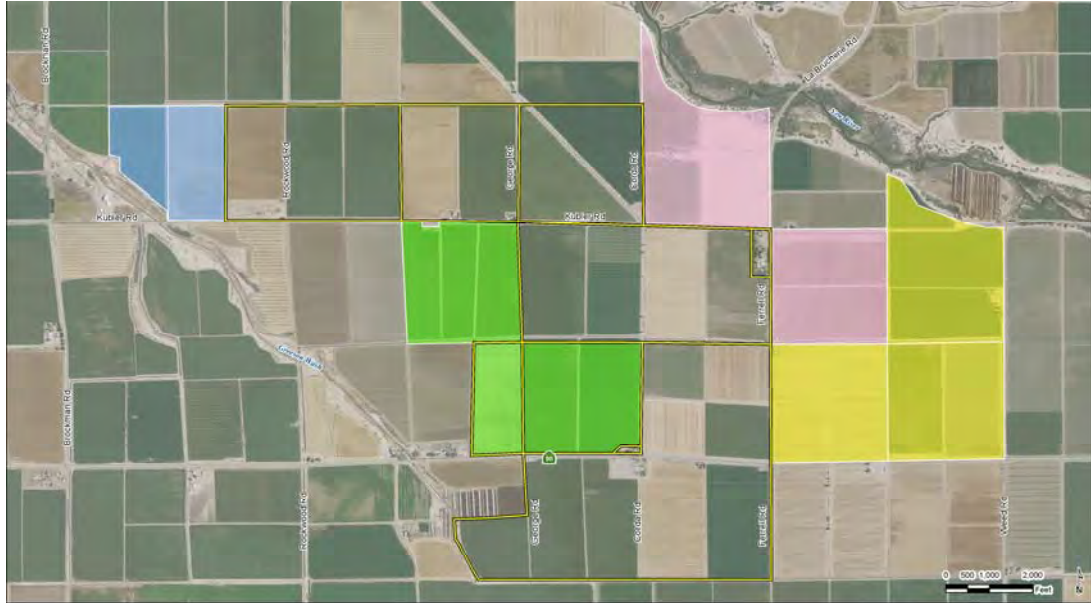


Final Environmental Impact Report Iris Solar Farm Project Imperial County, California



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Prepared for
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LIST OF ACRONYMS

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AB	Assembly Bill
ABPP	Avian and Bat Protection Plan
AC	Alternating current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-containing material
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AEP	Annual exceedance probability
AF	Acre-feet
AF/AC	Acre-feet per acre
AFY	Acre-feet per year
ALUCP	Airport Land Use Compatibility Plan
AP	Alquist-Priolo
AP Act	Alquist-Priolo Special Studies Zone Act
APLIC	Avian Powerline Interaction Committee
APN	Assessor's Parcel Number
AQAP	Air Quality Attainment Plan
AQMP	Air Quality Management Plan
ARB	Air Resources Board
AST	Aboveground storage tank
ASTM	American Society of Testing and Materials
AWSC	All-Way Stop Controlled

B

BGEPA	Bald and Golden Eagle Protection Act
bhp	brake horsepower
BLM	Bureau of Land Management
BMP	Best Management Practice
BMSL	Below mean sea level
BUOW	Burrowing owl
BTR	Biological Technical Report

C

CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAFÉ	Corporate Average Fuel Economy
Cal-OSHA	California Occupational Safety and Health Agency
CalARP	California Accidental Release Prevention
CalEPA	California EPA
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCCC	California Climate Change Center
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission

C (continued)

CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH ₄	Methane
CMA	Congestion Management Agency
CMP	Congestion Management Program
CNEL	Community Noise Equivalent Level
CO	Carbon monoxide
County	Imperial County
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPUC	California Public Utilities Commission
CPV	concentrated photovoltaic
CRB	Colorado River Basin
CRHR	California Register of Historic Resources
CTR	California Toxics Rule
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act

D

dB	Decibel
dBA	A-weighted decibel
DBE	Design basis earthquake
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenylethylene
DDT	Dichlorodiphenyltrichloroethane
DEIR	Draft Environmental Impact Report
DHS	Department of Health Services
DOC	Department of Conservation
DOE	Department of Energy
DOI	Department of Interior
DOGGR	Division of Oil, Gas, and Geothermal Resources
DPM	Diesel particulate matter
DTSC	Department of Toxic Substance Control

E

EA	Environmental Assessment
EDP	Equitable Distribution Plan
EDR	Environmental Data Research
EIR	Environmental Impact Report
EIR/EA	Environmental Impact Report/ Environmental Assessment
EMF	Electromagnetic field
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPCRA	Emergency Planning Community Right-to-Know Act
ESA	Environmental Site Assessment
ESA	Endangered Species Act

F

F	Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FIRM	Flood Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FSF	Ferrell Solar Farm
FSZ	Farmland Security Zone
FTA	Federal Transit Administration

G

GCC	Global Climate Change
GHG	Greenhouse gas
GIS	Geographic information systems
GS Lyon	GS Lyon Consultants, Inc.
GWP	global warming potential

H

HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HFE	Hydrofluorinated ethers
HSC	Health and Safety Code
HUC	Hydrologic Unit
HVAC	Heating, ventilation, and air-conditioning
Hz	Hertz

I

I	Interstate
I-8	Interstate 8
ICAPCD	Imperial County Air Pollution Control District
ICFD	Imperial County Fire Department
ICFD/OES	Imperial County Fire Department and Office of Emergency Services
ICPDSD	Imperial County Planning and Development Services Department
IGR	Intergovernmental Review
IID	Imperial Irrigation District
in/sec	Inches per second
IOU	Investor-owned utility
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Plan
IS	Initial Study
ISF	Iris Solar Farm
ISO	Independent System Operator (Calif.)
IV	Imperial Valley
IVAG	Imperial Valley Association of Governments
IVC	Imperial Valley College
IVT	Imperial Valley Transit
IRWMP	Imperial Integrated Regional Water Management Plan
IWSP	Interim Water Supply Policy

K

kV	Kilovolt
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L

LCC	Land capability classification
LCI	Landmark Consultants, Inc.
L _{dn}	Day-Night Average Sound Level
LE	Land evaluation
L _{eq}	Equivalent Sound Level
LESA	Land Evaluation and Site Assessment
LLG	Linscott, Law and Greenspan
L _{max}	Maximum noise level
LOS	Level of Service
LSF	Lyons Solar Farm

M

MBTA	Migratory Bird Treaty Act
MCE	Maximum creditable earthquake
MLD	Most Likely Descendant
MMT	Million metric tons
MMTCO ₂ e	Million metric tons of CO ₂ equivalent
MOU	Memorandum of Understanding
mph	Miles per hour
MT	Metric tons
MW	Megawatt
MW-h	megawatt hours
MWSC	Minor Street Stop Controlled

N

N ₂	Nitrogen
N ₂ O	Nitrous Oxide
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEHRP	National Earthquake Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NF ₃	Nitrogen trifluoride
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NIMS	National Incident Management System
NMFS	National Marine Fisheries Service
NO	Nitric oxide
NO ₂	Nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO _x	Nitrogen Oxide
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places

O

O ₂	Oxygen
O ₃	Ozone
O&M	Operations and Maintenance
OA	Operational Area

O (continued)

OES	Office of Emergency Services
OHP	Office of Historic Preservation
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration

P

Pb	Lead
PCBs	Polychlorinated biphenyls
PCE	Passenger Car Equivalent
PFC	perfluorocarbon
PGA	Peak ground Principal Investigator
PM _{2.5}	Particulate Matter Less Than 2.5 Microns in Diameter
PM ₁₀	Particulate Matter Less Than 10 Microns in Diameter
POE	Point of entry
POU	Publicly owned utility
ppb	Parts per billion
ppm	Parts per million
PPV	Peak particle velocity
PRC	Public Resources Code
PTR	Preferred Transmission Route
PUC	Public Utilities Commission
PV	Photovoltaic
PVC	Polyvinyl chloride

Q

Q=CiA	Rational Method
QSA	Quantification Settlement Agreement

R

RCP	Regional Comprehensive Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized environmental concern
ROW	Right-of-way
RPS	Renewable Portfolio Standard
RSF	Rockwood Solar Farm
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board

S

SA	Site assessment
SARA	Superfund Amendments and Reauthorization Act
SCAG	Southern California Association of Governments

S (continued)

SCAQMD	South Coast Air Quality Management District
SCH	State Clearinghouse
SCIC	South Coastal Information Center
SCS	Sustainable Communities Strategy
SDG&E	San Diego Gas and Electric
SDI	Supply/demand imbalance
SDSU	San Diego State University
SF ₆	Sulfur hexafluoride
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO ₂	Sulfur Dioxide
SPA	Specific Plan Area
SPCC	Spill Prevention, Control, and Countermeasures
SR	State Route
SSAB	Salton Sea Air Basin
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board

T

TAC	Toxic air contaminant
tCO ₂ e	Tonnes of carbon dioxide equivalents
TIS	Traffic Impact Study
TMDL	Total maximum daily load
TSS	Total suspended solids

U

UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground storage tank
U.S. EPA	United States Environmental Protection Agency

V

V/C	Volume to Capacity Ratio
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W

WSA	Water Supply Assessment
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°	degrees
µg/m ³	microgram per cubic meter
3-D	Three-dimensional

I.1 INTRODUCTION AND SUMMARY

This Final Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) as amended (Public Resources Code Section 21000 et seq.), CEQA Guidelines (California Administrative Code Section 15000 et seq.), and the County of Imperial CEQA procedures.

According to CEQA Guidelines §15132, the Final Environmental Impact Report (EIR) shall consist of the following:

- a) The Draft EIR or a revision of the Draft;
- b) Comments and recommendations received on the Draft EIR, either verbatim or in summary;
- c) A list of persons, organizations, and public agencies commenting on the Draft EIR;
- d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process; and
- e) Any other information added by the Lead Agency.

In accordance with these requirements, the Final Iris Cluster Solar Farm Project EIR is comprised of the following:

- Draft Environmental Impact Report, Iris Cluster Solar Farm Project (September 2014) (SCH No. 2014041091); and
- This Final EIR document, dated January 2015, that incorporates the information required by §15132.

Format of the Final EIR

This document is organized as follows:

Section I.1 Introduction

This section describes CEQA requirements and content of this Final EIR.

Section II.1 Corrections and Additions

This section provides a list of those revisions made to the Draft EIR text and figures as a result of comments received and/or clarifications subsequent to release of the Draft EIR for public review. The Draft EIR, as revised is included as part of the Final EIR.

Section III Responses to Comment Letters Received on the Draft EIR

This section provides copies of the comment letters received and individual responses to written comments. In accordance with Public Resources Code 21092.5, copies of the written proposed responses to public agencies will be forwarded to the agencies at least 10 days prior to certifying the EIR. The responses conform to CEQA Guideline 15088, providing "... good faith, reasoned analysis in response."

Section IV Mitigation Monitoring and Reporting Program

This section includes the Mitigation Monitoring and Reporting Program (MMRP) which identifies the mitigation measures, timing and responsibility for implementation of the measures.

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II.1 CORRECTIONS AND ADDITIONS

The following Sections II.1.1 and II.1.2 contain revisions to information included in the Draft EIR (September 21014) based upon: (1) additional or revised information required to prepare a response to a specific comment; (2) updated information required due to the passage of time; and/or (3) typographical errors. Given the minor changes associated with the document, the information added to the EIR does not meet the requirements for recirculation pursuant to Section 150885.5 of the State *CEQA Guidelines*.

II.1.1 REVISED AND SUPPLEMENTAL TEXT

Changes to the Draft EIR were made in response to comments received on the Draft EIR. Overall, the new information clarifies information and analysis presented in the Draft EIR, or revises mitigation measures in response to comments on the Draft EIR.

The table below identifies the changed EIR sections as presented in this Final EIR.

Final EIR Section	Description of Revisions
Table of Contents	<ul style="list-style-type: none"> Updated to reflect Final EIR format
ES. Executive Summary/Introduction	<ul style="list-style-type: none"> Changed format of headings to reflect Final EIR format Updated Air Quality mitigation measures to reflect revisions in main body of EIR
1.0 Introduction	<ul style="list-style-type: none"> Minor typographical and formatting edits Revised page 1-4 to reference the final "Modified" 2009 8-hour Ozone Air Quality Management Plan
3.0 Project Description	<ul style="list-style-type: none"> Replaced Ferrell Solar Farm Site Plan with Revised Ferrell Solar Farm Site Plan Added a statement on page 3-8 clarifying that diesel generators greater than 50 brake horse power will require a permit to operate Updated text on page 3-22 to indicate project construction anticipated to start mid-2015
4.3 Air Quality	<ul style="list-style-type: none"> Revised Mitigation Measures 4.3-2a, 4.3-2b and 4.3-2e to add more specificity to mitigation reporting requirements in response to ICAPCD comments Deleted Mitigation Measure 4.3-2c as it was a redundant measure
4.13 Transportation/Traffic	<ul style="list-style-type: none"> Edited page 4.13-2 to indicate the County adopted an updated Bicycle Master Plan in 2012 (rather than 2011)
9.0 References	<ul style="list-style-type: none"> Updated to include new technical reports added to EIR appendices

II.1.2 REVISED AND SUPPLEMENTAL MITIGATION MEASURES

The following Mitigation Measures have been revised as part of preparation of the Final EIR:

Mitigation Measure 4.3-2a has been revised as follows:

- 4.3-2a Construction Equipment.** Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment, including all off-road equipment utilized at each of the projects by make, model, year, horsepower and expected/actual hours of use, and the associated EPA Tier shall be submitted to the County Planning and Development Services Department and ICAPCD prior to the issuance of a grading permit. The ICAPCD shall utilize this list to calculate air

emissions to verify that equipment use does not exceed significance thresholds. The Planning and Development Services Department and ICAPCD shall to verify implementation of this measure.

Mitigation Measure 4.3-2b has been revised as follows:

- 4.3-2b Fugitive Dust Control.** Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII-Fugitive Dust Control Measures. Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required additional standard and enhanced These mitigation measures listed below shall be implemented prior to and during construction. The County Department of Public Works will verify implementation and compliance with these measures as part of the grading permit review/approval process.

ICAPCD Standard Measures for Construction Combustion Equipment

- ~~• Use alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.~~
- ~~• Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.~~
- ~~• Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.~~
- ~~• Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).~~
- ~~• Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines.~~
- ~~• Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology.~~
- ~~• Keep vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same.~~

Mitigation Measure 4.3-2c has been deleted as follows:

- ~~**4.3-2c Vehicular Emissions.** Pursuant to ICAPCD Policy Number 5, prior to construction activities, the project applicant shall pay an in-lieu impact fee as determined by ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM₁₀ and NO_x emissions. The applicable fee in Policy Number 5 is derived from utilizing the last three year Carl Moyer grant program average cost effectiveness for Imperial County multiplied by the amount of tons needed to be offset. Detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction.~~

EIR Mitigation Measure 4.3-2e has been revised as follows:

- 4.3-2e Dust Suppression Management Plan.** ~~The project applicant shall submit for the ICAPCD and Imperial County Planning and Development Services Department review and approval an operational "Dust Suppression Management Plan" for both construction and operations.~~

Prior to any earthmoving activity, the applicant shall submit and obtain approval from the ICAPCD and Imperial County Planning and Development Services Department (ICPDSD) a Construction Dust Control Plan. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.

ICAPCD Rule 310 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed projects, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the proposed projects. The project applicant shall pay an "Operational Fee" to the ICAPCD for the square footage of the operations and maintenance building and substation as determined applicable by the ICAPCD pursuant to Rule 310.

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III.1 RESPONSE TO COMMENTS

III.1.1 PROJECT OVERVIEW

This section contains responses to all comment letters received on the September 2014 Draft Environmental Impact Report (DEIR). Nine letters were received during the comment period, which closed November 19, 2014. A copy of each letter with bracketed comment numbers on the right margin is followed by the response for each comment as indexed in the letter. The comment letters are listed in Table III.1-1.

**TABLE III.1-1. DRAFT EIR COMMENT LETTERS
IRIS CLUSTER SOLAR FARM PROJECT**

Letter No.	Commenter	Date
1	State Clearinghouse	11/20/2014
2	Imperial County Agricultural Commissioner	11/19/2014
3	Imperial County Air Pollution Control District	11/19/2014
4	California Department of Fish and Wildlife	11/17/2014
5	Imperial County Fire Prevention Bureau	11/18/2014
6	Imperial County Department of Public Works	11/19/2014
7	Imperial Irrigation District	11/6/2014
8	Michael Abatti	11/19/2014
9	Law Offices of Stephan C. Volker	11/19/2014
10	California Department of Transportation (Caltrans)	10/14/2014

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Edmund G. Brown Jr.
Governor

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit



Ken Alex
Director

November 20, 2014

Patricia Valenzuela
Imperial County
801 Main Street
El Centro, CA 92243

Subject: Iris Cluster Solar Farm Project
SCH#: 2014041091

Dear Patricia Valenzuela:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on November 19, 2014, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report State Clearinghouse Data Base

SCH# 2014041091
Project Title Iris Cluster Solar Farm Project
Lead Agency Imperial County

Type EIR Draft EIR
Description Note: Review Per Lead

The Ferrell, Rockwood, Iris and Lyons Solar Projects involve the construction of four utility-scale Photovoltaic solar facilities on four non-contiguous independent sites encompassing approximately 1,422 acres. Each Project would include a ground mounted photovoltaic solar power generating system, supporting structures, inverter modules, pad mounted transformers, a water treatment system, plant control system, access roads and fencing, an O&M building, and an on-site substation. Each Project would have its own O&M building and onsite substation(s); but may utilize shared facilities with one or more neighboring solar project(s). Each Project would also connect a 230 kilovolt overhead transmission line which may also be shared with one or more neighboring solar project(s). Project includes approval of CUPs, Variances, and W.A. Cancellations.

Lead Agency Contact

Name	Patricia Valenzuela	
Agency	Imperial County	
Phone	760 482-4236x4241	Fax
email	PactriviaValenzuela@co.imperial.ca.us	
Address	801 Main Street	
City	El Centro	State CA Zip 92243

Project Location

County	Imperial
City	Calexico
Region	
Lat / Long	32° 41' 9.59" N / 15° 35' 59.96" W
Cross Streets	Kubler Road, Preston Road, Weed Road, Brockman Road
Parcel No.	multiple
Township	17S
Range	14,13E
Section	multi
Base	SBB&M

Proximity to:

Highways	SR 98
Airports	
Railways	
Waterways	New River
Schools	
Land Use	Irrigated Agriculture and Fallow Land / A-2, A-2R, A-3/ Agriculture

Project Issues Agricultural Land; Air Quality; Biological Resources; Archaeologic-Historic; Geologic/Seismic; Other Issues; Toxic/Hazardous; Water Quality; Landuse; Public Services; Recreation/Parks; Traffic/Circulation; Drainage/Absorption; Fiscal Impacts; Flood Plain/Flooding; Forest Land/Fire Hazard; Noise; Schools/Universities; Septic System; Soil Erosion/Compaction/Grading; Solid Waste; Vegetation; Wetland/Riparian; Growth Inducing; Cumulative Effects

Reviewing Agencies Resources Agency; Colorado River Board; Department of Conservation; Department of Fish and Wildlife, Region 6; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 11; Air Resources Board; State Water Resources Control Board, Division of Financial Assistance; Regional Water Quality Control Board, Region 7; California Energy Commission; Native American Heritage Commission; Public Utilities Commission

Document Details Report
State Clearinghouse Data Base

Date Received 09/30/2014 *Start of Review* 09/30/2014 *End of Review* 11/19/2014





State of California - Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, CA 91764
(909) 484-0459
www.wildlife.ca.gov

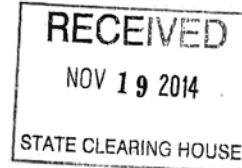
EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



Clear
11/19/14
r

November 17, 2014

Ms. Patricia Valenzuela, Planner IV
Imperial County Planning
801 Main Street
El Centro, CA 92243
PatriciaValenzuela@co.imperial.ca.us



Subject:

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
State Clearinghouse No. 2014041091

Dear Ms. Valenzuela:

The Department of Fish and Wildlife (Department) appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Iris Cluster Solar Farm Project (Project) [State Clearinghouse No. 2014041091]. The Department is responding to the DEIR as a Trustee Agency for fish and wildlife resources (California Fish and Game Code Sections 711.7 and 1802, and the California Environmental Quality Act [CEQA] Guidelines Section 15386), and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines Section 15381), such as the issuance of a Lake or Streambed Alteration Agreement (California Fish and Game Code Sections 1600 *et seq.*) and/or a California Endangered Species Act (CESA) Permit for Incidental Take of Endangered, Threatened, and/or Candidate species (California Fish and Game Code Sections 2080 and 2080.1).

The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (i.e., biological resources). The Department is a Trustee Agency with responsibility under CEQA for commenting on projects that could affect biological resources. As a Trustee Agency, the Department is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities (CEQA Guidelines, § 15386; Fish & G. Code, § 1802).

The 1,422 acre Project site is composed of four non-contiguous independent sites (Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF) and Lyons Solar Farm (LSF) located between State Route 98 to the south, Kubler Road and

Conserving California's Wildlife Since 1870

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
SCH No. 2014041091
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Preston Road to the north, Weed Road to the east and Brockman Road to the west southwest of the City of El Centro in Imperial County. The proposed Project includes the construction of solar photovoltaic (PV) or concentrated photovoltaic (CPV) energy-generating facilities on 4 Conditional Use Permit (CUP) areas producing a total of 360 megawatts (MW) of power. The Project will be constructed over a 12 month period with overlapping phases for each CUP. Following review of the Biological Resources section of the DEIR, the Department offers the comments and recommendations listed below to assist the County of Imperial in adequately identifying and/or mitigating the project's significant, or potentially significant, impacts on biological resources.

Lake and Streambed

For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream or use material from a streambed, the project Applicant (or "entity") must provide written notification to the Department pursuant to Section 1602 of the Fish and Game Code. Imperial Irrigation District (IID) drains and canals are state jurisdictional and any impacts to those waters will need to be assessed and mitigated.

Section 4.4-3 of the DEIR states that there will be no impacts to state jurisdictional waters by the Project, however the Applicant only mentions removing or relocating IID drains or canals as impacts. Please note that any impacts, such as road widening over a canal, replacing or changing culvert sizes, vegetation removal within jurisdictional areas, etc. need to be stated in the impact section of the DEIR in order for the Department to use the CEQA document when issuing a streambed agreement. If there are impacts to state jurisdictional waters a mitigation proposal should be proposed that includes the impact acreage along with the type, location, and ratios of compensation. Without such documentation the Department is unable to determine whether the impacts would be mitigated, and cannot, without further information from Imperial County concur that impacts to jurisdictional waters would be mitigated to less than significant levels.

Avian Impacts

It is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). In addition, sections 3503, 3503.5, and 3513 of the Fish and Game Code (FGC) prohibit the take of all birds and their nests. Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by FGC or any regulation made pursuant thereto; Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by FGC or any regulation adopted pursuant thereto; and Section 3513 states that it is unlawful to take or possess

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any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

The DEIR fails to include impacts to migratory birds from collision with components of the Project during construction and operation. Those impacts should be assessed for significance, and avoidance and mitigation should be identified. Migratory birds are killed or injured from collisions with solar panels, mirrors, heliostats, electrical generation-tie lines, fences, and other structures. The growing evidence suggests a particular hazard to water-associated birds seeking migratory stopover habitat typically found along rivers and lakeshores (Service 2014a), and is commonly referred to as a "lake effect" (Xu and Small 2014). Based on the species composition of avian fatalities found at three sites in the Mojave and Sonoran deserts-thin film photovoltaic, solar thermal trough, solar thermal power tower-all three technologies resulted in an unexpectedly high composition (approximately 30 to 40 percent by project) (McCrary et al. 1986; Ironwood Consulting 2013; AECOM 2013) of water-associated birds in the total number of avian fatalities across at least 17 families and 43 species. The magnitude of impact from the lake effect is potentially related to many potential migratory flyway and species-specific factors that have yet to be investigated, including availability of other appropriate migratory stopover habitat, seasonality, broad-front vs. corridor migration patterns, weather and wind conditions, moon phase, etc.

The Project is located southwest of the Salton Sea, which is a critical stopover along the Pacific Flyway, providing permanent habitat and seasonal refuge to resident water-associated birds and migratory birds (Shuford et al. 2002). The agricultural fields surrounding the Salton Sea also provide habitat for a variety of wintering birds and shorebirds (Patten et al. 2003). To date, limited information exists on bird collisions at utility-scale solar energy facilities within the Salton Sea basin due to a lack of systematic, statistically rigorous monitoring. However, utility-scale photovoltaic, parabolic trough, and power tower projects that are currently under construction or in operation are reporting mortalities and injuries to a wide range of avian species, including water-associated birds, passerines, and raptors involving various project features, such as solar panels or heliostats, evaporation ponds, fencing, distribution lines within the facility, and gen-tie lines.

The Project Applicant should prepare a Bird and Bat Conservation Strategy (BBCS) following the most recent guidelines from the US Fish and Wildlife Service. The plan should also include a statistically robust, systematic avian and bat mortality and injury monitoring program to achieve the following: (1) estimate annual mortality by taxa and season using appropriate statistical design and appropriate estimators (this estimate should include mortality associated with all features of the project that are likely to result in injury and mortality - e.g., fences, ponds, solar panels, collector lines, gen-ties); (2) identify collision and other mortality during diurnal and nocturnal times of the day; and (3) assess the spatial distribution and abundance of mortalities [species composition

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Iris Cluster Solar Farm Project
SCH No. 2014041091
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(including rare and sensitive species), abundance, and distribution] on the project site. The Department should be included in the review of the mortality and monitoring plan.

Also, please note that section 3511(a)(11) of the FGC states fully protected birds or parts thereof may not be taken or possessed at any time and no provisions are allowed to authorize the issuance of permits or license's to take any fully protected bird. If a fully protected species is found dead or injured on site the Applicant shall notify the Department immediately and we will work with the Applicant on the appropriate course of action.

Burrowing Owl

Burrowing owl surveys were conducted during the breeding season in 2013. Fourteen burrows with either a burrowing owl seen or active sign noted occur within the Project boundary. Approximately 15 adults and 1 juvenile were seen at these burrows. Thirty two burrows with either a burrowing owl seen or active sign noted were found within the IID drains surrounding the sites. Approximately 37 adults and 7 juveniles were seen at these burrows.

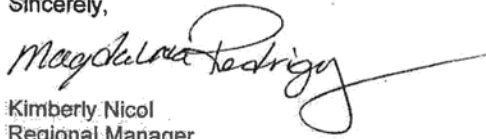
Burrowing owls located within the project boundary will be directly impacted by construction and will be passively relocated during the non-breeding season. Replacement of the burrows is proposed at a 2:1 ratio. The Applicant has proposed to place the artificial burrow systems (ABS) within the solar field in open areas or detention basins. The Department is not convinced this is the best location for the replacement burrows and recommends they be located outside of the solar site. Consultation with the Department and approval on the best locations for ABS's should occur prior to the closure of any active burrow. The locations and approach should be included in the Burrowing Owl Mitigation and Monitoring Plan.

The DEIR states the project will result in permanent impacts to burrowing owl foraging and breeding habitat. To mitigate for the loss of burrowing owl forage the Applicant has proposed to use areas that will not be developed and are under the Applicants control and adjacent to the solar site, but outside IID easements. The Department appreciates the Applicant's willingness to compensate for loss of forage however; we have a few concerns about the mitigation plan as outlined due to the fact that details of exact location, implementation, monitoring, financing, and oversight have not been worked out at this time. If this option is not feasible the Applicant proposes to provide off-site land acquisition to offset impacts. In addition, the Applicant has not specified in the DEIR the amount of compensation (e.g. acreages or ratios) they are proposing to mitigate the impacts to the surrounding owls from loss of foraging habitat. Without such documentation the Department is unable to determine whether the impacts would be mitigated, and cannot, without further information from Imperial County concur that those impacts would be mitigated to less than significant levels. The Department will need to work with the Applicant to determine the appropriate compensation to offset the foraging impacts from this Project.

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Iris Cluster Solar Farm Project
SCH No. 2014041091
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The Department appreciates the opportunity to comment on the DEIR for the Iris Cluster Solar Farm Project (SCH No.2014041091) and requests that the Department's comments be addressed in the revised CEQA document. If you should have any questions pertaining to this letter, please contact Magdalena Rodriguez at Magdalena.Rodriguez@wildlife.ca.gov or 909-844-2520.

Sincerely,



for Kimberly Nicol
Regional Manager

cc: State Clearinghouse, Sacramento

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
SCH No. 2014041091
Page 6 of 6

Literature Cited

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Letter 1
State Clearinghouse
November 20, 2014

Response to Comment 1-1

This comment acknowledges that the County of Imperial has complied with the State Clearinghouse review requirements for the Iris Solar Farm Project. The comment letter provided by the California Department of Fish and Wildlife, as transmitted to the County by the State Clearinghouse, is responded to in responses to comment Letter 4.

Connie L. Valenzuela
Agricultural Commissioner
Sealer of Weights and Measures

Linda S. Evans
Assistant Agricultural Commissioner/
Asst. Sealer of Weights and Measures

**AGRICULTURAL COMMISSIONER
SEALER OF WEIGHTS AND MEASURES**



852 Broadway
El Centro, CA 92243-2850

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November 19, 2014

Patricia Valenzuela, Planner IV
Planning & Development Services Department
County Of Imperial
801 Main Street
El Centro, CA 92243

Subject: Iris Solar Project Draft Environmental Impact Report

Dear Ms. Valenzuela:

We have reviewed the draft report. Our comments on the Administrative Draft Environmental Impact Report dated September 12, 2014 were not discussed nor answered. We have concerns that need change, discussion, and/or response:

Aesthetics

- Transmission and collector lines extending along private lands would significantly impact the aesthetics of the area especially if allowed a variance from 120 feet to 140 feet. The extended variance would impact farming by restricting aerial pesticide applications.

2-1

Agriculture

- The Pest Management Plan should be in place for the duration of the project not just during construction.
- The Site Restoration Plan should restore the land to a farmable condition that would allow someone to grow a crop. The Planning and Development Services Director and/or the landowner may or may not have the expertise to make that determination.
 - The plan should include the following:
 - Crop History of each field.
 - Detailed map with a description of each field depicting the physical infrastructure of the field such as but not limited to field grading, field water delivery system, surface drainage system, sub-surface tile lines, field roads and field access, and soil type/profile.
 - Restoration should be accomplished by using the farming practices available at restoration time to restore the land to farming not by using methods that may be outdated. (The Restoration cost will have to be based on today's farming costs.)

2-2

2-3

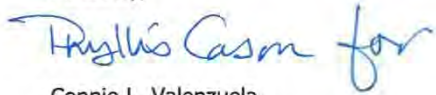
2-4

Removing acres of farmland has significant impact on our agricultural industry. The farmable acres in our county do not fluctuate. In 2013 Imperial Irrigation District reported 473,311 acres under cultivation in the valley. Land that is "temporarily" (30 years) removed from farming cannot be replaced. Farmland is a resource and once it is removed from farming there are no alternative areas in our County that can be turned into farmland. New farmland cannot be created. The proposed and approved solar projects will convert approximately 22,559 acres. This affects the agricultural industry directly and indirectly. Growers are finding it hard to lease other fields. Some of the other industries which are affected are seed companies, fertilizer and pesticide companies, pest control advisors, harvesters, coolers, haulers, equipment sales and repair, container suppliers, field workers, and sheep herders.

2-5

Should you have any questions, please call the office at (760)482-4314.

Sincerely,

A handwritten signature in blue ink that reads "Connie L. Valenzuela for".

Connie L. Valenzuela
Agricultural Commissioner

Attachment

Connie L. Valenzuela
Agricultural Commissioner
Sealer of Weights and Measures

Linda S. Evans
Assistant Agricultural Commissioner/
Asst. Sealer of Weights and Measures

AGRICULTURAL COMMISSIONER
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September 12, 2014

Patricia Valenzuela, Planner IV
Planning & Development Services Department
County Of Imperial
801 Main Street
El Centro, CA 92243

Subject: Iris Solar Project Admin. Draft Environmental Impact Report

Dear Ms. Valenzuela:

We have reviewed the draft report. We have some concerns on issues that need further change, discussion, and/or response:

0.1 Executive Summary

- **Alternative 2: Reduce Acreage Alternative** – This project will remove 1,422 acres of farm land. Of the 1,422 acres, 463 acres have grown produce for the last five (5) years. Produce is a high value crop that employs many workers. Yet, only 160.4 acres were considered Prime Farmland.
- **Alternative 3: Avoid Williamson Act Land** – According to the records 683.9 acres are in the Williamson Act.

1.0 Introduction

- **Section 1.1.1.1 Subsection 6: Williamson Act** – petitions were filed? What is the status of the cancelation of the Williamson Act and when will it be finalized.

2.0 Environmental Setting

- **2.2.2. Agricultural Resources:** Mono-cropping does not really describe crop practices in the valley for alfalfa, bermudagrass or produce. Alfalfa is traditionally a five (5) year crop that is harvested on average seven (7) times per year and bermudagrass is traditionally a 10 to 15 year crop that is harvested on average (4) times a year. Produce crops, such as lettuce or broccoli, are planted in September and harvested in December through January. Another crop, such as sweet corn or melons, will be planted right after the ground is prepared in January through February and harvested in May or June. Wheat, grown for grain and straw, is another crop alternative. To suggest that mono-cropping and that the land to the west and south transitioning into solar is justification to remove the land from the Williamson Act or to remove prime farm ground are not valid reasons.

2A-1

2A-2

2A-3

2A-4

3.0 Project Description

- **3.3.8.6 Dust Suppression and Erosion Control:** Two options are listed groundcover and soil stabilizing polymers. Of the two options, groundcover should not be a choice because of pest control, water and safety.
- **3.5 Restoration of the Project Study Areas:** The last paragraph that the project restoration to farmland be based on “*the success of establishment of post-project vegetation*” does this include harvesting a crop and who determines if there is success?
- **3.5 Section 5: Restoration Plans:** See comment 4.2-1b.
- **3.6.1 Section 6: William Act Contract Cancellation:** See comment Section 1.1.1.1

2A-5

2A-6

2A-7

2A-8

4.1 Aesthetics/Visual Resources

- **4.1.3 Decommissioning/Restoration and Residual Impacts:** “flat agricultural areas; therefore, no grading or significant land form modifications would be required...project sites would not be substantially degraded in the short-term and related impacts would be **less than significant**.” After 25 to 40 years the project roadways will have compacted the soil, the soil composition may change, removal of the panel supports will change the soil profile and texture not only on the surface but the subsurface as well. **It is significant.** The land must be restored to farmable condition. The infrastructure of the field such as soil profile, field grading, field water delivery system, surface and subsurface drainage systems, field roads, and field access will need to be restore to the land. These are significant changes.

2A-9

4.2 Agricultural Resources

- **4.2.1 Environmental Setting:** Use current data. 2013 data is available.
- **4.2.1.2 Existing Conditions:** See 2.0 Environmental Setting
- **4.2-1b Site Restoration Plan:** The text “maybe shown by growing a crop or other means to reasonable satisfaction of the Planning and Development Services Director and landowner.” The Restoration Plan should restore the land to a farmable condition that would allow someone to grow a crop. The Planning and Development Services Director and/or the landowner may or may not have the expertise to make that determination.
 - Include the following:
 - Crop History of each field.
 - Detailed map with a description of each field depicting the physical infrastructure of the field such as but not limited to field grading, field water delivery system, surface drainage system, sub-surface tile lines, field roads and field access, and soil type/profile.
 - Restoration should be accomplished by using the farming practices available at restoration time to restore the land to farming not by using methods that may be outdated. (The Restoration cost will have to be based on today’s farming costs.)
- **Significance After Mitigation:** Explain why after mitigation why the impact is “**less than significant**”
- **4.2.2 Pest Management Plan:** Correct *Weed and Pest Control Plan* to *Pest Management Plan*. See the attached document “*Pest Management Plan Requirements for Solar Projects*” for the requirements

2A-10

2A-11

2A-12

2A-13

2A-14

- **Subsection 1.** Remove “that are adjacent to agricultural lands.” The Pest Management Plan should protect not only agricultural lands but any surrounding land from infestation whether it is insect, vertebrate, weed or pathogen. “Adjacent” is too limiting.
- **Subsection 2.** See the attachment for the necessary requirements.
- **Subsection 3. a.** Remove “ground cover” this should not be an option since it could harbor a pest that could become a potential problem to the surrounding area as well as a potential safety hazard for the employees at the project.

2A-15

2A-16

2A-17

6.0 Cumulative Impacts: The 2013 total valley farmable acres as reported by IID is 473,311. To use 532,273 County-wide Important Farmland total is misleading. Solar projects are not proposed for the farmable Palo Verde area (6,661 acres) or the farmable Bard area (BWD 9,656 acres & Indian Reservation 11,969 acres) so the County-wide acreage should not be used. One project alone does not seem significant but when all the solar projects acreage is added together the cumulative impact is significant. The statement “the quantity of agricultural lands within Imperial County is always in flux and can vary widely year to year” is not an accurate statement. The irrigated farmland in Imperial Valley as well as in Bard and Palo Verde does not fluctuate. Farmland is fallowed and crops change but the number of fields has been relatively constant. Imperial County is unique in its farming by being able to produce crops year round with multiple cropping on many fields.

2A-18

Should you have any questions, please call the office at (760)482-4314.

Sincerely,



Connie L. Valenzuela
Agricultural Commissioner

Letter 2
Imperial County Agricultural Commission
November 19, 2014

Response to Comment 2-1

The Draft EIR provides a detailed evaluation of potential aesthetic impacts of the proposed project (see EIR Section 4.1 Aesthetics/Visual Resources). This analysis includes an assessment of the potential impacts of all components of the proposed project including the transmission facilities in the context of the existing visual character and quality of the area, exposure to sensitive visual receptors and overall visual sensitivity. Visual simulations of the proposed project conditions, which include proposed transmission facilities, are provided on EIR Figures 4.1-3 through 4.1-14. These figures illustrate the visual changes from 12 perspective viewpoints. As stated in the EIR (page 4.1-14), the changes from the existing condition to the proposed condition would have a significant visual change from an agricultural land use to a solar farm facility. As stated in the Existing Conditions, Section 4.1.1.3, the general area has a low visual character due to a lack of diversity in landscape pattern elements (color and texture) and the area lacks a dominate feature. The existing visual quality of the area has low vividness, moderately low intactness, and a moderately high visual unity. The combination of the low visual character and moderate visual quality results in a moderately low existing resource determination.

The surrounding area is currently being developed with (or proposed for) numerous solar projects of similar scale as the proposed projects; including the Mount Signal Solar Project, consisting of over 4,000 acres of land that will be constructed in the near-term. Considering the existing visual character of the area is considered low and the surrounding area is currently in the process of solar development, the construction of the proposed projects would be consistent with current and planned development patterns and types in the area. Furthermore, the surrounding area has a moderately low existing visual quality, and no resources were identified in the area with the exception of the background views of the mountains. The proposed heights of project components would not obscure the background views of the mountains.

EIR Figures 4.1-3 through 4.1-14 illustrate that the impacts would be similar across the four project sites. The viewer response ratings as identified in EIR Table 4.1-4, are considered to be moderately low, combined with a moderately low resource change that would result in a moderately low visual impact due to the construction of the project, as shown in EIR Table 4.1-5, Summary of Key View Ratings.

The existing visual quality of the surrounding areas where transmission lines are proposed is similar to the project sites, having a low vividness, moderately low intactness, and a moderately high visual unity. EIR Figures 4.1-15 through 4.1-18 include the proposed 230 kilovolt proposed transmission line. The construction of the transmission line will not change the visual character or visual quality of the surrounding area. The EIR concludes that this potential aesthetic impact would be less than significant.

The areas proposed for transmission facilities are adjacent to areas that will be converted from their existing agricultural uses to solar generation facilities. Because these areas would no longer be utilized for agricultural production, aerial pesticide applications would not be required. EIR Figure 4.2-2 depicts the proposed project site in the context of other approved and proposed solar facilities. As shown, the Iris transmission lines are only proposed to be located adjacent to solar fields. Therefore, the proposed transmission lines would not impact farming by restricting aerial pesticide applications.

Response to Comment 2-2

The Pest Management Plan would be in place for the duration of the project as a requirement of the CUP. Specifically, EIR Mitigation Measure 4.2-2 requires that a Weed and Pest Control Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. Item #3 specifically requires that “a long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:

- a. Use of specific types of herbicides and pesticides on a scheduled basis.

- b. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.”

Response to Comment 2-3

As identified in the EIR Project Description, as part of the approvals associated with the project, the County will be required to approve the site reclamation plans for each of the projects. The site reclamation plan for each of the four projects is provided in EIR Appendix L. As required by the County, when the projects are decommissioned at the end of their life spans, the project applicant or its successor in interest would be responsible for implementing the reclamation plan, which includes the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on each of the sites, as well as restoration of the site to its pre-project condition with respect to agricultural suitability (e.g., soils, infrastructure). The County is responsible for approving the reclamation plan for each project and confirming that financial assurances for each of the projects are in conformance with Imperial County ordinances. This approved is required by EIR Mitigation Measure 4.2-1b which states:

4.2-1b Site Reclamation Restoration Plan. The DOC has clarified the goal of a reclamation and decommissioning plan: the land must be restored to land which can be farmed. In addition to MM 4.2.1a for Prime Farmland and Non-Prime Farmland, the Applicant shall submit to Imperial County a Reclamation Plan prior to issuance of a grading permit. The Reclamation Plan shall document the procedures by which each CUP will be returned to its current agricultural condition/LESA score of 75.71 for FSF, 71.06 for RSF, 72.75 for ISF, and 69.29 for LSF. Permittee also shall provide financial assurance/bonding in the amount equal to a cost estimate prepared by a California-licensed general contractor or civil engineer for implementation of the Reclamation Plan in the event Permittee fails to perform the Reclamation Plan.

The site reclamation plans include an engineer's estimate of probable costs to restore the agricultural lands to “farm ready conditions.” The reclamation plan exhibits indicate current conditions of the farm fields and a typical layout for the proposed solar power arrays. The estimate accounts for costs to restore the land to farm-ready conditions upon ceasing the power facility operation and removal of all power facility improvements. No crop planting is included in the restoration costs since customary farm practices do not include planting prior to leasing. Crop type and planting is each individual farmer's selection. Costs are provided for replacement of concrete irrigation ditches and subsurface agricultural tile drainage pipelines, deep chiseling (sub-soiling), disking, landplaning and restoration of irrigation land slopes (land-leveling).

Existing agricultural soils and agricultural crops are identified in the reclamation plans. For example, the Iris reclamation plan identifies that “The lands generally consist of silty clay to fat clay soil that require subsurface tile drains to maintain crop yields, normally used for growing field crops such as alfalfa, bermuda grass, sudan grass and wheat. Even though there are lands identified as “Prime Farmland” by the California Department of Conservation, the cropping patterns of all of the agricultural lands within the Ferrell Solar Farm have historically been “field crops.”

Further, the reclamation plans address agricultural infrastructure under the section “restoration methods” which includes irrigation ditches, subsurface tile drains, and ground preparation. Cost estimates are provided in the reclamation plans, for land leveling, ground work (subsoil/stubble disc/landplane), and manure application. Agronomic Soil Sampling is also required.

The Imperial County Planning and Development Services Department regularly consults with the agricultural commissioner on matters related to farming, and it is anticipated that the Department would consult with the commissioner at the time of implementation of the reclamation plans to verify that restoration would allow crop production. However, the reclamation plans provide the standards and costs required to restore the lands back to their existing agricultural conditions. Further, the applicant will be required to bond for the restoration amounts to there is a financial mechanism in place to restore the agricultural lands.

The County will consider approval of the reclamation plans in conjunction with consideration of approval of the project. As part of their approval, the applicant shall provide financial assurances/bonding in the amount equal to the site restoration cost estimate to return the land back to its agricultural conditions after the solar facility ceases operations and closes. This mitigation approach is consistent with the Department of Conservation's recommendation that reclamation plans be prepared for solar projects located on agricultural lands.

Response to Comment 2-4

Please refer to response to comment 2-3. Existing physical conditions of the project site are considered as part of the reclamation plans, and including the engineer's estimate of probable costs. The existing conditions include soils types, crop types and existing infrastructure. Appendix A of the reclamation plan includes map of project existing conditions. Appendix F includes a LESA model which provides detailed information about existing agricultural conditions of the project site.

The restoration costs (engineer's estimate of probable costs) are based on current farming costs.

Response to Comment 2-5

The comments regarding the conversion of farmland are acknowledged. The EIR evaluates the impacts to farmland associated with the proposed project (see EIR Section 4.2 Agricultural Resources and Section 6.0 Cumulative Impacts). The cumulative loss of approximately 22,559 acres of farmland as a result of cumulative solar development is acknowledged, and consistent with the acreage identified in EIR Section 6.0 Cumulative Impacts.

An evaluation of the proposed project's potential economic impacts, employment impacts, fiscal impacts, and statement of potential for urban decay has been conducted, and is provided as Appendix M to the EIR. This economic information will be considered by the County's Planning Commission and Board of Supervisors as part of the consideration of approval of the project.

As provided in EIR Appendix M, the Economic Impact Analysis provides a calculation of the predicted impact to a community or region as a result of a project or activity. This includes all known direct (and indirect) expenditures as a result of both construction and operation for the projected life of a facility/project. With respect to the Iris Solar Farm, the Economic Impact Analysis indicates that the economic impact to the Imperial County region will be approximately \$944.06 million over the thirty (30) year life of the project (inclusive of both project construction and operations). By comparison, DMG, Inc. calculated the estimated economic impact of the current use of the subject property (field/grass crops and produce) over the same thirty (30) year period to be \$298.41 million.

As provided in EIR Appendix M, the Employment or Jobs Impact Analysis provides a calculation of not only the total amount of construction and operational jobs, but also provides a comparison of those jobs to those already in existence on the project site. Specific to the Iris Solar Farm, the subject property has historically been used for hay/grass type crops. The Employment Impact Analysis has determined that the Iris Solar Farm will generate the equivalent of 876 full-time one-year equivalent construction jobs over the first two years and 24 full-time equivalent permanent jobs. By comparison the current use of the site (row crops-277acres, hay/grass type crops-1,145 acres) produces about fourteen (14) jobs. When comparing both the direct and indirect permanent employment of agriculture versus utility (energy) production, the proposed use will generate a total of 93.2 permanent jobs while the current use creates 25.21 permanent jobs.

The Employment Impact Analysis concludes that the proposed use of the site for solar energy production will generate about 68 more total (direct and indirect) permanent jobs as the current use. This is in addition to the 876 one-year equivalent FTE construction jobs that are projected during the first two years (the construction period).

Finally, as provided in EIR Appendix M, the Fiscal Impact Analysis provides a calculation of the amount of revenue a governmental agency is expected to receive and provides a calculation of the projected costs that the agency will incur to provide appropriate services to both the project and the additional population/employment generated as a result of such. A comparative model is then produced in order to determine if the project is of economic benefit or cost to the government agency.

Development Management Group, Inc. has calculated that the Iris Solar Farm will generate approximately \$23.57 million in net local (county) tax revenue over the thirty (30) year life of the project. This is derived from an estimated \$15.96 million in sales tax revenue and \$7.61 in net property tax revenue.

It is projected that it will cost the County about \$15.67 million to provide appropriate services to the project and related employment thus generating a projected surplus to the County of Imperial of about \$7.90 million over the thirty (30) year life of the project (subject to acceptance of the recommendations provided within the report).

Note that this amount is based solely on the tax laws that are currently in place and does not include any amounts that may be received by the County under a Public Benefits Agreement or similar arrangement.

Comment Letter 2 – Attachment

Response to Comment 2A-1

EIR page 4.2-10 identifies a total of 160.4 acres of Prime Farmland within the project site. The remainder of the land is mapped as Farmland of Statewide Importance (~~1,229.051~~^{1,250.7} acres), and Other Land (11.3 acres). These classifications are based on the most currently available California Department of Conservation Important Farmlands Mapping (2010).

As described on EIR page 8-5, Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would avoid the Prime Farmlands, as mapped by the California Department of Conservation Important Farmlands Mapping, located within the project area, specifically associated with the FSF and ISF. The 2010 Important Farmland maps for Imperial County indicate that a majority of the four project sites are comprised of Farmland of Statewide Importance with small isolated areas designated as Prime Farmland and “other.” Under this alternative, approximately 160.4 acres of Prime Farmland would be avoided.

The purpose of this alternative is to avoid the Prime Farmlands located within the project sites, specifically associated with the FSF and ISF. The 2010 Important Farmland maps for Imperial County indicate that a majority of the project sites are comprised of Farmland of Statewide Importance with small isolated areas designated as Prime Farmland and “other.” This alternative is illustrated in Figure 8.0-1, which shows the location of the Prime Farmland that would be avoided (approximately 160.4 acres) and the total acreage of the projects with the exclusion of Prime Farmland. (NOTE: this alternative would not avoid several pockets of Prime Farmland as shown on Figure 8.0-1 as these represent small, isolated pockets of land, which would likely not remain economically viable or practically feasible to farm as they would be surrounded by solar uses.)

Response to Comment 2A-2

Information provided by the Imperial County Assessor’s office indicates that a total of 661 acres on the project site are currently under Williamson Act contracts. Alternative 3: Avoid Williamson Act Land would avoid a total of ~~662~~^{683.9} acres of agricultural land, which includes 22.9 acres that are currently not under Williamson Act contracts. Existing Williamson Act contracted lands within the project sites includes the following:

- Contract 160-1-2003 (160.27 acres)
- Contract 160-2-2003 (317.30 acres)
- Contract 160-1-2004 (184.58 acres)

Response to Comment 2A-3

The Williamson Act Cancellation request for preserve No. 160 was delivered to the Imperial County Assessor on September 25, 2014 (Agricultural Preserved Program Diminishment Application). As stated in EIR Chapter 3.0 Project Description (page 3-26) the County will approve the Williamson Act Cancellation as part of the discretionary actions for approval of the project. As part of this request, Williamson Act Cancellation findings in accordance with Government Code Section 51282(a) is required.

Response to Comment 2A-4

Information presented in this comment regarding the existing agricultural characteristics of the project site is provided in Section 2.0 Environmental Setting, Subsection 2.2.2 Agricultural Resources which provides a general description of the environmental setting as farming operations in this area generally consist of medium to large-scale crop production with related operational facilities. Crops generally cultivated in the area may include alfalfa, barley, and/or Bermuda grass in any given year. EIR Section 4.2 Agricultural Resources provides a description as much of the land base in the vicinity of and within the project study areas is considered productive farmland where irrigation water is available. Farming operations in this area generally consist of medium to large-scale crop production with related operational facilities. Crops generally cultivated in the area may include alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops (such as corn, melons, wheat) are also prominent in the area.

Response to Comment 2A-5

The comments related to pest control, water, and safety concerns associated with the potential use of groundcover for dust control are acknowledged. EIR Section 3.3.8.6 (Dust Suppression and Erosion Control) states, "The use of permeable soil stabilizing polymers, which would provide dust suppression and erosion control against wind and water is proposed."

Response to Comment 2A-6

As stated on EIR page 3-25, the project applicant is proposing to restore the sites with the same type of agriculture as is currently found onsite as part of the restoration effort. The success of establishment of the post-project vegetation would be evaluated in terms of percent coverage at two years after seeding with a performance standard of 80 percent or better. The performance standards and requirements for site restoration are identified in the site reclamation plans (EIR Appendix L).

The intent of the reclamation plans is to restore the site to its existing use (e.g., crop type), which are defined in the restoration plans. As stated above, 80 percent cover of a similar crop type would be required to be met.

As a condition of project approval, the applicant is required to post bonds for the reclamation plans to ensure that the site's are restored to their existing conditions.

Response to Comment 2A-7

Please refer to response to comment 2-3 and 2-4.

Response to Comment 2A-8

Please refer to response to comment 2A-3.

Response to Comment 2A-9

Restoration of the sites, including soils and supporting agricultural infrastructure are required as part of the site reclamation plans. Please refer to response to comment 2-3.

Response to Comment 2A-10

EIR Section 4.2.1 utilizes 2013 data regarding agricultural trends in the County.

Response to Comment 2A-11

Please refer to response to comment 2A-4.

Response to Comment 2A-12

Please refer to response to comment 2-4.

Response to Comment 2A-13

This comment is reference to the impact statements made at the conclusion of each environmental threshold within Section 4.2 Agricultural Resources. EIR Section 4.2.2.1 provides the Thresholds of Significance in which the potential impacts are evaluated. EIR Section 4.2.2.2 describes the methodology utilized in evaluation of the potential impacts. As stated, this analysis utilizes the LESA model in conjunction with other readily available information sources in assessing impacts on agriculture and farmland. With respect to the conversion of agricultural land, the LESA scoring for the site locations analyzed in conjunction with the projects are provided in EIR Table 4.2-4. As shown, the LESA scores for the projects support the farmland designations as identified in the FMMP. Therefore, their conversion to non-agricultural use, albeit temporary, is considered a significant impact. Implementation of Mitigation Measures 4.2-1a and 4.2-1b would reduce these impacts to a level less than significant.

With respect to the Williamson Act cancellations, with the implementation of Mitigation Measure 4.2-1b, the project applicant would be required to restore the project study areas to an agricultural use through the implementation of site reclamation plans. Therefore, the implementation of Mitigation Measure 4.2-1b and adherence to the Williamson Act Cancellation process in accordance with Government Code Section 51282(a) would reduce impacts related to the conversion of Williamson Act contracted land to a less than significant level.

Response to Comment 2A-14

The requirements of the "Pest Management Plan Requirements for Solar Projects" as identified in this comment have been incorporated into EIR Mitigation Measure 4.2-2. Mitigation Measure 4.2-2 reads as follows:

- 4.2-2** Prior to the issuance of a grading permit or building permit (whichever occurs first), a Weed and Pest Control Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The plan shall provide the following:
1. Monitoring, preventative, and management strategies for weed and pest control during construction activities at any portion of the project (e.g., transmission line);
 2. Control and management of weeds and pests in areas temporarily disturbed during construction where native seed will aid in site revegetation as follows;
 - Monitor for all pests including insects, vertebrates, weeds, and pathogens. Promptly control or eradicate pests when found, or when notified by the Agricultural Commissioner's office that a pest problem is present on the project site;
 - All treatments must be performed by a qualified applicator or a licensed pest control operator;

- “Control” means to reduce the population of common pests below economically damaging levels, and includes attempts to exclude pests before infestation, and effective control methods after infestation. Effective control methods may include physical/mechanical removal, bio control, cultural control, or chemical treatments;
 - Notify the Agricultural Commissioner’s office immediately regarding any suspected exotic/invasive pest species such as A- and Q-rated pest species as defined by the California Department of Food Agriculture (CDFA). Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner’s Office and/or CDFA;
 - Obey all pesticide use laws, regulations, and permit conditions;
 - Access shall be allowed by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties;
 - All project employees that handle pest control issues shall be appropriately trained and certified, and all required records shall be maintained and made available for inspection. All required permits shall be maintained current; and
 - Records of pests found and controlled shall be maintained and available for review, or submitted to the Agricultural Commissioner’s office on a quarterly basis.
3. A long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:
- a. Use of specific types of herbicides and pesticides on a scheduled basis.
4. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.

Response to Comment 2A-15

The text referenced in this comment “that are adjacent to agricultural lands” is not included in Subsection 1 of Mitigation Measure 4.2-2.

Response to Comment 2A-16

Please refer to response to comment 2A-14.

Response to Comment 2A-17

The reference to “ground cover” is not included in Subsection 1 of Mitigation Measure 4.2-2.

Response to Comment 2A-18

As stated on EIR page 6-6, County-wide Important Farmland totaled 473,311 acres in 2013. The EIR correctly states that in the County, the amount of agricultural land in production in any one year varies widely. Tens of thousands of acres of farmland is either out of production or intentionally fallowed at any given time.

Combined, the cumulative impact of agricultural conversion associated with the theoretical megawatt (MW) production is conservatively estimated at approximately 3.7 percent of all County-wide Important Farmland with the assumption that all the land converted is “Important.” For all of these reasons, the contribution of the proposed projects to any potentially significant loss of farmland, if any, would not be considerable. The incremental impact of the loss of 1,400~~1,422~~ acres of farmland would be mitigated via full restoration of the project study areas to comparable agricultural production post-project, purchase of an agricultural easement at a 2:1 ratio, or payment into the County’s agricultural mitigation fund, which the County uses at its discretion to mitigate for farmland loss consistent with its General Plan policies.

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November 19, 2014

Mr. Jim Minnick
Director
Planning & Development Services
801 Main Street
El Centro, CA 92243

Subject: Draft Environmental Impact Report (EIR) for the Iris Cluster Solar Farm
Project dated September 2014

Dear Mr. Minnick:

The Imperial County Air Pollution Control District (Air District) has reviewed the Draft EIR for the Iris Cluster Solar Farm. The review by the Air District was NOT an in depth review but was a more than a cursory review. The project as described is a solar photovoltaic energy generating facility approximately 1,422 acres in total. The project consists of four separate Conditional Use Permits (CUPs) for the following:

- Ferrell Solar Farm (FSF) – Proposed 90 MW¹ AC approximately 367.1 acres
- Rockwood Solar Farm (RSF) – Proposed 100 MW AC approximately 396.2 acres
- Iris Solar Farm (ISF) – Proposed 130 MW AC approximately 520.8 acres
- Lyons Solar Farm (LSF) – Proposed 40 MW AC approximately 138.4 acres

The four CUP's are expected to be constructed within a 12 month period resulting in a facility capable of generating up to 360 MW of electricity. Project characteristic include but are not limited to an expansive or concentrated photovoltaic solar energy facility with supporting uses. Components include but are not limited to panels/arrays, operations and maintenance (O&M) facilities, electrical substation facilities, inverter modules, pad mounted transformer(s) and transmission and collector lines. The Air District found the finding of "less than significant" for Air Quality as unsupported primarily because the mitigation measures as written are not enforceable.

The following are some of the more significant observations by the Air District which also apply to other sections of the Draft EIR.

3-1

¹ Megawatts (MW)

Executive Summary – beginning with page 0.1-7 (Air Quality)

4.3-2a – Construction Equipment

"Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment and the associated EPA Tier shall be submitted to the County Planning and Development Services Department prior to the issuance of a grading permit to verify implementation of this measure."

Air District comment:

As written this mitigation measure does NOT assure compliance with the Off-road regulations and does not assure reduction of emissions for NOx. In essence, paper shuffling does not reduce emissions. Therefore in order to assure emission reductions claimed in the "Air Quality/Greenhouse Gas Report" by OB-1 the project MUST submit to the Air District a list of all off-road equipment utilized at the each of the projects by Make, Model, Year, Horsepower, and expected/actual hours of use in such a timely manner as to assure that emissions are kept below the level of significance. Calculations by the Air District will help assure compliance with the "less than significant" finding for IMPACT 4.3-2 as well as the impact for the cumulative analysis.

3-2

4.3-2b – Fugitive Dust Control

The Air District will not attempt to reproduce this section but will point out the following:

1. Page 22 of the Imperial County CEQA Air Quality Handbook clearly identifies that compliance with Regulation VIII is not a mitigation for use as REDUCTIONS attributed to ENVIRONMENTAL IMPACTS. The section continues to explain that all preliminary modeling presumptions assume compliance with Regulation VIII and additional reductions cannot be taken.
2. The statement at the end of this mitigation measure states "[i]mplementation of the above-listed fugitive dust control measures was assumed to control PM₁₀ emissions by 85%". This is an unsupported statement and MUST be removed.
3. No commitment language to abide by the Off-Road regulations under the last three bulleted points under the title "ICAPCD Standard Measures for Construction Combustion Equipment". Therefore in order to assure emission reductions claimed in the "Air Quality/Greenhouse Gas Report" by OB-1 the project MUST submit to the Air District a list of all off-road equipment utilized at the each of the projects by Make, Model, Year, Horsepower, and expected/actual hours of use in such a timely manner as to assure that emissions are kept below the level of significance. Calculations by the Air District will help assure compliance with the "less than significant" finding for IMPACT 4.3-2 as well as the impact for the cumulative analysis.
4. For the remaining mitigation measures recordkeeping requirements to be kept on site at all times of the applied mitigation measure is necessary to assure emissions are kept below the level of significance. In addition, a construction

3-3

3-4

3-5

3-6

dust control plan must be submitted prior to any earthmoving activity for approval by the Air District.

3-6
Cont.

5. Remove all the bulleted points under "Standard Mitigation Measures for Construction Combustion Equipment" as they are redundant and are listed above.

3-7

6. The listed "Enhanced Mitigation Measures for Construction Equipment" may only be effective if recordkeeping is required. Any alerts issued by the Imperial Valley Air Website are evidence of "periods of high ambient pollutant concentrations". Without an effective means of accessing that information this mitigation measures means very little.

3-8

4.3-2c – Vehicular Emissions

"Pursuant to ICAPCD Policy Number 5, prior to construction activities, the project applicant shall pay an in-lieu impact fee as determined by ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM₁₀ and NO_x emissions. The applicable fee in Policy Number 5 is derived from utilizing the last three year Carl Moyer grant program average cost effectiveness for Imperial County multiplied by the amount of tons needed to be offset. Detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction."

Air District comment:

As written this mitigation measure does NOT assure compliance with the Off-road regulations and does not assure reduction of emissions for NO_x. The use of Policy 5 requires an assessment of the causes of emissions, PM₁₀ and NO_x. The greatest source of NO_x emissions results from the use of off-road equipment. Therefore, in order to assure emission reductions claimed in the "Air Quality/Greenhouse Gas Report" by OB-1 the project MUST submit to the Air District a list of all off-road equipment utilized at the each of the projects by Make, Model, Year, Horsepower, and expected/actual hours of use in such a timely manner as to assure that emissions are kept below the level of significance. Calculation by the Air District will assure compliance with the "less than significant" finding for IMPACT 4.3-2 as well as the impact for the cumulative analysis

3-9

4.3-2d – Dust Suppression

No comment

3-10

4.3-2e – Dust Suppression Management Plan

"Prior to the issuance of building permits, the applicant shall submit for the ICAPCD and Imperial County Planning and Development Services Department review and approval an operational "Dust Suppression Management Plan" for both construction and operations. The project applicant shall pay an "Operational Fee" to the ICAPCD for the square footage of the operations and maintenance building and substation pursuant to Rule 310."

3-11

Air District comment

The Air District is a bit unclear the true meaning of this mitigation measure. So, as not to confuse the intent the Air District strongly recommends the submittal of two Dust Control Plans; 1. addressing construction – must be submitted prior to any earthmoving activity and must be approved by the Air District. 2. addressing Operations – must be submitted and approved prior to the issuance of a certificate of occupancy. This will assure PM emissions are maintained below the level of significance and that the cumulative impacts are similarly are address.

3-11
Cont.

As to the last sentence Rule 310 Operational Fees applies to ANY project applying for a “building permit”. The application of a building permit triggers a review by the Air District. The review by the Air District, applying Rule 310 requirements, will then determine if fees are applicable. Please reword the last sentence to reflect the true intent of Rule 310.

Draft EIR - Page 4.3-21 – IMPACT 4.3-3

See above comments for 4.3-2a, 4.3-2b, 4.3-2c, and 4.3-2e

3-12

Other noted comments not affecting the conclusion by the Air District

Page 1-4 of the Draft EIR refers to the 1991 Air Quality Attainment Plan. Other sections of the document and the Air Quality/Greenhouse Gas Report correctly reference the 2009 Modified Ozone Plan adopted the Air District.

3-13

Page 3-8 of the Draft EIR lists “diesel power generators” as part of the auxiliary facilities that may be used. Please note, all diesel powered generators 50 horsepower (35 megawatts) must have a valid permit to operate from the Air District, excluding allowed exemptions.²

3-14

Finally, CEQA statute beginning with §21002 explains that projects should apply feasible alternatives and/or feasible mitigation measures. CEQA Guidelines §15096 reiterates that projects should not be approved if feasible mitigation measures are available.

3-15

The submittal of both a construction and operational dust control plan and an itemized list of in-use off-road equipment by Make, Model, Year, horsepower and hours of usage and the alternative of the use of Policy #5 are feasible mitigation measures that can be applied to projects to reduce potentially significant impacts.

3-16

Thank you for giving the Air District an opportunity to comment on this project. Should you have any questions please do not hesitate to call the office at (760) 482-4606.

3-17

² Exemptions to the permitting requirements are made by authorized engineers in the Engineering Division of the Imperial County Air Pollution Control District.

Respectfully Submitted,



Monica N. Soucier
APC Division Manager

Letter 3
Imperial County Air Pollution Control District
November 19, 2014

Response to Comment 3-1

This comment states the Imperial County Air Pollution Control District has completed its review of the Iris Cluster Solar Farm Projects Draft EIR, and summarizes the proposed project components. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

Response to Comment 3-2

Mitigation Measure 4.2-3a has been revised as follows:

- 4.3-2a Construction Equipment.** Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment, including all off-road equipment utilized at each of the projects by make, model, year, horsepower and expected/actual hours of use, and the associated EPA Tier shall be submitted to the County Planning and Development Services Department and ICAPCD prior to the issuance of a grading permit. The ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The Planning and Development Services Department and ICAPCD shall to verify implementation of this measure.

Response to Comment 3-3

The first paragraph of Mitigation Measure 4.3-2b has been revised as follows:

- 4.3-2b Fugitive Dust Control.** Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII-Fugitive Dust Control Measures. Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required additional standard and enhanced These mitigation measures listed below shall be implemented prior to and during construction. The County Department of Public Works will verify implementation and compliance with these measures as part of the grading permit review/approval process.

Response to Comment 3-4

The last paragraph of Mitigation Measure 4.3-2b has been revised as follows:

Enhanced Mitigation Measures for Construction Equipment

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways.
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts).

~~Implementation of the above-listed fugitive dust control measures was assumed to control PM₁₀ emissions by 85%.~~

Response to Comment 3-5

The commitment language identified in this comment regarding Mitigation Measure 4.3-2b and specifically related to ICAPCD Standard Measures for Construction Combustion Equipment has been added to EIR Mitigation Measure 4.3-2a. Please refer to response to comment 3-2.

Response to Comment 3-6

EIR page 4.3-18, under Mitigation Measure(s) been revised to include the following general requirement, applicable to all air quality mitigation measures 4.3-2a through 4.3-2e:

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF and LSF, and transmission line. Records sufficient to document compliance with mitigation measures shall be maintained on site at all times and available for ICAPCD inspection.

Response to Comment 3-7

EIR Mitigation Measure 4.3-2b has been revised to remove the "Standard Mitigation Measures for Construction Combustion Equipment." As noted in this comment, these measures are redundant and are already required by Mitigation Measure 4.3-2a.

EIR Mitigation Measure 4.3-2b has been revised as follows:

~~ICAPCD Standard Measures for Construction Combustion Equipment~~

- ~~• Use alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.~~
- ~~• Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.~~
- ~~• Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.~~
- ~~• Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).~~
- ~~• Construction equipment operating on site should be equipped with two to four degree engine timing retard or precombustion chamber engines.~~
- ~~• Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology.~~
- ~~• Keep vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same.~~

Response to Comment 3-8

As stated in response to comment 3-6, EIR page 4.3-18, under Mitigation Measure(s) been revised to include the following general requirement that records sufficient to document compliance with mitigation measures shall be maintained on site at all times and available for ICAPCD inspection.

Response to Comment 3-9

EIR Mitigation Measure 4.3-2c Vehicular Emissions has been deleted as follows:

4.3-2c Vehicular Emissions. Pursuant to ICAPCD Policy Number 5, prior to construction activities, the project applicant shall pay an in-lieu impact fee as determined by ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM₁₀ and NO_x emissions. The applicable fee in Policy Number 5 is derived from utilizing the last three year Carl Moyer grant program average cost effectiveness for Imperial County multiplied by the amount of tons needed to be offset. Detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction.

This mitigation measure has been determined not to be necessary and is otherwise a redundant measure that does not add any additional mitigation requirements to those required by Mitigation Measures 4.3-2a and 4.3-2b. The only “vehicular emissions” this measure referred to are the on-road/off-site vehicle use emissions. For NO_x the onsite emissions are approximately 80% of the total and for PM₁₀ (minus road dust) it is over 80%. Therefore, project mitigation requirements of Mitigation Measures 4.3-2a and 4.3-2b primarily focus on the onsite emissions. Regarding road dust, approximately 99% of the emissions calculated for the proposed project will be generated from unpaved roads and the mitigation that requires reduced vehicle speeds addresses this impacts. In addition some of the discretionary measures for fugitive dust address offsite vehicular emissions.

Response to Comment 3-10

No comment.

Response to Comment 3-11

EIR Mitigation Measure 4.3-2e has been revised as follows:

4.3-2e Dust Suppression Management Plan. ~~The project applicant shall submit for the ICAPCD and Imperial County Planning and Development Services Department review and approval an operational “Dust Suppression Management Plan” for both construction and operations.~~

Prior to any earthmoving activity, the applicant shall submit and obtain approval from the ICAPCD and Imperial County Planning and Development Services Department (ICPDSD) a Construction Dust Control Plan. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.

ICAPCD Rule 310 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed projects, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the proposed projects. The project applicant shall pay an “Operational Fee” to the ICAPCD for the square footage of the operations and maintenance building and substation as determined applicable by the ICAPCD pursuant to Rule 310.

Response to Comment 3-12

Comment noted. Please refer to preceding responses to comments 3-1 through 3-11.

Response to Comment 3-13

The text on EIR page 1-4 has been revised as follows:

Imperial County Air Pollution Control District

- Review as part of the EIR process regarding consistency with the Imperial County Air Pollution Control District (ICAPCD) CEQA Air Quality Handbook, ~~the 1991 Air Quality Attainment Plan~~, the final “Modified” 2009 8-hour Ozone Air Quality Management Plan, and the State Implementation Plan for particulate matter less than 10 microns in diameter (PM₁₀) in the Imperial Valley, and including verification of Rule 801 compliance.

Response to Comment 3-14

The text on EIR page 3-8 has been modified as follows in order to clarify that any diesel generator greater than 50 brake horsepower (bhp) will require a permit to operate and owners/operators would have to comply with the District's permitting protocol as follows:

The projects would employ the use of PV (or CPV) power systems to convert solar energy into electricity using non-reflective technology. The project facilities would consist of solar PV (or CPV) panels, inverter modules, pad mounted transformer(s), and optional, on-site O&M buildings and substation(s). Each solar project facility may have its own O&M building and substation, or may share among the projects. Up to four O&M buildings and substations are contemplated. Each O&M building would include its own emergency power, fire suppression, potable water system and septic system. Additional auxiliary facilities would include lighting, grounding, backup uninterruptable power supply (UPS) systems and diesel power generators (diesel generators greater than 50 bhp will require a permit to operate), fire and hazardous materials safety systems, security systems, chemical safety systems, and emergency response facilities.

Response to Comment 3-15

Comment noted.

Response to Comment 3-16

This comment is acknowledged and EIR mitigation measures have been revised accordingly to ensure proper compliance and verification with the construction and operational dust control plans, off-road construction equipment, and Policy #5. Please refer to responses to comments 3-2 through 3-11.

Response to Comment 3-17

Comment noted.



State of California - Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, CA 91764
(909) 484-0459
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EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director



November 17, 2014

Ms. Patricia Valenzuela, Planner IV
Imperial County Planning
801 Main Street
El Centro, CA 92243
PatriciaValenzuela@co.imperial.ca.us

Subject:

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
State Clearinghouse No. 2014041091

Dear Ms. Valenzuela:

The Department of Fish and Wildlife (Department) appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Iris Cluster Solar Farm Project (Project) [State Clearinghouse No. 2014041091]. The Department is responding to the DEIR as a Trustee Agency for fish and wildlife resources (California Fish and Game Code Sections 711.7 and 1802, and the California Environmental Quality Act [CEQA] Guidelines Section 15386), and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines Section 15381), such as the issuance of a Lake or Streambed Alteration Agreement (California Fish and Game Code Sections 1600 *et seq.*) and/or a California Endangered Species Act (CESA) Permit for Incidental Take of Endangered, Threatened, and/or Candidate species (California Fish and Game Code Sections 2080 and 2080.1).

The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species (i.e., biological resources). The Department is a Trustee Agency with responsibility under CEQA for commenting on projects that could affect biological resources. As a Trustee Agency, the Department is responsible for providing, as available, biological expertise to review and comment upon environmental documents and impacts arising from project activities (CEQA Guidelines, § 15386; Fish & G. Code, § 1802).

The 1,422 acre Project site is composed of four non-contiguous independent sites (Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF) and Lyons Solar Farm (LSF) located between State Route 98 to the south, Kubler Road and

4-1

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Iris Cluster Solar Farm Project
SCH No. 2014041091
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Preston Road to the north, Weed Road to the east and Brockman Road to the west southwest of the City of El Centro in Imperial County. The proposed Project includes the construction of solar photovoltaic (PV) or concentrated photovoltaic (CPV) energy-generating facilities on 4 Conditional Use Permit (CUP) areas producing a total of 360 megawatts (MW) of power. The Project will be constructed over a 12 month period with overlapping phases for each CUP. Following review of the Biological Resources section of the DEIR, the Department offers the comments and recommendations listed below to assist the County of Imperial in adequately identifying and/or mitigating the project's significant, or potentially significant, impacts on biological resources.

4-1
Cont.

Lake and Streambed

For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream or use material from a streambed, the project Applicant (or "entity") must provide written notification to the Department pursuant to Section 1602 of the Fish and Game Code. Imperial Irrigation District (IID) drains and canals are state jurisdictional and any impacts to those waters will need to be assessed and mitigated.

Section 4.4-3 of the DEIR states that there will be no impacts to state jurisdictional waters by the Project, however the Applicant only mentions removing or relocating IID drains or canals as impacts. Please note that any impacts, such as road widening over a canal, replacing or changing culvert sizes, vegetation removal within jurisdictional areas, etc. need to be stated in the impact section of the DEIR in order for the Department to use the CEQA document when issuing a streambed agreement. If there are impacts to state jurisdictional waters a mitigation proposal should be proposed that includes the impact acreage along with the type, location, and ratios of compensation. Without such documentation the Department is unable to determine whether the impacts would be mitigated, and cannot, without further information from Imperial County concur that impacts to jurisdictional waters would be mitigated to less than significant levels.

4-2

Avian Impacts

It is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et seq.*). In addition, sections 3503, 3503.5, and 3513 of the Fish and Game Code (FGC) prohibit the take of all birds and their nests. Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by FGC or any regulation made pursuant thereto; Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by FGC or any regulation adopted pursuant thereto; and Section 3513 states that it is unlawful to take or possess

4-3

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
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any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

The DEIR fails to include impacts to migratory birds from collision with components of the Project during construction and operation. Those impacts should be assessed for significance, and avoidance and mitigation should be identified. Migratory birds are killed or injured from collisions with solar panels, mirrors, heliostats, electrical generation-tie lines, fences, and other structures. The growing evidence suggests a particular hazard to water-associated birds seeking migratory stopover habitat typically found along rivers and lakeshores (Service 2014a), and is commonly referred to as a "lake effect" (Xu and Small 2014). Based on the species composition of avian fatalities found at three sites in the Mojave and Sonoran deserts-thin film photovoltaic, solar thermal trough, solar thermal power tower-all three technologies resulted in an unexpectedly high composition (approximately 30 to 40 percent by project) (McCrary et al. 1986; Ironwood Consulting 2013; AECOM 2013) of water-associated birds in the total number of avian fatalities across at least 17 families and 43 species. The magnitude of impact from the lake effect is potentially related to many potential migratory flyway and species-specific factors that have yet to be investigated, including availability of other appropriate migratory stopover habitat, seasonality, broad-front vs. corridor migration patterns, weather and wind conditions, moon phase, etc.

4-3
Cont.

The Project is located southwest of the Salton Sea, which is a critical stopover along the Pacific Flyway, providing permanent habitat and seasonal refuge to resident water-associated birds and migratory birds (Shuford et al. 2002). The agricultural fields surrounding the Salton Sea also provide habitat for a variety of wintering birds and shorebirds (Patten et al. 2003). To date, limited information exists on bird collisions at utility-scale solar energy facilities within the Salton Sea basin due to a lack of systematic, statistically rigorous monitoring. However, utility-scale photovoltaic, parabolic trough, and power tower projects that are currently under construction or in operation are reporting mortalities and injuries to a wide range of avian species, including water-associated birds, passerines, and raptors involving various project features, such as solar panels or heliostats, evaporation ponds, fencing, distribution lines within the facility, and gen-tie lines.

4-4

The Project Applicant should prepare a Bird and Bat Conservation Strategy (BBCS) following the most recent guidelines from the US Fish and Wildlife Service. The plan should also include a statistically robust, systematic avian and bat mortality and injury monitoring program to achieve the following: (1) estimate annual mortality by taxa and season using appropriate statistical design and appropriate estimators (this estimate should include mortality associated with all features of the project that are likely to result in injury and mortality - e.g., fences, ponds, solar panels, collector lines, gen-ties); (2) identify collision and other mortality during diurnal and nocturnal times of the day; and (3) assess the spatial distribution and abundance of mortalities [species composition

4-5

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
SCH No. 2014041091
Page 4 of 6

(including rare and sensitive species), abundance, and distribution] on the project site. The Department should be included in the review of the mortality and monitoring plan.

4-5
Cont.

Also, please note that section 3511(a)(11) of the FGC states fully protected birds or parts thereof may not be taken or possessed at any time and no provisions are allowed to authorize the issuance of permits or license's to take any fully protected bird. If a fully protected species is found dead or injured on site the Applicant shall notify the Department immediately and we will work with the Applicant on the appropriate course of action.

4-6

Burrowing Owl

Burrowing owl surveys were conducted during the breeding season in 2013. Fourteen burrows with either a burrowing owl seen or active sign noted occur within the Project boundary. Approximately 15 adults and 1 juvenile were seen at these burrows. Thirty two burrows with either a burrowing owl seen or active sign noted were found within the IID drains surrounding the sites. Approximately 37 adults and 7 juveniles were seen at these burrows.

4-7

Burrowing owls located within the project boundary will be directly impacted by construction and will be passively relocated during the non-breeding season. Replacement of the burrows is proposed at a 2:1 ratio. The Applicant has proposed to place the artificial burrow systems (ABS) within the solar field in open areas or detention basins. The Department is not convinced this is the best location for the replacement burrows and recommends they be located outside of the solar site. Consultation with the Department and approval on the best locations for ABS's should occur prior to the closure of any active burrow. The locations and approach should be included in the Burrowing Owl Mitigation and Monitoring Plan.

4-8

The DEIR states the project will result in permanent impacts to burrowing owl foraging and breeding habitat. To mitigate for the loss of burrowing owl forage the Applicant has proposed to use areas that will not be developed and are under the Applicants control and adjacent to the solar site, but outside IID easements. The Department appreciates the Applicant's willingness to compensate for loss of forage however; we have a few concerns about the mitigation plan as outlined due to the fact that details of exact location, implementation, monitoring, financing, and oversight have not been worked out at this time. If this option is not feasible the Applicant proposes to provide off-site land acquisition to offset impacts. In addition, the Applicant has not specified in the DEIR the amount of compensation (e.g. acreages or ratios) they are proposing to mitigate the impacts to the surrounding owls from loss of foraging habitat. Without such documentation the Department is unable to determine whether the impacts would be mitigated, and cannot, without further information from Imperial County concur that those impacts would be mitigated to less than significant levels. The Department will need to work with the Applicant to determine the appropriate compensation to offset the foraging impacts from this Project.

4-9

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
SCH No. 2014041091
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The Department appreciates the opportunity to comment on the DEIR for the Iris Cluster Solar Farm Project (SCH No.2014041091) and requests that the Department's comments be addressed in the revised CEQA document. If you should have any questions pertaining to this letter, please contact Magdalena Rodriguez at Magdalena.Rodriguez@wildlife.ca.gov or 909-844-2520.

4-10

Sincerely,



KN Kimberly Nicol
Regional Manager

cc: State Clearinghouse, Sacramento

Draft Environmental Impact Report
Iris Cluster Solar Farm Project
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Letter 4
California Department of Fish and Wildlife
November 17, 2014

Response to Comment 4-1

This comment provides a summary of the Department's role as a Trustee Agency pursuant to CEQA Guideline 15386 and a Responsible Agency pursuant to CEQA Guideline 15381, and provides a general summary of the proposed project. No further response is necessary.

Response to Comment 4-2

The County acknowledges that impacts to state jurisdictional waters would require written notification to the Department pursuant to Section 1602 of the Fish and Game Code. As currently proposed, IID canal and drain structures would not be impacted, and no jurisdictional areas have otherwise been identified on the project site. As stated in the biological technical report (EIR Appendix E, page 27), "no IID drains or canals will be removed or relocated, no roads will be widened and no washes are found within the project."

Response to Comment 4-3

Page 4.4-15 of the EIR addresses the proposed project's potential impacts to migratory birds. With respect to electrocution, all electrical components within the solar projects shall be either undergrounded or protected so that there will be no exposure to wildlife and therefore no potential for electrocution. The transmission line would be constructed in such a manner that energized components do not present an opportunity for "skin to skin" or wing span contact. However, the Avian Powerline Interaction Committee's (APLIC) 1996 report on power line electrocution in the United States reports that avian electrocution risk is highest along distribution lines (generally less than 69 kV) where the distance between energized phases, ground wires, transformers, and other components of an electrical distribution system are less than the length or skin-to-skin contact distance of birds. The distance between energized components along transmission lines (>69 kV) is generally insufficient to present avian electrocution risk. No impact to raptors is anticipated to occur due to electrocution along the proposed transmission line. Therefore, no mitigation would be required. An Avian and Bat Protection Plan (ABPP) will be developed that will incorporate guidance from USFWS (2010e) and the Avian Powerline Interaction Committee (APLIC 2006), and will include a wildlife mortality reporting program. Mitigation Measure 4.4-1f, specifically the ABPP, will provide the project applicant the vehicle to comply with the Bald and Golden Eagle Protection Act as well as the MBTA.

Regarding collision, no incidences of avian ground wire collisions of existing transmission wires were observed during surveys. If collisions are found to be a problem, marking shall be applied to ground wires, which has been shown to decrease the incidence of bird collisions by 60 percent (Alonso, Alonso and Munoz-Pulido 1994).

The proposed project is over 30 miles from the Salton Sea and does not present stopover habitat. No increase in avian mortality has been observed in the Calexico/Mt Signal Solar Farm (2000 acres). In fact, avian species (i.e. brown pelicans, mourning doves) have been observed using the shade provided by the solar panels with no harmful effects (personal observation, M. Barrett). This is an agricultural area and does not approximate habitat found within the desert areas of the Mojave and Sonoran regions.

Response to Comment 4-4

Please refer to response to comment 4-3.

Response to Comment 4-5

Mitigation Measure 4.4-1f, specifically the ABPP, will provide the project applicant the vehicle to comply with the Bald and Golden Eagle Protection Act as well as the MBTA.

Response to Comment 4-6

Comment noted. No increase in avian mortality has been observed in the Calexico/Mt Signal Solar Farm (2000 acres). In fact, avian species (i.e., brown pelicans, mourning doves) have been observed using the shade provided by the solar panels with no harmful effects (personal observation, M. Barrett). This is an agricultural area and does not approximate habitat found within the desert areas of the Mojave and Sonoran regions.

Response to Comment 4-7

This comment states the findings of the burrowing owl surveys, which is consistent with the information presented on EIR page 4.4-8.

Response to Comment 4-8

Mitigation Measure 4.4-1a addresses potential impacts to burrowing owl. Specifically Item #5 requires that “a Forage Habitat Plan shall only be completed upon prior approval by and in cooperation with the CDFW.” Specifically, Item #5 of Mitigation Measure 4.4-1a requires the following:

1. As the project construction schedule and details are finalized, an agency-approved biologist shall prepare a Burrowing Owl Mitigation and Monitoring Plan that will detail the approved, site-specific methodology proposed to minimize and mitigate impacts to this species. Passive relocation, destruction of burrows, construction of artificial burrows, and a Forage Habitat Plan shall only be completed upon prior approval by and in cooperation with the CDFW. The Mitigation and Monitoring Plan shall include success criteria, remedial measures, and an annual report to CDFW and shall be funded by the project applicant to ensure long-term management and monitoring of the protected lands.

Response to Comment 4-9

As stated in response to comment 4-8, Item #5 of Mitigation Measure 4.4-1a requires that a Forage Habitat Plan shall only be completed upon prior approval by and in cooperation with the CDFW. The applicant has discussed the proposed project with Ms. Rodriguez of CDFW, and a meeting will be scheduled with CDFW to present a BUOW Avoidance, Minimization, Mitigation and Monitoring Plan and resolve any BUOW issues mentioned within the letter.

Response to Comment 4-10

Comment noted.

ADMINISTRATION/TRAINING

1078 Dogwood Road
Heber, CA 92249
Phone: (760) 482-2420
Fax: (760) 482-2427



OPERATIONS/PREVENTION

2514 LaBrucherie Road
Imperial, CA 92251
Phone: (760) 355-1191 Ext. 2
Fax: (760) 355-7051

November 18, 2014

To: Patricia Valenzuela, Planner IV County of Imperial

From: Imperial County Fire Prevention Bureau

Subject: Draft Environmental Impact Report for Iris Cluster Solar Project

The Imperial County Fire Prevention Bureau would like to thank you for allowing our comments on this project. The following is a list of our general requirements

O&M Buildings:

The type of suppression systems that will be used for the O&M Building must be described in the project; also, the hours and amount of staffing that will be used. In addition, include a description of your emergency and hazardous materials plan. Provide the square footage of all supporting structures to determine if the buildings will require sprinkler systems.

5-1

Road Access and Array Requirements:

Dimensions: Alley roads shall have an unobstructed width of not less than 20 feet (6096 mm), except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm). The width in-between arrays shall be a minimum of 9 feet (2704mm). The width between arrays shall not be less than 10 feet (3048mm). Any array that exceeds a distance in length of 500 feet shall provide a turn around.

5-2

Turning radius: The required turning radius of a fire apparatus access road shall be a minimum of 70 by 90 degrees diameter

5-3

Access and loading: Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an approved fire apparatus access road with an asphalt, all weathered, concrete, or other approved driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34 050 kg).

5-4

Fire apparatus access road gates: Gates securing the fire apparatus access roads shall comply with all of the following criteria:

5-5

1. The minimum gate width shall be 20 feet (6096 mm).
2. Gates shall be of the swinging or sliding type.
3. Construction of gates shall be of materials that allow manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools or when a key box containing the keys) to the lock is installed at the gate location.
7. Locking device specifications shall be submitted for approval by the fire code official

5-5
Cont.

Water Requirement:

- 1) Provide a 10,000 gallon water storage tank dedicated for fire suppression for any proposed O&M structures.

5-6

Fiscal Impacts:

Any agreement with the applicant over terms and conditions of fiscal impacts or provisions will remain open until meeting with the department head and developer, which may include but not limited to:

1. Capital purchases which may be required to assist in servicing this project
2. Costs for services during construction and life of the project
3. Training

5-7

Thank You,

Robert Malek

Robert Malek
Deputy Fire Marshal
Imperial County Fire Department

Letter 5
Imperial County Fire Prevention Bureau
December 13, 2011

Response to Comment 5-1

As described in EIR Section 3.0 Project Description 3.3.8.4 - Fire Protection, the projects are located within the jurisdiction of the Imperial County Fire Department. On-site fire protection would be provided via portable and fixed fire suppression systems throughout each of the projects. Portable fire extinguishers would be provided at various locations throughout the solar farms, while fixed fire suppression systems would be available in the form of dedicated 10,000-gallon on-site storage tank(s). A 10,000-gallon on-site water storage tank would be provided for each of the O&M buildings constructed, and are intended for the fire protection of the O&M buildings. The O&M building would have access to a wet-fire (i.e., water) connection to provide sufficient fire protection.

Subsequent to project approval, construction level engineering plans will be submitted by the applicant to the County Planning & Development Services Department, which in turn will be provided to the Fire Prevention Bureau for review and approval as part of the development review/building permit process. These detailed engineering plans will provide building square footage, and would meet applicable requirements for fire suppression, including sprinkler systems as required.

As described in EIR Chapter 3.0, an O&M building is contemplated for each of the project sites; however, there may be cases where the O&M building on one site can be shared with an adjacent solar project (see EIR page 3-14). As described, the footprint of the O&M buildings at each location would not exceed an area of approximately 3,200 square feet. The parking area would comprise an area of less than 0.25 acres. The O&M buildings would consist of a steel framed structure with metal siding and roof panels and painted to match the surrounding landscape (e.g., desert sand). The O&M buildings would include a small office, storage space, an electrical/array control room, restroom, and a compact water treatment facility.

EIR Section 3.3.10, Operations and Maintenance describes that the combined projects would be staffed with up to 24 full-time employees (up to six for each site) to maintain the project facilities seven days a week during normal daylight hours. Typically, up to 12 staff would work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekend. To ensure optimal solar output, the solar panels would be maintained 24 hours a day/7 days a week. Each of the individual site components would be staffed by up to four employees during the day. Equipment and supply deliveries would typically occur during the week and, on average, could entail up to two daily truck trips.

As discussed in EIR Section 4.8 Hazards and Hazardous Materials (see EIR page 4.8-15), if the on-site storage of hazardous materials necessitate, at any time during construction and/or operations and long term maintenance, quantities in excess of 55-gallons, a Hazardous Material Management Program (HMMP) would be required. The HMMP developed for the projects will include, at a minimum, procedures for:

- Hazardous materials handling, use and storage;
- Emergency response;
- Spill control and prevention;
- Employee training; and
- Record keeping and reporting.

Additionally, hazardous material storage and management will be conducted in accordance with requirements set forth by the ICFD, Imperial County Office of Emergency Services, DTSC, and CUPA for storage and handling of hazardous materials. The HMMP would be submitted for review and approval to the ICFD as a condition of approval of the projects.

Response to Comment 5-2

EIR Section 3.0 (page 3-21) describes the proposed security gates and access. As described, access to each of the site locations would be provided using a 20 foot minimum swinging or sliding gate. Additionally, controlled access gates would be maintained at entrances into the each of the project site locations. Emergency response personnel would be provided with manual override capability in order to access the site facilities.

Both the access and service roads (along the perimeter of the project facilities) would have turnaround areas to allow clearance for fire trucks per fire department standards (70 feet by 70 feet, and 20-foot-wide access road).

All security gates and proposed access roads will be subject to final review by the ICFD as a condition of approval of the project.

Response to Comment 5-3

The proposed project will meet the turning radius requirements for a fire apparatus access road. Site plans will be subject to final review by the ICFD as a condition of approval of the project.

Response to Comment 5-4

As stated on EIR page 3-21, paved access would be provided for the main access road to the parking lot and maintenance area. Site plans will be subject to final review by the ICFD as a condition of approval of the project.

Response to Comment 5-5



Please refer to response to comment 5-2. All security gates will be subject to final review by the ICFD as a condition of approval of the project to ensure that these criteria are met.

Response to Comment 5-6

As described on EIR page 3-21, fixed fire suppressions systems would be provided in the form of dedicated 10,000-gallon on-site storage tank(s). A 10,000-gallon on-site water storage tank would be provided for each of the O&M buildings constructed, which are intended for the fire protection of the O&M buildings. The O&M building would have access to a wet-fire (i.e., water) connection to provide sufficient fire protection.

Response to Comment 5-5

This comment states that any agreement regarding the terms and conditions addressing fiscal impacts or other provisions of service is contingent upon meeting with the Department head and the applicant, and may include capital purchases, costs for services during the life of the project, and training. The County acknowledges this comment and will include the fire service agreement(s) as part of the conditions of approval for the project.

 <p>COUNTY OF IMPERIAL</p> <p>DEPARTMENT OF PUBLIC WORKS</p> <p>155 S. 11th Street El Centro, CA 92243</p> <p>Tel: (760) 482-4462 Fax: (760) 352-1272</p>	 <p>Public Works works for the Public</p>
	<p>RECEIVED</p> <p>NOV 19 2014</p> <p>IMPERIAL COUNTY PLANNING & DEVELOPMENT SERVICES</p> <p>November 19, 2014</p> <p>Mr. Jim Minnick, Director Planning & Development Services Department 801 Main Street El Centro, CA 92243</p> <p>Attention: Patricia Valenzuela, Planner IV</p> <p>SUBJECT: Administrative EIR Iris Solar Farm project. (Conditional Use Permits 13-0054 thru 13-0057); located 2 miles west of the City of Calexico.</p> <p>Dear Mr. Minnick:</p> <p>This letter is in response to your letter and Draft EIR package received on September 2, 2014, for the above mentioned project. The project consists of constructing four utility-scale Photovoltaic (PV) solar facilities, on four non-contiguous independent sites encompassing approximately 1,422 acres. In addition four separate Conditional Use Permit (CUP) application have been filed for the proposed projects (Ferrell Solar Farm, Rockwood Solar Farm, Iris Solar Farm, Lyons Solar Farm).</p> <p>The Imperial County Department of Public Works – (ICDPW) staff has reviewed the package information and the following comments</p> <p><u>Draft EIR:</u></p> <div style="border: 1px solid black; padding: 10px;"> <p>1. Pg. 0.1-21 under 0.1 Executive Summary. It's stated that the proposed projects would not result in significant impacts to transportation and no traffic mitigation is provided therefore.</p> <p>With the exception of La Brucherie at McCabe Rd, ICDPW generally concurs with the traffic study within the DEIR that there will be sufficient LOS for intersections and roadway segments related to capacity.</p> <p>However, ICDPW has concerns related to potentially significant direct and cumulative impacts related to heavy solar construction traffic on existing county roadways that will be utilized for this project. No discussion was given within the DEIR document related to current pavement conditions or structural capacity and how that may be impacted overtime due to solar traffic loads.</p> <p>Furthermore, the traffic study within the DEIR indicated that LaBrucherie at McCabe road intersection drops from a LOS C to LOS D with Baseline + Construction Traffic creating a direct impact. No mitigation was listed within the MMRP.</p> </div>

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2. Pg. 3-15 under 3.0 Project Description section 3.3.8.1. Please note that All proposed site security including fencing and access gates shall be located outside the ultimate of right of way for all County roadways that are to be dedicated. 6-2
3. Pg. 4.13-2 under Transportation/Traffic. The County Updated the Bicycle Plan in 2012 not 2011. Please correct as required. 6-3
4. Pg. 4.13-22 under Transportation/Traffic Table 4. 13-8 list La Brucherie road//McCabe road intersection drops to a LOS of D under Baseline with Construction project traffic. No mitigation is listed within the MMRP for the direct impact. ICDPW requires that under any scenario in which an intersection or road segments Level of Service drops below LOS C, mitigation shall be provided. 6-4
5. Table 0-1. Summary of Project Impacts and Proposed Mitigation Measures under the Transportation and Traffic Section (Pg. 0.1-21) states that the “implementation of the projects would not significantly impact transportation and traffic” and, therefore, no mitigation is required. 6-5

ICDPW proposes the following mitigation measures under the MMRP to remedy potentially direct and cumulative impacts related to solar traffic loading on existing County roadways.

Mitigation Measures

- MM 1** The Applicant shall retain a professional civil engineer to survey and evaluate the condition of roads along the proposed haul routes prior to commencing construction. The pre-construction conditions shall be documented for each roadway with photo and text description. Video of haul routes may also be used to document pre-construction conditions. The photographs and/or videos are to include documentation of bridges and other appurtenances such as signs, striping, drainage, and other utilities as determined in consultation with the County. The report shall make a determination of the minimum road design criteria to support anticipated project traffic and whether the existing roadways comply. The Applicant shall submit the completed report to the Imperial County Department of Public Works for review and comment. 6-5
- Timing/Implementation:* Prior to the issuance of grading permit.
Enforcement/Monitoring: Imperial County Planning and Development Services Department, Imperial County Public Works Department.
- MM 2** The Applicant shall enter into a Roadway Maintenance Agreement with the County of Imperial prior to issuance of a grading permit. The Applicant shall pay its proportionate share of the responsibility to maintain the proposed haul routes during construction and if necessary bring the roadways up to an appropriate minimum standard to handle the anticipated project traffic.

Timing/Implementation: Prior to the issuance of grading permit

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- MM 3** *Enforcement/Monitoring:* *Imperial County Planning and Development Services Department, Imperial County Public Works Department.*
- The Applicant shall perform the roadway preparation work and construct pavement improvements as specified prior to use of a haul route that involves one of the roads identified below:
- Weed Road
 - Brockman Road
 - Kubler Road
 - FERREL Road
- In addition, the Applicant shall be responsible for roadway preparation work, pavement construction and repairs to County-maintained roads including County-maintained bridges and other roadway appurtenances for any other route that is subsequently used but not identified with the DEIR. This may include, but not be limited to, bridges, signs, striping, drainage improvements and roadway shoulders. Consideration shall also be given to improvements to other infrastructure, such as Imperial Irrigation District canal and drain crossings.
- Timing/Implementation:* *Prior to the issuance of grading permit*
Enforcement/Monitoring: *Imperial County Planning and Development Services Department, Imperial County Public Works Department.*

6-5
Cont.

Traffic Impact Analysis Review Comments.

6. Section 3.1 of the traffic impact analysis describes State Route 98 as a state highway/expressway with bike lanes and a posted speed limit of 40 MPH. Locations of bike lanes and posted speed limits along State Route 98 should be verified.
7. Section 7.2 of the traffic impact analysis states that most of the deliveries will primarily be from north of the site through Interstate 8. La Brucherie Road is assumed to be the primary access from north of the site (Interstate 8 access). However, La Brucherie Road does not connect directly to Interstate 8. Drew Road and Forrester Road provide direct access from the Interstate 8 and a shorter travel distance (for west coast traffic) to the site.
8. Section 10.0 of the traffic impact analysis lists the four sites for the project. The Ferrell NW Site is discussed under Section 10.2 (Rockwood). The Ferrell NW Site shall be removed from this section and included on Section 10.3 (FerrellSE & NW). The table of contents shall be revised accordingly.
9. Section 10.1 of the traffic impact analysis states that the highest directional peak hour construction associated with the Lyons Site is 78 driveway trips. Per Table 7-1 of the traffic impact analysis, the driveway trips shall be 31.
10. Section 10.2 of the traffic impact analysis states that the highest directional peak hour construction associated with the Rockwood Site is 31 driveway trips. Per Table 7-1 of the traffic impact analysis, the driveway trips shall be 78.

6-6

6-7

6-8

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Respectfully,

William S. Brunet, PE
Director of Public Works

By:



John Gay, PE
Deputy Direct of Engineering, Public Works

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(draft).docx

Letter 6
Imperial County Department of Public Works
November 19, 2014

Response to Comment 6-1

Pavement conditions and the project's potential impacts to paving on area roadways is addressed in the EIR. Specifically, as stated on EIR page 4.13-25, as a condition of approval for the projects, the project applicant will be required to conduct a pre- and post-construction roadway condition survey to document existing roadway conditions prior to the commencement of construction activities so that any damages to local roadways are repaired after construction. These access roads would not increase hazards due to design features or incompatible uses and a less than significant impact is identified.

EIR page 0.1-21 states that the proposed projects would not result in significant impacts to transportation and traffic. No mitigation is required. However, as a condition of project approval, the applicant will be required to conduct pre-construction and post-construction roadway condition surveys to document the roadway conditions before and after project construction. The applicant would be responsible to roadway repair as determined appropriate based on these surveys and in mutual agreement with the County. The measures proposed in this comment will be incorporated into the CUP conditions of approval to ensure that the roadway pavement conditions are properly restored to pre-construction conditions.

With respect to the project's potential impacts to the LaBrucherie at McCabe Road intersection, the proposed project effects to LOS and delay analyzed in EIR Section 4.13 are temporary construction impacts, and are related to the worst-case component of the overall construction process. The traffic study evaluates the project impacts against a baseline (without project) that includes cumulative growth. This is not an existing condition, but an "existing + cumulative" baseline. The baseline, pre-project delay is 22.4 seconds at LOS C. The threshold between LOS C & LOS D is 25.0 seconds. When the temporary, worst-case construction volumes are added to the existing + cumulative baseline, the resultant delay is 25.7 seconds, or 0.7 seconds greater than the LOS C/D threshold, which would indicate an impact. Were the temporary, worst-case construction volumes to be added to the existing baseline (to measure project-only effects), the resultant LOS would remain LOS C, as the removal of cumulative traffic would easily reduce delay by 0.7 seconds. As such, the analysis as presented shows the effects of both project and cumulative traffic. In the event that the cluster were to be developed concurrently, or in conjunction with other solar farms in the Mt. Signal area, consideration should be given to either a) staggering AM work hours between 6AM and 9 AM, and/or b) requiring employees from the north and east to utilize SR 98 via SR 111. Both of these strategies would avoid the potential cumulative impacts to the La Brucherie Road/McCabe Road unsignalized intersection. As currently proposed, the construction phasing will be staggered as shown on EIR Figure 3.0-10 Iris Solar Farm – Phase Activity Distributions which would avoid an impact to the LaBrucherie at McCabe Road intersection. However, this requirement will be incorporated as a condition of approval for the project so as to avoid any potential cumulative impact to this intersection.

Response to Comment 6-2

Comment noted. No fencing or access gates will be constructed within the ultimate right of way for all County roadways.

Response to Comment 6-3

The text on EIR page 4.13-2 has been revised as follows:

County of Imperial Bicycle Master Plan Update: Final Plan

In ~~2012~~ 2014, the County of Imperial adopted an updated Bicycle Master Plan to serve as the guiding document for the development of an integrated network of bicycle facilities and supporting programs

designed to link the unincorporated areas and attractive land uses throughout the County. This document is an update to the previously adopted Countywide Bicycle Master Plan; and was prepared to accomplish the following goals:

1. To promote bicycling as a viable travel choice for users of all abilities in the County,
2. To provide a safe and comprehensive regional connected bikeway network,
3. To enhance environmental quality, public health, recreation and mobility benefits for the County through increased bicycling

Response to Comment 6-4

Please refer to response to comment 6-1.

Response to Comment 6-5

Please refer to response to comment 6-1.

Response to Comment 6-6

Comment noted. Please note that changes to these criteria will not affect the findings of the analysis.

Response to Comment 6-7

Comment noted. Delivery routes have not been determined; however as several other cumulative solar developments in the area are forecasted to utilize the La Brucherie corridor, it was considered most conservative to assume the Iris Solar Farm would as well. Where delivery trips do not occur via La Brucherie Road, then identified cumulative impacts would likely be reduced to less than significant.

Response to Comment 6-8

EIR Appendix J has been revised to reflect that the appropriate driveway trips are correlated with each site as described in Sections 10.1-10.4.

Response to Comment 6-9

EIR Appendix J has been revised to reflect that the appropriate driveway trips are correlated with each site as described in Sections 10.1-10.4.

Response to Comment 6-10

EIR Appendix J has been revised to reflect that the appropriate driveway trips are correlated with each site as described in Sections 10.1-10.4.



www.iid.com

Executive-ES

November 6, 2014

Ms. Patricia Valenzuela
Planner IV
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: Iris Cluster Solar Farm Draft EIR

Dear Ms. Valenzuela:

On October 2, 2014 we received from the Imperial County Planning & Development Services Department, Draft Environmental Impact Report (EIR) for the Iris Cluster Solar Farm project. 8minute Renewables (85JP 8ME, LLC) is proposing to construct four photovoltaic solar facilities (Ferrell Solar Farm, Iris Solar Farm, Lyons Solar Farm and the Rockwood Solar Farm), collectively estimated to generate up to 360 MW, on four non-contiguous independent sites encompassing approximately 1,422 acres, about 2 miles west of the City of Calexico, CA; and generally located between State Route 98 to the south, Kubler Road and Preston Road to the north, Weed Road to the east, and Brockman Road to the west.

The Imperial Irrigation District (IID) has reviewed the Draft EIR and in addition to our March 7, 2011 and May 15, 2014 comment letters (see attached letters), has the following comments:

1. The proposed project could result in significant impacts to IID existing and proposed electrical systems if not mitigated appropriately.
2. To better assess impacts to IID infrastructure, IID requests that project proponent provide IID with phasing maps with the different build-out scenarios: individually, in clusters or all at once. The phasing maps should include estimated times in which each portion of the facilities will be built (in their entirety or in a phased development), including substations, Gen-Tie, collector lines and O&M maintenance buildings.
3. Furthermore IID requires project proponent to provide plans for the on- and offsite improvements and include Imperial County approved construction plans as well as hard copy and digital CAD files of the new solar facilities, plan and profile drawings showing the proposed generation interconnection (Gen-Tie) that extends from proposed solar field site parcels through existing solar facilities in the area, including all collector lines. IID plans to utilize various road rights of way to build transmission and distribution lines in the general area.
4. It is important that project proponent be made aware of IID's plan to build the Kubler Substation on the south east corner of Brockman Road and Kubler Road in conjunction with a future 92 kV transmission line with double and single 7.2/12.5 kV rated distribution

7-1

7-2

7-3

7-4

IMPERIAL IRRIGATION DISTRICT
OPERATING HEADQUARTERS • P.O. BOX 937 • IMPERIAL, CA 92251

Ms. Patricia Valenzuela
November 6, 2014
Page 2

- | | |
|--|----------------------|
| <p>lines along Kubler Road. Should the proposed Kubler Substation, which will be located adjacent to solar facilities, be constructed, IID will require all solar facilities in the vicinity that are not participating financially with IID, through an Affected System Agreement and a Backfeed & Station Power Service Agreement, to participate in funding the construction of the proposed new substation. Additional fees and funding for transmission and distribution upgrades to connect to the new substation will also be required.</p> | <p>7-4
Cont.</p> |
| <p>5. The electric service for the facilities' construction, station service and O&M buildings shall be provided by IID. It is important to note that all costs associated with the relocation and/or upgrades of IID electrical infrastructure to service the project will be the responsibility of the project proponent, thus the project proponent should be advised to contact IID Energy Customer Operations and Planning Section at (760) 482-3402 or (760) 482-3300 for additional information regarding electrical service for the project. However, IID's energy deliverability has been identified as limited around the project area and a circuit analysis will be needed in order to identify the types of upgrades to IID electrical distribution infrastructure necessary to provide service, which can include but is not limited to new, relocated, modified or re-constructed substations, transmission and /or distribution lines.</p> | <p>7-5</p> |
| <p>6. On the attached map there are three sump pumps that have initially been identified as being impacted by the project. These sump pumps are S-1, S-184 and S-327. These pumps are currently being served by existing overhead distribution rated lines. Also note that there are four residences that are located within the project site and are currently being fed by IID.</p> | <p>7-6</p> |
| <p>7. The Initial Study and the Notice of Preparation states that there are no IID Canals or drainage structures located within the project sites, that IID rights-of-way, access roads, canal and drains are located immediately adjacent to project sites and no IID canals or drain structures will be removed or relocated. However, the project will impact numerous IID Water Department facilities. IID facilities that will be impacted include the Wisteria Canal; Wisteria Laterals 2, 3, 4, and 5; Wisteria Drain, and the South Central Drain. The impacted IID facilities and rights-of-ways are located within the Iris Cluster Solar Farm project sites.</p> | <p>7-7</p> |
| <p>8. The proposed project will impact IID drains with project, site runoff flows and proposed storm water detention facilities. To assess the impacts and determine appropriate mitigation, the project will require a comprehensive IID hydraulic drainage system analysis. IID's hydraulic drainage system analysis includes an associated drain impact fee.</p> | <p>7-8</p> |
| <p>9. Storm water outlets for this project should be connected to IID drains at existing agricultural discharge locations.</p> | <p>7-9</p> |
| <p>10. The project proponent may not use IID's canal or drain banks to access the project site. Any abandonment of easements or facilities shall be approved by IID based on systems (Irrigation, Drainage, Power... etc.) needs.</p> | <p>7-10</p> |

Ms. Patricia Valenzuela
November 6, 2014
Page 3

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| <p>11. The IID Water Department Engineering Services requests: (1) the location of the groundwater monitoring wells for the purpose of reviewing for impact to IID's canal and drain system and (2) a copy of the monitoring data for the wells. For further clarification, please contact IID Water Engineering Services at (760) 339-9446.</p> | <p>7-11</p> |
| <p>12. Project proponent must submit to IID Water Engineering all project documentation that includes reports, plans, drawings and maps. The proposed project must submit their grading and drainage plans. Maps and drawings are required to detail the project's site locations for:</p> <ul style="list-style-type: none"> - Temporary construction water deliveries - Water supply deliveries - Temporary construction surface drainage - Surface drainage pipe discharges - Temporary construction dewatering discharge - Temporary construction access - Access driveways crossing canals or drains - Access roads into and within project site - All power poles, utility crossings and encroachments such as water, sewer, storm water, gas, overhead and underground electric facilities. | <p>7-12</p> |
| <p>13. An IID planning review will be required for the project in accordance with IID Water Department developer guidelines. A copy of IID's Developer Project Guide is available at http://www.iid.com/Modules/ShowDocument.aspx?documentid=2328. For additional information regarding IID Water Department planning review contact IID Water Engineering Section, at (760) 339-9265.</p> | <p>7-13</p> |
| <p>14. Project proponent should be advised that, all new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP) (see http://www.iid.com/index.aspx?page=152 for a link to the IWSP). In order to enter into a water supply agreement with the IID and obtain a water supply for the project, the project proponent will be required to comply with all applicable IID policies and regulations. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project have been adequately assessed, appropriate mitigation has been developed and appropriate conditions have been adopted by the relevant land use permitting/approving agencies. Furthermore, the applicant will be required to meet standards for water use efficiency and best management practices, including but not limited to those established by the County, as well as other water use efficiency standards, adopted by IID or local government agencies.</p> | <p>7-14</p> |
| <p>15. On May 8, 2012 the IID Board of Directors adopted a Temporary Land Conversion Following Policy (TLCFP) that will require participation from certain project developers and/or landowners as a condition of water service for new non-agricultural projects. In particular, this policy will target lower water demand projects, such as photovoltaic solar facilities, that require a temporary land use conversion and are permitted by conditional</p> | <p>7-15</p> |

Ms. Patricia Valenzuela
November 6, 2014
Page 4

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| <p>use permits on agriculturally-zoned lands. Implementation details are being developed by IID and will be incorporated into landowner following contracts and project water supply agreements issued under IID's Interim Water Supply Policy (see IID website http://www.iid.com/Modules/ShowDocument.aspx?documentid=5646 or the IID MCI webpage at http://www.iid.com/index.aspx?page=152).</p> | <p>7-15
Cont.</p> |
| <p>16. On water supply matters related to IID's IWSP and TLCFP, project proponent should contact Autumn Plourd at (760) 339-9755 for further information.</p> | <p>7-16</p> |
| <p>17. Any construction or operation on IID property or within its existing and proposed right of way or easements will require an encroachment permit or agreement that encompasses all IID permits (depending on the circumstances), including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities (e.g. power lines). A copy of the encroachment permit application is included in the District's <i>Developer Project Guide 2008</i>. The guide can be accessed at the following website: http://www.iid.com/Modules/ShowDocument.aspx?documentid=2328. In addition, instructions for the completion of encroachment applications can be found at http://www.iid.com/Modules/ShowDocument.aspx?documentid=2335. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements.</p> | <p>7-17</p> |
| <p>18. An IID encroachment permit is required to utilize existing surface water drain pipe connections to drains, and receive drainage service from IID. Surface water drain pipe connections are to be modified in accordance with IID Standards.</p> <p style="margin-left: 40px;">a. Construction Storm Water Permit: A construction storm water permit from the California Regional Water Quality Control Board (CRWQCB) is required before commencing construction. Copies of this permit and the Storm Water Pollution Prevention Plan for the project are to be submitted to IID.</p> <p style="margin-left: 40px;">b. An industrial storm water permit from CRWQCB is required for operation of the proposed solar facility. A copy of this permit is to be submitted to IID.</p> | <p>7-18</p> |
| <p>19. IID Water Engineering requires review and approval of all proposed project connections and encroachments into IID facilities.</p> | <p>7-19</p> |
| <p>20. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.</p> | <p>7-20</p> |

Ms. Patricia Valenzuela
November 6, 2014
Page 5

21. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully mitigated. **Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.**

7-21

Should you have any questions, please do not hesitate to contact me by phone at 760-482-3609 or by e-mail at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,



Donald Vargas
Environmental Analyst

Kevin Kelley – General Manager
Kristine Fontaine – Asst. General Manager & Interim Portfolio Management Officer
Tina Shields – Interim Planning and Water Conservation Manager, Water Dept.
Mike Pacheco – Interim Operations and Maintenance Manager, Water Dept.
Carl Stills – Manager, Energy Dept.
Vance Taylor – Asst. General Counsel
Tom King – Deputy Energy Manager, Engineering & Operations
Paul G. Peschel – Manager Planning & Engineering, Energy Dept.
Angela Evans – Manager Distribution Services & Maintenance Operations
Juan Carlos Sandoval – Asst. Mgr., Transmission Expansion Development, Energy Dept.
Michael P. Kemp – Superintendent, Real Estate & Environmental
Shayne Ferber – Asst. Supervisor, Real Estate
Vikki Dee Bradshaw – Environmental Compliance Officer

Attachment A



www.iid.com

Executive-ES

May 15, 2014

Ms. Patricia Valenzuela
Planner IV
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: Iris Cluster Solar Farm NOP of an EIR

Dear Ms. Valenzuela:

On April 23, 2014 we received from the Imperial County Planning & Development Services Department, the Initial Study (IS) and Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Iris Cluster Solar Farm project. 8minute Renewables (85JP 8ME, LLC) is proposing to construct a project which consisting of four (4) photovoltaic solar facilities (Ferrell Solar Farm, Rockwood Solar Farm, Iris Solar Farm, and the Lyons Solar Farm), collectively estimated to generate up to 360 MW, on four (4) non-contiguous independent sites encompassing approximately 1,422 acres, about 2 miles west of the City of Calexico, CA; and generally located between State Route 98 to the south, Kubler Road and Preston Road to the north, Weed Road to the east, and Brockman Road to the west.

The Imperial Irrigation District (IID) has reviewed the IS and NOP and has the following comments:

1. Given that the project's impacts to the IID transmission system is virtually impossible to evaluate due to the lack of details of its transmission interconnection facilities contained in the IS and NOP (e.g. there is no specifics of how the solar facilities substations will interconnect with the neighboring solar projects), it is very difficult at this point in time to provide explicit comments about impacts to IID's electrical facilities. Nonetheless, we reserve the right to comment on these issues in the future as we deem necessary and as additional information becomes available.
2. Furthermore, in view of the lack of detail in the layout of the four solar facilities in regards to location of collector lines, on-site substations etc., the facilities; collectively or individually, could potentially conflict with future transmission right-of-way alignment and siting of IID's upcoming system upgrades. Thus IID may require easements across the front of the project site's parcels.

7-A1

7-A2

IMPERIAL IRRIGATION DISTRICT
OPERATING HEADQUARTERS • P.O. BOX 937 • IMPERIAL, CA 92251

Ms. Patricia Valenzuela
May 15, 2014
Page 2

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|---|-------------|
| <p>3. The electric service for the project's construction, station service and the O&M building shall be provided by IID. Thus, it is important to note that all costs associated with the relocation and/or upgrade of IID electrical infrastructure to service the project will be the responsibility of the project proponent. Project proponent is urged to contact IID Energy - Customer Operations & Planning Section at 760-482-3402 or (760) 482-3300 for additional information regarding electrical service for the project.</p> | <p>7-A3</p> |
| <p>4. However, IID's energy deliverability has been identified as limited around the project area; a circuit analysis will be needed in order to identify what kind of upgrades to IID electrical distribution infrastructure would be necessary to provide service, which can include but are not limited to new, relocated, modified or re-constructed substations, transmission and/or distribution lines.</p> | <p>7-A4</p> |
| <p>5. The IS and NOP state that there are no IID canals or drainage structures located within the project sites, that IID rights-of-way, access roads, canal and drains are located immediately adjacent to the project sites and that no IID canal or drain structures will be removed or relocated; nevertheless, we strongly recommend that the project proponent be advised that modifications to IID canals and drains may have project level environmental impacts that should be analyzed on a site specific basis.</p> | <p>7-A5</p> |
| <p>6. In addition, the project proponent should be informed that IID's canal or drain banks may not be used to access the project site. Any abandonment of easements or facilities shall be approved by IID based on its systems (Irrigation, Drainage, Power, etc.) needs.</p> | <p>7-A6</p> |
| <p>7. The proposed project may impact IID's drains with site runoff flows. To mitigate impacts, the proposed project will require a comprehensive IID hydraulic drainage system analysis.</p> | <p>7-A7</p> |
| <p>8. The project's storm water runoff should be designed to connect to drains at existing agricultural discharge locations.</p> | <p>7-A8</p> |
| <p>9. Be advised that the project's upcoming EIR should address impacts to IID's drains. 33.3% of water delivered to agricultural users is discharged into the IID's drainage system. Reduction in field drainage due to land use conversion has an incrementally negative effect on both drain water quality and volume of impacted drain and subsequent drainage path to the Salton Sea. This affects drainage habitat (flora and fauna) and the elevation of the Salton Sea (shoreline habitat and exposed acreage that may have air quality issues). Additionally certain direct-to-Sea drains have been identified as pupfish drains which require additional protections under state and federal Endangered Species Acts.</p> | <p>7-A9</p> |

Ms. Patricia Valenzuela
May 15, 2014
Page 3

10. Furthermore, the EIR should also contain an assessment or analysis of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and subsequently, the Salton Sea.

7-A10

11. Taking into account that the project proponent plans to potentially draw water from the Wistaria Canal, be advised that all new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP) (see <http://www.iid.com/index.aspx?page=152> for a link to the IWSP) and require a water supply agreement prior to operation. In order to enter into a water supply agreement with the IID and obtain canal water service for the project, the applicant will be required to comply with all applicable IID policies and regulations. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the project have been adequately assessed, appropriate mitigation has been developed and appropriate conditions have been adopted by the relevant land use permitting/approving agencies. Furthermore, the applicant will be required to meet standards for water use efficiency and best management practices, including but not limited to those established by the County, as well as other water use efficiency standards, adopted by IID or local government agencies.

7-A11

12. On May 8, 2012 the IID Board of Directors adopted a Temporary Land Conversion Fallowing Policy (TLCFP) that will require participation from certain project developers and/or landowners as a condition of water service for new non-agricultural projects. In particular, this policy will target lower water demand projects, such as photovoltaic solar facilities, that require a temporary land use conversion and are permitted by conditional use permits on agriculturally-zoned lands. Fallowing contracts in support of the TLCFP may be required to implement this policy and in order to process a project's water supply agreement as described previously (see <http://www.iid.com/Modules/ShowDocument.aspx?documentid=5646> or the IID MCI webpage at <http://www.iid.com/index.aspx?page=152>). For additional information regarding the IWSP or TLCFP, contact the IID Water Department representative at (760) 339-9755.

7-A12

13. Any construction or operation on IID property or within its existing and proposed right of way or easements will require an encroachment permit, including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities. A copy of the encroachment permit application is included in the IID's *Developer Project Guide 2008*, and can be accessed at: <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2328>. Furthermore, instructions for the completion of encroachment applications can be found at <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2335>. The IID Real

7-A13

Ms. Patricia Valenzuela
May 15, 2014
Page 4

Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits.

7-A13
Cont.

14. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.

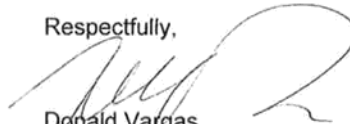
7-A14

15. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully mitigated. **Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.**

7-A15

Should you have any questions, please do not hesitate to contact me by phone at 760-482-3609 or by e-mail at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,



Donald Vargas
Environmental Analyst

Kevin Kelley – General Manager
Kristine Fontaine – Asst. General Manager & Interim Portfolio Management Officer
Carl Stills – Manager, Energy Dept.
Ismael Gomez – Interim Manager, Water Dept.
Vance Taylor – Asst. General Counsel
Tom King – Deputy Energy Manager, Engineering & Operations
Paul G. Peschel – Interim Manager Planning & Engineering, Energy Dept.
Angela Evans – Manager Distribution Services & Maintenance Operations
Juan Carlos Sandoval – Asst. Mgr., Transmission Expansion Development, Energy Dept.
Michael P. Kemp – Superintendent, Real Estate & Environmental
Shayne Ferber – Asst. Supervisor, Real Estate
Vikki Dee Bradshaw – Environmental Compliance Officer

Attachment B



www.iid.com

GS-ES

March 7, 2013

Mr. Jared Chavez
Planner I
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: Iris Solar Farm Project - 8minutenergy Renewables CUP Application #13-0001

Dear Mr. Chavez:

On February 11, 2013 we received from the Imperial County Planning & Development Services Department, Conditional Use Permit (CUP) application #13-0001. 8minute Renewables, LLC is proposing to construct the Iris Solar Farm (85JP 8ME, LLC), an approximately 1400-acre 200 MW photo-voltaic solar facility. The Iris Solar Farm project intends to interconnect to the IV Substation via 230 kV gen-tie facilities shared by the Mount Signal Solar Farm I, Imperial Solar Energy Center South and Centinela Solar Energy projects. The facility is to be located 2 miles west of Calexico, CA adjacent to the Mount Signal Solar Farm I currently under construction.

The Imperial Irrigation District (IID) has reviewed the application and has the following comments:

1. The project will impact numerous IID Water Department facilities. IID facilities that may be impacted include the Wisteria Canal, Wisteria Laterals 2, 3, 4, and 5; Wisteria Drain and Wisteria 5 Drain.
2. Modifications to IID canals and drains may have project level environmental impacts that will be analyzed on a site specific basis.
3. The project proponent should be advised that IID's canal or drain banks may not be used to access the project site. Any abandonment of easements or facilities shall be approved by IID based on its systems (Irrigation, Drainage, Power, etc.) needs.
4. The proposed project may impact IID's drains with site runoff flows. To mitigate impacts, the proposed project will require a comprehensive IID hydraulic drainage system analysis. For additional information regarding items 1 thru 4, project proponent should be advised to contact IID Water Engineering Services at (760) 339-9265.
5. The project's storm water runoff should be designed to connect to drains at existing agricultural discharge locations.

7-B1

7-B2

7-B3

7-B4

7-B5

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March 7, 2013
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6. Be advised that the project's upcoming environmental document should address impacts to IID's drains. 33.3% of water delivered to agricultural users is discharged into the IID's drainage system. Reduction in field drainage due to land use conversion has an incrementally negative effect on both drain water quality and volume of impacted drain and subsequent drainage path to the Salton Sea. This affects drainage habitat (flora and fauna) and the elevation of the Salton Sea (shoreline habitat and exposed acreage that may have air quality issues). Additionally certain direct-to-Sea drains have been identified as pupfish habitat which requires additional protections under state and federal Endangered Species Acts. 7-B6
7. Furthermore, the environmental document should also contain an assessment or analysis of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and subsequently, the Salton Sea. 7-B7
8. Project proponent should be informed that, all new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP) (see <http://www.iid.com/index.aspx?page=152> for a link to the IWSP). In order to enter into a water supply agreement with the IID and obtain a water supply for the project, the applicant will be required to comply with all applicable IID policies and regulations. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project have been adequately assessed, appropriate mitigation has been developed and appropriate conditions have been adopted by the relevant land use permitting/approving agencies. Furthermore, the applicant will be required to meet standards for water use efficiency and best management practices, including but not limited to those established by the County, as well as other water use efficiency standards, adopted by IID or local government agencies. For additional information regarding the IWSP, the IID Water Supply Planning/Colorado River Manager may be contacted at (760) 339-9038. 7-B8
9. On May 8, 2012 the IID Board of Directors adopted a Temporary Land Conversion Following Policy that will require participation from certain project developers and/or landowners as a condition of water service for new non-agricultural projects. In particular, this policy will target lower water demand projects, such as photovoltaic solar facilities, that require a temporary land use conversion and are permitted by conditional use permits on agriculturally-zoned lands. Implementation details are being developed by IID and will be incorporated into landowner following contracts and project water supply agreements issued under IID's Interim Water Supply Policy (see IID website <http://www.iid.com/Modules/ShowDocument.aspx?documentid=5646> or the IID MCI webpage at <http://www.iid.com/index.aspx?page=152>). 7-B9
10. Any construction or operation on IID property or within its existing and proposed right of way or easements will require an encroachment permit or encroachment agreement (depending on the circumstances), including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities. A copy of the encroachment permit application is included in the IID's *Developer Project Guide 2008*, accessed at: <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2328>. Also, 7-B10

Mr. Jared Chavez
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- instructions for the completion of encroachment applications can be found at <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2335>. For additional information regarding encroachment permits, the IID Real Estate Section at (760) 339-9239 should be contacted.
11. IID water, for use during the project's construction phase, will require an encroachment permit.
12. An IID encroachment permit is also required in order to utilize existing surface water drain pipe connections to drains and receive drainage service from IID. Surface water drain pipe connections are to be modified in accordance with IID Standards. Copies of the Construction Storm Water Permit, the Storm Water Pollution Prevention Plan and the Industrial Storm Water Permit, required by the California Regional Water Quality Control Board, should be submitted to IID in support of the encroachment permit application.
13. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.
14. Of the parcels that make up the project site,
- IID Energy has existing overhead 7.2kV single phase primary lines:
- On parcels 052-180-053 & 052-180-058, on the south side of Kubler Road.
 - Partially along the south side of parcel 052-180-048.
 - On parcel 052-180-040, on the south side of Highway 98, west of George Road, approximately 400 ft.
 - Along the north side of the parcel 052-180-0164.
 - On parcel 052-108-042, along the west side of Corda Road, north of Kubler Road, approximately 1,600 ft..
 - Along the south side of parcel 059-050-002.
- and existing overhead 7.2/12.5kV three phase primary lines:
- On the south side of Highway 98 on parcel 052-180-0164.
 - At the south east corner of parcel 052-108-042, at the intersection of Kubler Road and Ferrell Road.

Mr. Jared Chavez
March 7, 2013
Page 4

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| <ul style="list-style-type: none"> • On parcel 059-050-001, along the west side of Ferrell Road and at the intersection of Kubler Road and Ferrell Road, on the south side of Kubler Road. • Along the west side of Weed Road on parcel 059-050-002. • Along the east side of Ferrell Road and along the south side of parcel 059-120-001. • Along the south side of parcel 059-050-003 and along the west side of Weed Road. | <p>7-B14
Cont.</p> |
| <p>15. Given that the project's impacts to IID's existing distribution system and planned transmission facilities is virtually impossible to evaluate due to the lack of details of its transmission interconnection facilities contained in the application (e.g. there is no indication of how the project's 230 kV substation will interconnect with the Centinela Solar facility), it is very difficult at this point in time to provide specific comments about impacts to IID's electrical facilities. Nonetheless, we reserve the right to comment on these issues in the future as we deem necessary and as additional information becomes available.</p> | <p>7-B15</p> |
| <p>16. However, a point of concern is the location of the 500'x500' 230 kV substation on the corner of Ferrell Road and Highway 98. It appears that the project could potentially conflict with IID's upcoming IID Kubler Substation project's future transmission right-of-way alignment (92 kV & 230 kV). Thus, IID may require easements across the front of the project site's parcels.</p> | <p>7-B16</p> |
| <p>17. The electric service for the project's construction, station service (backfeed) and the O&M building shall be provided by IID. Thus, it is important to note that all costs associated with the relocation and/or upgrade of IID electrical infrastructure to service the project will be the responsibility of the project proponent. Project proponent is urged to contact IID Energy - Customer Operations & Planning Section at 760-482-3402 or (760) 482-3300 for additional information regarding electrical service for the project. A complete set of electrical plans for the entire facility and the project's construction schedule will be required for initial review.</p> | <p>7-B17</p> |
| <p>18. Power is limited around the project area; a circuit analysis will be needed in order to identify what kind of upgrades to IID electrical infrastructure would be necessary to provide service, which can include but are not limited to new, relocated, modified or re-constructed substations, transmission and/or distribution lines.</p> | <p>7-B18</p> |
| <p>19. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully mitigated. Any and all mitigation</p> | <p>7-B19</p> |

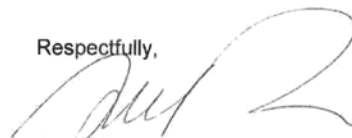
Mr. Jared Chavez
March 7, 2013
Page 5

necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

7-B19
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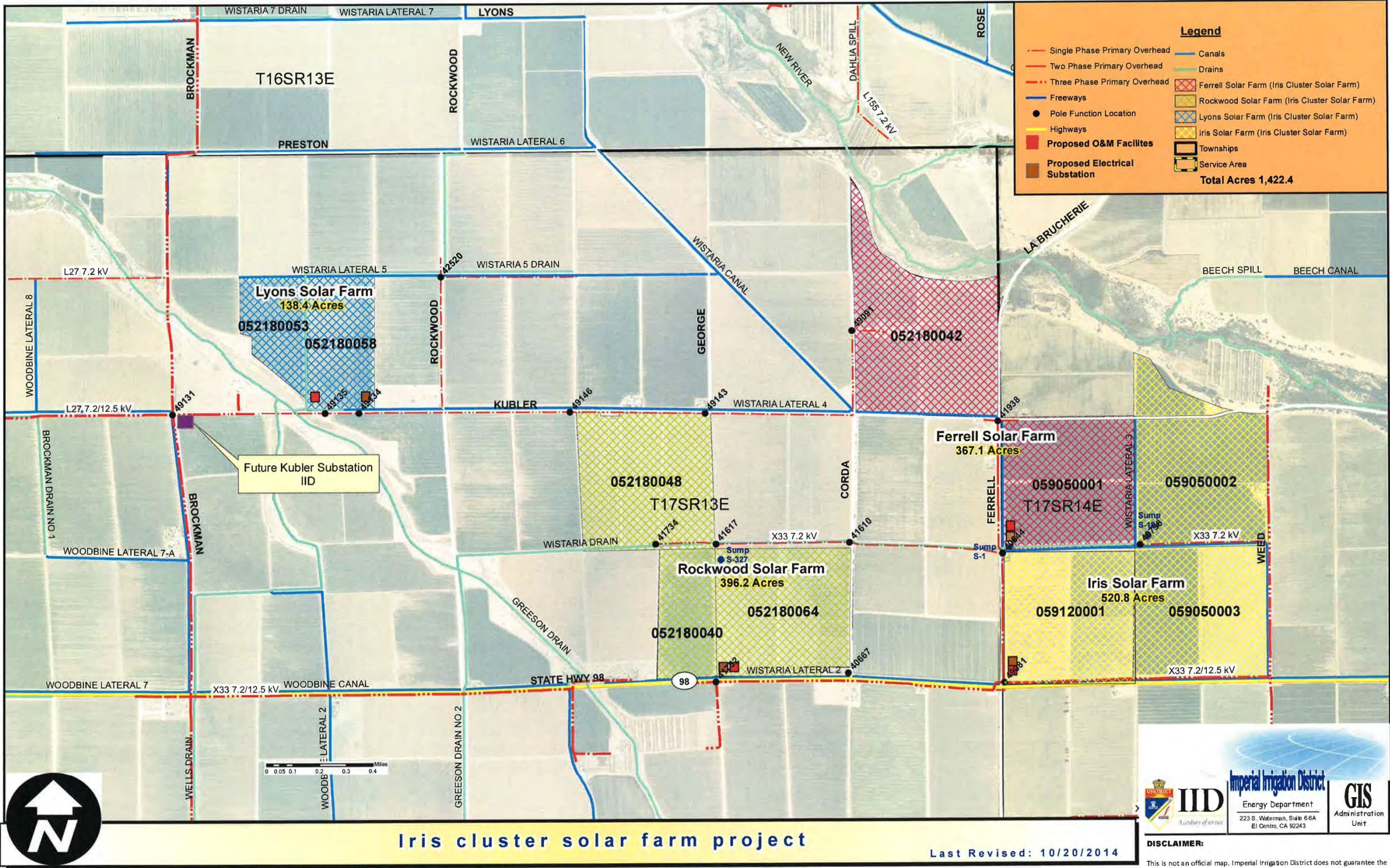
Should you have any questions, please do not hesitate to contact me by phone at 760-482-3609 or by e-mail at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,



Donald Vargas
Environmental Specialist

Kevin Kelley – General Manager
Jesse Silva – Manager, Water Dept.
Carl Sillis – Interim Manager, Energy Dept.
Vance M. Taylor – Asst. General Counsel
Tom King – Interim Project Management Officer, Portfolio Mgmt. Office
Carlos Villalon – Asst. Mgr., Water Dept. System Control & Monitoring
Juan Carlos Sandoval – Asst. Mgr. Energy Dept.
Mike Kemp – Interim Superintendent, GMD - Real Estate & Environmental
Shayne Ferber – Asst. Supervisor, Real Estate Unit
Vikki Dee Bradshaw – Asst. Supervisor, Environmental Services Unit





Imperial Irrigation District
Energy Department
223 S. Waterman, Suite 66A
El Centro, CA 92243



GIS
Administration Unit

DISCLAIMER:
This is not an official map. Imperial Irrigation District does not guarantee the accuracy of data in this map. Any errors or omissions shall not be considered the responsibility of the Imperial Irrigation District.

Date: 10/20/2014
Drawn by: lgallegos

CURRENT COORDINATE SYSTEM: NAD_1983_StatePlane_California_VI_FIPS_0406_Feet
\\Supv5\publicshare\ESRI_GIS\Management\Other_Dept\ENERGY\REAL ESTATE\Renewable Energy Project\MXD\Iris Solar Farm_2.mxd

Letter 7
Imperial Irrigation District
December 14, 2011

Response to Comment 7-1

Comment noted. It is acknowledged that the project applicant will be required to coordinate with IID with respect to any portion of the project that involves IID facilities or easements. The project applicant will be required to comply with specific requirements of IID as part of the construction and operation of the projects.

Response to Comment 7-2

EIR Chapter 3.0 provides the general phasing for the project. Subsequent to approval of the projects, the applicant will be required to continue to coordinate with IID for construction and operation of the projects. This would include providing information requested by IID, including the provision of phasing maps with the different build-out scenarios and estimated timeframes to better enable IID to assess facility and service needs as the projects develop.

Response to Comment 7-3

Comment noted. The applicant will provide improvement plans in CAD to IID as requested in this comment.

Response to Comment 7-4

Comment noted. The County and project applicant acknowledge the potential construction by IID of the Kubler Substation. It is acknowledged that if the Kubler Substation is constructed, the applicant would be required to participate either in an Affected System Agreement and a Backfeed & Station Power Service Agreement or would be required to participate in funding the construction of the proposed Kubler Substation.

Response to Comment 7-5

Comment noted. It is acknowledged that a circuit analysis is needed to identify the types of upgrades needed to serve the project and that costs associated with the relocation or upgrade of IID electrical infrastructure to service the project will be the responsibility of the project proponent. This requirement will be included as a Condition of Approval for the projects.

Response to Comment 7-6

The project applicant will coordinate with IID as part of final engineering/design plans to ensure that the electric service to the three sump pumps (S-1, S-184 and S-327) and four existing residences is maintained or otherwise not impacted by the proposed project.

Response to Comment 7-7

It is acknowledged that the IID facilities identified in this comment are located within, or adjacent to the project areas. The project applicant intends to avoid impacts or changes to IID facilities to the extent feasible, and details of the various transmission and connection facilities will be developed as part of construction level engineering. To the extent that IID facilities are located within the project sites' boundaries, the impacts associated with the development of such facilities have been addressed in the EIR as they would be located within the area of disturbance assumed for the assessment of impacts to issues such as agricultural resources, biological resources, and cultural resources.

Response to Comment 7-8

Comment noted. It is acknowledged that storm water runoff will be controlled to the satisfaction of IID. This requirement will be included as a Condition of Approval for the projects.

Additionally, potential hydrology and water quality impacts are addressed in EIR Section 4.9 Hydrology/ Water Quality. Included is Mitigation Measure 4.9-4, which states in part, "The project applicant shall prepare a site specific Drainage Plan for all facilities constructed in conjunction with the projects that meets the County Department of Public Works and IID requirements, where applicable."

Response to Comment 7-9

Comment noted. Please refer to response to comment 7-8.

Response to Comment 7-10

Comment noted. IID canal or drain banks are not proposed to be utilized for site access. Construction traffic would utilize site access that is available from existing right of way.

Response to Comment 7-11

This comment is acknowledged and does not address the adequacy of the EIR; therefore, no additional response is necessary. The applicant will be required to submit specific locations of groundwater wells and groundwater monitoring well data as requested in this comment.

Response to Comment 7-12

Comment noted. Please refer to response to comment 7-8.

Response to Comment 7-13

Comment noted. Please refer to response to comment 7-8.

Response to Comment 7-14

Comment noted. It is acknowledged that the project applicant will be required to comply with all applicable IID policies and regulations of IID regarding water supply, and that a water supply agreement for the non-agricultural use of water may be required. It should also be noted that water supply for the projects is considered to be reliable.

Response to Comment 7-15

The County acknowledges that IID adopted the Temporary Land Conversion Following Policy (TLCFP) that may require participation by the project applicant as a condition of water service. The applicant will be required to adhere to project water supply agreements issued under IID's Interim Water Supply Policy and the landowner will be required to adhere to appropriate provisions as part of the following contracts.

Response to Comment 7-16

Comment noted.

Response to Comment 7-17

Comment noted. EIR page 3-27 identifies an Encroachment Permit from IID as a potential approval required for implementation of the project. The applicant will coordinate with IID with respect to any

potential encroachment into IID rights of way. Coordination with IID regarding these matters will be included as a Condition of Approval for the projects.

Response to Comment 7-18

Comment noted. EIR Mitigation Measure 4.9-1a requires that the appropriate encroachment and stormwater permits are obtained prior to construction of the proposed projects.

Response to Comment 7-19

Comment noted. The applicant will coordinate with IID with respect to any potential IID connections and/or encroachments into IID rights of way. Coordination with IID regarding these matters will be included as a Condition of Approval for the projects.

Response to Comment 7-20

Comment noted. The applicant will coordinate with IID with respect to any potential encroachment into IID rights of way. Coordination with IID regarding these matters will be included as a Condition of Approval for the projects.

Response to Comment 7-21

The project does not propose specific changes, modifications, or relocations to IID facilities and avoidance of IID facilities is proposed to the extent feasible. Potential impacts associated with any unforeseen improvements to IID facilities would occur within the footprint of the proposed project and, to that extent, impacts have been addressed. These physical impacts include the conversion of agricultural land, and potential biological and cultural resources impacts. These impacts have been evaluated to the extent that the entire project site is assumed to be within the development footprint and proposed area of disturbance, with the exception of IID drainages and canals. Mitigation associated with these impacts (e.g., burrowing owl, agricultural restoration, drainage) are the responsibility of the project applicant.

Letter 7 - Attachment 1 (Comments 7-A1 through A15)

Attachment 1 is the IID's comment letter on the Initial Study and Notice of Preparation. These comments have been addressed in the EIR and/or are otherwise responded to in the preceding responses to comments. Please refer to responses to comments 7-1 through 7-21.

Letter 7 – Attachment 2 (Comments 7-B1 through B19)

Attachment 2 is the IID's comment letter on the CUP applications. These comments do not address the adequacy of the EIR. Where comments may pertain to the EIR, they have been addressed in the EIR and/or are otherwise responded to in the preceding responses to comments. Please refer to responses to comments 7-1 through 7-21.

November 19, 2014

Via Electronic and U.S. Mail

Patricia Valenzuela, Planner IV
Imperial County Planning & Development Services Department
801 Main Street,
El Centro, CA 92243

Email: patriciavalenzuela@imperialcounty.net



Re: Comments on Iris Cluster Solar Farm Project Draft EIR

Dear Ms. Valenzuela:

The following comments are made in regards to the Draft Environmental Impact Report (EIR) for the Iris Cluster Solar Farm Project. Please include these comments as part of the administrative record for this project.

General Comments

The project consists of four solar farm sites (Ferrell Solar Farm, Rockwood Solar Farm, Iris Solar Farm, and Lyons Solar Farm) which combined propose to construct solar energy facilities employing photovoltaic (PV) or concentrated photovoltaic (CPV) technology upon 1,422 acres of farmland west of Calexico to generate up to 360 megawatts of renewable energy. The interconnection for the proposed projects will occur at the 230 kV side of the San Diego Gas & Electric (SDG&E) Imperial Valley Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and it's shared 230 kV electrical transmission line. This project is one of a number of similar solar development projects in the area which are expected to generate renewable energy for export through the SDG&E Sunrise Powerlink transmission line.

The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided (Public Resources Code Section 21002). The EIR is also intended to demonstrate to an apprehensive public that the agency has, in fact analyzed and considered the ecological implications of its action [in approving a project] (*No Oil Inc. v. City of Los Angeles* (1974) 13 C3d 68, 86). The foremost principal under CEQA is that the legislature intended the Act to be interpreted in such a manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language. (*Laurel Heights Improvement Assn v. Regents of the University of California* (1988) 47 C3d 376, 390). The current Draft EIR falls short in achieving these purposes because certain impact analyses and/or mitigation measures presented within the document are insufficient as discussed below.

8-1

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Analysis and Proposed Mitigation of Impacts to Agricultural Resources are Inadequate

The Draft EIR notes that 160.4 acres of Prime Farmland and 1,250.7 acres of Farmland of Statewide Importance will be converted to non-agricultural use by the proposed project resulting in significant impacts to the area's agricultural resources (p. 4.2-12). As a means of mitigating these impacts, the Draft EIR recommends a number of measures which it claims will reduce impacts to levels less than significant. On page 4.2-14, the Draft EIR recommends **Mitigation Measure 4.2-1a "Payment of Agricultural and Other Benefit Fees"** as one means to mitigate impacts on agricultural resources. With respect to mitigation of Non Prime Farmland, one of the following three options is proposed:

Option 1: Provide Agricultural Conservation Easement(s). *The Permittee shall procure Agricultural Conservation Easements on a "1 to 1" basis on land of equal size, of equal quality farmland, outside the path of development. The conservation easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits.*

Option 2: Pay Agricultural In-Lieu Mitigation Fee. *The Permittee shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 20 percent of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including programs costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County; or,*

Option 3: Public Benefit Agreement. *The Permittee and County voluntarily enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; 2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy.*

8-2

Similarly, on page 4.2-15, the Draft EIR recommends that one of the following four options be implemented to mitigate impacts to Prime Farmland:

Option 1: Provide Agricultural Conservation Easement(s). *Agricultural Conservation Easements on a "2 to 1" basis on land of equal size, of equal quality farmland, outside the path of development. The Conservation Easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits; or*

Option 2: Pay Agricultural In-Lieu Mitigation Fee. *The Permittee shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 30% of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including program costs*

8-3

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on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County.

Option 3: Public Benefit Agreement. *The Permittee and County enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; (2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy; the Project and other recipients of the Project's Agricultural Benefit Fee funds; or emphasis on creation of jobs in the agricultural sector of the local economy for the purpose of off-setting jobs displaced by this Project.*

Option 4: Avoid Prime Farmland. *The Permittee must revise their CUP Application/Site Plan to avoid Prime Farmland.*

8-3
Cont.

Additionally, on page 4.2-15, the Draft EIR identifies **Mitigation Measure 4.2-1b Site Restoration Plan** which requires the preparation of a site restoration plan to allow lands converted from agricultural uses to solar uses to be returned to agricultural use at the end of the project's assumed 40 year life.

8-4

The extent and manner by which Mitigation Measures 4.2-1a and 4.2-1b reduce or eliminate impacts to agricultural resources is not clear in the Draft EIR. On page 4.2-15 of the document under the heading "Significance After Mitigation" a statement is made to the effect that with the implementation of Mitigation Measure 4.2-1a impacts to the *permanent* loss of valuable farmlands will be minimized, although there is no discussion as to how this will occur or information supporting the likelihood of whether this will occur. Subsequent statements in the same paragraph conclude that the implementation of Mitigation Measure 4.2-1b will address *temporary* conversion impacts and that this measure would reduce the impact on agricultural resources to less than significant levels. Again, no discussion is provided as to how or why this mitigation measure might accomplish this feat and it is unclear to the document reader as to why this might happen. This omission in analysis prevents the public from assessing the adequacy of the Draft EIR as an informational document and renders it useless in regards to this topic.

8-5

In addition, a number of the mitigation options recommended under **Mitigation Measure 4.2-1a "Payment of Agricultural and Other Benefit Fees"** are uncertain if not dubious as to how or why impacts will be reduced. One of the mitigation options is particularly worthy of comment – the "Public Benefit Agreement". This option requires that the permittee and the County enter into an agreement that includes a fee payment to be held by the County for "such purposes as the stewardship, preservation and enhancement of agricultural lands with Imperial County and to implement the goals and objectives of the Agricultural Benefit program". The Draft EIR also notes that the Public Benefit Agreement must conform with Imperial County Resolution 2012-005 entitled "Resolution of the Board of Supervisors of the County of Imperial Establishing Guidelines for the Public Benefit Program for Use with Solar Plants in Imperial County" adopted

8-6

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by the County on January 24, 2012. A review of the resolution and guidelines reveals that mitigation fees collected under this program may be used for measures unrelated to agricultural land preservation. For example, the guidelines allow funds to be expended on “infrastructure improvement”, “economic development and enhancement to the quality of life in neighboring communities”, and “programs or projects that increase agricultural industry employment opportunities”. [See 2012 *Guidelines for the Public Benefit Program for Use with Solar Power Plants in Imperial County*]. More recently, Imperial County adopted a “Funding Allocation Guidelines and the Proposed General Procedures/Guidelines for Allocation of Ag Benefit Funds” on February 11, 2014 to assist with the expenditure of fees collected under this program. These guidelines recommend funding for four categories with the following allocations of funds:

- 1) Agricultural Business Development - funding for agricultural commodity processing plants and energy plants that use agricultural products, 50 % of the funds;
- 2) Research & Development - funding for development of new high-yield or water-efficient crops, new water conservation techniques, new technology to improve yields in existing crops, and partial funding for UCCE Extension Specialist/Advisor position(s), 20% of the funds;
- 3) Agricultural Stewardship Category – funding for programs that bring fields back into production, soil reclamation, and improve existing grounds to improve yields, 20% of the funds; and
- 4) Education/Scholarship Category – matching funds for scholarships awarded by Ag organizations for Ag studies, student loans, FFA/4-H loans, 10% of the funds.

8-6

While some of these funding categories may mitigate economic impacts within the agricultural community resulting from the loss of agricultural lands, none of them serve to protect or off-set the physical loss of agricultural resources resulting from the project. Furthermore, it is noted that non-specific fee based mitigation measures are speculative in nature and insufficient for the purposes of CEQA. (See for example, *Anderson First Coalition v. City of Anderson* (2005) 130 Cal.App.4th 1173). While it is recognized that the Draft EIR also allows conservation easements and/or Agricultural In-lieu Mitigation Fees as means of mitigation in addition to a Public Benefit Agreement, these measures also fail because they provide no firm commitments to off-set the actual physical loss of agricultural lands resulting from the project. i.e., no new farmland is created to off-set the loss in production. The fact that a reclamation plan is required under **Mitigation Measure 4.2-1b Site Restoration Plan** in no way assures that lands will actually be restored to agricultural uses at the end of the project’s 40 year life. The preparation of a plan itself is not a firm commitment to restore the lands and cannot be relied upon as mitigation.

8-7

Flawed Analysis of Project’s Consistency with the County’s General Plan

On pages 4.2-6 through 4.2-8, the Draft EIR provides a summary of the project’s purported consistency with the County’s General Plan. This analysis fails to accurately describe the project’s consistency with a number of the General Plan elements. For example, the analysis claims that the project is consistent with the Agricultural Resources Element, Preservation of Important Farmland, Goal 1 which states:

8-8

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Goal 1: All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by Federal and State agencies, should be reserved for agricultural uses.

The Draft EIR states on page 4.2-6 that the project is consistent with this goal because “[t]he projects would temporarily convert land designated as Prime Farmland and Farmland of Statewide Importance to non-agricultural uses, but mitigation is provided to prevent a permanent conversion”. The fact that the conversion may be temporary has no bearing as to whether or not the project conforms to this goal. The goal clearing describes that farmland “should be reserved for agricultural uses”. A solar farm is not an agricultural use of land, it is an industrial use. The Draft EIR should be revised to reflect that the proposed project is not consistent with this General Plan goal. The fact that the County Board of Supervisors chooses to ignore the inherent conflict with this primary General Plan goal in approving the construction of solar facilities on agricultural lands cannot be used as evidence of compliance.

8-8
Cont.

Similarly, the Draft EIR on page 4.2-6 claims that the project is consistent with Objective 1.1 of the County’s General Plan Agricultural Resources Element which provides:

Objective 1.1 Maintain existing agricultural land uses outside of urbanizing areas and allow only those land uses in agricultural areas that are compatible with agricultural activities.

In support of this claim, the Draft EIR states that “[t]he projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. Therefore, the proposed projects would be compatible with the existing surrounding uses.” However, the question that must be addressed is not whether the majority of the vacant agricultural lands are approved or proposed for solar development, but rather as noted in the objective whether it is compatible with agricultural activities. The construction of solar facilities on agricultural lands is not compatible with agricultural activities. Compatible can be defined in this context as being able to exist or occur together without conflict. The construction of solar panels on agricultural lands prevents them from being used for agricultural and is thus inherently in conflict with this purpose. The statement that the project is compatible with existing land uses also fails to reflect that not all of the lands in this area have been committed to solar uses. As the owner of land (APN 052-180-030) located at the southeast corner of Kubler Road and Rockwood Road which currently is in agricultural production and anticipated to continue to remain in production, the conclusion that the project is compatible with existing lands is clearly in error. The construction of solar panels on lands adjacent to existing agriculture also conflicts with those lands as noted below.

8-9

On page 4.2-5 the Draft EIR claims that the project is consistent with Objective 1.5 which states:

Objective 1.5 Direct development to less valuable farmland (i.e., Unique Farmland and Farmland of Local Importance rather than Prime Farmland or Farmland of Statewide Importance) when conversion of agricultural land is justified.

8-10

In support of this claim, the statement is made that “mitigation is required to prevent permanent conversion of valuable farmland”. This is not true. While the preparation of a restoration plan is

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required, there is no guarantee or assurances that at the end of the project's 40 year life span that lands will actually be returned to agricultural uses. Notwithstanding the fact that a "temporary" project with a life span of 40 years is in reality a permanent project, this objective has clearly not been met as there has been no attempt to direct the development to less valuable farmland or for that matter non-farmland.

8-10
Cont.

On page 4.2-7 the Draft EIR claims that the project is consistent with Objective 2.1 which states:

Objective 2.1 Do not allow the placement of new non-agricultural land uses such that agricultural fields or parcels become isolated or more difficult to economically and conveniently farm.

8-11

I am particularly disappointed in this conclusion as this project together with the Wistaria Ranch, and Centinela solar projects effectively isolate my land from other agricultural lands and leaves me as an island within a sea of solar developments. Other portions of this project also border lands I own or farm along or northward of Lyons Road and there are a number of other agricultural lands which become isolated as a result of this project. It is absolutely unrealistic to claim that the proposed project conforms to this objective.

Along similar lines, the Draft EIR on page 4.2-8 states that the project is consistent with Goal 3 of the Agricultural and Non-Agricultural Land Use Relations which states:

Goal 3: Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property.

The project fails to meet this goal to the extent that solar development is introduced into farming areas and poses conflicts to farming. In support of its conclusion that the project is consistent with this goal, the Draft EIR notes "[w]ith approval of a Conditional Use Permit, the projects would be an allowable use in agricultural zones. Additionally, the projects do not include the development of housing." While the project may be allowed in an agricultural zone with the approval of a Conditional Use Permit, the project nonetheless intrudes upon farming areas contrary to this goal and no attempt has been made to limit this intrusion. The construction of the project will also conflict with the continued agricultural uses on adjacent properties. For example, transmission lines are proposed throughout the project area including upon lands I own which will limit the ability to treat croplands via aerial applications as the transmission lines pose hazards to aircraft. These transmission lines also pose conflicts with agricultural operations to the extent that they pose dangers to birds in the area which in turn present challenges for farmers as they must deal with restrictions imposed on vegetable harvesting when they discover dead carcasses in their fields. When these carcasses are found, harvest operations must be stopped and an assessment made of the area to identify other potential occurrences. Restrictions are then placed on the crop harvesting around the carcass. There is no discussion in the Draft EIR as to whether these transmission lines will be removed at the end of the project.

8-12

Draft EIR Fails to Analyze Individual or Cumulative Heat Island Impacts

It is well known that the conversion of agricultural lands to solar farms alters the climate within the area of development and at adjoining properties with respect to both ground temperature and humidity. The irrigation of agricultural lands has the effect of reducing ground surface

8-13

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temperatures and increasing humidity levels during most months of the year: The removal these lands from agricultural production results in general temperature increases and reduced humidity. In addition, the installation of large scale photovoltaic projects in and of themselves is known to raise ambient temperatures by 3.4° Fahrenheit or more (Fthenakis V. and Yu Y., Analysis of the Potential for a Heat Island Effect in Large Solar Farms 39th IEEE Photovoltaic Specialists Conference, Tampa, FL, June 17-23, 2013). The combined effects of these phenomena will significantly alter the climate on adjacent lands. This project and others constructed or proposed for construction pose a very significant cumulative impact with respect to both temperature and humidity changes on both project lands and lands adjacent thereto. As a landowner and farmer adjacent to the proposed project I am very concerned about these impacts and I have raised these concern before (See for example my letter dated May 27, 2014 to Patricia Valenzuela, Imperial County Planning & Development Services Department concerning the Notice of Preparation of the Draft EIR for the Iris Cluster Solar Farm). The Draft EIR fails to provide any analysis of the project in this regards either individually or on a cumulative basis and is therefore incomplete. An EIR is to disclose and analyze the direct and the reasonably foreseeable indirect environmental impacts of a proposed project if they are significant (Guidelines, §§ 15126.2, 15064, subd. (d)(3)).

8-13
Cont.

No Fair Analysis of the Non-farmland Project Alternatives

In an attempt to claim that a reasonable range of alternatives was evaluated in the Draft EIR, a token review was made of those alternatives which would avoid impacts to existing farmland. This review overstates purported impacts to certain environmental resources in an attempt to eliminate them from serious consideration. For example, with respect to Alternative 5 – Alternative Location – Desert Land which proposes construction on Bureau of Land Management (BLM) lands along Utility Corridor “N” west of the proposed project, the claim is made that greater impacts to aesthetics, air quality, biological resources, cultural resources, and transportation would occur as a result of the project thereby effectively eliminating this alternative from contention. These sweeping conclusions are not supported in the document. For example, the Draft EIR concludes that impacts to visual resources as measured under the guidelines established by the BLM in its California Desert Conservation Act (CDCA) Plan are somehow greater than the visual impacts that may be experienced by local residents and general population within the proposed project location (Page 8-20). This is not an objective comparison. A point made on page 8-18 is that the proposed development would contrast with the native environment resulting in degraded views. However, the same can be said to be true with respect to visual contrast of constructing these facilities in agricultural areas. The Draft EIR also claims that excessive dust from the construction of the project could also be considered a visual quality impact although the same can said with respect to impacts in agricultural areas. The problem with the Draft EIR’s analysis is that no uniform standard has been applied against all of the alternatives to draw these conclusions.

8-14

In regards to impacts to biological resources under Alternative 5, the Draft EIR argues on page 8-19 that potential impacts to the Flat-tailed Horned Lizard (FTHL) may occur and construction of Alternative 5 would conflict with the BLM’s FTHL Rangewide Management Strategy for the Yuha Basin Management Area. While construction of a solar facility on these lands may not conform to BLM’s current policies as suggested in the document, this in and of itself does not

8-15

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provide support for the contention that significant impacts to FTHL will actually occur. No surveys have been identified in the document as to whether any FTHLs exist in the area of Corridor N and therefore it can't be concluded that they will be significantly impacted (Indeed, no mention is made at all as to the FTHL under Section 4.4 Biological Resources of the Draft EIR). With respect to any alleged BLM policy nonconformance, the fact that Alternative 5 may not be consistent with BLM plans needs to be weighed against the fact that an honest assessment of the project's preferred alternative impacts upon agricultural resources demonstrates a conflict with the County's General Plan. Such a comparison needs to be provided in the Draft EIR for it to serve its purpose under CEQA.

8-15
Cont.

The Draft EIR likewise fails to provide any real evidence that presumed potential impacts to cultural resources on BLM will actually occur relying instead on an assumption that undisturbed lands might contain cultural resources. This oversight should be addressed by performing a survey of the alternative project lands. Also to be noted is the conclusion with respect to transportation that because traffic impacts associated with the project, which will entail similar traffic volumes across all project alternatives, are likely to occur on unpaved road that this is somehow more significant than impacts which would occur under the preferred alternative on paved roads. This conclusion can only be supported by comparing projected traffic volumes against recommended service levels which has not been done.

8-16

Conclusion

The Draft EIR fails in its assessments of environmental impacts, provides an incomplete analysis thereof, or offers inadequate mitigation measures as highlighted above. The Draft EIR also fails to honestly assess impacts under the project's BLM non-agricultural land alternatives in an attempt to support the proposed project. Given the magnitude of these oversights, it is appropriate that the Draft EIR be revised and recirculated for comment. If you have any questions concerning my comments, I would be happy to discuss them with you further.

8-17

Best regards,

Michael Abatti

Michael Abatti
El Centro, California

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Michael Abatti
November 19, 2014

Response to Comment 8-1

Comment noted. Please refer to responses to comments 8-2 through 8-17.

Response to Comment 8-2

This comment restates EIR Mitigation Measure 4.2-1a that addresses “Mitigation for Non Prime Farmland.” No further response is necessary.

Response to Comment 8-3

This comment restates EIR Mitigation Measure 4.2-1a that addresses “Mitigation for Prime Farmland.” No further response is necessary.

Response to Comment 8-4

Comment noted.

Response to Comment 8-5

With respect to the permanent loss of agricultural lands, as discussed on EIR page 4.2-15, with the implementation of Mitigation Measure 4.2-1a, the project applicant would be required to minimize the permanent loss of valuable farmlands through either provision of an agricultural conservation easement, payment into the County agricultural fee program, or entering into a public benefit agreement.

Conservation easements will protect a portion of those remaining agricultural land resources and lessen project impacts in accordance with California Environmental Quality Act (CEQA Guidelines Section 15370). This measure has been accepted and is used by lead agencies as an appropriate mitigation measure under CEQA and because it follows an established rationale similar to that of wildlife habitat mitigation.

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The proposed conversion of agricultural land should be deemed an impact at least from a regional significance standpoint. Hence the search for replacement lands can be conducted regionally or statewide, and need not be limited strictly to lands within the project's surrounding area. Mitigation for the loss of Prime Farmland is suggested at a 2:1 ratio due to its importance in the State of California.

Regarding the agricultural fee program and/or public benefit agreement options within Mitigation Measure 4.2-1a, the County has identified how these monies would be applied to benefit the agricultural industry in Imperial County. This began with the County's adoption of the CIPG Energy Element. Consistent with the CIPG Energy Element and the Agricultural Element, the County Board of Supervisors has taken a number of actions to carry out general plan policies for use of farmland for non-agricultural uses. Also, the Board continues to develop targeted implementing policies. Based upon direction given by the Board of Supervisors on March 1, 2011, a Staff Memorandum (dated September 2, 2011) was prepared by Planning and Development Services staff in response to concerns related to the temporary loss of agricultural land in association with development of solar facilities (Villa 2011). Thereafter, on January 24, 2015, the Board of Supervisors adopted Resolution No. 2015-005. The “Guidelines for the Public Benefit Program for Use with Solar Power Plants in Imperial County” (Guidelines) attached to the Resolution set forth the Agricultural, Community and Sales Tax Benefits which should accrue to the

County from the use of farmland for non-agricultural purposes. In addition, Resolution No. 2015-005 established restricted accounts for the fees collected thereunder and set out an advisory committee to determine uses of the benefit fees collected for mitigation of solar plant impacts. In a February 11, 2014 Memorandum submitted by the Agricultural Commissioner to (and accepted and approved by) the Board of Supervisors, the Agricultural Benefit Advisory Committee reported its progress and requested that the Board take specific actions including approval of the Recommended Funding Allocation Guidelines and Proposed General Procedures/Guidelines for Allocation of Ag Benefit Funds (Valenzuela 2014).

In response to Objective 1.8, the 2011 Staff Memorandum, and Resolution 2012-005, the County retained Development Management Group (DMG) to prepare the *Iris Solar Farm (Inclusive of Ferrell, Iris, Lyons and Rockwood) Economic Impact Analysis (EIA)*, *Employment (Jobs) Impact Analysis (JIA)*, *Fiscal Impact Analysis (FIA)*. DMG's Analysis addresses the clear and immediate need for the project as well as the various types of benefits resulting from the project. The following summarizes the findings:

1. A net increase of 68 jobs compared to the jobs for the existing agricultural use;
2. A net increase of \$492,010,551 million in new wages compared to the wages for the existing agricultural use; solar job wages are estimated to be \$517,109,382 million compared to estimated \$25,098,831 million from continuing existing agricultural jobs;
3. Approximately 876 construction jobs;
4. Approximately \$944.06 million in overall economic impact to the Imperial Valley Region over the possible 30+ year term from the construction and operation of the project; and
5. Approximately \$23.57 million in gross revenues (sales and property taxes) during the same period.

On February 11, the Board of Supervisors adopted the Agricultural Benefit Committee's Recommended Funding Allocation (Valenzuela 2014). The funding allocation was recommended by a committee of agricultural and economic development experts that included the County Agricultural Commissioner, County Executive Officer, County Farm Bureau, Imperial Valley Vegetable Growers, Imperial County cattle industry, and two members of the general public. This allocation confirms use of these fees are to be used for the stewardship, protection and enhancement of agricultural lands within the County (Resolution 2012-005).

- The Agricultural Business Development Category, such as funding for agricultural commodity processing plants and energy plants that use agricultural products, which was identified as the greatest job creator category would receive 50 percent of the funds;
- The Research & Development Category, such as funding for development of new high-yield or water-efficient crops, new water conservation techniques, new technology to improve yields in existing crops, and partial funding for an endowment to support an agricultural research specialist, would receive 20% of the funds. Improved water conservation and efficient crop production keeps more farmland in production during drought cycles therefore supports job creation and maintenance;
- The Agricultural Stewardship Category, such as programs that bring fields back into production, implement soil reclamation, and improve existing fields to improve crop yields, would receive 20%. Increase production of crops again leads to more agricultural jobs to prepare and harvest the fields; and
- The Education/Scholarship Category, such as matching funds for scholarships awarded by agricultural organizations for agricultural studies, student loans, Future Farmers of America and 4-H loans, would receive 10%. Training the next generation of farmers to continue and expand farming operations will also support agricultural job creation.

With respect to the temporary conversion of agricultural land, the California Department of Conservation (DOC) has identified solar facility mitigations, including preparation of, and implementation of a Reclamation Plan as a feasible mechanism to address temporary displacement of agricultural resources.

Mitigation Measure 4.2-1b will ensure that the project applicant adheres to the terms of the agricultural restoration plans prepared for each of the project sites, which would address the temporary conversion impact.

The DOC has identified that if the solar facility is considered a temporary displacement of agricultural resources, then there should be some assurances that it will be temporary and will be removed in the future. Hence the need for a reclamation plan. The loss of agricultural land (even temporary) represents a reduction in the State's agricultural land resources. The Division has witnessed the negative impacts of non-operational wind power generation facilities and related equipment that have been left to deteriorate on agricultural land. For that reason, the DOC has identified several options for mitigating the temporary conversion of agricultural land as follows:

- Require a reclamation plan suited for solar facilities, based on the principles of the Surface Mining and Reclamation Act (SMARA). As part of this plan, a performance bond or other similar measures may be used.
- A typical requirement would be for the soil to be restored to the same condition it was in prior to the solar facility's construction (i.e. pre-Project soil conditions). Whatever project-related materials have been brought in, or changes made to the land (i.e., graveling, roads, compaction, equipment), would be removed once the solar facility (or portions of) is no longer active.
- Solar projects are generally considered to be "temporary." The County could require that a new permit must be applied for after a certain period of time. Because this is a new and unprecedented use of agricultural land, this would allow the county more flexibility in determining what conditional uses or conditions may be most appropriate in the longer term.
- Require permanent agricultural conservation easements of land of at least equal quality and size as partial compensation for the direct loss of agricultural land.

Mitigation Measure 4.2-1b is consistent with these provisions.

Response to Comment 8-6

Comment noted. Please refer to response to comment 8-5.

Response to Comment 8-7

As stated in EIR Mitigation Measure 4.2-1b Site Reclamation Plan, the land must be restored to land which can be farmed. The Reclamation Plan shall document the procedures by which each CUP will be returned to its current agricultural condition/LESA score of 75.71 for FSF, 71.06 for RSF, 72.75 for ISF, and 69.29 for LSF. Permittee also shall provide financial assurance/bonding in the amount equal to a cost estimate prepared by a California-licensed general contractor or civil engineer for implementation of the Reclamation Plan in the event Permittee fails to perform the Reclamation Plan. Mitigation Measure 4.2-1b is repeated below for the commenter's reference:

4.2-1b Site Reclamation Restoration Plan. The DOC has clarified the goal of a reclamation and decommissioning plan: the land must be restored to land which can be farmed. In addition to MM 4.2.1a for Prime Farmland and Non-Prime Farmland, the Applicant shall submit to Imperial County a Reclamation Plan prior to issuance of a grading permit. The Reclamation Plan shall document the procedures by which each CUP will be returned to its current agricultural condition/LESA score of 75.71 for FSF, 71.06 for RSF, 72.75 for ISF, and 69.29 for LSF. Permittee also shall provide financial assurance/bonding in the amount equal to a cost estimate prepared by a California-licensed general contractor or civil engineer for implementation of the Reclamation Plan in the event Permittee fails to perform the Reclamation Plan.

Please also refer to response to comment 8-5.

Response to Comment 8-8

Please refer to responses to comments 9-3 and 9-4 (Volker letter).

Response to Comment 8-9

The private lands on which the proposed project will be located are designated Agriculture under the County's General Plan and are zoned A-2 General Agriculture, A-2-R General Agriculture – Rural Zone; and A-3 Heavy Agriculture. Solar energy electrical generators, electrical power generating plants, substations and facilities for the transmission of electrical energy are allowed as conditional uses in Agricultural zones. In complying with the zoning designations, the applicant is requesting approval of conditional use permits for the project. The proposed project would not remove land from the Agricultural designation of the General Plan or would not require a zoning change. These projects may be allowed pursuant to the General Plan and Board of Supervisor's Implementing Policies discussed in response to comment 8-7.

Response to Comment 8-10

Please refer to responses to comments 8-5 through 8-7.

Response to Comment 8-11

EIR Sections 4.2 Agricultural Resources and 4.10 Land Use/Planning provide an analysis of the proposed project's consistency with the County's General Plan goals and policies, and as discussed in preceding responses to comments the project is considered consistent with the General Plan. Also, as noted in EIR Section 4.10, while the EIR analyzes the project's consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Planning Commission and Board of Supervisors retain authority for the determination of the project's consistency with the General Plan.

The proposed solar projects are considered compatible with existing agricultural operations, existing solar development, and planned solar development in the surrounding areas. The County has made this finding associated with other previously approved solar projects in the same area as the proposed projects. As shown on EIR Figure 4.2-2 Surrounding Utility-Scale Solar Energy Projects, the project sites adjoin previously approved large-scale solar projects. Large tracts of agricultural fields remain in certain areas; however, certain measures will still need to be adhered to avoid any incompatibility issues, including adherence to Imperial County Right-to-Farm Ordinance, State nuisance law, and weed abatement and pest control plans that will be reviewed and approved by the agricultural commissioner.

Response to Comment 8-12

Please refer to response to comment 8-11.

Response to Comment 8-13

Solar arrays consist of photovoltaic (PV) modules mounted on aluminum and steel support structures. These support structures have little or no exposure to sunlight. The amount of the sun's heat absorbed by a solar module is similar to the amount of the sun's heat absorbed by open land. However, solar modules store less heat than the earth because they consist of a thin, lightweight glass that is surrounded by airflow. As such, heat dissipates quicker from a solar panel compared with solid earth, which dissipates heat slowly and generally does not increase ambient air temperatures. There is no evidence in the record to date that would indicate that the project would increase ambient air temperatures at or around the project site. A study prepared for the Sarnia Solar Power Plant concluded that there is no statically significant mean temperature difference between the air temperatures at the PV solar facility's periphery compared to the surrounding farmland (First Solar, 2010).

Response to Comment 8-14

EIR Section 8.0 Alternatives provides a detailed evaluation of potential alternatives to the proposed project that could avoid, or lessen, the potentially significant impacts associated with the proposed project. CEQA does not require the evaluation of alternatives at the same level as the proposed project. Further, With respect to Alternative 5: Alternative Location – Desert Land, potential impacts associated with the alternative are discussed at a level of detail to allow “meaningful evaluation, analysis, and comparison with the proposed project” pursuant to CEQA Guideline 15126.6(d).

As analyzed in the EIR regarding aesthetics, development of a utility scale solar project would occur in undisturbed, desert lands that are in a natural condition, as compared to development of the project site on lands that have been converted from their natural condition to an agricultural use. As compared to the proposed project, depending on the location of the proposed projects under this alternative, this alternative could affect views from areas such as National Historic Trails, Wilderness areas, or culturally sensitive landscapes, where such resources do not exist at the project site.

With respect to traffic, Similar to the proposed projects, this alternative would temporarily increase the number of vehicles and truck trips on local roadways during construction. However, these construction vehicles and truck trips would be traveling on access roads, which are typically unpaved. Depending on the location of the proposed projects under this alternative, access (including emergency access) to the sites may be more difficult. Compared to the proposed projects, this alternative would result in a greater impact related to transportation/traffic.

Response to Comment 8-15

Please refer to response to comment 8-14. Additionally, FTHL surveys have been conducted within Utility Corridor “N” as part of the environmental review processes for the Imperial Solar Energy Center South and West projects, as well as subsequent biological monitoring activities as part of project construction. These surveys have resulted in confirmation of presence of FTHL within Utility Corridor “N.” In comparison, EIR Section 4.4 Biological Resources does not address FTHL because this species has not potential for occurrence on the project site, as it does not contain suitable habitat for this species.

With respect to biological resources, very limited biological resources exist on the project site, with no endangered species identified. However, under this alternative, the projects would be developed in the Flat-tailed Horned Lizard (FTHL) Rangewide Management Strategy, Yuha Basin Management Area (MA). In accordance with the Rangewide Management Strategy, occupancy of FTHL within the MA is assumed; therefore, there is a potential to impact FTHL within the MA, which would be avoided at the proposed project location. Furthermore, there is a one percent disturbance threshold within the Yuha MA. Based on the Record Decision for the Ocotillo Sol Project (BLM/CA/EA-2013/022+1793), the total disturbance (with the Ocotillo Sol Project) in the MA is 0.805 percent. This leaves approximately 112 acres before the BLM reaches the 1 percent disturbance cap. The four solar energy facilities would encompass 1,4001,422 acres. Based on the remaining acres allowed before the BLM reaches the 1 percent disturbance cap, the projects would exceed this threshold. For these reasons, it is concluded that Alternative 5 would have a greater impact to biological resources than the proposed project.

Response to Comment 8-16

With respect to cultural resources, Alternative 5 has a higher potential to disturb cultural resources because of the desert’s generally undisturbed nature as opposed to the project study areas that have been disturbed due to disking over time from farming activity. For example, 29 prehistoric sites, one historic site, and eight isolates were reported as being located within the project footprint of the transmission corridor (located on BLM lands) associated with the Imperial Solar Energy South Project. The potential of finding cultural resources on a highly disturbed site is anticipated to be lower compared to a generally undisturbed site. Compared to the proposed projects, this alternative is likely to result in greater cultural resource impacts.

Response to Comment 8-17

Please refer to preceding responses to comment 8-1 through 8-16.

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November 19, 2014

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**Re: Comments of Backcountry Against Dumps, Donna Tisdale, Carolyn Allen,
Danny Robinson, William Robinson, and Joseph Tagg on the Draft
Environmental Impact Report (DEIR) for the Iris Cluster Solar Farm
Project, SCH No. 2014041091**

Pursuant to the California Environmental Quality Act (“CEQA”), Public Resources Code section 21000 *et seq.*, and Imperial County’s (the “County’s”) Notice of Availability of a Draft Environmental Impact Report (“NOA”), Backcountry Against Dumps, Donna Tisdale, Carolyn Allen, Danny Robinson, William Robinson, and Joseph Tagg (collectively, “Backcountry”) submit the following comments on the County’s Draft Environmental Impact Report (“DEIR”) for the Iris Cluster Solar Farm Project (“Iris Cluster Solar” or the “Project”).

The Project would involve the construction and operation of four utility-scale photovoltaic solar (“PV”) electrical generation facilities – the 367.1-acre Ferrell Solar Farm (CUP 13-0054), the 396.2-acre Rockwood Solar Farm (CUP 13-0057), the 520.8-acre Iris Solar Farm (CUP 13-0055) and the 138.4-acre Lyons Solar Farm (CUP 13-0056). Each of the projects would require its own inverter modules and pad-mounted transformers. DEIR 3-8. The Project will also require an unspecified number of O&M buildings, auxiliary facilities, and substations. *Id.* “Each O&M building would include its own emergency power, fire suppression, potable water system and septic system.” *Id.* Combined, the four projects would generate as much as 360 megawatts (“MW”) of electricity. *Id.*

The Project would be located on and displace more than 1,422 acres of, according to local farmers, *some of the best and most productive agricultural land* in Imperial County, including 683.9 acres that are protected by Williamson Act contracts and substantial acreage of California Department of Conservation-designated Prime Farmland and Farmland of Statewide Importance.

9-1

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DEIR 3-1, 3-26. This premier farmland is currently used for agricultural production, and is truly irreplaceable. *Id.* The food and fiber it produces year in and year out for Americans throughout our country are of inestimable value to present and future generations. Yet the Project would preclude cultivation of the land throughout its operational lifetime, and possibly permanently. DEIR 4.2-12 (“there would be a 40-year period where existing agricultural uses within the project study areas would no longer be possible . . . [and] it is possible that project-related activities (e.g., soil disturbance) and subsequent restoration of the site could result in a net reduction in Prime Farmland or Farmland of Statewide Importance”). Furthermore, the Project would likely cause significant additional impacts to agriculture and the agricultural economy countywide by reducing demand for agriculture-serving businesses and interfering with one of the only airports servicing agricultural spraying operations in the County.

9-1
Cont.

Backcountry opposes this Project as an unnecessary industrialization of highly productive farmland. Not only would the Project have significant environmental, agricultural and economic impacts, the proposed industrial-scale electrical generation and transmission uses are forbidden by the Imperial County General Plan (and hence the Planning and Zoning Law, Government Code section 65000 *et seq.*). In further expression of these major concerns and others, Backcountry offers the following comments to assist the County in analyzing the Project and developing a Final Environmental Impact Report (“FEIR”) thereon.

I. THE PROPOSED SOLAR ENERGY GENERATION AND TRANSMISSION USES ARE FORBIDDEN BY THE IMPERIAL COUNTY GENERAL PLAN LAND USE ELEMENT.

A. The County May Not Approve a Conditional Use that Is Forbidden by the County General Plan.

The Project is inconsistent with the County General Plan, and thus its approval would violate the Planning and Zoning Law. As acknowledged in *Neighborhood Action Group v. County of Calaveras* (“*Neighborhood*”) (1984) 156 Cal.App.3d 1176, 1184, the requirement that use permits be consistent with a county’s general plan

9-2

is necessarily to be implied from the hierarchical relationship of the land use laws. To view them in order: a use permit is struck from the mold of the zoning law ([Government Code section] 65901); the zoning law must comply with the adopted general plan (§ 65860); the adopted general plan must conform with state law (§§ 65300, 65302). The validity of the permit process derives from compliance with this hierarchy of planning laws. *These laws delimit the authority of the permit issuing agency to act and establish the measure of a valid permit. . . . A permit action taken without compliance with the hierarchy of land use laws is ultra vires as to any defect implicated by the uses sought by the permit.*

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Id. (emphasis added); *Endangered Habitats League, Inv. v. County of Orange* (“*Endangered Habitats League*”) (2005) 131 Cal.App.4th 777, 782 (“A project is inconsistent if it conflicts with a general plan policy that is fundamental, mandatory, and clear”); *see also* DEIR 4.10-1 (“The State Zoning Law . . . establishes that zoning ordinances . . . are required to be consistent with the general plan and any applicable specific plans”).

9-2
Cont.

Because Imperial County is a general law county, the foregoing settled law is dispositive. Since, as shown below, the proposed solar energy generation and transmission uses are specifically forbidden under the Imperial County General Plan, the County lacks authority to approve those uses in contravention of the General Plan. Any “permit action taken without compliance with the hierarchy of land use laws is *ultra vires*.” *Neighborhood*, 156 Cal.App.3d at 1184.

B. The Imperial County General Plan Forbids the Proposed Solar Energy Generation and Transmission Uses.

The Imperial County General Plan’s Land Use Element specifically *forbids* the proposed solar uses within the “Agriculture” plan designation that applies to entire Project site. DEIR 4.10-2 (Figure 4.10-2 shows that all Project sites are designated in the General Plan as “Agriculture”). The Land Use Element directs that lands designated as “Agriculture” may not be developed with uses that do not preserve and protect agricultural production and related activities. It states in pertinent part as follows:

1. Agriculture.

This category is intended to preserve lands for agricultural production and related industries including aquaculture (fish farms), ranging from light to heavy agriculture. Packing and processing of agricultural products may also be allowed in certain areas, and other uses necessary or supportive of agriculture. . . .

Where this designation is applied, agriculture shall be promoted as the principal and dominant use to which all other uses shall be subordinate. Where questions of land use compatibility arise, the burden of proof shall be on the non-agricultural use to clearly demonstrate that an existing or proposed use does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations. No use should be permitted that would have a significant adverse effect on agricultural production, including food and fiber production, horticulture, floraculture, or animal husbandry. . . .

9-3

Imperial County General Plan, Land Use Element (Revised 2008), page 48 (emphasis added).

It is clear from the foregoing language that lands designated as “Agriculture” in the

9-4

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General Plan must be used *only* for agriculture and related industries that support agricultural production. “Where questions of land use compatibility arise, the burden of proof shall be on the non-agricultural use to *clearly demonstrate* that an existing or proposed use does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations.” *Id.* (emphasis added).

9-4
Cont.

Here, it is undisputed that the proposed industrial-scale solar facility uses would terminate and prevent all agricultural use on the subject lands for at least the Project’s operational lifetime of up to 40 years. DEIR 4.10-11 (“The projects would convert the sites from agricultural land to a solar energy facility”), 3-11 (Ferrell Solar Farm “parcels would be leased to the project applicant for up to 40 years, which is the anticipated duration of the project”), 3-14 (stating that anticipated duration of Rockwood Solar Farm, Iris Solar Farm and Lyons Solar Farm would also be “up to 40 years”), 4.2-18 (“Agricultural productivity of the project study areas could be reduced as a result of the projects, *even after* final restoration of individual site components” (emphasis added)).

9-5

As the California Department of Conservation has determined in both the Williamson Act and CEQA contexts, and reiterated in its November 1, 2011, and July 16, 2010 letters (attached hereto as Exhibits 1 and 2) to the Imperial County Planning and Development Services Department regarding other solar projects proposed for lands designated for Agriculture on the County General Plan, commercial solar uses are *completely incompatible* with agricultural uses. This incompatibility is especially odious here where “[m]uch of the land base in the vicinity of and within the project sites and off-site transmission areas is considered productive farmland where irrigation water is available.” DEIR 2-2; Michael Abatti, May 27, 2014, Letter to Patricia Valenzuela, p. 2 (“Abatti Letter,” stating that “Agricultural lands within this portion of the County are generally of higher quality as compared to many other areas in the County”) (included in DEIR Appendix A).

9-6

Furthermore, the Project would impede agricultural operations on *surrounding* lands, which is demonstrated by the increasingly rapid conversion of farmland to non-agricultural uses in the Project area as more and more industrial-scale electrical generation projects are proposed and built there. *See* DEIR 2-2 (“a majority of the currently vacant agricultural lands surrounding the project area have been approved for, or are currently proposed for, the development of utility-scale solar energy projects,” and are “anticipated to transition into solar energy use in the near future”), 4.2-9 (figure depicting location of Project and similar nearby approved or proposed projects). This is more than concerning to many local farmers, including Joseph Tagg, Danny Robinson and others (like Mr. Abatti, who has separately commented on this Project). The Project threatens not only their environment and rural way of life, it threatens their agricultural livelihood.

9-7

Among the many serious impacts the Project will cause and/or contribute cumulatively to on surrounding farmland is an increase in temperature and reduction in humidity, which will

9-8

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necessitate additional irrigation while likely reducing efficiency and crop productivity. This is due to both greatly reduced evapotranspiration on converted farmland and the inherent “heat island effect” of utility-scale solar facilities. Abatti Letter, p. 1 (“The current irrigation of agricultural lands in the project area has the effect of reducing ground surface temperatures and increasing humidity levels during most months of the year”); Fthenakis and Yu, “Analysis of the Potential for a Heat Island Effect in Large Solar Farms,” *presented at 39th IEEE Photovoltaic Specialists Conference, Tampa, Florida, June 17-23, 2013* (attached hereto as Exhibit 3). “Both [Fthenakis and Yu’s] field data and . . . simulations show that the annual average of air temperatures in the center of a [photovoltaic] field can reach up to 1.9°C above the ambient temperature,” and only begin “approaching (within 0.3°C) the ambient [temperature] at about 300 m [from] the perimeter of the solar farm.” Exhibit 3 at 1.

9-8
Cont.

Furthermore, the Project will impede crop dusting on surrounding farmland, particularly where other existing or planned electrical generation facilities abut the land on other sides. It will not only make it more dangerous for pilots to access the land (due to glare from the solar panels and increased risk of collision with Project components), it will increase the likelihood of the planes inadvertently spraying the adjacent electrical generation facilities and causing complaints. In addition, because continued cultivation of the farmland will produce dust that will likely drift onto the adjacent solar panels and associated equipment, the solar project operators will have further incentive to pressure the surrounding farmers to sell their lands or stop farming.

9-9

The Project could also reduce employment, income, sales and tax revenue in the County. As Imperial County Agricultural Commissioner Valenzuela noted in her February 25, 2011 comments (attached hereto as Exhibit 4) on the DEIR for a similar solar project, “removal of any farmland out of production would have a *direct negative impact on employment, income, sales and tax revenue.*” The Economic Impact Analysis prepared for the Project, which is Appendix M to the DEIR, concludes that there would be a net increase in County revenue and jobs created by the Project, but it fails to take into account some important factors. For example, as these utility-scale electrical generation and transmission projects convert more and more agricultural land to non-agricultural uses, more and more agriculture-serving businesses will be forced to close.¹ And as the quantity and quality of agriculture-serving businesses decreases in the County,

9-10

¹ For example, the Project could disrupt the functioning of the lone local airport servicing agricultural spraying operations by putting local pilots at risk due to the glint and glare from the Project’s solar panels, as well as the collision risk presented by the transmission lines, towers and other tall structures required by the Project and others in the area. See DEIR 4.10-11 (variances will be “required to allow the new towers to be built at 140 feet in height” (emphasis added)). The airport – the Johnson Brothers Airstrip – “is located approximately 0.5 mile southeast of APN 059-050-003 (ISF).” DEIR 4.8-18. “Frontier Agricultural Services . . . operates a crop dusting service for the surrounding agricultural land use” from the airport. *Id.* Incredibly and illogically, the DEIR dismisses these aviation (and agricultural services) impacts because there

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more and more farmers will find it uneconomical or impractical to keep farming and sell, lease or use their lands for non-agriculture purposes.

9-10
Cont.

Because the proposed solar energy generation and transmission uses at the Project sites would “conflict with agricultural operations,” result in the certain “elimination” of agricultural operations and “have a significant adverse effect on agricultural production,” both on the Project sites and elsewhere in the County, the Project is specifically forbidden by the General Plan.

9-11

C. The Project’s Incompatibility with the General Plan Agricultural Use Provisions Is Not Cured by Other Conflicting General Plan Provisions or the County Land Use Ordinance.

Despite the fact that the Project would “conflict with” and result in the certain “elimination” of “agricultural operations,” and “have a significant adverse effect on agricultural production,” the DEIR states that “the project facilities are a conditionally permitted use under the A-2, A-2-R, and A-3 zones and, therefore, are considered consistent with the Agriculture General Plan land use designation.” DEIR 4.10-11 (citing the Land Use Element’s “Land Use Compatibility Matrix,” which “identifies land designated as ‘Agriculture’ as compatible with lands zoned A-2, A-2-R, and A-3”). The DEIR is mistaken. The existing A-2, A-2-R and A-3 zoning on the Project sites is *inconsistent* with the General Plan’s “Agriculture” designation.

9-12

As discussed, the Project is incompatible with the General Plan’s explicit use standards for lands designated as “Agriculture.” Not only will the proposed solar energy generation and transmission use conflict with existing (and future) agricultural operations and have a significant adverse effect on agricultural production *on the Project sites* by terminating and preventing all agricultural use on the sites for up to *40 years*, it will impede agricultural operations elsewhere in the County as well. To the extent the County Land Use Ordinance – which by law is subordinate to the County General Plan – might be interpreted to allow uses such as the proposed solar facilities that are inconsistent with the General Plan’s land use designations, that interpretation is invalid. Government Code § 65860(a); *Neighborhood*, 156 Cal.App.3d at 1184. And to the extent the Land Use Element’s Compatibility Matrix, the Agricultural Resources Element, the Conservation and Open Space Element, the Geothermal/Alternative Energy and Transmission

9-13

are or will soon be many tall structures in the area associated with other “nearby solar farms,” and because “the agricultural crop dusting will be reduced in the immediate area.” DEIR 4.8-18 (first quote), 4.8-19 (second quote). The DEIR’s first rationale defies reason: more tall structures near the airport and farmland served by Frontier Agricultural Services will create *greater collision risk*, not less. And the DEIR’s second rationale just proves the point that as the number and acreage of local farms decreases, so too will the crop dusting and airport services’ business, eventually causing the businesses to close and leaving the remaining farmers without those important services.

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Element or any other part of the General Plan can be read to approve zoning regulations that conflict with the Land Use Element's textual land use standards, the General Plan is internally inconsistent and invalid. Government Code § 65300.5 ("the Legislature intends that the general plan and elements and parts thereof comprise an integrated, internally consistent and compatible statement of policies for the adopting agency"); *Concerned Citizens of Calaveras County v. Board of Supervisors* (1985) 166 Cal.App.3d 90, 97 ("a general plan must be reasonably consistent and integrated on its face"); *Sierra Club v. Kern County* (1981) 126 Cal.App.3d 698, 704 ("Since the general plan was internally inconsistent, the zoning ordinance under review . . . could not be consistent with such plan and was invalid when passed.").

9-13
Cont.

The County may not approve a land use in reliance on an invalid zoning regulation or General Plan element. "Under state law, the propriety of virtually any local decision affecting land use and development depends upon consistency with the applicable general plan and its elements. . . . [A]bsence of a valid general plan, or valid relevant elements or components thereof, precludes enactment of zoning ordinances and the like." *Resource Defense Fund v. County of Santa Cruz* (1982) 133 Cal.App.3d 800, 806; *Neighborhood*, 156 Cal.App.3d at 1104; *Concerned Citizens of Calaveras County*, 166 Cal.App.3d at 97. And where there is a clear violation of a specific General Plan provision, mere compatibility with the overarching objectives of the Plan is not enough to make a project consistent and compliant with the Plan as a whole. *Neighborhood*, 156 Cal.App.3d at 1184; *FUTURE v. Board of Supervisors* (1998) 62 Cal.App.4th 1332, 1342.

II. THE PROPOSED SOLAR ENERGY GENERATION AND TRANSMISSION USES ON THE IRIS SOLAR FARM SITE ARE FORBIDDEN BY THE IMPERIAL COUNTY GENERAL PLAN AGRICULTURAL ELEMENT.

Objective 2.1 of the County General Plan Agricultural Element mandates that the County "not allow the placement of new non-agricultural land uses such that agricultural fields or parcels become isolated or more difficult to economically and conveniently farm." Imperial County General Plan, Agricultural Element (Revised 1996), page 30 (emphasis added); DEIR 4.2-7 (same). The DEIR states that the Project is "[c]onsistent" with Objective 2.1. DEIR 4.2-7. Not so.

9-14

As discussed above, Mr. Tagg farms the 320 acres that border the Iris Solar Farm site to the south. If the Iris Solar Farm is constructed, it would completely isolate his farming operation. The land he farms would be surrounded *on all four sides* by industrial-scale solar energy generation projects. And as a result, it would be much "more difficult [for Mr. Tagg] to economically and conveniently farm." Imperial County General Plan, Agricultural Element (Revised 1996), page 30. For example, it would be much more difficult – not to mention dangerous – to crop dust the land he farms. In addition, the Iris Solar Farm would likely increase the temperature and reduce the humidity on his farmland, necessitating additional irrigation while reducing efficiency and crop productivity. Furthermore, as the DEIR admits, if not properly

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grounded the Project could cause ground “potential rise,” and associated “hazardous voltage, many hundreds of yards away from the grounding electrode location,” including on the land Mr. Tagg farms. DEIR 3-21.

9-15
Cont.

Because the Iris Solar Farm would “isolate[]” the land Mr. Tagg farms and make it “more difficult [for him] to economically and conveniently farm,” it is prohibited by the County General Plan. *Id.* Approval of the Iris Solar Farm would therefore violate the Planning and Zoning Law. *Neighborhood*, 156 Cal.App.3d at 1184; *Endangered Habitats League*, 131 Cal.App.4th at 782 (“A project is inconsistent if it conflicts with a general plan policy that is fundamental, mandatory, and clear”).

9-16

III. THE PROPOSED PROJECT VIOLATES THE WILLIAMSON ACT.

The Project as originally proposed requires the cancellation of the Williamson Act contracts on 683.9 acres of high-quality farmland, including all 520.8 acres of the Iris Solar Farm and 163.1 acres of the Ferrell Solar Farm. But the County cannot lawfully cancel the three Williamson Act contracts here because “the cancellation” is neither “consistent with the purposes of [the Act]” nor “in the public interest.” Government Code § 51282(a)(1)-(2). The proposed cancellation is not consistent with the purposes of the Williamson Act because the Project is not “consistent with the applicable provisions of the . . . county general plan.” *Id.* § 51282(b)(3). The proposed cancellation is not in the public interest because the benefits of cancellation do *not* “outweigh the objectives of [the Williamson Act].” *Id.* § 51282(c).

9-17

IV. THE DEIR MUST CONTAIN A COMPLETE AND ACCURATE PROJECT DESCRIPTION, AND A ROBUST ANALYSIS OF PROJECT ALTERNATIVES AND IMPACTS.

Despite the fact that the proposed Project’s industrial-scale electrical generation and transmission uses are prohibited by the County General Plan, the County has developed a DEIR for the Project in preparation for considering the Project for approval. While Backcountry maintains that the County may not approve the Project under the current General Plan, it nonetheless offers the following comments on the DEIR and any subsequent environmental review of the Project.

9-18

A. The DEIR Must Provide a Complete and Accurate Project Description.

“An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR.” *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193. Yet here, the DEIR fails to meet this essential CEQA requirement.

First, the DEIR fails to specify what type of solar PV technology the Project would use. Rather, the DEIR states that “[i]ndividual panels will be installed on *either* fixed-tilt *or* tracker

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mount systems (single- or dual-axis, using galvanized steel or aluminum).” DEIR 3-9 (emphasis added). Indeed, the DEIR does not even know how tall the panels will stand, or what their final layout will be. *Id.* Would the solar panels use silica-based solar cells or something else? Would the Project employ fixed or tracking PV arrays? Would the Project use concentrated PV? The Project and its impacts cannot be evaluated without this information. Therefore this grave inadequacy must be remedied.

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Furthermore, the DEIR fails to adequately describe the Project’s O&M facilities. “Each solar project facility *may* have its own O&M building and substation, or *may* share among the projects. Up to four O&M buildings and substations are contemplated.” DEIR 3-8 (emphasis added). Without concrete information on the proposed development of O&M buildings and substations, the Project description is not “accurate, stable [or] finite.” The DEIR also fails to show how SDG&E would use the electricity generated by this Project, or why it is necessary to meet California’s renewable energy goals. DEIR 4.14-10 to 4.14-15.

The DEIR’s Project Description of the relevant parcels is also inaccurate. The DEIR describes FSF as comprising APNs 052-180-042 and 059-150-001. DEIR 3-1, 3-7. However, the discussion of Williamson Act lands within the FSF identifies APN 059-050-001. DEIR 3-26. A search of the Imperial County Assessor’s GIS indicates that this parcel should be identified as APN 059-050-001 – just as it is identified in DEIR Figures 3.0-2 and 3.0-3, as well as the discussion of Williamson Act lands.

9-19

Finally, the construction timeline in the DEIR must be updated. The DEIR claims that “[c]onstruction activities are proposed to start in mid-2014.” DEIR 3-22. However, given that the DEIR was not released until September 2014, and no FEIR has been prepared, that schedule is inaccurate. In order for the public and decisionmakers to fully understand the impacts of the Project, the FEIR must include an accurate construction schedule.

9-20

B. The DEIR Fails to Adequately Analyze a Reasonable Range of Alternatives.

To comply with CEQA, agencies must consider a “reasonable range” of alternatives. CEQA Guidelines §15126.6(a); *Village of Laguna Beach, Inc. v. Board of Supervisors* (“*Village of Laguna Beach*”) (1982) 134 Cal.App.3d 1022, 1028. Furthermore, an agency may not approve a Project where there are “feasible alternatives . . . available which would substantially lessen the significant environmental effects” of that Project. Public Resources Code § 21002. Here, the DEIR failed to analyze any non-solar alternative and ignored the significant benefits that would come from a distributed generation alternative. DEIR 8-1 to 8-24.

9-21

The DEIR considered six alternatives: (1) No Project, (2) Reduced Acreage - Avoid Prime Farmland, (3) Reduced Acreage - Avoid Williamson Act Land, (4) Alternative Location - Private Land, (5) Alternative Location - Desert Land, and (6) No Utility-Scale Development - Distributed Commercial and Industrial Rooftop Only. DEIR 8-2, 8-5, 8-9, 8-13, 8-18, 8-20.

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However, no non-solar alternative was considered. Without such an alternative, the County could not comply with CEQA's requirement that the DEIR consider a reasonable range of alternatives. CEQA Guidelines §15126.6(a); *Village of Laguna Beach*, 134 Cal.App.3d at 1028.

9-21
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Furthermore, the DEIR's discussion of Alternative 6 – the distributed generation alternative – ignores the environmental setting for that alternative and therefore substantially understates the benefits of the alternative as compared to the Project. DEIR 8-20 to 8-24. The distributed generation alternative would be built “within existing *developed* areas, typically on the rooftops of commercial and industrial facilities.” DEIR 8-20 (emphasis added). Therefore, any potential impacts of this alternative would occur within a previously developed area, thereby limiting the significance of certain effects. For example, the DEIR concludes that distributed generation will have a greater aesthetic impact than the proposed Project. DEIR 8-21. However, this cursory statement ignores the fact that these rooftop solar panels will be constructed on commercial and industrial rooftops, which have little aesthetic value to begin with. DEIR 8-20 to 8-21. Similarly, the DEIR concludes, without support, that distributed generation will have a more significant impact on biological resources, cultural resources, land use, and noise. DEIR 8-21 to 8-23. Again, these unsupported conclusions ignore the developed commercial and industrial setting in which this alternative would be constructed.

9-22

Distributed energy projects such as rooftop solar PV have substantial environmental, aesthetic, economic and public safety benefits over remote, industrial-scale solar energy facilities such as the Iris Cluster Solar Project.² They do not mar the landscape with massive and unsightly arrays of glare-producing PV and CPV panels, or their associated powerlines, substations and industrial operations and maintenance buildings. They are much less likely to ignite catastrophic wildfires. They do not displace agriculture and wildlife habitat. They present a much smaller threat to wildlife. They do not waste electricity due to conductor resistance and corona discharges along lengthy transmission lines.³ Their reliability is far greater. And they are easier

² As former California Public Utilities Commission (“CPUC”) Commissioner John Bohn acknowledged, “[u]nlike other generation sources, [distributed generation] projects can get built quickly and without the need for expensive new transmission lines. And . . . these projects are extremely benign from an environmental standpoint, with neither land use, water, or air emission impacts.” CPUC, “CPUC Approves Edison Solar Roof Program,” Press Release, June 18, 2009, available at: http://docs.cpuc.ca.gov/published/News_release/102580.htm.

³ The U.S. Energy Information Administration estimates that California lost nearly 18 million kilowatt-hours of electricity in 2010, due primarily to conductor resistance, corona discharges and other transmission and distribution line losses. Energy Information Administration, January 27, 2012, *State Electricity Profiles 2010*, DOE/EIA-0348(01)/2, at p. 30, available at: <http://www.eia.gov/electricity/state/pdf/sep2010.pdf>.

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to upgrade as technology improves.

In addition, as these solar PV technologies improve and the liability costs of utility-scale renewable energy facilities become clearer, the per-watt installed price for distributed solar PV systems should soon drop below that of remote, utility-scale projects like the Iris Cluster Solar Project. In likely recognition of this trend, many utility-scale renewable energy project developers themselves agree that distributed generation is the future of renewable energy power. For example, NRG Energy, Inc., CEO David Crane stated the following in a 2011 call with financial analysts:

Ultimately, however, we fully recognize that the current generation of utility-sized solar and wind projects in the United States is largely enabled by favorable government policies and financial assistance. It seems likely that much of that special assistance is going to be phased out over the next few years, leaving renewable technologies to fend for themselves in the open market.

We do not believe that this will be the end of the flourishing market for solar generation. We do believe that it will lead to a *stronger and more accelerated transition from an industry that is currently biased towards utility-sized solar plants to one that's focused more on distributed and even residential solar solutions on rooftops and parking lots.*

We are already planning for this transition now within NRG, so that any potential decline in either the availability of utility-sized solar projects or in the attractiveness of the returns being realized on these projects, *will be exceeded in aggregate by the increase in the business we are doing on smaller distributed and residential solar projects . . .* (emphasis added).⁴

In sum, distributed generation is not only feasible, it is environmentally and economically preferable to remote, utility-scale renewable energy generation facilities like the Iris Cluster Solar Project.

The DEIR's lack of support for its conclusory assertions about distributed generation must be remedied. Without this necessary information, the public and decisionmakers cannot understand the actual benefits of potential alternatives and how they relate to the Project. Public Resources Code §21002; CEQA Guidelines §15126.6(a); *Village of Laguna Beach*, 134

⁴ Seeking Alpha, April 22, 2011, "NRG Energy's CEO Discusses Q4 2010 Results – Earnings Call Transcript," at p. 7, *available at*: <http://seekingalpha.com/article/254272-nrg-energy-s-ceo-discusses-q4-2010-results-earnings-call-transcript> (attached hereto as Exhibit 5)

9-22
Cont.

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Cal.App.3d at 1028; *Vineyard Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428; *Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (“*Berkeley Keep Jets*”) (2001) 91 Cal.App.4th 1344, 1355-1356.

9-22
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C. The DEIR Must Analyze the Project’s Significant Agricultural Impacts.

As discussed above, the Project would have a significant impact on agricultural production by terminating and preventing all agricultural use of the subject lands for up to 40 years, and potentially indefinitely. DEIR 3-11, 3-14, 4.2-18, 4.10-11. Yet the DEIR ignores or mistakenly dismisses many of the Project’s significant negative impacts on Imperial Valley agriculture, including the following six.

First, the DEIR ignores the fact that the Land Use Element’s use standards on lands designated as “Agriculture” prohibit the proposed utility-scale electrical generation and transmission uses proposed here, as discussed above. DEIR 4.10-11 (asserting, without analysis of the Land Use Element’s use standards, that the “project facilities are a conditionally permitted use under the A-2, A-2-R, and A-3 zones and, therefore, are considered consistent with the Agriculture General Plan land use designation”). The DEIR also erroneously concludes that the Project is consistent with Objective 2.1 of the General Plan Agricultural Element. DEIR 4.2-7. These omissions violate CEQA, which requires a thorough General Plan consistency analysis. Where, as here, general plan requirements are adopted to protect environmental quality, departure from those general plan standards constitutes evidence of a significant environmental impact. The Governor’s Office of Planning and Research has made this clear in its *CEQA Technical Advice Series* (September 1994):

9-23

The agency should also rely upon its general plan as a source of environmental standards. For instance, policies for the conservation of agricultural land may yield a threshold based on soil type, project size, and water availability.

Id., “Thresholds of Significance: Criteria for Defining Environmental Significance.” Here, the General Plan has gone one step further by specifically designating the subject sites for exclusively “Agriculture” use and the “placement of new non-agricultural land uses such that agricultural fields or parcels become isolated or more difficult to economically and conveniently farm.” DEIR 4.2-7. Thus, it is clear that the General Plan’s land use standards and policy for the conservation of agricultural land forbid the proposed utility-scale energy generation and transmission use. Violation of this environmental standard demonstrates the significance of the Project’s impacts on the environment. *The Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 930 (holding that “if substantial evidence supports a fair argument that the proposed project conflicts with [the applicable land use policies and regulations, and those policies were adopted in order to avoid or mitigate environmental impacts], this constitutes grounds for requiring an EIR”).

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Second, the DEIR concludes that the “net reduction in [Prime Farmland and Farmland of Statewide Importance] within the project study areas would be” reduced “to a less than significant” level by “ensur[ing] that the project applicant adheres to the terms of the agricultural restoration plans prepared for each of the project sites.” DEIR 4.2-13. But the DEIR fails to account for the fact that when the proposed conditional use permits expire, the Project applicant – or another solar energy developer – could and may well apply for another conditional use permit to use the Project sites for *another* 40 years for the same non-agricultural purposes. Nothing prevents this outcome, which would eviscerate the proposed restoration plan requirement.

9-24

Third, the DEIR fails to analyze the many ways in which the Project would impede agricultural operations on farmland surrounding the Project sites, such as those discussed above in Section I(B). Instead, the DEIR erroneously concludes that “the operation of the solar generating facilities is not expected to inhibit or adversely affect adjacent agricultural operations through the placement of sensitive lands uses, generation of excessive dust or shading, or place [sic] additional development pressures on adjacent areas.” DEIR 4.2-16 (quote), 4.2-17 to 4.2-18. To understand the fallacy of the DEIR’s conclusion, one need only observe the increasingly rapid conversion of farmland to non-agricultural uses in the Project area as more and more industrial-scale electrical generation projects are proposed and built there. *See* DEIR 2-2, 4.2-9.

Among the many serious impacts the Project will cause and/or contribute cumulatively to on surrounding farmland is an increase in temperature and reduction in humidity, which will necessitate additional irrigation while likely reducing efficiency and crop productivity. Abatti Letter, p. 1; Exhibit 3 at 1. Furthermore, the Project will impede crop dusting on surrounding farmland, particularly where other existing or planned electrical generation facilities abut the land on other sides. It will not only make it more dangerous for pilots to access the land, it will increase the likelihood of the planes inadvertently spraying the adjacent electrical generation facilities and causing complaints. In addition, because continued cultivation of the farmland will produce dust that will likely drift onto the adjacent solar panels and associated equipment, the solar project operators will have further incentive to pressure the surrounding farmers to sell their lands or stop farming. The DEIR either wholly ignores or fails to fully analyze these impacts and thereby violates CEQA.

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Fourth, the DEIR fails to analyze how the Project would affect agriculture *countywide* due to the cumulatively significant conversion of fertile farmland to non-agricultural uses. As these utility-scale energy projects convert more and more agricultural land to non-agricultural uses, more and more agriculture-serving businesses will be forced to close, due to both declining revenues and logistical problems. And as the quantity and quality of agriculture-serving businesses decrease in the County, more and more farmers will find it uneconomical or impractical to keep farming and be forced to sell, lease or use their lands for non-agriculture purposes. The DEIR violates CEQA by ignoring this “spiral of death” leading to ever more farmland conversion to industrial uses.

9-26

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Fifth, the DEIR fails to adequately analyze whether the Project could disrupt the functioning of the lone local airport servicing agricultural spraying operations – the Johnson Brothers Airport, described above – and put local pilots at significant risk due to the glint and glare from the Project’s solar panels, as well the construction of numerous tall structures. The DEIR erroneously dismisses these aviation (and agricultural services) impacts because there are or will soon be many tall structures in the area associated with other “nearby solar farms,” and because “the agricultural crop dusting will be reduced in the immediate area.” DEIR 4.8-18 (first quote), 4.8-19 (second quote). The DEIR also claims that “the projects would not use materials that would reflect significant levels of glare or glint upwards in a manner that could affect flight operations.” DEIR 4.1-29. All three rationales fail.

The DEIR’s first rationale defies reason: more tall structures near the airport and farmland served by Frontier Agricultural Services will create *greater collision risk*, not less. The DEIR’s second rationale just proves the point that as the number and acreage of local farms decreases, so too will the crop dusting and airport services’ business, eventually causing the businesses to close and leaving the remaining farmers without those important services. And the DEIR’s third rationale fails because the DEIR never specifies the make or model of the panels to be used by the Project or provide visual evidence to support its assertion. DEIR 4.1-29. Without more, especially given the history of utility-scale solar panels producing significant glare,⁵ the DEIR lacks the requisite “substantial evidence” to support its conclusion that the Project would not produce glare. *Vineyard*, 40 Cal.4th at 426; *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376, 409 n. 12.

Sixth, the DEIR wrongly concludes that the conversion of land under Williamson Act Contract presents no significant impact because the “Williamson Act Cancellation process [will be completed] in accordance with Government Code Section 51282(a)” and because the applicant will restore the Project sites to agricultural use after the conditional use permits expire. DEIR 4.2-16. As discussed above, the proposed cancellation of the Williamson Act contracts on 683.9 acres of high-quality farmland is *not* “consistent with the applicable provisions of the . . . county general plan.” Government Code § 51282(b)(3). As a result, and because the benefits of cancellation do *not* “outweigh the objectives of [the Williamson Act],” any Williamson Act contract cancellation as part of the Project would violate the Act and constitute a significant impact under CEQA. *Id.* § 51282(c).

⁵ Glint and glare from a utility-scale solare energy generation facility in southern Imperial County may have caused or contributed to the June 4, 2014 military jet crash in the City of Imperial, which severely damaged at least three homes and hospitalized the pilot. Infoscape.com, June 9, 2014, “Did the Glint of a Few Million Solar Panels Cause a Military Jet to Crash in California?,” available here: <http://infoscape.com/did-the-glint-of-a-few-million-solar-panels-cause-a-military-jet-to-crash-in-california/> (attached as Exhibit 6 hereto).

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D. The DEIR Must Analyze the Project's Impacts on the Greater Sandhill Crane, the Burrowing Owl and Other Listed, Rare and Important Species.

The Project would have potentially significant impacts to numerous species, including the greater sandhill crane. DEIR 4.4-6 to 4.4-10, 4.4-12 to 4.4-18. According to the DEIR, "the greater sandhill crane is state listed as threatened and is also on the [Migratory Bird Treaty Act] list of sensitive birds." DEIR 4.4-7. The crane "could be found on the project sites and . . . in adjacent [alfalfa and bermuda] fields." *Id.* Yet despite this admission of potential significant impacts to the crane, the DEIR completely fails to analyze the Project's impacts on the species. DEIR 4.4-12 to 4.4-18. Indeed, except for DEIR 4.4-7 and DEIR Appendix E – which both discuss existing conditions – there is no mention of the greater sandhill crane in the DEIR. DEIR 4.4-7; DEIR Appendix E, Biological Resources Evaluation Technical Report, p. 15.

The Project will also have a significant impact on the burrowing owl. DEIR 4.4-13. The construction impact to "burrowing owl foraging habitat is considered a *significant impact*," as are the indirect construction impacts. *Id.* Operational impacts would also "be considered a *significant impact* and mitigation would be required." *Id.* However, the DEIR's analysis of these threats is inadequate.

The burrowing owl surveys completed were inadequate, making any analysis based on those surveys inadequate as well. CDFW sets forth specific guidelines for burrowing owl surveys, yet the County failed to follow those procedures.⁶ The Biological Resources Evaluation Technical Report identifies the dates that burrowing owl surveys were completed – four surveys at each of the four sites between April 29, 2013 and July 15, 2013. DEIR Appendix E, Biological Resources Evaluation Technical Report, p. 10. However, CDFW requires that of the four surveys completed, one must occur between February 15 and April 15. CDFW 2012 Staff Report, p. 28. None were performed between those dates. DEIR Appendix E, Biological Resources Evaluation Technical Report, p. 10. Furthermore, the CDFW guidelines call for three weeks between each of the three remaining visits that occur after April 15. CDFW 2012 Staff Report, p. 28. Again, the burrowing owl surveys failed to meet this requirement. DEIR Appendix E, Biological Resources Evaluation Technical Report, p. 10. Without adequate surveys of the Project area the public and decisionmakers cannot accurately determine the impacts of the Project on burrowing owls and their habitat, in violation of CEQA. CEQA Guidelines §15144; *Vineyard*, 40 Cal.4th at 428; *Berkeley Keep Jets*, 91 Cal.App.4th at 1355-1356.

Not only was the focused survey for the burrowing owl inadequate, but the DEIR's

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⁶ CDFW, *Staff Report on Burrowing Owl Mitigation*, March 7, 2012, available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843> ("CDFW 2012 Staff Report") (attached hereto as Exhibit 7).

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discussion of impacts to the owl and mitigation measures to protect it also fails. The thousands of Project photovoltaic panels would present a substantial collision risk to burrowing owls, particularly given that the height of the panels – up to 30 feet above the ground – would likely be about the same height at which the owls typically forage. DEIR 3-9. Furthermore, to the extent the Project would eliminate burrowing animals and their burrows from the Project sites, it would significantly impact the owls by (1) reducing the abundance of prey for the owls, and (2) destroying their nesting habitat, as burrowing owls use burrows created by other animals instead of making their own. DEIR 4.4-15 to 4.4-17.

An EIR must avoid potentially significant impacts where it is feasible to do so. Public Resources Code § 21002; Guidelines §§ 15121, 15125, 15126, 15126.4. But despite the clear confirmation that the project area is occupied by “15 adult burrowing owls and one juvenile burrowing owl,” as well as “eight occupied burrows and six active burrows,” and construction and operation would both result in a significant impact to the species, the DEIR incorrectly assumes that with limited mitigation this impact would be less than significant. DEIR 4.4-13. In fact, this assumption does not follow from the facts for three reasons.

First, such significant impacts to the burrowing owl – direct mortality, entrapment or injury in crushed burrows, and loss of burrows or other habitat – cannot simply be mitigated by avoiding burrows or evicting the owls from their burrows through a one-way door. DEIR 4.4-13, 4.4-15 to 4.4-16. Indeed, given the physical dimensions of the solar collections, avoiding burrows is not always possible, and even where it is, it does not mitigate the impacts of noise or night lighting. DEIR 4.4-13 (“Noise and vibrations from construction equipment may disturb or disrupt burrowing owl nesting behavior”).

Second, the DEIR erroneously asserts that construction noise impacts would be mitigated by a buffer of 160 feet. DEIR 4.4-15 to 4.4-16. However, 160 feet would not be sufficient to protect the burrowing owl. Contrary to the DEIR’s assertion, these mitigations would not make the impacts to the burrowing owl less than significant.

Third, where avoidance fails, this protected species would be forced to leave its burrow. DEIR 4.4-16. However, the DEIR fails to analyze what effect this “mitigation” would have on the species. *Id.* A single statement that eviction and other mitigation measures “shall only be completed upon prior approval by and cooperation with the CDFW” does not suffice for analysis of this impact and subsequently, fails to provide the public and decisionmakers with sufficient information to fully consider the impacts of the Project. DEIR 4.4-16; CEQA Guidelines §15144; *Vineyard*, 40 Cal.4th at 428; *Berkeley Keep Jets*, 91 Cal.App.4th at 1355-1356. Deferral of mitigation measures to a future date with no guidelines on what those mitigations require, violates CEQA. CEQA Guidelines §15126.4; *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-4 (mitigation may be deferred *only where* it includes specific performance criteria).

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9-30

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The impacts to burrowing owls must be better understood with a more thorough survey covering the entire Project area and conforming to the CDFW's survey protocols. Only then can the impacts be adequately analyzed and appropriate mitigation measures presented. Even with attempted avoidance or eviction as mitigation, however, the impact to burrowing owls would remain significant.

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The DEIR also fails to address the dangerous "lake" effect that the Project's reflective solar panels may create, and its impacts on avian species. The "pseudo-lake effect" occurs when glare, glint, and reflection from the PV solar panels appears as a large body of water to birds flying above the facility, which can in turn entice them to dive downwards and collide with the solar panels.⁷ Solar projects' reflective panels often attract migratory birds searching for water. This "pseudo-lake effect" is suspected to be one of the main causes of migratory bird trauma and death at the PV facility Desert Sunlight.⁸ Yet here, the DEIR downplays this documented potential for glint, claiming that the panels will have a low reflectivity, and completely ignores the potential impact to birds. DEIR 4.1-29 to 4.1-30.

The DEIR admits that "land traffic in roadways around the proposed parcels might be exposed to certain degree of glint," but never once addresses the impact on wildlife, and specifically the avian species that fly overhead. DEIR Appendix B, Reflectivity Analysis, p. 27; See also DEIR section 4.4 (Biological Resources). The DEIR admits that there is potential for numerous protected avian species to be found at the project site, including the greater sandhill crane, loggerhead shrike, yellow warbler, ferruginous hawk, mountain plover, long billed curlew, short billed dowitcher, and horned lark. DEIR 4.4-7 to 4.4-10. However, it completely fails to consider the impacts of glint and the pseudo-lake effect on these species.

9-31

The DEIR's failure to provide adequate studies to understand the Project's impacts on critical environmental resources violates CEQA's informational purpose and prevents the public and decisionmakers from fully considering the impacts of the Project. CEQA Guidelines § 15144; *Vineyard*, 40 Cal.4th at 428; *Berkeley Keep Jets*, 91 Cal.App.4th at 1355-1356.

⁷ See Chris Clarke, July 10, 2013, "Endangered Bird Found Dead at Desert Solar Power Facility," Rewire, *KCET* (attached hereto as Exhibit 8).

⁸ National Fish and Wildlife Forensics Laboratory *Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis*, Rebecca A. Kagan, Tabitha C. Viner, Pepper W. Trail, and Edgard O. Espinoza ("FWS"), pp. 1, 11, available at: http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN201977_20140407T161504_Center_Supplemental_Opposition_to_Motion.pdf (attached hereto as Exhibit 9).

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E. The DEIR Must Analyze the Project’s Stray Voltage and Ground Potential Rise Impacts.

The DEIR notes that the Project could cause “ground potential rise” if not properly grounded. DEIR 3-21. The DEIR describes ground potential rise as being “caused by electrical currents that occur at electrical substations, power plants, or high-voltage transmission lines and are injected into the earth at the grounding electrode.” *Id.* at n. 1. As the DEIR admits, the “resulting potential rise can cause *hazardous voltage, many hundreds of yards away* from the grounding electrode location.” *Id.* (emphasis added). This has the potential to significantly impact farmers and residents on surrounding lands, like Joseph Tagg. But the DEIR fails to analyze this possibility or the consequences of coming into contact with such “hazardous voltage.” *Id.* Instead it attempts to brush this potentially significant impact under the rug with the conclusory statement – unsupported by any details or evidence – that a “grounding system would be installed to permit dissipation of ground fault currents and minimize ground potential rise.” DEIR 3-21. This does not constitute the thorough analysis CEQA requires

9-32

F. The DEIR Must Analyze the Project’s Direct, Indirect and Embedded Greenhouse Gas Emissions.

The DEIR admits that Project construction will produce 1,439 tCO₂e per year, and that operational emissions will be 124 tCO₂e per year. DEIR 4.7-9. However, the DEIR only accounts for construction emissions “generated from operation of both on-road and off-road equipment.” *Id.* But the County must do more. The FEIR must also (1) assess the Project’s substantial *embedded* greenhouse gas emissions: the GHG emissions associated with production of the materials used to construct the Project, such as the photovoltaic panels; and (2) compute the change in GHG emissions from and carbon sequestration in the soil on the Project site resulting from the Project’s conversion of the land from agricultural production to the proposed solar farm. The DEIR did neither and this inadequacy must be remedied.

9-33

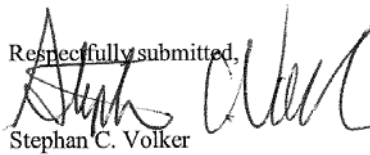
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V. CONCLUSION

The Project's industrial use of lands designated "Agriculture" is specifically forbidden by the Imperial County General Plan. Therefore the County may not approve the Project. Despite this the County has developed a DEIR for the Project. While Backcountry maintains that the County may not approve the Project under the current General Plan, it nonetheless provides the foregoing comments on the Project's DEIR, so that these inadequacies can be remedied prior to any potential Project approval.

9-34

Respectfully submitted,



Stephan C. Volker

Attorney for Backcountry Against Dumps, Donna
Tisdale, Carolyn Allen, Danny Robinson, William
Robinson, and Joseph Tagg

SCV:taf

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LIST OF EXHIBITS

1. John M. Lowrie, California Department of Conservation, Letter to Armando Villa re: Cancellation of Land Conservation (Williamson Act) Contract No. 2001-00706, November 1, 2011;
2. Dan Otis, California Department of Conservation, Letter to Patricia Valenzuela re: Notice of Preparation for a DEIR for Imperial Solar Energy Center South, July 16, 2010;
3. Vasilis Fthenakis and Yuanhao Yu, "Analysis of the Potential for a Heat Island Effect in Large Solar Farms," *presented at 39th IEEE Photovoltaic Specialists Conference*, Tampa, Florida, June 17-23, 2013;
4. Connie L. Valenzuela, Imperial County Agricultural Commissioner, Letter to Armando Villa re: CUP 10-0035 8 Minutenergy Renewables, LLC, Calipatria Solar Farm II, February 25, 2011;
5. Seeking Alpha, April 22, 2011, "NRG Energy's CEO Discusses Q4 2010 Results – Earnings Call Transcript;"
6. Infoscape.com, June 9, 2014, "Did the Glint of a Few Million Solar Panels Cause a Military Jet to Crash in California?," available at: <http://infoscape.com/did-the-glint-of-a-few-million-solar-panels-cause-a-military-jet-to-crash-in-california/>;
7. California Department of Fish and Wildlife, *Staff Report on Burrowing Owl Mitigation*, March 7, 2012, available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843>;
8. Chris Clarke, July 10, 2013, "Endangered Bird Found Dead at Desert Solar Power Facility," *Rewire, KCET*;
9. National Fish and Wildlife Forensics Laboratory, Rebecca A. Kagan, Tabitha C. Viner, Pepper W. Trail, and Edgard O. Espinoza, *Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis*, available at: [here: http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN201977_20140407T161504_Center_Supplemental_Opposition_to_Motion.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN201977_20140407T161504_Center_Supplemental_Opposition_to_Motion.pdf).

EXHIBIT 1

NATURAL RESOURCES AGENCY

EDMUND G. BROWN, JR., GOVERNOR



DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

November 1, 2011

Mr. Armando G. Villa, Director
Imperial County
Department of Planning and Development Services
801 Main Street
El Centro, CA 92243

Dear Mr. Villa:

SUBJECT: Cancellation of Land Conservation (Williamson Act) Contract
No. 2001-00706; Landowner: James R. & Barbara A. Smith; Applicant: 8
Minute Energy (Calipatria Solar Farm II); APN 022-170-005

The Department of Conservation (Department) monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act. The Department has reviewed the application submitted by the Imperial County Department of Planning and Development Services (County) regarding the referenced cancellation and offers the following recommendations.

Project Description

The petition proposes to cancel 563 acres of agricultural land subject to Williamson Act Contract in order to build a photovoltaic energy facility (Project) which will generate a total of 50 megawatts. The Project Site is located approximately one mile north of Calipatria, California within Imperial County and is bounded by Blair Road to the east, E. Peterson Road to the north, W. Lindsey Road to the south and the Southern Pacific Railroad to the west. The Calipatria State Prison is located to the northeast of the project site. According to the petition, the applicant has submitted a Conditional Use Permit for a 40 year term.

Cancellation Findings

Government Code (GC) section 51282 states that tentative approval for cancellation may be granted only if the local government makes *either* one of the following findings:

- 1) Cancellation is **consistent** with purposes of the Williamson Act, (not addressed by the cancellation petition) *or*
- 2) Cancellation is in the **public interest**.

The following are the requirements for the public interest findings required under GC section 51282 (above):

The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.

Mr. Armando G. Villa
November 1, 2011
Page 2 of 4

2) Cancellation is in the Public Interest

For the cancellation to be in the public interest, the Board must make both of the following findings:

- a. Other public concerns substantially outweigh the objectives of the Williamson Act, and
- b. There is no *proximate, noncontracted land*¹ which is available and *suitable*² for the use proposed on the contracted land, or, development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

Department Comments on the Public Interest Cancellation Findings

The Department has reviewed the petition and additional information supplied by the applicant, and offers the following comments with regards to the submitted public interest findings:

a) Other public concerns substantially outweigh the objectives of the Williamson Act: Renewable energy is energy generated from sources such as the sun, wind, the ocean, and the earth's core. Solar photovoltaic electricity qualifies as a renewable energy source for the purposes of California's Renewables Portfolio Standards. In April, Governor Brown signed Senate Bill 2 (First Extraordinary Session) which extends the current 20% renewables portfolio standard target in 2010 to a 33% renewables portfolio standard by December 31, 2020. Through a number of legislative actions and/or policies, the State has placed an importance on renewable energy as well as preserving farmland.

There are many factors in determining whether the production of solar energy is of a higher public interest than the pre-existing agricultural use of the land. Some factors may include the quality of the soil, current agricultural production and the availability of reliable irrigation water. The Department has no comment regarding this particular finding.

¹ "Proximate, noncontracted land" means land not restricted by contract, which is sufficiently close to land which is so restricted that it can serve as a practical alternative for the use which is proposed for the restricted land. (GC section 51282).

² "Suitable" for the proposed use means that the salient features of the proposed use can be served by the land not restricted by contract. Such nonrestricted land may be a single parcel or may be a combination of contiguous or discontinuous parcels. (GC section 51282).

Mr. Armando G. Villa
November 1, 2011
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b) *There is no available and suitable proximate non-contracted land for the use proposed on the contracted land.*

According to the petition, the property was chosen due to its close proximity to the electrical grid which has the capacity for the solar facility. The Department has no comment regarding this particular finding.

Cancellation Findings Conclusion

Imperial County Board of Supervisors could approve the cancellation application based on the required public interest findings only if the Board feels it has adequate amount of information and has built the record to meet the statutory requirements.

Compatible Use

The Department has determined that commercial solar facilities are an industrial use of the land and inconsistent with the intent of the Williamson Act and its protection of open space and agricultural resources. The suggestion that a solar facility is a compatible use as defined by the Williamson Act is misguided. The footprint of a solar facility and the fact that it does not allow for the continuation of agricultural operations or open space activities as the main operation of the land, make it inconsistent with many different sections of the Act. The Department views GC §51238, which cites the compatibility of gas, electric, water, communication, or agricultural labor housing facilities in an *agricultural preserve*, as referring to those structures which have minimal impact on the land, and which are necessary for the needs of a community. The Department has consistently interpreted this section to describe overhead power lines, electrical substations, underground communication lines, and water lines, all of which take up a minimal amount of land.

Additionally, the Williamson Act provides a preferential tax assessment on contracted land in exchange for limiting the land to agricultural or open space uses. Agricultural use means the use of the land for the purpose of producing an agricultural commodity for commercial purposes (GC§51201(a)). Open space is the use or maintenance of land in a manner that preserves its natural characteristics, beauty, or openness for the benefit and enjoyment of the public or for wildlife habitat (GC§51201(o)). A commercial solar facility does not meet the definition of an agricultural use and solar energy does not meet the definition of an agricultural commodity, which means any and all plant and animal products produced in this State for commercial purposes. Nor is it consistent with the definition of an open space use. In addition, GC§51242 requires that land enrolled in a Williamson Act contract be devoted to agricultural use. When a solar project displaces all of the agriculture, and replaces it with a use that has no agricultural utility, the land clearly ceases to be devoted to agriculture.

Mr. Armando G. Villa
November 1, 2011
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Neither the Legislature nor City Councils or Boards of Supervisors can override the restrictions included within the Williamson Act or the Constitutional provision enabling the Act. The construction of solar facilities removes and replaces agriculture or open space uses to have a significant impact on agricultural and open space lands, including grazing land. After a review of the proposal, the Department does not believe that the County can consider commercial solar facilities compatible with the Williamson Act contract.

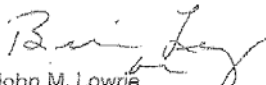
Site Restoration Plan

Since solar technology is advancing rapidly over time, the amount of open land that is needed for the same amount of solar energy production may decrease significantly in the future. That same land may also one day be needed again for the production of food.

It is important that proposals for the conversion of agricultural land to solar energy projects include a detailed site restoration plan describing how the project proponents will restore the land back to its current condition including irrigation supplies if and when some or all of the solar panels are removed. This type of plan would be similar to SMARA-required restoration plans on proposed mining sites. The Department recommends that an acceptable site restoration plan be required by the County for the proposed project.

Thank you for the opportunity to provide comments on the proposed cancellation. Please provide our office with a copy of the Notice of Public Hearing on this matter ten (10) working days before the hearing and a copy of the published notice of the Board's decision within thirty (30) days of the tentative cancellation pursuant to GC section 51284. If you have any questions concerning our comments, please contact Sharon Grewal, Environmental Planner at (916) 327-6643.

Sincerely,


John M. Lowrie
Program Manager
Williamson Act Program

EXHIBIT

2

NATURAL RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, GOVERNOR



DEPARTMENT OF CONSERVATION

DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

July 16, 2010

VIA FACSIMILE (760) 353-8338

Ms. Patricia Valenzuela, Planner III
Imperial County Planning & Development Services
801 main Street
El Centro, CA 92243

Subject: Notice of Preparation for a DEIR for Imperial Solar Energy Center South
- SCH# 2010061038

Dear Ms. Valenzuela:

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation (NOP) for a DEIR for Imperial Solar Energy Center South. The Division monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act and other agricultural land conservation programs. We offer the following comments and recommendations with respect to the proposed project's potential impacts on agricultural land and resources.

Project Description:

The project is located on Pullman Road and Anza Road in an unincorporated part of Imperial County on the US/Mexico Border. The project site is 903 acres of agricultural land. The site is designated Prime Farmland and Farmland of Statewide Importance per the Imperial County Farmland Mapping and Monitoring Program maps. The existing General Plan designation is Agriculture and the zoning is General Agriculture Rural Zone and Heavy Agriculture.

The project proposes the development of a solar energy center and would consist of ground mounted photovoltaic solar power generation system, supporting structures, an operations and maintenance building, substation, water treatment facility, plant control system, meteorological station, roads and fencing. The project also plans a 120-foot wide Right-of-Way from the project site, along BLM land, within BLM's designated Utility Corridor "N" to the Imperial Valley Substation.

Division Comments:

The initial study for the NOP stated that because solar generation facilities are an allowed use within the zone district and subject to a conditional use permit, they do not conflict with existing zoning for agriculture and thus no impact is identified. However, the entire purpose of going through the conditional use permit process is to trigger a thorough CEQA review of a project's potential impacts. The development of 903 acres of Prime Farmland and Farmland of Statewide Importance is a substantial amount of development and displacement of agricultural resources.

The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.

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The Department of Conservation considers the construction of a solar facility that removes and replaces agriculture on agricultural lands to have a significant impact on those agricultural lands, including grazing land. While solar panels may be an allowed use under the County zoning and General Plan, they can and should be considered an impact under CEQA to the project site's agricultural resources.

Although direct conversion of agricultural land is often an unavoidable impact under California Environmental Quality Act (CEQA) analysis, mitigation measures must be considered. A principal purpose of an EIR is to present a discussion of mitigation measures in order to fully inform decision-makers and the public about ways to lessen a project's impacts. In some cases, the argument is made that mitigation cannot reduce impacts to below the level of significance because agricultural land will still be converted by the project, and, therefore, mitigation is not required. However, reduction to a level below significance is not a criterion for mitigation. Rather, the criterion is feasible mitigation that lessens a project's impacts. Pursuant to CEQA Guideline §15370, mitigation includes measures that "avoid, minimize, rectify, reduce or eliminate, or compensate" for the impact. For example, mitigation includes *"Minimizing impacts by limiting the degree or magnitude of the action and its implementation (§15370(b))"* or *"Compensating for the impact by replacing or providing substitute resources or environments (§15370(e))."*

All measures allegedly feasible should be included in the DEIR. Each measure should be discussed, as well as the reasoning for selection or rejection. A measure brought to the attention of the Lead Agency should not be left out unless it is infeasible based on its elements.

Finally, when presenting mitigation measures in the DEIR, it is important to note that mitigation should be specific, measurable actions that allow monitoring to ensure their implementation and evaluation of success. A mitigation consisting only of a statement of intention or an unspecified future action may not be adequate pursuant to CEQA.

Project Impacts on Agricultural Land

When determining the agricultural value of the land, the value of a property may have been reduced over the years due to inactivity, but it does not mean that there is no longer any agricultural value. The inability to farm the land, rather than the choice not to do so, is what could constitute a reduced agricultural value. The Division recommends the following discussion under the Agricultural Resources section of the Draft EIR:

- Type, amount, and location of farmland (Prime, Unique, and Farmland of Statewide Importance) conversion that may result directly and indirectly from project implementation and growth inducement, respectively.
- Impacts on current and future agricultural operations; e.g., land-use conflicts, increases in land values and taxes, etc.
- Incremental project impacts leading to cumulative impacts on agricultural land. This would include impacts from uses allowed with the proposed solar facility, as well as impacts from past, current, and likely projects in the future.

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Under California Code of Regulations Section 15064.7, impacts on agricultural resources may also be both quantified and qualified by use of established thresholds of significance. As such, the Division has developed a California version of the USDA Land Evaluation and Site Assessment (LESA) Model. The California LESA model is a semi-quantitative rating system for establishing the environmental significance of project-specific impacts on farmland. The model may also be used to rate the relative value of alternative project sites. The LESA Model is available on the Division's website at:

http://www.consrv.ca.gov/DLRP/gh_les.htm

Solar Facility Mitigations and Reclamation Plan

If the solar facility is considered a temporary displacement of agricultural resources, then there should be some assurances that it will be temporary and will be removed in the future. Hence the need for a reclamation plan. The loss of agricultural land (even temporary) represents a reduction in the State's agricultural land resources. The Division has witnessed the negative impacts of non-operational wind power generation facilities and related equipment that have been left to deteriorate on agricultural land. For that reason, the Division offers a variety of permitting conditions the County might use for energy projects on agricultural land:

- Require a reclamation plan suited for solar facilities, based on the principles of the Surface Mining and Reclamation Act (SMARA). As part of this plan, a performance bond or other similar measure may be used.
 - A typical requirement would be for the soil to be restored to the same condition it was in prior to the solar facility's construction. Whatever project-related materials have been brought in, or changes made to the land (i.e. graveling, roads, compaction, equipment), would be removed once the solar facility (or portions of) is no longer active.
- Solar projects are generally considered to be "temporary". The County could require that a new permit must be applied for after a certain period of time. Because this is a new and unprecedented use for agricultural land, this would allow the County more flexibility in determining what conditional uses or conditions may be most appropriate in the longer term.
- Require permanent agricultural conservation easements on land of at least equal quality and size as partial compensation for the direct loss of agricultural land.
 - Conservation easements will protect a portion of those remaining agricultural land resources and lessen project impacts in accordance with California Environmental Quality Act (CEQA) Guideline §15370. The Department highlights this measure because of its acceptance and use by lead agencies as an appropriate mitigation measure under CEQA and because it follows an established rationale similar to that of wildlife habitat mitigation.

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The proposed conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands can be conducted regionally or statewide, and need not be limited strictly to lands within the project's surrounding area. Mitigation for the loss of Prime Farmland

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July 16, 2010
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is suggested at a 2:1 ratio due to its importance in the State of California. The use of conservation easements is only one form of mitigation, and any other feasible mitigation measures should also be considered. Mitigations for temporary solar projects can also be flexible, especially in cases where there is a reclamation plan in place that requires the land to be returned to an agricultural state.

The Department also has available a listing of approximately 30 "conservation tools" that have been used to conserve or mitigate project impacts on agricultural land. This compilation report may be requested from the Division at the address or phone number at the conclusion of this letter. Of course, the use of conservation easements is only one form of mitigation that should be considered. Any other feasible mitigation measures should also be considered.

Thank you for giving us the opportunity to comment on the Notice of Preparation for a DEIR for Imperial Solar Energy Center South project. Please provide this Department with a copy of the DEIR, the date of any hearings for this particular action, and any staff reports pertaining to it. If you have questions regarding our comments, or require technical assistance or information on agricultural land conservation, please contact Meri Meraz, Environmental Planner, at 801 K Street, MS 18-01, Sacramento, California 95814, or by phone at (916) 445-9411.

Sincerely,



Dan Otis
Program Manager
Williamson Act Program

cc: State Clearinghouse

Imperial County Farm Bureau
1000 Broadway
El Centro, CA 92243
FAX (760) 352-0232

EXHIBIT

3

Analysis of the Potential for a Heat Island Effect in Large Solar Farms

Vasilis Fthenakis^{1,2} and Yuanhao Yu¹

¹ Center for Life Cycle Analysis, Department of Earth and Environmental Engineering, Columbia University, New York, NY

² PV Environmental Research Center, Brookhaven National Laboratory, Upton, NY

Abstract — Large-scale solar power plants are being built at a rapid rate, and are setting up to use hundreds of thousands of acres of land surface. The thermal energy flows to the environment related to the operation of such facilities have not, so far, been addressed comprehensively. We are developing rigorous computational fluid dynamics (CFD) simulation capabilities for modeling the air velocity, turbulence, and energy flow fields induced by large solar PV farms to answer questions pertaining to potential impacts of solar farms on local microclimate. Using the CFD codes Ansys CFX and Fluent, we conducted detailed 3-D simulations of a 1 MW section of a solar farm in North America and compared the results with recorded wind and temperature field data from the whole solar farm. Both the field data and the simulations show that the annual average of air temperatures in the center of PV field can reach up to 1.9°C above the ambient temperature, and that this thermal energy completely dissipates to the environment at heights of 5 to 18 m. The data also show a prompt dissipation of thermal energy with distance from the solar farm, with the air temperatures approaching (within 0.3°C) the ambient at about 300 m away of the perimeter of the solar farm. Analysis of 18 months of detailed data showed that in most days, the solar array was completely cooled at night, and, thus, it is unlikely that a heat island effect could occur. Work is in progress to approximate the flow fields in the solar farm with 2-D simulations and detail the temperature and wind profiles of the whole utility scale PV plant and the surrounding region. The results from these simulations can be extrapolated to assess potential local impacts from a number of solar farms reflecting various scenarios of large PV penetration into regional and global grids.

Index Terms — PV, climate change, heat island, fluid dynamics

I. INTRODUCTION

Solar farms in the capacity range of 50 MW to 500 MW are being proliferating in North America and other parts of the world and those occupy land in the range from 275 to 4000 acres. The environmental impacts from the installation and operation phases of large solar farms deserve comprehensive research and understanding. Turney and Fthenakis [1] investigated 32 categories of impacts from the life-stages of solar farms and were able to categorize such impacts as either beneficial or neutral, with the exception of the “local climate” effects for which they concluded that research and observation are needed. PV panels convert most of the incident solar radiation into heat and can alter the air-flow and temperature profiles near the panels. Such changes may subsequently affect the thermal environment of near-by populations of humans and other species. Nemet [2] investigated the effect on

global climate due to albedo change from widespread installation of solar panels and found this to be small compared to benefits from the reduction in greenhouse gas emissions. However, Nemet did not consider local microclimates and his analytical results have not been verified with any field data. Donovan [3] assumed that the albedo of ground-mounted PV panels is similar to that of underlying grassland and, using simple calculations, postulated that the heat island effect from installing PV on grassy land would be negligible. Yutaka [4] investigated the potential for large scale of roof-top PV installations in Tokyo to alter the heat island effect of the city and found this to be negligible if PV systems are installed on black roofs.

In our study we aim in comprehensively addressing the issue by modeling the air and energy flows around a solar farm and comparing those with measured wind and temperature data.

II. FIELD DATA DESCRIPTION AND ANALYSIS

Detailed measurements of temperature, wind speed, wind direction, solar irradiance, relative humidity, and rain fall were recorded at a large solar farm in North America. Fig. 1 shows an aerial photograph of the solar farm and the locations where the field measurements are taken.



Fig. 1. A picture of the solar farm indicating the locations of the monitoring stations

The field data are obtained from 17 monitoring stations within and around the solar farm, including 8 weather stations (WS) and 9 Hawk stations (HK), all at 2.5 m heights off the ground. There also 80 module temperature (MT) sensors at the back-side of the modules close to each of the corresponding power stations. The WS and MT provide data at 1-min intervals, while the Hawk provides data every 30 minutes. The WS and MT data cover a period of one year from October 2010 to September 2011, while the Hawk data cover a period of 18 months from March 2010 through August 2011.

Hawk stations 3, 6, 7, 8 and 9 are outside the solar farm and were used as reference points indicating ambient conditions. The measurements from Hawk 3, 6, 8 and 9 agree very well confirming that their distances from the perimeter of the solar farm are sufficient for them to be unaffected by the thermal mass of the PV system; Hawk 7 shows higher temperatures likely due to a calibration inaccuracy. In our comparative data analysis we use Hawk 6 as a reference point and, since the prevailing winds are from the south, we selected the section around WS7 as the field for our CFD simulations. Figures 2 to 7 show the difference between the temperatures in Hawk 6 and those in the weather stations WS2 and WS7 within the field, and Hawks 1, 2, 4 and 5 around the solar field.

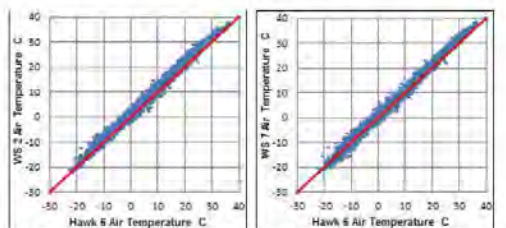


Fig. 2. Air temp WS2 vs. Hawk 6

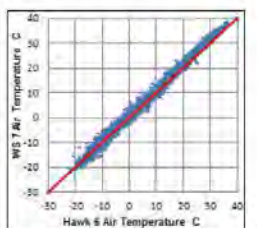


Fig. 3. Air temp WS7 vs. Hawk 6

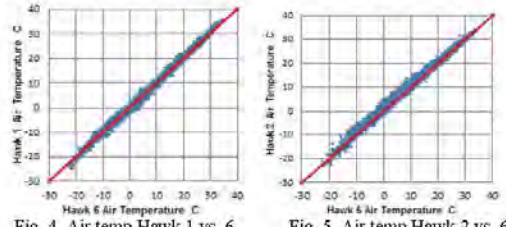


Fig. 4. Air temp Hawk 1 vs. 6

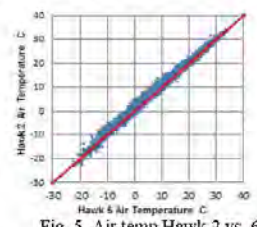


Fig. 5. Air temp Hawk 2 vs. 6

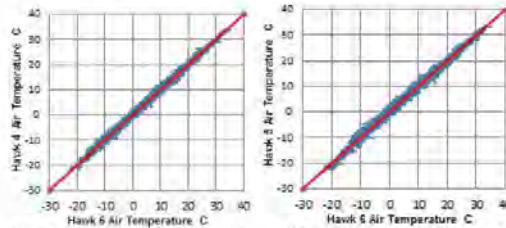


Fig. 6. Air temp Hawk 4 vs. 6

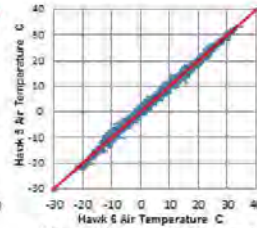


Fig. 7. Air temp Hawk 5 vs. 6

These figures and Table 1 show that with the exception of Hawk 4, the closer the proximity to solar farm the higher the temperature difference from the ambient (indicated by Hawk 6). The relative high temperatures recorded at Hawk 4, and also the relative low temperatures at Hawks 1 and 5 are explained by the prevailing wind direction, which for the time period used in our analysis (8/14/2010-3/14/2011) was Southerly (158°-202°). Hawk 4 is downwind of the solar farm, whereas Hawks 1 and 5 are upwind; the downwind station “feels” more the effect of the heat generated at the solar farm than the ones upwind.

Fig. 8 shows the decline in air temperature as a function of distance to solar farm perimeter. Distances for WS2 and WS7 are negative since they are located inside the solar farm site. WS2 is further into the solar farm and this is reflected in its higher temperature difference than WS7.

TABLE I
DIFFERENCE OF AIR TEMPERATURE (@2.5 M HEIGHTS) BETWEEN THE LISTED WEATHER AND HAWK STATIONS AND THE AMBIENT

Met Station	WS2	WS7	HK1	HK2	HK3	HK4	HK5	HK9
Temp Difference from H6 (°C)	1.878	1.468	0.488	1.292	0.292	0.609	0.664	0.289
Distance to solar farm perimeter (m)	-440	-100	100	10	450	210	20	300

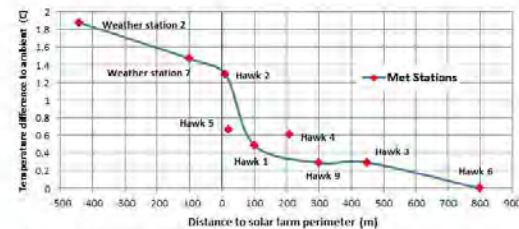


Fig. 8. Air temperature difference as a function of distance from the perimeter of the solar farm. Negative distances indicate locations within the solar farm.

We also examined in detail the temperature differences between the modules and the surrounding air. These vary throughout the year but the module temperatures are consistently higher than those of the surrounding air during the day, whereas at night the modules cool to temperatures below ambient; an example is shown in Fig. 9. Thus, this PV solar farm did not induce a day-after-day increase in ambient temperature, and therefore, adverse micro-climate changes from a potential PV plant are not a concern.

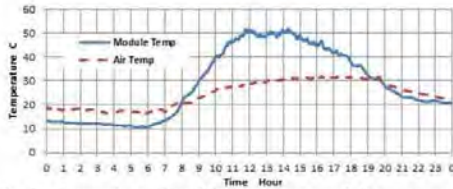


Fig. 9. Comparison of module temperature and air temperature 2.5 m off the ground on a sunny day (July 1, 2011)

III. CFD MODEL DEVELOPMENT

In preliminary simulations we tested the Ansys CFX and FLUENT computational fluid dynamics codes (CFD) and decided to use FLUENT in detailed simulations. FLUENT offers several turbulence schemes including multiple variations of the $k-\epsilon$ models, as well as $k-\omega$ models, and Reynolds stress turbulence models. We used the standard, renormalized-group (RNG), and realizable $k-\epsilon$ turbulence closure scheme as it is the most commonly used model in street canyon flow and thermal stratification studies [5]. FLUENT incorporates the P-1 radiation model which affords detailed radiation transfer between the solar arrays, the ground and the ambient air; it also incorporates standard free convection and wind-forced convection models. Our choice of solver was the pressure-based algorithm SIMPLE which uses a relationship between velocity and pressure corrections to enforce mass conservation and obtain the pressure field. We conducted both three-dimensional (3-D) and 2-D simulations.

A 3-D model was built of four fields each covering an area of 93-meters by 73-meters (Fig. 10). Each field contains 23 linear arrays of 73-meter length and 1.8-meter width. Each array has 180 modules of 10.5% rated efficiency, placed facing south at a 25-degree angle from horizontal, with their bottom raised 0.5 m from the ground and their top reaching a height of 1.3 m. Each array was modeled as a single 73 m \times 1.8 m \times 1 cm rectangular. The arrays are spaced 4 meters apart and the roads between the fields are 8 m. Fig. 10 shows the simulated temperatures on the arrays at 14:00 pm on 7/1/2011, when the irradiance was 966 W/m². As shown, the highest average temperatures occur on the last array (array 46). Temperature on the front edge (array 1) is lower than in the center (array 23). Also, temperature on array 24 is lower than array 23, which is apparently caused by the cooling induced by the road space between two fields, and the magnitude of the temperature difference between arrays 24 and 46 is lower than that between arrays 1 and 23, as higher temperature differences from the ambient, result in more efficient cooling.

TABLE II
MODULES TEMPERATURE

Arrays	1	23	24	46
Temperature °C	46.1	56.4	53.1	57.8

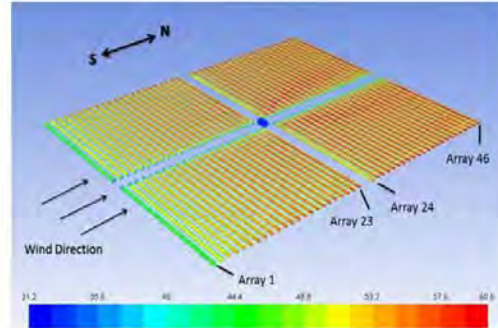
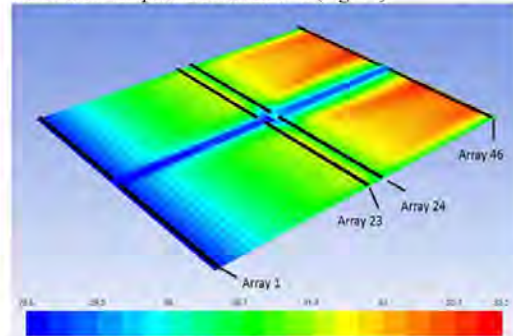
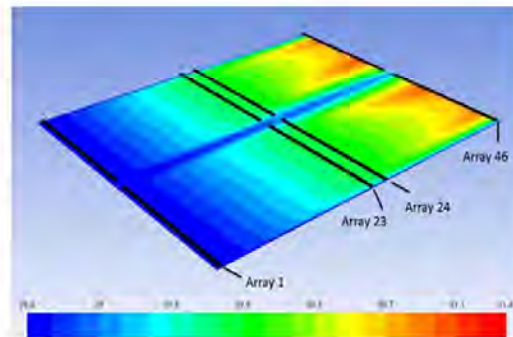


Fig. 10. Module temperatures from 3-D simulations of air flows and thermal exchange during a sunny day

Our simulations also showed that the air temperatures above the arrays at a height of 2.5 m ranged from 28.6 °C to 31.1°C; the ambient temperature was 28.6 °C (Fig. 11).



(a)



(b)

Fig. 11 Air temperatures from 3-D simulations during a sunny day. a) Air temperatures at a height of 1.5 m; b) air temperatures at a height of 2.5 m.

TABLE III
AIR TEMPERATURE

Temperature	Ambient (°C)	Low (°C)	High (°C)	Average (°C)
2.5m height	28.6	28.6	31.1	30.1
1.5m height	28.6	28.6	33.2	30.8

These simulations show a profound cooling effect with increasing height from the ground. It is shown that the temperatures on the back surface of solar panels is up to 30 °C warmer than the ambient temperature, but the air above the arrays is only up to 2.5°C higher than the ambient (i.e., 31.1°C). Also the road between the fields allows for cooling, which is more evident at the temperatures 1.5 m off the ground (Fig. 11a). The simulations show that heat build-up at the power station in the middle of the fields has a negligible effect on the temperature flow fields; it was estimated that a power station adds only about 0.4% to the heat generated by the corresponding modules.

The 3-D model showed that the temperature and air velocity fields within each field of the solar farm were symmetrical along the cross-wind axis; therefore a 2-D model of the downwind and the vertical dimensions was deemed to be sufficiently accurate. A 2-D model reduced the computational requirements and allowed for running simulations for several subsequent days using actual 30-min solar irradiance and wind input data. We tested the numerical results for three layers of different mesh sizes and determined that the following mesh sizes retain sufficient detail for an accurate representation of the field data: a) Top layer: 2m by 1m, b) Middle layer: 1.5m by 0.6m, c) Bottom layer: 1m by 0.4m. According to these mesh specifications, a simulation of 92 arrays (length of 388m, height 9m), required a total of 13600 cells. Figures 12-15 show comparisons of the modeled and measured module and air temperatures.

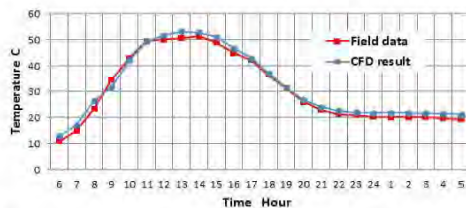


Fig. 12. Comparisons of field and modeled module temperatures; a sunny summer day (7/1/2011); 2-D simulations.

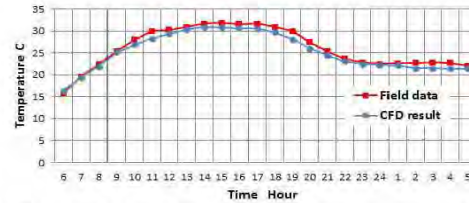


Fig. 13. Comparisons of field and modeled air temperatures at a height of 2.5 m; a sunny summer day (7/1/2011); 2-D simulations.

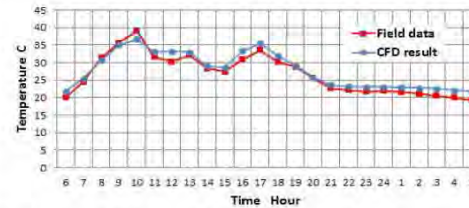


Fig. 14. Comparisons of field and modeled module temperatures; a cloudy summer day (7/11/2011); 2-D simulations.

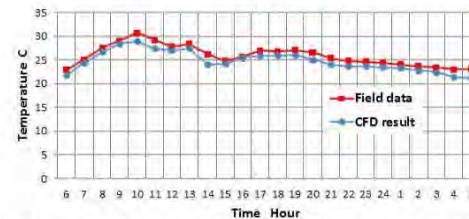


Fig. 15. Comparisons of field and modeled air temperatures at a height of 2.5 m; a cloudy summer day (7/11/2011); 2-D simulations.

Figures 16a and 16b show the air temperature as a function of height at different downwind distances in the morning and afternoon during a sunny summer day. At 9 am (irradiance 500 W/m², wind speed 1.6 m/s, inlet ambient temperature 23.7°C), the heat from the solar array is dissipated at heights of 5-15m, whereas at 2 pm (irradiance 966 W/m², wind speed 2.8m/s, inlet ambient temperature 28.6°C, the temperature of the panels has reached the daily peak, and the thermal energy takes up to 18 m to dissipate.

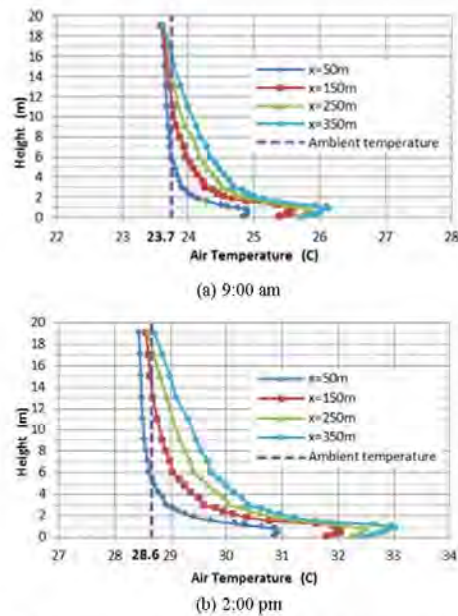


Fig. 16 Air temperatures within the solar farm, as a function of height at different downwind distances. From 2-D simulations during a sunny summer day (7/1/2011) at 9 am and 2 pm.

IV. CONCLUSION

The field data and our simulations show that the annual average of air temperatures at 2.5 m of the ground in the center of simulated solar farm section is 1.9°C higher than the

ambient and that it declines to the ambient temperature at 5 to 18 m heights. The field data also show a clear decline of air temperatures as a function of distance from the perimeter of the solar farm, with the temperatures approaching the ambient temperature (within 0.3°C), at about 300 m away. Analysis of 18 months of detailed data showed that in most days, the solar array was completely cooled at night, and, thus, it is unlikely that a heat island effect could occur.

Our simulations also show that the access roads between solar fields allow for substantial cooling, and therefore, increase of the size of the solar farm may not affect the temperature of the surroundings. Simulations of large (e.g., 1 million m²) solar fields are needed to test this hypothesis.

ACKNOWLEDGEMENT

We are grateful to First Solar for providing data for this study.

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EXHIBIT 4

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February 25, 2011

Armando G. Villa
Planning & Development Services Director
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RE: CUP 10-0035 8 Minutenergy Renewables, LLC, Calipatria Solar Farm II

The project entails the construction, development and operation of a ground mounted 50 MW Photovoltaic solar energy facility. The proposed solar plant will convert approximately 563 acres of privately owned farmland to non-farm use. The project will be located approximately one mile north of Calipatria, California in Imperial County and is bounded by Blair Road to the east, E. Peterson Road to the north, W. Lindsey Road to the south, and the Southern Pacific Railroad to the west. Agricultural lands lie to the immediate north, south, east and west of the project. The Calipatria State Prison is located to the northeast of the project site. An algae farm (Earthrise Farms) is located adjacent to the northwest corner of the site across the Southern Pacific Railroad tracks.

The California Department of Conservation has classified the property as Farmland of Statewide Importance. This farmland supports crops that contribute directly to Imperial County's \$1.45 billion gross agricultural production value. Temporary or permanent removal of any farmland out of production would have a direct negative impact on employment, income, sales and tax revenue.

During the construction phase and perhaps afterwards depending on whether this project will have some level of permanent staffing, neighboring agricultural operations would be impacted and restricted in their ability to use some pesticides or some pesticide application methods. Also, any complaints received by the construction site regarding nearby agricultural operations would need to be investigated; costs incurred to conduct investigations into incidents and complaints are not directly reimbursed by the state.

Since the project will be surrounded by farmland it will be exposed to higher than normal levels of dust and potential pesticide drift which will likely increase the cleaning requirements of the panels.

The land under the solar panels could harbor pests including noxious weeds, plant diseases, insects, and vertebrates which are detrimental to agriculture and could cause damage to adjacent fields and crops. This could be a problem if a cover crop is used for dust control and needs to be addressed or mitigated. In addition to direct crop damage caused by pests, if these solar panels are located next to or near any produce or organic fields, they could create food safety issues (i.e. E. coli in spinach caused by animal dropping getting into the field). Many produce growers today have to comply with Leafy Greens Agreements to ensure produce safety.

Sincerely,

Connie L. Valenzuela
Connie L. Valenzuela
Agricultural Commissioner
Sealer of Weights and Measures

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5

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February 22, 2011 | about: [NRG](#)

Executives

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Christian Schade - Chief Financial Officer and Executive Vice President

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Nahla Azmy - Vice President of Investor Relations

Jason Few - SVP of Mass Markets and Operations, Reliant Energy, Inc.

Analysts

Anthony Crowdell - Jefferies & Co

Dan Eggers - Crédit Suisse AG

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

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Charles Fishman - Pritchard Capital Partners, LLC

Jonathan Arnold - Deutsche Bank AG

Ameet Thakkar - BofA Merrill Lynch

Theodore Durbin - Goldman Sachs Group Inc.

James Dobson - Wunderlich Securities Inc.

Brian Chin - Citigroup Inc

NRG Energy (NRG) Q4 2010 Earnings Call February 22, 2011 9:00 AM ET

Operator

Good day, ladies and gentlemen, and welcome to the Fourth Quarter and Full Year 2010 NRG Energy Earnings Conference Call. My name is Deanna, and I'll be your operator for today. [Operator Instructions] And I would now like to turn the call over to your host for today, Ms. Nahla Azmy, Senior Vice President of Investor Relations. Please proceed.

Nahla Azmy

Thank you, Deanna. Good morning, and welcome to our Fourth Quarter and Full Year 2010 Earnings Call.

This call is being broadcast live over the phone and from our website at www.nrgenergy.com. You can access the call presentation and press release through a link on the Investor Relations page of our website. A replay of the call will also be available on our website. This call, including the formal presentation and the question-and-answer session, will be limited to one hour. In the interest of time, we ask that you please limit yourself to one question with just one follow-up.

And now for the obligatory Safe Harbor statement. During the course of this morning's presentation, management will reiterate forward-looking statements made in today's press release regarding future events and financial performance. These forward-looking statements are subject to material risks and uncertainties that could cause actual results to differ materially from those in the forward-looking statements. We caution you to consider the important risk factors contained in our press release and other filings with the SEC that could cause actual results to differ materially from those in the forward-looking statements in the press release and this conference call.

In addition, please note that the date of this conference call is February 22, 2011, and any forward-looking statements that we make today are based on assumptions that we believe to be reasonable as of this date. We undertake no obligation to update these statements as the result of future events except as required by law.

During this morning's call, we will refer to both GAAP and non-GAAP financial measures of the company's operating financial results. For complete information regarding our non-GAAP financial information, the most directly comparable GAAP measures and a quantitative reconciliation of those figures, please refer to today's press release and this presentation.

And now with that, I'd like to turn the call over to David Crane, NRG's President and Chief Executive

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Officer.

David Crane

Thank you, Nahla, and good morning, everyone, and welcome to our year-end 2010 earnings call. Today, with me, and participating in the presentation is Mauricio Gutierrez, the company's Chief Operating Officer; and Chris Schade, the company's Chief Financial Officer. Also with me today and available to answer questions are Jason Few, who runs NRG's retail company, Reliant; and Chris Moser, who runs the commercial operations function for this company.

So without further ado, to begin -- so ladies and gentlemen, current and perspective shareholders of NRG, as we speak today, it's now been 32 months since natural gas prices began their relentless fall and the economy at large entered into a great recession, the likes of which, I'm sure none of us wish to experience again in our lifetimes, yet the financial performance of NRG during this period has been superb. And that financial performance has been built on the foundation of an equally exceptional operating performance across all phases of our operations and across all our regions.

In 2010, the second full year of the great recession, our financial performance surpassed all previous years of company results, save for fiscal year 2009, which was of course the first year of the great recession, a year in which we performed spectacularly, achieving both record financial performance and the acquisition of Reliant.

While I am, for the most part, extremely pleased with both the company's financial and its operating performance during 2010, I am acutely mindful of the fact that NRG shareholders did not see any of the benefits of our exceptional performance and share price appreciation during that year. As a management team, we recognize that we have a long way to go in presenting NRG's present value and future potential to the market.

In this presentation and in subsequent presentations that Mauricio, Chris and I will be making during the spring Investor Relations season, we intend to make a concerted effort to explain the NRG value proposition. From the competitive strength of our core businesses, even in a low commodity price environment, to the meaningful and measurable value of our growth opportunities, as well as our effective risk mitigation in areas which we believe to be of concern to the investment community.

So starting with 2010, as summarized on Slide 3, the company continued to generate a very high level of EBITDA in excess of \$2.5 billion and also throw off a substantial amount of free cash flow. Indeed, in regard to what should perhaps be the most important metric to shareholders, free cash flow yield, our free cash flow yield for 2010 was a robust 29%, making our seven-year average exceed 23%. And in response to some people who said that we should measure free cash flow for these purposes after both maintenance and environmental CapEx, we have done it in that way but before growth CapEx.

A substantial amount of that free cash flow yield was redeployed back to stakeholders in the form of debt repayment and through our 2010 share buyback program and also into various growth initiatives, which we'll discuss in a minute. But over \$650 million of excess free cash flow was returned as cash into the company's coffers, with the result being that our liquidity position at the end of 2010, \$4.3 billion of total liquidity with \$3 billion of cash on hand, is stronger than it has ever been.

It has always been my position that next to safety, the most important thing that we do as executive management at NRG is capital allocation, and given the amount that we are investing on an annual basis and the record amount that we currently have available either to invest in growth or to return to our equity and debt stakeholders, capital allocation has never been more important than it is now. As

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such, I'm going to focus the greater part of my remaining remarks on capital, which we expect to invest in our growth initiatives in the months and years to come. Chris will focus a good deal of his comments on capital to be returned to stakeholders.

In terms of the allocation of capital to our growth initiatives, it's important to start with the obvious point that we want to invest the company's capital in assets and initiatives that not only are likely to yield a return significantly in excess of our risk-adjusted weighted average cost of capital, but also in businesses and initiatives which advance the company's strategy.

As depicted on Slide 4, the company's long-term strategy for some time has been twin-tracked. First, to strengthen and enhance our generation to retail business in our core markets through superior operating performance, continued implementation of our first-lean-enabled, long-term hedging program and pursuit of both select acquisitions and the repowering of our older facilities with advantage locations inside load pockets in our core markets. This comply of our strategy which we have pursued with relentless consistency and a high degree of effectiveness for the past five years was joined a couple years ago with a supplemental strategy that is overtly green and designed to take advantage of the societal trend towards sustainability.

This sustainability trend is, in our opinion, about to accelerate as a result of the emergence of various consumer-oriented disruptive technologies, which will make green energy at the consumer level the focal point of sustainability. We made considerable progress on both strategic fronts during 2010, with substantial advances across every facet of our sustainability initiative.

From our rollout of our eVgo network in Houston, which is centered around an innovative fueling package in approach to electric vehicle infrastructure that is already being replicated in other locations through the smart meter e-Sense applications now being sold by Reliant in quantity, to our unique approach to CCS/EOR being funded in collaboration with the DOE at our Parish facility in Texas. All of these initiatives are exciting and off to a good start. All will, I am confident, return considerable value to NRG to shareholders in the medium term.

You will hear more about these initiatives in the future but not today, because today, consistent with my theme, I want to concentrate my comments on the growth initiatives which are more immediate and which are key priorities for deployment of your investment capital during 2011. This is shown on Slide 6.

By way of background, in 2010, we committed substantial growth capital in four general areas: Zero carbon renewables, with an emphasis on solar; new advanced nuclear development; conventional gas-fired acquisitions and repowerings; and green retail acquisitions in the form of Green Mountain Energy. All four are likely to be areas of additional capital expenditure in 2011 but with very different investment profiles from 2010.

First, we expect an acceleration and significant expansion in our equity capital invested in high-growth, high-return solar projects. At the greater part of our utility scale, solar portfolio should achieve financial close and enter the construction phase during 2011.

Second, investment in conventional generation assets should be relatively flat year-on-year, as spending on GenConn and Cottonwood should give way to spending on El Segundo, but conventional CapEx could increase depending on our development success at Astoria, Saguaro or Encina and also, whether we find any strategic assets that can be acquired at value.

Third, capital invested in green retail should drop precipitously as obviously the big expenditure in this

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area in 2010 with the acquisition of Green Mountain. The amount of capital that we will be investing in and around Green Mountains business in 2011 or to expand into new geographic markets, bigger customers segments and new complimentary green product offerings is fairly minimal.

And finally, and similarly and perhaps, contrary to popular investor belief, even if the STP nuclear development project stays on course, the development capital projected to be required of NRG in 2011 will be far less than half of what we invested in 2010 and will be a mere fraction of what we will be investing in solar projects and other capital allocation alternatives.

So this is a lot to digest, so let's go through a little bit more slowly, starting on Slide 7 with Green Mountain. Four months ago, we paid \$357 million for a business that we expect to contribute \$70 million, \$80 million of EBITDA in 2011, plus, we expect Green Mountain to continue to deliver on a 20-plus percent compound annual growth rate trajectory that they have delivered for the past decade. But we didn't acquire Green Mountain just to continue with business as usual. We wanted to take advantage, and we wanted them to take advantage of what we believe are very substantial synergies between Green Mountain and NRG.

Essentially, we want Green Mountain to accelerate the depth and breadth of their growth in close cooperation with us on the same path that they were following on their own, which means expansion into a high retail price Northeast markets, where they start with a natural green-leaning constituency, also, expansion into the larger Commercial segment of the C&I market than they have previously sought to access. And finally, expansion of their value-added product offerings to include distributed green generation.

It's early days yet, but on at least the first two of these, they are already beginning to bear fruit. Green Mountain has established a small but fast-growing footprint in New York Zone J, and in terms of larger C&I customers, they have won landmark business like the Empire State Building. We expect to be reporting on these and many more successes from and with Green Mountain as the year progresses.

Turning to conventional generation on Slide 8. 2010 was an uneven year, with the successful acquisition of Cottonwood and the repowering at Devon and Middletown, balanced by the missed opportunities surrounding Dynegy's California asset. Cottonwood and Devon have been smoothly integrated into our South Central and NEPOOL lineups respectively, and we are very pleased with the results today.

Looking forward to 2011, we're very focused on the successful repowering of El Segundo, an advantage which we hope to derive from having a modern, fast-start, low-heat rate, combined-cycle plant inside the Los Angeles basin load pocket. Beyond El Segundo, we hope to make progress on similar repowering efforts at Astoria in New York City and Encina in San Diego County. Beyond our own Repowering pipeline, the capital we deploy in the acquisition of conventional power plants, obviously, will depend on market conditions and asset availability in our core regions.

While the acquisition market is lumpy, generalities are difficult and predictions are often proved wrong, the optimism I once held at the first half of 2011 would be a buyer's market for CCGTs in the United States has largely dissipated. I see no sign of a flood of assets on the market and the combined cycle of transactions which have been announced recently have been priced at levels significantly above what we could justify to ourselves or explain to our shareholders.

With respect to our nuclear project, while important steps forward have occurred in several areas since our last earnings call, very little of it can be seen with the naked eye. As before, really all critical

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aspects of the STP 3 & 4 project run off of our receipt of an acceptable conditional loan guarantee from the government. Certainly, it is a challenge for us to complete meaningful discussions about PPAs with potential off-takers, while the loan guarantee application remains pending.

So our exit ramp analysis, which is set forth on Slide 9, remains largely unchanged from the previous quarter. Likewise, our viewpoint with respect to NRG's continued participation in the project remains at the most challenging of these hurdles, which is the long-term off-take requirement, effectively needs to be addressed no later than the third quarter of 2011 before the project enters the substantial pre-construction phase.

As such, we reiterate the view which is clearly articulated in both our 10-K and in today's earnings release, that NRG will be in a position by late this summer to make a final decision on our continued financial participation in this project. At that point, the market should have substantially greater clarity about the prospects for this project and NRG's role in it.

While we understand that there is skepticism amongst some investors that the project can go forward in the current low gas price environment, we nonetheless, believe it might be helpful to you for us to outline as shown on Slide 10 the future capital commitment of NRG in respect to this project, should it stay on track, with NRG continuing to support it financially.

The overall message is that due to a combination of first, the very substantial sum that NRG has previously committed to the project development, particularly during the first half of 2010 after the settlement with CPS. Second, taking into account our expectation of an optimal hold amount in the project for NRG of approximately 40%, which is down from the 67% that we will own if and when TEPCO invests in a project post-loan guarantee award. And third, due to the value ascribed to NRG for its contribution of the site, NRG's cash commitment to the project going forward is less than what otherwise would be suggested by our projected ownership level.

In summary, should the project proceed to financial closing, the total cash commitment for NRG at our 40% hold level should be something just short of \$800 million in aggregate, including cash invested to date. Beyond that, we are likely to have an LC commitment to a standby equity crossover line facility that will be fixed. And while that number has not yet been finally fixed, you should be thinking in the range of a few hundred million dollars maximum.

In exchange for this size investment in STP 3 & 4, we expect cash flow from dividends and tax benefits in the range of \$500 million a year for the first several years of operations. Obviously, this is a very attractive return but one which we believe is well justified given the extraordinary challenges of the undertaking.

Now pulling it back from where we hope the project will be in 2016 or 2017 to where we are here in the first quarter of 2011, you should be focused on what happens after announcements of acceptance of the loan guarantee. As the loan guarantee acceptance naturally will trigger certain funding obligations from our partners, NRG's share of cash development spent for the remainder of the development phase should approximate \$50 million for all of 2011 and half that for 2012.

While our perspective 2011, 2012 development standard is perhaps substantially less than many in the market were anticipating, it remains a lot of money to us, and we're taking very seriously our commitment to retain our financial discipline around this project and prevent exposure of our balance sheet beyond the specific commitments that I've outlined in this presentation.

Now turning to Slide 11, last but certainly not least, there is the solar pipeline. I've said many times,

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and I'll repeat here, that in my 20 years in this business, I had never seen investment opportunities in this sector that offer more attractive combination of high returns, low construction risks, long-term PPAs and repeatable business opportunities than the utility-sized solar projects that we currently have in our advanced development portfolio.

As such, we intend to do as much of this business as we can get our hands on, with the result being that by the end of this year, we may well have a total initial equity investment in our solar portfolio that exceeds the total amount that we may ever invest in STP 3 & 4 at very attractive near-term returns. The limiting item for us in terms of these solar investments is our ability on our own to make optimal use of the considerable tax benefits which will be generated by these projects. This is a topic that Chris Schade will discuss in a few minutes.

What I will end by saying is that this extraordinary pipeline of utility-sized solar projects, which our colleagues at NRG Solar have managed to develop or acquire, provides us with a truly unique opportunity to develop over the next few years a solar portfolio of true scale and significant benefit, even in the context of the larger portfolio of NRG.

Ultimately, however, we fully recognize that the current generation of utility-sized solar and wind projects in the United States is largely enabled by favorable government policies and financial assistance. It seems likely that much of that special assistance is going to be phased out over the next few years, leaving renewable technologies to fend for themselves in the open market.

We do not believe that this will be the end of the flourishing market for solar generation. We do believe it will lead to a stronger and more accelerated transition from an industry that is currently biased towards utility-sized solar plants to one that's focused more on distributed and even residential solar solutions on rooftops and in parking lots.

We are already planning for this transition now within NRG, so that any potential decline in either the availability of utility-sized solar projects or in the attractiveness of the returns being realized on these projects, will be exceeded in aggregate by the increase in the business we are doing on smaller distributed and residential solar projects through our Green Mountain and even our Reliant retail sales channel.

With that, I'll turn it over to Mauricio.

Mauricio Gutierrez

Thank you, David, and good morning, everyone. NRG continued its strong operating and commercial performance during the fourth quarter, making 2010 one of NRG's best years. Slide 13 highlights a few of the key accomplishments achieved in 2010.

Starting with safety, we're particularly pleased with our record performance this year. Our OSHA recordable rate improved 26% over 2009. Our top performance remained strong with 90% availability of our baseload fleet, just shy of our 2009 level. This performance was achieved despite a forced outage event on our STP nuclear plant in November, which I will cover in more detail in the next slide.

On the environmental front, we delivered our second best year, and our FORNRG program far exceeded our 2010 goal. As I mentioned to you on our last call, controlling our cost is a priority, given the challenging economic environment our industry is facing.

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Our Commercial Operations Group increased our hedge levels in 2011 and continues to look for opportunities to catch the odd years of favorable prices. We successfully transitioned to the Nodal Market in ERCOT and began integrating Green Mountain Energy and the Cottonwood combined cycle plant into our portfolio.

With respect to our projects under construction, the Indian River Unit 4 environmental back-end control project continues to be on track and on budget to be operational by January 2012. Our Middletown project in Connecticut received all major equipments in the fourth quarter and continues to be on schedule for operation this summer. Finally, the El Segundo Energy Center completed aboveground demolition of two existing units and secured major equipment orders. El Segundo is on track to be operational by the summer of 2013.

Turning to our plant performance metrics on Slide 14. Safety continues to be our number one priority. We are very proud to report that we achieved top decile in the industry, making 2010 our best OSHA recordable year. We have 25 sites with no injuries and nine sites certified or recertified as OSHA VPP Star worksites.

Net generation decreased by 6% in the fourth quarter due to mild weather across Texas and a 22-day on-plan outage at STP Unit 2 during the month of November. The forced outage event was the result of a breaker failure during routine testing and was extended to repair a reactor coolant pump seal. In order to prevent recurrence, similar electric components were checked in both units. Unit 2 has operated without any issues since it was brought back to service on November 26.

For the full year, net generation was flat from 2009 levels. Increased generation in the Northeast and South Central regions driven by the strong summer weather and the addition of Cottonwood, were offset by lower generation in California and Texas.

For 2010, our coal fleet availability finished the year above the sub-quarter performance level for the industry. WA Parish led the fleet with 92.6% availability factor, and Limestone had the best reliability for the year, with a 1.6% forced outage rate.

Our FORNRG 2.0 program exceeded the 2010 goal by \$49 million, and it is on track to achieve our goal of \$150 million by 2011, one year earlier than planned. Savings were achieved through a combination of reliability, capacity and efficiency improvements at generating assets and cost savings across our corporate and regional groups.

Turning to our retail operations on Slide 15, we closed out the year with another strong quarter. Volumes and margins were consistent with our forecast, while Operations delivered better-than-expected asset management and lower operational costs.

The Mass segment continues to drive segment improvement in net customer attrition with a 57% reduction in the fourth quarter versus 2009. This result was driven by marketing, sales and introduction of innovative products to meet our customer needs.

In 2010, we led Texas in innovation, enrolling over 175,000 customers on our Reliant e-Sense product and services that utilize smart grid technology. We also introduced new and unique offers like carbon-state [ph] and home protection products, adding not only incremental EBITDA but increased customer stickiness.

We continue to maintain the lowest PUC customer complaint rate while balancing customer counterpricing. Throughout 2010, we aligned to successfully demonstrate that we have stabilized

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customer attrition and expect to achieve zero net attrition in 2011.

In the C&I segment, both renewal and new deal win rates continue to improve. We have expanded our business in several Northeast states where we can leverage existing energy assets and increase product offerings to include products such as backlog generation. These provides a solid platform to grow our business in 2011.

Business continues to show some fundamentals as you can see on Slide 16. Weather-normalized demand grew by 2% year-on-year and ERCOT set a new winter peak low of 57 kilowatts in February, an increase of almost 2.5% from the previous record. I'd like to take this opportunity to address the events in Texas on February 2.

The men and women of NRG Texas worked very hard to help meet the high demand for electricity due to the extreme cold conditions, increasing our generation by more than 60% from the previous day. Although we had some operational issues, of the approximately 9,500 megawatts of power we had available in Texas during the low-shed event, we maintained between 97% and 91% of that capacity online. I want to thank all our employees in Texas for their dedication and extraordinary efforts during these events.

Now moving on to reserve volumes in ERCOT, we see a positive feature of our generation portfolio with reserved margins tightening faster than expected. This is to some extent reflected in the forward heat rates, as you can see on the chart on the lower right-hand quarter. We believe this trend will continue, given the robust growth and the expectation that asset retirement will outpace new builds. We have not seen as much coal-to-gas switching in Texas as we have in the Northeast and Southeast regions. In fact, cash generation was down year-on-year due to increases in new coal and wind generation in Texas.

In the Northeast, the back-end market continues to make some news. In New York, the recent FERC order to increase cost of new entry should provide a boost to capacity prices in New York City and rest of state, benefiting our New York portfolio. In PJM, prices remain uncertain until more clarity is given around the minimum offer price rule, the subsidized generation in New Jersey and Maryland and review demand outlook.

Moving on to Slide 17, you can see our detailed plan to control air emissions for each of our coal plants. As stated in our last earnings call, our plan is to invest approximately \$720 million through 2015 in environmental projects tailored to comply with future regulations.

Just to remind everyone, the proposed CAIR rule does not require additional capital for compliance. The HAP MACT proposed rule should be released in mid-March, and as you can see in the table, our plant considers mercury controls on all our coal units.

Intake modifications and repowering are expected to meet once for cooling requirements. We only have dry fly ash disposals at our all coal facilities. And finally, in most of our facilities, we burn low sulfur, low chlorine PRB coal.

Moving on to our hedge profile and commodity sensitivities on Slide 18. Our baseload portfolio is now 100% hedged in 2011 and 50% hedged in 2012, providing the protection in the short term where gas prices continue to be weaker given the oversupply situation. Beyond 2012, we choose to remain significantly open.

After two years of low gas prices, we believe the downside risk is limited. Our combination of

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incremental demand from the power sector, particularly in light of possible coal plant retirements, some signs of the interest rate by producers, indication that drilling to home acreage may be ending, and a move from dry to wet gas production will provide better opportunities to catch our baseload portfolio in the future.

With respect to retail, we have increased our pipe load to 66% in 2011 from 57% in the third quarter. We continue to match as much generation load as possible to start maximum synergies between our retail and wholesale portfolios.

Our power and coal hedges continue to be well managed in 2011 and 2012. Given the shape of the coal curve and steep contango, we have not added any additional occasions since the last quarter. We also remain well hedged in terms of coal transportation now for some time.

Our sensitivity to commodity prices is agreeable for 2011, with 2012 to 2015 largely unchanged from last quarter. Let me remind you that this sensitivity is around our baseload portfolio. Interest expense, our portfolio is well-positioned to benefit, particularly, in the Texas and South Central regions.

With that, I will turn it over to Chris who will discuss our financial results.

Christian Schade

Thank you, Mauricio, and good morning. Beginning with the financial summary on Slide 20, full-year 2010 adjusted EBITDA was \$2.514 billion, just shy of the record 2009 adjusted EBITDA of \$2.618 billion and within our previously stated guidance of \$2.5 billion to \$2.55 billion. As a result of our continued strong operating performance, adjusted cash flow from operations for 2010 was robust at \$1.76 billion.

The company's liquidity position at year end, excluding funds deposited by counterparties, stood at nearly \$4.3 billion, a \$458 million increase from December 31, 2009, liquidity of approximately \$3.8 billion. Our cash balance at year end 2010 available for both working capital as well as our 2011 capital allocation program was approximately \$2.9 billion.

Now turning to a summary of our 2011 guidance in Capital Allocation Plan. First, we reaffirmed the preliminary 2011 EBITDA guidance range of \$1.75 billion to \$1.95 billion. Second, and as part of our 2011 capital allocation program, we are planning to repurchase \$180 million of common stock, and complete \$240 million of term loan debt repayments and \$39 million for additional facilities, all of which is consistent with NRG's commitment to return excess capital to its stakeholders. Third, in 2011, in addition to the amount deferred from 2010 as a result of extending the cash grant availability, we are currently planning to commit an additional \$640 million of net investment to advance our Repowering and renewable development program, particularly, utility-scale solar.

Now turning to a more detailed review of 2010 adjusted EBITDA result from Slide 21. The company reported near record results of \$2.514 billion adjusted EBITDA, only \$104 million lower than the 2009 adjusted EBITDA of \$2.618 billion. These results were achieved despite the decline in forward prices across all of our regions and clearly benefited from our wholesale generation hedging program and the continued strong performance of Reliant Energy.

During the year, Reliant Energy contributed \$711 million of adjusted EBITDA. Comparatively, these results are lower by \$158 million from 2009 as we overlined for only eight months of that year. The year-on-year decline was driven by an 18% decline in Mass margins, which were the direct result of price reductions enacted following the acquisition, as well as lower margins on customer renewals and

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new customer acquisitions reflective of the competitive market. All told, for 2010, Reliant saw net customer attrition rates improve to 0.4% from 0.7% in 2009 with total customers at year end steady at 1.5 million.

The wholesale business meanwhile generated \$1.8 billion in adjusted EBITDA, \$173 million lower as compared to a record 2009 EBITDA of \$1.976 billion. The comparative year-to-date decline is largely explained by a 32% drop in baseload hedge prices in the Northeast, as well as lower margins in Texas, caused by a 60% increase in fuel costs, due largely to higher coal transportation costs at our WA Parish facility. These results were partially offset by an increase in adjusted EBITDA of \$28 million from the South Central region due to increases in generation and contracted sales.

Also increasing adjusted EBITDA were our newly acquired assets, including Green Mountain Energy, Cottonwood, Northwind Phoenix, South Trent Wind Farm, as well as the full year of operations from the Blythe solar project.

For the fourth quarter, the company reported adjusted EBITDA results of \$444 million, a \$45 million decline versus 2009. Reliant Energy contributed \$117 million of adjusted EBITDA compared to \$104 million for the fourth quarter of 2009. Reliant's quarterly results were favorable \$13 million driven by an improvement in operating costs primarily due to better customer payment habits as related to a decrease in bad debt expense.

In the fourth quarter of 2010, our Wholesale Generation business contributed \$327 million of adjusted EBITDA, a \$58 million decline compared to fourth quarter '09. The change in results can largely be attributed to the following items: In the Northeast region, 35% lower hedge prices and a 25% decrease in generation resulting in a \$57 million decline in energy margins quarter-over-quarter. The decrease in generation was largely a result of coal-to-natural gas switching and offsetting this decline in energy margins were favorable year-on-year operating and maintenance expenses of \$13 million.

In Texas, the 10% decline in generation at the Limestone and WA Parish facilities due to lower power prices and reduced demand led to a 6% decline in overall generation for the region. Offsetting this decline were favorable year-on-year operating expenses of \$17 million that included gain on land sales of \$6 million in 2010.

Now turning to Slide 22. As I mentioned a moment ago, total liquidity at year-end 2010 excluding funds deposited by hedged counterparts remained strong at nearly \$4.252 billion. Total cash stood at \$2.959 billion, an increase of \$653 million as compared to the 2009 year-end cash balance of \$2.3 billion. The drivers of the cash increase included adjusted cash from operations of \$1.76 billion and debt proceeds of \$1.317 billion.

These increases were offset by several items: First, five completed acquisitions totaling about \$1 billion, which included \$507 million for Cottonwood generation station, \$357 million for Green Mountain, \$100 million for Northwind Phoenix, \$32 million for South Trent Wind Farm and for the U.S. solar portfolio, 720 megawatts of development projects in nine states in California and Arizona. Second, debt and fee payments totaling \$813 million, including Term Loan B payments of \$453 million and a repayment of a common stock fund or CSF of \$190 million.

And third, capital expenditures excluding NINA of \$445 million, including \$199 million of maintenance, \$184 million of environmental, primarily related to the Indian River Air Quality Control System project, and \$62 million of growth investments. For the full year, we made cash contributions to NINA totaling \$170 million primarily in the first half of 2010. And finally, we completed share

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repurchases of 8.5 million shares, totaling \$180 million.

Now turning to 2011 guidance on Slide 23. Our EBITDA guidance remains unchanged from our November 24 range of \$1.75 billion to \$1.95 billion. Included in this guidance range are wholesale expectations of \$1.2 billion to \$1.3 billion, retail expectations of \$480 million to \$570 million, and Green Mountain of \$70 million to \$80 million. As Mauricio discussed earlier, we are about 100% hedged on our baseload generation for 2011 and are thus comfortable with our forecasted results.

As we look forward to our Wholesale business in 2012, we are currently in excess 50% hedged with a higher average price in 2011 as indicated in our SEC filings. Due to this position and based on the current forward curves, we expect flat to marginally lower year-on-year wholesale results in 2012 from 2011. These results will be supplemented with adjusted EBITDA of \$85 million from our repowering and solar investments in 2012 that are not subject to market fluctuations.

For our retail business in 2011, our current expectations, assuming normal weather, are an EBITDA range of \$480 million to \$570 million, the decrease in 2011 guidance compared to current 2010 results is largely explained by lower unit margins in Reliant's Mass business. Reliant's C&I business margins are also expected to decline slightly, but be directly offset by higher terawatt-hours served, reflecting our continued dedication to this growing client base in both Texas and PJM.

Finally, we expect Green Mountain Energy to contribute \$70 million to \$80 million of EBITDA. We are very excited about enhancing the growth prospects for our Green Energy Retail business during the process of integrating the business with our growing renewables portfolio to enhance these future growth prospects.

During our Q3 earnings call, we discussed the 2011 free cash flow guidance of \$425 million to \$625 million, and we now currently anticipate free cash flow for 2011 to be in a range of \$150 million to \$350 million. The difference in guidance is largely explained by certain timing of solar projects, due to Congress extending the availability of cash grants for renewable projects through 2011. NRG postponed its large investments in solar projects from 2010 to 2011, resulting in \$267 million of solar expenditures pushed into '11 and relates primarily to our Agua Caliente, Ivanpah and CVSR solar projects.

As we often like to emphasize, we are in a strong cash flow position based on Friday's closing stock price of \$20.89 and our affirmed outlook. Free cash flow before growth yield currently stands at between 16% to 20%, or \$3.36 to \$4.17 per share.

Slide 24 shows the company's projected 2011 year-end cash position which we project to be about \$2.5 billion. Beginning with the portion of the Capital Allocation Plan that includes share repurchases and debt repayments in 2011, the company intends to repurchase \$180 million of common stock, which is within the constraint of the restricted payments basket; repay \$240 million of debt related to our Term Loan B agreement; and approximately \$39 million in other facilities. It's important to note that the company made a Term Loan B prepayment in November that totaled \$200 million.

And finally, complete \$907 million of capital allocation in the following projects: \$50 million in NINA; \$219 million for other Repowering investments including El Segundo, GenConn Middletown, eVgo, Texas Reliability and Princeton Hospital and \$638 million for solar projects, net of cash grant proceeds, and including the \$267 million of deferred payments from 2010.

During the third quarter conference call, I also mentioned that we usually maintain a minimum cash balance of \$700 million largely for working capital margin requirements, the timing of cash payments,

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of interests, property taxes, as well as equity for projects we have under construction throughout the year. Thus, for 2011, we estimate a balance of just over \$1.8 billion to allocate between perhaps additional share repurchases, contingent on the restricted payments basket expansion, further investments of high-growth opportunities and continued opportunistic management of our debt structure.

On January 11, the company issued \$1.2 billion of 7 5/8 senior notes due 2018 and announced the simultaneous cash tender for \$1.2 billion of the outstanding 7 1/4 senior notes due 2014. As of January 25, nearly 945 million bonds have tendered, and the remaining 250 million will be redeemed by the end of February pursuant to the embedded call price. As a result, we've improved our debt maturity profile, all of our public debt matures after 2016, and replace the restricted covenant package with one permitting greater efficiency and flexibility to return value to all NRG stakeholders.

On a go forward basis, we will continue to moderately embed in calls in the 2016 and '17 maturities and be opportunistic about replacing those bonds with less restricted covenant packages, similarly to how we handle the 2014 maturity.

Looking at NRG's combined Repowering and Solar portfolio and our EBITDA contribution on Slide 25, you can clearly see the benefit of the program with nearly \$550 million of recurring contribution by 2015.

During the fourth quarter, our El Segundo Repowering project received prior approval from the California Public Utilities Commission for a ten-year Power Purchase Agreement with Southern California Edison. Commercial operation's expected in the summer of 2013.

Our large utility-scale solar projects will also begin to reach commercial operations between the summer of '13 and the first quarter of 2014, and these projects collectively are driving this EBITDA growth. These solar investments are attractive for their high-teens returns, very low construction risks and offtake agreement of 20-plus years with highly rated counterparties. We will continue to provide updates on the progress of these projects as they move into construction and operation.

As we continue to invest and grow our solar portfolio, it's important to highlight a few economic benefits created with these projects. Slide 26 shows how the combination of cash grant, maker's depreciation and strong cash flows from the PPAs for our projects result in a payback for our investments, in some cases by 2014, and retain stable cash flows for the remaining term of the PPAs.

Though we believe there will be a turnaround in commodity markets, we are mindful of our ability to create enough taxable income for us to fully absorb tax benefits created by these solar investments. There is clearly a limit to how much tax efficiency we could absorb in any one year before reducing the total project returns. As such, to both minimize the tax leakage and enhance our returns, in 2011, we will pursue new equity investors for our solar portfolio, who have both the appetite for tax benefits and seek investment to one of the largest utility-scale solar portfolios in the world. New equity investors would not only help to optimize our existing tax position but allow us to continue to invest in future projects with high returns.

We expect to launch this initiative soon and look forward to sharing the progress in the future. Now I'll pass it back to David for final comments.

David Crane

Thank you, Chris, and thank you, Mauricio. And so in conclusion, on Slide 28, we put what we think

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are some of the value drivers around the investment proposition at NRG. And it starts with the fact that 2 1/2 years into the commodity price down cycle, it appears to us that the end is in sight, the bottom of the trough has been reached, and the only way to go is up. When or how quickly gas prices will recover remains open to conjecture, but the case for rising heat rates in our core market of Texas is clear and compelling. And we've positioned our portfolio and our hedge both to benefit from that upturn.

Second, even in a political environment that has turned more conservative in the past year, market mandates for renewable generation and for solar power in particular, remain well supported in both the red and blue states. And the result for us has been a fast-growing portfolio of projects that will contribute substantially to shareholder value creation over the short to medium-term.

Finally, there's the inherent value unique amongst our peer group of Wholesale generation combined with the leading retail position. While we have executed to such great success in Texas, together with Reliant, we are now in position to replicate with Green Mountain in the fast-growing green and retail energy sector. It's a bright future indeed, and for all of us at NRG, we'll strive to realize its vantage on behalf of the shareholders of NRG.

So Deanna, with that, we'd be happy to take some questions.

Question-and-Answer Session

Operator

[Operator Instructions] The first question will come from the line of Daniel Eggers, Crédit Suisse.

Dan Eggers - Crédit Suisse AG

David, I was just trying to marry up some of the comments made about some of the solar investment opportunities. If I look at Slides 25 and 26, the cash investment and then the earnings contribution you guys show there, is that based on the things that are in hand right now, or is there a assumption of the amount of incremental projects who would have to get signed this year to help get to those numbers?

David Crane

I think what we're showing, Chris, correct me if I'm wrong, is the Tier 1, which are projects, which in my personal estimation are ones that have a 90-plus percent chance of achieving financial closure.

Christian Schade

Yes, that's actually correct, Dan.

Dan Eggers - Crédit Suisse AG

So these are things that are already in place, and this would be less contribution than what you said in your comments earlier, David, about having equity investment and solar greater than what you do see in South Texas ultimately?

David Crane

I'm sorry. Say it again?

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Dan Eggers - Crédit Suisse AG

So this earnings contribution represents an investment less than what you think you can get to from the solar perspective based on your comments earlier in the presentation?

David Crane

I mean there are more projects behind this portfolio.

Dan Eggers - Crédit Suisse AG

When do you see the opportunity this year to announce off projects? And how would you see this sell down equity go as far as changing the earnings contribution profile from these projects? And how much could you sell down, do you think?

Christian Schade

Well, we're going to get to how much we can sell down as we move through the process. But very clearly, any amount we sell down will sort of be a pro rata reduction in EBITDA. And so depending on how much we do, we'll certainly let you know. But we do believe that the sell down will allow us to provide incremental more equity into other projects we have yet to announce. But what David said, we're on the bubble given the benefits from the government largesse, which we think still exist but perhaps will run out in the next couple years. And those projects will also be assumed as sort of returns consistent with what we've seen to date.

Dan Eggers - Crédit Suisse AG

And I guess one last question just on South Texas. David, if you could maybe just -- we go through the numbers as far as how much cash you expect to throw off in the project, and then to clarify that, contribution's based on kind of the pricing you'd need it to be able to receive in order to earn economic return on that project?

David Crane

Well, so you're saying you're -- Dan, you're actually looking forward to 2016 and '17? Yes, I mean, looking at Page 10, I mean, through the first few years, when we've talked about receiving \$500 million of cash, that's based on our view on where gas prices go, which is, obviously, some way up from where they are now, sort of into the \$6 to \$7 range. Having said that, Dan, we've stressed the returns on the nuclear project from an IRR perspective, sort of \$4 gas in perpetuity model. And the IRR in the project, it would still be in double digits, but obviously, the higher gas prices, the better we do. But it works, the numbers work even at a \$4 gas environment. And the reason that is the case, Dan, is because, obviously, the tax benefits associated with nuclear project, particularly, the production tax credits, meaning that through the first several years of the nuclear project, the economics are more driven actually by the tax benefits than they are by the price of electricity.

Dan Eggers - Crédit Suisse AG

Do you see IRR as working in \$4 gas to the equivalent of a mid-30s power price, you would see the plant being economic?

David Crane

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In a \$4 gas, the plant is, yes. I mean, again, it's a low-teen return. I'm not sure that -- it's not the return we're seeking, but it's not a single digit return or a negative return.

Operator

The next question will come from the line of Ameet Thakkar, Bank of America Merrill Lynch.

Ameet Thakkar - BofA Merrill Lynch

Mauricio, you kind of indicated that the path with hedging, despite, I guess, some uptick in heat rates in Texas and you also didn't do much in the way of coal as well. I mean is your expectation that PRB prices should follow gas down? Or are you guys a little bit more neutral on gas at this point?

Mauricio Gutierrez

Well, I mean, if you look at our hedge profile, the next few years, we're pretty well hedged on both sides, so power and coal. We can justify the contango that exists with the coal curve. And given the inventory that we have and the hedge profile, we think that we can weigh to be more opportunistic about when to catch the coal prices. With respect to gas, we continue to see further declines in the front part of the curve, which we've been pretty well insulated. But as I mentioned in my remarks, I mean, I think when you look at 2012 and beyond, and where those price levels are, we see very little downside risk from that. And we think that there are several factors that are converging that could potentially move gas prices, assuming they could be higher than where they are today.

Ameet Thakkar - BofA Merrill Lynch

And then David, real quick on STP. I just want to make sure I understood, I guess, some of your answers to the previous questions. You see returns in kind of the teens area, given the \$4 gas for STP?

David Crane

Yes, so the returns would be in the teens area in the \$4, in perpetuity model. Again, this is based on the idea that we're running a model where there's roughly 1,000 megawatts of power sold by long-term contract, and the rest is taken into the merchant market. So the \$4 gas would apply to the 2,000 in the merchant market. And yes, you're right, what it shows is a return in the teens, in that sensitivity. I would also tell you, Ameet, both in response to your question and I should say to Dan, also, we run this with no value associated to the zero-carbon aspect of it, so the price on carbon directly or indirectly would be on top of this.

Ameet Thakkar - BofA Merrill Lynch

And then so is like the 1,000 megawatts of PPA cover, I guess, under that analysis, is that really kind of the goal to kind of continue to move forward and not exit, I guess, exit land for on Slide 9?

David Crane

Well, Ameet, almost as a -- I mean, from the beginning, I think that we have said to our investor base that we, at least, would not proceed with the project unless there was a significant amount of long-term offtake associated with the project. And so, roughly 1,000 megawatts has been something we talked about from the beginning. On top of that, Ameet, the conditional loan guarantee, if and when it's announced, it's called a conditional loan guarantee because there are conditions associated

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with it. And probably the most substantive condition, the condition we would be focused on is that the government would require us to have approximately that same amount of long-term offtake agreement contracted, which was a condition, again that we were happy to agree with the government on since we had said that we wouldn't go forward with it either. So that's why we would be doing that.

Operator

And the next question will come from the line of Ted Durbin, Goldman Sachs.

Theodore Durbin - Goldman Sachs Group Inc.

If I could just ask a little bit about the capital allocation. You're obviously coming out of 2010 here with a high cash balance. I'm just trying to understand a little bit better the allocation of the capital towards the renewables and whatnot, maybe extending that relative to between cash to stakeholders. Could you just talk a little bit more about that?

Christian Schade

As we said, we're committing to a \$180 million stock repurchase, and that's within the confines of our restrictive payment basket. We're also going to be making required debt repayments under our term loan program, Term Loan B program. We've also earmarked potential investment in our solar projects, and these are projects which we had -- some of which we're announced late last year and early this year and would be subject to the cash grant program under the government. So all of those projects and repowering projects from El Segundo and GenConn Middletown. But those are the programs at least that were part of the capital allocation program for this year. That's what we've announced. We have \$1.8 billion after which we would be able to deploy into additional repowering should they be available and new solar projects that we see on the horizon, as I've said before, all of which offer us the opportunity for very attractive returns.

David Crane

And just to add, Ted, I think you phrased the question almost as if it was an either/or, and I guess that may be a little different. I mean, given the company's free cash flow generation and the cash we have on hand, we haven't really seen it as an either/or. In terms of returning capital to shareholders through the share buyback, we do as much as we can under the restrictive payment basket. Over the past years, we've constantly evaluated whether or not we could negotiate a way to have more room to do more, but the expense of doing that has always made that impractical. So from our perspective, it has not been an either/or decision. It's been do both.

Theodore Durbin - Goldman Sachs Group Inc.

Does that cost of getting the ability to do more of a buyback, you're still seeing that as not worth the expense of getting that?

Christian Schade

That's right. We think the expense to negotiate with the bondholders is being punitive. And as I said in the prepared remarks, the approach that we took on the 2014 maturity to wait for the calls to come due than to call away and refinance was we felt unattractive and a cost-beneficial way to do it. We have calls coming up in February for the 2016 maturity which we'll keep an eye on. The 2017 are not yet callable, will be so within a year. The high-yield market remains very attractive from financing

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perspectives, so we'll continue to look at that closely. But just to further what David said, with the excess cash in addition to the \$180 million as we said, we'll certainly consider future stock repurchases if it can fall within the confines of hedging expansion we see in our restrictive payments basket throughout the year as well.

Theodore Durbin - Goldman Sachs Group Inc.

I appreciate the commentary on sort of the assets side. It sounds like you're not seeing the values on the CCGT side that you were before, but you did do the Cottonwood transaction. Are there other holes in your portfolio, where you say, "Geez, we'd really like to add some mid-merit assets whether it's more in South Central or whatnot?" And kind of talk about where you'd like to build up the portfolio.

David Crane

Well, I think the place where we'd like to build up the portfolio, and again, we've been fairly -- well, it took us six years to execute on the idea that we needed a load following plant in South Central. So just because I say this, I don't want you to think any sort of announcement's around the corner, because I'm actually skeptical that we can achieve anything. But we would definitely like to have some more baseload-following capability in PJM, particularly Eastern PJM. Having said that, we don't have any optimism about anything coming available in that footprint that we would find probably at a reasonable price. But we keep our ear to the ground. I would say that has been our single greatest priority second to backing up Big Cajun, which we've now achieved with Cotton.

Operator

And the next question will come from the line of Jonathan Arnold, Deutsche Bank.

Jonathan Arnold - Deutsche Bank AG

My question is, on STP, you believe the option for the second 10%, the TEPCO would take -- had a May expiration date on it, we recall from the original 8-K. But is there a similar date around the base 10% investment that's contingent on the loan guarantee acceptance? Is May a kind of drop-dead date for that whole arrangement with TEPCO?

David Crane

I don't believe there's a drop-dead date. And John, Tokyo Electric well understands the pace of development. I don't want to speak to them, but I think their enthusiasm for participating in this project is unchanged from when we announced the deal a year ago. So I don't remember any sense of date, but I have a very high level of confidence that if the loan guarantee comes that Tokyo Electric will participate in the project.

Jonathan Arnold - Deutsche Bank AG

And can you also give us a sense of -- well, obviously, your contribution is relatively small over this '11, '12 period. What would the \$25 million in '12 be absent additional sell downs? And maybe some kind of sense of how much is actually being spent on the project itself during this next couple of years.

Christian Schade

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Well, what it would be without the sell down, I'll have to get back to you on that. The amount of money that has to be invested towards in order for us to proceed is it's several hundred million dollars. But Jonathan, it's really hard to put it in those terms. Because like a good portion of it is long lead time materials in Japan which are actually funded with the credit facility from Toshiba. So maybe we can break out and provide it to you or do it next quarter. Just the development spend for now, in order for us to proceed against the sources of capital, because it's really not useful if you look at it as one-lump sum, because various things are paid for with different buckets of money.

Jonathan Arnold - Deutsche Bank AG

And if I may just on one other topic, what indications are you getting from DOE on these discussions at a level of hedging through PPAs that would be acceptable to them on the project?

David Crane

Well, I think that the condition is very specific. And I think back, it's the same as I answered to Ameet. It's something just less than 1,000 megawatts.

Operator

The next question will come from the line of Jay Dobson, Wunderlich Securities.

James Dobson - Wunderlich Securities Inc.

I was hoping you could give us some insight into the offtake discussions. The local media's covered some interesting transactions, or at least, proposals that you had. So I'm just wondering if you can give us some insight into where things stand and sort of what your level of optimism is currently.

David Crane

It's a good question, and I think what I would say without -- I mean, it's difficult to comment with discussions that are underway. And in fact, normally, we don't comment on it but since as you said, there's been discussions by the public, I guess I should say some things. I would say, first of all, I think there's an openness, a willingness, and interest on several load-serving entities, large load-serving entities in the Texas market to talk about long-term offtake. And I would also say that the events of early February in Texas, where a part of the reason the state had rolling brownouts or even blackouts is because people couldn't get gas to some power plants, I think has reinforced the idea that having fuel diversity in the state is something that load-serving entities want to have. So there's a fairly high level of interest from various parties, but the big qualifier I always put on this question is, right now, as you say, it's really discussions. I mean, the project isn't really real to off-takers until we have a loan guarantee. So I would describe anything that we're doing with any counterparty at this point is being preliminary. And so that's what I would tell you. And based on what we're being told by the camp, their interest level, I'm guardedly optimistic. But mainly, my main attitude towards all this is, let's wait and see what happens when the loan guarantee's announced, because that's when ourselves and our counterparties are going to have to get down to business, and people are going to have to make commitments on both sides. So that's the main thing, and what we're trying to empathize here is that, that phase, and hopefully that phase will begin within the coming weeks, is something that basically needs to be resolved by the summer so that we can all have clarity as within the company and U.S. investors and analysts as to where we stand vis-à-vis this project.

James Dobson - Wunderlich Securities Inc.

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As an unrelated follow-up, on the solar side, I'm not sure if this is good for your or for Chris. I assume in addition to selling an equity stake, you'd consider selling a tax equity there, and how do you consider those two alternatives?

Christian Schade

Yes, very much so. I think the equity stake that we are contemplating is tax equity, it's a structuring issue. But we're certainly looking to pass off the tax attributes that are generated from this portfolio to tax equity investors. I think, one thing as a follow-up to a question before is that we'd certainly be looking to sell this equity at a premium. The returns that we're seeing perhaps from these investors are below the expected returns that we see in the high-teens, and so that sort of premium or IRR arbitrage gain will certainly benefit us in having development premium for this. But our goal here both is to bring equity into these projects and also, to lay off some of the tax that perhaps, does not necessarily accrue to NRG.

James Dobson - Wunderlich Securities Inc.

And Chris just a last follow-up, the capacity of the RP basket at year end?

Christian Schade

It was about \$160 million. So the \$180 million that we announced today will be spread out for a couple of quarters.

Operator

The next question will come from the line of Brandon Blossman, Tudor, Pickering Holt & Co.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

I guess just a follow-up on the tax equity question, probably for Chris. Just to be clear, is the tax equity partner or sell down required to optimize the tax benefits of the current solar portfolio, or is that something you need to do to increase the size of that portfolio?

Christian Schade

I think it's not necessarily required. I think it benefits the returns of the portfolio and allows us to continue to invest in the space. As David said, we're seeing a lot of opportunities elsewhere, and I think when we start to layer on other utility-sized projects in addition to what we have, there is a limit to the capacity of tax attributes that we can assume. So we think it's important. We're seeing a lot of interest and opportunities to invest in this space by sort of nontraditional investors who want to get green, and so we think it's a big opportunity for us, who are certain taxpayers as well. So it's for us to check a lot of boxes along the way. First and foremost to optimize our tax position in appropriate years, as well as to allow us to continue to invest in the space.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And how does that dovetail with STP's tax attributes? Is that far enough out so that there's no overlap here or concerns about maximizing that value?

Christian Schade

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It is far enough out that we're not perspiring about the tax attributes that it generates. But certainly, it's a topic that we will address at due time. And also, would speak to our underlying business that we hope and certainly think will grow enough to burn through these NOLs and to continue to generate the taxable asset side in those years. So we're confident of that.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And David, as a follow up, not that anyone wants this to happen, but if there is an exit ramp for STP, can you describe what that looks like? Is there a project to be had at some point in the future, given that this is a particularly attractive development project?

David Crane

Well, Brandon, I guess, what I would say, on a few fronts. I mean it sort of depends on which exit ramp you're talking about. And I'm just speculating on things which of course, we don't hope to happen. I mean from my perspective, I think if something happens during this year that caused the entire project to go away, we would probably finish the licensing process, which is a small fraction of the overall development spend. But we're so far along with the NRC that to stop it this close to the end would not make sense. But beyond that, would the project go forward? I think it depends on which exit ramp it is. And again, I don't mean to speak for the other partners, because I want to emphasize every NRG investor on the call. We do not have the right to kill the STP 3 & 4 project. We just have the right to stop our own financial contribution to it. But I would say, if the exit ramp is that, actually it turns out that there is no loan guarantee in the offing -- I haven't actually asked this question directly, but I think our partners in Japan -- and we would be aligned that there would be, that the project would stop if there's no hope of a federal loan guarantee. If on the other hand, there was a federal loan guarantee, but we were taking the exit ramp because we were unable to lineup the offtake, I don't know what our partners would do in that circumstance. Maybe they would continue with the project, that would be their prerogative to do. I just know that if we don't have that offtake arrangement, then we will stop funding.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And that would be not the 1,000 megawatts, but isn't that predicated on the loan guarantee or the loan guarantee predicated on the 1,000 megawatts?

David Crane

It is, but one of the reasons why I don't know -- I don't remember the exact terms, the exact words of the conditional loan guarantee, but I know that we do not have the opportunity at NRG to solve for the offtake arrangement, because I think the condition is offtake agreements with investment grade offtakers. Our Japanese partners who are investment grade would have that opportunity should they so choose to correct that on their own. We don't have that type of power, so that's not a question for us.

Operator

The next question will come from the line of Brian Chin, Citigroup.

Brian Chin - Citigroup Inc

What's the rough range of construction cost estimates in dollar per KW for the solar PV facilities that

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you are seeing, and also for the solar thermal side?

Christian Schade

The range, well, I think we would say that the range right now is 3,500 to 4,000 per KW, and I don't know, that would be for the PV -- I can't tell you -- the solar thermal would probably be in the same range.

Brian Chin - Citigroup Inc

And then would it be fair to say that \$4 sustaining perpetual natural gas price environment that you'd still see solar generating returns in the double digits as well? And is it higher or lower than nuclear?

David Crane

Well, we haven't compared them side-by-side. I think it's fair to say that like nuclear, the solar projects, at this point, the economics are very heavily driven by the tax benefits. But beyond that, the real difference between the two is that every solar project we're doing is completely not merchant. It's totally PPA. So I don't think -- in fact, when we talk about taking the company's financial performance and sort of de-linking it to natural gas prices, we put renewables together with retail in parts of our EBITDA stream that are not associated with natural gas prices, because of the fact that all of the economics are derived from long-term PPAs.

Brian Chin - Citigroup Inc

Can you talk just a little bit about from your perspective, what the FERC's order in the New York ISO and the capacity market situation up there? What's changed longer-term, and how much of a positive is that for you guys, or is that even material?

Mauricio Gutierrez

Well, I mean it's definitely material. It's difficult to say what is the ultimate impact, because I think the variables are still being flushed out. But the three main changes was the recognition of state taxes and the cost of new entry calculation, inter-connection costs and then the energy offsets. So when you put those three together, you basically have higher cost of new entry, which will push capacity prices for both New York City and the whole state. This will benefit our New York portfolio, but at this point I can't give you the specific mind into it.

Operator

And the next question will come from the line of Anthony Crowdell, Jefferies.

Anthony Crowdell - Jefferies & Co

Just a quick question on the, I guess, the cold stub that hit Texas earlier this month. And it seem like there wasn't much of an impact on the generation side, but was there any impact to the margins that Reliant expected or anything on the quarter?

Jason Few

This is Jason. From the retail side, we actually, fared fairly well through this event. I mean, our hedging strategy and risk policies served as well during the event. We did not see material impact to

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our business.

Operator

In interest of time, we have time for two more callers. And the next question will come from the line of Charles Fishman, Pritchard Capital Partners.

Charles Fishman - Pritchard Capital Partners, LLC

Your five-year environmental capital plan, Page 17, I want to make sure I understand this. The \$720 million includes your view of what the math might be, which is less than worst-case, number one. And number two is there are no dollars in the \$720 million to address once thru cooling. Is that correct?

David Crane

No, actually, there is some dollars for 316(b) through the installation of extremes. We've been very successful in New York, in Arthur Kill and Huntley and Dunkirk to address this issue. So while it addresses the Mercury and asymmetric controls across all our coal assets, it also addresses the 316(b).

Charles Fishman - Pritchard Capital Partners, LLC

And if we do end up with the worst case math, I mean could this number increase 50%? Or do you have any feel for that?

Mauricio Gutierrez

Well, we actually disclosed that on our last earnings call. And I believe it's about \$1 billion -- just shy of \$1 billion. If it was the worst case scenario, in terms of unit-specific controls, no averaging. And we just don't believe the EPA will go that route. But the rule is going to come out, the proposal is going to come out in about a month, and I think it's just prudent to wait before we make any changes.

Operator

And there are no more questions in queue at this time.

David Crane

Okay, well, good. Well, thank you all very much, and we look forward to talking to you in the next quarter. Thank you, operator.

Operator

And ladies and gentlemen, this concludes today's presentation. Thank you very much for your participation. You may now disconnect, and have a great day.

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Executives

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Christian Schade - Chief Financial Officer and Executive Vice President

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Nahla Azmy - Vice President of Investor Relations

Jason Few - SVP of Mass Markets and Operations, Reliant Energy, Inc.

Analysts

Anthony Crowdell - Jefferies & Co

Dan Eggers - Crédit Suisse AG

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

Charles Fishman - Pritchard Capital Partners, LLC

Jonathan Arnold - Deutsche Bank AG

Ameet Thakkar - BofA Merrill Lynch

Theodore Durbin - Goldman Sachs Group Inc.

James Dobson - Wunderlich Securities Inc.

Brian Chin - Citigroup Inc

NRG Energy (NRG) Q4 2010 Earnings Call February 22, 2011 9:00 AM ET

Operator

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Good day, ladies and gentlemen, and welcome to the Fourth Quarter and Full Year 2010 NRG Energy Earnings Conference Call. My name is Deanna, and I'll be your operator for today. [Operator Instructions] And I would now like to turn the call over to your host for today, Ms. Nahla Azmy, Senior Vice President of Investor Relations. Please proceed.

Nahla Azmy - Vice President of Investor Relations

Thank you, Deanna. Good morning, and welcome to our Fourth Quarter and Full Year 2010 Earnings Call.

This call is being broadcast live over the phone and from our website at www.nrgenergy.com. You can access the call presentation and press release through a link on the Investor Relations page of our website. A replay of the call will also be available on our website. This call, including the formal presentation and the question-and-answer session, will be limited to one hour. In the interest of time, we ask that you please limit yourself to one question with just one follow-up.

And now for the obligatory Safe Harbor statement. During the course of this morning's presentation, management will reiterate forward-looking statements made in today's press release regarding future events and financial performance. These forward-looking statements are subject to material risks and uncertainties that could cause actual results to differ materially from those in the forward-looking statements. We caution you to consider the important risk factors contained in our press release and other filings with the SEC that could cause actual results to differ materially from those in the forward-looking statements in the press release and this conference call.

In addition, please note that the date of this conference call is February 22, 2011, and any forward-looking statements that we make today are based on assumptions that we believe to be reasonable as of this date. We undertake no obligation to update these statements as the result of future events except as required by law.

During this morning's call, we will refer to both GAAP and non-GAAP financial measures of the company's operating financial results. For complete information regarding our non-GAAP financial information, the most directly comparable GAAP measures and a quantitative reconciliation of those figures, please refer to today's press release and this presentation.

And now with that, I'd like to turn the call over to David Crane, NRG's President and Chief Executive Officer.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Thank you, Nahla, and good morning, everyone, and welcome to our year-end 2010 earnings call. Today, with me, and participating in the presentation is Mauricio Gutierrez, the company's Chief Operating Officer; and Chris Schade, the company's Chief Financial Officer. Also with me today and available to answer questions are Jason Few, who runs NRG's retail company, Reliant; and Chris Moser, who runs the commercial operations function for this company.

So without further ado, to begin -- so ladies and gentlemen, current and perspective shareholders of NRG, as we speak today, it's now been 32 months since natural gas prices began their relentless fall and the economy at large entered into a great recession, the likes of which, I'm sure none of us wish to experience again in our lifetimes, yet the financial performance of NRG during this period has been superb. And that financial performance has been built on the foundation of an equally exceptional

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operating performance across all phases of our operations and across all our regions.

In 2010, the second full year of the great recession, our financial performance surpassed all previous years of company results, save for fiscal year 2009, which was of course the first year of the great recession, a year in which we performed spectacularly, achieving both record financial performance and the acquisition of Reliant.

While I am, for the most part, extremely pleased with both the company's financial and its operating performance during 2010, I am acutely mindful of the fact that NRG shareholders did not see any of the benefits of our exceptional performance and share price appreciation during that year. As a management team, we recognize that we have a long way to go in presenting NRG's present value and future potential to the market.

In this presentation and in subsequent presentations that Mauricio, Chris and I will be making during the spring Investor Relations season, we intend to make a concerted effort to explain the NRG value proposition. From the competitive strength of our core businesses, even in a low commodity price environment, to the meaningful and measurable value of our growth opportunities, as well as our effective risk mitigation in areas which we believe to be of concern to the investment community.

So starting with 2010, as summarized on Slide 3, the company continued to generate a very high level of EBITDA in excess of \$2.5 billion and also throw off a substantial amount of free cash flow. Indeed, in regard to what should perhaps be the most important metric to shareholders, free cash flow yield, our free cash flow yield for 2010 was a robust 29%, making our seven-year average exceed 23%. And in response to some people who said that we should measure free cash flow for these purposes after both maintenance and environmental CapEx, we have done it in that way but before growth CapEx.

A substantial amount of that free cash flow yield was redeployed back to stakeholders in the form of debt repayment and through our 2010 share buyback program and also into various growth initiatives, which we'll discuss in a minute. But over \$650 million of excess free cash flow was returned as cash into the company's coffers, with the result being that our liquidity position at the end of 2010, \$4.3 billion of total liquidity with \$3 billion of cash on hand, is stronger than it has ever been.

It has always been my position that next to safety, the most important thing that we do as executive management at NRG is capital allocation, and given the amount that we are investing on an annual basis and the record amount that we currently have available either to invest in growth or to return to our equity and debt stakeholders, capital allocation has never been more important than it is now. As such, I'm going to focus the greater part of my remaining remarks on capital, which we expect to invest in our growth initiatives in the months and years to come. Chris will focus a good deal of his comments on capital to be returned to stakeholders.

In terms of the allocation of capital to our growth initiatives, it's important to start with the obvious point that we want to invest the company's capital in assets and initiatives that not only are likely to yield a return significantly in excess of our risk-adjusted weighted average cost of capital, but also in businesses and initiatives which advance the company's strategy.

As depicted on Slide 4, the company's long-term strategy for some time has been twin-tracked. First, to strengthen and enhance our generation to retail business in our core markets through superior operating performance, continued implementation of our first-lean-enabled, long-term hedging program and pursuit of both select acquisitions and the repowering of our older facilities with advantage locations inside load pockets in our core markets. This comply of our strategy which we

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have pursued with relentless consistency and a high degree of effectiveness for the past five years was joined a couple years ago with a supplemental strategy that is overtly green and designed to take advantage of the societal trend towards sustainability.

This sustainability trend is, in our opinion, about to accelerate as a result of the emergence of various consumer-oriented disruptive technologies, which will make green energy at the consumer level the focal point of sustainability. We made considerable progress on both strategic fronts during 2010, with substantial advances across every facet of our sustainability initiative.

From our rollout of our eVgo network in Houston, which is centered around an innovative fueling package in approach to electric vehicle infrastructure that is already being replicated in other locations through the smart meter e-Sense applications now being sold by Reliant in quantity, to our unique approach to CCS/EOR being funded in collaboration with the DOE at our Parish facility in Texas. All of these initiatives are exciting and off to a good start. All will, I am confident, return considerable value to NRG to shareholders in the medium term.

You will hear more about these initiatives in the future but not today, because today, consistent with my theme, I want to concentrate my comments on the growth initiatives which are more immediate and which are key priorities for deployment of your investment capital during 2011. This is shown on Slide 6.

By way of background, in 2010, we committed substantial growth capital in four general areas: Zero carbon renewables, with an emphasis on solar; new advanced nuclear development; conventional gas-fired acquisitions and repowerings; and green retail acquisitions in the form of Green Mountain Energy. All four are likely to be areas of additional capital expenditure in 2011 but with very different investment profiles from 2010.

First, we expect an acceleration and significant expansion in our equity capital invested in high-growth, high-return solar projects. At the greater part of our utility scale, solar portfolio should achieve financial close and enter the construction phase during 2011.

Second, investment in conventional generation assets should be relatively flat year-on-year, as spending on GenConn and Cottonwood should give way to spending on El Segundo, but conventional CapEx could increase depending on our development success at Astoria, Saguaro or Encina and also, whether we find any strategic assets that can be acquired at value.

Third, capital invested in green retail should drop precipitously as obviously the big expenditure in this area in 2010 with the acquisition of Green Mountain. The amount of capital that we will be investing in and around Green Mountains business in 2011 or to expand into new geographic markets, bigger customers segments and new complimentary green product offerings is fairly minimal.

And finally, and similarly and perhaps, contrary to popular investor belief, even if the STP nuclear development project stays on course, the development capital projected to be required of NRG in 2011 will be far less than half of what we invested in 2010 and will be a mere fraction of what we will be investing in solar projects and other capital allocation alternatives.

So this is a lot to digest, so let's go through a little bit more slowly, starting on Slide 7 with Green Mountain. Four months ago, we paid \$357 million for a business that we expect to contribute \$70 million, \$80 million of EBITDA in 2011, plus, we expect Green Mountain to continue to deliver on a 20-plus percent compound annual growth rate trajectory that they have delivered for the past decade. But we didn't acquire Green Mountain just to continue with business as usual. We wanted to take

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advantage, and we wanted them to take advantage of what we believe are very substantial synergies between Green Mountain and NRG.

Essentially, we want Green Mountain to accelerate the depth and breadth of their growth in close cooperation with us on the same path that they were following on their own, which means expansion into a high retail price Northeast markets, where they start with a natural green-leaning constituency, also, expansion into the larger Commercial segment of the C&I market than they have previously sought to access. And finally, expansion of their value-added product offerings to include distributed green generation.

It's early days yet, but on at least the first two of these, they are already beginning to bear fruit. Green Mountain has established a small but fast-growing footprint in New York Zone J, and in terms of larger C&I customers, they have won landmark business like the Empire State Building. We expect to be reporting on these and many more successes from and with Green Mountain as the year progresses.

Turning to conventional generation on Slide 8. 2010 was an uneven year, with the successful acquisition of Cottonwood and the repowering at Devon and Middletown, balanced by the missed opportunities surrounding Dynegy's California asset. Cottonwood and Devon have been smoothly integrated into our South Central and NEPOOL lineups respectively, and we are very pleased with the results today.

Looking forward to 2011, we're very focused on the successful repowering of El Segundo, an advantage which we hope to derive from having a modern, fast-start, low-heat rate, combined-cycle plant inside the Los Angeles basin load pocket. Beyond El Segundo, we hope to make progress on similar repowering efforts at Astoria in New York City and Encina in San Diego County. Beyond our own Repowering pipeline, the capital we deploy in the acquisition of conventional power plants, obviously, will depend on market conditions and asset availability in our core regions.

While the acquisition market is lumpy, generalities are difficult and predictions are often proved wrong, the optimism I once held at the first half of 2011 would be a buyer's market for CCGTs in the United States has largely dissipated. I see no sign of a flood of assets on the market and the combined cycle of transactions which have been announced recently have been priced at levels significantly above what we could justify to ourselves or explain to our shareholders.

With respect to our nuclear project, while important steps forward have occurred in several areas since our last earnings call, very little of it can be seen with the naked eye. As before, really all critical aspects of the STP 3 & 4 project run off of our receipt of an acceptable conditional loan guarantee from the government. Certainly, it is a challenge for us to complete meaningful discussions about PPAs with potential off-takers, while the loan guarantee application remains pending.

So our exit ramp analysis, which is set forth on Slide 9, remains largely unchanged from the previous quarter. Likewise, our viewpoint with respect to NRG's continued participation in the project remains at the most challenging of these hurdles, which is the long-term off-take requirement, effectively needs to be addressed no later than the third quarter of 2011 before the project enters the substantial pre-construction phase.

As such, we reiterate the view which is clearly articulated in both our 10-K and in today's earnings release, that NRG will be in a position by late this summer to make a final decision on our continued financial participation in this project. At that point, the market should have substantially greater clarity about the prospects for this project and NRG's role in it.

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While we understand that there is skepticism amongst some investors that the project can go forward in the current low gas price environment, we nonetheless, believe it might be helpful to you for us to outline as shown on Slide 10 the future capital commitment of NRG in respect to this project, should it stay on track, with NRG continuing to support it financially.

The overall message is that due to a combination of first, the very substantial sum that NRG has previously committed to the project development, particularly during the first half of 2010 after the settlement with CPS. Second, taking into account our expectation of an optimal hold amount in the project for NRG of approximately 40%, which is down from the 67% that we will own if and when TEPCO invests in a project post-loan guarantee award. And third, due to the value ascribed to NRG for its contribution of the site, NRG's cash commitment to the project going forward is less than what otherwise would be suggested by our projected ownership level.

In summary, should the project proceed to financial closing, the total cash commitment for NRG at our 40% hold level should be something just short of \$800 million in aggregate, including cash invested to date. Beyond that, we are likely to have an LC commitment to a standby equity crossover line facility that will be fixed. And while that number has not yet been finally fixed, you should be thinking in the range of a few hundred million dollars maximum.

In exchange for this size investment in STP 3 & 4, we expect cash flow from dividends and tax benefits in the range of \$500 million a year for the first several years of operations. Obviously, this is a very attractive return but one which we believe is well justified given the extraordinary challenges of the undertaking.

Now pulling it back from where we hope the project will be in 2016 or 2017 to where we are here in the first quarter of 2011, you should be focused on what happens after announcements of acceptance of the loan guarantee. As the loan guarantee acceptance naturally will trigger certain funding obligations from our partners, NRG's share of cash development spent for the remainder of the development phase should approximate \$50 million for all of 2011 and half that for 2012.

While our perspective 2011, 2012 development standard is perhaps substantially less than many in the market were anticipating, it remains a lot of money to us, and we're taking very seriously our commitment to retain our financial discipline around this project and prevent exposure of our balance sheet beyond the specific commitments that I've outlined in this presentation.

Now turning to Slide 11, last but certainly not least, there is the solar pipeline. I've said many times, and I'll repeat here, that in my 20 years in this business, I had never seen investment opportunities in this sector that offer more attractive combination of high returns, low construction risks, long-term PPAs and repeatable business opportunities than the utility-sized solar projects that we currently have in our advanced development portfolio.

As such, we intend to do as much of this business as we can get our hands on, with the result being that by the end of this year, we may well have a total initial equity investment in our solar portfolio that exceeds the total amount that we may ever invest in STP 3 & 4 at very attractive near-term returns. The limiting item for us in terms of these solar investments is our ability on our own to make optimal use of the considerable tax benefits which will be generated by these projects. This is a topic that Chris Schade will discuss in a few minutes.

What I will end by saying is that this extraordinary pipeline of utility-sized solar projects, which our colleagues at NRG Solar have managed to develop or acquire, provides us with a truly unique

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opportunity to develop over the next few years a solar portfolio of true scale and significant benefit, even in the context of the larger portfolio of NRG.

Ultimately, however, we fully recognize that the current generation of utility-sized solar and wind projects in the United States is largely enabled by favorable government policies and financial assistance. It seems likely that much of that special assistance is going to be phased out over the next few years, leaving renewable technologies to fend for themselves in the open market.

We do not believe that this will be the end of the flourishing market for solar generation. We do believe it will lead to a stronger and more accelerated transition from an industry that is currently biased towards utility-sized solar plants to one that's focused more on distributed and even residential solar solutions on rooftops and in parking lots.

We are already planning for this transition now within NRG, so that any potential decline in either the availability of utility-sized solar projects or in the attractiveness of the returns being realized on these projects, will be exceeded in aggregate by the increase in the business we are doing on smaller distributed and residential solar projects through our Green Mountain and even our Reliant retail sales channel.

With that, I'll turn it over to Mauricio.

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Thank you, David, and good morning, everyone. NRG continued its strong operating and commercial performance during the fourth quarter, making 2010 one of NRG's best years. Slide 13 highlights a few of the key accomplishments achieved in 2010.

Starting with safety, we're particularly pleased with our record performance this year. Our OSHA recordable rate improved 26% over 2009. Our top performance remained strong with 90% availability of our baseload fleet, just shy of our 2009 level. This performance was achieved despite a forced outage event on our STP nuclear plant in November, which I will cover in more detail in the next slide.

On the environmental front, we delivered our second best year, and our FORNRG program far exceeded our 2010 goal. As I mentioned to you on our last call, controlling our cost is a priority, given the challenging economic environment our industry is facing.

Our Commercial Operations Group increased our hedge levels in 2011 and continues to look for opportunities to catch the odd years of favorable prices. We successfully transitioned to the Nodal Market in ERCOT and began integrating Green Mountain Energy and the Cottonwood combined cycle plant into our portfolio.

With respect to our projects under construction, the Indian River Unit 4 environmental back-end control project continues to be on track and on budget to be operational by January 2012. Our Middletown project in Connecticut received all major equipments in the fourth quarter and continues to be on schedule for operation this summer. Finally, the El Segundo Energy Center completed aboveground demolition of two existing units and secured major equipment orders. El Segundo is on track to be operational by the summer of 2013.

Turning to our plant performance metrics on Slide 14. Safety continues to be our number one priority. We are very proud to report that we achieved top decile in the industry, making 2010 our best OSHA

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recordable year. We have 25 sites with no injuries and nine sites certified or recertified as OSHA VPP Star worksites.

Net generation decreased by 6% in the fourth quarter due to mild weather across Texas and a 22-day on-plan outage at STP Unit 2 during the month of November. The forced outage event was the result of a breaker failure during routine testing and was extended to repair a reactor coolant pump seal. In order to prevent recurrence, similar electric components were checked in both units. Unit 2 has operated without any issues since it was brought back to service on November 26.

For the full year, net generation was flat from 2009 levels. Increased generation in the Northeast and South Central regions driven by the strong summer weather and the addition of Cottonwood, were offset by lower generation in California and Texas.

For 2010, our coal fleet availability finished the year above the sub-quarter performance level for the industry. WA Parish led the fleet with 92.6% availability factor, and Limestone had the best reliability for the year, with a 1.6% forced outage rate.

Our FORNRG 2.0 program exceeded the 2010 goal by \$49 million, and it is on track to achieve our goal of \$150 million by 2011, one year earlier than planned. Savings were achieved through a combination of reliability, capacity and efficiency improvements at generating assets and cost savings across our corporate and regional groups.

Turning to our retail operations on Slide 15, we closed out the year with another strong quarter. Volumes and margins were consistent with our forecast, while Operations delivered better-than-expected asset management and lower operational costs.

The Mass segment continues to drive segment improvement in net customer attrition with a 57% reduction in the fourth quarter versus 2009. This result was driven by marketing, sales and introduction of innovative products to meet our customer needs.

In 2010, we led Texas in innovation, enrolling over 175,000 customers on our Reliant e-Sense product and services that utilize smart grid technology. We also introduced new and unique offers like carbon-state [ph] and home protection products, adding not only incremental EBITDA but increased customer stickiness.

We continue to maintain the lowest PUC customer complaint rate while balancing customer counterpricing. Throughout 2010, we aligned to successfully demonstrate that we have stabilized customer attrition and expect to achieve zero net attrition in 2011.

In the C&I segment, both renewal and new deal win rates continue to improve. We have expanded our business in several Northeast states where we can leverage existing energy assets and increase product offerings to include products such as backlog generation. These provides a solid platform to grow our business in 2011.

Business continues to show some fundamentals as you can see on Slide 16. Weather-normalized demand grew by 2% year-on-year and ERCOT set a new winter peak low of 57 kilowatts in February, an increase of almost 2.5% from the previous record. I'd like to take this opportunity to address the events in Texas on February 2.

The men and women of NRG Texas worked very hard to help meet the high demand for electricity due to the extreme cold conditions, increasing our generation by more than 60% from the previous

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day. Although we had some operational issues, of the approximately 9,500 megawatts of power we had available in Texas during the low-shed event, we maintained between 97% and 91% of that capacity online. I want to thank all our employees in Texas for their dedication and extraordinary efforts during these events.

Now moving on to reserve volumes in ERCOT, we see a positive feature of our generation portfolio with reserved margins tightening faster than expected. This is to some extent reflected in the forward heat rates, as you can see on the chart on the lower right-hand quarter. We believe this trend will continue, given the robust growth and the expectation that asset retirement will outpace new builds. We have not seen as much coal-to-gas switching in Texas as we have in the Northeast and Southeast regions. In fact, cash generation was down year-on-year due to increases in new coal and wind generation in Texas.

In the Northeast, the back-end market continues to make some news. In New York, the recent FERC order to increase cost of new entry should provide a boost to capacity prices in New York City and rest of state, benefiting our New York portfolio. In PJM, prices remain uncertain until more clarity is given around the minimum offer price rule, the subsidized generation in New Jersey and Maryland and review demand outlook.

Moving on to Slide 17, you can see our detailed plan to control air emissions for each of our coal plants. As stated in our last earnings call, our plan is to invest approximately \$720 million through 2015 in environmental projects tailored to comply with future regulations.

Just to remind everyone, the proposed CAIR rule does not require additional capital for compliance. The HAP MACT proposed rule should be released in mid-March, and as you can see in the table, our plant considers mercury controls on all our coal units.

Intake modifications and repowering are expected to meet once for cooling requirements. We only have dry fly ash disposals at our all coal facilities. And finally, in most of our facilities, we burn low sulfur, low chlorine PRB coal.

Moving on to our hedge profile and commodity sensitivities on Slide 18. Our baseload portfolio is now 100% hedged in 2011 and 50% hedged in 2012, providing the protection in the short term where gas prices continue to be weaker given the oversupply situation. Beyond 2012, we choose to remain significantly open.

After two years of low gas prices, we believe the downside risk is limited. Our combination of incremental demand from the power sector, particularly in light of possible coal plant retirements, some signs of the interest rate by producers, indication that drilling to home acreage may be ending, and a move from dry to wet gas production will provide better opportunities to catch our baseload portfolio in the future.

With respect to retail, we have increased our pipe load to 66% in 2011 from 57% in the third quarter. We continue to match as much generation load as possible to start maximum synergies between our retail and wholesale portfolios.

Our power and coal hedges continue to be well managed in 2011 and 2012. Given the shape of the coal curve and steep contango, we have not added any additional occasions since the last quarter. We also remain well hedged in terms of coal transportation now for some time.

Our sensitivity to commodity prices is agreeable for 2011, with 2012 to 2015 largely unchanged from

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last quarter. Let me remind you that this sensitivity is around our baseload portfolio. Interest expense, our portfolio is well-positioned to benefit, particularly, in the Texas and South Central regions.

With that, I will turn it over to Chris who will discuss our financial results.

Christian Schade - Chief Financial Officer and Executive Vice President

Thank you, Mauricio, and good morning. Beginning with the financial summary on Slide 20, full-year 2010 adjusted EBITDA was \$2.514 billion, just shy of the record 2009 adjusted EBITDA of \$2.618 billion and within our previously stated guidance of \$2.5 billion to \$2.55 billion. As a result of our continued strong operating performance, adjusted cash flow from operations for 2010 was robust at \$1.76 billion.

The company's liquidity position at year end, excluding funds deposited by counterparties, stood at nearly \$4.3 billion, a \$458 million increase from December 31, 2009, liquidity of approximately \$3.8 billion. Our cash balance at year end 2010 available for both working capital as well as our 2011 capital allocation program was approximately \$2.9 billion.

Now turning to a summary of our 2011 guidance in Capital Allocation Plan. First, we reaffirmed the preliminary 2011 EBITDA guidance range of \$1.75 billion to \$1.95 billion. Second, and as part of our 2011 capital allocation program, we are planning to repurchase \$180 million of common stock, and complete \$240 million of term loan debt repayments and \$39 million for additional facilities, all of which is consistent with NRG's commitment to return excess capital to its stakeholders. Third, in 2011, in addition to the amount deferred from 2010 as a result of extending the cash grant availability, we are currently planning to commit an additional \$640 million of net investment to advance our Repowering and renewable development program, particularly, utility-scale solar.

Now turning to a more detailed review of 2010 adjusted EBITDA result from Slide 21. The company reported near record results of \$2.514 billion adjusted EBITDA, only \$104 million lower than the 2009 adjusted EBITDA of \$2.618 billion. These results were achieved despite the decline in forward prices across all of our regions and clearly benefited from our wholesale generation hedging program and the continued strong performance of Reliant Energy.

During the year, Reliant Energy contributed \$711 million of adjusted EBITDA. Comparatively, these results are lower by \$158 million from 2009 as we overlined for only eight months of that year. The year-on-year decline was driven by an 18% decline in Mass margins, which were the direct result of price reductions enacted following the acquisition, as well as lower margins on customer renewals and new customer acquisitions reflective of the competitive market. All told, for 2010, Reliant saw net customer attrition rates improve to 0.4% from 0.7% in 2009 with total customers at year end steady at 1.5 million.

The wholesale business meanwhile generated \$1.8 billion in adjusted EBITDA, \$173 million lower as compared to a record 2009 EBITDA of \$1.976 billion. The comparative year-to-date decline is largely explained by a 32% drop in baseload hedge prices in the Northeast, as well as lower margins in Texas, caused by a 60% increase in fuel costs, due largely to higher coal transportation costs at our WA Parish facility. These results were partially offset by an increase in adjusted EBITDA of \$28 million from the South Central region due to increases in generation and contracted sales.

Also increasing adjusted EBITDA were our newly acquired assets, including Green Mountain Energy, Cottonwood, Northwind Phoenix, South Trent Wind Farm, as well as the full year of operations from the Blythe solar project.

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For the fourth quarter, the company reported adjusted EBITDA results of \$444 million, a \$45 million decline versus 2009. Reliant Energy contributed \$117 million of adjusted EBITDA compared to \$104 million for the fourth quarter of 2009. Reliant's quarterly results were favorable \$13 million driven by an improvement in operating costs primarily due to better customer payment habits as related to a decrease in bad debt expense.

In the fourth quarter of 2010, our Wholesale Generation business contributed \$327 million of adjusted EBITDA, a \$58 million decline compared to fourth quarter '09. The change in results can largely be attributed to the following items: In the Northeast region, 35% lower hedge prices and a 25% decrease in generation resulting in a \$57 million decline in energy margins quarter-over-quarter. The decrease in generation was largely a result of coal-to-natural gas switching and offsetting this decline in energy margins were favorable year-on-year operating and maintenance expenses of \$13 million.

In Texas, the 10% decline in generation at the Limestone and WA Parish facilities due to lower power prices and reduced demand led to a 6% decline in overall generation for the region. Offsetting this decline were favorable year-on-year operating expenses of \$17 million that included gain on land sales of \$6 million in 2010.

Now turning to Slide 22. As I mentioned a moment ago, total liquidity at year-end 2010 excluding funds deposited by hedged counterparts remained strong at nearly \$4.252 billion. Total cash stood at \$2.959 billion, an increase of \$653 million as compared to the 2009 year-end cash balance of \$2.3 billion. The drivers of the cash increase included adjusted cash from operations of \$1.76 billion and debt proceeds of \$1.317 billion.

These increases were offset by several items: First, five completed acquisitions totaling about \$1 billion, which included \$507 million for Cottonwood generation station, \$357 million for Green Mountain, \$100 million for Northwind Phoenix, \$32 million for South Trent Wind Farm and for the U.S. solar portfolio, 720 megawatts of development projects in nine states in California and Arizona. Second, debt and fee payments totaling \$813 million, including Term Loan B payments of \$453 million and a repayment of a common stock fund or CSF of \$190 million.

And third, capital expenditures excluding NINA of \$445 million, including \$199 million of maintenance, \$184 million of environmental, primarily related to the Indian River Air Quality Control System project, and \$62 million of growth investments. For the full year, we made cash contributions to NINA totaling \$170 million primarily in the first half of 2010. And finally, we completed share repurchases of 8.5 million shares, totaling \$180 million.

Now turning to 2011 guidance on Slide 23. Our EBITDA guidance remains unchanged from our November 24 range of \$1.75 billion to \$1.95 billion. Included in this guidance range are wholesale expectations of \$1.2 billion to \$1.3 billion, retail expectations of \$480 million to \$570 million, and Green Mountain of \$70 million to \$80 million. As Mauricio discussed earlier, we are about 100% hedged on our baseload generation for 2011 and are thus comfortable with our forecasted results.

As we look forward to our Wholesale business in 2012, we are currently in excess 50% hedged with a higher average price in 2011 as indicated in our SEC filings. Due to this position and based on the current forward curves, we expect flat to marginally lower year-on-year wholesale results in 2012 from 2011. These results will be supplemented with adjusted EBITDA of \$85 million from our repowering and solar investments in 2012 that are not subject to market fluctuations.

For our retail business in 2011, our current expectations, assuming normal weather, are an EBITDA

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range of \$480 million to \$570 million, the decrease in 2011 guidance compared to current 2010 results is largely explained by lower unit margins in Reliant's Mass business. Reliant's C&I business margins are also expected to decline slightly, but be directly offset by higher terawatt-hours served, reflecting our continued dedication to this growing client base in both Texas and PJM.

Finally, we expect Green Mountain Energy to contribute \$70 million to \$80 million of EBITDA. We are very excited about enhancing the growth prospects for our Green Energy Retail business during the process of integrating the business with our growing renewables portfolio to enhance these future growth prospects.

During our Q3 earnings call, we discussed the 2011 free cash flow guidance of \$425 million to \$625 million, and we now currently anticipate free cash flow for 2011 to be in a range of \$150 million to \$350 million. The difference in guidance is largely explained by certain timing of solar projects, due to Congress extending the availability of cash grants for renewable projects through 2011. NRG postponed its large investments in solar projects from 2010 to 2011, resulting in \$267 million of solar expenditures pushed into '11 and relates primarily to our Agua Caliente, Ivanpah and CVSR solar projects.

As we often like to emphasize, we are in a strong cash flow position based on Friday's closing stock price of \$20.89 and our affirmed outlook. Free cash flow before growth yield currently stands at between 16% to 20%, or \$3.36 to \$4.17 per share.

Slide 24 shows the company's projected 2011 year-end cash position which we project to be about \$2.5 billion. Beginning with the portion of the Capital Allocation Plan that includes share repurchases and debt repayments in 2011, the company intends to repurchase \$180 million of common stock, which is within the constraint of the restricted payments basket; repay \$240 million of debt related to our Term Loan B agreement; and approximately \$39 million in other facilities. It's important to note that the company made a Term Loan B prepayment in November that totaled \$200 million.

And finally, complete \$907 million of capital allocation in the following projects: \$50 million in NINA; \$219 million for other Repowering investments including El Segundo, GenConn Middletown, eVgo, Texas Reliability and Princeton Hospital and \$638 million for solar projects, net of cash grant proceeds, and including the \$267 million of deferred payments from 2010.

During the third quarter conference call, I also mentioned that we usually maintain a minimum cash balance of \$700 million largely for working capital margin requirements, the timing of cash payments, of interests, property taxes, as well as equity for projects we have under construction throughout the year. Thus, for 2011, we estimate a balance of just over \$1.8 billion to allocate between perhaps additional share repurchases, contingent on the restricted payments basket expansion, further investments of high-growth opportunities and continued opportunistic management of our debt structure.

On January 11, the company issued \$1.2 billion of 7 5/8 senior notes due 2018 and announced the simultaneous cash tender for \$1.2 billion of the outstanding 7 1/4 senior notes due 2014. As of January 25, nearly 945 million bonds have tendered, and the remaining 250 million will be redeemed by the end of February pursuant to the embedded call price. As a result, we've improved our debt maturity profile, all of our public debt matures after 2016, and replace the restricted covenant package with one permitting greater efficiency and flexibility to return value to all NRG stakeholders.

On a go forward basis, we will continue to moderately embed in calls in the 2016 and '17 maturities

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and be opportunistic about replacing those bonds with less restricted covenant packages, similarly to how we handle the 2014 maturity.

Looking at NRG's combined Repowering and Solar portfolio and our EBITDA contribution on Slide 25, you can clearly see the benefit of the program with nearly \$550 million of recurring contribution by 2015.

During the fourth quarter, our El Segundo Repowering project received prior approval from the California Public Utilities Commission for a ten-year Power Purchase Agreement with Southern California Edison. Commercial operation's expected in the summer of 2013.

Our large utility-scale solar projects will also begin to reach commercial operations between the summer of '13 and the first quarter of 2014, and these projects collectively are driving this EBITDA growth. These solar investments are attractive for their high-teens returns, very low construction risks and offtake agreement of 20-plus years with highly rated counterparties. We will continue to provide updates on the progress of these projects as they move into construction and operation.

As we continue to invest and grow our solar portfolio, it's important to highlight a few economic benefits created with these projects. Slide 26 shows how the combination of cash grant, maker's depreciation and strong cash flows from the PPAs for our projects result in a payback for our investments, in some cases by 2014, and retain stable cash flows for the remaining term of the PPAs.

Though we believe there will be a turnaround in commodity markets, we are mindful of our ability to create enough taxable income for us to fully absorb tax benefits created by these solar investments. There is clearly a limit to how much tax efficiency we could absorb in any one year before reducing the total project returns. As such, to both minimize the tax leakage and enhance our returns, in 2011, we will pursue new equity investors for our solar portfolio, who have both the appetite for tax benefits and seek investment to one of the largest utility-scale solar portfolios in the world. New equity investors would not only help to optimize our existing tax position but allow us to continue to invest in future projects with high returns.

We expect to launch this initiative soon and look forward to sharing the progress in the future. Now I'll pass it back to David for final comments.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Thank you, Chris, and thank you, Mauricio. And so in conclusion, on Slide 28, we put what we think are some of the value drivers around the investment proposition at NRG. And it starts with the fact that 2 1/2 years into the commodity price down cycle, it appears to us that the end is in sight, the bottom of the trough has been reached, and the only way to go is up. When or how quickly gas prices will recover remains open to conjecture, but the case for rising heat rates in our core market of Texas is clear and compelling. And we've positioned our portfolio and our hedge both to benefit from that upturn.

Second, even in a political environment that has turned more conservative in the past year, market mandates for renewable generation and for solar power in particular, remain well supported in both the red and blue states. And the result for us has been a fast-growing portfolio of projects that will contribute substantially to shareholder value creation over the short to medium-term.

Finally, there's the inherent value unique amongst our peer group of Wholesale generation combined

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with the leading retail position. While we have executed to such great success in Texas, together with Reliant, we are now in position to replicate with Green Mountain in the fast-growing green and retail energy sector. It's a bright future indeed, and for all of us at NRG, we'll strive to realize its vantage on behalf of the shareholders of NRG.

So Deanna, with that, we'd be happy to take some questions.

Question-and-Answer Session

Operator

[Operator Instructions] The first question will come from the line of Daniel Eggers, Crédit Suisse.

Dan Eggers - Crédit Suisse AG

David, I was just trying to marry up some of the comments made about some of the solar investment opportunities. If I look at Slides 25 and 26, the cash investment and then the earnings contribution you guys show there, is that based on the things that are in hand right now, or is there a assumption of the amount of incremental projects who would have to get signed this year to help get to those numbers?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

I think what we're showing, Chris, correct me if I'm wrong, is the Tier 1, which are projects, which in my personal estimation are ones that have a 90-plus percent chance of achieving financial closure.

Christian Schade - Chief Financial Officer and Executive Vice President

Yes, that's actually correct, Dan.

Dan Eggers - Crédit Suisse AG

So these are things that are already in place, and this would be less contribution than what you said in your comments earlier, David, about having equity investment and solar greater than what you do see in South Texas ultimately?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

I'm sorry. Say it again?

Dan Eggers - Crédit Suisse AG

So this earnings contribution represents an investment less than what you think you can get to from the solar perspective based on your comments earlier in the presentation?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

I mean there are more projects behind this portfolio.

Dan Eggers - Crédit Suisse AG

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When do you see the opportunity this year to announce off projects? And how would you see this sell down equity go as far as changing the earnings contribution profile from these projects? And how much could you sell down, do you think?

Christian Schade - Chief Financial Officer and Executive Vice President

Well, we're going to get to how much we can sell down as we move through the process. But very clearly, any amount we sell down will sort of be a pro rata reduction in EBITDA. And so depending on how much we do, we'll certainly let you know. But we do believe that the sell down will allow us to provide incremental more equity into other projects we have yet to announce. But what David said, we're on the bubble given the benefits from the government largesse, which we think still exist but perhaps will run out in the next couple years. And those projects will also be assumed as sort of returns consistent with what we've seen to date.

Dan Eggers - Crédit Suisse AG

And I guess one last question just on South Texas. David, if you could maybe just -- we go through the numbers as far as how much cash you expect to throw off in the project, and then to clarify that, contribution's based on kind of the pricing you'd need it to be able to receive in order to earn economic return on that project?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, so you're saying you're -- Dan, you're actually looking forward to 2016 and '17? Yes, I mean, looking at Page 10, I mean, through the first few years, when we've talked about receiving \$500 million of cash, that's based on our view on where gas prices go, which is, obviously, some way up from where they are now, sort of into the \$6 to \$7 range. Having said that, Dan, we've stressed the returns on the nuclear project from an IRR perspective, sort of \$4 gas in perpetuity model. And the IRR in the project, it would still be in double digits, but obviously, the higher gas prices, the better we do. But it works, the numbers work even at a \$4 gas environment. And the reason that is the case, Dan, is because, obviously, the tax benefits associated with nuclear project, particularly, the production tax credits, meaning that through the first several years of the nuclear project, the economics are more driven actually by the tax benefits than they are by the price of electricity.

Dan Eggers - Crédit Suisse AG

Do you see IRR as working in \$4 gas to the equivalent of a mid-30s power price, you would see the plant being economic?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

In a \$4 gas, the plant is, yes. I mean, again, it's a low-teen return. I'm not sure that -- it's not the return we're seeking, but it's not a single digit return or a negative return.

Operator

The next question will come from the line of Ameet Thakkar, Bank of America Merrill Lynch.

Ameet Thakkar - BofA Merrill Lynch

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Mauricio, you kind of indicated that the path with hedging, despite, I guess, some uptick in heat rates in Texas and you also didn't do much in the way of coal as well. I mean is your expectation that PRB prices should follow gas down? Or are you guys a little bit more neutral on gas at this point?

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Well, I mean, if you look at our hedge profile, the next few years, we're pretty well hedged on both sides, so power and coal. We can justify the contango that exists with the coal curve. And given the inventory that we have and the hedge profile, we think that we can weigh to be more opportunistic about when to catch the coal prices. With respect to gas, we continue to see further declines in the front part of the curve, which we've been pretty well insulated. But as I mentioned in my remarks, I mean, I think when you look at 2012 and beyond, and where those price levels are, we see very little downside risk from that. And we think that there are several factors that are converging that could potentially move gas prices, assuming they could be higher than where they are today.

Ameet Thakkar - BofA Merrill Lynch

And then David, real quick on STP. I just want to make sure I understood, I guess, some of your answers to the previous questions. You see returns in kind of the teens area, given the \$4 gas for STP?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Yes, so the returns would be in the teens area in the \$4, in perpetuity model. Again, this is based on the idea that we're running a model where there's roughly 1,000 megawatts of power sold by long-term contract, and the rest is taken into the merchant market. So the \$4 gas would apply to the 2,000 in the merchant market. And yes, you're right, what it shows is a return in the teens, in that sensitivity. I would also tell you, Ameet, both in response to your question and I should say to Dan, also, we run this with no value associated to the zero-carbon aspect of it, so the price on carbon directly or indirectly would be on top of this.

Ameet Thakkar - BofA Merrill Lynch

And then so is like the 1,000 megawatts of PPA cover, I guess, under that analysis, is that really kind of the goal to kind of continue to move forward and not exit, I guess, exit land for on Slide 9?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, Ameet, almost as a -- I mean, from the beginning, I think that we have said to our investor base that we, at least, would not proceed with the project unless there was a significant amount of long-term offtake associated with the project. And so, roughly 1,000 megawatts has been something we talked about from the beginning. On top of that, Ameet, the conditional loan guarantee, if and when it's announced, it's called a conditional loan guarantee because there are conditions associated with it. And probably the most substantive condition, the condition we would be focused on is that the government would require us to have approximately that same amount of long-term offtake agreement contracted, which was a condition, again that we were happy to agree with the government on since we had said that we wouldn't go forward with it either. So that's why we would be doing that.

Operator

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And the next question will come from the line of Ted Durbin, Goldman Sachs.

Theodore Durbin - Goldman Sachs Group Inc.

If I could just ask a little bit about the capital allocation. You're obviously coming out of 2010 here with a high cash balance. I'm just trying to understand a little bit better the allocation of the capital towards the renewables and whatnot, maybe extending that relative to between cash to stakeholders. Could you just talk a little bit more about that?

Christian Schade - Chief Financial Officer and Executive Vice President

As we said, we're committing to a \$180 million stock repurchase, and that's within the confines of our restrictive payment basket. We're also going to be making required debt repayments under our term loan program, Term Loan B program. We've also earmarked potential investment in our solar projects, and these are projects which we had -- some of which we're announced late last year and early this year and would be subject to the cash grant program under the government. So all of those projects and repowering projects from El Segundo and GenConn Middletown. But those are the programs at least that were part of the capital allocation program for this year. That's what we've announced. We have \$1.8 billion after which we would be able to deploy into additional repowering should they be available and new solar projects that we see on the horizon, as I've said before, all of which offer us the opportunity for very attractive returns.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

And just to add, Ted, I think you phrased the question almost as if it was an either/or, and I guess that may be a little different. I mean, given the company's free cash flow generation and the cash we have on hand, we haven't really seen it as an either/or. In terms of returning capital to shareholders through the share buyback, we do as much as we can under the restrictive payment basket. Over the past years, we've constantly evaluated whether or not we could negotiate a way to have more room to do more, but the expense of doing that has always made that impractical. So from our perspective, it has not been an either/or decision. It's been do both.

Theodore Durbin - Goldman Sachs Group Inc.

Does that cost of getting the ability to do more of a buyback, you're still seeing that as not worth the expense of getting that?

Christian Schade - Chief Financial Officer and Executive Vice President

That's right. We think the expense to negotiate with the bondholders is being punitive. And as I said in the prepared remarks, the approach that we took on the 2014 maturity to wait for the calls to come due than to call away and refinance was we felt unattractive and a cost-beneficial way to do it. We have calls coming up in February for the 2016 maturity which we'll keep an eye on. The 2017 are not yet callable, will be so within a year. The high-yield market remains very attractive from financing perspectives, so we'll continue to look at that closely. But just to further what David said, with the excess cash in addition to the \$180 million as we said, we'll certainly consider future stock repurchases if it can fall within the confines of hedging expansion we see in our restrictive payments basket throughout the year as well.

Theodore Durbin - Goldman Sachs Group Inc.

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I appreciate the commentary on sort of the assets side. It sounds like you're not seeing the values on the CCGT side that you were before, but you did do the Cottonwood transaction. Are there other holes in your portfolio, where you say, "Geez, we'd really like to add some mid-merit assets whether it's more in South Central or whatnot?" And kind of talk about where you'd like to build up the portfolio.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, I think the place where we'd like to build up the portfolio, and again, we've been fairly -- well, it took us six years to execute on the idea that we needed a load following plant in South Central. So just because I say this, I don't want you to think any sort of announcement's around the corner, because I'm actually skeptical that we can achieve anything. But we would definitely like to have some more baseload-following capability in PJM, particularly Eastern PJM. Having said that, we don't have any optimism about anything coming available in that footprint that we would find probably at a reasonable price. But we keep our ear to the ground. I would say that has been our single greatest priority second to backing up Big Cajun, which we've now achieved with Cotton.

Operator

And the next question will come from the line of Jonathan Arnold, Deutsche Bank.

Jonathan Arnold - Deutsche Bank AG

My question is, on STP, you believe the option for the second 10%, the TEPCO would take -- had a May expiration date on it, we recall from the original 8-K. But is there a similar date around the base 10% investment that's contingent on the loan guarantee acceptance? Is May a kind of drop-dead date for that whole arrangement with TEPCO?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

I don't believe there's a drop-dead date. And John, Tokyo Electric well understands the pace of development. I don't want to speak to them, but I think their enthusiasm for participating in this project is unchanged from when we announced the deal a year ago. So I don't remember any sense of date, but I have a very high level of confidence that if the loan guarantee comes that Tokyo Electric will participate in the project.

Jonathan Arnold - Deutsche Bank AG

And can you also give us a sense of -- well, obviously, your contribution is relatively small over this '11, '12 period. What would the \$25 million in '12 be absent additional sell downs? And maybe some kind of sense of how much is actually being spent on the project itself during this next couple of years.

Christian Schade - Chief Financial Officer and Executive Vice President

Well, what it would be without the sell down, I'll have to get back to you on that. The amount of money that has to be invested towards in order for us to proceed is it's several hundred million dollars. But Jonathan, it's really hard to put it in those terms. Because like a good portion of it is long lead time materials in Japan which are actually funded with the credit facility from Toshiba. So maybe we can break out and provide it to you or do it next quarter. Just the development spend for now, in order for

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us to proceed against the sources of capital, because it's really not useful if you look at it as one-lump sum, because various things are paid for with different buckets of money.

Jonathan Arnold - Deutsche Bank AG

And if I may just on one other topic, what indications are you getting from DOE on these discussions at a level of hedging through PPAs that would be acceptable to them on the project?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, I think that the condition is very specific. And I think back, it's the same as I answered to Arneet. It's something just less than 1,000 megawatts.

Operator

The next question will come from the line of Jay Dobson, Wunderlich Securities.

James Dobson - Wunderlich Securities Inc.

I was hoping you could give us some insight into the offtake discussions. The local media's covered some interesting transactions, or at least, proposals that you had. So I'm just wondering if you can give us some insight into where things stand and sort of what your level of optimism is currently.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

It's a good question, and I think what I would say without -- I mean, it's difficult to comment with discussions that are underway. And in fact, normally, we don't comment on it but since as you said, there's been discussions by the public, I guess I should say some things. I would say, first of all, I think there's an openness, a willingness, and interest on several load-serving entities, large load-serving entities in the Texas market to talk about long-term offtake. And I would also say that the events of early February in Texas, where a part of the reason the state had rolling brownouts or even blackouts is because people couldn't get gas to some power plants, I think has reinforced the idea that having fuel diversity in the state is something that load-serving entities want to have. So there's a fairly high level of interest from various parties, but the big qualifier I always put on this question is, right now, as you say, it's really discussions. I mean, the project isn't really real to off-takers until we have a loan guarantee. So I would describe anything that we're doing with any counterparty at this point is being preliminary. And so that's what I would tell you. And based on what we're being told by the camp, their interest level, I'm guardedly optimistic. But mainly, my main attitude towards all this is, let's wait and see what happens when the loan guarantee's announced, because that's when ourselves and our counterparties are going to have to get down to business, and people are going to have to make commitments on both sides. So that's the main thing, and what we're trying to empathize here is that, that phase, and hopefully that phase will begin within the coming weeks, is something that basically needs to be resolved by the summer so that we can all have clarity as within the company and U.S. investors and analysts as to where we stand vis-à-vis this project.

James Dobson - Wunderlich Securities Inc.

As an unrelated follow-up, on the solar side, I'm not sure if this is good for your or for Chris, I assume in addition to selling an equity stake, you'd consider selling a tax equity there, and how do you

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consider those two alternatives?

Christian Schade - Chief Financial Officer and Executive Vice President

Yes, very much so. I think the equity stake that we are contemplating is tax equity, it's a structuring issue. But we're certainly looking to pass off the tax attributes that are generated from this portfolio to tax equity investors. I think, one thing as a follow-up to a question before is that we'd certainly be looking to sell this equity at a premium. The returns that we're seeing perhaps from these investors are below the expected returns that we see in the high-teens, and so that sort of premium or IRR arbitrage gain will certainly benefit us in having development premium for this. But our goal here both is to bring equity into these projects and also, to lay off some of the tax that perhaps, does not necessarily accrue to NRG.

James Dobson - Wunderlich Securities Inc.

And Chris just a last follow-up, the capacity of the RP basket at year end?

Christian Schade - Chief Financial Officer and Executive Vice President

It was about \$160 million. So the \$180 million that we announced today will be spread out for a couple of quarters.

Operator

The next question will come from the line of Brandon Blossman, Tudor, Pickering Holt & Co.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

I guess just a follow-up on the tax equity question, probably for Chris. Just to be clear, is the tax equity partner or sell down required to optimize the tax benefits of the current solar portfolio, or is that something you need to do to increase the size of that portfolio?

Christian Schade - Chief Financial Officer and Executive Vice President

I think it's not necessarily required. I think it benefits the returns of the portfolio and allows us to continue to invest in the space. As David said, we're seeing a lot of opportunities elsewhere, and I think when we start to layer on other utility-sized projects in addition to what we have, there is a limit to the capacity of tax attributes that we can assume. So we think it's important. We're seeing a lot of interest and opportunities to invest in this space by sort of nontraditional investors who want to get green, and so we think it's a big opportunity for us, who are certain taxpayers as well. So it's for us to check a lot of boxes along the way. First and foremost to optimize our tax position in appropriate years, as well as to allow us to continue to invest in the space.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And how does that dovetail with STP's tax attributes? Is that far enough out so that there's no overlap here or concerns about maximizing that value?

Christian Schade - Chief Financial Officer and Executive Vice President

It is far enough out that we're not perspiring about the tax attributes that it generates. But certainly, it's a topic that we will address at due time. And also, would speak to our underlying business that we

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hope and certainly think will grow enough to burn through these NOLs and to continue to generate the taxable asset side in those years. So we're confident of that.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And David, as a follow up, not that anyone wants this to happen, but if there is an exit ramp for STP, can you describe what that looks like? Is there a project to be had at some point in the future, given that this is a particularly attractive development project?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, Brandon, I guess, what I would say, on a few fronts. I mean it sort of depends on which exit ramp you're talking about. And I'm just speculating on things which of course, we don't hope to happen. I mean from my perspective, I think if something happens during this year that caused the entire project to go away, we would probably finish the licensing process, which is a small fraction of the overall development spend. But we're so far along with the NRC that to stop it this close to the end would not make sense. But beyond that, would the project go forward? I think it depends on which exit ramp it is. And again, I don't mean to speak for the other partners, because I want to emphasize every NRG investor on the call. We do not have the right to kill the STP 3 & 4 project. We just have the right to stop our own financial contribution to it. But I would say, if the exit ramp is that, actually it turns out that there is no loan guarantee in the offing -- I haven't actually asked this question directly, but I think our partners in Japan -- and we would be aligned that there would be, that the project would stop if there's no hope of a federal loan guarantee. If on the other hand, there was a federal loan guarantee, but we were taking the exit ramp because we were unable to lineup the offtake, I don't know what our partners would do in that circumstance. Maybe they would continue with the project, that would be their prerogative to do. I just know that if we don't have that offtake arrangement, then we will stop funding.

Brandon Blossman - Tudor, Pickering, Holt & Co. Securities, Inc.

And that would be not the 1,000 megawatts, but isn't that predicated on the loan guarantee or the loan guarantee predicated on the 1,000 megawatts?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

It is, but one of the reasons why I don't know -- I don't remember the exact terms, the exact words of the conditional loan guarantee, but I know that we do not have the opportunity at NRG to solve for the offtake arrangement, because I think the condition is offtake agreements with investment grade offtakers. Our Japanese partners who are investment grade would have that opportunity should they so choose to correct that on their own. We don't have that type of power, so that's not a question for us.

Operator

The next question will come from the line of Brian Chin, Citigroup.

Brian Chin - Citigroup Inc

What's the rough range of construction cost estimates in dollar per KW for the solar PV facilities that

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you are seeing, and also for the solar thermal side?

Christian Schade - Chief Financial Officer and Executive Vice President

The range, well, I think we would say that the range right now is 3,500 to 4,000 per KW, and I don't know, that would be for the PV -- I can't tell you -- the solar thermal would probably be in the same range.

Brian Chin - Citigroup Inc

And then would it be fair to say that \$4 sustaining perpetual natural gas price environment that you'd still see solar generating returns in the double digits as well? And is it higher or lower than nuclear?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Well, we haven't compared them side-by-side. I think it's fair to say that like nuclear, the solar projects, at this point, the economics are very heavily driven by the tax benefits. But beyond that, the real difference between the two is that every solar project we're doing is completely not merchant. It's totally PPA. So I don't think -- in fact, when we talk about taking the company's financial performance and sort of de-linking it to natural gas prices, we put renewables together with retail in parts of our EBITDA stream that are not associated with natural gas prices, because of the fact that all of the economics are derived from long-term PPAs.

Brian Chin - Citigroup Inc

Can you talk just a little bit about from your perspective, what the FERC's order in the New York ISO and the capacity market situation up there? What's changed longer-term, and how much of a positive is that for you guys, or is that even material?

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Well, I mean it's definitely material. It's difficult to say what is the ultimate impact, because I think the variables are still being flushed out. But the three main changes was the recognition of state taxes and the cost of new entry calculation, inter-connection costs and then the energy offsets. So when you put those three together, you basically have higher cost of new entry, which will push capacity prices for both New York City and the whole state. This will benefit our New York portfolio, but at this point I can't give you the specific mind into it.

Operator

And the next question will come from the line of Anthony Crowdell, Jefferies.

Anthony Crowdell - Jefferies & Co

Just a quick question on the, I guess, the cold stub that hit Texas earlier this month. And it seem like there wasn't much of an impact on the generation side, but was there any impact to the margins that Reliant expected or anything on the quarter?

Jason Few - SVP of Mass Markets and Operations, Reliant Energy, Inc.

This is Jason. From the retail side, we actually, faired fairly well through this event. I mean, our

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hedging strategy and risk policies served as well during the event. We did not see material impact to our business.

Operator

In interest of time, we have time for two more callers. And the next question will come from the line of Charles Fishman, Pritchard Capital Partners.

Charles Fishman - Pritchard Capital Partners, LLC

Your five-year environmental capital plan, Page 17, I want to make sure I understand this. The \$720 million includes your view of what the math might be, which is less than worst-case, number one. And number two is there are no dollars in the \$720 million to address once thru cooling. Is that correct?

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

No, actually, there is some dollars for 316(b) through the installation of extremes. We've been very successful in New York, in Arthur Kill and Huntley and Dunkirk to address this issue. So while it addresses the Mercury and asymmetric controls across all our coal assets, it also addresses the 316(b).

Charles Fishman - Pritchard Capital Partners, LLC

And if we do end up with the worst case math, I mean could this number increase 50%? Or do you have any feel for that?

Mauricio Gutierrez - Chief Operating Officer and Executive Vice President

Well, we actually disclosed that on our last earnings call. And I believe it's about \$1 billion -- just shy of \$1 billion. If it was the worst case scenario, in terms of unit-specific controls, no averaging. And we just don't believe the EPA will go that route. But the rule is going to come out, the proposal is going to come out in about a month, and I think it's just prudent to wait before we make any changes.

Operator

And there are no more questions in queue at this time.

David Crane - Chief Executive Officer, President, Executive Director and Member of Nuclear Oversight Committee

Okay, well, good. Well, thank you all very much, and we look forward to talking to you in the next quarter. Thank you, operator.

Operator

And ladies and gentlemen, this concludes today's presentation. Thank you very much for your participation. You may now disconnect, and have a great day.

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EXHIBIT

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Did The Glint Of A Few Million Solar Panels Cause A Military Jet To Crash In California?

 infoscape.com/did-the-glint-of-a-few-million-solar-panels-cause-a-military-jet-to-crash-in-california/

On Wednesday, a military jet crashed into a residential neighborhood in the desert city of Imperial, California.

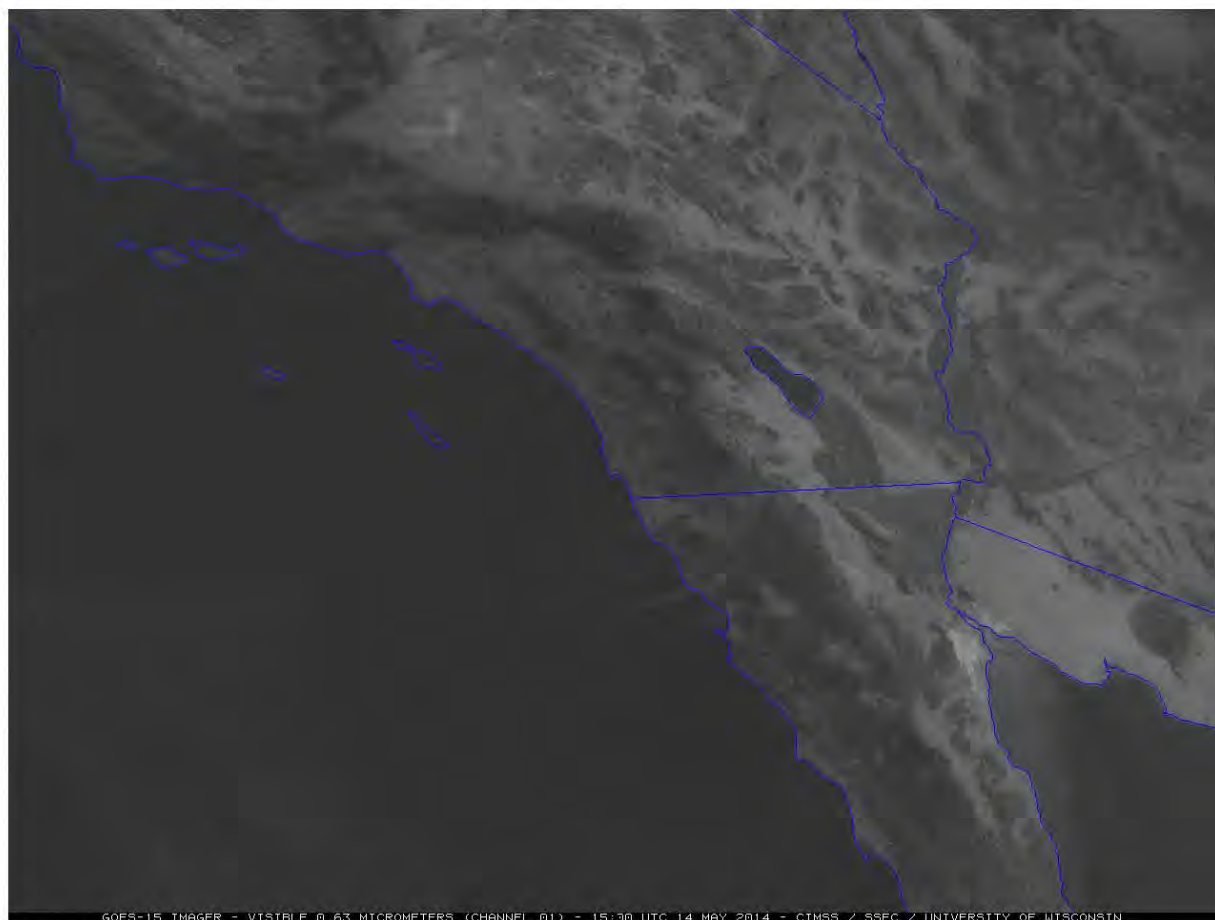
The accident, which involved an AV-8B Harrier aircraft, destroyed three houses, but did not cause any physical injuries.

"The Harrier is among the coolest, most ingenious aircraft ever designed, but the downsides of its design and a long history of failures mean these most recent crashes are hardly surprising," according to a piece by Alex Davies at [Wired](#).

I am inclined to agree, but for very different reasons than those cited by Davies.

Only a few weeks ago, I discovered a series of images taken by satellite that suggested it was more dangerous to fly over parts of southern California than I had previously understood.

The [CIMSS Satellite Blog](#) created an animation from the images that showed massive plumes of smoke from California's wildfires streaming into the Pacific Ocean. Near the end of the animation, two clusters of intensely bright pixels appear briefly just north of the California/Baja California border, which CIMSS explained was "a signal of sunlight being reflected off of large solar panel arrays in that area."



McIDAS images of southern California GOES-15 0.63 μm visible channel data – May 14, 2014.

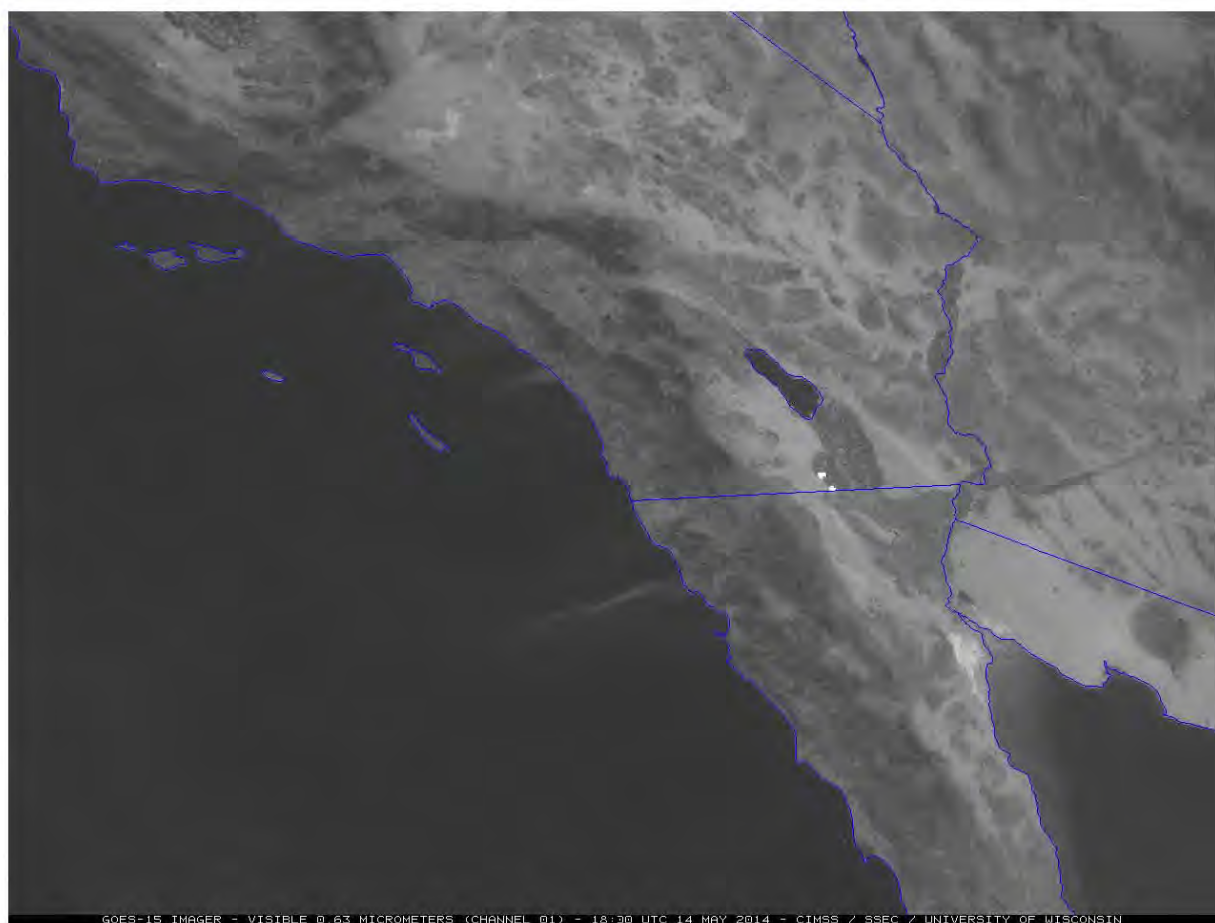
That “area” is the southern portion of the Imperial Valley, a roughly 50-mile stretch of desert that runs from the Salton Sea in the north to the Mexican border in the south. The County is currently the site of more than two dozen solar power projects.

The AV-8B Harrier that crashed last week did so only a few miles away from several utility-scale solar plants, including Imperial Solar [Energy](#) Center South power plant and the Campo Verde Project.

The [Imperial Solar Energy Center South](#) was constructed by First Solar for Omaha, Neb.-based Tenaska. The facility stretches across about 1,000 acres of land slightly south of the city of El Centro and boasts a fleet of nearly two million solar panels, enough to power more than 40,000 homes.

Last year, First Solar completed construction of the 139 megawatt Campo Verde Project in El Centro and is currently constructing the Solar Gen 2 project, which is expected to come online in July, 2014.

The satellite images show something called solar “glint,” which was caused by one or more of the 28 solar power projects currently online in Imperial County.



[Solar glint](#), a brief but intense burst of light over a solar power facility, can temporarily blind pilots flying overhead and interfere with radar and navigation systems, according to the Federal Aviation Administration.

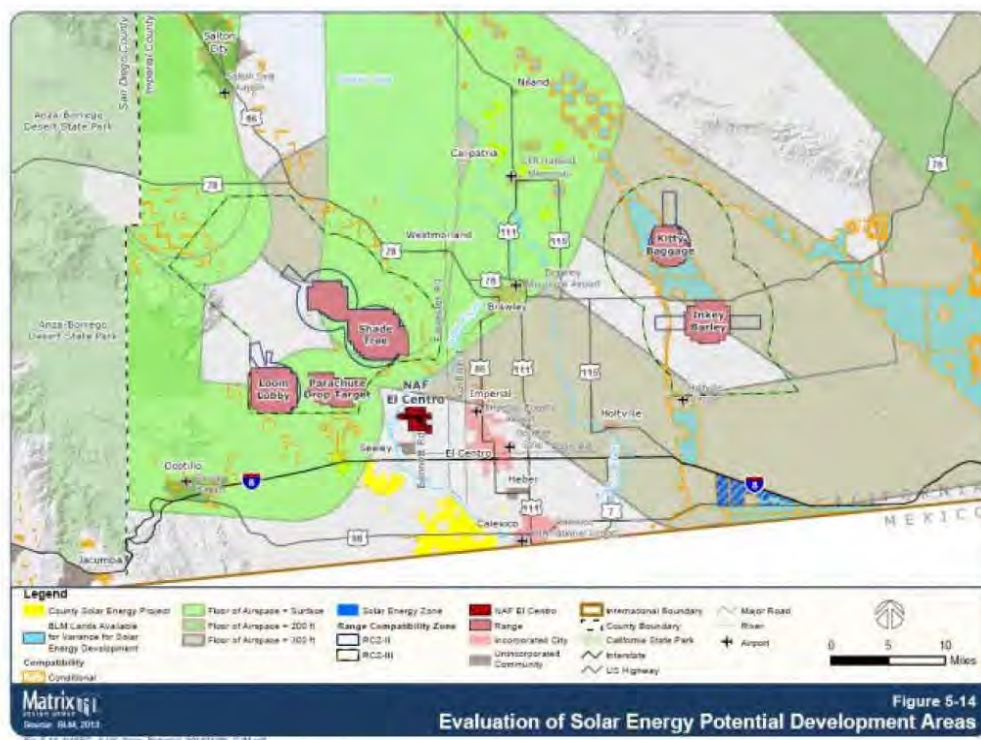
Military investigators say that the pilot followed protocol, but have otherwise declined to comment on the cause of the accident, which is likely to take months to complete.

In the meantime, the County's fleet of solar power facilities is likely to remain a primary suspect.

This [post](#) originally appeared on [Forbes](#)

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The Forbes logo, consisting of the word "Forbes" in a blue, serif font.



The U.S. Department of Defense has expressed serious concerns about the potential hazards of siting solar power projects in or around military operating areas like the Naval Air Facility El Centro (NAFEC).

Located about 10 miles west of the city of Imperial, NAFEC spans 2,700 acres and is a key flight training facility for the U.S. Navy. Hundreds of flight operations are conducted out of NAFEC daily.

The renewable energy boom in Imperial County has not escaped NAFEC's notice. On the contrary, NAFEC recently completed a major [joint land use planning exercise](#) to ensure neither solar nor geothermal (which is also booming in the Imperial Valley) resources are developed in a manner that conflicts with the military's training operations.

"Construction materials used in the development of solar energy infrastructure may employ reflective surfaces causing visual impairment for pilots in training," according to the Naval Air Facility El Centro's Joint Land Use Study in February 2014.

What would have been the fourth and final workshop organized to ensure members of the public had an opportunity to comment on the more than 200 page long study was cancelled on the morning before the jet crashed in Imperial.

When that meeting is rescheduled, it seems likely to draw a bigger crowd than the previous meetings.

In recent years, several studies have evaluated the potential glint and glare impacts of solar PV facilities in Imperial County. None of those studies found a risk of nuisance or hazard from glint or glare to ground or air-based observers. The accuracy of those studies is likely to be a subject of discussion at the re-scheduled land-use meeting.

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EXHIBIT

7

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012¹

¹ This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary "satellite" burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as "projects" or "activities")

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompson 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

- owls, designated use areas).
- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

- a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.
11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
 12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
 13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

"The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996)."

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

“Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season.”

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season's nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn't limiting nesting opportunity.

Burrowing owls may use “satellite” or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompson 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), "the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring." Habitat loss from the State's long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in "take". These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2" long brown to black regurgitated pellets consisting of non-digestible portions of the owls' diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (<http://ebird.org>), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
 - a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
 - b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
 - c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
 - d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
 - e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
 - f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

- g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
- h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to "flush" burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor's ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20° C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and banded to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDDB Field Survey Forms should be sent directly to the Department's CNDDDB office, and copies should be included in the environmental document as an appendix. (<http://www.dfg.ca.gov/bdb/html/cnddb.html>).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
 - a. Vegetation management goals,
 - i. Vegetation management tools:
 1. Grazing
 2. Mowing
 3. Burning
 4. Other
 - b. Management of ground squirrels and other fossorial mammals,
 - c. Semi-annual and annual artificial burrow cleaning and maintenance,
 - d. Non-natives control – weeds and wildlife,
 - e. Trash removal;
 7. Financial assurances:
 - a. Property analysis record or other financial analysis to determine long-term management funding,
 - b. Funding schedule;
 8. Performance standards and success criteria;
 9. Monitoring, surveys and adaptive management;
 10. Maps;
 11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985a).
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.

EXHIBIT

8

Endangered Bird Found Dead at Desert Solar Power Facility | Photovoltaic... <http://www.kcet.org/news/rewire/solar/photovoltaic-pv/endangered-bird...>



Solar | Photovoltaic (PV)

Endangered Bird Found Dead at Desert Solar Power Facility

(<http://www.kcet.org/news/rewire/solar/photovoltaic-pv/endangered-bird-dead-at-desert-solar-facility.html>)

by Chris Clarke

on July 10, 2013 2:50 PM



Yuma clapper rail | Photo: Jim Rorabaugh, FWS

A bird found dead at a Riverside County solar project in May was a Yuma clapper rail, a Federally listed Endangered species. The rail is one of a number of water birds found dead at the site, according to one of the owners of the project. The fatality marks the first reported death of a Federally Endangered bird at a renewable energy generation site in the mainland U.S.

Story Continues Below



Support KCET

A spokesperson for the Desert Sunlight solar facility near Joshua Tree National Park in Riverside County, confirmed that a rail was found dead on the project site on May 8, further adding that a several dead grebes have also been discovered at the site, and were also reported to relevant agencies for investigation.

Like

Endangered Bird Found Dead at Desert Solar Power Facility | Photovoltaic... <http://www.kcet.org/news/rewire/solar/photovoltaic-pv/endangered-bird...>

The U.S. Fish and Wildlife Service (FWS) wrote an Incidental Take Statement for Desert Sunlight as part of FWS's Biological Opinion on likely impacts of the project, but that statement doesn't mention Yuma clapper rails. If investigation proves the bird died as a result of operation of the project, the death may thus place Desert Sunlight in violation of the Endangered Species Act.

Desert Sunlight's statement pledges that the company will cooperate fully with the investigation. Jane Hendron, a press spokesperson for FWS's Carlsbad office, told ReWire that her office didn't yet know the cause of the rail's death, and that plans to minimize future such mortalities would depend on what turns out to have killed the rail.

[**UPDATE:** Minutes after this piece went live, Hendron informed ReWire that the rail's carcass was too badly decomposed to allow a determination of the cause of death.]

The Yuma clapper rail, which ranges up and down the Colorado River from Mexico to Utah, was listed as Endangered in 1967 under the Endangered Species Preservation Act, a federal law that was a precursor to the 1973 Endangered Species Act. A subspecies of the more widespread clapper rail, numbers of the Yuma clapper rail (*Rallus longirostris yumanensis*) have declined significantly since then as a result of depletion of its freshwater marsh habitat along the river. Fewer than 1,000 Yuma clapper rails are thought to survive in the United States.

The rails, which are wading birds somewhere between a crow and a chicken in size, subsist on a diet of marsh invertebrates -- mainly crayfish, but also including clams, freshwater shrimp, insects, and occasional fish. The birds prefer mixed stands of vegetation near ponds with stable water levels, and likely probe the waterlogged soil with their long bills to feed.

A century of alteration of the Colorado's flow patterns has drastically reduced the amount of habitat available to the rail, both along the river's length and in what was once a braided network of sloughs and channels in the river's delta. The accidental creation of the Salton Sea a century ago did augment the rail's habitat, and some still survive in the marshes at its south end.

According to the statement provided by Desert Sunlight's representative Ashley Hudgens, the site's biologists do not believe construction operations contributed to the bird's death. The statement also claims that the rails are not native to the site. That's true, in the strictest sense: there were no open freshwater ponds on the Desert Sunlight project site.

However, Yuma rails do travel between the river and the Salton Sea, and could reasonably be expected to pass the vicinity of the Desert Sunlight project in doing so. Over the last few decades, rails have been spotted as deep into the desert as Harper Lake west of Barstow.

What would entice a water bird like a clapper rail or a grebe to a field of photovoltaic panels deep in the desert? A photo of the Copper Mountain PV facility in Nevada taken by the group Basin and Range Watch offers a suggestion:

Endangered Bird Found Dead at Desert Solar Power Facility | Photovoltaic... <http://www.kcet.org/news/rewire/solar/photovoltaic-pv/endangered-bird..>



Polarized reflective glare | Photo © Basin and Range Watch

PV panels polarize the light they reflect, much like the surface of a body of water. The resemblance of the PV field pictured to a lake is remarkable, even in bright daylight that reveals the technological underpinnings of the site. For night-flying birds, especially on nights when a new or crescent moon doesn't provide much light, all the birds would have to go on would be the reflection of the stars in the PV panels. A large PV project would seem to offer an oasis for water birds in the desert, but coming in for a landing on such a "lake" could well prove routinely fatal, either at the moment of impact or after a disabled bird wanders off into the desert.

ReWire has heard of other reports of waterfowl injuries at photovoltaic facilities, and we're working to determine the extent of the phenomenon. We'll keep you updated as we learn more. If it turns out that Desert Sunlight is attracting water birds due to polarized reflections from its panels, that raises the question of how FWS will approach minimizing similar risk from the proposed McCoy and Blythe photovoltaic projects, which together might offer as much as 15 square miles of fake "lake" to unwary water birds, less than 15 miles from the Colorado River.

EXHIBIT 9

Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis

Rebecca A. Kagan, Tabitha C. Viner, Pepper W. Trail, and Edgard O. Espinoza
National Fish and Wildlife Forensics Laboratory

Executive Summary

This report summarizes data on bird mortality at three solar energy facilities in southern California: Desert Sunlight, Genesis, and Ivanpah. These facilities use different solar technologies, but avian mortality was documented at each site. Desert Sunlight is a photovoltaic facility, Genesis employs a trough system with parabolic mirrors, and Ivanpah uses a power tower as a focal point for solar flux.

FINDINGS

Trauma was the leading cause of death documented for remains at the Desert Sunlight and Genesis sites. Trauma and solar flux injury were both major causes of mortality at the Ivanpah site. Exposure to solar flux caused singeing of feathers, which resulted in mortality in several ways. Severe singeing of flight feathers caused catastrophic loss of flying ability, leading to death by impact with the ground or other objects. Less severe singeing led to impairment of flight capability, reducing ability to forage and evade predators, leading to starvation or predation. Our examinations did not find evidence for significant tissue burns or eye damage caused by exposure to solar flux.

Cause of Death	Ivanpah	Genesis	Desert Sunlight	Total
Solar Flux	47	0	0	47
Impact trauma	24	6	19	49
Predation trauma	5	2	15	22
Trauma of undetermined cause	14	0	0	14
Electrocution	1	0	0	1
Emaciation	1	0	0	1
Undetermined (remains in poor condition)	46	17	22	85
No evident cause of death	3	6	5	14
Total	141	31	61	233

These solar facilities appear to represent “equal-opportunity” hazards for the bird species that encounter them. The remains of 71 species were identified, representing a broad range of ecological types. In body size, these ranged from hummingbirds to pelicans; in ecological type from strictly aerial feeders

(swallows) to strictly aquatic feeders (grebes) to ground feeders (roadrunners) to raptors (hawks and owls). The species identified were equally divided among resident and non-resident species, and nocturnal as well as diurnal species were represented. Although not analyzed in detail, there was also significant bat and insect mortality at the Ivanpah site, including monarch butterflies. It appears that Ivanpah may act as a “mega-trap,” attracting insects which in turn attract insect-eating birds, which are incapacitated by solar flux injury, thus attracting predators and creating an entire food chain vulnerable to injury and death.

SITE	No. Remains	Identifiable Remains	Foraging Zone			Residency Status	
			Air	Terr	Water	Resident	Migrant
Ivanpah	141	127	28	85	14	63	64
Genesis	31	30	12	12	6	20	10
Desert Sun	61	56	7	22	27	18	38
TOTALS	233	213	47	119	47	101	112

CONCLUSIONS AND RECOMMENDATIONS

In summary, three main causes of avian mortality were identified at these facilities: impact trauma, solar flux, and predation. Birds at all three types of solar plants were susceptible to impact trauma and predators. Predation was documented mostly at the photovoltaic site, and in many cases appeared to be associated with stranding or nonfatal impact trauma with the panels, leaving birds vulnerable to resident predators. Solar flux injury, resulting from exposures to up to 800° F, was unique to the power tower facility. Our findings demonstrate that a broad ecological variety of birds are vulnerable to morbidity and mortality at solar facilities, though some differential mortality trends were evident, such as waterbirds at Desert Sunlight, where open water sources were present; and insectivores at Ivanpah, where insects are attracted to the solar tower.

Specific hazards were identified, including vertically-oriented mirrors or other smooth reflective panels; water-like reflective or polarizing panels; actively fluxing towers; open bodies of water; aggregations of insects that attracted insectivorous birds; and resident predators. Making towers, ponds and panels less attractive or accessible to birds may mitigate deaths. Specific actions should include:

Monitoring/detection measures:

- 1) Install video cameras sufficient to provide 360 degree coverage around each tower to record birds (and bats) entering and exiting the flux
- 2) For at least two years (and in addition to planned monitoring protocol), conduct daily surveys for birds (at all three facilities), as well as insects and bats (in the condenser building at Ivanpah) around each tower at the base of and immediately adjacent to the towers in the area cleared of vegetation. Timing of daily surveys can be adjusted to minimize scavenger removal of carcasses as recommended by the TAC. Surveys in the late afternoon might be optimal for bird carcasses, and first light for bat carcasses.

- 3) Use dogs for monitoring surveys to detect dead and injured birds that have hidden themselves in the brush, both inside and outside the perimeter of the facility
- 4) To decrease removal of carcasses, implement appropriate raven deterrent actions

Bird Mortality Avoidance Measures:

- 1) Increase cleared area around tower at Ivanpah to decrease attractive habitat; at least out to fence
- 2) Retrofit visual cues to existing panels at all three facilities and incorporate into new panel design. These cues should include UV-reflective or solid, contrasting bands spaced no further than 28 cm from each other
- 3) Suspend power tower operation during peak migration times for indicated species
- 4) Avoid vertical orientation of mirrors whenever possible, for example tilt mirrors during washing
- 5) Properly net or otherwise cover ponds
- 6) Place perch deterrent devices where indicated, eg. on tower railings near the flux field
- 7) Employ exclusionary measures to prevent bats from roosting in and around the condenser facility at Ivanpah.

It must be emphasized that we currently have a very incomplete knowledge of the scope of avian mortality at these solar facilities. Challenges to data collection include: large facilities which are difficult to efficiently search for carcasses; vegetation and panels obscuring ground visibility; carcass loss due to scavenging; rapid degradation of carcass quality hindering cause of death and species determination; and inconsistent documentation of carcass history.

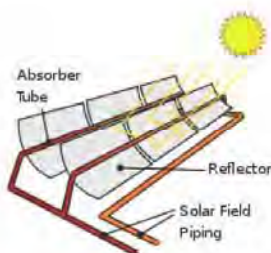
To rectify this problem, video cameras should be added to the solar towers to record bird mortality and daily surveys of the area at the base of and immediately adjacent to the towers should be conducted. At all the facilities, a protocol for systematic, statistically-rigorous searches for avian remains should be developed, emphasizing those areas where avian mortality is most likely to occur. Investigation into bat and insect mortalities at the power tower site should also be pursued.

Finally, there are presently little data available on how solar flux affects birds and insects. Studies of the temperatures experienced by objects in the flux; of the effects of high temperatures on feather structure and function; and of the behavior of insects and birds in response to the flux and related phenomena (e.g. "light clouds") are all essential if we are to understand the scope of solar facility effects on wildlife.

Introduction

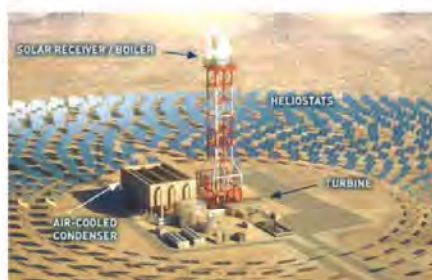
The National Fish and Wildlife Forensics Laboratory was requested to determine cause of death for birds found at facilities that generate electricity from solar energy. Solar generating facilities can be classified into three major types: photovoltaic sites, trough systems and solar power towers. There is much written about these systems so this report will not include any technical details, but simply mention the differences and their potential impact on birds.

1) **Photovoltaic systems** directly convert the sun's light into electricity. The perceived threat to birds is associated with the presence of water ponds which attract birds and from traumatic impact with the photovoltaic cells. An example of this type of solar power plant is Desert Sunlight Solar Farm (AKA First Solar).



2) **Trough systems** are composed of parabolic mirrors which focus and reflect the sun to a tube that converts the heat from the sun into electricity. The perceived threat to birds is associated with the presence of water ponds which attract birds and from traumatic impact with the trough structures. An example of this type of solar power plant is Genesis Solar Energy Project.

3) **Solar power towers** use thousands of mirrors to reflect the solar energy to a tower, where water in a boiler is converted to steam, generating the electricity. The perceived threat to birds is associated traumatic impact with the mirrors and the danger associated with the heat produced by the mirrors. An example of this type of solar power plant is Ivanpah Solar Electric Generating System.



Methods

Carcasses were collected at the different solar power plant sites by either US Fish and Wildlife Service employees or by energy company staff. The collection of the carcasses was opportunistic; that is, not according to a pre-determined sampling schedule or protocol. There was no attempt to quantify the number of carcasses that scavengers or predators removed from the solar facilities' grounds, or to compare the distribution of carcasses inside and outside the boundaries of the solar facility sites.

Additionally, three USFWS/-OLE staff, including two Forensics Lab staff (EOE and RAK), visited the Ivanpah Solar plant from October 21 – 24, 2013. Their on-site observations are included in this report.

A total of 233 birds collected from three different facilities were examined; 141 from a solar thermal power tower site (Ivanpah, Bright Source Inc.), 31 from a parabolic trough site (Genesis, NextEra Energy Inc.) and 61 from a photovoltaic (PV) panel site (Desert Sunlight, First Solar Inc.). Nine of the Ivanpah birds were received fresh; 7 of those were necropsied during a site visit by a Forensics Laboratory pathologist (RAK). The rest of the birds were received frozen and allowed to thaw at room temperature prior to species identification and necropsy. Species determination was made by the Forensics Laboratory ornithologist (PWT) for all birds either prior to necropsy or, for those necropsied on-site, from photos and the formalin-fixed head. All data on carcass history (location of the carcass, date of collection and any additional observations) were transcribed, although these were not available for all carcasses.

As part of the gross pathological examination, whole carcasses were radiographed to help evaluate limb fractures and identify any metal foreign bodies. Alternate light source examination using an Omnicrome Spectrum 9000+ at 570 nm with a red filter helped rule in or out feather burns by highlighting subtle areas of feather charring (Viner et al., 2014). All birds or bird parts from Ivanpah without obvious burns were examined with the alternate light source, as well as any bird reportedly found near a power line and a random sub-sample of the remaining birds from Genesis and Desert Sunlight (Viner, T. C., R. A. Kagan, and J. L. Johnson, 2014, Using an alternate light source to detect electrically singed feathers and hair in a forensic setting, *Forensic Science International*, v. 234, p. e25-e29).

Carcass quality varied markedly. If carcasses were in good post mortem condition, representative sections of heart, lung, kidney, liver, brain and gastrointestinal tract as well as any tissues with gross lesions were collected and fixed in 10% buffered formalin. Full tissue sets were collected from the fresh specimens. Formalin-fixed tissues were routinely processed for histopathology, paraffin-embedded, cut at 4 µm and stained with hematoxylin and eosin. Tissues from 63 birds were examined microscopically: 41 from Ivanpah, 1 from Genesis and 21 from Desert Sunlight.

Birds with feather burns were graded based on the extent of the lesions. Grade 1 birds had curling of less than 50% of the flight feathers. Grade 2 birds had curling of 50% or more of the flight feathers. Grade 3 birds had curling and visible charring of contour feathers (Figure 1).



Figure 1: Three grades of flux injury based on extent and severity of burning. Grade 1 (top); Yellow-rumped Warbler with less than 50% of the flight feathers affected (note sparing of the yellow rump feathers). Grade 2 (middle); Northern Rough-winged Swallow initially found alive but unable to fly, with greater than 50% of the flight feathers affected. Grade 3 (bottom); MacGillivray's Warbler with charring of feathers around the head, neck, wings and tail.

Bird Species Recovered at Solar Power Facilities

Tables 1-4 and Appendix 1 summarize 211 identifiable bird remains recovered from the three solar facilities included in this study. These birds constitute a taxonomically diverse assemblage of 71 species, representing a broad range of ecological types. In body size, these species ranged from hummingbirds to pelicans; in ecological type from strictly aerial feeders (e.g. swifts and swallows) to strictly aquatic feeders (pelicans and cormorants) to ground feeders (roadrunners) to raptors (hawks and owls). The species identified were equally divided among resident and non-

resident species. Nocturnal as well as diurnal species were represented.

In Tables 1-4 and Appendix 1, bird species are categorized into very general ecological types by foraging zone and residency status. Foraging Zones were "air" (a significant portion of foraging activity performed in the air), "terrestrial" (including foraging both in vegetation and on the ground), and "water" (foraging associated with water, including waders as well as aquatic birds). Residency Status was "resident" (for breeding or year-round residents) and "migrant" (for both passage migrants and non-breeding-season residents). For a number of species, the appropriate classification for residency status was uncertain, due to a lack of detailed knowledge of the sites. The present classification is based on published range maps, and is subject to revision as more information becomes available.

This dataset is not suitable for statistical analysis, due to the opportunistic and unstandardized collection of avian remains at the facilities, and the lack of baseline data on bird diversity and abundance at each site. Nevertheless, a few conclusions can be noted. First, these data do not support the idea that these solar facilities are attracting particular species. Of the 71 bird species identified in remains, only five species were recovered from all three sites. These five were American Coot, Mourning Dove, Lesser Nighthawk, Tree Swallow, and Brown-headed Cowbird, again emphasizing the ecological variety of birds vulnerable to mortality at the solar facilities. Over two-thirds (67%) of the species were found at only a single site

(Appendix 1). That being said, the Desert Sunlight facility had particularly high mortality among waterbirds, suggesting a need to render the ponds at that site inaccessible or unattractive to these species.

The diversity of birds dying at these solar facilities, and the differences among sites, suggest that there is no simple “fix” to reduce avian mortality. These sites appear to represent “equal-opportunity” mortality hazards for the bird species that encounter them. Actions to reduce or mitigate avian mortality at solar facilities will need to be designed on a site-specific basis, and will require much more data on the bird communities at each site, and on how mortality is occurring. Carefully-designed mortality studies might reveal significant patterns of vulnerability that are not evident in these data.

Table 1. Summary data on avian mortality at the three solar sites included in this study. See summary for discussion of Foraging Zone and Residency Status categories.

SITE	No. Species	No. Remains	Identifiable Remains	Foraging Zone			Residency Status	
				Air	Terr	Water	Resident	Migrant
Ivanpah	49	141	127	26	85	14	63	64
Genesis	15	31	30	12	12	6	20	10
Desert Sun	33	61	56	7	22	27	18	38
TOTALS	71	233	213	47	119	47	101	112

Table 2. Species identified from avian remains at the Desert Sunlight photovoltaic solar facility. MNI = minimum number of individuals of each species represented by the identifiable remains. In some cases (e.g. Cinnamon/Blue-winged Teal), closely related species could not be distinguished based on the available remains, but the Foraging Zone and Residency Status could still be coded, due to the ecological similarities of the species involved. Total identified birds = 56.

DESERT SUNLIGHT		Zone	Residency	MNI
Pied-billed Grebe	<i>Podilymbus podiceps</i>	water	migrant	1
Eared Grebe	<i>Podiceps nigricollis</i>	water	migrant	3
Sora	<i>Porzana carolina</i>	water	migrant	1
American Avocet	<i>Recurvirostra americana</i>	water	migrant	1
Cinnamon/Blue-winged Teal	<i>Anas discors/clypeata</i>	water	migrant	1
Western Grebe	<i>Aechmophorus occidentalis</i>	water	migrant	9
Brown Pelican	<i>Pelecanus occidentalis</i>	water	migrant	2
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	water	migrant	2
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	water	migrant	1
Yuma Clapper Rail	<i>Rallus longirostris</i>	water	resident	1
American Coot	<i>Fulica americana</i>	water	migrant	5
Mourning Dove	<i>Zenaida macroura</i>	terr	resident	3
White-winged Dove	<i>Zenaida asiatica</i>	terr	resident	1
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	air	resident	2
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	air	resident	1
Costa's Hummingbird	<i>Calypte costae</i>	air	resident	1
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	air	resident	1
Black-throated/Sage Sparrow	<i>Amphispiza sp.</i>	terr	resident	1
Black Phoebe	<i>Sayornis nigricollis</i>	air	resident	1
Loggerhead Shrike	<i>Lanius ludovicianus</i>	terr	resident	2
Common Raven	<i>Corvus corax</i>	terr	resident	1
Horned Lark	<i>Eremophila alpestris</i>	terr	migrant	1
Tree Swallow	<i>Tachycineta bicolor</i>	air	migrant	1
Townsend's Warbler	<i>Setophaga townsendi</i>	terr	migrant	2
Common Yellowthroat	<i>Geothlypis trichas</i>	terr	migrant	1
Savannah Sparrow	<i>Passerculus sandwichensis</i>	terr	migrant	1
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	terr	migrant	1
Wilson's Warbler	<i>Cardellina pusilla</i>	terr	migrant	2
Western Tanager	<i>Piranga ludoviciana</i>	terr	migrant	2
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	terr	migrant	1
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	terr	resident	2
Brown-headed Cowbird	<i>Molothrus ater</i>	terr	resident	1

Table 3. Species identified from avian remains at the Genesis trough system solar facility. Total identified birds = 30.

GENESIS		Zone	Residency	MNI
Eared Grebe	<i>Podiceps nigricollis</i>	water	migrant	2
Great Blue Heron	<i>Ardea herodias</i>	water	migrant	1
American Kestrel	<i>Falco sparverius</i>	air	resident	1
Ring-billed Gull	<i>Larus delawarensis</i>	water	migrant	2
California Gull	<i>Larus californianus</i>	water	resident	1
White-winged Dove	<i>Zenaida asiatica</i>	terr	resident	1
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	air	resident	2
Say's Phoebe	<i>Sayornis saya</i>	air	resident	2
Tree Swallow	<i>Tachycineta bicolor</i>	air	migrant	2
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	air	resident	5
Hermit Warbler	<i>Setophaga occidentalis</i>	terr	migrant	1
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	terr	migrant	1
Chipping Sparrow	<i>Spizella passerina</i>	terr	resident	1
Bullock's Oriole	<i>Icterus bullockii</i>	terr	resident	2
Brown-headed Cowbird	<i>Molothrus ater</i>	terr	resident	6

Table 4. Species identified from avian remains at the Ivanpah power tower solar facility. Total identified birds = 127

IVANPAH		Zone	Residency	MNI
Cinnamon Teal	<i>Anas cyanoptera</i>	water	migrant	4
Cooper's Hawk	<i>Accipiter cooperii</i>	air	migrant	1
Red-shouldered Hawk	<i>Buteo lineatus</i>	terr	migrant	1
American Kestrel	<i>Falco sparverius</i>	air	resident	1
Peregrine Falcon	<i>Falco peregrinus</i>	air	resident	1
American Coot	<i>Fulica americana</i>	water	migrant	7
Sora	<i>Porzana carolina</i>	water	migrant	1
Spotted Sandpiper	<i>Actitis maculatus</i>	water	migrant	2
Greater Roadrunner	<i>Geococcyx californianus</i>	terr	resident	5
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	terr	migrant	1
Mourning Dove	<i>Zenaida macroura</i>	terr	resident	11
Barn Owl	<i>Tyto alba</i>	terr	resident	1
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	air	resident	3
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	air	resident	1
White-throated Swift	<i>Aeronautes saxatalis</i>	air	resident	1
Allen's/Rufous Hummingbird	<i>Selasphorus sp.</i>	air	migrant	1
Northern Flicker	<i>Colaptes auratus</i>	terr	resident	1
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	air	resident	1
Loggerhead Shrike	<i>Lanius ludovicianus</i>	terr	resident	3
Warbling Vireo	<i>Vireo gilvus</i>	terr	migrant	1
Common Raven	<i>Corvus corax</i>	terr	resident	2
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	air	migrant	2
Tree Swallow	<i>Tachycineta bicolor</i>	air	migrant	2
Verdin	<i>Auriparus flaviceps</i>	terr	resident	3
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	terr	resident	1
Northern Mockingbird	<i>Mimus polyglottos</i>	terr	resident	1
American Pipit	<i>Anthus rubescens</i>	terr	migrant	4
Orange-crowned Warbler	<i>Oreothlypis celata</i>	terr	migrant	1
Lucy's Warbler	<i>Oreothlypis luciae</i>	terr	resident	1
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	terr	migrant	1
Yellow-rumped Warbler	<i>Setophaga coronata</i>	air	migrant	14
Townsend's Warbler	<i>Setophaga townsendi</i>	terr	migrant	2
Yellow Warbler	<i>Setophaga petechia</i>	terr	migrant	1
Black-and-white Warbler	<i>Mniotilta varia</i>	terr	migrant	1
Wilson's Warbler	<i>Cardellina pusilla</i>	terr	migrant	2
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	terr	migrant	1
Western Tanager	<i>Piranga ludoviciana</i>	terr	migrant	2
Lazuli Bunting	<i>Passerina amoena</i>	terr	migrant	1
Blue Grosbeak	<i>Passerina caerulea</i>	terr	resident	1
Green-tailed Towhee	<i>Pipilo chlorurus</i>	terr	migrant	1
Brewer's Sparrow	<i>Spizella breweri</i>	terr	resident	3
Chipping Sparrow	<i>Spizella passerina</i>	terr	resident	3
Black-throated Sparrow	<i>Amphispiza bilineata</i>	terr	resident	3
Savannah Sparrow	<i>Passerculus sandwichensis</i>	terr	migrant	2
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	terr	migrant	6

IVANPAH		Zone	Residency	MNI
Pine Siskin	<i>Spinus pinus</i>	terr	migrant	1
House Finch	<i>Carpodacus mexicanus</i>	terr	resident	13
Brown-headed Cowbird	<i>Molothrus ater</i>	terr	resident	1
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	terr	resident	3

Cause of Death of Birds Found at the Solar Power Plants

Photovoltaic facility (Desert Sunlight):

Sixty-one birds from 33 separate species were represented from Desert Sunlight. Due to desiccation and scavenging, a definitive cause of death could not be established for 22 of the 61 birds (see Table 5). Feathers could be examined in all cases, however, and none of the 61 bird remains submitted from the PV facility had visible evidence of feather singeing, a clear contrast with birds found at Ivanpah.

Blunt force impact trauma was determined to have been the cause of death for 19 Desert Sunlight birds including two Western Grebes (*Aechmophorus occidentalis*) and one each of 16 other species. Impact (blunt force) trauma is diagnosed by the presence of fractures and internal and/or external contusions. In particular, bruising around the legs, wings and chest are consistent with crash-landings while fractures of the head and/or neck are consistent with high-velocity, frontal impact (such as may result from impacting a mirror).



Predation was the immediate cause of death for 15 birds. Lesions supporting the finding of predation included decapitation or missing parts of the body with associated hemorrhage (9/15), and lacerations of the skin and pectoral muscles. Eight of the predated birds from Desert Sunlight were



Figure 2: Predation trauma (top) resulting in traumatic amputation of the head and neck (American Avocet) and impact trauma (bottom) causing bruising of the keel ridge of the sternum (Brown Pelican).

grebes, which are unable to easily take off from land. This suggests a link between predation and stranding and/or impact resulting from confusion of the solar panels with water (see Discussion).

Parabolic trough facility (Genesis):

Thirty-one birds were collected from this site. There were 15 species represented. Those found in the greatest numbers were Brown-headed Cowbirds and Cliff Swallows, though no more than 6 individuals from any given species were recovered. Overall, carcass quality was poor and precluded definitive cause of death determination in 17/31 birds (Table 5). Identifiable causes of death consisted of impact trauma (6/31) and predation trauma (2/31). Necropsy findings were similar to those at Desert Sunlight with fractures and hemorrhage noted grossly. Predation trauma was diagnosed in two birds, a Cliff Swallow and a Ring-billed Gull.

Power tower facility (Ivanpah):

Ivanpah is the only facility in this study that produces solar flux, which is intense radiant energy focused by the mirror array on the power-generating tower. Objects that pass through this flux, including insects and birds, encounter extreme heat, although the extent of heating depends on many variables, including the duration of exposure and the precise location in the flux beam.

From Ivanpah, 141 birds were collected and examined. Collection dates spanned a period of one year and five months (July 2012 to December 2013) and included at least seven months of construction during which time the towers were not actively fluxing (2013). There were 49 species represented (Table 4). Those found in the greatest numbers were Yellow-rumped Warblers (*Setophaga coronata*; 14), House Finches (*Carpodacus mexicanus*; 13), Mourning Doves (*Zenaida macroura*; 11) and American Coots (*Fulica americana*; 7). Yellow-rumped Warblers and House Finches were found exclusively at the power tower site.

Solar flux injury was identified as the cause of death in 47/141 birds. Solar flux burns manifested as feather curling, charring, melting and/or breakage and loss. Flight feathers of the tail and/or wings were invariably affected. Burns also tended to occur in one or more of the following areas; the sides of the body (axillae to pelvis), the dorsal coverts, the tops and/sides of the head and neck and the dorsal body wall (the back). Overlapping portions of feathers and light-colored feathers were often spared (Figures 3 and 4).

Figure 3: contour feather from the back of a House Finch with Grade 3 solar flux injury. The feather has curling and charring limited to the exposed tip.

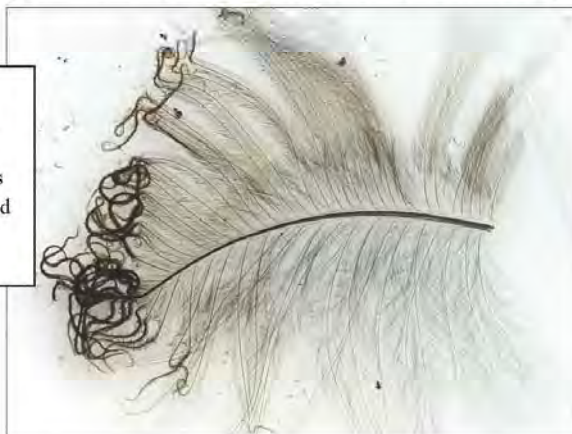




Figure 4: Feather from a Peregrine Falcon with Grade 2 solar flux injury. Note burning of dark feather bands with relative sparing of light bands.

The yellow and red rumps of Yellow-rumped Warblers and House Finches respectively remained strikingly unaffected (See Figure 1). Charring of head feathers, in contrast, was generally diffuse across all color patterns. A pattern of spiraling bands of curled feathers across or around the body and wings was often apparent.

Table 5. Cause of death (COD) data

Cause of Death	Ivanpah	Genesis	Desert Sunlight	Total
Solar Flux	47	0	0	47
Impact trauma	24	6	19	49
Predation trauma	5	2	15	22
Trauma of undetermined cause	14	0	0	14
Electrocution	1	0	0	1
Emaciation	1	0	0	1
Undetermined (remains in poor condition)	46	17	22	85
No evident cause of death	3	6	5	14
Total	141	31	61	233

Eight birds were assigned a feather damage Grade of 1 with curling of less than 50% of the flight feathers. Six of these had other evidence of acute trauma (75%). Five birds were Grade 2, including three birds that were found alive and died shortly afterwards. Of these birds, 2 (the birds found dead) also had evidence of acute trauma. Twenty-eight birds were Grade 3; with charring of body feathers. Of these birds, 21/28

(28%) had other evidence of acute trauma. Remaining carcasses (6) were incomplete and a grade could not be assigned.

Twenty-nine birds with solar flux burns also had evidence of impact trauma. Trauma consisted of skull fractures or indentations (8), sternum fractures (4), one or more rib fractures (4), vertebral fractures (1), leg fracture (3), wing fracture (1) and/or mandible fracture (1). Other signs of trauma included acute macroscopic and/or microscopic internal hemorrhage. Location found was reported for 39 of these birds; most of the intact carcasses were found near or in a tower. One was found in the inner heliostat ring and one was found (alive) on a road between tower sites. The date of carcass collection was provided for 42/47. None were found prior to the reported first flux (2013).



Figure 5: The dorsal aspect of the wing from a Peregrine Falcon (the same bird as shown in Figure 4) with Grade 2 lesions. Note extensive curling of feathers without visible charring. This bird was found alive, unable to fly, emaciated and died shortly thereafter. These findings demonstrate fatal loss of function due to solar flux exposure in the absence of skin or other soft tissue burns.

Among the solar flux cases, a variety of bird species were affected though all but one (a raptor) was a passerine (Appendix 2). House Finches and yellow-rumped Warblers were most often represented (10/47 and 12/47 respectively). For the birds in which species could be determined (41/47), insects were a major

dietary component in all but two species. These were an unidentified hummingbird (*Selasphorus*) species (known to include insects in the diet) and a Peregrine Falcon (a species that feeds on small birds).

Four birds were reportedly found alive and taken to a wildlife rehabilitation center where they died one to a few days later (exact dates were not consistently provided). Three had Grade 2 feather burns and one had Grade 3 feather burns. None had other evidence of trauma. Body condition was reduced in all of the birds (two considered thin and two emaciated) based on a paucity of fat stores and depletion of skeletal musculing. The four birds were of four different species and consisted of three passerines and one raptor.

The second most commonly diagnosed cause of death at the Ivanpah facility was impact (or blunt force) trauma (24/141 birds). Necropsy findings were as previously described at the Desert Sunlight facility. Impact marks were reported on heliostat mirrors adjacent to the carcasses in 5 cases and mirrors were described as being vertically-oriented in 5 cases. Specific carcass locations were reported for 18 of the birds. Those birds were found in a variety of areas; below heliostats (8/18), in or near tower and powerblock buildings (4/18), on roads (2/18), below power lines (2/18), in the open (1/18) and by a desert tortoise pen (1/18).

Predation was determined to be the cause of death for five of the birds. A coot and a Mourning Dove were found with extensive trauma and hemorrhage to the head and upper body consisting of lacerations, crush trauma and/or decapitation. One of the birds (an American Coot) was found near a kit fox shelter site. One bird (Northern Mockingbird) was found near the fence line and the third (a Mourning Dove) in an alley way. Two more birds (an unidentified sparrow and an American Pipit) were observed being eaten by one of the resident Common Ravens.

Discussion of Cause of Death of Birds Found at the Solar Power Plants

Impact trauma:

Sheet glass used in commercial and residential buildings has been well-established as a hazard for birds, especially passerines (Klem 1990, 2004, 2006; Loss et al. 2014). A recent comprehensive review estimated that between 365-988 million birds die annually by impacting glass panels in the United States alone (median estimate 599 million; Loss et al. 2014). Conditions that precipitate window strike events include the positioning of vegetation on either side of the glass and the reflective properties of the window. Glass panels that reflect trees and other attractive habitat are involved in a higher number of bird collisions.

The mirrors and photovoltaic panels used at all three facilities are movable and generally directed upwardly, reflecting the sky. At the Ivanpah facility, when heliostats are oriented vertically (typically for washing or installation, personal communication, RAK) they appear to pose a greater risk for birds. Of the eight birds reported found under a heliostat, heliostats were vertically-oriented in at least 5 cases. (D Klem Jr., DC Keck, KL Marty, AJ Miller Ball, EE Niciu, and CT Platt. 2004. Effects of window angling, feeder placement, and scavengers on avian mortality at plate glass. *Wilson Bulletin*, 116(1):69-73; D Klem Jr. 2006. Glass: A deadly conservation issue for birds. *Bird Observer* 34(2):73-81; D Klem Jr. 1990.

Collisions between birds and windows: mortality and prevention. *Journal of Field Ornithology* 61:120–128; Loss, S.R., T. Will, S.S. Loss, and P.P. Marra. 2014. Bird-building collisions in the United States: Estimates of annual mortality and species vulnerability. *Condor* 116: 8-23). Studies with aquatic insects have found that vertically-oriented black glass surfaces (similar to solar panels) produced highly polarized reflected light, making them highly attractive (Kriska, G., P. Makik, I. Szivak, and G. Horvath. 2008. Glass buildings on river banks as “polarized light traps” for mass-swarming polarotactic caddis flies. *Naturwissenschaften* 95: 461-467).

A desert environment punctuated by a large expanse of reflective, blue panels may be reminiscent of a large body of water. Birds for which the primary habitat is water, including coots, grebes, and cormorants, were over-represented in mortalities at the Desert Sunlight facility (44%) compared to Genesis (19%) and Ivanpah (10%). Several factors may inform these observations. First, the size and continuity of the panels differs between facilities. Mirrors at Ivanpah are individual, 4 x 8' panels that appear from above as stippling in a desert background (Figure 6). Photovoltaic panels at Desert Sunlight are long banks of adjacent 27.72 x 47.25" panels (70 x 120 cm), providing a more continuous, sky/water appearance. Similarly, troughs at Genesis are banks of 5 x 5.5' panels that are up to 49-65 meters long.



Figure 6: The Ivanpah Solar Electric Generating System as seen via satellite. The mirrored panels are 5 x 8 feet.

There is growing concern about “polarized light pollution” as a source of mortality for wildlife, with evidence that photovoltaic panels may be particularly effective sources of polarized light in the environment (see Horvath et al. 2010). Reducing the maladaptive attractiveness of solar panels to polarotactic insects. *Conservation Biology* 24: 1644-1653, and *ParkScience*, Vol. 27, Number 1, 2010; available online at: <http://www.nature.nps.gov/parkscience/index.cfm?ArticleID=386&ArticleTypeID=5>; as well as discussion of this issue in the Desert Sunlight Final Environmental Impact Statement, Chapter 4, pp. 14-15).

Variables that may affect the illusory characteristics of solar panels are structural elements or markings that may break up the reflection. Visual markers spaced at a distance of 28 cm or less have been shown to reduce the number of window strike events on large commercial buildings (City of Toronto Green Development Standard; Bird-friendly development guidelines. March 2007). Mirrors at the Ivanpah facility are unobscured by structures or markings and present a diffuse, reflective surface. Photovoltaic panels at Desert Sunlight are arranged as large banks of small units that are 60 x 90 cm. The visually uninterrupted expanse of both these types of heliostat is larger than that which provides a solid structure visual cue to passerines. Parabolic troughs at Genesis have large, diffusely reflective surfaces between seams that periodically transect the bank of panels at 5.5' intervals. Structures within the near field, including the linear concentrator and support arms, and their reflection in the panels and may provide a visual cue to differentiate the panel as a solid structure.

The paper by Horvath et al cited above provides experimental evidence that placing a white outline and/or white grid lines on solar panels significantly reduced the attractiveness of these panels to aquatic insects, with a loss of only 1.8% in energy-producing surface area (p. 1651). While similar detailed studies have yet to be carried out with birds, this work, combined with the window strike results, suggest that significant reductions in avian mortality at solar facilities could be achieved by relatively minor modifications of panel and mirror design. This should be a priority for further research.

Finally, ponds are present on the property of the Desert Sunlight and Genesis facilities. The pond at Genesis is netted, reducing access by migratory birds, while the pond at Desert Sunlight is open to flighted wildlife. Thus, birds are both attracted to the water feature at Desert Sunlight and habituated to the presence of an accessible aquatic environment in the area. This may translate into the misinterpretation of a diffusely reflected sky or horizontal polarized light source as a body of water.

Stranding and Predation:

Predation is likely linked to panel-related impact trauma and stranding. Water birds were heavily over-represented in predation mortalities at Desert Sunlight. Of the 15 birds that died due to predation, 14 make their primary habitat on water (coots, grebes, a cormorant, and an avocet). A single White-winged Dove was the only terrestrial-based predation mortality in the submitted specimens. This is in contrast to blunt trauma mortalities at Desert Sunlight in which 8 of the 19 birds determined to have died of impact trauma were water species.

Locations of the birds when found dead were noted on several submissions. Of the birds that died of predation for which locations were known, none were located near ponds. The physiology of several of

these water birds is such that locomotion on land is difficult or impossible. Grebes in particular have very limited mobility on land and require a run across water in order to take off (Jehl, J. R., 1996. Mass mortality events of Eared Grebes in North America. *Journal of Field Ornithology* 67: 471-476). Thus, these birds likely did not reach their final location intentionally. Ponds at the PV and trough sites are fenced, prohibiting terrestrial access by predators. Birds on the water or banks of the pond are inaccessible to resident predators. Therefore, it is unlikely that the birds were captured at the pond and transported by a predator into the area of the panels. Attempts to land or feed on the panels because of their deceptive appearance may have injured the birds to the point that they could not escape to safety, or inadvertently stranded the birds on a substrate from which they could not take flight. We believe that an inability to quickly flee after striking the panels and stranding on the ground left these birds vulnerable to opportunistic predators. At least two types of predators, kit foxes and ravens, have been observed in residence at the power tower and PV facilities and ravens have been reported at the trough site (personal communication and observation, RAK). Additionally, histories for multiple birds found at the tower site document carcasses found near kit fox shelters or being eaten or carried by a raven.

Solar Flux:

Avian mortality due to exposure to solar flux has been previously explored and documented (McCrary, M. D., McKernan, R. L., Schreiber, R. W., Wagner, W. D., and Sciarrotta, T. C. Avian mortality at a solar energy power plant. *Journal of Field Ornithology*, 57(2): 135-141). Solar flux injury to the birds of this report, as expected, occurred only at the power tower facility. Flux injury grossly differed from other sources of heat injury, such as electrocution or fire. Electrocution injury requires the bridging of two contact points and is, therefore, seen almost exclusively in larger birds such as raptors. Contact points tend to be on the feet, carpi and/or head and burns are often found in these areas. Electrocution causes deep tissue damage as opposed to the surface damage of fire or solar flux. Other sequelae include amputation of limbs with burn marks on bone, blood vessel tears and pericardial hemorrhage. Burns from fires cause widespread charring and melting of feathers and soft tissues and histopathologic findings of soot inhalation or heat damage to the respiratory mucosa. None of these were characteristics of flux injury. In the flux cases small birds were over-represented, had burns generally limited to the feathers and internal injuries attributable to impact. Flux injury inconsistently resulted in charring, tended to affect feathers along the dorsal aspects of the wings and tail, and formed band-like patterns across the body (Divincenti, F. C., J. A. Moncrief, and B. A. Pruitt. 1969. Electrical injuries: a review of 65 cases. *The Journal of Trauma* 9: 497-507).

Proposed mechanisms of solar flux-related death follow one or a combination of the following pathways:

- impact trauma following direct heat damage to feathers and subsequent loss of flight ability
- starvation and/or thermoregulatory dysfunction following direct heat damage to feathers
- shock
- soft tissue damage following whole-body exposure to high heat
- ocular damage following exposure to bright light.

Necropsy findings from this study are most supportive of the first three mechanisms.

Loss of feather integrity has effects on a bird's ability to take off, land, sustain flight and maneuver. Tail feathers are needed for lift production and maneuverability, remiges are needed for thrust and lift and feathers along the propatagium and coverts confer smoothness to the avian airfoil. Shortening of primary flight feathers by as little as 1.6 cm with loss of secondary and tertiary remiges has been shown to eliminate take-off ability in house sparrows further demonstrating the importance of these feathers (Brown, R. E., and A. C. Cogley, 1996. Contributions of the propatagium to avian flight: *Journal of Experimental Zoology* 276: 112-124). Loss of relatively few flight feathers can, therefore, render a bird unable or poorly-able to fly. Birds encountering the flux field at Ivanpah may fall as far as 400 feet after feather singeing. Signs of impact trauma were often observed in birds with feather burns and are supportive of sudden loss of function (Beaufreire, H., 2009. A review of biomechanic and aerodynamic considerations of the avian thoracic limb. *Journal of Avian Medicine and Surgery* 23: 173-185).

Birds appear to be able to survive flux burns in the short term, as evidenced by the collection of several live birds with singed feathers. Additionally, Forensic Lab staff observed a falcon or falcon-like bird with a plume of smoke arising from the tail as it passed through the flux field. Immediately after encountering the flux, the bird exhibited a controlled loss of stability and altitude but was able to cross the perimeter fence before landing. The bird could not be further located following a brief search (personal observation, RAK and EOE). Birds that initially survive the flux exposure and are able to glide to the ground or a perch may be disabled to the point that they cannot efficiently acquire food, escape predators or thermoregulate. Observations of emaciation in association with feather burns in birds found alive is supportive of debilitation subsequent to flux exposure. More observational studies and follow-up are required to understand how many birds survive flux exposure and whether survival is always merely short-term. As demonstrated by the falcon, injured birds (particularly larger birds), may be ambulatory enough to glide or walk over the property line indicating a need to include adjacent land in carcass searches.

There was evidence of acute skin burns on the heads of some of the Grade 3 birds that were found dead. But interestingly, tissue burn effects could not be demonstrated in birds known to have survived short periods after being burned. Hyperthermia causing instantaneous death manifests as rapid burning of tissue, but when death occurs a day or later there will be signs of tissue loss, inflammation, proteinic exudate and/or cellular death leading to multisystemic organ failure. The beginnings of an inflammatory response to injury can be microscopically observed within one to a few hours after the insult and would have been expected in any of the four birds found alive. Signs of heat stroke or inhalation of hot air should have been observable a day or more after the incident. Rather, in these cases extensive feather burns on the body largely appeared to be limited to the tips of the feathers with the overlapping portions insulating the body as designed. This, in conjunction with what is likely only a few seconds or less spent in the flux, suggests that skin or internal organ damage from exposure to high temperatures in solar flux may not be a major cause of the observed mortality.

Ocular damage following light exposure was also considered but could not be demonstrated in the submitted birds. In the four birds that initially survived, there were no signs of retinal damage, inflammation or other ocular trauma. Given the small sample size, this does not preclude sight impairment as a possible sequela but clinical monitoring of survivors would be needed to draw more definitive conclusions.

Other/Undetermined:

Powerline electrocution was the cause of death for one bird (a juvenile Common Raven) at the Ivanpah facility. Electrocution at these solar facilities is a potential hazard but, thus far, appears to be an uncommon cause of death.

Smashed birds (13/233) were found at all three locations. Detailed carcass collection information was provided for 6; all were found on roads. Though poor carcass quality in all cases precluded definitive cause death determination, circumstances and carcass condition suggest vehicle trauma as the cause of deaths. The relatively low numbers of vehicle collisions may be attributed to slow on-site vehicle speeds and light traffic. Vehicle collisions, therefore, do not appear to be a major source of mortality and would be expected to decrease as construction ends.

There was a large number of birds (85/233) for which a cause of death could not be determined due to poor carcass condition. The arid, hot environment at these facilities leads to rapid carcass degradation which greatly hinders pathology examination. Results were especially poor for birds from the Genesis facility, where the cause of death(s) for 23/31 (74%) could not be determined. These results underscore the need for carcasses to be collected soon after death. More frequent, concerted carcass sweeps are advised.

Insect mortality and solar facilities as “mega-traps”

An ecological trap is a situation that results in an animal selecting a habitat that reduces its fitness relative to other available habitats (Robertson, B.A. and R.L. Hutto. 2006. A framework for understanding ecological traps and an evaluation of existing evidence. *Ecology* 87: 1075-1085; Robertson, B.A., J.S. Rehage, and Sih, A. 2013. Ecological novelty and the emergence of evolutionary traps. *Trends in Ecology and Evolution* 28: 552-560).

A wide variety of circumstances may create ecological traps, ranging from subtle (songbirds attracted to food resources in city parks, where they are vulnerable to unnaturally high populations of predators) to direct (birds are attracted to oil-filled ponds, believing it to be water, and become trapped). It appears that solar flux facilities may act as “mega-traps,” which we define as artificial features that attract and kill species of multiple trophic layers. The strong light emitted by these facilities attract insects, which in turn attract insect-eating birds, which are incapacitated by solar flux injury, thus attracting predators and creating an entire food chain vulnerable to injury and death.

OLE staff observed large numbers of insect carcasses throughout the Ivanpah site during their visit. In some places there were hundreds upon hundreds of butterflies (including monarchs, *Danaus plexippus*) and dragonfly carcasses. Some showed singeing, and many appeared to have just fallen from the sky. Careful observation with binoculars showed the insects were active in the bright area around the boiler at the top of the tower. It was deduced that the solar flux creates such a bright light that it is brighter than the surrounding daylight. Insects were attracted to the light and could be seen actively flying the height of the tower. Birds were also observed feeding on the insects. At times birds flew into the solar flux and ignited. Bird carcasses recovered from the site showed the typical singed feathers. The large populations of insects

may also attract indigenous bat species, which were seen roosting in structures at the base of the power tower.

Monarch butterflies in North America – both east and west of the Rocky Mountains – have been documented to be in decline (see the North American Monarch Conservation Plan, available at: http://www.mlmp.org/Resources/pdf/5431_Monarch_en.pdf). Proposed causes include general habitat loss and specific loss of milkweed, upon which the butterflies feed and reproduce. Considering the numerous monarch butterfly carcasses seen at the Ivanpah facility, it appears that solar power towers could have a significant impact on monarch populations in the desert southwest. Analysis of the insect mortality at Ivanpah, and systematic observations of bird/insect interactions around the power tower, is clearly needed.

Bird species affected by solar flux include both insectivores (e.g. swallows, swifts, flycatchers, and warblers) and raptors that prey on insect-feeding birds. Based on observations of the tower in flux and the finding of large numbers of butterflies, dragonflies and other insects at the base of the tower and in adjacent buildings it is suspected that the bright light generated by solar flux attracts insects, which in turn attracts insectivores and predators of insectivores. Waterbirds and other birds that feed on vegetation were not found to have solar flux burns. Birds were observed perching and feeding on railings at the top of the tower, apparently in response to the insect aggregations there.

Further, dead bats found at the Ivanpah site could be attracted to the large numbers of insects in the area. Nineteen bats from the condenser area of the power tower facility have been submitted to NFWFL for further evaluation. These bats belong to the Vespertilionidae and Molossidae families, which contain species considered by the Bureau of Land Management to be sensitive species in California. Preliminary evaluation revealed no apparent singing of the hair, and analysis is ongoing.

Solar flux and heat associated with solar power tower facilities

Despite repeated requests, we have been unsuccessful in obtaining technical data relating to the temperature associated with solar flux at the Ivanpah facility. The following summarizes the information we have gathered from other sources.

The Ivanpah solar energy generating facility consists of mirrors that reflect sunlight to a tower. In the tower sits a boiler that generates steam which then powers a turbine.

At the top of a 459 foot tall tower sits a boiler (solar receiver) that is heated by the sun rays reflected by 300,000 mirrors, called solar heliostats. When the concentrated sunlight strikes the boiler tubes, it heats the water to create superheated steam. The high temperature steam is then piped from the boiler to a turbine where electricity is generated (<http://ivanpahsolar.com/about> visited on 01/20/2014).



Figure 7 Ivanpah solar power facilities
<http://ivanpahsolar.com/about>

If all the solar heliostats are focused on the solar tower the beams multiply the strength of sunlight by 5000 times, and this generates temperatures at the solar tower in excess of 3600° Fahrenheit (> 1982° Celsius). Since steel melts at 2750° Fahrenheit (1510° Celsius), only a percentage of heliostats are focused on the solar receiver so that the optimal temperature at the tower is approximately 900° Fahrenheit (~482° Celsius) (“How do they do it” Wag TV for Discovery Channel, Season 3, Episode 15, “Design Airplane Parachutes, Create Solar Power, Make Sunglasses” Aired August 25, 2009).

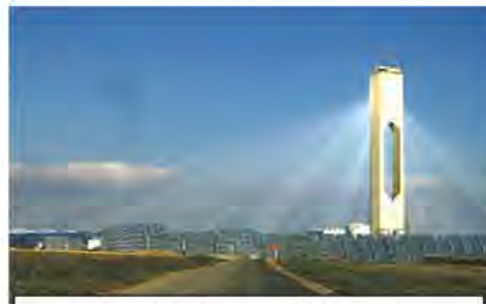


Figure 8: Seville solar power facility (<http://inhabitat.com/sevilles-solar-power-tower>)

A solar steam plant in Coalinga that also uses heliostat technology for extracting oil is on record stating that the steam generator is set to about 500° Celsius. (<http://abclocal.go.com/kDSn/story?section=news%2Fbusiness&id=8377469> Viewed Jan 21, 2013)

Temperatures measured by the authors at the edge of the solar complex on the surface of a heliostat were approximately 200° Fahrenheit (~93° Celsius). Therefore, there is a gradient of temperature from the edge of the solar field to the tower that ranges from 200° to 900° Fahrenheit.

There is a phenomenon that occurs when the heliostats are focused on the tower and electricity is being generated. The phenomenon can be described as either a circle of clouds around the tower or, at times, a cloud formed on the side that is receiving the solar reflection. It appears as though the tower is creating clouds. Currently we propose two hypotheses of why this “cloud” is formed. The first hypothesis is simply the presumption that the high heat associated with towers is condensing the air, and forming the



Figure 9: Tower 1 (bright white) is shown under power. Tower 2 (black) is not operating.

2 of 28

clouds. The second hypothesis is that this phenomenon does not represent clouds at all rather it is a place in space where the heliostats that are not being used to generate heat are focused. Under this scenario, it is a place where the mirrors focus the excess energy not being used to generate electricity.

Ivanpah employees and OLE staff noticed that close to the periphery of the tower and within the reflected solar field area, streams of smoke rise when an object crosses the solar flux fields aimed at the tower. Ivanpah employees used the term “streamers” to characterize this occurrence.

When OLE staff visited the Ivanpah Solar plant, we observed many streamer events. It is claimed that these events represent the combustion of loose debris, or insects. Although some of the events are likely that, there were instances in which the amount of smoke produced by the ignition could only be explained by a larger flammable biomass such as a bird. Indeed OLE staff observed birds entering the solar flux and igniting, consequently becoming a streamer.

OLE staff observed an average of one streamer event every two minutes. It appeared that the streamer events occurred more frequently within the “cloud” area adjacent to the tower. Therefore we hypothesize that the “cloud” has a very high temperature that is igniting all material that traverses its field. One possible explanation of this this phenomenon is that the “cloud” is a convergent location where heliostats are “parked” when not in use. Conversely it undermines the condensation hypothesis, given that birds flying through condensation clouds will not spontaneously ignite.

Temperatures required to burn feathers

Many of the carcasses recovered from the Ivanpah Solar plant after the plant became operational showed singeing of feathers as shown in Figure 10.



Figure 10: Singed feathers from a Northern Rough-winged Swallow

In order to investigate at what temperature feathers burn/singe, we exposed feathers to different air temperatures. Each feather was exposed to a stream of helium and air for 30 seconds. The results indicate that at 400° Celsius (752° Fahrenheit) after 30 seconds the feather begins to degrade. But at 450° and



Figure 11: Results of exposing feathers to different temperatures (in degrees Celsius)

500° Celsius (842° and 932° Fahrenheit respectively) the feathers singed as soon as they made contact with the superheated air (Figure 11). Therefore, when singed birds are found, it can be inferred that the temperatures in the solar flux at the time a bird flew through it was at least 400° Celsius (752° Fahrenheit). This inference is consistent with the desired operating temperature of a power tower solar boiler (482° Celsius).

The fact that a bird will catch on fire as it flies through the solar flux has been confirmed by a Chevron engineer who works at the Coalinga Chevron Steam plant, a joint venture of Chevron and BrightSource Solar.

(<http://abclocal.go.com/kDSn/story?section=news%2Fbusiness&id=8377469> Viewed Jan 21, 2013)

Conclusions and Recommendations

In summary, three main causes of avian mortality were identified at these facilities; impact trauma, predation and solar flux. Birds at all three types of solar plants were susceptible to impact trauma and predators. Solar flux injury was unique to the power tower facility. Solar facilities, in general, do not appear to attract particular species, rather an ecological variety of birds are vulnerable. That said, certain mortality and species trends were evident, such as waterbirds at Desert Sunlight, where open water sources were present.

Specific hazards were identified, including vertically-oriented mirrors or other smooth reflective panels; water-like reflective or polarizing panels; actively fluxing towers; open bodies of water; aggregations of insects that attracted insectivorous birds; and resident predators. Making towers, ponds and panels less attractive or accessible to birds may mitigate deaths. Specific actions include placing perch-guards on power tower railings near the flux field, properly netting or otherwise covering ponds, tilting heliostat mirrors during washing and suspending power tower operation at peak migration times.

Visual cues should be retrofitted to existing panels and incorporated into new panel design. These cues may include UV-reflective or solid, contrasting bands spaced no further than 28 cm from each other. This arrangement has been shown to significantly reduce the number of passerines hitting expanses of windows on commercial buildings. Spacing of 10 cm eliminates window strikes altogether. Further exploration of panel design and orientation should be undertaken with researchers experienced in the field (Daneil Klem Jr. of Muhlenberg College) to determine causes for the high rate of impact trauma, and designs optimized to reduce these mortalities.

Challenges to data collection included rapid degradation of carcass quality hindering cause of death and species determination; large facilities which are difficult to efficiently search for carcasses; vegetation and panels obscuring ground visibility; carcass loss due to scavenging; and inconsistent documentation of carcass history. Searcher efficiency has been shown to have varying influences on carcass recovery with anywhere from 30% to 90% detection of small birds achieved in studies done at wind plants (Erickson et al., 2005). Scavengers may also remove substantial numbers of carcasses. In studies done on agricultural fields, up to 90% of small bird carcasses were lost within 24 hours (Balcomb, 1986; Wobeser and Wobeser, 1992). OLE staff observed apparently resident ravens at the Ivanpah power tower. Ravens are efficient scavengers, and could remove large numbers of small bird carcasses from the tower vicinity. (Erickson, W. P., G. D. Johnson, and D. P. Young, Jr., 2005, A summary and comparison of bird mortality from anthropogenic causes with an emphasis on collisions: U S Forest Service General Technical Report PSW, v. 191, p. 1029-1042; Balcomb, R., 1986, Songbird carcasses disappear rapidly from agricultural fields: Auk, v. 103, p. 817-820; Wobeser, G., and A. G. Wobeser, 1992, Carcass disappearance and estimation of mortality in a simulated die-off of small birds: Journal of Wildlife Diseases, v. 28, p. 548-554.)

Given these variables it is difficult to know the true scope of avian mortality at these facilities. The numbers of dead birds are likely underrepresented, perhaps vastly so. Observational and statistical studies to account for carcass loss may help us to gain a better sense of how many birds are being killed. Complete histories would help us to identify factors (such as vertical placement of mirrors) leading to mortalities. Continued monitoring is also advised as these facilities transition from construction to full operation. Of especial concern is the Ivanpah facility which was not fully-functioning at the time of the latest carcass submissions. In fact, all but 7 of the carcasses with solar flux injury and reported dates of collection were found at or prior to the USFWS site visit (October 21-24, 2013) and, therefore, represent flux mortality from a facility operating at only 33% capacity. Investigation into bat and insect mortalities at the power tower site should also be pursued.

ACKNOWLEDGMENTS

We wish to acknowledge the invaluable assistance and insights of S.A. Michael Clark and S.A. Ed Nieves.

Appendix 1. List of all 71 species recovered from the three solar energy sites. In this table, remains of closely related taxa that could not be definitively identified (e.g. Cinnamon/Blue-winged Teal and Black-throated/Sage Sparrow) are assigned to the biogeographically more likely taxon. In all such cases, the possible taxa are ecologically similar. All of these species are MBTA-listed.

SPECIES		Zone	Residency	Sites	MNI
Cinnamon Teal	<i>Anas cyanoptera</i>	water	migrant	DS,IV	5
Pied-billed Grebe	<i>Podilymbus podiceps</i>	water	migrant	DS	1
Western Grebe	<i>Aechmophorus occidentalis</i>	water	migrant	DS	9
Eared Grebe	<i>Podiceps nigricollis</i>	water	migrant	DS,GN	5
Brown Pelican	<i>Pelecanus occidentalis</i>	water	migrant	DS	2
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	water	migrant	DS	2
Great Blue Heron	<i>Ardea herodias</i>	water	migrant	GN	1
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	water	migrant	DS	1
Cooper's Hawk	<i>Accipiter cooperii</i>	air	migrant	IV	1
Red-shouldered Hawk	<i>Buteo lineatus</i>	terr	migrant	IV	1
American Kestrel	<i>Falco sparverius</i>	air	resident	GN,IV	2
Peregrine Falcon	<i>Falco peregrinus</i>	air	resident	IV	1
American Coot	<i>Fulica americana</i>	water	migrant	DS, IV	12
Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	water	resident	DS	1
Sora	<i>Porzana carolina</i>	water	migrant	DS,IV	2
American Avocet	<i>Recurvirostra americana</i>	water	migrant	DS	1
Spotted Sandpiper	<i>Actitis maculatus</i>	water	migrant	IV	2
Ring-billed Gull	<i>Larus delawarensis</i>	water	migrant	GN	2
California Gull	<i>Larus californianus</i>	water	resident	GN	1
Greater Roadrunner	<i>Geococcyx californianus</i>	terr	resident	IV	5
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	terr	migrant	IV	1
Mourning Dove	<i>Zenaida macroura</i>	terr	resident	DS, IV	14
White-winged Dove	<i>Zenaida asiatica</i>	terr	resident	DS,GN	2
Barn Owl	<i>Tyto alba</i>	terr	resident	IV	1
Lesser nighthawk	<i>Chordeiles acutipennis</i>	air	resident	DS,GN,IV	7
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	air	resident	DS,IV	2
White-throated Swift	<i>Aeronautes saxatalis</i>	air	resident	IV	1
Costa's Hummingbird	<i>Calypte costae</i>	air	resident	DS	1
Allen's/Rufous Hummingbird	<i>Selasphorus sp.</i>	air	migrant	IV	1
Northern Flicker	<i>Colaptes auratus</i>	terr	resident	IV	1
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	air	resident	DS,IV	2
Say's Phoebe	<i>Sayornis saya</i>	air	resident	GN	2
Black Phoebe	<i>Sayornis nigricollis</i>	air	resident	DS	1
Loggerhead shrike	<i>Lanius ludovicianus</i>	terr	resident	DS,IV	5
Warbling Vireo	<i>Vireo gilvus</i>	terr	migrant	IV	1
Common Raven	<i>Corvus corax</i>	terr	resident	DS,IV	3
Horned Lark	<i>Eremophila alpestris</i>	terr	migrant	DS	1
Tree Swallow	<i>Tachycineta bicolor</i>	air	migrant	DS,GN,IV	5

SPECIES		Zone	Residency	Sites	MNI
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	air	resident	GN	5
No. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	air	migrant	IV	2
Verdin	<i>Auriparus flaviceps</i>	terr	resident	IV	3
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	terr	resident	IV	1
Northern Mockingbird	<i>Mimus polyglottos</i>	terr	resident	IV	1
American Pipit	<i>Anthus rubescens</i>	terr	migrant	IV	4
Orange-crowned Warbler	<i>Oreothlypis celata</i>	terr	migrant	IV	1
Lucy's Warbler	<i>Oreothlypis luciae</i>	terr	resident	IV	1
Yellow-rumped Warbler	<i>Setophaga coronata</i>	air	migrant	IV	14
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	terr	migrant	IV	1
Hermit Warbler	<i>Setophaga occidentalis</i>	terr	migrant	GN	1
Townsend's warbler	<i>Setophaga townsendi</i>	terr	migrant	DS,IV	4
Yellow Warbler	<i>Setophaga petechia</i>	terr	migrant	IV	1
Black-and-white Warbler	<i>Mniotilta varia</i>	terr	migrant	IV	1
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	terr	migrant	IV	1
Wilson's Warbler	<i>Cardellina pusilla</i>	terr	migrant	DS,IV	4
Common Yellowthroat	<i>Geothlypis trichas</i>	terr	migrant	DS	1
Western Tanager	<i>Piranga ludoviciana</i>	terr	migrant	DS,IV	4
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	terr	migrant	DS,GN	2
Lazuli Bunting	<i>Passerina caerulea</i>	terr	migrant	IV	1
Blue Grosbeak	<i>Passerina caerulea</i>	terr	resident	IV	1
Green-tailed Towhee	<i>Pipilo chlorurus</i>	terr	migrant	IV	1
Brewer's Sparrow	<i>Spizella breweri</i>	terr	resident	IV	3
Chipping Sparrow	<i>Spizella passerina</i>	terr	resident	GN,IV	4
Black-throated Sparrow	<i>Amphispiza bilineata</i>	terr	resident	DS,IV	4
Savannah Sparrow	<i>Passerculus sandwichensis</i>	terr	migrant	DS,IV	3
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	terr	migrant	IV	6
Pine Siskin	<i>Spinus pinus</i>	terr	migrant	IV	1
House Finch	<i>Carpodacus mexicanus</i>	terr	resident	IV	13
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	terr	resident	DS,IV	5
Brown-headed Cowbird	<i>Molothrus ater</i>	terr	resident	DS,GN,IV	8
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	terr	migrant	DS	1
Bullock's Oriole	<i>Icterus bullockii</i>	terr	resident	GN	2

Species recovered from one site: 47
two sites: 18
three sites: 5

Appendix 2. Species with solar flux burns

Common Name	Scientific name	
Yellow-rumped warbler	<i>Setophaga coronata</i>	12
House finch	<i>Carpodacus mexicanus</i>	10
Chipping sparrow	<i>Spizella passerina</i>	2
Unidentified warbler	<i>Parulidae</i>	2
Verdin	<i>Auriparus flaviceps</i>	2
Great-tailed grackle	<i>Quiscalus mexicanus</i>	2
Lucy's warbler	<i>Oreothlypis luciae</i>	1
Wilson's warbler	<i>Cardellina pusilla</i>	1
MacGillivray's warbler	<i>Oporornis tolmei</i>	1
Black-throated gray warbler	<i>Setophaga nigrescens</i>	1
Townsend's warbler	<i>Setophaga townsendi</i>	1
Orange-crowned warbler	<i>Oreothlypis celata</i>	1
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	1
Unidentified swallow	<i>Hirundinidae</i>	1
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	1
Warbling vireo	<i>Vireo gilvus</i>	1
Unidentified hummingbird	<i>Selasphorus sp.</i>	1
Unidentified passerine	<i>Passeriformes</i>	1
Unidentified finch	<i>Carpodacus sp.</i>	1
Lazuli bunting	<i>Passerina caerulea</i>	1
Unidentified sparrow	<i>Spizella species</i>	1
Unidentified blackbird	<i>Icteridae</i>	1
Peregrine falcon	<i>Falco peregrinus</i>	1

Letter 9
Law Offices of Stephan C. Volker
November 19, 2014

Response to Comment 9-1

The County acknowledges receipt of the “Backcountry Against Dumps” November 19, 2014 comment letter on the Draft EIR for the Iris Cluster Solar Farm Project and its general opposition to the project. This comment summarizes the overall characteristics of the projects as described in Chapter 3 of the EIR.

The proposed solar farm use is not “forbidden” by the Imperial County General Plan—as is claimed according to the commentator’s interpretation of the General Plan. The proposed solar use is consistent with the County’s General Plan and is a conditionally permitted use under the County’s Land Use Ordinance. Please refer to responses to comment 9-2 for additional discussion of the projects’ consistency with the County’s General Plan and 9-3 for additional discussion of the project’s impact to agricultural resources and local operations.

Response to Comment 9-2

This comment indicates that the project is inconsistent with the County’s General Plan based on precedent established in the court case “Neighborhood Action Group v. County of Calaveras” (1984) 156 Cal. App.3d 1176, 1184. In that case, the County of Calaveras approved a conditional use permit (CUP) for a proposed project, but the County did not have a valid General Plan (i.e., the General Plan was determined not to be in compliance with State law). This, in turn, invalidated the County’s issuance of a CUP for the project. The circumstances regarding the Neighborhood Action Group v. County of Calaveras case are not applicable to the project. Unlike the “Neighborhood” case, the County of Imperial’s General Plan meets State requirements and is legally valid. As such, no defect exists as it relates to the County’s authority to issue a CUP for the proposed solar generation projects, consistent with the underlying zoning designations within the project sites. Moreover, in a recent trial court case in the County of Imperial (Campoverde) a judge found that solar farms are consistent with the County’s adopted General Plan.

Specifically with respect to the proposed projects, as indicated on EIR pages 4.10-11 through 4.10-12:

Pursuant to Title 9, Division 5, Chapter 9 of the County’s Zoning Ordinance, “Solar Energy Plants” are permitted uses in the A-2, A-2-R, and A-3 zones; subject to approval of a CUP. The Land Use Compatibility Matrix (see Table 4 of the General Plan Land Use Element) identifies land designated as “Agriculture” as compatible with lands zoned A-2, A-2-R, and A-3. In this content, the project facilities are a conditionally permitted use under the A-2, A-2-R, and A-3 zones and, therefore, are considered consistent with the General Plan and agricultural land use designation. Further, post-project restoration of the project sites would ensure future agricultural production and substantial conformance with the goals and objectives of the County’s General Plan.

One of the Court’s primary considerations in the “Neighborhood” case was whether the County of Calaveras had the authority to issue a CUP if it had failed to adopt a general plan containing elements, required by state law, which are relevant to the uses authorized by the permit. The County of Imperial’s General Plan Land Use Element recognizes solar energy (an alternative form of energy) as being consistent with the County’s overall goals and energy policies. As indicated on EIR Table 4.10-1, Project Consistency with Applicable Plan Policies (see EIR page 4.10-7), Development of Geothermal/Alternative Energy Resources. Goal 1 - the County of Imperial supports and encourages the full, orderly, and efficient development of geothermal/alternative energy resources while at the same time preserving and enhancing where possible agricultural, biological, human, and recreational resources. With the approval of all CUPs, Variances and discretionary permits, the proposed projects would be an allowable use within the existing land use and zoning designations for the sites. In addition, the project would promote Imperial County’s renewable energy policies and would be consistent with the County’s goal, as stated in its April

20, 2010 proclamation. According to the April 28, 2009 Joint Resolution of Imperial County Irrigation District and County of Imperial for the Creation of an Imperial Valley Renewable Energy Development Program, Imperial County is a major source of renewable energy for the State of California (see response to comment 9-16).

Response to Comment 9-3

This comment incorrectly states an interpretation of the General Plan that it “forbids” the proposed solar farm use on the proposed project sites. While the County’s General Plan Land Use Agriculture category states that “agriculture shall be promoted as the principal and dominate use”; the Element does not restrict or otherwise forbid other uses. Moreover, agricultural uses continue to be the principal dominate use in the County. As provided in the Land Use Element, conversion of agricultural uses is allowed in cases “where a clear long term economic benefit to the County can be demonstrated through the planning and environmental review process.” An economic, employment, and fiscal impact analysis has been prepared for the projects (Development Management Group, Inc., 2014) and is provided as EIR Technical Appendix M. The information in this analysis will be considered by the Planning Commission and Board of Supervisors as part of consideration of approval of the proposed projects, consistent with this particular provision of the General Plan.

CUPs for solar energy projects on agriculturally-zoned land are not expressly prohibited in the Imperial County General Plan. Although each conditional use permit application must be evaluated on a case-by-case basis, such conditional uses are not inherently inconsistent with the General Plan Agricultural Element or Land Use Element. The Agricultural Element and Land Use Element contain no express prohibition of non-agricultural uses on land designated within the Agricultural category. Rather, the Agricultural Element specifically allows non-agricultural development on land within the Agricultural Category. According to the Land Use Element, the “Agriculture” land use designation expressly allows non-agricultural uses on agricultural land and places an appropriate burden on those proposing a non-agricultural use to demonstrate that (1) it “does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations” and (2) it meets the requirement that “no use should be permitted which would have a significant adverse effect on agricultural production.” (ICGP Land Use Elem. IV.C.1.) The Lead Agency has the authority to interpret the meaning of the General Plan and determine whether the proposed projects, together with the mitigation measures set forth in the EIR and the conditions of approval mandated by a CUP, are consistent with the General Plan.

Response to Comment 9-4

General Plan goals and policies for preserving agricultural land are not inflexible and, pursuant to the language in the General Plan, should be balanced with General Plan goals and objectives of economic growth and regional vision. The General Plan Agricultural Element specifically cautions against its Goals and Policies being interpreted as doctrine:

Imperial County’s Goals and Objectives are intended to serve as long-term principles and policy statements representing ideals which have been determined by the citizens as being desirable and deserving of community time and resources to achieve. The Goals and Objectives, therefore, are important guidelines for agricultural land use decision making. It is recognized, however, that other social, economic, environmental, and legal considerations are involved in land use decisions and that these [Agricultural Element] Goals and Objectives, and those of other General Plan Elements, should be used as guidelines but not doctrines. (ICGP Ag. Elem. III.A Preface [emphasis added].)

In addition to the considerations set forth in the Agricultural Element regarding non-agricultural use of land within the Agricultural category, preserving Agricultural land for agricultural use must be balanced against the Economic Growth and Regional Vision goals and objectives of the General Plan Land Use Element. In particular, Goal 2 states: “Diversify employment and economic opportunities in the County while preserving agricultural activity.” Goal 3, Objective 3.2 states: “Preserve agricultural and natural resources while promoting diverse economic growth through sound land use planning.” These goals and

objectives call for a balanced approach between preserving agricultural land and promoting economic growth.

Furthermore and as provided on page 4.2-17 of the Draft EIR, existing nuisance issues such as noise, dust, and odors from existing agricultural uses would not impact the projects given the general lack of associated sensitive uses (e.g. residences). Likewise, with mitigation measures proposed in other resource sections (e.g. air quality, noise, etc.) project-related activities would not adversely affect adjacent agricultural operations. Additionally, the projects would not develop infrastructure that would attract or encourage new development of adjacent farmlands. Further, the provisions of the Imperial County Right-to-Farm Ordinance (No. 1031) and the State nuisance law (California Code Sub-Section 3482) would continue to be enforced. Based on these considerations, the projects are not expected to adversely impact adjacent landowners' abilities to economically and conveniently farm adjacent agricultural land and the impact is considered less than significant.

Response to Comment 9-5

The comment states that the projects would terminate and prevent agricultural uses on the project sites for the projects' operational life of up to 40 years. This project-related impact is disclosed in Impact 4.2.1 of the Draft EIR (see pages 4.2-12 through 4.2-15) and was determined to be significant in the absence of mitigation. With the implementation of Mitigation Measures 4.2-1a and 4.2-1b, this impact would be reduced to a less than significant level. The comment does not question the adequacy of Mitigation Measures 4.2-1a and 4.2-1b in minimizing this impact.

Response to Comment 9-6

The County recognizes that the proposed solar uses are not compatible with the existing Williamson Act lands located within the project sites. Therefore, cancellation of William Act contracted lands is a required discretionary action associated with approval of the projects. EIR Section "Required Project Approvals" (see EIR page 3-26) states:

Williamson Act Contract Cancellation. There are three active Williamson Act Contracts within the FSF and ISF project sites. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (Assessor's Parcel Numbers [APNs]: 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN: 059-050-002) within the ISF project site. One parcel associated with Contract 2003-001 (APN: 059-050-001) is also part of Agricultural Preserve 160 and is located within the FSF project site. Petitions for cancellation of these contracts were filed with the County in 2014.

In addition to the on-site contracts, page 4.2-16 of the EIR acknowledges the presence of other properties surrounding the project sites under active Williamson Act Contracts (see Figure 4.2-1) and the potential creation of disincentives for adjacent properties to keep renewing their existing contracts. However, given that final land uses following the projects useful lifecycle would consist of agricultural uses, no new growth pressures are anticipated as a direct consequence of the projects.

Additionally, the Imperial County Board of Supervisors recently voted in 2010 to not renew existing Williamson Act Contracts within the County due to the State's decision to discontinue funding for the program. This essentially means that all Williamson Act contracts in Imperial County will terminate on or before December 31, 2018. Although there remains a possibility that the State' will reinstate funding for Williamson Act subventions, the fact the Board of Supervisors has already voted to discontinue funding for the program brings into question the continuation of the Williamson Act program within Imperial County. Although, landowners do have the option to protest the non-renewal, this option only allows them to keep their Williamson Act value until there is less than six years remaining in the non-renewal phase-out. Beyond four years, current tax incentives would no longer apply. Based on these circumstances, if the property owners had protested, which they did not, each of the active Williamson Act contracts could theoretically be in non-renewal status prior to project approval.

Response to Comment 9-7

Please refer to responses to comments 9-4 and 9-6.

Response to Comment 9-8

The County appreciates the additional information provided by the comment as it relates to the projects' potential to increase temperatures and decrease humidity levels on surrounding farmland. After further investigation of Exhibit III, it appears that the commenter is overstating the results of the study. As provided, although the field data showed a decline in air temperatures as a function of distance from the solar farm, the study notes that the solar array was completely cooled at night (most days) based on 18 months of data. As a result, the formation of a heat island was determined unlikely. Further, the study indicated that access roads in-between the solar arrays, as proposed as part of the projects, allowed for substantial cooling. In this context, micro-climatic changes as a result of the projects are considered less than significant.

Response to Comment 9-9

Local public and private airport operations are considered in Impacts 4.8-5 and 4.8-6 of the EIR (see pages 4.8-18 to 4.8-19). As provided, the Calexico International Airport is located approximately 2.5 miles east of the ISF project site and the Frontier Agricultural Services and Johnson Brothers private airstrip is located approximately 0.50 mile southeast of ISF. On August 13, 2014 the Imperial County Airport Land Use Commission reviewed the project and determined that the project is consistent with the Airport Land Use Compatibility Plan (ALUCP). The potential for compatibility impacts between the private airstrip and projects included consideration of the projects' potential to produce light and glare impacts and the introduction of structures on the project sites that could interfere with the aerial application operations. Given that aerial application operations would be discontinued over the project sites and lessened in the project vicinity due to other nearby solar farms, the impact is considered less than significant. This comment does not raise any issue as to the adequacy of the EIR analysis.

Response to Comment 9-10

Pursuant to CEQA, an economic impact is not an impact on the physical environment that must be addressed in an EIR (see CEQA Guidelines Section 15131). The County considers the fiscal and economic impacts as part of approval of the projects. Conditions of Approval, in terms of financing of services, etc. are also placed on each of these projects based on the findings of the particular fiscal/economic study. Previous solar projects approved by the County have been shown to provide a fiscal benefit to the County.

An economic, employment, and fiscal analysis has been prepared for the projects (Appendix M) and this information will be considered as part of the Planning Commission and Board of Supervisor consideration for approval of the projects. The analysis provided in EIR Appendix M indicates that the proposed project would have an overall economic, employment and fiscal benefit as compared to the existing agricultural use of the project sites.

Response to Comment 9-11

Please refer to responses to comments 9-3, 9-4, and 9-5.

Response to Comment 9-12

Please refer to responses to comments 9-2 and 9-3.

Response to Comment 9-13

Please refer to responses to comments 9-2 and 9-3.

Response to Comment 9-14

As provided in response to comment 9-4, the EIR provides consideration for the projects' potential to impact adjacent agricultural lands and operations. Based on the analysis provided under Impact 4.2-4 (page 4.2-17), the projects would not directly affect the movement of agricultural equipment on local roadways nor would they disrupt access to existing agriculture-serving roads. Additionally, County setback requirements combined with existing roadways along the borders of each project site would provide physical separation between the solar arrays and adjacent agricultural operations. Based on these circumstances, the comment provides no basis as to why agricultural usage on adjacent properties would become infeasible with the projects. With respect to crop dusters, the potential restriction about over spraying would be no different than being surrounded by organic farms which would prohibit the use of pesticides.

Response to Comment 9-15

As provided on page 3-21 of the EIR, the projects would include the installation of a grounding system to permit dissipation of ground fault currents. With the implementation of standard engineering practices as part of the grounding installation, this impact is considered less than significant.

Response to Comment 9-16

Please refer to response to comment 9-14.

Response to Comment 9-17

Pursuant to Government Code §51200 et seq., Williamson Acts, cancellation of lands within Williamson Act contracts is allowed. The Act contains specific provisions for the cancellation of the contracts which the County will implement as part of the approvals of the projects. Although the commenter argues that the County cannot lawfully cancel the three existing Williamson Act contracts based on a perceived inconsistency with the County's General Plan and public benefit, substantial evidence shows that this is not the case. Cancellation of the contracts would be consistent with the Act and County's General Plan and in the public interest because of the following:

- All Williamson Act Contracts in the County will expire because the County Board of Supervisors in 2010 directed County staff to file notices of Non-Renewal for all active Williamson Act Contracts in the County. This policy direction by the County Board of Supervisors in essence determined that the cancellation of Williamson Act Contracts may not have an effect of removing land from agricultural production.
- The proposed project sites represent approximately 0.25% of the total amount of land devoted to agriculture in Imperial County.
- Because solar energy projects are largely passive facilities that do not generate dust, noise, or other impacts that would impact adjacent agricultural uses, they do not threaten the preservation of such adjacent agricultural uses.

Therefore, the cancellation of these contracts would result in a less than significant impact.

Response to Comment 9-18

The County disagrees with the comment's assertion that the projects' are not adequately described in the Draft EIR. As stated in Chapter 3 of the EIR, the proposed projects involve four separate CUP applications associated with four project sites. A single solar energy facility is not proposed. In fact, four separate solar generating facilities are contemplated, each governed by its own CUP application; however, they would share the same transmission line. The County has prepared this EIR in order to comprehensively address the potential environmental impacts associated with the development of the project sites under these four CUP applications. Each site could potentially be developed with differing technologies based on market conditions at the time of construction. For this reason, the EIR evaluates both expansive photovoltaic (PV) and concentrated photovoltaic (CPV) technologies within a fixed-tilt or tracker mount system. Representative examples of these technologies are considered and analyzed in Section 4.1 of the EIR (see EIR Figures 4.1-3 through 4.1-18).

In relation to the proposed Operations and Maintenance (O&M) buildings, page 3.9 of the EIR provides a description of these project facilities. An O&M building is contemplated for each of the project sites; however, there may be cases where the O&M building on one site can be shared with an adjacent solar project (see EIR page 3-9). As described, the footprint of the O&M buildings at each location would not exceed an area of approximately 5,000 square feet. The parking area would comprise an area of less than 0.25 acres. The O&M buildings would consist of a steel framed structure with metal siding and roof panels and painted to match the surrounding landscape (e.g., desert sand). The O&M buildings would include a small office, storage space, an electrical/array control room, restroom, and a compact water treatment facility. Subsequent to project approval, construction level engineering plans will be submitted by the applicant to the County Planning & Development Services Department, which in turn will be provided to the Fire Prevention Bureau for review and approval as part of the development review/building permit process.

The project objective of providing up to 360 MW of power reflects the County's mission to help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), the County's goals of becoming a major source of renewable energy for California, and the Applicant's goal to assist the County with these initiatives.

According to the April 28, 2009 Joint Resolution of Imperial County Irrigation District and County of Imperial for the Creation of an Imperial Valley Renewable Energy Development Program, Imperial County is a major source of renewable energy for the State of California. One of the purposes of the Imperial Valley Renewable Energy Development Program is to "[m]aximize development of all renewable energy resources." In addition to the project objective cited by the commenter, an objective of the projects is "to help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006)." Pursuant to SB 2X, California utilities have been mandated to obtain 33% of their energy from renewable sources (wind, solar, geothermal, biofuels, etc.) by 2020. Additional objectives of the projects are to "[i]nterconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the ISO controlled transmission network, and maximize opportunities for the sharing or use of existing utility transmission corridor(s)" and to "[e]ncourage economic investment and diversify the economic base for Imperial County."

Response to Comment 9-19

Table 3-1 on EIR page 3-1 contained a typographical error. Table 3-1 has been corrected as follows:

Table 3-1. Project Study Areas APNs, Acreages, and Zoning

	APN	Acreage	Zoning
Ferrell Solar Farm	052-180-042	204.0	A2R
	059-150-001		A2R
	059-050-001	160.27163.1	
<i>Subtotal</i>		<u>364.27367.1</u>	
Rockwood Solar Farm	052-180-040	67.9	A2R, A2
	052-180-048	170.7	A2R
	052-180-064	157.7	A2R, A2
<i>Subtotal</i>		396.2	
Iris Solar Farm	059-050-002	184.58188.1	A2R
	059-050-003	160.0465.5	A2R, A2
	059-120-001	157.3467.2	A2R
<i>Subtotal</i>		<u>501.88520.8</u>	
Lyons Solar Farm	052-180-053	57.2	A3
	052-180-058	81.2	A2R
<i>Subtotal</i>		138.4	
Total Project Study Areas		<u>1,400.751,422.4</u>	

Response to Comment 9-20

Page 3-22 of the EIR has been revised as follows to indicate that project construction is proposed to start in early to mid-2015:

Construction activities are proposed to start in mid-~~2014~~2015 and last for up to 12 months;

This minor text change does not change any of the analysis or determinations provided in the Draft EIR.

Response to Comment 9-21

The alternatives analysis as provided in Chapter 8 of the EIR contains a reasonable range of alternatives consistent with the requirements of CEQA. Furthermore, the EIR does not reject any of the alternatives analyzed and each of these alternatives would remain under consideration by the County decision makers. For each of these alternatives, the EIR states, "However, this alternative would make it more difficult to achieve the overall objective of providing a total of up to 360 megawatts of renewable solar energy, as there would be less area available for the placement of PV or CPV structures." However, this statement is not a categorical rejection of the alternatives.

In relation to the comment's request for the analysis on a non-solar alternative, the County would assert that such an alternative is commensurate with the No Project/No Development Alternative, which is already analyzed as Alternative 1. As provided on page 8-2 of the Draft EIR, Alternative 1 would generally maintain existing agricultural use on the project sites. If another economically viable electrical generating facility could be constructed (in place of solar), the project applicant could have proposed such an alternative. However, an EIR need not consider alternatives that are infeasible (CEQA Guidelines 15126.6(a)) or which would change the fundamental nature of the proposed project. (*Al Larson Boat Shop, Inc. v. Board of Harbor Comm.* (1993) 18 Cal.App.4th 729, 745.) The alternatives presented in an EIR must be potentially feasible, defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors." (Pub. Res. Code Section 21061.1).

This comment also alleges that the EIR fails to examine the benefits of a Renewable Distributed Generation alternative (Alternative 6). The commenter is directed to page 8-23 of the EIR. As provided, Alternative 6 would result in reduced impacts to agricultural and hydrology/water quality when compared

to the proposed project. However, due to a lack of an effective electricity distribution system for large numbers of small electricity producers that would be required under Alternative 6, it was not considered environmentally superior to Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land).

Response to Comment 9-22

The County notes the comment's disagreement with the EIR's determination of the environmentally superior alternative (Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land)). However, the comment's focus is solely placed on the roof-top solar facilities and not the interconnecting utility infrastructure, which could result in impacts that are similar to or greater than that of the proposed project. For example, the distributed nature of the alternative would require utility connections that could result in similar impacts to burrowing owl and local water crossings due to the increased distance between connections. Additionally, at approximately 10 kW per system, since the applicant does not own the buildings needed for installation, implementation would take many, many years (compared to the proposed project's three year construction schedule) to reach the up to 360 MW capacity. Based on these circumstances, the Distributed Generation Alternative would make it more difficult to achieve the overall objective of providing a total of 360 megawatts of renewable solar energy, as there would be less area available for the placement of PV structures, and full implementation would not be achievable within the state-mandated timeframes.

Response to Comment 9-23

Please refer to responses to comments 9-2, 9-3, and 9-4.

Response to Comment 9-24

The comment speculates on the potential impacts to important farmlands as a result of another 40-year CUP following the expiration of the CUP subject to the EIR. The EIR analyzes the environmental effects on the 40-year CUP followed by post-project restoration of the project sites. The application of another CUP would be subject to additional CEQA review at the time an application is filed with the County. Any consideration of potential impacts to important farmlands would be based on future project details, which remain remote and speculative at this time.

Response to Comment 9-25

Please refer to responses to comments 9-3, 9-4, 9-8, 9-9, 9-10, and 9-14.

Response to Comment 9-26

The projects' cumulative effects to agricultural resources, including important farmlands, are considered on pages 6-6 through 6-8 of the Draft EIR. As provided, the incremental impact of the loss of 1,4001,422 acres of farmland would be mitigated via full restoration of the project study areas to comparable agricultural production post-project, purchase of an agricultural easement at a 2:1 ratio, or payment into the County's agricultural mitigation fund, which the County uses at its discretion to mitigate for farmland loss consistent with its General Plan policies. The comment's statement regarding impacts to agriculture-serving business is unsupported by substantial evidence and beyond the scope of CEQA (see response to comment 9-10).

Response to Comment 9-27

Please refer to response to comment 9-9.

Response to Comment 9-28

Please refer to responses to comments 9-6 and 9-17.

Response to Comment 9-29

The County disagrees with the comment's ascertain that the focused surveys for western burrowing owl were inadequate. As provided on page 4.4-8 of the EIR, 15 adult burrowing owls and one juvenile burrowing owl were observed using eight occupied burrows and six active burrows within the project area. An additional 37 adults and seven juveniles using 22 occupied burrows and 10 active burrows were observed off-site within the IID right-of-way. The locations of these sightings are provided in Figure 4.4-1. In accordance with the CDFW Staff Report on Burrowing Owl Mitigation (2012), impacts to the foraging habitat within 100 meters (approximately 300 feet; 6.5 acres) of each active burrow was considered significant thereby requiring mitigation. Direct and indirect impacts to burrowing owl as a result of project-related construction and operation are described on pages 4.4-13 through 4.4-14. Mitigation Measures 4.4-1a, 4.4-1b, 4.4-1c, and 4.4-1d are proposed to minimize the identified impacts consistent with CDFW's general guidance. The comment provides no supporting basis as to how the impact is not adequately analyzed in the EIR or why the proposed mitigation is insufficient. Please also refer to responses to comments 4-1 through 4-10.

Response to Comment 9-30

The comment provides no supporting rationale for the 160 foot buffer requirements contained in Mitigation Measure 4.4-1a(1). In practice, burrowing owls are well adapted to urban and disturbed environments and, as a result, the proposed distance is considered sufficient during the non-breeding season. As provided in Mitigation Measure 4.4-1a, for construction activities occurring during the breeding season, measures 2 through 5 would be required along with Mitigation Measure 4.4-1b. These measures, when combined with Mitigation Measures 4.4-1c and 4.4-1d, would be effective in minimizing direct and indirect impacts to burrowing owl to a less than significant level. Please also refer to responses to comments 4-1 through 4-10.

Response to Comment 9-31

The comment ascertains that the EIR fails to analysis operational effects, including glare and glint, is inaccurate. Impact 4.4-1 (page 4.4-15) of the EIR provides an analysis of the project's potential to result in electrocution of avian species, including migratory birds. Mitigation Measure 4.4-1f proposes the development and implementation of an Avian Bat Protection Plan (ABPP) following the USFWS's guidelines. As provided, the ABPP will outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations and shall be developed by the project applicant in conjunction with and input from the USFWS. In addition to addressing issues related to electrocution from distribution lines, the ABPP will also address potential effects from the PV panels. With the implementation of an ABPP, project-related impacts to migratory birds would be less than significant.

Response to Comment 9-32

Please refer to response to comment 9-15.

Response to Comment 9-33

The EIR provides an analysis of the projects' contribution to greenhouse gas emissions based on best available information. As provided in Appendix D (Air Quality and Global Climate Change), solar projects are an integral part of the State's emission reduction strategy as presented in the State's Scoping Plans. The 2008 Scoping Plan specifically addresses critical complementary measures directed at emission sources that are included in the cap-and-trade program that are designed to achieve cost-effective emissions reductions while accelerating the necessary transition to the low-carbon economy. One of these measures was the Renewables Portfolio Standard (Scoping Action E-3 – RPS), which was to promote multiple objectives, including diversifying the electricity supply by accelerating the transformation of the Electricity sector, including investment in the transmission infrastructure and system changes to allow integration of large quantities of intermittent wind and solar generation. Therefore, this project

complies with an approved GHG emission reduction plan and is presumed to have less than significant GHG impacts and no further quantification is warranted.

Response to Comment 9-34

Please refer to responses to comments 9-2 and 9-3.

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION

DISTRICT 11, DIVISION OF PLANNING

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PLANNING & DEVELOPMENT SERVICES

October 14, 2014

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PM 24.09

Iris Cluster Solar Farm DEIR

SCH # 2014041091

Armando Villa
Imperial County
Planning and Development Services
801 Main Street
El Centro, CA 92243

Dear Mr. Villa:

The California Department of Transportation (Caltrans) received a copy of the Draft Environmental Impact Report (DEIR) for the proposed Iris Cluster Solar Farm project located near State Route 98 (SR-98). Caltrans has the following comments:

Visual aspects of the project including glint and glare should be documented not to have any potential safety impacts to motorists driving on SR-98.

10-1

It is understood by our agency that the project will only access SR-98 from existing county roads or a permitted highway access location.

10-2

If you have any questions on the comments Caltrans has provided, please contact Marisa Hampton of the Development Review Branch at (619) 688-6954.

10-3

Sincerely,

JACOB M. ARMSTRONG, Chief
Development Review Branch

*"Provide a safe, sustainable, integrated and efficient transportation system
to enhance California's economy and livability"*

Letter 10
California Department of Transportation (Caltrans)
October 14, 2014

Response to Comment 10-1

EIR Section 4.1 Aesthetics/Visual Resources provides an evaluation of potential glint and glare impacts of the proposed project to motorists traveling on roadways that are adjacent to the project site, including SR-98. A reflectivity analysis was completed that addressed potential fixed tilt, one axis trackers, and two axis tracker systems that could be installed at the project sites.

The analysis determined that the single axis trackers had no risk of glare to roadway traffic; however, the fix tilt structures showed a potential risk of glint to south roadway positions, and double axis trackers showed a potential risk of glint to the east and west roadway positions. The Reflectivity Analysis recommendations included the installation of fence slats along southern roadways where fixed tilt trackers may be located, and fence slats along east and west roadways where double axis trackers may be located to reduce potential glare or glint impacts to roadway travelers.

The following mitigation measures are required for the FSF, RSF, ISF, and LSF and would reduce the impact to a level less than significant:

4.1-4 Installation of Fence Slats. Based on final engineering and design, neutral colored security fence slats shall be installed in the following areas:

- **Fixed Tilt** – Fence slats shall be installed for all portions of the project study areas with fixed-tilt trackers installed that face a roadway to the south.
- **Double Axis Trackers** – Fence stats shall be installed for all portions of the project study areas with double axis trackers installed that face a roadway to the east and/or west.

It should be noted that the County is requesting the applicant to conduct additional glint and glare analysis at the time site plans are submitted to the Planning Department for review and approval as these plans would have the precise location and layout, configuration, material types, etc of the PV or CPV systems. This analysis may indicate that slats may be required only in specific locations (depending on the array types, etc.) or that none would be required with a determination of no glint or glare risk to motorists.

Response to Comment 10-2

Comment noted. Access is proposed only from existing County roadways and permitted highway locations.

Response to Comment 10-3

Comment noted.

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IV.1 MITIGATION MONITORING AND REPORTING PROGRAM

Iris Cluster Solar Farm Project, County of Imperial

The County of Imperial will adopt this Mitigation Monitoring and Reporting Program (MMRP) in accordance with Public Resources Code (PRC) Section 21081.6 and Section 15097 of the California Environmental Quality Act (CEQA) Guidelines. The purpose of the MMRP is to ensure that the Iris Cluster Solar Farm Project, which is the subject of the Environmental Impact Report (EIR), comply with all applicable environmental mitigation requirements. The mitigation measures for the project will be adopted by the County of Imperial, in conjunction with the adoption of the EIR. The mitigation measures have been integrated into this MMRP. Within this document, the approved mitigation measures are organized and referenced by subject category and include: Aesthetics, Agricultural Resources, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, and Noise and Vibration. The mitigation measures are provided in Table 1. The specific mitigation measures are identified, as well as the monitoring method, responsible monitoring party, monitoring phase, verification/approval party, date mitigation measure verified or implemented, location of documents (monitoring record), and completion requirement for each mitigation measure.

The mitigation measures applicable to the project include avoiding certain impacts altogether, minimizing impacts by limiting the degree or magnitude of the action and its implementation, and/or reducing or eliminating impacts over time by maintenance operations during the life of the action.

Public Resources Code Section 21081.6 requires the Lead Agency, for each project that is subject to CEQA, to monitor performance of the mitigation measures included in any environmental document to ensure that implementation does, in fact, take place. The County of Imperial is the designated CEQA lead agency for the Mitigation Monitoring and Reporting Program. The County of Imperial is responsible for review of all monitoring reports, enforcement actions, and document disposition as it relates to impacts within the County's jurisdiction. The County of Imperial will rely on information provided by the monitor as accurate and up to date and will field check mitigation measure status as required.

A record of the MMRP will be maintained at County of Imperial, Department of Planning and Development Services, 801 Main Street, El Centro, CA 92243. All mitigation measures contained in the EIR shall be made conditions of the project as may be further described below.

**TABLE IV-1. IRIS CLUSTER SOLAR FARM PROJECT
MITIGATION, MONITORING, AND REPORTING PROGRAM CHECKLIST**

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
Chapter 4.1 Aesthetics									
FSF, RSF, ISF, and LSF	4.1-4	Installation of Fence Slats. Based on final engineering and design, neutral colored security fence slats shall be installed in the following areas: <ul style="list-style-type: none"> Fixed Tilt – Fence slats shall be installed for all portions of the project study areas with fixed-tilt trackers installed that face a roadway to the south. Double Axis Trackers – Fence slats shall be installed for all portions of the project study areas with double axis trackers installed that face a roadway to the east and/or west. 	Prior to issuance of a building permit, the Department of Planning and Development Services shall verify that neutral colored security fence slats are incorporated into the project's design.	Department of Planning and Development Services	Prior to issuance of a building permit	Department of Planning and Development Services			
Chapter 4.2 Agricultural Resources									
FSF, RSF, ISF, and LSF	4.2-1a	Payment of Agricultural and Other Benefit Fees. One of the following options included below is to be implemented prior to the issuance of a grading permit or building permit (whichever is issued first) for the Project: <p>A. Mitigation for Non Prime Farmland.</p> <p>Option 1: Provide Agricultural Conservation Easement(s). The Permittee shall procure Agricultural Conservation Easements on a "1 to 1" basis on land of equal size, of equal quality farmland, outside the path of development. The conservation easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits.</p> <p>Option 2: Pay Agricultural In-Lieu Mitigation Fee. The Permittee shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 20 percent of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the</p>	Prior to the issuance of a grading permit, Planning and Development Services shall verify that the Applicant has implemented one of the following mitigation options for Non Prime Farmland: procured a conservation easement, paid an agricultural in-lieu mitigation fee, or entered into an enforceable Public Benefit Agreement or Development Agreement with the County.	Department of Planning and Development Services	Prior to the issuance of a grading permit	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>effective date of the permit, including programs costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County; or,</p> <p>Option 3: Public Benefit Agreement. The Permittee and County voluntarily enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; 2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy.</p> <p>B. Mitigation for Prime Farmland. Option 1: Provide Agricultural Conservation Easement(s). Agricultural Conservation Easements on a "2 to 1" basis on land of equal size, of equal quality farmland, outside the path of development. The Conservation Easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits; or Option 2: Pay Agricultural In-Lieu Mitigation Fee. The Permittee shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 30% of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective</p>	<p>Prior to the issuance of a grading permit, Planning and Development Services shall verify that the Applicant has implemented one of the following mitigation options for Prime Farmland: procured a conservation easement, paid an agricultural in-lieu mitigation fee, entered into an enforceable Public Benefit Agreement or Development Agreement with the County, or submitted revised applicable CUP applications and associated site plans.</p>						

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>date of the permit, including program costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County.</p> <p>Option 3: Public Benefit Agreement. The Permittee and County enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; (2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy; the Project and other recipients of the Project's Agricultural Benefit Fee funds; or emphasis on creation of jobs in the agricultural sector of the local economy for the purpose of off-setting jobs displaced by this Project.</p> <p>Option 4: Avoid Prime Farmland. The Permittee must revise their CUP Application/Site Plan to avoid Prime Farmland.</p>							
FSF, RSF, ISF, and LSF	4.2-1b	<p>Site Reclamation Plan. The DOC has clarified the goal of a reclamation and decommissioning plan: the land must be restored to land which can be farmed. In addition to MM 4.2.1a for Prime Farmland and Non-Prime Farmland, the Applicant shall submit to Imperial County a Reclamation Plan prior to issuance of a grading permit. The Reclamation Plan shall document the procedures by which each CUP will be</p>	Prior to issuance of a grading permit, Planning and Development Services shall review and approve the Reclamation Plan. Planning and Development Services shall also	Department of Planning and Development Services	Prior to the issuance of a grading permit	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		returned to its current agricultural condition/LESA score of 75.71 for FSF, 71.06 for RSF, 72.75 for ISF, and 69.29 for LSF. Permittee also shall provide financial assurance/bonding in the amount equal to a cost estimate prepared by a California-licensed general contractor or civil engineer for implementation of the Reclamation Plan in the event Permittee fails to perform the Reclamation Plan.	verify that the Permittee has provided financial assurance/bonding.						
FSF, RSF, ISF, LSF, and Transmission Line	4.2-2	<p>Prior to the issuance of a grading permit or building permit (whichever occurs first), a Weed and Pest Control Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The plan shall provide the following:</p> <ol style="list-style-type: none"> 1. Monitoring, preventative, and management strategies for weed and pest control during construction activities at any portion of the project (e.g., transmission line); 2. Control and management of weeds and pests in areas temporarily disturbed during construction where native seed will aid in site revegetation as follows; <ul style="list-style-type: none"> • Monitor for all pests including insects, vertebrates, weeds, and pathogens. Promptly control or eradicate pests when found, or when notified by the Agricultural Commissioner's office that a pest problem is present on the project site; • All treatments must be performed by a qualified applicator or a licensed pest control operator; • "Control" means to reduce the population of common pests below economically damaging levels, and includes attempts to exclude pests before 	Prior to the issuance of a grading permit, Planning and Development services shall review and approve the Weed and Pest Control Plan.	Department of Planning and Development Services and Agricultural Commissioner	Prior to the issuance of a grading permit	Department of Planning and Development Services Agricultural Commissioner			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>infestation, and effective control methods after infestation. Effective control methods may include physical/mechanical removal, bio control, cultural control, or chemical treatments;</p> <ul style="list-style-type: none"> • Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species such as A- and Q-rated pest species as defined by the California Department of Food Agriculture (CDFA). Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or CDFA; • Obey all pesticide use laws, regulations, and permit conditions; • Access shall be allowed by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties; • All project employees that handle pest control issues shall be appropriately trained and certified, and all required records shall be maintained and made available for inspection. All required permits shall be maintained current; • Records of pests found and controlled shall be maintained and available for review, or submitted to the Agricultural Commissioner's office on a quarterly basis; 							

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>3. A long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:</p> <p>a. Use of specific types of herbicides and pesticides on a scheduled basis.</p> <p>4. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.</p>							
Chapter 4.3 Air Quality									
FSF, RSF, ISF and LSF, and Transmission Line	4.3-2a	Construction Equipment. Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment, including all off-road equipment utilized at each of the projects by make, model, year, horsepower and expected/actual hours of use, and the associated EPA Tier shall be submitted to the County Planning and Development Services Department and ICAPCD prior to the issuance of a grading permit. The ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The Planning and Development Services Department and ICAPCD shall verify implementation of this measure.	Prior to the issuance of a grading permit, ICAPCD shall verify that construction equipment are equipped with an engine designation of EPA Tier 2 or better.	Department of Planning and Development Services and ICAPCD	Prior to the issuance of a grading permit	Department of Planning and Development Services and ICAPCD			
FSF, RSF, ISF and LSF, and Transmission Line	4.3-2b	Fugitive Dust Control. Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII-Fugitive Dust Control Measures. Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required additional standard and enhanced mitigation measures listed below shall be implemented prior to and during construction. The County Department of Public Works will verify implementation and	Prior to and during construction, the ICAPCD will verify that the project is in compliance with Regulation VIII-Fugitive Dust Control Measures.	Department of Planning and Development Services and ICAPCD	Prior to and during construction	Department of Public Works			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>compliance with these measures as part of the grading permit review/approval process.</p> <p>ICAPCD Standard Measures for Fugitive Dust (PM₁₀) Control</p> <ul style="list-style-type: none">All disturbed areas, including bulk material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.All on-site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.All unpaved traffic areas one acre or more with 75 or more average vehicle trips per day shall be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.The transport of bulk materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk material. In addition, the cargo compartment of all haul trucks shall be cleaned and/or washed at delivery site after removal of bulk material.All Track-Out or Carry-Out shall be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50							

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>linear feet or more onto a paved road within an urban area.</p> <ul style="list-style-type: none">• Movement of bulk material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.• The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering. <p>ICAPCD “Discretionary” Measures for Fugitive Dust (PM₁₀) Control</p> <ul style="list-style-type: none">• Water exposed soil with adequate frequency for continued moist soil, including a minimum of three wettings per day during grading activities.• Replace ground cover in disturbed areas as quickly as possible.• Install automatic sprinkler system on all soil piles.• Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.• Implement the trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees.• Implement a shuttle service to and from retail services and food establishments during lunch hours.							

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		Standard Mitigation Measures for Construction Combustion Equipment <ul style="list-style-type: none"> Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum. Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set). <p>To help provide a greater degree of reduction of PM emissions from construction combustion equipment the ICAPCD recommends the following enhanced measures.</p> Enhanced Mitigation Measures for Construction Equipment <ul style="list-style-type: none"> Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways. Implement activity management (e.g., rescheduling activities to reduce short-term impacts). 							
	4.3-2c	Mitigation measure 4.3-2c was deleted.							
FSF, RSF, ISF and LSF, and Transmission Line	4.3-2d	Dust Suppression. The project applicant shall employ a method of dust suppression (such as water or chemical stabilization) approved by ICAPCD. The project applicant shall apply chemical stabilization as directed by the product manufacturer to control dust between the panels as approved by ICAPCD.	During construction, the Department of Planning and Development Services shall verify that the	Department of Planning and Development Services	During construction	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		and other non-used areas (exceptions will be the paved entrance and parking area, operations and maintenance building, and Fire Department access/emergency entry/exit points as approved by Fire/OES Department).	project applicant is employing a method of dust suppression approved by ICAPCD.						
FSF, RSF, ISF and LSF, and Transmission Line	4.3-2e	<p>Dust Suppression Management Plan. Prior to any earthmoving activity, the applicant shall submit and obtain approval from the ICAPCD and Imperial County Planning and Development Services Department (ICPDSD) a construction Dust Control Plan. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.</p> <p>ICAPCD Rule 310 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed projects, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the proposed projects. The project applicant shall pay an "Operational Fee" to the ICAPCD for the square footage of the operations and maintenance building and substation as determined applicable by the ICAPCD pursuant to Rule 310.</p>	<p>Prior to any earthmoving activity, the Department of Planning and Development shall review and approve a construction Dust Control Plan.</p> <p>Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.</p>	Department of Planning and Development Services	Prior to construction, prior to issuance of a Certificate of Occupancy	Department of Planning and Development Services and ICAPCD			
Chapter 4.4 Biological Resources									
FSF, RSF, ISF, LSF, and Transmission Line	4.4-1a	<p>Burrowing Owl Mitigation. Burrowing owls have been observed in the active agricultural fields within the project sites. The following measures will avoid, minimize, or mitigate potential impacts to burrowing owl during construction activities:</p> <ol style="list-style-type: none"> 1. During non-breeding season (September through January) a distance of 160 feet shall be maintained between active burrows and construction activities. A qualified biologist may also employ the technique of sheltering in place (using hay bales to shelter the 	<p>Prior to construction, the Planning and Development Services shall verify that pre-construction surveys were conducted.</p> <p>If active burrows are present, the measures as providing in</p>	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services and CDFW			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>burrow from construction activities). If this technique is employed, the sheltered area shall be monitored weekly by a qualified biologist.</p> <p>2. If construction is to begin during the breeding season, the following measures (Measure 4 below) shall be implemented prior to February 1 to discourage the nesting of the burrowing owls within the project footprint. As construction continues, any area where owls are sighted shall be subject to frequent surveys by the qualified biologist for burrows before the breeding season begins, so that owls can be properly relocated before nesting occurs.</p> <p>3. Within 30 days prior to initiation of construction, pre-construction clearance surveys for this species shall be conducted by qualified and agency-approved biologists to determine the presence or absence of this species within the project footprint. This is necessary, as burrowing owls may not use the same burrow every year; therefore, numbers and locations of burrowing owl burrows at the time of construction may differ from the data collected during previous focused surveys. The proposed project footprint shall be clearly demarcated in the field by the project engineers and biologist prior to the commencement of the pre-construction clearance survey. The surveys shall follow the protocols provided in the <i>Burrowing Owl Survey Protocol and Mitigation Guidelines</i>.</p> <p>4. If active burrows are present within the project footprint, the following mitigation measures shall be</p>	Mitigation Measures 4.4-1a and 4.4-1b shall be implemented.						

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>implemented. Passive relocation methods are to be used by the biological monitors to move the owls out of the impact zone. Passive relocation shall only be done in the non-breeding season in accordance with the guidelines found in the <i>Imperial Irrigation District Artificial Burrow Installation Manual</i>. This includes covering or excavating all burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. A period of at least one week is required after the relocation effort to allow the birds to leave the impacted area before construction of the area can begin. The burrows shall then be excavated and filled in to prevent their reuse. The destruction of the active burrows on-site requires construction of new burrows at a mitigation ratio of 2:1 at least 50 meters from the impacted area and must be constructed as part of the above-described relocation efforts. The construction of new burrows will take place within open areas in the solar fields such as detention basins.</p> <p>5. As the project construction schedule and details are finalized, an agency-approved biologist shall prepare a Burrowing Owl Mitigation and Monitoring Plan that will detail the approved, site-specific methodology proposed to minimize and mitigate impacts to this species. Passive relocation, destruction of burrows, construction of artificial burrows, and a Forage Habitat Plan shall only be</p>							

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		completed upon prior approval by and in cooperation with the CDFW. The Mitigation and Monitoring Plan shall include success criteria, remedial measures, and an annual report to CDFW and shall be funded by the project applicant to ensure long-term management and monitoring of the protected lands.							
FSF, RSF, ISF, LSF, and Transmission Line	4.4-1b	<p>Burrowing Owl Compensation. The project applicant shall compensate for impacts to burrowing owl habitat through the following measures:</p> <ol style="list-style-type: none"> 1. CDFW's mitigation guidelines for burrowing owl (2012) require the acquisition and protection of replacement foraging habitat per pair or unpaired resident bird to offset the loss of foraging and burrow habitat on the project sites. The project applicant shall landscape small pockets of land along the perimeter of the solar fields, and/or within the solar fields themselves, with native vegetation that will provide suitable foraging habitat for burrowing owls, pursuant to a Mitigation and Monitoring Plan that is reviewed and approved by CDFW prior to the commencement of construction. Although the site plans show almost 100 percent coverage of solar panels, it is anticipated that due to the nature of solar panel configuration, there will be spaces at various locations, such as between the edges of the agricultural fields (i.e., outside of IID easements) and the solar project footprints. Sufficient open areas shall be set aside for burrowing owl habitat and burrow relocation for the lifespan of the solar projects. Due to County of Imperial requirements 	Prior to and during construction. The Department of Planning and Development Services shall verify the measures as provided in Mitigation Measures 4.4-1a and 4.4-1b are implemented if active burrows are present.	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services and CDFW			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		that the solar fields be returned to active agriculture after the life of the solar projects, it is assumed that when the land is returned to active agricultural crops, it will continue to provide habitat for burrowing owl. If the vegetation that is planted does not succeed, sufficient areas cannot be provided on-site, or planting is not feasible, alternative mitigation shall be provided, which CDFW determines provides equivalently effective mitigation. Such alternative mitigation may include off-site preservation of the required amount of foraging habitat through a CDFW-approved conservation easement, or an in-lieu fee in an amount approved by CDFW that is sufficient to acquire such conservation easements, or some combination of the two.							
FSF, RSF, ISF, LSF, and Transmission Line.	4.4-1c	<p>Worker Awareness Program. Prior to project initiation, a Worker Environmental Awareness Program (WEAP) shall be developed and implemented by a qualified biologist, and shall be available in both English and Spanish. Wallet-sized cards summarizing this information shall be provided to all construction, operation, and maintenance personnel. The education program shall include the following aspects:</p> <ul style="list-style-type: none"> • Biology and status of the burrowing owl; • CDFW/USFWS regulations; • Protection measures designed to reduce potential impacts to the species, function of flagging designated authorized work areas; • Reporting procedures to be used if a burrowing owl (dead, alive, injured) is encountered in the field. 	<p>Prior to construction, Planning and Development Services shall verify that a WEAP has been developed by the project biologist.</p> <p>The qualified biologist implementing the WEAP shall provide an attendance log to the Planning and Development Services verifying that all construction, operation, and</p>	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
			maintenance personnel have attended the worker awareness class.						
FSF, RSF, ISF, LSF, and Transmission Line.	4.4-1d	Speed Limit. The Designated Biologist or Biological Monitor(s) shall evaluate and implement best measures to reduce burrowing owl mortality along access roads. <ul style="list-style-type: none"> A speed limit of 15 miles per hour when driving access roads. All vehicles required for O&M must remain on designated access/maintenance roads. 	During construction	Designated Biologist or Biological Monitor	During construction	Designated Biologist or Biological Monitor and Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.4-1e	Temporary Construction Suspension. If a Designated Biological Monitor observes these species foraging within the project site, or in adjacent agricultural fields, construction shall cease until they disperse. Additionally, in order to reduce impacts to the Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Horned Lark, and Loggerhead Shrike, an Avian Bat Protection Plan (ABPP) shall be prepared following USFWS guidelines and subsequently implemented by the project applicant. The requirements of the ABPP are described in Mitigation Measure 4.4-1f.	During construction Mitigation Measure 4.4-1e shall be implemented.	Department of Planning and Development Services	During construction and O&M	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.4-1f	Construction and O&M Mitigation Measures. In order to reduce the potential indirect impact to migratory birds, bats and raptors, an Avian Bat Protection Plan ABPP shall be prepared following the USFWS's guidelines and implemented by the project applicant. This ABPP shall outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations and shall be developed by the project applicant in conjunction with and input from the USFWS. Construction conservation measures to be incorporated into the ABPP include: <ol style="list-style-type: none"> Minimizing disturbance to vegetation to the maximum extent practicable. 	During construction and O&M, the applicant shall implement Mitigation Measure 4.4-1f which would include adherence to the stipulations of the ABPP.	Department of Planning and Development Services	During construction and O&M	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<div><div>2. Clearing vegetation outside of the breeding season. If construction occurs between February 1 and September 15, an approved biologist shall conduct a pre-construction clearance survey for nesting birds in suitable nesting habitat that occurs within the project footprint. Pre-construction nesting surveys will identify any active migratory birds (and other sensitive non-migratory birds) nests. Direct impact to any active migratory bird nest should be avoided.</div><div>3. Minimize wildfire potential.</div><div>4. Minimize activities that attract prey and predators.</div><div>5. Control of non-native plants.</div><div>O&M conservation measures to be incorporated into the ABPP include:</div><div><div>1. Incorporate APLIC guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (APLIC 2006).</div><div>2. Minimize noise.</div><div>3. Minimize use of outdoor lighting.</div><div>4. Implement post-construction avian monitoring that will incorporate of the Wildlife Mortality Reporting Program.</div></div></div>							
FSF, RSF, ISF, LSF, and Transmission Line	4.4-1g	<div><div>Raptor and Active Raptor Nest Avoidance. Raptors and active raptor nests are protected under CFGC 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact to nesting raptors such as red-tailed hawk, the following measures shall be implemented:</div><div><div>1. Initial grading and construction within the project sites should take place outside the raptors' breeding season of February 1 to July 15.</div><div>If construction occurs between February 1 and July 15, a qualified biologist shall conduct a pre-construction clearance survey</div></div></div>	Prior to construction, Department of Planning and Development Services shall verify that pre-construction surveys were conducted. If active raptor nests are present, the measures as listed in Mitigation	Department of Planning and Development Services	Prior to construction	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		for nesting raptors in suitable nesting habitat (e.g., tall trees or transmission towers) that occurs within 500 feet of the survey area. If any active raptor nest is located, the nest area will be flagged, and a 500-foot buffer zone delineated, flagged, or otherwise marked. No work activity may occur within this buffer area, until a qualified biologist determines that the fledglings are independent of the nest.	Measure 4.4-1g shall be implemented.						
Chapter 4.5 Cultural Resources									
FSF, RSF, ISF, LSF, and Transmission Line	4.5-4	Human Remains. In the event that any human remains or related resources are discovered on the project site, such resources shall be treated in accordance with federal, state, and local regulations and guidelines for disclosure, recovery, relocation, and preservation, as appropriate. All construction affecting the discovery site shall cease until, as required by CEQA Guidelines, Section 156064.5(e), the human remains are evaluated by the County Coroner for the nature of the remains and cause of death. All parties involved would ensure that any such remains are treated in a respectful manner and that all applicable federal, state, and local laws are followed. If human remains are found to be of Native American origin, or if associated grave goods or objects of cultural patrimony are discovered, the provisions of the NAGPRA would be followed, and the Native American Heritage Commission shall be asked to determine the descendants who are to be notified or, if unidentifiable, to establish the procedures for burial.	During construction and operational repair period, discovery of human remains shall result work stoppage in that area until the coroner and the Native American Heritage Commission are contacted.	Department of Planning and Development Services	During construction and operations	Department of Planning and Development Services			
Chapter 4.6 Geology and Soils									
FSF, RSF, ISF, LSF, and Transmission Line	4.6-1	Prepare Geotechnical Report(s) for the Projects and Implement Required Measures. Facility design for all project components shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by the project applicant. The final geotechnical and/or civil	Prior to the issuance of a grading permit, the Department of Planning and Development Services shall verify a	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<p>engineering report shall address and make recommendations on the following:</p> <ul style="list-style-type: none"> • Site preparation; • Soil bearing capacity; • Appropriate sources and types of fill; • Potential need for soil amendments; • Road, pavement, and parking areas; • Structural foundations, including retaining-wall design; • Grading practices; • Soil corrosion of concrete and steel; • Erosion/winterization; • Seismic ground shaking; • Liquefaction; and • Expansive/unstable soils. <p>In addition to the recommendations for the conditions listed above, the geotechnical investigation shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the version of the CBC that is applicable at the time building and grading permits are applied for. All recommendations contained in the final geotechnical engineering report shall be implemented by the project applicant.</p>	Geotechnical Report has been completed by the Applicant.						
FSF, RSF, ISF, LSF, and Transmission Line	4.6-4	Implement Corrosion Protection Measures. As determined appropriate by a licensed geotechnical or civil engineer, the project applicant shall ensure that all underground metallic fittings, appurtenances, and piping include a cathodic protection system to protect these facilities from corrosion.	During O&M, the Department of Planning and Development Services shall verify and approve a Geotechnical Report has been completed by the Applicant.	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.6-5	Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements. The project's wastewater treatment and disposal system(s) shall demonstrate compliance with the Imperial County performance standards as outlined in	Prior to construction and again prior to operation, the Imperial County Public Works	Imperial County Public Works Department	Prior to construction and again prior to operation	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		Title 9, Division 10, Chapters 4 and 12 of the Imperial County Code. Prior to construction, and again prior to operation, the project applicant will obtain all necessary permits and/or approvals from the Imperial County Public Works Department. The project applicant shall demonstrate that the system adequately meets County requirements, which have been designed to protect beneficial uses and ensure that applicable water quality standards are not violated. This shall include documentation that the system will not conflict with the Regional Water Quality Control Board's Anti-Degradation Policy.	Department shall verify that on-site wastewater system and disposal requirements adequately meets County requirements.						
Chapter 4.7 Greenhouse Gas Emissions									
FSF, RSF, ISF, LSF, and Transmission Line	4.7-1a	Diesel Equipment (Compression Ignition) Offset Strategies <ol style="list-style-type: none"> Use electricity from power poles rather than temporary diesel power generators. Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines. Construction equipment used for the project should utilize EPA Tier 2 or better engine technology (requirement under Mitigation Measure 4.3-1 as described in Chapter 4.3, Air Quality of this EIR). 	Prior to the issuance of a grading permit, the Applicant shall identify measures to reduce greenhouse gas emissions as listed in Mitigation Measure 4.7-1a.	Department of Planning and Development Services and ICAPCD	Prior to issuance of a grading permit	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.7-1b	Vehicular Trip (Spark Ignition) Offset Strategies <ol style="list-style-type: none"> Encourage commute alternatives by informing construction employees and customers about transportation options for reaching your location (i.e., post transit schedules/routes). Help construction employees "ride share" by posting commuter ride sign-up sheets, employee home, zip code, map, etc. 	Prior to the issuance of a grading permit, the Applicant shall identify measures to reduce greenhouse gas emissions as listed in Mitigation Measure 4.7-1b.	Department of Planning and Development Services and ICAPCD	Prior to issuance of a grading permit	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<ul style="list-style-type: none"> c. When possible, arrange for single construction vendor who makes deliveries for several items. d. Plan construction delivery routes to eliminate unnecessary trips. e. Keep construction vehicles well maintained to prevent leaks and minimize emissions. 							
Chapter 4.8 Hazards and Hazardous Materials									
FSF and ISF	4.8-2a	Phase II Environmental Site Assessment. A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the FSF substation is to be constructed in the area of the Kubler Shop. This ESA will assist to determine if the previous USTs are still onsite and if soil contamination exists.	Prior to issuance of a grading permit, the Department of Planning and Development Services shall verify that a Phase II ESA has been completed.	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			
FSF and ISF	4.8-2b	Hazardous Materials Discovery. All construction contractor(s) shall be instructed to immediately stop all subsurface construction activities in the event that petroleum is discovered, an odor is identified, or significantly stained soil is visible during construction. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process.	During construction, discovery of hazardous materials shall result in the immediate stop of all subsurface construction activities.	Department of Planning and Development Services and Certified Unified Program Agency (CUPA)	During construction	Department of Planning and Development Services			
FSF and ISF	4.8-2c	Lead and Asbestos. Prior to the demolition of any buildings, the contractor shall conduct testing to determine if lead and/or asbestos are present. Testing will help to identify the proper removal procedures to follow per state and local guidelines.	Prior to the demolition of any buildings, the Department of Planning and Development Services shall verify that lead and/or asbestos testing has been conducted.	Department of Planning and Development Services	Prior to the demolition of any buildings	Department of Planning and Development Services			
FSF and ISF	4.8-2d	Well Abandonment. Prior to issuance of a grading permit, the project applicant shall submit evidence demonstrating that the locations of all known wells on-site have	Prior to issuance of a grading permit, the project applicant shall	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		been reviewed by the DOGGR and that all well abandonment requirements, including gas leakage testing, have been completed according to DOGGR specifications, including construction Project Site Review and Well Abandonment Procedures.	submit documentation to the Department of Planning and Development Services that the locations of all known wells on-site have been reviewed by the DOGGR and that all requirements have been completed according to DOGGR specifications.						
Chapter 4.9 Hydrology and Water Quality									
FSF, RSF, ISF, LSF, and Transmission Line	4.9-1a	<p>Acquire Appropriate Clean Water Act Regulatory Permits, Prepare SWPPP, and Implement BMPs Prior to Construction and Site Restoration. The project applicant or its contractor shall prepare a SWPPP specific to the projects and be responsible for securing coverage under SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ). The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by the project applicant prior to commencement of work and shall be made conditions of the contract with the contractor selected to build and decommission the projects. The SWPPP(s) shall incorporate control measures in the following categories:</p> <ul style="list-style-type: none"> Soil stabilization and erosion control practices (e.g., hydroseeding, erosion control blankets, mulching); 	Prior to construction and site restoration, the Applicant shall acquire appropriate Clean Water Act regulatory permits; prepare SWPPP with incorporated control measures outlined in Mitigation Measure 4.9-1a; and implement BMPs. Department of Planning and Development Services to confirm.	Department of Planning and Development Services	Prior to issuance of a grading permit and site restoration	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		<ul style="list-style-type: none">Dewatering and/or flow diversion practices, if required (see Mitigation Measure 4.9-1b);Sediment control practices (temporary sediment basins, fiber rolls);Temporary and post-construction on- and off-site runoff controls;Special considerations and BMPs for water crossings, wetlands, and drainages;Monitoring protocols for discharge(s) and receiving waters, with emphasis placed on the following water quality objectives: dissolved oxygen, floating material, oil and grease, pH, and turbidity;Waste management, handling, and disposal control practices;Corrective action and spill contingency measures;Agency and responsible party contact information, andTraining procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP. <p>The SWPPP shall be prepared by a qualified SWPPP practitioner with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. Given that Imperial Valley Drains would accept runoff from the project sites and are listed as impaired for sediment, the SWPPP shall include BMPs sufficient for Risk Level 2 projects. BMPs for soil stabilization and erosion control practices and sediment control practices will also be</p>							

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.							
FSF, RSF, ISF, LSF, and Transmission Line	4.9-1b	Properly Dispose of Construction Dewatering in Accordance with the Colorado River Basin Regional Water Quality Control Board. If required, all construction dewatering shall be discharged to an approved land disposal area or drainage facility in accordance with Colorado River Basin RWQCB requirements. The project applicant or its construction contractor shall provide the Colorado River Basin RWQCB with the location, type of discharge, and methods of treatment and monitoring for all groundwater dewatering discharges. Emphasis shall be placed on those discharges that would occur directly or in proximity to surface water bodies and drainage facilities.	Prior to issuance of a grading permit, the Applicant shall provide Colorado River Basin Regional Water Quality Control Board with the location, type of discharge, and methods treatment and monitoring for all groundwater dewatering discharges if the project requires construction dewatering.	Department of Planning and Development Services	Post construction	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.9-2	Incorporate Post-Construction Runoff BMPs into Project Drainage Plan and Maximize Opportunities for Low Impact Development. The project Drainage Plan shall adhere to County and IID guidelines to treat, control, and manage the on- and off-site discharge of stormwater to existing drainage systems. Low Impact Development opportunities, including but not limited to infiltration trenches or bioswales, will be investigated and integrated into the Drainage Plan to the maximum extent practical. The Drainage Plan shall provide both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and treatment of runoff generated from project impervious surfaces prior to off-site discharge.	Post construction, the Applicant shall implement a Drainage Plan in accordance with the County and Imperial Irrigation District guidelines as outlined in Mitigation Measure 4.9-2. Department of Planning and Development Services and Imperial Irrigation District to confirm.	Department of Planning and Development Services	Post construction	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		The project applicant shall ensure the provision of sufficient outlet protection through the use of energy dissipaters, vegetated rip-rap, soil protection, and/or other appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations for the operations and maintenance (O&M) facilities, access roads, electrical distribution and substation facilities, and solar array locations. A long-term maintenance plan shall be developed and implemented to support the functionality of drainage control devices. The facility layout(s) shall also include sufficient container storage and on-site containment and pollution-control devices for drainage facilities to avoid the off-site release of water quality pollutants, including, but not limited to oil and grease, fertilizers, treatment chemicals, and sediment.							
FSF, RSF, ISF, LSF, and Transmission Line	4.9-4	Prepare Drainage Plan(s) for Structural Facilities. The project applicant shall prepare a site specific Drainage Plan for all facilities constructed in conjunction with the projects that meets County Department of Public Works and IID requirements, where applicable. The Drainage Plan shall incorporate measures to maintain off-site runoff during peak conditions to pre-construction discharge levels. Design specifications for the detention, retention, and/or infiltration facilities shall provide sufficient temporary storage capacity to accommodate the 100-year, 24-hour storm event to pre-project conditions.	Prior to construction, the Applicant shall prepare site specific Drainage Plans for all project facilities and also incorporate measures to maintain off-site runoff during peak conditions to pre-construction discharge levels. Department of Planning and Development Services to confirm.	Department of Planning and Development Services	Prior to construction	Department of Planning and Development Services			
Chapter 4.11 Noise and Vibration									
FSF, RSF, ISF, LSF, and Transmission Line	4.11-1a	Limit Construction Hours. Construction and decommissioning activities shall be limited to daylight hours between 7 AM and 7 PM Monday through Friday, and 9 AM and 5 PM on Saturday for those construction areas that are located within 2,500 feet of noise-	During construction and decommissioning activities, the Applicant shall adhere to	Department of Planning and Development Services	During construction and decommissioning activities	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
		sensitive receptors. No construction shall be allowed on Sundays or holidays.	construction hours identified in Mitigation Measure 4.11-1a.						
FSF, RSF, ISF, LSF, and Transmission Line	4.11-1b	Minimize Noise from Construction Equipment and Staging. Construction equipment noise shall be minimized during project construction and decommissioning by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools, where used. The project applicant's construction specifications shall also require that the contractor select staging areas as far as feasibly possible from sensitive receptors. All contractor specifications shall include a requirement that equipment located within 2,500 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings or other noise reducing technology such that noise levels are no more 85 dBA at 50 feet. If necessary the line of sight between the equipment and nearby sensitive receptors shall be blocked by portable acoustic barriers and/or shields to reduce noise levels.	Prior to construction and decommissioning activities, the Applicant shall implement measures outlined in Mitigation Measure 4.11-1b to prevent noise from construction equipment and staging. Department of Planning and Development Services to provide inspection for final approval.	Department of Planning and Development Services	Prior to construction and decommissioning activities	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.11-1c	Maximize the Use of Noise Barriers. Construction and decommissioning contractors shall locate fixed construction equipment (such as compressors and generators) as far as possible from nearby residences. If feasible, noise barriers shall be used at the construction site and staging area. Temporary walls, stockpiles of excavated materials, or moveable sound barrier curtains would be appropriate in instances where construction noise would exceed 85 dBA and occur within less than 200 feet from a sensitive receptor. The final selection of noise barriers shall be subject to the project applicant's approval and shall provide a minimum 5 dBA reduction in construction noise levels, where noise levels would exceed 85 dBA without the barrier.	Prior to construction and decommissioning activities, the Applicant shall implement measures outlined in Mitigation Measure 4.11-1c to sensitive receptors. Department of Planning and Development Services to provide inspection for final approval.	Department of Planning and Development Services	Prior to construction and decommissioning activities	Department of Planning and Development Services			

IV. Mitigation, Monitoring, and Reporting Program

Project Component	MM No.	Mitigation Measure	Monitoring Method	Responsible Monitoring Party	Monitoring Phase	Verification/ Approval Party	Date Mitigation Measure Verified or Implemented	Location of Documents (Monitoring Record)	Completion Requirement
FSF, RSF, ISF, LSF, and Transmission Line	4.11-1d	Prohibit Non-Essential Noise Sources During Construction. No amplified sources (e.g., stereo “boom boxes”) shall be used in the vicinity of residences during project construction or decommissioning.	During construction and decommissioning activities, the Applicant shall verify no amplified noise sources are in use. Department of Planning and Development Services to provide inspection for final approval.	Department of Planning and Development Services	During construction and decommissioning activities	Department of Planning and Development Services			
FSF, RSF, ISF, LSF, and Transmission Line	4.11-1e	Provide a Mechanism for Filing Noise Complaints. The project applicant shall provide a mechanism for residents, businesses, and agencies to register complaints with the County if construction noise levels are overly intrusive or construction occurs outside the required hours.	During construction, the Applicant shall provide a mechanism for residents, businesses, and agencies to register complaints with the County if construction noise levels are overly intrusive or outside required hours. Department of Planning and Development Services to provide inspection for final approval.	Department of Planning and Development Services	During construction	Department of Planning and Development Services			

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0.1 EXECUTIVE SUMMARY

0.1.1 PROJECT OVERVIEW

This Environmental Impact Report (EIR) has been prepared in compliance with the California Environmental Quality Act (CEQA) Public Resources Code Section 21000 et seq., the CEQA Guidelines (Section 15000 et seq.) as promulgated by the California Resources Agency and the Governor's Office of Planning and Research. The purpose of this environmental document is to assess the potential environmental effects associated with the Iris Cluster Solar Farm Project and to propose mitigation measures, where required, to reduce significant impacts.

The proposed solar farms project would consist of two primary components: (1) the combined construction and operation of an expansive photovoltaic (PV) and/or concentrated photovoltaic (CPV) solar energy facility and supporting uses; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnections. The primary components within the solar farms will be solar arrays, electrical substation facilities, and other operations and maintenance (O&M) facilities. Also, a major component of these projects would be restoration of the project areas to agricultural use in up to 40 years.

Four separate Conditional Use Permit (CUP) applications have been filed by the project applicant for the properties identified below. Additionally, four variance applications have been filed with the County for these properties in order to exceed the currently allowed height limit for transmission towers within the applicable zones:

- Ferrell Solar Farm (FSF)
- Rockwood Solar Farm (RSF)
- Iris Solar Farm (ISF); and
- Lyons Solar Farm (LSF)

The combined acreage of the four proposed solar farm sites encompasses 1,4004,422 acres of land located in the southern portion of Imperial County. The interconnection for the proposed projects will occur at the 230 kV side of the San Diego Gas & Electric ("SDG&E") Imperial Valley (IV) Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

Transmission and collector lines would extend along private lands, traversing the project area both west to east and north to south along major roads (e.g., Kubler Road, State Route [SR] 98, George Road, Corda Road, and Ferrell Road) and other local roadways. Figure 3.0-3 in Section 3.0, Project Description, provides an index of the major project components and the details of the projects are further described and depicted in Section 3.0.

0.1.2 PURPOSE OF AN EIR

The purpose of an EIR is to analyze the potential environmental impacts associated with a project. CEQA (Section 15002) states that the purpose of CEQA is to: (1) inform the public and governmental decision makers of the potential, significant environmental impacts of a project; (2) identify the ways that environmental damage can be avoided or significantly reduced; (3) prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and (4) disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

0.1.3 ELIMINATED FROM FURTHER REVIEW IN NOTICE OF PREPARATION

Based on the Initial Study and Notice of Preparation (IS/NOP) prepared for the proposed projects (Appendix A), Imperial County has determined that the proposed projects would not have the potential to cause significant adverse effects associated with the topics identified below. Therefore, these topics are not addressed in this EIR; however, the rationale for eliminating these topics is briefly discussed below.

Forestry Resources

The project sites are located on privately owned, undeveloped agricultural land. No portion of the project area (or the immediate vicinity) is zoned or designated as forest lands, timberlands, or Timberland Production. As such, the projects would not result in a conflict with existing zoning or cause rezoning. Therefore, implementation of the proposed projects would not impact forestry resources.

Mineral Resources

The project sites are not used for mineral resource production and the projects do not include any form of mineral extraction. According to the Conservation and Open Space Element of the County of Imperial General Plan, no known mineral resources occur within the project area nor do the project sites contain mapped mineral resources. As such, the proposed projects would not adversely affect the availability of any known mineral resources within the project area.

Recreation

The combined projects would be staffed with up to 24 full-time employees, which would not significantly increase the use or accelerate the deterioration of regional parks or other recreational facilities. The temporary increase of population during construction that might be caused by an influx of workers would be minimal and not cause a detectable increase in or impact on the use of parks. Additionally, the projects do not include or require the expansion of recreational facilities.

Population/Housing

The project sites have historically been used for, and are still currently being used for agricultural production. Development of housing is not proposed as part of the projects. The projects will be staffed with up to 24 full time employees to maintain the facility seven days a week during normal daylight hours. The facilities will operate seven days per week, generating electricity during normal daylight hours when the solar energy is available. To ensure optimal PV (or CPV) output, the solar panels will be maintained 24 hours a day/seven days a week. The proposed projects would not result in a substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. A total of four residences are located within the project sites. These residences would not be relocated as part of the proposed project; therefore, no impact associated with displacement would result.

Public Services (Schools, Parks and Other Facilities)

The proposed projects do not include the development of residential land uses that would result in an increase in population or student generation. Construction of the proposed projects would not result in an increase in student population within any school district that would serve the project area. Therefore, the proposed projects would have no impact on Imperial County schools.

Operation of the proposed projects would require minimal full-time staff (for security, maintenance, etc.). Therefore, substantial permanent increases in population that would adversely affect local parks, libraries and other public facilities (such as post offices) are not expected. Therefore, no impacts are identified for these issue areas.

Utilities (Wastewater, Stormwater, and Solid Waste)

The proposed projects would generate a minimal volume of wastewater during construction. During construction activities, wastewater would be contained within portable toilet facilities and disposed of at an approved site. Operation of the proposed projects could include up to four O&M buildings. Wastewater generation would be minimal and would be treated via an on-site septic system associated with each of the O&M buildings. The proposed projects would not exceed wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB). The projects do not require new storm drainage facilities because the proposed solar facilities would not generate a significant increase in the amount of runoff water during operations. Water from solar panel washing would continue to percolate through the ground, as a majority of the surfaces within the project study areas would remain pervious. Therefore the projects would not result in impacts with regards to wastewater or storm drainage facilities.

During construction of the project, solid waste would be generated. For example, the PV panels are typically shipped in boxes which then would require either recycling or disposal. During operation of the projects, waste generation will be minor. Solid waste will be disposed of using a locally-licensed waste hauling service, most likely Allied Waste. There are over 40 solid waste facilities listed in Imperial County in the CalRecycle database. Trash would likely be hauled to the Calexico Solid Waste Site located in Calexico or the CR&R Material Recovery Transfer Station located in El Centro. The Calexico Solid Waste site has approximately 1.1 million cubic yards of capacity (reporting date July 2009) and is estimated to remain in operation through 2077. The CR&R Material Recovery and Transfer station has a maximum permitted throughput of 99 tons/day. No closure date has been reported for this facility (<http://www.calrecycle.ca.gov/SWFacilities/Directory/13-AA-0109/Detail/>). Therefore, there is ample landfill capacity throughout the County to receive the minor amount of solid waste generated by project construction and operation. Additionally, conditions of the CUP for each project will contain provisions for recycling and diversion of construction waste per policies of the County.

0.1.4 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES THAT REDUCE OR AVOID THE SIGNIFICANT IMPACTS

Based on the analysis presented in the IS/NOP and the information provided in the comments to the IS/NOP, the following environmental topics are analyzed in this EIR.

- | | |
|----------------------------|-----------------------------------|
| • Aesthetics | • Hazards and Hazardous Materials |
| • Agricultural Resources | • Hydrology/Water Quality |
| • Air Quality | • Land Use and Planning |
| • Biological Resources | • Noise and Vibration |
| • Cultural Resources | • Public Services |
| • Geology and Soils | • Transportation/Traffic |
| • Greenhouse Gas Emissions | • Utilities/Service Systems |

Table 0-1 summarizes existing environmental impacts that were determined to be potentially significant, mitigation measures, and level of significance after mitigation associated with the project.

TABLE 0-1. SUMMARY OF PROJECT IMPACTS AND PROPOSED MITIGATION MEASURES

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Aesthetics			
The project would create a new source of glint and glare, which is a significant impact to roadway travelers within proximity to the project sites.	Potentially Significant	<p>The following mitigation measures are required for the Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF), Lyons Solar Farm (LSF):</p> <p>4.1-4 Installation of Fence Slats</p> <p>Based on final engineering and design, neutral colored security fence slats shall be installed in the following areas:</p> <ul style="list-style-type: none"> • Fixed Tilt – Fence slats shall be installed for all portions of the project study areas with fixed-tilt trackers installed that face a roadway to the south. • Double Axis Trackers – Fence slats shall be installed for all portions of the project study areas with double axis trackers installed that face a roadway to the east and/or west. 	Less than Significant
Agriculture			
Conversion of Important Farmlands to Non-Agricultural Use	Potentially Significant	<p>The following mitigation measures are required for the Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF), Lyons Solar Farm (LSF), and transmission line.</p> <p>4.2-1a Minimize Impacts to Important Farmlands. Prior to the issuance of a grading permit or building permit (whichever comes first) for the project, the mitigation of impacts to agricultural lands shall be accomplished as follows:</p> <p>A. Mitigation for Non Prime Farmland. The project applicant shall mitigate for short- and long-term impacts to Non-Prime Farmland through the implementation of one of the three optional mitigation requirements as prescribed in the County's MOU regarding solar generation projects on agricultural lands.</p> <p>Option 1: Provide Agricultural Conservation Easement(s). The project applicant shall provide agricultural conservation easements on a "1 to 1" basis on land of equal size, of equal farmland quality, and outside the path of development. The conservation easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits.</p> <p>Option 2: Pay Agricultural In-Lieu Mitigation Fee. The project applicant shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 20 percent of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including programs costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County. The County Board of Supervisors will be contemplating adoption of a public benefit agreement for solar projects. The agreement language contains provisions for mitigation of temporary loss of agricultural land. Agreement to the public benefit agreement can satisfactorily mitigate temporary loss of land.</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>Option 3: Public Benefit Agreement. The project applicant and County may negotiate and enter into a public benefit agreement that includes an Agricultural Benefit Fee payment and which incorporates financial assurance/bonding guaranteeing site restoration as may be required elsewhere in the CUP.</p> <p>B. Mitigation for Prime Farmland. The project applicant shall mitigate for short- and long-term impacts to Prime Farmland through the implementation of one of the three optional mitigation requirements as prescribed in the County's MOU regarding solar generation projects on agricultural lands.</p> <p>Option 1: Provide Agricultural Conservation Easement(s). The project applicant shall provide agricultural conservation easements on a "2 to 1" basis on land of equal size, of equal farmland quality, and outside the path of development. The conservation easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits.</p> <p>Option 2: Pay Agricultural In-Lieu Mitigation Fee. The project applicant shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 30 percent of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including programs costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County. The County Board of Supervisors will be contemplating adoption of a public benefit agreement for solar projects. The agreement language contains provisions for mitigation of temporary loss of agricultural land. Agreement to the public benefit agreement can satisfactorily mitigate temporary loss of land.</p> <p>Option 3: Public Benefit Agreement. The project applicant and County may negotiate and enter into a public benefit agreement that includes an Agricultural Benefit Fee payment and which incorporates financial assurance/bonding guaranteeing site restoration as may be required elsewhere in the CUP.</p> <p>4.2-1b Site Reclamation Restoration Plan. The project applicant shall adhere to the terms of the site reclamation restoration plan that has been submitted to Imperial County to return the property to its existing agricultural condition prior to the issuance of any building permits. The reclamation restoration plan includes a restoration cost estimate prepared by a California-licensed civil engineer and provisions that require that the land be restored to its condition prior to the permitted power plant development, which may be shown by growing a crop or other means to reasonable satisfaction of the Planning and Development Services Director and landowner. The project applicant shall provide financial assurance/ bonding in the amount equal to the restoration cost estimate to return the land to its existing agricultural condition prior to the issuance of any building permits.</p>	

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Adversely Affect Agricultural Productivity	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.2-2 Prior to the issuance of a grading permit or building permit (whichever occurs first), a Weed and Pest Control Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The plan shall provide the following:</p> <ol style="list-style-type: none"> 1. Monitoring, preventative, and management strategies for weed and pest control during construction activities at any portion of the project (e.g., transmission line); 2. Control and management of weeds and pests in areas temporarily disturbed during construction where native seed will aid in site revegetation as follows; <ul style="list-style-type: none"> • Monitor for all pests including insects, vertebrates, weeds, and pathogens. Promptly control or eradicate pests when found, or when notified by the Agricultural Commissioner's office that a pest problem is present on the project site; • All treatments must be performed by a qualified applicator or a licensed pest control operator; • "Control" means to reduce the population of common pests below economically damaging levels, and includes attempts to exclude pests before infestation, and effective control methods after infestation. Effective control methods may include physical/mechanical removal, bio control, cultural control, or chemical treatments; • Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species such as A- and Q-rated pest species as defined by the California Department of Food Agriculture (CDFA). Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or CDFA; • Obey all pesticide use laws, regulations, and permit conditions; • Access shall be allowed by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties; • All project employees that handle pest control issues shall be appropriately trained and certified, and all required records shall be maintained and made available for inspection. All required permits shall be maintained current; • Records of pests found and controlled shall be maintained and available for review, or submitted to the Agricultural Commissioner's office on a quarterly basis; 	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>3. A long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:</p> <p>a. Use of specific types of herbicides and pesticides on a scheduled basis.</p> <p>4. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.</p>	
Air Quality			
Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF and LSF, and transmission line. <u>Records sufficient to document compliance with mitigation measures shall be maintained on site at all times and available for ICAPCD inspection.</u></p> <p>Fugitive Dust</p> <p>4.3-2a Construction Equipment. Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment, <u>including all off-road equipment utilized at each of the projects by make, model, year, horsepower and expected/actual hours of use,</u> and the associated EPA Tier shall be submitted to the County Planning and Development Services Department and ICAPCD prior to the issuance of a grading permit. <u>The ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The Planning and Development Services Department and ICAPCD shall to verify implementation of this measure.</u></p> <p>4.3-2b Fugitive Dust Control. Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII-Fugitive Dust Control Measures. <u>Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required additional standard and enhanced</u> These mitigation measures listed below shall be implemented prior to and during construction. The County Department of Public Works will verify implementation and compliance with these measures as part of the grading permit review/approval process.</p> <p>ICAPCD Standard Measures for Fugitive Dust (PM₁₀) Control</p> <ul style="list-style-type: none"> All disturbed areas, including bulk material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover. All on-site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering. 	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> • All unpaved traffic areas one acre or more with 75 or more average vehicle trips per day shall be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering. • The transport of bulk materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk material. In addition, the cargo compartment of all haul trucks shall be cleaned and/or washed at delivery site after removal of bulk material. • All Track-Out or Carry-Out shall be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area. • Movement of bulk material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line. • The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering. <p>ICAPCD Standard Measures for Construction Combustion Equipment</p> <ul style="list-style-type: none"> • Use alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum. • Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use. • Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set). • Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines. • Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology. • Keep vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same. <p>ICAPCD “Discretionary” Measures for Fugitive Dust (PM₁₀) Control</p> <ul style="list-style-type: none"> • Water exposed soil with adequate frequency for continued moist soil, including a minimum of three wettings per day during grading activities. 	

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> • Replace ground cover in disturbed areas as quickly as possible. • Install automatic sprinkler system on all soil piles. • Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. • Implement the trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees. • Implement a shuttle service to and from retail services and food establishments during lunch hours. <p>Standard Mitigation Measures for Construction Combustion Equipment</p> <ul style="list-style-type: none"> • Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment. • Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum. • Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use. • Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set). <p>To help provide a greater degree of reduction of PM emissions from construction combustion equipment the ICAPCD recommends the following enhanced measures.</p> <p>Enhanced Mitigation Measures for Construction Equipment</p> <ul style="list-style-type: none"> • Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways. • Implement activity management (e.g., rescheduling activities to reduce short-term impacts). <p>Implementation of the above-listed fugitive dust control measures was assumed to control PM₁₀ emissions by 85%.</p> <p>4.3-2c Vehicular Emissions. Pursuant to ICAPCD Policy Number 5, prior to construction activities, the project applicant shall pay an in-lieu impact fee as determined by ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM₁₀ and NO_x emissions. The applicable fee in Policy Number 5 is derived from utilizing the last three year Carl Moyer grant program average cost effectiveness for Imperial County multiplied by the amount of tons needed to be offset. Detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction.</p>	

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>4.3-2d Dust Suppression. The project applicant shall employ a method of dust suppression (such as water or chemical stabilization) approved by ICAPCD. The project applicant shall apply chemical stabilization as directed by the product manufacturer to control dust between the panels as approved by ICAPCD, and other non-used areas (exceptions will be the paved entrance and parking area, operations and maintenance building, and Fire Department access/emergency entry/exit points as approved by Fire/OES Department).</p> <p>4.3-2e Dust Suppression Management Plan. Prior to the issuance of building permits, Prior to any earthmoving activity, the project applicant shall submit and obtain approval from for the ICAPCD and Imperial County Planning and Development Services Department (ICPDSD) a construction Dust Control Plan. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.</p> <p><u>ICAPCD Rule 310 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed projects, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the proposed projects. review and approval an operational "Dust Suppression Management Plan" for both construction and operations. The project applicant shall pay an "Operational Fee" to the ICAPCD for the square footage of the operations and maintenance building and substation as determined applicable by the ICAPCD pursuant to Rule 310.</u></p>	
Biological Resources			
Possible Habitat Modification - BUOW	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.4-1a Burrowing Owl Mitigation. Burrowing owls have been observed in the active agricultural fields within the project sites. The following measures will avoid, minimize, or mitigate potential impacts to burrowing owl during construction activities:</p> <ol style="list-style-type: none"> 1. During non-breeding season (September through January), a distance of 160 feet shall be maintained between active burrows and construction activities. A qualified biologist may also employ the technique of sheltering in place (using hay bales to shelter the burrow from construction activities). If this technique is employed, the sheltered area shall be monitored weekly by a qualified biologist. 2. If construction is to begin during the breeding season, the following measures (Measure 4 below) shall be implemented prior to February 1 to discourage the nesting of the burrowing owls within the project footprint. As construction continues, any area where owls are sighted shall be subject to frequent surveys by the qualified biologist for burrows before the breeding season begins, so that owls can be properly relocated before nesting occurs. 	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>3. Within 30 days prior to initiation of construction, pre-construction clearance surveys for this species shall be conducted by qualified and agency-approved biologists to determine the presence or absence of this species within the project footprint. This is necessary, as burrowing owls may not use the same burrow every year; therefore, numbers and locations of burrowing owl burrows at the time of construction may differ from the data collected during previous focused surveys. The proposed project footprint shall be clearly demarcated in the field by the project engineers and biologist prior to the commencement of the pre-construction clearance survey. The surveys shall follow the protocols provided in the <i>Burrowing Owl Survey Protocol and Mitigation Guidelines</i>.</p> <p>4. If active burrows are present within the project footprint, the following mitigation measures shall be implemented. Passive relocation methods are to be used by the biological monitors to move the owls out of the impact zone. Passive relocation shall only be done in the non-breeding season in accordance with the guidelines found in the <i>Imperial Irrigation District Artificial Burrow Installation Manual</i>. This includes covering or excavating all burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. A period of at least one week is required after the relocation effort to allow the birds to leave the impacted area before construction of the area can begin. The burrows shall then be excavated and filled in to prevent their reuse. The destruction of the active burrows on-site requires construction of new burrows at a mitigation ratio of 2:1 at least 50 meters from the impacted area and must be constructed as part of the above-described relocation efforts. The construction of new burrows will take place within open areas in the solar fields such as detention basins.</p> <p>5. As the project construction schedule and details are finalized, an agency-approved biologist shall prepare a Burrowing Owl Mitigation and Monitoring Plan that will detail the approved, site-specific methodology proposed to minimize and mitigate impacts to this species. Passive relocation, destruction of burrows, construction of artificial burrows, and a Forage Habitat Plan shall only be completed upon prior approval by and in cooperation with the CDFW. The Mitigation and Monitoring Plan shall include success criteria, remedial measures, and an annual report to CDFW and shall be funded by the project applicant to ensure long-term management and monitoring of the protected lands.</p> <p>4.4-1b Burrowing Owl Compensation. The project applicant shall compensate for impacts to burrowing owl habitat through the following measures:</p> <p>1. CDFW's mitigation guidelines for burrowing owl (1995) require the acquisition and protection of replacement foraging habitat per pair or</p>	

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>unpaired resident bird to offset the loss of foraging and burrow habitat on the project sites.</p> <p>The project applicant(s) shall landscape small pockets of land along the perimeter of the solar fields, and/or within the solar fields themselves, with native vegetation that will provide suitable foraging habitat for burrowing owls, pursuant to a Mitigation and Monitoring Plan that is reviewed and approved by CDFW prior to the commencement of construction. Although the site plans show almost 100 percent coverage of solar panels, it is anticipated that due to the nature of solar panel configuration, there will be spaces at various locations, such as between the edges of the agricultural fields (i.e., outside of IID easements) and the solar project footprints. Sufficient open areas shall be set aside for burrowing owl habitat and burrow relocation for the lifespan of the solar projects. Due to County of Imperial requirements that the solar fields be returned to active agriculture after the life of the solar projects, it is assumed that when the land is returned to active agricultural crops, it will continue to provide habitat for burrowing owl. If the vegetation that is planted does not succeed, sufficient areas cannot be provided onsite, or planting is not feasible, alternative mitigation shall be provided, which CDFW determines provides equivalently effective mitigation. Such alternative mitigation may include off-site preservation of the required amount of foraging habitat through a CDFW-approved conservation easement, or an in-lieu fee in an amount approved by CDFW that is sufficient to acquire such conservation easements, or some combination of the two.</p> <p>4.4-1c Worker Awareness Program. Prior to project initiation, a Worker Environmental Awareness Program (WEAP) shall be developed and implemented by a qualified biologist, and shall be available in both English and Spanish. Wallet-sized cards summarizing this information shall be provided to all construction, operation, and maintenance personnel. The education program shall include the following aspects:</p> <ul style="list-style-type: none"> • Biology and status of the burrowing owl; • CDFW/USFWS regulations; • Protection measures designed to reduce potential impacts to the species, function of flagging designated authorized work areas; • Reporting procedures to be used if a burrowing owl (dead, alive, injured) is encountered in the field. <p>4.4-1d Speed Limit. The Designated Biologist or Biological Monitor(s) shall evaluate and implement best measures to reduce burrowing owl mortality along access roads.</p> <ul style="list-style-type: none"> • A speed limit of 15 miles per hour when driving access roads. All vehicles required for O&M must remain on designated access/maintenance roads. 	

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Possible Habitat Modification - Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Loggerhead Shrike, and Horned Lark	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.4-1e Temporary Construction Suspension. If a Designated Biological Monitor observes these species foraging within the project study areas, or in adjacent agricultural fields, construction shall cease until they disperse. Additionally, in order to reduce impacts to the Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Horned Lark, and Loggerhead Shrike, an Avian Bat Protection Plan (ABPP) shall be prepared following USFWS guidelines and subsequently implemented by the project applicant. The requirements of the ABPP are described in Mitigation Measure 4.4-1f.</p>	Less than Significant
Possible Habitat Modification - Migratory and Other Sensitive Non-Migratory Bird Species:	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.4-1f Construction and O&M Mitigation Measures. In order to reduce the potential indirect impact to migratory birds, bats and raptors, an Avian Bat Protection Plan (ABPP) shall be prepared following the USFWS's guidelines and implemented by the project applicant. This ABPP shall outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations and shall be developed by the project applicant in conjunction with and input from the USFWS. Construction conservation measures to be incorporated into the ABPP include:</p> <ol style="list-style-type: none"> 1. Minimizing disturbance to vegetation to the maximum extent practicable. 2. Clearing vegetation outside of the breeding season. If construction occurs between February 1 and September 15, an approved biologist shall conduct a pre-construction clearance survey for nesting birds in suitable nesting habitat that occurs within the project footprint. Pre-construction nesting surveys will identify any active migratory birds (and other sensitive non-migratory birds) nests. Direct impact to any active migratory bird nest should be avoided. 3. Minimize wildfire potential. 4. Minimize activities that attract prey and predators. 5. Control of non-native plants <p>O&M conservation measures to be incorporated into the ABPP include:</p> <ol style="list-style-type: none"> 1. Incorporate APLIC guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (APLIC 2006). 2. Minimize noise. 3. Minimize use of outdoor lighting. <p>Implement post-construction avian monitoring that will incorporate the Wildlife Mortality Reporting Program.</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>4.4-1g Raptor and Active Raptor Nest Avoidance. Raptors and active raptor nests are protected under CFGC 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact to nesting raptors such as red-tailed hawk, the following measures shall be implemented:</p> <ol style="list-style-type: none"> 1. Initial grading and construction within the project study areas should take place outside the raptors' breeding season of February 1 to July 15. 2. If construction occurs between February 1 and July 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting raptors in suitable nesting habitat (e.g., tall trees or transmission towers) that occurs within 500 feet of the survey area. If any active raptor nest is located, the nest area will be flagged, and a 500-foot buffer zone delineated, flagged, or otherwise marked. No work activity may occur within this buffer area, until a qualified biologist determines that the fledglings are independent of the nest. 	
Cultural Resources			
Impact to Archaeological Resources	Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF and transmission line.</p> <p>4.5-2a Worker Awareness Training. Workers conducting grading activities and their supervisors shall receive proper training prior to the commencement of grading from a qualified archaeologist regarding the potential for sensitive archaeological resources to be unearthed during these grading activities. The workers shall be directed to report any unusual specimens of bone, stone, ceramics or other archaeological artifacts observed during grading and/or other construction activities to their supervisor and to cease grading activities in the immediate vicinity of the discovery until the archaeological monitor is notified of the discovery by the Superintendent of the project site.</p> <p>4.5.2b Archaeological and Tribal Monitoring. Proper training of on-site personnel will be required and, if requested, certified observers (tribal monitors) will be on-site to insure proper avoidance and/or removal protocols are observed in the event that cultural resources are uncovered due to construction ground disturbance.</p> <p>4.5.2c Accidental Discovery of Unknown Archaeological Resources. In the event that unknown historic or unique archaeological resources are encountered during construction or operational repairs, archaeological monitors will be authorized to temporarily divert construction work within 100 feet of the area of discovery until the significance and the appropriate mitigation measures are determined by a Registered Professional Archaeologist familiar with the resources of the region.</p> <p>4.5-2d Discovery of Archaeological Materials. In the event archaeological resources potentially eligible for the CRHR are encountered, surface disturbing work in the immediate vicinity of the discovery shall temporarily halt until appropriate treatment of the resource is determined by a qualified archaeologist in accordance with the</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>provisions of CEQA Section 15064.5. The archaeological monitor shall have the authority to re-direct construction equipment in the event archaeological resources potentially eligible for the CRHR are encountered. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the project applicant shall implement an archaeological data recovery program.</p> <p>4.5-2e Cultural Resource Documentation and Treatment by Tribal Monitors. If a cultural resource artifact, feature, or other cultural item is observed on the project site by the Tribal Monitor(s), the Tribal Monitor(s) will be given a reasonable opportunity to document, remove, and/or otherwise provide for treatment of the resource. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act (NAGPRA), the discovery of any cultural resource within the project area by the Tribal Monitor(s) shall not be grounds for a “stop work” notice or otherwise interfere with the project’s continuation except as set forth in this paragraph.</p> <p>4.5-2f Project Applicant Shall Notify the County within 24 Hours. Upon discovery of archaeological resources or materials, and after cessation of excavation, the contractor shall immediately contact the Imperial County Department of Planning and Development Services. The contractor shall not resume work until authorization is received from the County</p>	
Impacts to human remains	Less than significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.5-4 Human Remains. In the event that any human remains or related resources are discovered on the project site, such resources shall be treated in accordance with federal, state, and local regulations and guidelines for disclosure, recovery, relocation, and preservation, as appropriate. All construction affecting the discovery site shall cease until, as required by CEQA Guidelines, Section 156064.5(e), the human remains are evaluated by the County Coroner for the nature of the remains and cause of death. All parties involved would ensure that any such remains are treated in a respectful manner and that all applicable federal, state, and local laws are followed.</p> <p>If human remains are found to be of Native American origin, or if associated grave goods or objects of cultural patrimony are discovered, the provisions of the NAGPRA would be followed, and the Native American Heritage Commission shall be asked to determine the descendants who are to be notified or, if unidentifiable, to establish the procedures for burial.</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Geology and Soils			
Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking	Potentially significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.6-1 Prepare Geotechnical Report(s) for the Projects and Implement Required Measures. Facility design for all project components shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by the project applicant. The final geotechnical and/or civil engineering report shall address and make recommendations on the following:</p> <ul style="list-style-type: none"> • Site preparation; • Soil bearing capacity; • Appropriate sources and types of fill; • Potential need for soil amendments; • Road, pavement, and parking areas; • Structural foundations, including retaining-wall design; • Grading practices; • Soil corrosion of concrete and steel; • Erosion/winterization; • Seismic ground shaking; • Liquefaction; and • Expansive/unstable soils. <p>In addition to the recommendations for the conditions listed above, the geotechnical investigation shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the version of the CBC that is applicable at the time building and grading permits are applied for. All recommendations contained in the final geotechnical engineering report shall be implemented by the project applicant.</p>	Less than Significant
Exposure to Potential Hazards from Problematic Soils	Potentially Significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.6-4 Implement Corrosion Protection Measures. As determined appropriate by a licensed geotechnical or civil engineer, the project applicant shall ensure that all underground metallic fittings, appurtenances, and piping include a cathodic protection system to protect these facilities from corrosion.</p>	Less than Significant
On-site Wastewater Treatment and Disposal	Potentially Significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, and LSF.</p> <p>4.6-5 Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements. The project's wastewater treatment and disposal system(s) shall demonstrate compliance with the Imperial County performance standards as outlined in Title 9, Division 10, Chapters 4 and 12 of the Imperial County Code. Prior to construction, and again prior to operation, the project applicant will obtain all necessary permits and/or approvals from the Imperial County Public Works</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		Department. The project applicant shall demonstrate that the system adequately meets County requirements, which have been designed to protect beneficial uses and ensure that applicable water quality standards are not violated. This shall include documentation that the system will not conflict with the Regional Water Quality Control Board's (RWQCB) Anti-Degradation Policy.	
Greenhouse Gas Emissions			
Generate Greenhouse Gas Emissions, Either Directly or Indirectly, that may have a Significant Impact on the Environment.	Less than Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.7-1a Diesel Equipment (Compression Ignition) Offset Strategies</p> <ul style="list-style-type: none"> a. Use electricity from power poles rather than temporary diesel power generators. b. Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines. c. Construction equipment used for the project should utilize EPA Tier 2 or better engine technology (requirement under Mitigation Measure 4.3-1 as described in Chapter 4.3, Air Quality of this EIR). <p>4.7-1b Vehicular Trip (Spark Ignition) Offset Strategies</p> <ul style="list-style-type: none"> a. Encourage commute alternatives by informing construction employees and customers about transportation options for reaching your location (i.e., post transit schedules/routes). b. Help construction employees "ride share" by posting commuter ride sign-up sheets, employee home, zip code, map, etc. c. When possible, arrange for single construction vendor who makes deliveries for several items. d. Plan construction delivery routes to eliminate unnecessary trips. e. Keep construction vehicles well maintained to prevent leaks and minimize emissions. 	Less than Significant
Hazards and Hazardous Materials			
Possible Risk to the Public or Environment through Release of Hazardous Materials	Potentially Significant	<p>The following mitigation measures are required for the FSF and ISF:</p> <p>4.8-2a Phase II Environmental Site Assessment. A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the FSF substation is to be constructed in the area of the Kubler Shop. This ESA will assist to determine if the previous USTs are still onsite and if soil contamination exists.</p> <p>4.8-2b Hazardous Materials Discovery. All construction contractor(s) shall be instructed to immediately stop all subsurface construction activities in the event that petroleum is discovered, an odor is identified, or significantly stained soil is visible during construction. Contractors shall be instructed to follow all applicable regulations</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>regarding discovery and response for hazardous materials encountered during the construction process.</p> <p>4.8-2c Lead and Asbestos. Prior to the demolition of any buildings, the contractor shall conduct testing to determine if lead and/or asbestos are present. Testing will help to identify the proper removal procedures to follow per state and local guidelines.</p> <p>4.8-2d Well Abandonment. Prior to issuance of a grading permit, the project applicant shall submit evidence demonstrating that the locations of all known wells on-site have been reviewed by the DOGGR and that all well abandonment requirements, including gas leakage testing, have been completed according to DOGGR specifications, including construction Project Site Review and Well Abandonment Procedures.</p>	
Hydrology and Water Quality			
Violation of Water Quality Standards During Construction	Potentially Significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.9-1a Acquire Appropriate Clean Water Act Regulatory Permits, Prepare SWPPP, and Implement BMPs Prior to Construction and Site Restoration. The project applicant or its contractor shall prepare a SWPPP specific to the projects and be responsible for securing coverage under SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ). The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by the project applicant prior to commencement of work and shall be made conditions of the contract with the contractor selected to build and decommission the projects. The SWPPP(s) shall incorporate control measures in the following categories:</p> <ul style="list-style-type: none"> • Soil stabilization and erosion control practices (e.g., hydroseeding, erosion control blankets, mulching); • Dewatering and/or flow diversion practices, if required (see Mitigation Measure 4.9-1b); • Sediment control practices (temporary sediment basins, fiber rolls); • Temporary and post-construction on- and off-site runoff controls; • Special considerations and BMPs for water crossings, wetlands, and drainages; • Monitoring protocols for discharge(s) and receiving waters, with emphasis placed on the following water quality objectives: dissolved oxygen, floating material, oil and grease, pH, and turbidity; • Waste management, handling, and disposal control practices; 	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<ul style="list-style-type: none"> • Corrective action and spill contingency measures; • Agency and responsible party contact information, and • Training procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP. <p>The SWPPP shall be prepared by a qualified SWPPP practitioner with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. Given that Imperial Valley Drains would accept runoff from the project study areas and are listed as impaired for sediment, the SWPPP shall include BMPs sufficient for Risk Level 2 projects. BMPs for soil stabilization and erosion control practices and sediment control practices will also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.</p> <p>4.9-1b Properly Dispose of Construction Dewatering in Accordance with the Colorado River Basin Regional Water Quality Control Board. If required, all construction dewatering shall be discharged to an approved land disposal area or drainage facility in accordance with Colorado River Basin RWQCB requirements. The project applicant or its construction contractor shall provide the Colorado River Basin RWQCB with the location, type of discharge, and methods of treatment and monitoring for all groundwater dewatering discharges. Emphasis shall be placed on those discharges that would occur directly or in proximity to surface water bodies and drainage facilities.</p>	
Violation of Water Quality Standards During Construction	Potentially Significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.9-2 Incorporate Post-Construction Runoff BMPs into Project Drainage Plan and Maximize Opportunities for Low Impact Development. The project Drainage Plan shall adhere to County and IID guidelines to treat, control, and manage the on- and off-site discharge of stormwater to existing drainage systems. Low Impact Development opportunities, including but not limited to infiltration trenches or bioswales, will be investigated and integrated into the Drainage Plan to the maximum extent practical. The Drainage Plan shall provide both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and treatment of runoff generated from project impervious surfaces prior to off-site discharge.</p> <p>The project applicant shall ensure the provision of sufficient outlet protection through the use of energy dissipaters, vegetated rip-rap, soil protection, and/or other</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations for the O&M facilities, access roads, electrical distribution and substation facilities, and solar array locations. A long-term maintenance plan shall be developed and implemented to support the functionality of drainage control devices. The facility layout(s) shall also include sufficient container storage and on-site containment and pollution-control devices for drainage facilities to avoid the off-site release of water quality pollutants, including, but not limited to oil and grease, fertilizers, treatment chemicals, and sediment.	
Alternation of Drainage Patterns and Off-site Flooding	Potentially Significant	<p>The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.9-4 Prepare Drainage Plan(s) for Structural Facilities. The project applicant shall prepare a site specific Drainage Plan for all facilities constructed in conjunction with the projects that meets County Department of Public Works and IID requirements, where applicable. The Drainage Plan shall incorporate measures to maintain off-site runoff during peak conditions to pre-construction discharge levels. Design specifications for the detention, retention, and/or infiltration facilities shall provide sufficient temporary storage capacity to accommodate the 100-year, 24-hour storm event to pre-project conditions.</p>	Less than Significant
Land Use and Planning			
Implementation of the projects would not significantly impact land use and planning.	Less than Significant	The proposed projects would not result in significant impacts to land use and planning. No mitigation is required.	Less than Significant
Noise			
Temporary, Short-Term Exposure of Sensitive Receptors to Increased Equipment Noise from Project Construction.	Potentially Significant	<p>The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.</p> <p>4.11-1a Limit Construction Hours. Construction and decommissioning activities shall be limited to daylight hours between 7 AM and 7 PM Monday through Friday, and 9 AM and 5 PM on Saturday for those construction areas that are located within 2,500 feet of noise-sensitive receptors. No construction shall be allowed on Sundays or holidays.</p> <p>4.11-1b Minimize Noise from Construction Equipment and Staging. Construction equipment noise shall be minimized during project construction and decommissioning by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools, where used. The project applicant's construction specifications shall also require that the contractor select staging areas as far as feasibly possible from sensitive receptors. All contractor specifications shall include a requirement that equipment located within 2,500 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings or other noise reducing technology such that</p>	Less than Significant

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		<p>noise levels are no more 85 dBA at 50 feet. If necessary, the line of sight between the equipment and nearby sensitive receptors shall be blocked by portable acoustic barriers and/or shields to reduce noise levels.</p> <p>4.11-1c Maximize the Use of Noise Barriers. Construction and decommissioning contractors shall locate fixed construction equipment (such as compressors and generators) as far as possible from nearby residences. If feasible, noise barriers shall be used at the construction site and staging area. Temporary walls, stockpiles of excavated materials, or moveable sound barrier curtains would be appropriate in instances where construction noise would exceed 85 dBA and occur within less than 200 feet from a sensitive receptor. The final selection of noise barriers shall be subject to the project applicant's approval and shall provide a minimum 5 dBA reduction in construction noise levels, where noise levels would exceed 85 dBA without the barrier.</p> <p>4.11-1d Prohibit Non-Essential Noise Sources During Construction. No amplified sources (e.g., stereo "boom boxes") shall be used in the vicinity of residences during project construction or decommissioning.</p> <p>4.11-1e Provide a Mechanism for Filing Noise Complaints. The project applicant shall provide a mechanism for residents, businesses, and agencies to register complaints with the County if construction noise levels are overly intrusive or construction occurs outside the required hours.</p>	
Public Services			
Implementation of the projects would not significantly impact public services.	Less than Significant	The proposed projects would not result in significant impacts to public services. No mitigation is required.	Less than Significant
Transportation and Traffic			
Implementation of the projects would not significantly impact transportation and traffic.	Less than Significant	The proposed projects would not result in significant impacts to transportation and traffic. No mitigation is required. However, as a condition of project approval, the applicant will be required to conduct pre-construction and post-construction roadway condition surveys to document the roadway conditions before and after project construction. The applicant would be responsible to roadway repair as determined appropriate based on these surveys and in mutual agreement with the County.	Less than Significant
Utilities and Service Systems			
Implementation of the projects would not significantly impact utilities and services systems	Less than Significant	The proposed projects would not result in significant impacts to utilities and service systems. No mitigation is required.	Less than Significant

0.1.5 AREAS OF CONTROVERSY

Areas of Concern

Section 15123(b)(2) of the CEQA Guidelines requires that an EIR identify areas of controversy known to the Lead Agency, including issues raised by other agencies and the public. ~~The main comments submitted on the NOP during the public review and comment period are summarized in Table 1.0-1 in Section 1.0 of this EIR. A primary issue associated with these solar farm projects, and other solar facility projects that are proposed in the County, is the conversion of agricultural lands, including Williamson Act Contracted lands, to the solar farm use and the corresponding land use compatibility and fiscal/economic impacts to the County. Through the course of the environmental review process for these projects, other areas of concern and issues to be resolved include potential impacts related to aesthetics, biological resources, aircraft hazards, and water supply.~~

Detailed analyses of these topics are included within each corresponding section contained within this document.

Statement of Overriding Considerations

CEQA Guidelines Section 15093 requires the Lead Agency to balance, as applicable, the economic, legal, social, and technological, or other benefits of the project against its unavoidable environmental risks when determining whether to approve the project. No significant and unmitigated impacts have been identified for the proposed projects; therefore, the County would not be required to adopt a Statement of Overriding Considerations pursuant to Section 15093 for this project.

Project Alternatives

The environmental analysis for the proposed projects evaluated the potential environmental impacts resulting from implementation of the proposed projects, as well as alternatives to the projects. The alternatives include: Alternative 1: No Project/No Development; Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland); Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land); Alternative 4: Alternative Location – Private Land; Alternative 5: Alternative Location – Desert Land; and, Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only. A detailed discussion of the alternatives considered is included in Section 8.0. Table 0-2 summarizes the impacts resulting from the proposed projects and the identified alternatives.

Alternative 1: No Project/No Development Alternative

The CEQA Guidelines require analysis of the No Project Alternative (Public Resources Code Section 15126). According to Section 15126.6(e), “the specific alternative of ‘no project’ shall also be evaluated along with its impacts. The ‘no project’ analysis shall discuss the existing conditions at the time the Notice of Preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.”

The No Project/No Development Alternative assumes that the FSF, RSF, ISF and LSF projects, as proposed, would not be implemented and the project sites would not be developed.

The No Project/No Development Alternative would not meet any of the objectives of the projects. Additionally, the No Project/No Development Alternative would not help California meet its statutory and regulatory goal of increasing renewable power generation, including GHG reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006).

TABLE 0-2. COMPARISON OF PROPOSED PROJECT AND ALTERNATIVES

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Aesthetics	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact
Agriculture	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)
Air Quality	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact
Biological Resources	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Cultural Resources	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Similar impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact
Geology and Soils	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact
Greenhouse Gas Emissions	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact during construction. Would not achieve GHG emission reductions to the extent of the proposed project as less renewable energy would be produced	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact during construction. Would not achieve GHG emission reductions to the extent of the proposed project as less renewable energy would be produced	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Hazards and Hazardous Materials	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact
Hydrology/ Water Quality	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact
Land Use/Planning	Less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Greater impact
Noise	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact

0.1 Executive Summary

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Public Services	Less than Significant	CEQA Significance: No impact Comparison to Projects : Less impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact
Transportation/ Traffic	Less than significant	CEQA Significance: No impact Comparison to Projects: Similar	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Greater Impact	CEQA Significance: Less than significant Comparison to Projects: Similar
Utilities	Less than Significant	CEQA Significance: No impact Comparison to Projects: Greater impact (water use)	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Greater impact (water use)

Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)

This alternative would avoid the Prime Farmlands, as mapped by the California Department of Conservation Important Farmlands Mapping, located within the project area, specifically associated with the FSF and ISF. The 2010 Important Farmland maps for Imperial County indicate that a majority of the four project sites are comprised of Farmland of Statewide Importance with small isolated areas designated as Prime Farmland and “other.” Under this alternative, approximately 160.4 acres of Prime Farmland would be avoided.

Implementation of the Reduced Acreage Alternative (Avoid Prime Farmland) would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, greenhouse gas emissions (construction phase only), and hydrology/water quality. This alternative would not result in any greater environmental impacts when compared to the proposed projects.

Alternative 3: Reduced Acreage (Avoid Williamson Act Land)

This alternative would avoid Williamson Act Contract lands that are located within the project sites, specifically the FSF and ISF sites. This alternative would reduce the size of the projects by approximately 662,684 acres (~~662,156,83.9~~ acres) as compared to the proposed projects. There are three active Williamson Act Contracts within the FSF and ISF project sites. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (APNs 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN 059-050-002) within the ISF project site. One parcel associated with Contract 2003-001 (APN 059-050-001) is also part of Agricultural Preserve 160 and is located within the FSF project site.

The Reduced Acreage Alternative (Avoid Williamson Act Land) would meet most of the basic objectives of the proposed projects and should remain under consideration. However, this alternative would make it more difficult to achieve the overall objective of providing a total of 360 megawatts of renewable solar energy, as there would be less area available for the placement of PV or CPV structures.

Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land

The purpose of this alternative is to develop the proposed projects on privately owned, non-agricultural land. This alternative would avoid the temporary conversion of agricultural land to non-agricultural uses associated with the proposed projects. This alternative considers development of the proposed project within the Mesquite Lake Specific Plan Area (SPA) located in central Imperial County between SR 86 on the west and SR 111 plus ¼ mile on the east, and bordered by Harris Road on the south and Keystone Road on the north.

Compared to the proposed projects, implementation of Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land would avoid impacts on agriculture. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology/water quality, and noise.

Alternative Location – Desert Land

The Alternative Location – Desert Land considers developing the proposed projects on desert land to avoid the conversion of agricultural land to non-agricultural uses. This alternative considers development of the proposed projects in the Yuha Desert, taking advantage of the existing Utility Corridor “N,” other nearby solar projects (i.e., Imperial Solar Energy Center West), and the existing Imperial Valley Substation. This alternative would minimize the construction of miles of additional transmission infrastructure because it would share transmission with adjacent projects to maximize this utility and minimize potential environmental impacts. This alternative would avoid the construction of the solar farms on agricultural lands, as well as miles of additional transmission infrastructure on agricultural lands in order to connect to the Imperial Valley Substation. This alternative would require a right-of-way (ROW)

grant with the BLM to construct, operate, maintain, and decommission the proposed projects on BLM lands. The California Desert Conservation Act (CDCA) Plan would also need to be amended to identify the projects as suitable for solar energy development.

Compared to the proposed projects, implementation of the Desert Land would avoid impacts on agriculture. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, and transportation/traffic.

Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative

This alternative would involve the development of a number of geographically distributed small to medium solar PV systems (100 kilowatts to 1 MW) within existing developed areas, typically on the rooftops of commercial and industrial facilities throughout Imperial County. Under this alternative, no new land would be developed or altered and agricultural land would not be temporarily converted to non-agricultural uses. This alternative would involve placement of PV structures, transmission lines, and development of additional supporting facilities, such as switching stations and substations at various locations throughout the County. This alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, relatively flat roof areas necessary for efficient solar installations.

Implementation of the Distributed Commercial and Industrial Rooftop Solar Only Alternative would result in reduced impacts for the following environmental issue areas as compared to the proposed projects: agriculture and hydrology/water quality. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, land use and planning, noise, and utilities.

Environmentally Superior Alternative

The No Project/No Development Alternative would be considered the environmentally superior alternative, since it would eliminate all of the significant impacts identified for the projects. However, CEQA Guidelines Section 15126.6(e)(2) states that “if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” The environmentally superior alternative would be Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) because it would reduce impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, greenhouse gas emissions (construction phase only), and hydrology/water quality.

1.0 INTRODUCTION

This Environmental Impact Report (EIR) has been prepared to meet the requirements of the California Environmental Quality Act (CEQA) for purposes of evaluating the potential environmental impacts, mitigation measures, and alternatives associated with the proposed Ferrell Solar Farm (FSF), Rockwood Solar Farm (RSF), Iris Solar Farm (ISF) and Lyons Solar Farm (LSF), collectively known as the “Iris Cluster Solar Farm Project.” This EIR describes the existing environment that would be affected by, and the environmental consequences which could result from the construction and operation of the proposed projects as described in detail in Chapter 3.0 of this EIR.

1.1 OVERVIEW OF THE PROPOSED PROJECTS

The proposed solar farm projects would consist of two primary components: (1) the combined construction and operation of an expansive photovoltaic (PV) or concentrated photovoltaic (CPV) solar energy facility and supporting uses; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnections. The primary components within the solar farms will be solar arrays, electrical substation facilities, and other operations and maintenance (O&M) facilities. In addition, a major component of the projects would be restoration of the project sites to agricultural use in up to 40 years.

Four separate Conditional Use Permit (CUP) applications have been filed by the project applicant for each of the four projects. Additionally, Variance Applications have been filed with the County for these projects in order to exceed the currently allowed height limit for transmission towers within the applicable zones.

The combined acreage of the project solar farm project sites (not including the potential off-site transmission routes) encompasses 1,4001,422 acres of land located in the southern portion of Imperial County. The interconnection for the proposed projects will occur at the 230 kilovolt (kV) side of the San Diego Gas & Electric (SDG&E) Imperial Valley (IV) Substation, located approximately 5 miles northwest of the project sites. This connection will occur via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

Transmission and collector lines would extend along private lands, traversing land on the perimeter of the four proposed project sites, or where extending off-site, on the perimeters of previously approved solar project sites such as the Mount Signal and Calxico Solar Farms Project site. These off-site locations have been previously reviewed pursuant to CEQA and have been approved by the County. The transmission and collector lines would extend both west to east and north to south adjacent to major roads (e.g., Kubler Road, State Route [SR] 98, George Road, Corda Road, and Ferrell Road) and other local roadways. Figure 3.0-3 in Section 3.0, Project Description, provides an index of the major project components. The details of each of the four solar projects, including potential off-site transmission alignments, is further described and depicted in Section 3.0.

1.1.1 Agency Roles and Responsibilities

1.1.1.1 County of Imperial

The County of Imperial will be required to approve each of the four CUPs and corresponding Variance applications for each of the projects to authorize the construction and operation of the proposed solar facilities and supporting infrastructure, including transmission lines. Pursuant to Imperial County Land Use Ordinance Title 9, Division 5, Chapter 9, “Solar Energy Plants” are uses permitted in the A-2, A-2-R, and A-3 Zones, subject to issuance of a CUP by the County. Transmission lines, including “supporting towers, poles, microwave towers, utility substations” are permitted uses within the A-3 Zone. In addition, approval of the projects would involve County approval of a Variance for each project to allow the proposed transmission towers to exceed the 120-foot height limit currently established in the A-2, A-2-R

and A-3 zones in which the projects are located. No land use changes would be required in order to implement the proposed action.

The following approvals will be required for implementation of the projects:

1. **Approval of CUPs.** Implementation of the solar farm projects would require the approval of four CUPs by the County to allow for the construction and operation of the proposed FSF, RSF, ISF, and LSF projects. The projects are located on a total of 10 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agriculture Rural), and A-3 (Heavy Agriculture). Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" is a use that is permitted in the A-2, A-2-R, and A-3 Zones, subject to approval of a CUP. ("Transmission lines, including supporting towers, poles, microwave towers, utility substations" are permitted uses within the A-3 Zone.)
2. **Site Plans.** Site Plan and Architectural Review is required.
3. **Variance.** Variances are required for the solar energy facility sites in order to exceed the height limit for transmission towers within the A-2, A-2-R, and A-3 Zones. The existing A-2, A-2-R, and A-3 Zones allow a maximum height limit of 120 feet; whereas, transmission towers of up to 140 feet in height are proposed.
4. **Certification of the EIR.** After the required public review for the Draft EIR, the County will respond to written comments, edit the document, and produce a Final EIR to be certified by the Planning Commission and/or Board of Supervisors prior to making a decision on the projects.
5. **Reclamation Restoration Plans.** The project applicant has prepared a site reclamation (restoration plan) for each of the four projects (EIR Appendix L). As required by the County, when the projects are decommissioned at the end of their life spans, the project applicant or its successor in interest would be responsible for implementing the reclamation restoration plan, which includes the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on each of the sites, as well as restoration of the site to its pre-project condition with respect to agricultural suitability (e.g., soils, infrastructure). The County is responsible for approving the reclamation restoration plan for each project and confirming that financial assurances for each of the projects are in conformance with Imperial County ordinances.
6. **Williamson Act Contract Cancellation.** There are three active Williamson Act Contracts within the FSF and ISF project sites. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (Assessor's Parcel Numbers [APNs]: 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN: 059-050-002) within the ISF project site. One parcel associated with Contract 2003-001 (APN: 059-050-001) is also part of Agricultural Preserve 160 and is located within the FSF project site. Petitions for cancellation of these contracts were filed with the County in 2014.

Subsequent ministerial approvals may include, but are not limited to:

- Grading and clearing permits;
- Building permits;
- Septic system permits;
- Occupancy permits; and
- Encroachment permits.

1.1.1.2 Other Agency Reviews and/or Consultations

1.1.1.2.1 Federal

U.S. Army Corps of Engineers

- Consultation, if required, for a disturbance to jurisdictional waters of the U.S. that may trigger the need for a Clean Water Act (CWA) Section 404 permit. Note, no U.S. Army Corps of Engineers (USACE) jurisdictional features are identified on-site or proposed to be impacted by the project.

U.S. Fish and Wildlife Service

- Consultation regarding potential impacts to special-status species or their habitat as required under the Federal Endangered Species Act (FESA). If applicable, Section 10 take permits would be required for the loss of such species and their habitat.

1.1.1.2.2 State

California Department of Fish and Wildlife (Trustee Agency)

- Consultation regarding potential impacts to California special-status species or their habitats as required under the California Endangered Species Act (CESA). If applicable, incidental take permits for the loss of such species or their habitat would be required. Consultation regarding potential impacts to waters/wetlands of the state. If applicable, a Section 1602 Streambed Alteration Agreement would be required. Note, no California Department of Fish and Wildlife (CDFW) jurisdictional features are identified on-site or proposed to be impacted by the project.

California Department of Transportation

- Utility encroachment permits and/or consultation on potential impacts/improvements regarding Caltrans roads/rights-of-way.

California Regional Water Quality Control Board

National Pollution Discharge Elimination System (NPDES) Construction General Permit Order No. 2009-009-DWQ. Requires the applicant to file a public Notice of Intent to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP).

NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems Order No. 2013-0001-DWQ. Requires that discharges of pollutants from areas of new development be reduced to the maximum extent practicable in order to protect receiving waters and uphold water quality standards.

Consultation Regarding Potential Impacts to Jurisdictional Waters. If applicable, CWA Section 401 Water Quality Certification, or permitting under California Porter-Cologne Act.

1.1.1.2.3 Local

Imperial County Fire Department

- Review as part of the EIR process including the final design of the proposed fire system.

Imperial Irrigation District

- Review as part of the EIR process including approval of encroachment permits.

Imperial County Air Pollution Control District

- Review as part of the EIR process regarding consistency with the Imperial County Air Pollution Control District (ICAPCD) CEQA Air Quality Handbook, ~~the 1991 Air Quality Attainment Plan, the final "Modified" 2009 8-hour Ozone Air Quality Management Plan,~~ and the State Implementation Plan for particulate matter less than 10 microns in diameter (PM₁₀) in the Imperial Valley, and including verification of Rule 801 compliance.

1.2 RELATIONSHIP TO STATUTES, REGULATIONS, AND OTHER PLANS

County of Imperial General Plan and Land Use Ordinance

The General Plan provides guidance on future growth in the County of Imperial. Any development in the County of Imperial must be consistent with the General Plan and the Land Use Ordinance (Title 9, Division 10).

Renewables Portfolio Standard Program

Established in 2002 under Senate Bill (SB) 1078, California's Renewables Portfolio Standard (RPS) was accelerated in 2006 under SB 107 by requiring that 20 percent of electricity retail sales be served by renewable energy resources by 2010. Subsequent recommendations in California energy policy reports advocated a goal of 33 percent by 2020. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08 requiring that "...[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed the California Air Resources Board, under its Assembly Bill 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In the ongoing effort to codify the ambitious 33 percent by 2020 goal, Senate Bill X1-2 was signed by Governor Brown, in April 2011. This new RPS preempts the California Air Resources Boards' 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities (IOUs), electricity service providers, and community choice aggregators. All of these entities must have adopted the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020. Renewable energy sources include wind, geothermal, and solar.

California Global Warming Solutions Act of 2006, Assembly Bill 32 (Statutes 2006; Chapter 488; Health and Safety Code Sections 38500 et seq.)

This Act requires the Air Resources Board (ARB) to enact standards that will reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. Electricity production facilities are regulated by the ARB.

Title 17 CCR, Subchapter 10, Article 2, Sections 95100 et seq.

These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006.

Federal Clean Air Act

The legal authority for federal programs regarding air pollution control is based on the 1990 Clean Air Act Amendments (CAAA). These are the latest in a series of amendments made to the Clean Air Act (CAA). This legislation modified and extended federal legal authority provided by the earlier Clean Air Acts of 1963 and 1970.

The Air Pollution Control Act of 1955 was the first Federal legislation involving air pollution. This Act provided funds for federal research in air pollution. The CAA of 1963 was the first Federal legislation regarding air pollution *control*. It established a federal program within the U.S. Public Health Service and authorized research into techniques for monitoring and controlling air pollution. In 1967, the Air Quality Act was enacted in order to expand Federal government activities. In accordance with this law, enforcement proceedings were initiated in areas subject to interstate air pollution transport. As part of these proceedings, the Federal government for the first time conducted extensive ambient monitoring studies and stationary source inspections.

The Air Quality Act of 1967 also authorized expanded studies of air pollutant emission inventories, ambient monitoring techniques, and control techniques.

Imperial County Air Pollution Control District

The Imperial County Air Pollution Control District enforces rules and regulations regarding air emissions associated with various activities, including construction and farming, and operational activities associated with various land uses, in order to protect the public health.

Federal Clean Water Act (33 United States Code §§1251-1387)

The Federal Water Pollution Control Act (33 United States Code [USC] §§1251-1387), otherwise known as the CWA, is a comprehensive statute aimed at restoring and maintaining the chemical, physical and biological integrity of the nation's waters. Enacted originally in 1948, the Act was amended numerous times until it was reorganized and expanded in 1972. It continues to be amended almost every year. Primary authority for the implementation and enforcement of the CWA rests with the U.S. Environmental Protection Agency (EPA). In addition to the measures authorized before 1972, the Act authorizes water quality programs, requires federal effluent limitations and state water quality standards, requires permits for the discharge of pollutants into navigable waters, provides enforcement mechanisms, and authorizes funding for wastewater treatment works construction grants and state revolving loan programs, as well as funding to states and tribes for their water quality programs. Provisions have also been added to address water quality problems in specific regions and specific waterways.

Important for wildlife protection purposes are the provisions requiring permits to dispose of dredged and fill materials into navigable waters. Permits are issued by the U.S. Army Corps of Engineers (USACE) under guidelines developed by EPA pursuant to Section 404 of the CWA.

Federal Clean Water Act and California Porter-Cologne Water Quality Control Act

The project is located within the Colorado River Basin (CRB) Regional Water Quality Control Board (RWQCB), Region 7. The Federal CWA and the California Porter-Cologne Water Quality Control Act require that Water Quality Control Plans (more commonly referred to as Basin Plans) be prepared for the nine state-designated hydrologic basins in California. The Basin Plan serves to guide and coordinate the management of water quality within the region.

Federal Endangered Species Act

FESA (16 U.S.C. 1531-1544) provides protection for plants and animals whose populations are dwindling to levels that are no longer sustainable in the wild. The Act sets out a process for listing species, which

allows for petition from any party to list a plant or animal. Depending on the species, either the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) will determine whether listing the species is warranted. If it is warranted, the species will be listed as either threatened or endangered. The difference between the two categories is one of degree, with endangered species receiving more protections under the statute.

Section 9 of the ESA prohibits the "take" of listed fish and wildlife species, but not plant species. This provision applies to every person. The definition of "take" includes, by regulation, "significant habitat modification or degradation that actually kills or injures wildlife." 50 Code of Federal Regulations (CFR) §17.3.

National Historic Preservation Act

Federal regulations (36 CFR Part 800.2) define historic properties as "any prehistoric or historic district, site, building, structure, or object included, or eligible for inclusion in, in the National Register of Historic Places (NRHP)." The term "cultural resource" is used to denote a historic or prehistoric district, site, building, structure, or object, regardless of whether it is eligible for the NRHP.

California Endangered Species Act (Government Code Section 2050)

CESA is enacted through Government Code Section 2050. Section 2080 of the California Fish and Game Code prohibits "take" of any species that the commission determines to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

CESA allows for take incidental to otherwise lawful development projects. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project caused losses of listed species populations and their essential habitats.

California Lake and Streambed Program (Fish and Game Code Section 1602)

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake.

1.3 PURPOSE OF AN EIR

The purpose of an EIR is to analyze the potential environmental impacts associated with a project. CEQA (Section 15002) states that the purpose of CEQA is to: (1) inform the public and governmental decision makers of the potential, significant environmental impacts of a project; (2) identify the ways that environmental damage can be avoided or significantly reduced; (3) prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and (4) disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

1.4 EIR PROCESS

1.4.1 Availability of Reports

This Final EIR and documents incorporated by reference are available for public review at the County of Imperial Planning and Development Services Department, 801 Main Street, El Centro, California 92243.

Copies are also available for review at the City of El Centro Public Library, 539 State Street, El Centro, CA. Documents at these locations may be reviewed during regular business hours.

Patricia Valenzuela, Planner IV
County of Imperial, Planning and Development Services Department
801 Main Street
El Centro, CA 92243

Comments received during the public review period of the Draft EIR ~~will be~~ have been reviewed and responded to in ~~the~~ this Final EIR. The Final EIR will then be reviewed by the Imperial County Planning Commission and Board of Supervisors as a part of the procedure to adopt the EIR. Additional information on this process may be obtained by contacting the County of Imperial Planning and Development Services Department at (760) 482-4236.

Incorporation by Reference

Pursuant to CEQA Guidelines Section 15150, this EIR incorporates by reference the Mount Signal and Calexico Solar Farm Projects Final EIR (State Clearinghouse [SCH] #2011071066) and the Imperial Solar Energy Center South Project Final EIR (SCH# 2010061038). Noise measurement data derived for the Imperial Solar Energy Center South project was used for the noise impact analysis for the proposed Iris Cluster Solar Energy Project. The environmental effects of a portion of the proposed shared transmission facilities were previously evaluated in the Mount Signal and Calexico Solar Farm Project Final EIR. The provisions of incorporation by reference are set forth in the CEQA Guidelines Sections 15150(a) through (f), which state that an EIR may incorporate by reference all or portions of another document which is a matter of public record and is generally available to the public. Where an EIR uses incorporation by reference, the incorporated part of the referenced document shall be briefly summarized where possible or briefly described if the data or information cannot be summarized. Also, the relationship between the incorporated part of the referenced document and the EIR shall be described. Incorporation by reference is also described in more detail in Section 4.0, Introduction to Environmental Analysis of this EIR.

The Mount Signal and Calexico Solar Farm Projects Final EIR and the Imperial Solar Energy Center South Project Final EIR are available at the County of Imperial Planning and Development Services Department, 801 Main Street, El Centro, California 92243.

1.4.2 Public Participation Opportunities/Comments and Coordination

1.4.2.1 Notice of Preparation

The County of Imperial issued a Notice of Preparation (NOP) for the preparation of an EIR for the Iris Cluster Solar Farm Project on April 22, 2014. The NOP was distributed to City, County, State, and Federal agencies, other public agencies, and various interested private organizations and individuals in order to define the scope of the EIR. The NOP was also published in the Imperial Valley press on April 23, 2014. The NOP was subsequently republished in the newspaper to correct the date of the scoping meeting (May 15, 2014). The purpose of the NOP was to identify public agency and public concerns regarding the potential impacts of the projects, and the scope and content of environmental issues to be addressed in the EIR. Correspondence in response to the NOP was received from the following entities and persons:

- Native American Heritage Commission (April 28, 2014)
- Imperial Valley Air Pollution Control District (April 30, 2014)
- Carolyn Allen (May 15, 2014)
- Imperial Irrigation District (May 15, 2014)
- Kay Pricola email (May 22, 2014)

- Backcountry Against Dumps, Donna Tisdale, and Carolyn Allen via the Law Offices of Stephan C. Volker (May 23, 2014)
- Imperial County Department of Public Works (May 27, 2014)
- Michael Abatti (May 27, 2014)
- Imperial County Air Pollution Control District (April 30, 2014)
- Edie Harmon (May 15, 2014)

The comments submitted on the NOP during the public review and comment period are included as Appendix A to this EIR.

1.4.2.2 Scoping Meeting and Environmental Evaluation Committee

During the NOP public review period, the Iris Solar Farms Project was discussed as an informational item at the County's Environmental Evaluation Committee meeting on May 15, 2014. Additionally, a scoping meeting for the general public as well public agencies was held on May 15, 2014 at 6:00 p.m. The meeting was held by the Imperial County Planning & Developmental Services Department in the Board of Supervisors Chambers located at the County Administration Center at 940 Main Street, El Centro, CA.

1.4.3 Environmental Topics Addressed

Based on the analysis presented in the NOP and the information provided in the comments to the NOP, the following environmental topics are analyzed in this EIR.

- | | |
|----------------------------|-----------------------------------|
| • Aesthetics | • Hazards and Hazardous Materials |
| • Agricultural Resources | • Hydrology/Water Quality |
| • Air Quality | • Land Use and Planning |
| • Biological Resources | • Noise and Vibration |
| • Cultural Resources | • Public Services |
| • Geology and Soils | • Transportation/Traffic |
| • Greenhouse Gas Emissions | • Utilities/Service Systems |

1.4.3.1 Eliminated from Further Review in Notice of Preparation

The Initial Study and NOP completed by the County (Appendix A) determined that environmental effects to Mineral Resources, Recreation, and Population/Housing would not be potentially significant. Therefore, these impacts are not addressed in this EIR; however, the rationale for eliminating these issues is briefly discussed below:

Mineral Resources

The project sites and off-site transmission areas are not used for mineral resource production and the applicant is not proposing any form of mineral extraction. According to the Conservation and Open Space Element of the County of Imperial General Plan, no known mineral resources occur within the project area nor do any of the project sites, including off-site transmission areas contain mapped mineral resources. As such, the proposed projects would not adversely affect the availability of any known mineral resources.

Recreation

Combined, the four projects would be staffed with up to 24 full-time employees, which would not significantly increase the use or accelerate the deterioration of regional parks or other recreational facilities. The temporary increase of population during construction that might be caused by an influx of workers would be minimal and not cause a detectable increase in or impact on the use of parks. Additionally, the projects do not include or require the expansion of recreational facilities.

Population/Housing

The project sites, including areas proposed for off-site transmission, have been used for and are currently being used for agricultural production. Development of housing is not proposed as part of the projects. The combined projects will be staffed with up to 24 full-time employees to maintain the facility seven days a week during normal daylight hours. The facilities will operate seven days per week, generating electricity during normal daylight hours when the solar energy is available. To ensure optimal PV (or CPV) output, the solar panels will be maintained 24 hours a day/seven days a week. The proposed projects would not result in a substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. A total of four residences are located within the project sites. These residences would not be relocated as part of the proposed project; therefore, no impact associated with displacement would result.

1.4.4 Areas of Controversy to be Resolved

Areas of Concern

Section 15123(b)(2) of the *CEQA Guidelines* requires that an EIR identify areas of controversy known to the Lead Agency, including issues raised by other agencies and the public. A primary issue associated with these solar farm projects, and other solar facility projects that are proposed in the County, is the conversion of agricultural lands, including Williamson Act Contracted lands, to the solar farm use and the corresponding land use compatibility and fiscal/economic impacts to the County. Through the course of the environmental review process for these projects, other areas of concern and issues to be resolved include potential impacts related to aesthetics, biological resources, aircraft hazards, and water supply.

1.4.5 Document Organization

The structure of the Draft EIR is identified below. The Draft EIR was organized into eleven chapters, including the Executive Summary. Within Chapter 4.0 the environmental impacts associated with implementation of the proposed projects are addressed.

- **Section I.1 Introduction** describes CEQA requirements and content of this Final EIR.
- **Section II.1 Corrections and Additions** provides a list of those revisions made to the Draft EIR text and figures as a result of comments received and/or clarifications subsequent to release of the Draft EIR for public review. Revisions to the Draft EIR have been incorporated into this Final EIR document.
- **Section III.1 Responses to Comment Letters Received on the Draft EIR** provides copies of the comment letters received and individual responses to written comments. In accordance with Public Resources Code 21092.5, copies of the written proposed responses to public agencies will be forwarded to the agencies at least 10 days prior to certifying an EIR. The responses will conform to the legal standards established for response to comments on Draft EIRs.
- **Section IV.1 Mitigation Monitoring and Reporting Program** includes the Mitigation Monitoring and Reporting Program (MMRP) which identifies the mitigation measures, timing and responsibility for implementation of the measures.

- The **Executive Summary** provides a summary of the proposed projects, including a summary of project impacts, mitigation measures, and project alternatives.
- **Chapter 1.0 Introduction** provides a brief introduction of the proposed projects; relationship to statutes, regulations and other plans; the purpose of an EIR; public participation opportunities; availability of reports; and, comments received on the NOP.
- **Chapter 2.0 Environmental Setting** provides a description of the physical characteristics of the proposed project study areas.
- **Chapter 3.0 Project Description** provides a description of the Iris Cluster Solar Farm Project. This chapter also defines the goals and objectives of the proposed projects, provides details regarding the individual components that together comprise the projects, and identifies the discretionary approvals required for implementation of each of the projects.
- **Chapter 4.0 Environmental Analysis** provides an analysis of the environmental impacts of the projects for the following environmental issues: aesthetics; agricultural resources; air quality; biological resources; cultural resources; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology/water quality; land use and planning; noise and vibration; public services; transportation/traffic; and utilities/service systems. This chapter also identifies mitigation measures to address potential impacts to the environmental issues identified above.
- **Chapter 5.0 Analysis of Long-Term Effects** provides an analysis of growth inducing impacts, significant irreversible environmental changes, and unavoidable adverse impacts.
- **Chapter 6.0 Cumulative Impacts** discusses the impact of the proposed projects in conjunction with other planned and future development in the surrounding areas.
- **Chapter 7.0 Effects Found Not to be Significant** lists all the issues determined to not be significant as a result of the preparation of this EIR.
- **Chapter 8.0 Alternatives** analyzes the alternatives to the proposed projects.
- **Chapter 9.0 References** lists the data references utilized in preparation of the EIR.
- **Chapter 10.0 EIR Preparers and Organizations Contacted** lists all the individuals and companies involved in the preparation of the EIR, as well as the individuals and agencies consulted and cited in the EIR.

2.0 ENVIRONMENTAL SETTING

The project sites encompass a total of 1,4004,422 acres located in Imperial County, California. Imperial County encompasses over 4,597 square miles or 2,942,080 acres of land, bordered by Mexico to the south, Riverside County to the north, San Diego County on the west, and the State of Arizona on the east. The terrain varies from 235 feet below sea level at the Salton Sea to 4,548 feet at Blue Angel Peak.

The climate is hot and dry, ranging from lows in the mid 30s in January to highs of 110 degrees (°) and above in July and August (mean temperatures: low-55.0°; high-89.6°), with little moisture (average annual rainfall: 2.92 inches; 25 percent average relative humidity) (Imperial County General Plan, as amended through 2008). Most of the rainfall occurs in conjunction with monsoonal conditions between May and September, with an average annual rainfall of less than 3.0 inches where the projects are located. The 10-year, 24-hour estimated precipitation amount for the project area is 1.8 inches; while the 100-year, 24-hour estimated precipitation is 3.0 inches (Western Regional Climate Center 2004).

Approximately 19 percent of the land in Imperial County is irrigated for agricultural purposes, most notably the central area known as Imperial Valley (473,311 acres). The rich soils of Imperial County, particularly of the Imperial Valley, were created by periodic flooding of the Colorado River over thousands of years which left deep, rich deposits of silt. Favorable climate, productive soils, and the availability of irrigated water have permitted Imperial County to become a leading producer of agricultural products. Irrigation agriculture in the County is extremely diverse and includes numerous types of vegetable crops including lettuce, carrots, onions, tomatoes, cauliflower, and broccoli; alfalfa, Sudan grass, and other animal feed; sugar beets; wheat and other grains; melons; cotton; various citrus fruits, and nuts. Two resources that are vital to past and future agricultural production are productive soils and adequate water availability (Imperial County General Plan, as amended through 2008).

Imperial County is, and will continue for the foreseeable future to be, a predominantly agricultural area; however, a significant increase in urbanization since 2003 has occurred, including recently developed, and developing solar facilities, and other alternative energy projects such as geothermal. Most of Imperial County, approximately 50 percent, is still largely undeveloped or under federal ownership. According to the Southern California Association of Governments (SCAG), the population of Imperial County is 174,528 (based on 2010 census data) and has increased by 32,167 within the past decade. The developed area where the County's incorporated cities, unincorporated communities, and supporting facilities are situated comprise less than one percent of the land (Imperial County General Plan, as amended through 2008). There are 13 residences located within or in close proximity to the project sites. Four residences are located within the boundaries of the project sites, and nine are located adjacent to the project sites (within approximately 100-200 feet).

2.1 LOCATION OF PROJECTS AND STUDY AREA

Each of the four proposed solar farm sites, and including the off-site transmission facilities, are located west of Calexico, California in southern Imperial County (County) (see Figure 3.0-1). The closest project site boundary to the City of Calexico is the eastern boundary of the Iris Solar Farm project site. This boundary is approximately two miles west of the City of Calexico. The project sites include all or portions of Sections 6,7 Township 17 south, Range 14 east and Sections, 1,3,11,12 Township 17 south, Range 13 east San Bernardino baseline and meridian. The geographic center of the project sites roughly correspond with 32.686 latitude, -115.600 longitude.

Four separate Conditional Use Permit (CUP) applications and four Variance requests which would accompany these applications have been filed with the County, which together define the project sites. The four CUP applications or individual site locations consist of the following:

- Ferrell Solar Farm (FSF);
- Rockwood Solar Farm (RSF);
- Iris Solar Farm (ISF); and
- Lyons Solar Farm (LSF).

The project sites are located adjacent to three approved or planned solar farms. These include the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project study areas border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. For description of the project components for each project, see Section 3.0, Project Description.

2.1.1 Transmission and Collector Facilities

The projects would connect to existing electrical transmission infrastructure to enable the export and sale of electricity via the California Independent System Operator (ISO) grid. Transmission and collector lines would extend along private lands, traversing the project area both west to east and north to south along major roads (e.g., Kubler Road, State Route [SR] 98, George Road, Corda Road, and Ferrell Road) and other local roadways.

The interconnection for the proposed projects will occur at the 230 kilovolt (kV) side of the San Diego Gas & Electric (SDG&E) Imperial Valley (IV) Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

2.2 PHYSICAL CHARACTERISTICS

2.2.1 Aesthetics

The solar field component of the project sites is located in southern Imperial Valley, just north of SR 98, and is characterized as an agricultural landscape with generally level topography. Visual features within this portion of the project area include numerous agricultural canals that supply water to the project sites and agricultural related structures (e.g., silos). The City of Calexico is located to the east of the solar field portion of the project sites with the East Mesa sand dunes located further east. Areas to the north and south of this area are generally level and characterized by an agriculturally-dominated landscape.

2.2.2 Agricultural Resources

Much of the land base in the vicinity of and within the project sites and off-site transmission areas is considered productive farmland where irrigation water is available. Farming operations in this area generally consist of medium to large-scale crop production with related operational facilities. Crops generally cultivated in the area may include alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops (such as corn, melons, wheat) are also prominent in the area. Areas further to the north are also utilized for irrigated agricultural production and non-irrigated pasture for cattle grazing. However, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands surrounding the project area have been approved for, or are currently proposed for, the development of utility-scale solar energy projects. These lands are anticipated to transition into solar energy use in the near future. When surveyed as part of the biological resources assessment for the Iris Cluster Solar Farm, the project sites were planted with Bermuda, alfalfa, sweet corn, melons, wheat, and sudan.

2.2.3 Air Quality

The project area is located in the Salton Sea Air Basin (SSAB) under the jurisdiction of the Imperial County Air Pollution Control District's (ICAPCD). The SSAB, which contains part of Riverside County and all of Imperial County, is governed largely by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in winter when the high is weakest and farthest south. When the fringes of mid-latitude storms pass through the Imperial Valley in winter, the coastal mountains create a strong "rainshadow" effect that makes Imperial Valley the second driest location in the United States. The flat terrain near the Salton Sea, intense heat from the sun during the day, and strong radiational cooling at night create deep convective thermals during the daytime and equally strong surface-based temperature

inversions at night. The temperature inversions and light nighttime winds trap any local air pollution emissions near the ground. The area is subject to frequent hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and the temperature warms.

Currently, the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of 8-hour ozone (O_3), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Imperial County is classified as a "serious" non-attainment area for PM_{10} and a "moderate" non-attainment area for 8-hour ozone for the NAAQS and non-attainment for $PM_{2.5}$ for the urban areas of Imperial County. Air pollutants transported into the SSAB from the adjacent South Coast Air Basin (Los Angeles, San Bernardino County, Orange County, and Riverside County) and from Mexicali, Mexico substantially contribute to the non-attainment conditions in the SSAB. The closest air quality monitoring station to the project study areas are the Calexico-Ethyl station located within the City of Calexico (1029 Belcher Street, Calexico, CA 92231) and the El Centro-9th station within the City of El Centro (150 9th Street, El Centro, CA 92243). Both monitoring stations measure PM_{10} , $PM_{2.5}$, carbon monoxide (CO), and nitrogen dioxide (NO_2). The Calexico monitoring station also monitors SO_2 .

2.2.4 Biological Resources

The project sites, including off-site transmission areas are located entirely on active agricultural fields; and are being farmed with crops including Bermuda, alfalfa, sweet corn, melons, wheat, and sudan. Due to the active agricultural and disturbed nature found within the project area, no rare or special species plants are known or expected to exist and no federally listed wildlife species were observed during field surveys within the agricultural areas of the project sites and off-site transmission areas. The active agricultural fields do not provide habitat for the southwestern willow flycatcher, Yuma clapper rail, least Bell's vireo, or desert pupfish. Although agricultural fields are too heavily disturbed to provide nesting sites, the solar farm portion of the project site provides suitable foraging habitat and resting conditions for migratory birds. Several burrowing owls (fully protected species) have been observed on-site and were also found off-site within the Imperial Irrigation District (IID) right-of-way (ROW). Additionally, the project sites provide suitable habitat for loggerhead shrike, yellow warbler, ferruginous hawk, mountain plover, long billed curlew, short billed dowitcher, and horned lark (California Department of Fish and Wildlife [CDFW] species of special concern) and there is potential for these species to be found on site. No riparian habitat or sensitive natural communities were observed any of the sites.

2.2.5 Cultural Resources

Thousands of prehistoric (aboriginal culture and systems existing prior to 1769) and hundreds of historic (uncovered facts containing no known historical documentation) are found throughout Imperial County. Prehistoric evidence in the form of trails, rock art, geoglyphs, fish traps, and resource procurement and manufacturing locations are found in the regions surrounding the fertile valley portion of the county. From a historical standpoint, the intensive use of Imperial Valley for irrigation agriculture since the beginning of this century has impacted any resources that may have existed on land that is now farmland or under the Salton Sea. Historic resource sites date back to 1540, when the Hernando de Alcaron Expedition discovered Alta California from near the intersection of Interstate 8 and Highway 186. The next major historical event occurred in 1775 when Juan Bautista de Anza first passed through the area. The Anza Trail itself constitutes a significant cultural resource in the Yuha Desert, as does the later Sonoran/Southern Emigrant Trail which served as a major route to and from coastal California from 1825 to 1865. Although very few structures or artifacts may remain from the use of these trails, the routes themselves are of historical significance. Various other structures, such as missions (Spanish period 1769-1821) and a fort (Mexican period 1821-1848) are still evident in regions throughout the county (Imperial County).

Literature review of the project area indicates that there are no historical resources that have been recorded within a 1-mile radius of the proposed solar projects or within the project sites themselves. No cultural resources have been previously identified within the RSF and LSF project sites. One cultural resource has been previously identified within the FSF project site and is identified as a mesquite thicket

(CA-IMP-3325). Two cultural resources have been previously identified within the ISF project study area and are identified as a mesquite grove (CA-IMP-3309) and a destroyed cross road (CA-IMP-3326).

2.2.6 Geology and Soils

The project area is located in the Colorado Desert Physiographic province of southern California. The dominant feature of the Colorado Desert province is the Salton Trough, a geologic structural depression resulting from large-scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity (LCI 2013a-d).

The project area is located in a seismically active region, with potential for strong ground shaking associated with earthquakes. The faults/fault zones within the vicinity of (15 miles) and surrounding the project area include (but are not limited to) the Brawley Fault Zone, Imperial Fault Zone, Laguna Salada Fault Zone, Superstition Hills Fault, Superstition Mountain Fault, Wienert Fault, and the Yuha Wells Fault. The predominant surface soil is a silty clay loams and sandy loams in portions of the project sites along the New River (FSF and ISF). At depth, these materials transition from late Pleistocene¹ - to Holocene² - aged lake deposits that are expected to be less than 100 feet thick and derived from periodic flooding of the Colorado River, which intermittently formed Lake Cahuilla (LCI 20110a-d).

2.2.7 Hazards and Hazardous Materials

The project area is comprised of several agricultural fields that have been in and are currently in crop production since approximately the mid 1940s. No hydrocarbon stains were noted in the Phase I Environmental Site Assessments (ESAs); however, sites have the potential for hydrocarbon due to the machinery use associated with the agricultural land uses. Due to the previous common use of pesticides, there is a potential for portions of the project area to contain hazards related to pesticide and herbicide use from aerial and/or ground application.

The Corda residence and farm shop are located within the boundaries of the FSF site, and contain two aboveground storage tanks (ASTs) within a concrete fuel containment area. The abandoned labor camp contains a propane tank, an AST and two newer mobile homes located within the boundaries of the ISF site.

No evidence of groundwater or oil and gas wells were observed on the sites within or adjacent to the project sites during the site reconnaissance conducted by GS Lyon in 2013; however, according to the Division of Oil, Gas, and Geothermal Resources (DOGGR) database, five abandoned geothermal wells are located within or adjacent to the boundaries of the project sites. One oil well (in production) is located off-site, south of SR-98 and Ferrell Road. No other oil or gas wells were identified within or adjacent to the project sites, including the off-site transmission area. Pole-mounted transformers were noted within the project sites; however, no evidence of leakage from the transformers within the project area was observed.

The project area is located within a seismically active region within proximity to several nearby faults. Additionally, a crop duster airstrip and maintenance yard with storage of pesticides and herbicides is located within 0.5 mile southeast of the ISF.

¹ The Pleistocene is the epoch from 2,588,000 to 11,700 years before present. The end of the Pleistocene corresponds with the end of the last glacial period.

² The Holocene epoch extends from 11,700 years to present.

2.2.8 Hydrology/Water Quality

The project sites are located within the Colorado River Basin Regional Water Quality Control Board (RWQCB) (Region 7) which covers 13 million acres and encompasses all of Imperial County. The project sites are located within the Imperial Valley Planning Area, one of the six planning areas within the Colorado River Basin. This planning area comprises 2,500 square miles in the southern portion of the region, almost all of it in Imperial County. The easterly and westerly boundaries are contiguous with the westerly and easterly boundaries of the Colorado River Basin and the Anza-Borrego planning areas, respectively. Its northerly boundary is along the Salton Sea and the Coachella Valley planning area; and its southerly boundary follows the International Boundary with Mexico. The planning area's principal feature is the flat, fertile Imperial Valley. The principal communities are El Centro and Brawley.

The project area is situated just west of the New River approximately 27.5 miles south of the Salton Sea. According to watershed maps produced by the U. S. Geological Survey (USGS), the project area is contained within the Upper New River hydrologic sub-basin, which is located in the southernmost portion of the Imperial Valley Hydrologic Unit (HUC 18100200) (USGS 2014). The Imperial Valley is characterized as a closed basin and, therefore, all runoff generated within the New River Basin discharges into the Salton Sea.

2.2.9 Noise

The predominant sources of noise in the project area is from vehicular traffic on local roads and highways and agricultural operations. Activities involving the use of heavy-duty equipment such as front-end loaders, forklifts, and diesel-powered trucks are common noise sources typically associated with agricultural uses. Noise typically associated with agricultural operations, including the use of heavy-duty equipment, can reach maximum levels of approximately 85 A-weighted decibel (dBA) at 50 feet (Caltrans 1998). With the soft surfaces characterizing the agricultural landscape, these noise levels attenuate to approximately 60 dBA at distances over 800 feet.

Based on field observations of the project area, the existing noise environment is generally influenced by the noise produced from the following sources:

- Vehicle traffic along major roadways including Ferrell Road, George Road, Rockwood Road, Kubler Road, and SR-98;
- Crop dusting operations based out of Johnson Brothers Private Airstrip; and
- Agricultural operations throughout the project study areas including the operation of heavy equipment and vehicles.

2.2.10 Public Services

Because the project area is generally comprised of agricultural land, the need for public services is limited. The project sites are located on private land within the Imperial County Fire Department and Office of Emergency Services (ICFD/OES) area of service. There are no parks or libraries in the vicinity of the project area.

2.2.11 Transportation/Traffic

The following street segments are located within the project area: SR-98, Kubler Road, Brockman Road (S 30), Rockwood Road, George Road, Corda Road, La Brucherie Road, Ferrell Road, and Weed Road. As discussed further in Section 4.13 Transportation/Traffic, roads within proximity to the project area are currently operating at an acceptable level of service (LOS).

2.2.12 Utilities/Service Systems

Water is conveyed to the solar field portions of the project area via the IID canals. The project area is used for agricultural purposes. Only four residential units are located within the project sites. As a result, there are no wastewater facilities located on any of the four project sites. Current drainage systems consist primarily of earthen open channels paralleling irrigation canals on the downstream side of the fields. The drains collect excess surface flows from the agricultural fields (tailwater), subsurface flows from a system of tile drains underlying the fields (tilewater), and operational spill from the canals and laterals. IID also provides electricity to the private land portion of the project area.

2.3 EXISTING LAND USE

The project area is located on agricultural lands and zoned General Agriculture (A-2), General Agriculture Rural (A-2-R), and Heavy Agriculture Rural (A-3) which are areas designated for agricultural uses and promote compatible uses. To the east of the solar field portions of the project study areas is the Calexico Urban Area, which is approximately 8,302 acres surrounding the incorporated City of Calexico. Because urban areas typically will be annexed or incorporated, they typically provide a full range of public infrastructure normally associated with cities (Imperial County General Plan, as amended through 2008). There are 13 residences scattered throughout the project study area, which support farming activities. Nine of these residences are located off-site, and four are located on the project site. A private airstrip is located southeast of the ISF.

The four project sites are located adjacent to three solar farms including the previously approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project study areas border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. Additionally, the off-site transmission is generally located within private lands, within the boundaries of previously approved solar projects.

3.0 PROJECT DESCRIPTION

Chapter 3.0 provides a description of the Ferrell, Rockwood, Iris, and Lyons Solar Farm Projects. This chapter also defines the goals and objectives of the proposed projects, provides details regarding the individual components that together comprise the projects, and identifies the discretionary approvals required for project implementation of each of the projects.

3.1 LOCATION OF PROJECTS

The solar farm portions of the project are located on privately owned, primarily undeveloped agricultural land encompassing approximately 1,400.422 acres. The project area is located in southern Imperial County (County) (see Figure 3.0-1). The easternmost boundary of the project, which is the eastern boundary of the Iris site, is approximately two miles west of Calexico, California. The project area includes all or portions of Sections 6,7 Township 17 south, Range 14 east and Sections, 1,3,11,12 Township 17 south, Range 13 east, San Bernardino baseline and meridian. The geographic center of the project area roughly corresponds with 32.686 latitude, -115.600 longitude. Figure 3.0-1 illustrates the project area, which includes the solar farm sites and off-site transmission areas.

Four separate Conditional Use Permit (CUP) applications and four Variance requests which would accompany these applications have been filed with the County, which together define the project sites. The four CUP applications or individual site locations consist of the following:

- Ferrell Solar Farm (FSF);
- Rockwood Solar Farm (RSF);
- Iris Solar Farm (ISF); and
- Lyons Solar Farm (LSF)

The solar farm project sites, and including off-site transmission areas, are located adjacent to three solar farm projects including the previously approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project sites border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. Table 3-1 identifies the individual assessor parcel numbers (APNs) associated with the FSF, RSF, ISF, and LSF with their respective acreages, and zoning. Each individual site location comprising the project study areas is shown in Figure 3.0-2.

TABLE 3-1. PROJECT STUDY AREAS APNs, ACREAGES, AND ZONING

	APN	Acreage	Zoning
Ferrell Solar Farm	052-180-042	204.0	A2R
	059-150-001	463.4 <u>160.27</u>	A2R
<i>Subtotal</i>		367.4 <u>364.27</u>	
Rockwood Solar Farm	052-180-040	67.9	A2R, A2
	052-180-048	170.7	A2R
	052-180-064	157.7	A2R, A2
<i>Subtotal</i>		396.2	
Iris Solar Farm	059-050-002	488.4 <u>184.58</u>	A2R
	059-050-003	465.5 <u>160.0</u>	A2R, A2
	059-120-001	467.2 <u>157.3</u>	A2R
<i>Subtotal</i>		520.8 <u>501.88</u>	
Lyons Solar Farm	052-180-053	57.2	A3
	052-180-058	81.2	A2R
<i>Subtotal</i>		138.4	
Total Project Study Areas		<u>1,422.41,400.75</u>	

Figure 3.0-3 provides an index of the major project components and the details of the projects are further described and depicted below.

Figure 3.0-1. Project Location

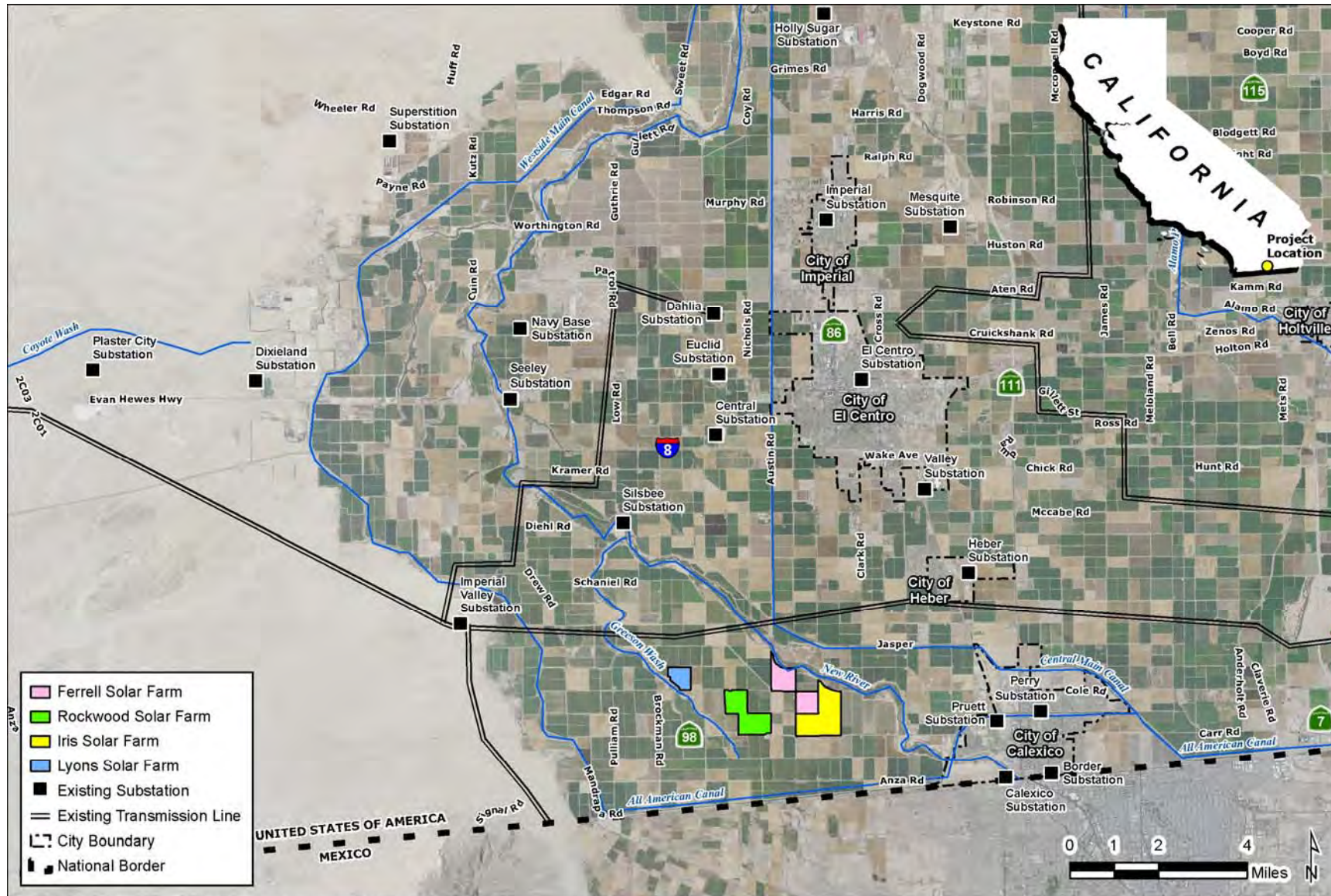
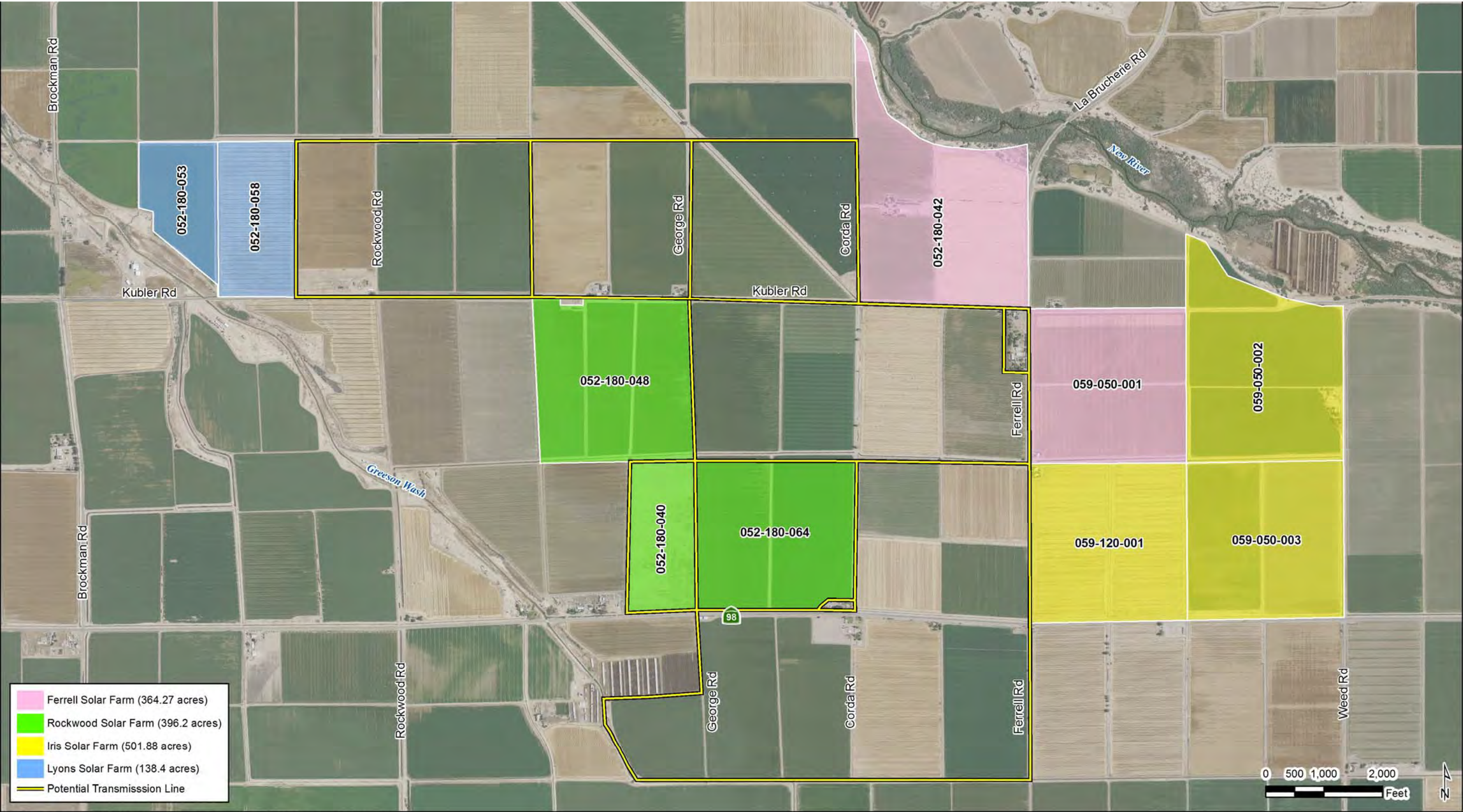


Figure 3.0-2. Project Study Areas and Assessor Parcel Numbers



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Figure 3.0-3. Index of Major Project Components



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3.1.1 Ferrell Solar Farm

The FSF project site consists of two parcels totaling ~~364.273674~~ 367.4 acres within the central and northern portions of the larger Iris Cluster Solar Farm project area. As shown on Figure 3.0-2a, the FSF project site is generally located between the New River to the north and the Wistaria Canal to the south, and between Corda Road to the west and a dirt road (1/2 mile east of Ferrell Road) to the east. Primary access to FSF is via South La Brucherie Road/Ferrell Road and Kubler Road. The FSF site includes the following County Assessor Parcel Numbers (APNs): 052-180-042 and 059-150-001.

3.1.2 Rockwood Solar Farm

The RSF project site consists of three parcels totaling 396.2 acres within the central portions of the larger Iris Cluster Solar Farm project area. As shown on Figure 3.0-2, the RSF is generally bounded by Kubler Road to the north, SR 98 to the south, and between a dirt road (1/2 mile east of Rockwood Road) to the west and Corda Road to the east. Primary access to the RSF occurs via Kubler Road. The RSF project site includes the following APNs: 052-180-040; 052-180-048; and 052-180-064.

3.1.3 Iris Solar Farm

The ISF project site consists of three parcels totaling ~~501.885208~~ 520.8 acres within the eastern portion of the larger Iris Cluster Solar Farm project area. As shown on Figure 3.0-2, the ISF is generally located between the New River to the north and SR 98 to the south, and between Ferrell Road to the west and Weed Road to the east. Primary access to the ISF is obtained via Kubler Road. The ISF project site includes the following APNs: 059-050-002; 059-050-003; and 059-120-001.

3.1.4 Lyons Solar Farm

The LSF project site location consists of two parcels totaling 138.4 acres within the western portion of the larger Iris Cluster Solar Farm project area. As shown on Figure 3.0-2, the LSF is generally located between a dirt road (1/2 mile south of Preston Road) to the north and Kubler Road to the south, and between Greeson Wash to the west and a private road to the east (1/4 mile west of Rockwood Road). Primary access to the LSF is obtained via Kubler Road. The LSF project site includes the following APNs: 052-180-053 and 052-180-058.

3.2 PROJECT OBJECTIVES

The objective of the projects is to utilize Imperial County's abundance of available solar energy (sunlight) to generate renewable energy, consistent with the County General Plan renewable energy objectives. The project applicant and the County identified the following objectives for the projects:

- Construct and operate a solar energy facility capable of producing up to 360 megawatts (MW) of electricity to help meet the State-mandated Renewable Portfolio Standard (RPS) of providing 33 percent renewable energy by 2020.
- Construct and operate a solar power facility with minimal impacts to the environment.
- Operate a facility at a location that ranks amongst the highest in solar resource potential in the nation.
- Construct a facility at a location near the U.S. border to avoid issues of leapfrog development and dividing stretches of agricultural land.
- Interconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the Independent System Operator (ISO) controlled transmission network, and maximize opportunities for the sharing or use of existing utility transmission corridor(s).

- Encourage economic investment and diversify the economic base for Imperial County.
- Operate a renewable energy facility that does not produce significant noise, emit any greenhouse gases, and minimizes water use.
- Help reduce reliance on foreign sources of fuel.
- Supply on-peak power to the electrical grid in California.
- Help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006).
- Sustain and stimulate the economy of Southern California by helping to ensure an adequate supply of renewable electrical energy while simultaneously creating additional construction and operations employment and increased expenditures in many local businesses.
- Contribute to Imperial County's economic growth and reputation as the renewable energy capital of the nation.

3.3 PROJECT CHARACTERISTICS

The proposed projects (FSF, RSF, ISF, and LSF facility sites) would consist of construction and operation of an expansive photovoltaic (PV) or concentrated photovoltaic (CPV) solar energy facility and supporting uses. The primary components within the solar farms will be the solar PV (or CPV) panels/arrays, operations and maintenance (O&M) facilities, and electrical substation facilities. In addition, a major component of the projects would be restoration of the project sites (including off-site transmission) to agricultural use up to 40 years.

The projects would employ the use of PV (or CPV) power systems to convert solar energy into electricity using non-reflective technology. The project facilities would consist of solar PV (or CPV) panels, inverter modules, pad mounted transformer(s), and optional, on-site O&M buildings and substation(s). Each solar project facility may have its own O&M building and substation, or may share among the projects. Up to four O&M buildings and substations are contemplated. Each O&M building would include its own emergency power, fire suppression, potable water system and septic system. Additional auxiliary facilities would include lighting, grounding, backup uninterruptable power supply (UPS) systems and diesel power generators (diesel generators greater than 50 bhp will require a permit to operate), fire and hazardous materials safety systems, security systems, chemical safety systems, and emergency response facilities.

At build-out, the proposed projects would facilitate the generation of up to 360 MW of alternating current (AC) on a daily basis. The project facilities would provide maximum electrical output during the daytime hours, which corresponds with peak energy demands associated with air conditioning use during the summer months. This peak period closely corresponds with the time period to where the peak solar energy and solar insulation values are the highest for the project study areas. A description of each individual solar farm that comprises the proposed projects is provided in Sections 3.3.4 through 3.3.7.

TABLE 3-2. IRIS CLUSTER SOLAR PROJECT PROPOSED MEGAWATT OUTPUT

Project	Proposed Megawatt (MW)
Ferrell Solar Farm	90 MW AC
Rockwood Solar Farm	100 MW AC
Iris Solar Farm	130 MW AC
Lyons Solar Farm	40 MW AC
TOTAL	360 MW

3.3.1 Photovoltaic Panels/Solar Arrays

The proposed projects will utilize either PV or CPV technology. The following provides a description of each. Figure 3.0-4 provides a representative example of these types of systems.

PV Panel and CPV Panel/Mounting Configuration. The photovoltaic panels or modules (which can include, but is not limited to concentrated photovoltaic (CPV) technology) would be placed on mounting frameworks. Individual panels will be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, the panels will be oriented toward the south. For tracking configurations, the panels will rotate to follow the sun over the course of the day. The panels will stand up to 30 feet high, depending on the mounting system used.

The solar array fields will be arranged in groups called “blocks”, with inverter stations generally located centrally within the blocks. Blocks will produce direct electrical current (DC), which is converted to alternating electrical current (AC) at the inverter stations. The blocks are up to 500 feet by 500 feet (typical).

Each solar module would be placed on a fixed-tilt or tracker mounting structure. The foundations for the mounting structures can extend up to 20 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings. Final solar panel layout and spacing will be optimized for site characteristics and the desired energy profile. Panel rows will be spaced up to 90 feet apart and will comply with fire department regulations regarding minimum row spacing.

Photovoltaic energy is delivered via cable to inverter stations, generally located near the center of each block. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter modules are housed in cabinets. Depending on the vendor selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad. The inverter modules would receive DC electricity directly from the PV (or CPV) solar array where it is then converted to AC electricity. The transformer receives the converted AC electricity where it is subsequently stepped up to approximately 20 kV to 70 kV. The converted power is then transferred to a substation via buried electrical conduits, electrical conductor wires, and/or overhead on up to 230 kV transmission lines.

Energy Storage System

An energy storage system in the form of modular and scalable battery packs and battery control systems may be located at or near substations and/or inverter stations. The battery packs utilize non-hazardous solid state materials (i.e., lithium ion or other commercially available large-scale system) and are fully recyclable. The energy storage devices are typically housed in pad- or post-mounted metal containers. It is estimate that the energy storage system would utilize approximately one container per MW (typically approximately 40 feet long, by 11 feet wide, by 11 feet high) for each project. The actual dimensions of the container may vary depending upon the supplier chosen, with the length measuring up to approximately 60 feet.

3.3.2 Operations and Maintenance Building

The proposed projects would also include a new O&M building and parking area near the proposed substations. The O&M building would not exceed an area of approximately 5,000 square feet for each project site. The parking area would comprise an area of less than 0.25 acres. The O&M building would consist of a steel framed structure with metal siding and roof panels and painted to match the surrounding landscape (e.g., desert sand). The O&M building would include a small office, storage space, an electrical/array control room, restroom, and a compact water treatment facility. In total, the O&M facility, including parking, would require up to one half acre of land. If the O&M building is shared with an adjacent solar project, then this area would instead be covered with solar panels.

Figure 3.0-4. Representative Examples of Optional Solar Panel Configurations

Typical Fixed-tilt Solar Panel Rows



Typical Single-axis Tracking
Solar Panel Rows

Typical Dual-axis Tracking
Solar Panel Rows



Concentrated Photovoltaic
(CPV) Solar Panel Rows

Source: 8-minute energy

Heating, ventilation, and air-conditioning (HVAC) for the office and control area of the O&M building would consist of a ground-mounted, heat pump unit. Mechanical ventilation would be provided for the maintenance areas. Temperature control would be provided for both the equipment and personnel areas, and humidity control would be provided in the control and communications equipment rooms.

3.3.3 Substations and Transmission Facilities

The interconnection for the proposed projects will occur at the 230 kV side of the San Diego Gas & Electric (SDG&E) Imperial Valley (IV) Substation, located approximately 5 miles northwest of the project area, via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

The substation may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, and voltage switching gear. Substations typically include a small control building (roughly 500 square feet) standing approximately 10 feet tall. The building is either prefabricated concrete or steel housing with rooms for the voltage switch gear/metering equipment, a room for the station supply transformer, and a separate control technology room.

A representative example of a substation is presented in Figure 3.0-5. Each substation would occupy an area of up to 500 feet by 500 feet (or approximately 5.7 acres) and would be secured by an 8-foot-high enhanced security chain-link fence. Any substation area that is not used on any of the four projects will be instead utilized for solar panels.

Figure 3.0-5. Representative Example of Typical Substation Design

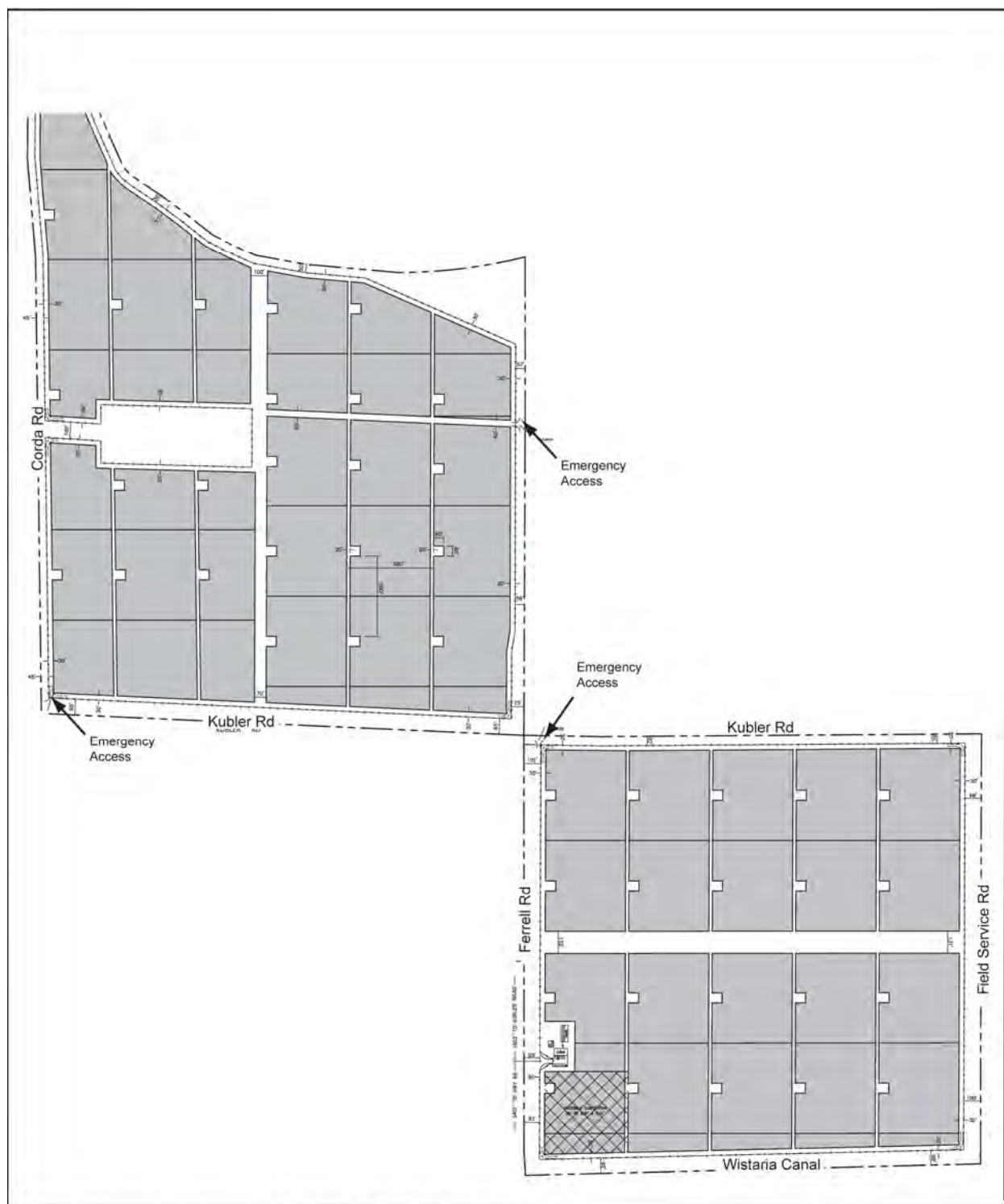


3.3.4 Ferrell Solar Farm

The FSF encompasses a total of ~~364.273674~~ 364.273674 acres and includes two parcels of land as described in Section 3.1. These parcels would be leased to the project applicant for up to 40 years, which is the anticipated duration of the project. The site layout for the FSF is illustrated in Figures 3.0-6a. In total, the FSF would facilitate the placement of up to 141,440 PV panels that would be capable of generating up to 90 MW AC.

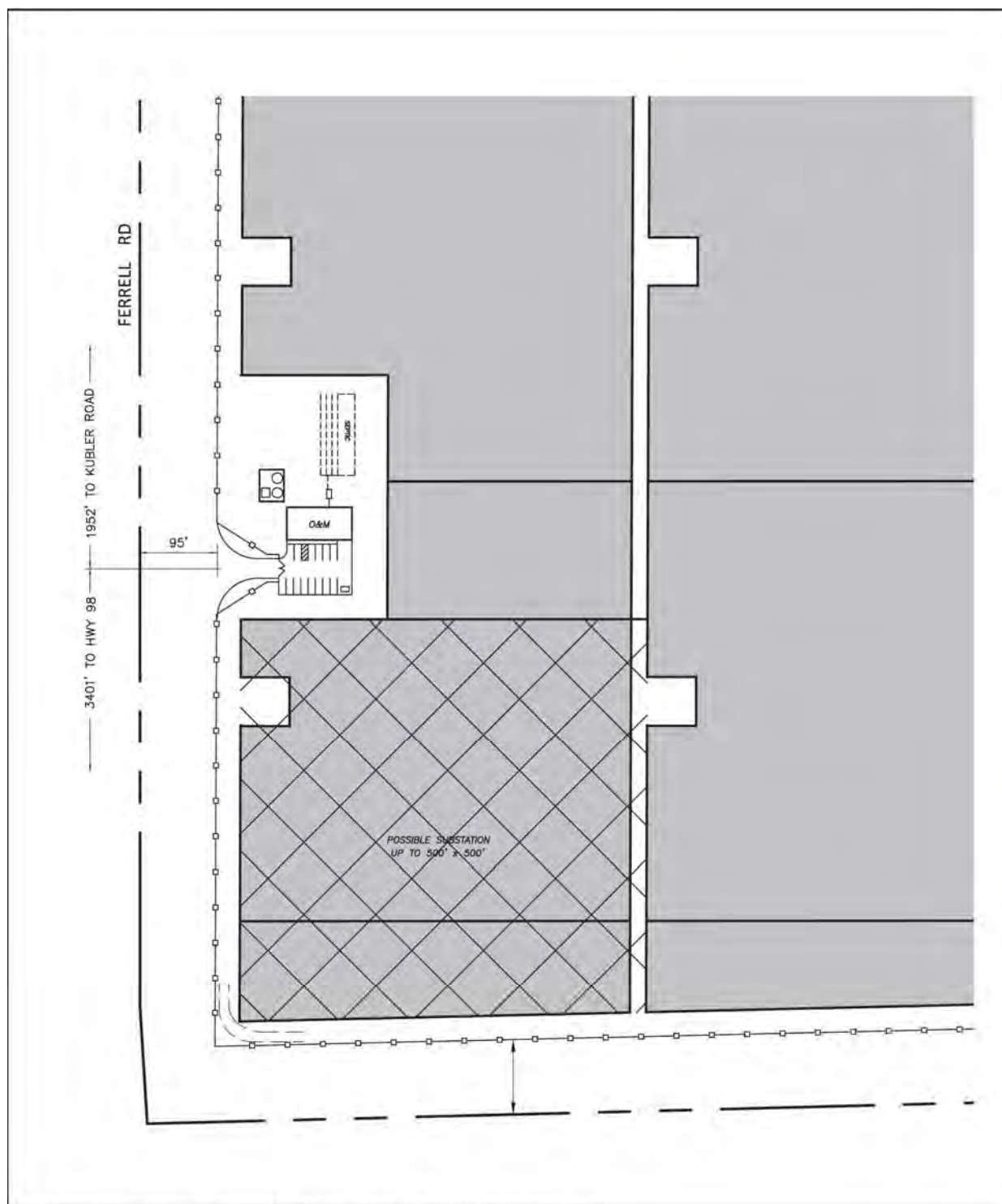
If required, an on-site substation would be located at the northeastern corner of the intersection of Ferrell Road and a dirt road at the Wistaria Canal (see Figure 3.0-6b) and would occupy an area of up to 500 feet by 500 feet (or approximately 5.7 acres). If the substation is shared with an adjacent solar project, then this area would instead be covered with solar panels.

Figure 3.0-6a. Ferrell Solar Farm – Site Layout



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Figure 3.0-6b. Ferrell Solar Farm – O&M and Substation Facility Detail



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The O&M building for the FSF would be located near the substation at the northeastern corner of the intersection of Ferrell Road and a dirt road at the Wistaria Canal (see Figure 3.0-6b). If the O&M building is shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.5 Rockwood Solar Farm

The RSF encompasses a total of 396.2 acres and includes three parcels of land as described in Section 3.1. Similar to the FSF, these parcels would be leased to the project applicant for up to 40 years, which is the anticipated duration of the project. The site layout for the RSF is illustrated in Figure 3.0-7a. In total, the RSF would facilitate the placement of up to 152,320 PV panels that would be capable of generating up to 100 MW AC depending on the technology used.

If required, an on-site substation would be located at the northeastern corner of the intersection of SR-98 and George Road (see Figure 3.0-7b). If the substation is shared with an adjacent solar project, then this area would instead be covered with solar panels.

The O&M building for the RSF would be located near the substation at the northeastern corner of the intersection of SR-98 and George Road (see Figure 3.0-7b). If the O&M building is shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.6 Iris Solar Farm

The ISF encompasses a total of ~~501.88~~^{520.8} acres and includes three parcels of land as described in Section 3.1. Similar to FSF, these parcels would be leased by the project applicant for up to 40 years, which is the anticipated duration of the project. The site layout for the ISF is illustrated in Figure 3.0-8a. In total, the ISF would facilitate the placement of up to 201,280 PV panels that would be capable of generating up to 130 MW AC depending on the technology.

If required, an on-site substation would be located at the northeastern corner of the intersection of Ferrell Road and SR-98 (see Figure 3.0-8b). If the substation is shared with an adjacent solar project, then this area would instead be covered with solar panels.

The O&M building for the ISF would be located near the substation at the northeastern corner of the intersection of Ferrell Road and SR-98 (see Figure 3.0-8b). If the O&M building is shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.7 Lyons Solar Farm

The LSF encompasses a total of 138.4 acres and includes two parcels of land as described in Section 3.1. Similar to the FSF, these parcels would be leased by the project applicant for up to 40 years, the anticipated duration of the project. The site layout for the LSF is illustrated in Figure 3.0-9a. In total, the LSF would facilitate the placement of up to 48,960 PV panels that would be capable of generating up to 40 MW AC depending on the technology utilized.

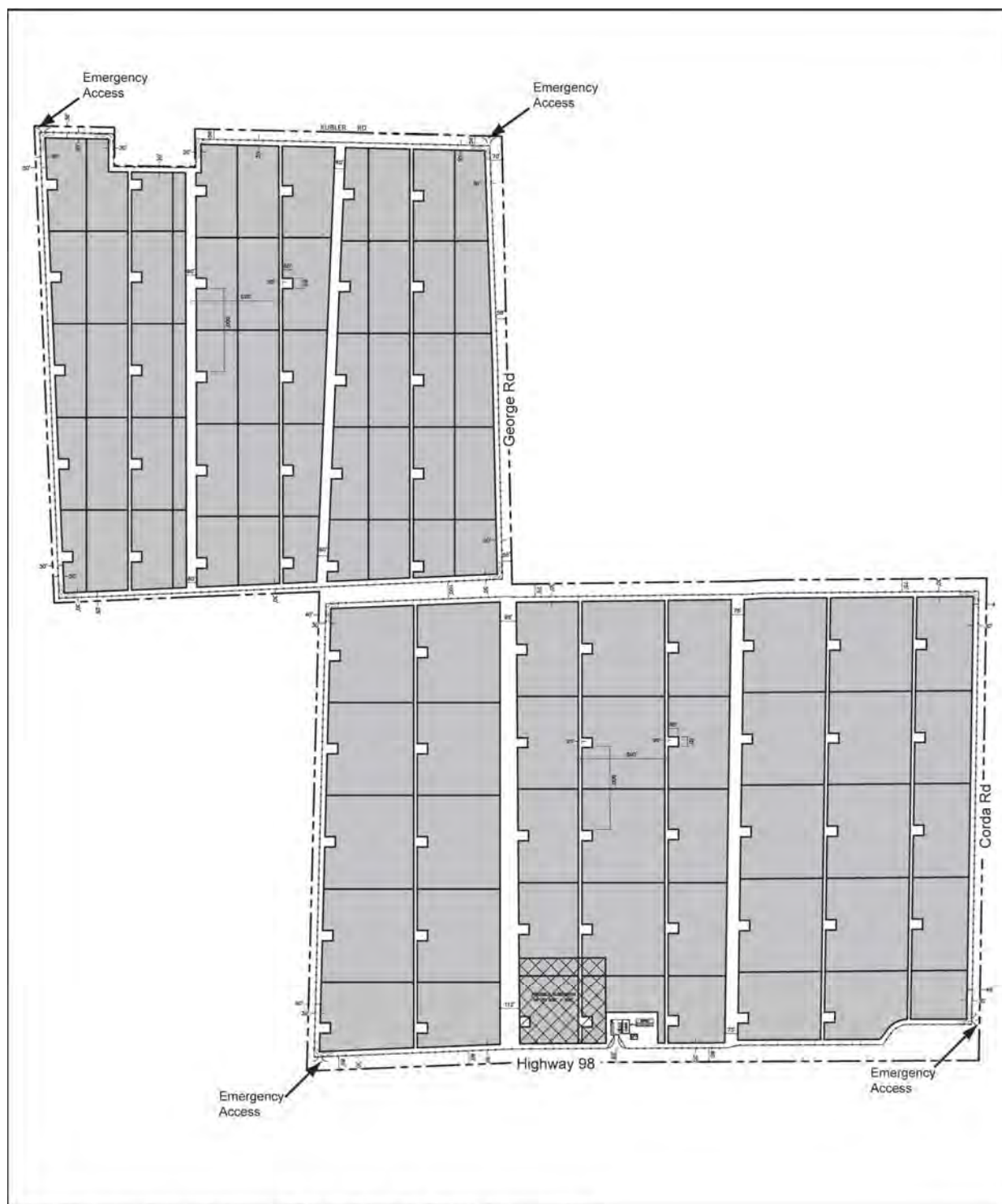
If required, an on-site substation would be located at the southeastern corner of Kubler Road and a private road (1/4 mile west of Rockwood Road) (see Figure 3.0-9b). If the substation is shared with an adjacent solar project, then this area would instead be covered with solar panels.

The O&M building for the LSF would be located on Kubler Road at the northeastern corner of the intersection of Kubler Road and a private road (1/2 mile east of Brockman Road) (see Figure 3.0-9b). If the O&M building is shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.8 Auxiliary Facilities

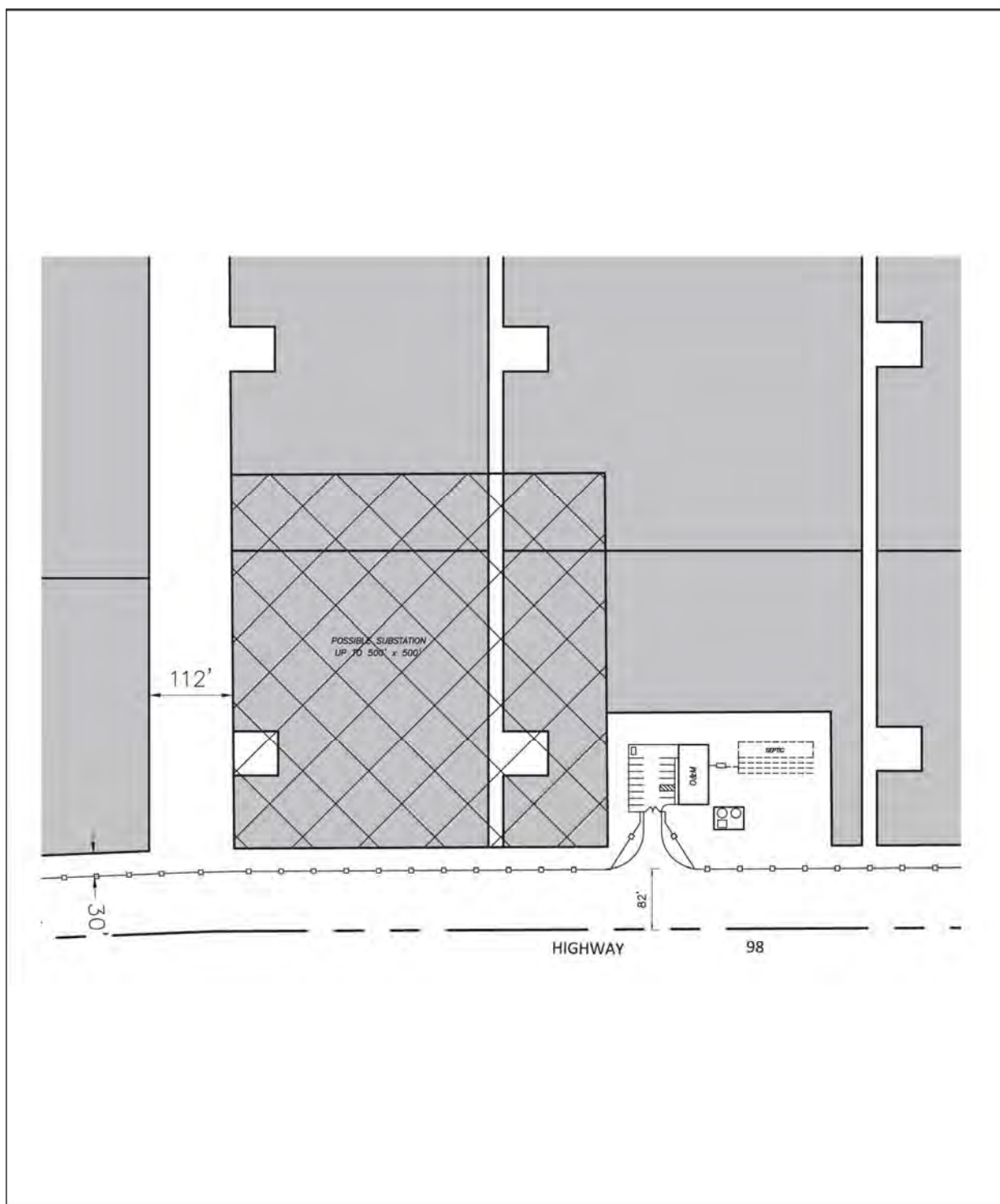
This section describes the auxiliary facilities that would be constructed and operated in conjunction with the project solar array and O&M facilities.

Figure 3.0-7a. Rockwood Solar Farm – Site Layout



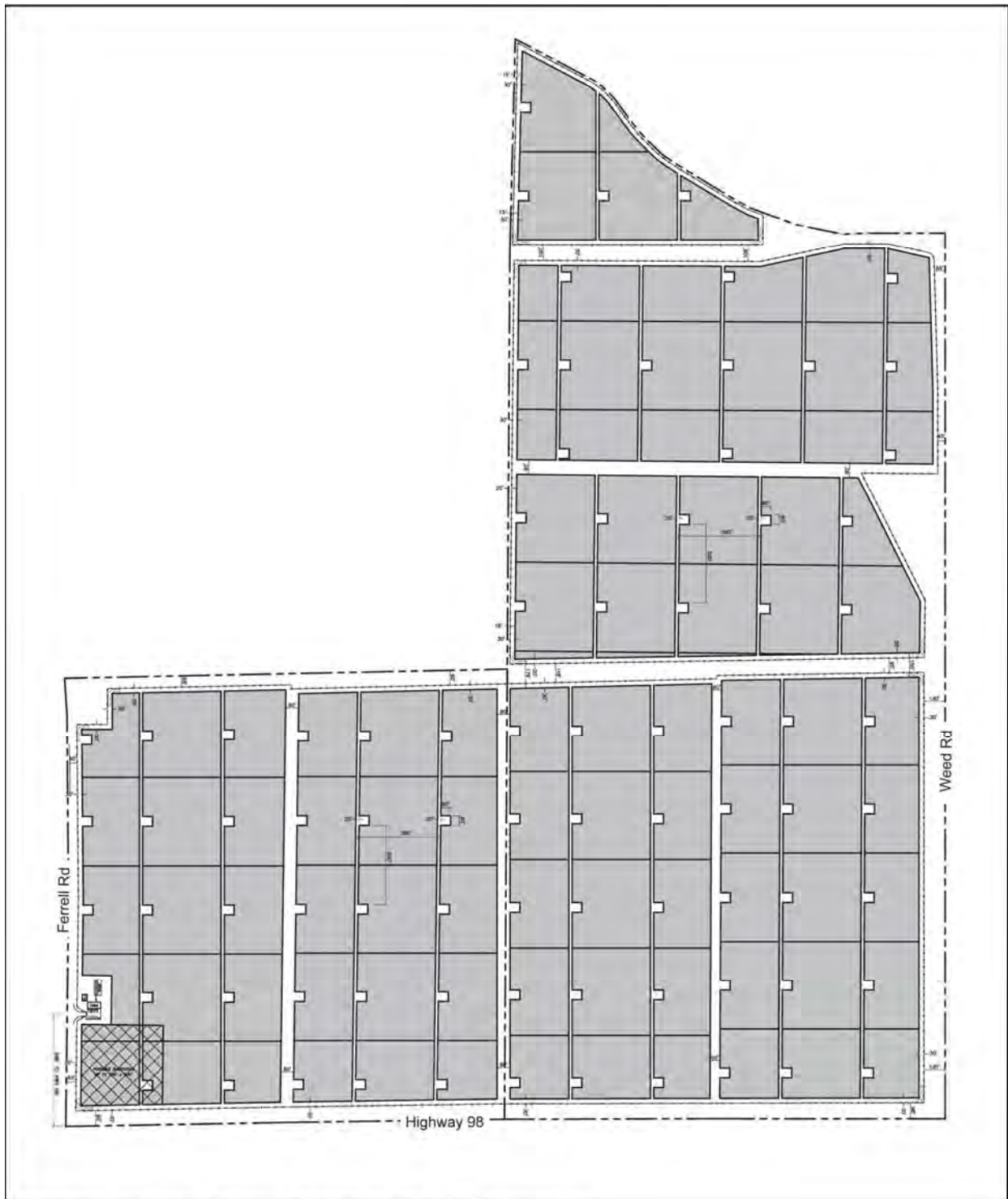
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Figure 3.0-7b. Rockwood Solar Farm – O&M and Substation Facility Detail



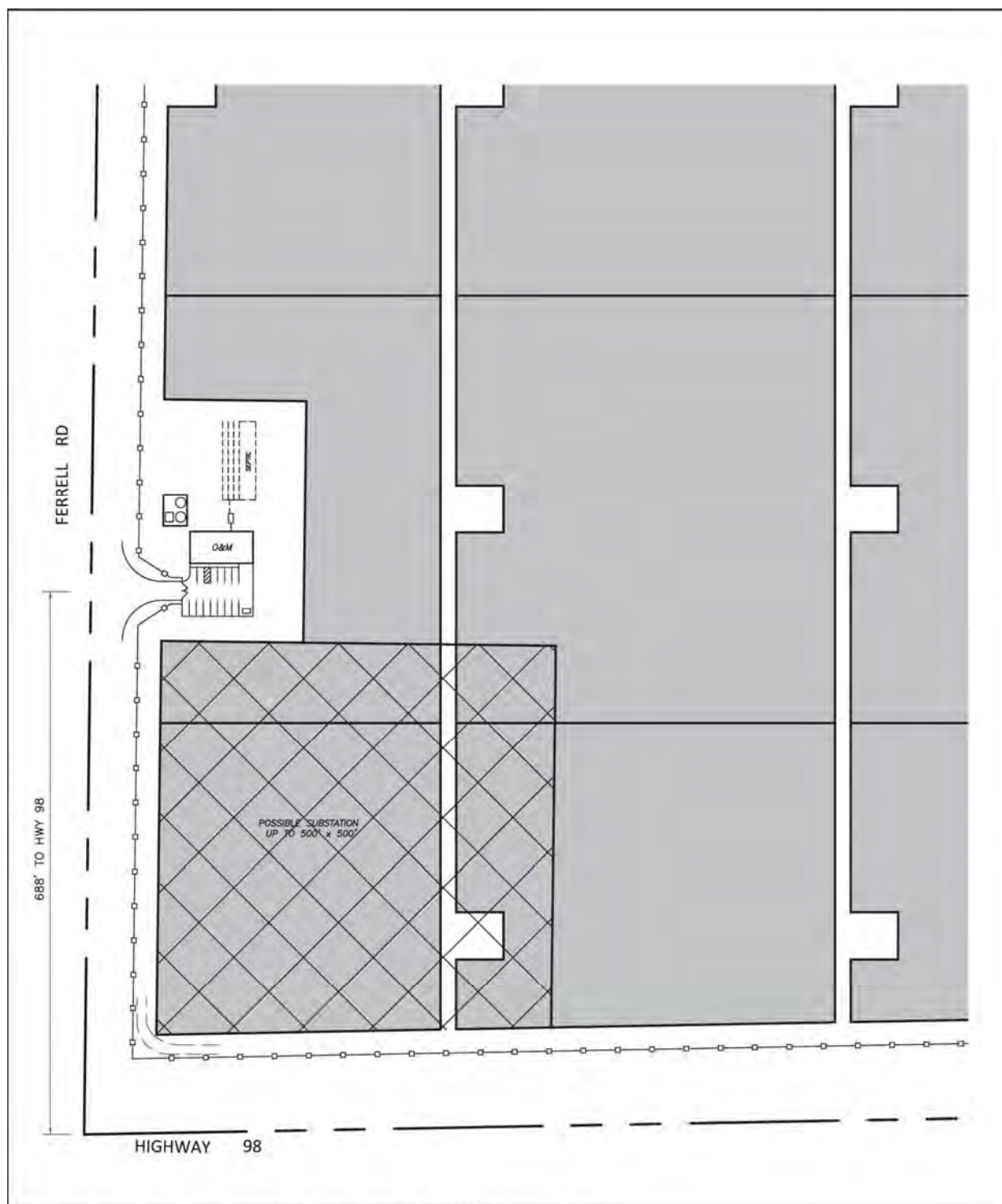
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Figure 3.0-8a. Iris Solar Farm – Site Layout



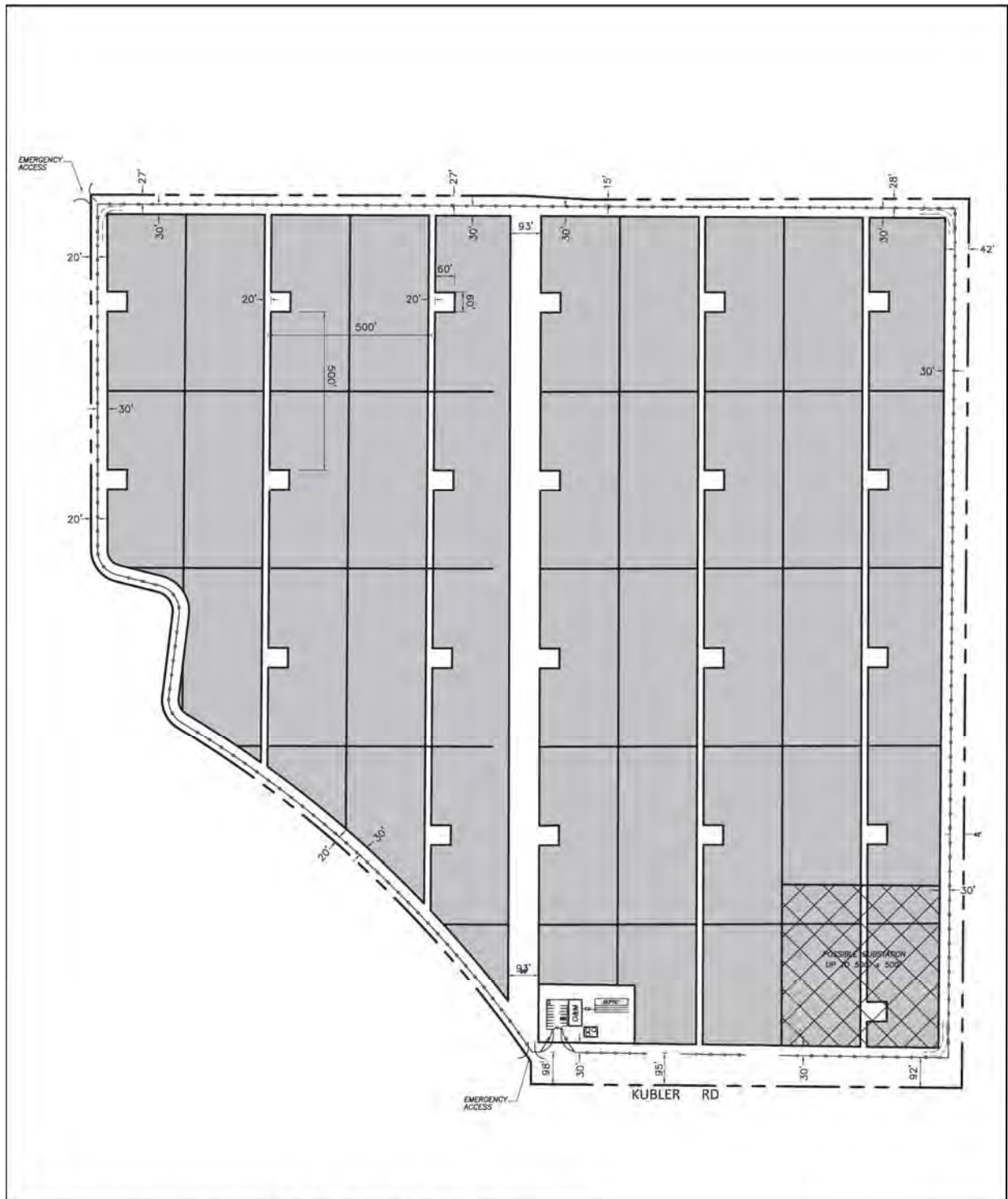
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Figure 3.0-8b. Iris Solar Farm – O&M and Substation Facility Detail



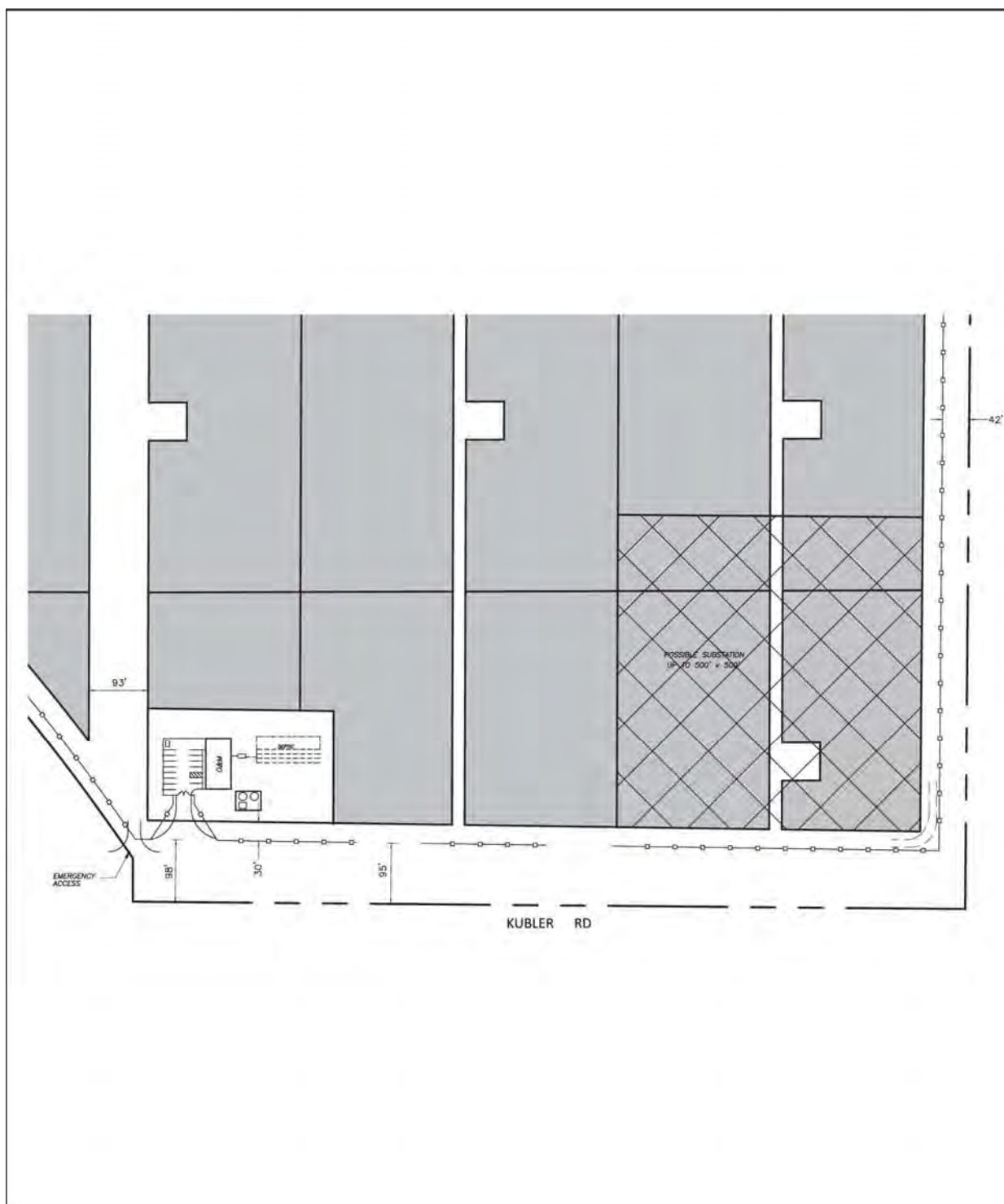
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Figure 3.0-9a. Lyons Solar Farm – Site Layout



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Figure 3.0-9b. Iris Solar Farm – O&M and Substation Facility Detail



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3.3.8.1 Site Security, Fencing, and Access Gates

The perimeter of the project facilities would be secured with low voltage security fencing (i.e., for security camera's and sensors), with barbed wire, and up to eight feet high along each public road. An intrusion alarm system comprised of sensor cables integrated into the perimeter fence, intrusion detection cabinets placed approximately every 1,500 feet along the perimeter fence, and an intrusions control unit, located either in the substation control room or at the O&M building, or similar technology, will be installed. Access to each of the site locations would be provided using a 20 feet minimum swinging or sliding gate. Additionally, controlled access gates would be maintained at entrances into the each of the project site locations. Emergency response personnel would be provided with manual override capability in order to access the site facilities.

3.3.8.2 Lighting System

Project lighting would include emergency egress identification and path lighting pursuant to County of Imperial Building Code Requirements. Energy-efficient lighting would be installed at the O&M building. All lighting features would be compliant with the County Zoning Ordinance.

3.3.8.3 Access Roads

To accommodate emergency access, PV or CPV panels would be spaced to maintain proper clearance. Unimproved access roads would be integrated into the project design and located within each solar array grid to facilitate access to the inverter modules and transformers. Paved access would be provided for the main access road to the parking lot and maintenance area.

3.3.8.4 Fire Protection

The projects are located within the jurisdiction of Imperial County Fire Department. On-site fire protection would be provided via portable and fixed fire suppression systems throughout each of the projects. Portable fire extinguishers would be provided at various locations throughout the solar farms, while fixed fire suppressions systems would be available in the form of dedicated 10,000-gallon on-site storage tank(s). A 10,000-gallon on-site water storage tank would be provided for each of the O&M buildings constructed, and are intended for the fire protection of the O&M buildings. The O&M building would have access to a wet-fire (i.e., water) connection to provide sufficient fire protection. Both the access and service roads (along the perimeter of the project facilities) would have turnaround areas to allow clearance for fire trucks per fire department standards (70 feet by 70 feet, and 20-foot-wide access road).

3.3.8.5 Electrical Grounding

A grounding system would be installed to permit dissipation of ground fault currents and minimize ground potential rise¹.

3.3.8.6 Dust Suppression and Erosion Control

The use of permeable soil stabilizing polymers, which would provide dust suppression and erosion control against wind and water is proposed.

3.3.9 Water Supply, Treatment, and Storage

Once the projects are operational, water would be required for domestic use, solar panel washing, fire protection, and irrigation. The projects would utilize water supplies currently delivered to the project sites by the Imperial Irrigation District (IID) and maximize the use of existing on-site water system(s).

¹ Ground potential rise is caused by electrical currents that occur at electrical substations, power plants, or high-voltage transmission lines and are injected into the earth at the grounding electrode. The resulting potential rise can cause hazardous voltage, many hundreds of yards away from the grounding electrode location.

The project applicant proposes to use 520 acre-feet per year (AFY) for operation of the projects. When compared to existing agricultural water usage at the project sites, the result is an approximately 92% decrease in annual water usage during the project operation when compared to existing conditions (see Section 4.14, Utilities/Service Systems). According to the Water Supply Assessment prepared by Development, Design & Engineering in July 2014, construction of the projects would occur over a 2-year duration, and would require approximately 1,000 AFY of water (3.3 million gallons)². Operation of the projects would require approximately 520 AFY of water (1.7 million gallons). Water use during construction and operation for each of the projects is described further in Table 3-3.

TABLE 3-3. PROJECT WATER SUPPLY DEMANDS

Project	Construction Water Use (AFY)*	Operational Water Use (AFY)	Total (AFY)
FSF (2015)	500	68**	568
FSF (2016-2056)	--	136	136
RSF (2015)	500	74**	574
RSF (2016-2056)	--	147	147
ISF (2016)	500	97**	597
ISF (2017-2057)	--	193	193
LSF (2016)	500	26**	526
LSF (2017-2057)	--	51	51

Source: Development, Design & Engineering 2014.

Notes: *Each project assumes a 6-month construction window.

**Projected to use half of estimated annual usage due to 6 months of operation first year.

On-site water would be stored in above-ground steel tank(s) located in proximity to each of the O&M buildings with a storage capacity of up to 80,000 gallons. Of this total storage capacity, 10,000 gallons of water would be dedicated for fire protection for the O&M building(s). A small Point of Entry (POE) Water Treatment System may be required to reduce sediment levels prior to panel cleaning use and, if required, would be placed at the O&M building(s). The point of entry system requires filtration and disinfection treatment or an alternative treatment technology such as reverse osmosis.

3.3.10 Operations and Maintenance

The combined projects would be staffed with up to 24 full-time employees (up to six for each site) to maintain the project facilities seven days a week during normal daylight hours. Typically, up to 12 staff would work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekend. To ensure optimal solar output, the solar panels would be maintained 24 hours a day/7 days a week. Each of the individual site components would be staffed by up to four employees during the day. Equipment and supply deliveries would typically occur during the week and, on average, could entail up to two daily truck trips.

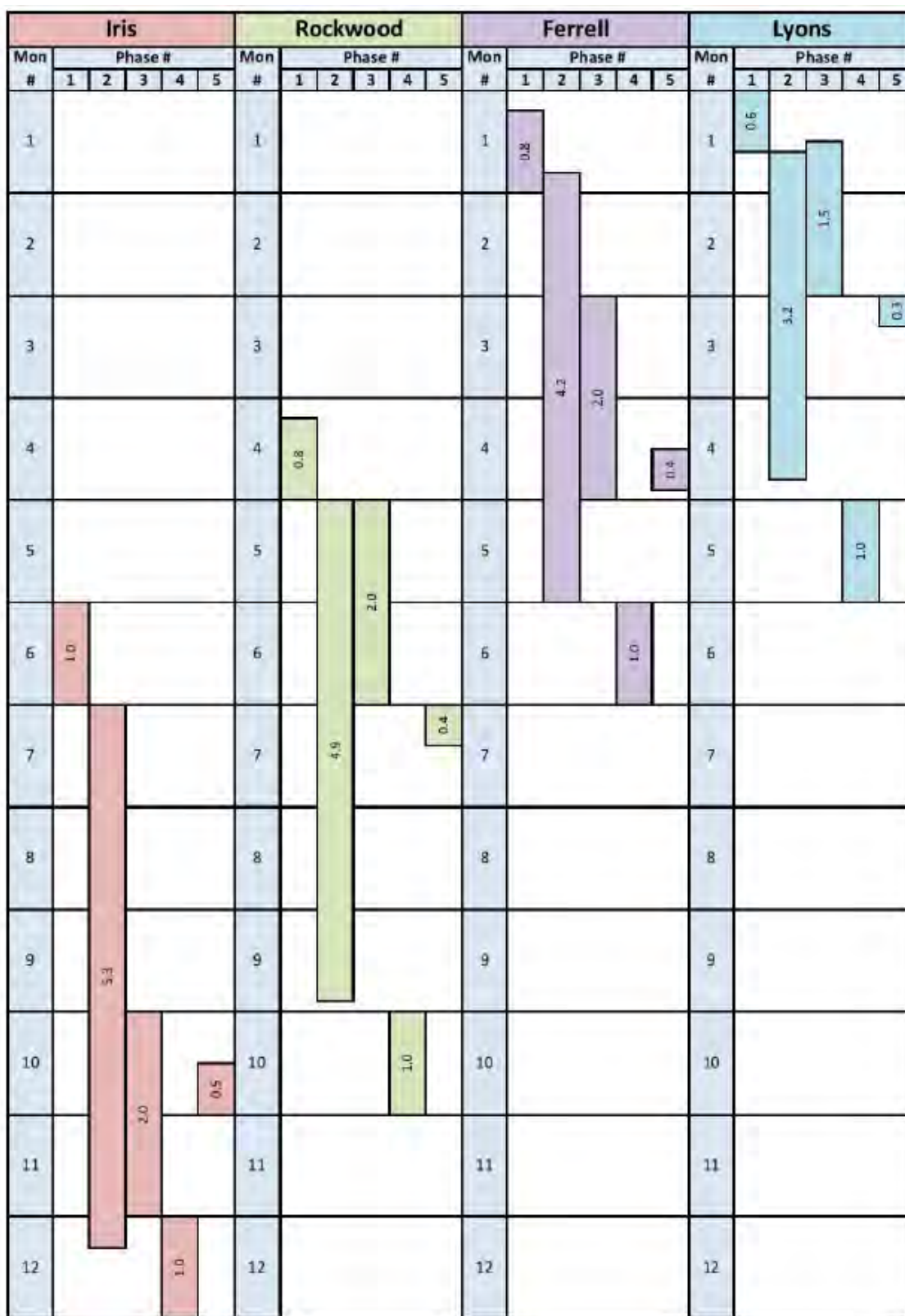
3.4 CONSTRUCTION PROCESS FOR SOLAR FARM SITES

Construction activities are proposed to start in mid-~~2014~~2015 and last for up to 12 months; and each separate site would be divided into five potentially overlapping broad phase activities: (1) Grading/Earthwork; (2) Solar Panel Installation; (3) O&M Building Construction; (4) Offsite Transmission Facilities; and (5) Paving. No single solar site is projected to take the entire 12 months.

The proposed phase activity distributions per project are presented in Figure 3.0-10.

² *One acre-foot is 325,851 gallons.

Figure 3.0-10. Iris Solar Farm – Phase Activity Distributions



Final construction scheduling would be completed during engineering and contractor bidding, which may result in variations to the planned construction schedule. Typical construction activities involved in the construction of the project include:

- Materials transport;
- Site preparation (vegetation removal, and structure demolition, if necessary);
- Earthwork (grading, excavation, backfill);
- Concrete foundations (forming, rebar placement, and concrete delivery and placement) and paving;
- Structural steel work (assembly and welding);
- Electrical/instrumentation work;
- Architectural and landscaping; and
- Start up and testing.

To characterize and analyze potential construction impacts, maximum crew size, truck trips, and worker trips have been estimated, based on the expected construction activities. To support these activities, the main pieces of equipment that may be used at any one time during construction may include:

- | | |
|----------------------------|---|
| • Track-mounted excavators | • Front-end loaders |
| • Backhoes | • Water trucks |
| • Graders | • Paver and roller |
| • Crane(s) | • Flat-bed delivery trucks |
| • Scrapers | • Forklifts |
| • Compactors | • Concrete trucks |
| • Boring machine/drill rig | • Helicopters (transmission line stringing) |
| • Dump trucks | • Compressors/jack hammers |

The typical crew size for each construction phase would be 10 to 20 people, plus inspectors. In assuming that multiple construction activities could occur simultaneously at multiple project facility sites, an average of 400 construction personnel could be present during the most intense construction periods for each phase. In addition, daily haul truck trips could average up to 55 daily trips at the height of construction. Work hours would be governed by permits issued by regulatory agencies. Roadways that would be used by construction traffic would be contingent on the location of actual construction at any given time. To the extent feasible, construction activities would occur in the dry months to minimize damage to unpaved roadways used by heavy equipment.

3.4.1 Construction and Staging Activities

Approximately 10 acres per project site would be required to allow for proper PV and/or CPV panel offloading and steel frame assembly. Although these areas have not been designated specifically for the lay down yard, it is assumed that they would be located in proximity to an O&M building; which are depicted in the site layout plans (see Figures 3.0-6 through 3.0-9).

3.4.2 Existing Utilities

The project applicant's contractors would implement an underground services alert (USA) to identify existing underground utilities and service connections prior to commencing any excavation work. Existing utility locations would be determined by hand-excavated test pits dug at locations determined and approved by the construction manager (also referred to as "potholing"). Temporary disruption of service may be required to allow for construction. Service on such lines would not be disrupted until prior approval is received from the construction manager and the service provider.

3.5 RESTORATION OF THE PROJECT STUDY AREAS

The generating facility's total useful operating life, with appropriate maintenance, repair and component replacement procedures, is expected to be up to 40 years. After the useful life of the projects, the solar facilities would be disassembled from the steel mounting frames and the site would be restored to pre-project conditions.

When the projects are decommissioned at the end of its life span, the project applicant or its successor in interest would be responsible for the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on the site, and restoration of the site to a level that is commensurate with the existing agricultural use of the site (e.g., soils, infrastructure). The project applicant anticipates using the best available recycling measures at the time of decommissioning. Further, the project applicant would be required to prepare and implement an agricultural reclamation ~~restoration~~ plan for each site. The site reclamation ~~restoration~~ plans are provided as Environmental Impact Report (EIR) Technical Appendix L.

Project decommissioning would include the following activities:

- The facility would be disconnected from the utility power grid.
- Individual PV and/or CPV panels would be disconnected from the on-site electrical system.
- Project components would be dismantled and removed using conventional construction equipment and recycled or disposed of safely.
- Individual PV and/or CPV panels would be unbolted and removed from the support frames and carefully packaged for collection and return to a designated recycling facility for recycling and material reuse.
- PV and/or CPV panel support steel and support posts would be removed and recycled off-site by an approved metals recycler.
- All compacted surfaces within the project study areas and temporary on-site haul roads would be de-compacted.
- Electrical and electronic devices, including inverters, transformers, panels, support structures, lighting fixtures, and their protective shelters would be recycled off-site by an approved recycler.
- All concrete used for the substation and underground distribution system would be recycled off-site by a concrete recycler.
- Fencing would be removed and recycled off-site by an approved metals recycler.
- Gravel roads would be removed; filter fabric would be bundled and disposed of in accordance with all applicable regulations. Road areas would be backfilled and restored to their natural contour.
- Soil erosion and sedimentation control measures would be re-implemented during the decommissioning period and until the site is stabilized.

The project applicant is proposing to restore the sites with the same type of agriculture as is currently found onsite as part of the reclamation/~~restoration~~ effort. The success of establishment of the post-project vegetation would be evaluated in terms of percent coverage at two years after seeding with a performance standard of 80 percent or better. The performance standards and requirements for site reclamation ~~restoration~~ are identified in the site reclamation ~~restoration~~ plans (EIR Appendix L). All permits related to decommissioning would be obtained, where required.

3.6 REQUIRED PROJECT APPROVALS

3.6.1 Imperial County

The County would be required to approve the following documents pursuant to the California Environmental Quality Act (CEQA):

1. **Approval of CUPs.** Implementation of the solar farm projects would require the approval of four CUPs by the County to allow for the construction and operation of the proposed FSF, RSF, ISF, and LSF projects. The projects are located on a total of 10 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agriculture Rural), and A-3 (Heavy Agriculture). Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" is a use that is permitted in the A-2, A-2-R, and A-3 Zones, subject to approval of a CUP. ("Transmission lines, including supporting towers, poles, microwave towers, utility substations" are permitted uses within the A-3 Zone.)
2. **Site Plans.** Site Plan and Architectural Review is required.
3. **Variance.** Variances are required for the solar energy facility sites in order to exceed the height limit for transmission towers within the A-2, A-2-R, and A-3 Zones. The existing A-2, A-2-R, and A-3 Zones allow a maximum height limit of 120 feet; whereas, transmission towers of up to 140 feet in height are proposed.
4. **Certification of the EIR.** After the required public review for the Draft EIR, the County will respond to written comments, edit the document, and produce a Final EIR to be certified by the Planning Commission and/or Board of Supervisors prior to making a decision on the projects.
5. **Reclamation Restoration Plans.** The project applicant has prepared a site reclamation restoration plan for each of the four projects (EIR Appendix L). As required by the County, when the projects are decommissioned at the end of their life spans, the project applicant or its successor in interest would be responsible for implementing the reclamation restoration plan, which includes the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on each of the sites, as well as restoration of the site to its pre-project condition with respect to agricultural suitability (e.g., soils, infrastructure). The County is responsible for approving the reclamation restoration plan for each project and confirming that financial assurances for each of the projects are in conformance with Imperial County ordinances.
6. **Williamson Act Contract Cancellation.** There are three active Williamson Act Contracts within the FSF and ISF project sites. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (Assessor's Parcel Numbers [APNs]: 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN: 059-050-002) within the ISF project site. One parcel associated with Contract 2003-001 (APN: 059-050-001) is also part of Agricultural Preserve 160 and is located within the FSF project site. Petitions for cancellation of these contracts were filed with the County in 2014.

Subsequent ministerial approvals may include, but are not limited to:

- Grading and clearing permits;
- Building permits;
- Septic system permits;
- Occupancy permits; and
- Encroachment permits.

3.6.2 Discretionary Actions and Approvals by Other Agencies

Responsible Agencies are those agencies that have discretionary approval over one or more actions involved with development of the project. Trustee Agencies are state agencies that have discretionary approval or jurisdiction by law over natural resources affected by a project. These agencies may include, but are not limited to the following:

- Imperial County Fire Department – Approval of Final Design of the Proposed Fire System.
- California Department of Transportation – Encroachment Permit.
- California Regional Water Quality Control Board – Notice of Intent for General Construction Permit.
- California Department of Fish and Wildlife (Trustee Agency) – Endangered Species Act Compliance, Burrowing Owl Mitigation.
- U.S. Fish and Wildlife Service – Endangered Species Act Compliance.
- Imperial Irrigation District – Encroachment Permit.
- Imperial County Air Pollution Control District – Rule 801 Compliance.

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4.0 INTRODUCTION TO ENVIRONMENTAL ANALYSIS

This section provides an overview of the environmental analysis and presents the format for the environmental analysis in each topical section.

4.0.1 ORGANIZATION OF ISSUE AREAS

This chapter provides an analysis of impacts for those environmental topics that the County determined could result in “significant impacts.” Sections 4.1 through 4.14 discuss the environmental impacts that may result with approval and implementation of the projects. Each environmental issue area in Chapter 4 contains a description of the following:

- The environmental setting as it relates to the specific issue;
- The regulatory framework governing that issue;
- The threshold of significance (from Appendix G of the California Environmental Quality Act (CEQA) Guidelines);
- The methodology used in identifying and considering the issues;
- An evaluation of the project-specific impacts and identification of mitigation measures;
- A determination of the level of significance after mitigation measures are implemented; and
- The identification of any residual significant impacts following mitigation.

4.0.2 FORMAT OF THE IMPACT ANALYSIS

This analysis presents the potential impacts that could occur under the projects along with any supporting mitigation requirements. For further differentiation of project-related impacts, this analysis presents additional discussion specific to each of the individual components that comprise the projects, including the Conditional Use Permit Applications (CUPs) and Variance Applications on file with the County. For each impact statement, the impact discussion is sub-divided, as appropriate, to differentiate between the environmental effects for each of the following project components described in Chapter 3, Project Description:

- Ferrell Solar Farm (FSF)
- Rockwood Solar Farm (RSF)
- Iris Solar Farm (ISF); and
- Lyons Solar Farm (LSF)

Where similar environmental impacts would occur for multiple projects and/or components, the impact discussion is consolidated. Likewise, in instances where impacts would be different for one or more projects or components, the discussion is separated accordingly to distinguish between key differences in the level of impact. Subheadings and sub-numbering is used, where appropriate, for transitions between major topics and particular distinctions in impact determinations for sub-issues covered by the impact statement. Terminology used in describing the range of impact mechanisms follows that described below. Where mitigation is prescribed, the analysis clearly indicates to which project component(s) it would apply.

Each section identifies the resulting level of significance of the impact using the terminology described below following the application of the proposed mitigation. The section includes an explanation of how the mitigation measure(s) reduces the impact in relation to the applied threshold of significance. If the impact remains significant (i.e., at or above the threshold of significance) additional discussion is provided to disclose the implications of the residual impact and indicate why no mitigation is available or why the applied mitigation does not reduce the impact to a less than significant level.

4.0.3 DETERMINATION OF IMPACT SIGNIFICANCE

Changes that would result from the projects were evaluated relative to existing environmental conditions within the project study areas as defined in Chapter 3 and illustrated in Figure 3.0-2. Existing environmental conditions are based on the time at which the Notice of Preparation was published on April 23, 2014. In evaluating the significance of these changes, this Environmental Impact Report (EIR) applies thresholds of significance that have been developed using (1) criteria discussed in the CEQA Guidelines; (2) criteria based on factual or scientific information; and (3) criteria based on regulatory standards of local, state, and/or federal agencies. Mechanisms that could cause impacts are discussed for each issue area.

This EIR uses the following terminology to denote the significance of environmental impacts of the projects:

- *No impact* indicates that the construction, operation, and maintenance of the project would not have any direct or indirect effects on the environment. It means no change from existing conditions. This impact level does not need mitigation.
- *A less than significant impact* is one that would not result in a substantial or potentially substantial adverse change in the physical environment. This impact level does not require mitigation, even if feasible, under CEQA.
- *A significant impact* is defined by CEQA Section 21068 as one that would cause “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project.” Levels of significance can vary by project, based on the change in the existing physical condition. Under CEQA, mitigation measures or alternatives to the projects must be provided, where feasible, to reduce the magnitude of significant impacts.
- *An unmitigable significant impact* is one that would result in a substantial or potentially substantial adverse effect on the environment, and that could not be reduced to a less than significant level even with any feasible mitigation. Under CEQA, a project with significant and unmitigable impacts could proceed, but the lead agency would be required to prepare a “statement of overriding considerations” in accordance with State CEQA Guidelines CCR Section 15093, explaining why the lead agency would proceed with the project in spite of the potential for significant impacts.

4.1 AESTHETICS/VISUAL RESOURCES

This section provides a description of the existing visual and aesthetic resources within the project area and pertinent federal, state, and local plans and policies regarding the protection of scenic resources. This section incorporates several technical studies prepared for the projects including a Reflectivity Analysis, prepared by Aztec Engineering (December 2013) to address potential glint impacts relative to roadway and aircraft traffic. In addition, an Aesthetics Study was prepared by Aztec Engineering and Tecnomia (July 2014) to address potential aesthetics/visual resources impacts. Both reports are included in Appendix B. Effects to the existing visual character of the project area as a result of project-related facilities are considered and mitigation is proposed based on the anticipated level of significance.

4.1.1 Environmental Setting

The project area is located in southern Imperial Valley, just north of the U.S./Mexico border, and is characterized as an agricultural landscape with generally level topography. Prominent visual features within the project area include numerous agricultural canals that supply water and agricultural related structures (e.g., silos). The Yuha Desert is generally located to the west and is comprised of upland desert landscape that transitions into the Coyote Mountains. Mount Signal rises 2,300 feet above mean sea level in the southern Yuha Desert, extending south into Mexico, and is the prominent visual landscape feature southwest of the project area. The City of Calexico is located to the east. Areas to the north and south of the project area are generally level and characterized as an agriculturally dominated landscape. The New River is located north of the FSF and ISF project sites, and the Greeson Wash is located south of the LSF project site.

4.1.1.1 Regulatory Setting

This section identifies and summarizes state and local laws, policies, and regulations that are applicable to the projects. There are no applicable Federal plans or policies that would apply to visual resources within the project study area.

State

California Department of Transportation

The California Department of Transportation (Caltrans) manages the California Scenic Highway Program. The goal of the program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to the scenic corridor (Caltrans 2008). Interstate 8 (I-8) located to the northwest of the project area is the nearest officially designated scenic route. The scenic route designation for I-8 ends at the junction of I-8 and State Route (SR) 98 near Coyote Wells. The project area is located more than 22 miles southeast of this designated scenic route.

Local

Imperial County General Plan

The Imperial County General Plan (Imperial County, as amended 2008) contains policies for the protection and conservation of scenic resources and open spaces within the County. These policies also provide guidance for the design of new development. The Conservation and Open Space Element of the General Plan provides specific goals and objectives for maintaining and protecting the aesthetic character of the region. Table 4.1-1 provides an analysis of the project's consistency with the Conservation and Open Space Element Goal 7. Additionally, the Circulation and Scenic Highways Element of the General Plan provides policies for protecting and enhancing scenic resources within highway corridors in Imperial County, consistent with Caltrans State Scenic Highway Program.

TABLE 4.1-1. CONSISTENCY WITH APPLICABLE GENERAL PLAN CONSERVATION AND OPEN SPACE POLICIES

General Plan Policies	Consistency with General Plan	Analysis
Goal 7: The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial, recreational, and tourist activity.	Consistent	<p>The projects would result in changes to the visual character of the project area, which is currently characterized as an agricultural landscape. As described in Section 4.1.1.2, the project sites do not contain high levels of visual character or quality; therefore, the projects would not result in a significant deterioration in the visual character of the project sites or project area.</p> <p>Additionally, project-related transmission facilities and associated towers would interconnect as much as possible, with existing transmission facilities, thereby limiting their overall footprint, which would limit their encroachment into background views of Mount Signal and the Peninsular Mountains. Additionally, these features would be primarily located in an east-west orientation and, therefore, would not distract from the overall unity of the viewshed facing west of Mount Signal and the Coyote Mountains.</p>
Objective 7.1: Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.	Consistent	The project study area is located within an agricultural portion of the County and generally avoids both desert and mountain landscapes.

4.1.1.2 Existing Conditions

Existing Visual Resources

The agricultural lands within the project area are considered “typical” views in the Imperial Valley. Considering the level terrain of the area, background views consist of the surrounding Peninsular Range Mountains to the west. The Coyote Mountain and Mount Signal are located to the east and southwest, beginning in the eastern edge of the Yuha Desert and extending south into Mexico. The New River, a hydrologic feature with native vegetation is located to the north of the FSF and ISF project sites. The Greeson Wash is located south of the LSF project site, which has seasonal water flow and limited native vegetation. Due to the lack of aesthetic value, the New River and Greeson Wash are not considered visual resources in this area. The background views of the mountains are the only existing visual resource in the area.

Scenic Roadway Designation

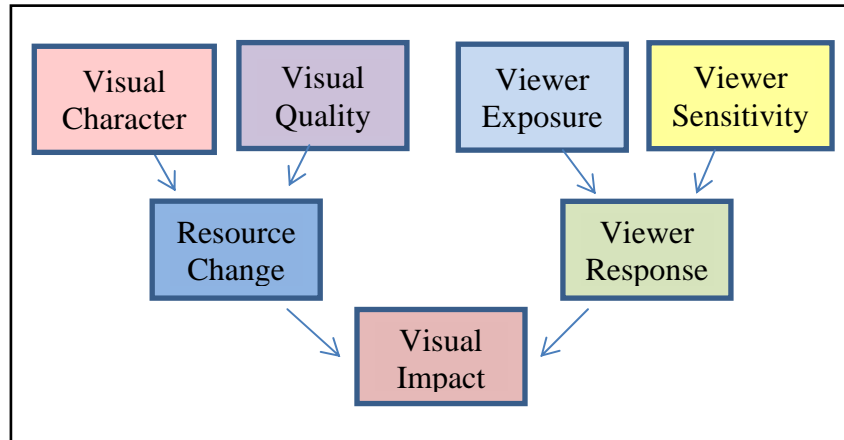
SR-98 is not officially designated or eligible for designation under the scenic highway program (Caltrans 2010). The nearest officially designed scenic route is I-8, located 20 miles northwest of the project area, at the junction of I-8 and SR-98 near Coyote Wells.

Federal Highway Administration Assessment Method

The Federal Highway Administration (FHWA) methodology outlined in the *Visual Impact Assessment for Highway Projects* (1981) was used for this visual assessment. Per the FHWA guidelines, the aesthetic quality of an area is determined through the variety and contrasts of the area’s visual features, the character of those features, and the scope and scale of the scene.

The aesthetic quality of an area depends on the relationship between its features and their importance in the overall view. Evaluating resource change requires a method that: (1) characterizes visual character; and (2) assesses their quality (vividness, intactness, and unity). The viewer exposure and viewer sensitivity is evaluated to determine the viewer response. The resource change is combined with the viewer response to determine the overall visual impact. Figure 4.1-1 illustrates this FHWA methodology. The FHWA terminology definitions are listed below.

Figure 4.1-1. FHWA Visual Environment Concept Diagram



Visual impacts related to the visual environment are characterized by their potential levels of change based on these following category ratings:

- **Low (L)** – Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.
- **Moderately Low (ML)** – Low negative change to the visual resource with a moderate viewer response, or moderate negative change to the resource with a low viewer response. Impact can be mitigated.
- **Moderate (M)** – Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within five years using conventional practices.
- **Moderately High (MH)** – Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than five years to mitigate.
- **High (H)** – A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts.

Assessing Visual Resources

Visual Character

Visual character includes attributes such as form, dominance, diversity, and continuity (as described below) to describe, not evaluate visual character; that is, these attributes are neither considered good nor bad. However, a change in visual character can be evaluated when it is compared with the viewer response to that change. Changes in visual character are identified by how visually compatible a project would be with the existing condition by using visual character attributes as an indicator. For this project, the following pattern characters or attributes were considered:

- Form – visual mass or shape;
- Dominance – position, size, or contrast;
- Diversity – pattern elements, as well as the variety among them;
- Continuity – uninterrupted flow of form, line, color, or textural pattern.

Visual Quality

Both natural and created features in a landscape contribute to its visual quality. Landscape characteristics influencing visual quality include geologic, hydrologic, botanical, wildlife, recreation, and urban features. Several sets of criteria have been developed for defining and evaluating visual quality.

According to these criteria, none of these is itself equivalent to visual quality; all three must be considered high to indicate high quality. The visual quality terms are defined as follows:

- *Vividness* is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
- *Intactness* is the integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions.
- *Unity* is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

Assessing Viewer Response

Viewer response is based on the viewer exposure (location, quantity, and duration) combined with the viewer sensitivity (activity, awareness, and local values), as described in the following definitions:

Viewer Exposure

- *Activity* relates to the preoccupation of viewers. Are they preoccupied, thinking of something else, or are they truly engaged in observing their surroundings. The more they are actually observing their surroundings, the more sensitivity viewers will have of changes to visual resources.
- *Awareness* relates to the focus of view. If the focus is wide and the view general or the focus is narrow and the view specific the more specific the awareness, and the more sensitive a viewer is to change.
- *Local values* and attitudes also affect viewer sensitivity. If the viewer group values aesthetics in general or if a specific visual resource has been protected by local, state, or national designation, it is likely that viewers will be more sensitive to visible changes.

Viewer Sensitivity

- *Location* relates to the position of the viewer in relationship to the object being viewed. The closer the viewer is to the object, the more exposure.
- *Quantity* refers to how many people see the object. The more people who can see an object or the greater frequency an object is seen, the more exposure the object has to viewers.
- *Duration* refers to how long a viewer is able to keep an object in view. The longer an object can be kept in view, the more exposure. High viewer exposure helps predict that viewers will have a response to a visual change.

Table 4.1-2 provides the visual impact ratings, and how they are quantified. The table illustrates how the combination of resource change and viewer response is used to determine the resource impact further discussed in Section 4.1.2.3, Impact Analysis.

TABLE 4.1-2. FHWA VISUAL IMPACT RATINGS

Resource Change	Viewer Response					
	Ratings	Low (L)	Moderately-Low (ML)	Moderate (M)	Moderately-High (MH)	High (H)
	Low (L)	L	ML	ML	M	M
	Moderately Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderately High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

4.1.1.3 Existing Conditions

A site reconnaissance was conducted to identify visual resources in the project area, including the project sites and off-site transmission areas. Viewpoints within the project area were selected based on the public viewing areas. A general description of the visual quality for the project area is described below. To capture the existing visual quality for each of the project components, views within the project area were photo-documented.

Figure 4.1-2 illustrates the photo-documented key view points and the direction to which the photographs were taken. The photographs depicting the existing condition at each project site are presented in Section 4.1.2.3, Impact Analysis along with visual simulations at each key view point depicting the proposed condition.

The viewer's distance from landscape elements plays an important role in the determination of an area's visual quality. Landscape elements are considered higher or lower in visual importance based on their proximity to the viewer, which contribute to a project area's overall viewshed. Generally, the closer a resource is to the viewer, the more dominant, and therefore visually important, it is to the viewer.

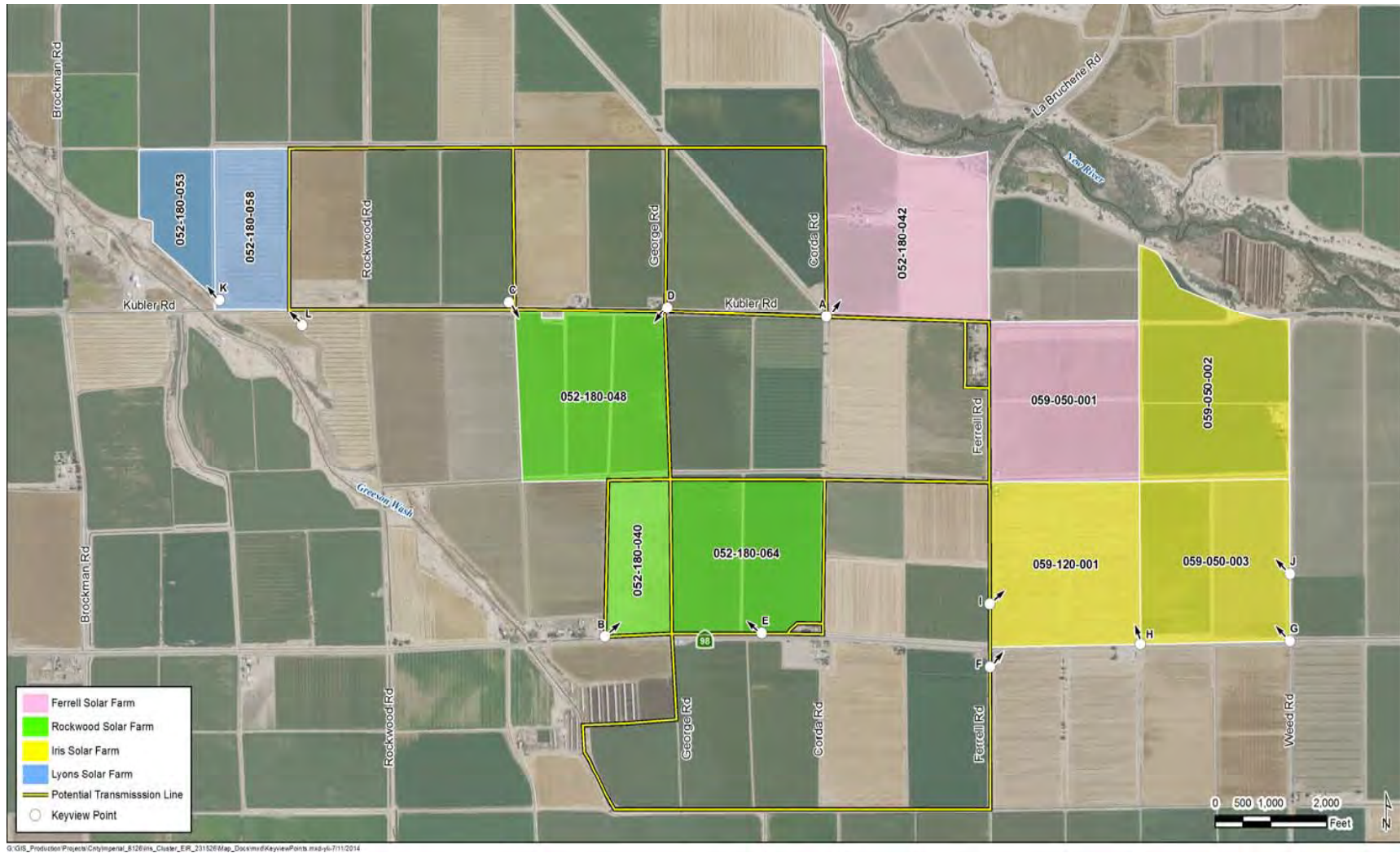
The FHWA separates landscapes into foreground, middleground, and background views. Although this should be considered on a case-by-case basis, in general, the foreground is characterized by clear details (0 up to 0.25 - 0.5 mile from the viewer); the middleground is characterized by loss of clear texture within a landscape creating a uniform appearance (up to 0.25 - 0.5 to 0.05 to 3 - 5 miles in the distance); and the background extends from the middleground (3 - 5 miles) to the limit of human sight. The FHWA foreground, middleground, and background view approach is used for describing the relative quality of each of these landscapes.

The FHWA attributes of form, dominance, scale, and continuity were used to determine the overall existing visual character. Vividness, intactness, unity were then applied to determine the visual quality. These visual resource changes were then combined with the viewer response to determine the visual impacts of the projects as discussed further in Section 4.1.2.3, Impact Analysis.

Visual Character

The overall character of the region and the project area is that of predominately agricultural landscapes, with a few residences to house the farming community. The area does not have a dominate feature in the surroundings due to the level terrain, which provides an uninterrupted flow and continuity to the landscape. The area farms have similar crops, so there is no diversity in the pattern elements for color or texture of the landscape. Although the area possesses a continuous pattern, there is no diversity, or dominate features. This results in a low visual character of the general area.

Figure 4.1-2. Photo-Documented Viewpoints within the Project Sites



Visual Quality

FSF

The landscape in the vicinity of FSF is characterized by level terrain, scattered agricultural residences and support structures, irrigation canals, drain facilities, dirt roadways, and the New River located to the north. (Viewpoint A, Figure 4.1-3). Foreground views include agricultural farmland, and an irrigation canal. Middleground views consist of open fields, isolated trees, and scattered agricultural structures. Background views consist of riparian vegetation associated with the New River.

The prominent visual feature in the area is the agriculture farmland. No distinctive mountain background views are present from this key viewpoint. The visual quality of the FSF project site is assessed below.

- **Vividness:** The foreground is characterized by typical views of active agricultural operations with numerous cultivated agricultural fields and irrigation canals and dirt roadways. No unique physical or geographic features add to the vividness of the FSF project site. There are no distinctive views of the surrounding mountains in the background or memorable landscapes. The FSF project site is considered to have low vividness.
- **Intactness:** The landscape can be characterized as an agricultural landscape, with the exception of the New River which contains riparian vegetation. Considering the change in the land use, the existing agricultural structures, utility poles, irrigation canals, fencing, and private access roads located in the fore- and middleground views are now considered “typical” visual intrusions to the area (Viewpoint A, Figure 4.1-3). Due to the agricultural ground disturbing activities (plowing), particulate matter in the air is increased which compromises visibility. In addition, the air quality is reduced during high temperature events, further reducing the background views of the mountains. The compromised air quality acts like a visual intrusion to the background views. The FSF project site is considered to have a moderately low level of intactness.
- **Unity:** The project area is predominately agricultural, which results in a harmonious visual pattern. The FSF project site is considered to have a moderately high level of unity.

As described above, the FSF project site has low vividness, moderately low intactness, and high visual unity, resulting in a moderate visual quality.

RSF

Similar to the FSF, the landscape in the vicinity of RSF project site is characterized by level terrain, scattered agricultural residences and support structures, irrigation canals, drain facilities, and dirt roadways (Viewpoints B through E, Figures 4.1-4 through 4.1-7). Foreground views include cultivated agricultural fields, utility poles, and ruderal vegetation along roadsides. Middleground views are similar to the FSF project site. Background views of the mountains are visible from Viewpoints C, D, and E. The visual quality of the RSF project site is assessed below.

- **Vividness:** The foreground is characterized by typical views of active agricultural operations with numerous cultivated agricultural fields, related agricultural structures, and roadways. No unique physical or geographic features add to the vividness of the RSF project site. Air quality issues are similar to the FSF, compromising the background views of the mountains. Similar to the FSF project area, this area is considered to have low vividness.
- **Intactness:** Similar to the FSF, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, irrigation canals, roadways, and private access roads, in the fore- and middleground views are considered “typical” visual intrusions to the area. The mountains are visible from the west to the south in the background (Viewpoint D, Figure 4.1-6). Similar to the FSF, the reduced air quality acts like a visual intrusion to the background views. The visual appearance of the existing structural elements does not contribute

as visual enhancements to the human-built landscape. The RSF project site is considered to have a moderately low level of intactness.

- **Unity:** Similar to the FSF, the area is predominately agricultural, which results in a harmonious visual pattern. The RSF project site is considered to have a moderately high level of unity.

As described above, the RSF project site has low vividness, moderately low intactness, and moderately high visual unity, resulting in a moderate existing visual quality.

Iris Solar Farm

Similar to the FSF, the landscape in the vicinity of ISF project area is characterized by level terrain, isolated agricultural residences and support structures, irrigation canals, drain facilities, dirt roadways, and the New River located to the north (Viewpoint F thorough J, Figure 4.1-8 through 4.1-12). Foreground views include cultivated agricultural fields, irrigation canals, and ruderal vegetation along roadsides. Middleground views consist of cultivated and fallow agricultural fields, isolated trees, and scattered agricultural structures. Although not visible in the key viewpoints for the LSF, the mountains are visible in the background views to the west and southwest. The visual quality of the ISF project site is provided below.

- **Vividness:** The foreground is characterized by typical views of cultivated and fallow agricultural fields and related structures, and existing roadways. No unique physical or geographic features add to the vividness of the ISF project site. There are no distinctive views or memorable landscape. The ISF project site is considered to have low vividness.
- **Intactness:** Similar to FSF, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, irrigation canals, roadways, and private access roads, in the fore- and middleground views are considered “typical” visual intrusions to the area. Although not visible in the key viewpoints for the LSF, the mountains are visible in the background views to the west and southwest. Air quality issues are similar to the FSF, compromising the background views of the mountains. The visual appearance of the existing structural elements does not contribute as visual enhancements to the human-built landscape. The ISF project site is considered to have a moderately low level of intactness.
- **Unity:** The area is predominately agricultural, which results in a harmonious visual pattern. The ISF project site is considered to have a moderately high level of unity.

As described above, the ISF project site has low vividness, moderately low intactness, and moderately high visual unity, resulting in a moderate existing visual quality.

Lyon Solar Farm

Similar to the FSF, the landscape in the vicinity of the LSF project site is characterized by level terrain, with the exception of the southeast corner of which has a slight rise in elevation. The area contains isolated cultivated and fallow agricultural fields (Viewpoints K and L, Figure 4.1-13 and 4.1-14). Foreground views include cultivated agricultural fields, irrigation canals, ruderal vegetation, and dirt roadways. Middleground views consist of cultivated and fallow agricultural fields. Although not visible in the key viewpoints for the LSF, the mountains are visible in the background views to the west and southwest. The visual quality of the LSF project site is provided below.

- **Vividness:** The foreground is characterized by typical views of cultivated and fallow agricultural fields and existing roadways. No unique physical or geographic features add to the vividness of the LSF project site. There are no distinctive views or memorable landscapes. This LSF project site is considered to have low vividness.
- **Intactness:** Similar to the FSF, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, irrigation canals, roadways, and private access

roads, in the fore- and middleground views are considered “typical” visual intrusions to the area. (Viewpoints K and L, Figure 4.1-13 and 4.1-14). The visual appearance of the existing structural elements does not contribute as visual enhancements to the human-built landscape. Although not visible in the key viewpoints for the LSF, the mountains are visible in the background views to the west and southwest. Given the air quality issues as previously discussed, the background view experience contains visual intrusions. The LSF project site is considered to have low levels of intactness.

- **Unity:** The area is predominately agricultural, which results in a harmonious visual pattern. The LSF project site is considered to have a moderately high level of unity.

As described above, the LSF project site has low vividness, low intactness, and moderately high visual unity resulting in a moderate existing visual quality.

The project area is identified as having a low visual character, combined with a moderate level of visual quality; which results in an existing resource designation of “Medium Low” for each of the project sites. Table 4.1-3 provides a summary of the visual quality within each project site.

TABLE 4.1-3. EXISTING RESOURCE DETERMINATIONS

Project Study Area	Visual Character	+	Visual Quality	=	Existing Resource
FSF	L		M		ML
ISF	L		M		ML
RSF	L		M		ML
LSF	L		M		ML

The project sites and proposed off-site transmission areas can be seen by two types of sensitive viewer groups: roadway travelers and people residing and working (residential users) within or near the project area. .

- **Roadway Travelers**
 - **Exposure:** SR-98 is situated in an east/west direction and is not a heavily traveled roadway. These travelers are anticipated to be farmers that work or reside in the area and people traveling to and from Calexico. Roadway speeds in the area are anticipated to be between 45 to 65 miles per hour (mph). The terrain within the project area is relatively flat, which provides open space viewing opportunities. Roadway Traveler’s (traveling towards the west) awareness would be visually drawn toward the background views of the Peninsular Mountains and Mount Signal to the west and southwest. Roadway traveler exposure is considered to be moderate.
 - **Sensitivity:** The outlying area of Calexico has a limited population due to the agricultural nature and does not contain a diverse visual environment. Given the limited population in this area, the roadway traveler sensitivity is considered to be low.
- **Residential**
 - **Exposure:** The residences in this area are primarily associated with people living and working in the agricultural industry. This viewer type has a prolonged view of the area. A total of three residences are located within the project study areas (FSF-1 and ISF-2) as identified in Section 4.11, Noise and Vibration. A total of ten residences are located within close proximity to each of the project study areas (FSF-2, RSF-6, and LSF-2). Given the limited number of residences in the area, the residential viewer exposure is considered low.

- **Sensitivity:** Residents are generally considered a sensitive viewer group due to the prolonged exposures (potentially 24 hours a day). Residents typically have an elevated concern regarding views from their homes that correlate to property values and would be considered engaged in their surrounding visual environment. Given the limited number of residences in the area and the adjacent farming operations, the residential viewer's sensitivity is considered moderate.

The viewer response within the project area is considered to be moderately low. Table 4.1-4 provides a summary of the FHWA viewer response ratings for each of the project sites.

TABLE 4.1-4. FHWA VIEWER RESPONSE RATINGS

Viewer Type	Viewer Exposure	+	Viewer Sensitivity	=	Viewer Response
Highway Travelers	M		L		ML
Residential Viewers	L		M		ML

Light, Glare, and Glint

Glare is considered a continuous source of brightness, relative to diffused light, whereas glint is a direct redirection of the sun beam in the surface of a photovoltaic (PV) or concentrated photovoltaic (CPV) solar module. Glint is highly directional, since its origin is purely reflective, whereas glare is the reflection of diffuse irradiance; it is not a direct reflection of the sun.

Due to the nature of the existing agricultural land uses and few residences, limited light is generated from within the project area. The majority of the light and glare that emits within the project sites is a result of motor vehicles traveling on surrounding roadways, airplanes, and farm equipment. Local roadways generate glare both during the night hours when cars travel with lights on, and during daytime hours because of the sun's reflection from cars and pavement surfaces. Additional sources of light and glare include exterior and interior building lighting, in addition to windows and reflective building materials such as metal roofs. When light is not sufficiently screened and spills over into areas outside of a particular development area the effect is called "light trespassing."

4.1.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering visual and aesthetics impacts, the methodology employed for the evaluation, and mitigation requirements, if necessary.

4.1.2.1 Thresholds of Significance

The thresholds of significance for impacts included as part of the evaluation are based on the checklist in Appendix G of the State California Environmental Quality Act (CEQA) Guidelines. Consistent with the CEQA Guidelines and the professional judgment of the County's staff and environmental consultants, the projects would result in a significant impact on the environment if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or

- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.1.2.2 Methodology

This visual impact analysis is based on field observations, a reflectivity analysis prepared by Aztec Engineering (December 2013), and visual simulations created by Aztec Engineering and Tecnomia (July 2014), for each of the projects, (and including proposed off-site transmission facilities), as well as a review of maps and aerial photographs for the project area. As previously presented in Section 4.1.1.2, Existing Visual Resources and FHWA Assessment Methodology, the FHWA visual assessment methodology was used for this analysis.

The analysis of potential impacts was based on changes to the existing visual character that would result from project implementation. In making a determination of the extent and implications of the visual changes, consideration was given to:

- Specific changes in the visual composition, character, and valued qualities of the affected environment;
- The visual context of the affected environment;
- The extent to which the affected environment contained places or features that have been designated in plans and policies for protection or special consideration; and
- The numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the project-related changes.

It should be noted that an assessment of visual quality is a subjective matter, and reasonable people can disagree as to whether alteration in the visual character of the project area would be adverse or beneficial. For this analysis, a conservative approach was taken, and the potential for substantial change to the visual character of the project sites area is generally considered a significant impact.

4.1.2.3 Impact Analysis

IMPACT Substantial Adverse Effect on a Scenic Vista.

4.1-1 Implementation of the projects would not degrade of the visual quality of a scenic vista.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As stated in Section 4.1.1, the project sites are located in the southern Imperial Valley, an agricultural landscape, and are not located within an area containing a scenic vista designated by the State or the County's General Plan (Imperial County, amended 2008). None of the viewpoints described in Section 4.1.1.2 characterize the physical attributes necessary to qualify as a designated scenic vista; however, there are scenic mountains identified as background views of the project. The solar arrays (up to a height of 30 feet), and the transmission (up to a height of 140 feet) and collector lines would extend along private lands, traversing the project area both west to east and north to south along major roads (e.g., Kubler Road, State Route SR-98, George Road, Corda Road, and Ferrell Road) and other local roadways.

The solar arrays, transmission lines, and collector lines would not create a visual obstruction for the background views of the mountains. Furthermore, due to the agricultural ground disturbing activities (plowing) particulate matter in the air is increased, which compromises the visibility in the area. In addition, air quality is reduced during high temperature events, further impeding the background views of the mountains. The low air quality acts like a visual intrusion to the background views. Based on these

factors, implementation of the projects would not have a substantial direct or indirect effect on a scenic vistas and **no impact** is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Substantial Adverse Effect on a Scenic Highway.*
4.1-2 *Implementation of the projects would not result in substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and ridgelines within a state scenic highway.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project sites are located along SR-98, which bisects the floor of the Imperial Valley, just north of the U.S. Mexico border. As provided in Section 4.1.1.2, the nearest designated scenic route is I-8, located 20 miles northwest of the project area and is not visible from the project site. Furthermore, the views to the project area from I-8 as it descends from the Peninsular Mountains are obstructed by Mount Signal. No scenic resources have been identified on the project sites. Based on these considerations, the projects would not result in damage to scenic resources, including trees, rock outcroppings, or historic buildings, including those listed as eligible for the Scenic Highway Program (Caltrans 2010). The proposed projects would not result in impacts to scenic highways. **No impact** is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Changes to Visual Character*
4.1-3 *Implementation of the projects would not substantially degrade the existing visual character or quality of the project sites and their surroundings.*

The projects consist of the construction of solar arrays, transmission towers, and power lines. The project components would result in a change in the existing land use at each of the four project sites from an agricultural land use to a solar facility. This would alter the visual character of the project area, both in terms of the on-site features proposed under the projects and in the context of the study area's relationship within the currently surrounding agricultural landscape. Each of these frames of reference is considered under the associated headings below.

On-site Changes to Existing Visual Character

As described in Section 4.1.1, the project sites are utilized for agricultural production. No distinctive visual resources, with the exception of background views of the mountains are located within the general area. Construction of the projects would alter the existing visual character of the project areas and their surroundings as a result of converting existing agricultural lands to a large-scale solar energy facility. The general area is essentially flat; therefore, no substantial site grading and landform change would occur. Although the project study areas would be visually disrupted in the short-term during construction due to soil disturbance activities, these activities would not be more disruptive than existing agricultural operations that also have soil disturbance activities. Because extensive grading is not required and these activities would be temporary, the visual character of the project study areas during construction would not be substantially degraded in the short-term and related impacts would be considered **less than significant**.

Iris Cluster (FSF, RSF, ISF, and LSF)

As discussed in Chapter 3.0, the major generation equipment that would be installed in conjunction with the projects includes solar arrays, inverter modules and transformers, operations and maintenance (O&M) buildings, electrical, substation(s), and an electrical distribution system. The proposed O&M facilities could reach a maximum height of 25 feet while the solar arrays (should CPV technology be employed) would extend up to 30 feet above the ground surface. As described in Chapter 3.0, each of projects' components within the project area would be enclosed by an 8-foot security fence.

Visual simulations were created for 12 key viewpoints to represent "typical views" that are associated with the project components (see Figures 4.1-3 through 4.1-14). The locations for Viewpoints A through L are identified in Figure 4.1-2. Figures 4.1-3 through 4.1-14 present the existing conditions and the visual simulations to illustrate a visual representation of the proposed condition to present the potential changes of the visual environment.

Visual simulations (also termed "photographic simulations" or "photo-simulations") are realistic, computer-generated, three-dimensional images of a project that simulate certain project features in their context (as they would be seen from critical views and under specific viewing conditions), matching baseline photographs of the same views. These conditions include angle of view, distance, and time of day, ambient lighting, and atmospheric perspective (the attenuation of details due to particulates or moisture). The computer imaging is generally restricted to features of the project, with the context being represented by a photograph. The image and photograph are then blended to realistically portray the project in its context. Three-dimensional (3-D) photo-simulations are simulations based on a photographic montage and 3-D modeling of geographic elevation information with other associated pertinent information that is representative and accurate.

Current industry standard procedures were used for the development of the visual simulations, resulting in the visual simulation that is both seamless and accurate. The photo simulations presented are by no means representative of all views affected. They are included to provide the reader with a better overall sense of project changes to the existing environment as well as to help visualize public perception and responses to these changes.

As previously discussed in Section 4.1.1.2, the existing visual resources in the area are limited to the background views of the peninsular Range Mountains that include Coyote Mountain and Mount Signal. The Greeson Wash is located south of the LSF project site and the New River is located north of the RSF and ISF project sites. These features lack aesthetic value and are not considered visual resources. The nearest officially designated scenic route is I-8, located 20 miles northwest of the project study areas and project features would not be visible from this long distance.

The four project sites have similar visual impacts. Figures 4.1-3 through 4.1-14 illustrates that the visual changes from 12 perspective viewpoints. The changes from the existing condition to the proposed condition would have a significant visual change from an agricultural land use to a solar farm facility. As stated in the Existing Conditions, Section 4.1.1.3, the general area has a low visual character due to a lack of diversity in landscape pattern elements (color and texture) and the area lacks a dominate feature. The existing visual quality of the area has low vividness, moderately low intactness, and a moderately high visual unity. The combination of the low visual character and moderate visual quality results in a moderately low existing resource determination.

The surrounding area is currently being developed with (or proposed for) numerous solar projects of similar scale as the proposed projects; including the Mount Signal Solar Project, consisting of over 4,000 acres of land that will be constructed in the near-term. Considering the existing visual character of the area is considered low and the surrounding area is currently in the process of solar development, the construction of the proposed projects would be consistent with current and planned development patterns and types in the area. Furthermore, the surrounding area has a moderately low existing visual quality, and no resources were identified in the area with the exception of the background views of the mountains. The proposed heights of project components would not obscure the background views of the mountains.

Figures 4.1-3 through 4.1-14 illustrate that the impacts would be similar across the four project sites. The viewer response ratings as identified in Table 4.1-4, are considered to be moderately low, combined with a moderately low resource change that would result in a moderately low visual impact due to the construction of the project, as shown in Table 4.1-5, Summary of Key View Ratings.

TABLE 4.1-5. SUMMARY OF KEY VIEW RATINGS

Project Study Area	Key View	Existing Visual Quality Analysis	Viewer Response	+	Resource Change	=	Visual Impact
FSF	A	ML	ML		ML		ML
RSF	B	ML	ML		ML		ML
	C	ML	ML		ML		ML
	D	ML	ML		ML		ML
	E	ML	ML		ML		ML
ISF	F	ML	ML		ML		ML
	G	ML	ML		ML		ML
	H	ML	ML		ML		ML
	I	ML	ML		ML		ML
LSF	J	ML	ML		ML		ML
	K	ML	ML		ML		ML
	L	ML	ML		ML		ML

With the exception of access roads and O&M facilities, the solar grids would cover the entire project site for each solar farm project. Figures 4.1-15 through 4.1-18 provide an oblique post-project rendering of the four project sites to illustrate the associated conceptual solar array grid layout. As shown, the solar array grids would provide uniform coverage over the project sites with the access roads and grid inverter model and transformer sites forming a rectangular grid layout that would be oriented in a north-south or east-west direction. This proposed layout would blend-in with and compliment the rectangular row cropping patterns present in adjacent agricultural fields. When considering the factors in the context of the low levels of vividness and moderately low levels of intactness as documented within the project area, these project-related changes would have a **less than significant** impact on the existing onsite visual character.

Transmission Line

As stated earlier, the visual character of all the project area is low due to a lack of diversity of landscape pattern elements (color and texture) and because the project area lacks dominate features. The existing visual quality of the surrounding areas where transmission lines are proposed is similar to the project sites, having a low vividness, moderately low intactness, and a moderately high visual unity. Figures 4.1-15 through 4.1-18 include the proposed 230 kilovolt proposed transmission line. The construction of the transmission line will not change the visual character or visual quality of the surrounding area.

Background views of the Peninsular Mountains and Mount Signal would not be impeded by proposed transmission lines because extensive grading is not required and these activities would be temporary; therefore, the visual character of the project area would not be substantially degraded in the short-term and related impacts would be considered **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

Figure 4.1-3. Existing and Proposed Views at Viewpoint A (FSF Project Site)



FSF Existing Condition: View from Kubler Road (southwest corner of APN 052-180-042).
View is directed toward the northeast.



FSF Proposed Condition: View of the solar arrays from Kubler Road (southwest corner of
APN 052-180-042). View is directed toward the northeast.

Figure 4.1-4. Existing and Proposed Views at Viewpoint B (RSF Project Site)



RSF Existing Condition: View from SR-98 (southwest corner of APN 052-180-040).
View is directed toward the northeast.



RSF Proposed Condition: View of the solar arrays from SR-98 (southwest corner of
APN 053-180-040). View is directed toward the northeast.

Figure 4.1-5. Existing and Proposed Views at Viewpoint C (RSF Project Site)



RSF Existing Condition: View from Kubler Road (northwest corner of APN 052-180-048). View is directed toward the southeast.



RSF Existing Condition: View of the solar arrays from Kubler Road (northwest corner of APN 052-180-048). View is directed toward the southeast.

Figure 4.1-6. Existing and Proposed Views at Viewpoint D (RSF Project Site)



RSF Existing Condition: View from Kubler Road (northwest corner of APN 052-180-048).
View is directed toward the southwest.



RSF Proposed Condition: View of the solar arrays and transmission line from Kubler Road
(northwest corner of APN 052-180-048). View is directed toward the southwest.

Figure 4.1-7. Existing and Proposed Views at Viewpoint E (RSF Project Site)



RSF Existing Condition: View from SR-98 (south side of APN 052-180-064).
View is directed toward the northwest.



RSF Proposed Condition: View of the solar arrays and transmission line from SR-98
(south side of APN 052-180-064). View is directed toward the northwest.

Figure 4.1-8. Existing and Proposed Views at Viewpoint F (ISF Project Site)



ISF Existing Condition: View from the intersection of Ferrell Road and SR-98 (southwest corner of APN 059-120-001). View is directed toward the northeast.



ISF Proposed Condition: View of the proposed substation from the intersection of Ferrell Road and SR-98 (southwest corner of APN 059-120-001). View is directed toward the northeast.

Figure 4.1-9. Existing and Proposed Views at Viewpoint G (ISF Project Site)



ISF Existing Condition: View from SR-98 (southeast corner of APN 059-050-003). View is directed toward the northwest.



ISF Proposed Condition: View of the solar arrays from SR-98 (southeast corner of APN 059-050-003). View is directed toward the northwest.

Figure 4.1-10. Existing and Proposed Views at Viewpoint H (ISF Project Site)



ISF Existing Condition: View from SR-98 (south side of APN 053-050-003). View is directed toward the northwest.



ISF Proposed Condition: View of the solar arrays from SR-98 (south side of APN 053-050-003). View is directed toward the northwest.

Figure 4.1-11. Existing and Proposed Views at Viewpoint I (ISF Project Site)



ISF Existing Condition: View from Ferrell Road (west side of APN 059-120-001).
View is directed toward the northeast.



ISF Proposed Condition: View of the solar arrays from Ferrell Road
(west side of APN 059-120-001). View is directed toward the northeast.

Figure 4.1-12. Existing and Proposed Views at Viewpoint J (ISF Project Site)



ISF Existing Condition: View from SR-98 (southeast corner of APN 059-050-003).
View is directed toward the northwest.



ISF Proposed Condition: View of the solar arrays from SR-98 (southeast corner of
APN 059-050-003). View is directed toward the northwest.

Figure 4.1-13. Existing and Proposed Views at Viewpoint K (LSF Project Site)



LSF Existing Condition: View from Kubler Road (southeast corner of APN 052-180-053).
View is directed toward the northwest.



LSF Proposed Condition: View of the solar arrays and Operations and Maintenance facility from
Kubler Road (southeast corner of APN 052-180-053). View is directed toward the northwest.

Figure 4.1-14. Existing and Proposed Views at Viewpoint L (LSF Project Site)



LSF Existing Condition: View from Kubler Road (southeast corner of APN 052-180-058).
View is directed toward the northwest.



LSF Proposed Condition: View of the solar arrays and substation from Kubler Road
(southeast corner of APN 052-180-058). View is directed toward the northwest.

Figure 4.1-15. Oblique Post-Project Rendering for FSF



Figure 4.1-16. Oblique Post-Project Rendering for RSF

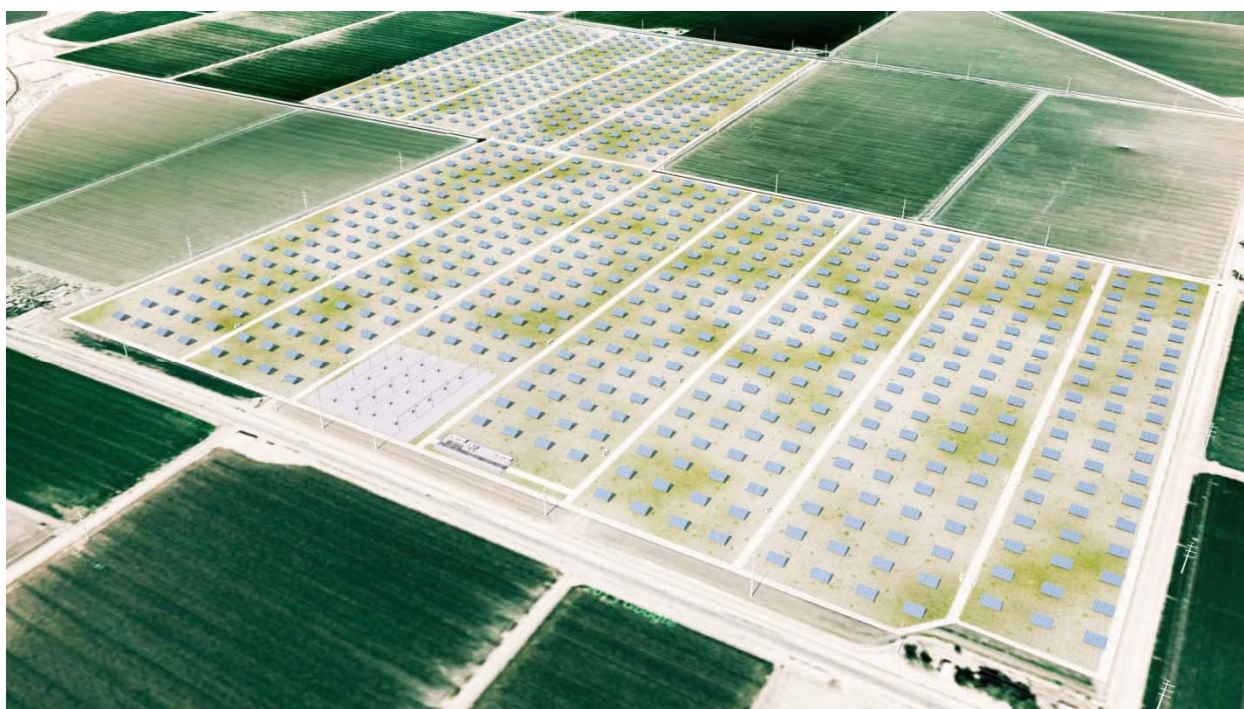


Figure 4.1-17. Oblique Post-Project Rendering for ISF



Figure 4.1-18. Oblique Post-Project Rendering for LSF



IMPACT *New Sources of Nighttime Lighting and Glare.*

4.1-4

The projects would not create new source of light and glare, which could adversely affect day or nighttime views in the project area.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As described in Chapter 3.0, the projects would include new sources of nighttime lighting. In addition, given the nature of the projects (e.g., solar facilities), this discussion also considers potential glare-related impacts generated by the proposed solar arrays. This discussion considers each issue under the associated headings below.

Nighttime Lighting

Sources of nighttime lighting associated with the projects would be minimal and limited to the O&M facilities, the electrical transmission towers for the purpose of alerting aircraft flying in and out of Calexico Airport, and for crop dusting activities. As provided in Chapter 3, project-related lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives. Additionally and consistent with County Ordinance 90301.02(K), development standards for commercial and industrial zones, project lighting would be directed downward and shielded to focus illumination on the projects and away from adjacent properties. Based on these considerations, the projects are not anticipated to create a new source of substantial light which would adversely affect nighttime views in the project area and the impact is considered **less than significant**.

Glare and Glint

The projects would involve the installation of PV or CPV solar systems, which convert sunlight directly into electricity, and by their sheer nature, are non-reflective. By nature, PV/CPV panels are designed to absorb as much of the solar spectrum as possible in order to convert sunlight to electricity and are furnished with anti-reflective coating for that purpose. Reflectivity levels of solar panels are decisively lower than standard glass or galvanized steel, and should not pose a reflectance hazard to area viewers. Other glare sources in nature (free water surfaces) have a higher glare effect than PV/CPV modules.

Reflected light from standard PV/CPV modules surface is between 10 to 20 percent of the incident radiation (as low as free water surfaces), while galvanized steel (used in industrial roofs) is between 40 to 90 percent (Aztec 2014)¹. As described in Chapter 3.0, the projects would generally avoid the use of materials such as fiberglass, aluminum or vinyl/plastic siding, galvanized products, and brightly painted steel roofs, which have the potential to create on- and off-site glare impacts.

The Reflectivity Analysis was completed using fix tilt, one axis trackers, and two axis trackers. The analysis was based on flat PV modules with low reflectivity characteristics. The analysis concluded that 10 percent incident radiation is reflected, but some glint may be produced to some key viewpoints. The analysis determined that the single axis trackers had no risk of glare to roadway traffic; however, the fix tilt structures showed a potential risk of glint to south roadway positions, and double axis trackers showed a potential risk of glint to the east and west roadway positions. The Reflectivity Analysis recommendations included the installation of fence slats along southern roadways where fixed tilt trackers may be located, and fence slats along east and west roadways where double axis trackers may be located to reduce potential glare or glint impacts to roadway travelers. Based on these considerations, impacts related to glare or glint to roadway vehicles is considered **significant** in the absence of mitigation.

Furthermore, given the project areas distance from the Calexico Airport of over 2.5 miles to the east, and Johnson Brothers private airstrip 0.50 mile to the southeast, the projects would not use materials that would reflect significant levels of glare or glint upwards in a manner that could affect flight operations.

¹ It should be noted that high incidence angles are always related to low sun elevation angles (i.e., the sun beams are close to being tangent to the reflecting surface).

Based on these considerations, impacts related to glare or glint to aircraft is considered **less than significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, and LSF:

4.1-4 Installation of Fence Slats. Based on final engineering and design, neutral colored security fence slats shall be installed in the following areas:

- **Fixed Tilt** – Fence slats shall be installed for all portions of the project study areas with fixed-tilt trackers installed that face a roadway to the south.
- **Double Axis Trackers** – Fence slats shall be installed for all portions of the project study areas with double axis trackers installed that face a roadway to the east and/or west.

Significance After Mitigation

With the implementation of Mitigation Measure 4.1-4, potential impacts related to roadway glare and glint would be considered **less than significant**.

4.1.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

The project sites are essentially flat agricultural areas; therefore, no grading or significant land form modifications would be required during decommissioning activities upon site restoration in the future. Although the project sites would be visually disrupted in the short-term during decommissioning activities, because extensive grading is not required and these activities would be temporary, the visual character of the project sites would not be substantially degraded in the short-term and related impacts would be **less than significant**.

Residual

Implementation of the mitigation measure contained in this section would reduce potential glare and glint impacts to roadway travelers to a less than significant level. Impacts related to substantial alteration of a scenic vista and damage to designated scenic corridor would be less than significant and no additional mitigation measures are required. Changes to visual character of the project area would be less than significant and would be transitioned back to agricultural uses in the future following site decommissioning and restoration. Based on these conclusions, implementation of the projects would not result in residual significant unmitigable impacts to the visual character of the project area or add substantial amounts of light and glare.

4.2 AGRICULTURAL RESOURCES

This section provides an overview of existing agricultural resources within the project study areas and identifies applicable federal, state, and local policies related to the conservation of agricultural lands (see Section 4.2.1). This includes a summary of the production outputs, soil resources and adjacent operations potentially affected by the projects. The impact assessment in Section 4.2.2 provides an evaluation of potential adverse effects to agricultural resources based on criteria derived from the California Environmental Quality Act (CEQA) Guidelines in conjunction with actions proposed in Chapter 3, Project Description. Section 4.2.3 provides a discussion of residual impacts, if any. Environmental Management Associates prepared Land Evaluation Site Assessments (LESA) for the FSF, RSF, ISF, and LSF sites in May 2013, and these are included in Appendix C. The site reclamation ~~restoration~~ plans for the FSF, RSF, ISF, and LSF are included in Appendix L.

No forestry resources are present within the project study areas and, therefore, this section focuses on issues related to agricultural resources.

4.2.1 Environmental Setting

In 2013, Imperial County (County) was ranked tenth among the 58 counties in the State of California with respect to production of agricultural goods, earning \$1,945,759,000 (gross) for the State's economy (California Department of Food and Agriculture 2011-2012). Vegetable and melon crops were the top commodities in Imperial County producing \$865,401,000 in the year 2013. Livestock and field crops and were the next two largest commodities generating \$617,371,000 and \$471,461,000, respectively, for Imperial County (Imperial County Agricultural Commissioner 2013).

4.2.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

State

California Land Conservation Act

The Williamson Act (California Land Conservation Act, California Government Code, Section 51200 et seq.) is a statewide mechanism for the preservation of agricultural land and open space land. The Act provides a comprehensive method for local governments to protect farmland and open space by allowing lands in agricultural use to be placed under contract (agricultural preserve) between a local government and a land owner.

Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the County to maintain agricultural or open space use of their lands in return for reduced property tax assessment. The contract is self-renewing and the landowner may notify the County at any time of intent to withdraw the land from its preserve status. Withdrawal involves a ten-year period of tax adjustment to full market value before protected open space can be converted to urban uses. Consequently, land under a Williamson Act Contract can be in either a renewal status or a nonrenewable status. Lands with a nonrenewable status indicate the farmer has withdrawn from the Williamson Act Contract and is waiting for a period of tax adjustment for the land to reach its full market value. Nonrenewable and cancellation lands are candidates for potential urbanization within a period of ten years.

There are three active Williamson Act Contracts within the FSF and ISF project study areas. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (APNs 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN: 059-050-002) within the ISF project study area. One parcel associated with Contract 2003-001 (APN: 059-050-001) is also part of

Agricultural Preserve 160 and is located within the FSF project study area. Petitions for cancellation of these contracts were filed with the County in 2014.

The requirements necessary for cancellation of land conservation contracts are outlined in Government Code Section 51282. The County must document the justification for the cancellation through a set of findings. Unless the land is covered by a Farmland Security Zone (FSZ) contract, the Williamson Act requires local agencies make both the Consistency with the Williamson Act and Public Interest findings. The projects are not covered by a FSZ. The cancellation of land conservation contracts for the proposed projects is being requested under Public Interest findings. In order to find that the cancellation is in the public interest, the County Board of Supervisors must find:

1. Other public concerns substantially outweigh the objectives of the Williamson Act; and,
2. That development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land.

On February 23, 2010, the Imperial County Board of Supervisors voted to not accept any new Williamson Act contracts and not to renew existing contracts, due to the elimination of the subvention funding from the state budget. The County reaffirmed this decision in a vote on October 12, 2010, and notices of nonrenewal were sent to landowners with Williamson Act contracts following that vote. The applicable deadlines for challenging the County's actions have expired, and therefore all Williamson Act contracts in Imperial County will terminate on or before December 31, 2018. This issue is discussed further in the impact analysis.

Farmland Security Zones

In August 1998, the Williamson Act's FSZ provisions were enacted with the passage of Senate Bill 1182 (Costa, Chapter 353, Statutes of 1998). This sub-program, dubbed the "Super Williamson Act," enables agricultural landowners to enter into contracts with the County for 20-year increments with an additional 35 percent tax benefit over and above the standard Williamson Act contract. As of 2010, no applications have been made for FSZs within the study areas.

California Farmland Mapping and Monitoring Program

The California Department of Conservation (DOC), under the Division of Land Resource Protection, has set up the Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the state's farmland to and from agricultural use. The map series identifies eight classifications and uses a minimum mapping unit size of ten acres. The program also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years. Table 4.2-1 provides a summary of agricultural land within Imperial County converted to non-agricultural uses during the time frame from 2008 to 2010 (DOC 2010). Figure 4.2-1 illustrates the FMMP designations for the project study areas.

Local

County of Imperial General Plan

The Agricultural Element of the County's General Plan serves as the primary policy statement for implementing development policies for agricultural land use in Imperial County. The goals, objectives, implementation programs, and policies found in the Agricultural Element provide direction for new development as well as government actions and programs. Imperial County's Goals and Objectives are intended to serve as long-term principles and policy statements to guide agricultural use decision-making and uphold the community's ideals.

TABLE 4.2-1. IMPERIAL COUNTY CHANGE IN AGRICULTURAL LAND USE SUMMARY (2008-2010)

Land Use Category	Total Acreage Inventoried		2008-2008 Acreage Changes			
	2008	2010	Acres Lost (-)	Acres Gained (+)	Total Acreage Changed	Net Acreage Changed
Prime Farmland	195,589	194,137	1,865	414	2,279	-1,451
Farmland of Statewide Importance	311,048	307,221	4,579	753	5,332	-3,826
Unique Farmland/Farmland of Local Importance	2,196	2,141	65	9	74	-56
	32,109	35,774	1,664	5,329	6,993	3,665
Important Farmland Subtotal	540,942	539,273	8,173	6,505	14,678	-1,668
Grazing Land	0	0	0	0	0	0
Agricultural Land Subtotal	540,942	539,273	8,173	6,505	14,678	-1,668
Urban and Built-Up Land	27,709	28,485	83	859	942	776
Other Land	458,829	460,001	338	1,510	1,848	1,172
Water Area	1,029	749	293	13	306	-280
Total Area Inventoried	1,028,509	1,028,508	8,887	8,887	17,774	0

Source: DOC 2010

Agriculture has been the single most important economic activity in the County throughout its history. The County recognizes the area as one of the finest agricultural areas in the world due to several environmental and cultural factors including good soils, a year-round growing season, the availability of adequate water transported from the Colorado River, extensive areas committed to agricultural production, a gently sloping topography, and a climate that is well-suited for growing crops and raising livestock. The Agricultural Element in the County General Plan demonstrates the long-term commitment by the County to the full promotion, management, use, and development and protection of agricultural production, while allowing logical, organized growth of urban areas (County of Imperial, as amended through 2008).

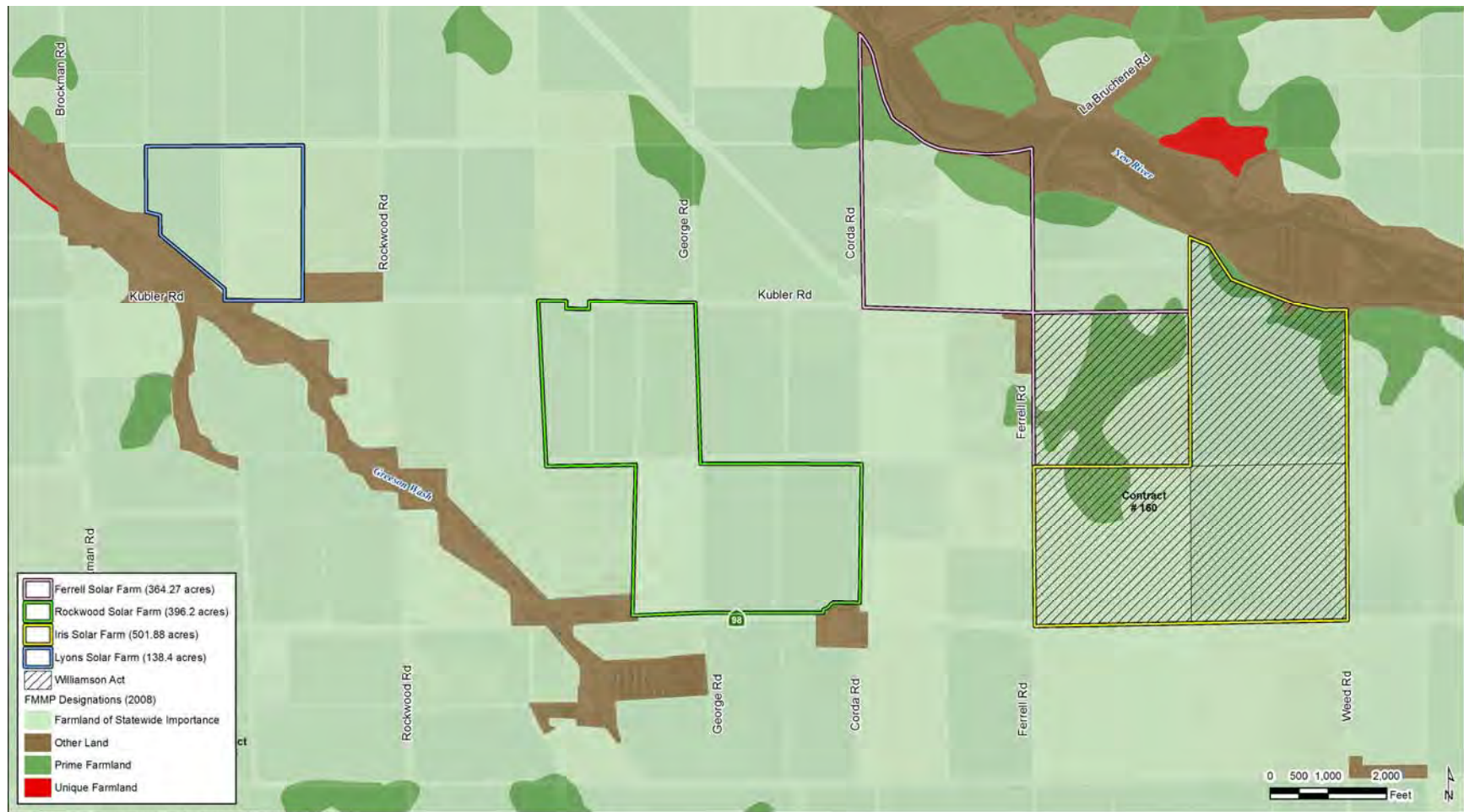
The County's Agricultural Element identifies several Implementation Programs and Policies for the preservation of agricultural resources. The Agricultural Element recognizes that the County can and should take additional steps to provide further protection for agricultural operations and at the same time provide for logical, organized growth of urban areas. The County must be specific and consistent about which lands will be maintained for the production of food and fiber and for support of the County's economic base. The County's strategy and overall framework for maintaining agriculture includes the following policy directed at the preservation of Important Farmland:

The overall economy of the County is expected to be dependent upon the agricultural industry for the foreseeable future. As such, all agricultural land in the County is considered as Important Farmland, as defined by federal and state agencies, and should be reserved for agricultural uses. Agricultural land may be converted to non-agricultural uses only where a clear and immediate need can be demonstrated, such as requirements for urban housing, commercial facilities, or employment opportunities. All existing agricultural land will be preserved for irrigation agriculture, livestock production, aquaculture, and other agriculture-related uses except for non-agricultural uses identified in this General Plan or in previously adopted City General Plans.

The following program is provided in the Agricultural Element:

No agricultural land designated except as provided in Exhibit C shall be removed from the Agriculture category except where needed for use by a public agency, for geothermal purposes, where a mapping error may have occurred, or where a clear long-term economic benefit to the County can be demonstrated through the planning and environmental review process. The Board (or Planning Commission) shall be required to prepare and make specific findings and circulate same for 60 days (30 days for parcels considered under Exhibit C of this element) before granting final approval of any proposal, which removes land from the Agriculture category.

Figure 4.2-1. FMMP and Williamson Act Contracted Lands



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Also, the following policy addresses Development Patterns and Locations on Agricultural Land:

“Leapfrogging” or “checkerboard” patterns of development have intensified recently and result in significant impacts to the efficient and economic production of adjacent agricultural land. It is a policy of the County that leapfrogging will not be allowed in the future. All new non-agricultural development will be confined to areas identified in this plan for such purposes or in Cities’ adopted Spheres of Influence, where new development must adjoin existing urban uses. Non-agricultural residential, commercial, or industrial uses will only be permitted if they adjoin at least one side of an existing urban use, and only if they do not significantly impact the ability to economically and conveniently farm adjacent agricultural land.

Agricultural Element Programs that address “leapfrogging” or “checkerboard” development include:

All non-agricultural uses in any land use category shall be analyzed during the subdivision, zoning, and environmental impact review process for their potential impact on the movement of agricultural equipment and products on roads located in the Agriculture category, and for other existing agricultural conditions which might impact the projects, such as noise, dust, or odors.

The Planning and Development Services Department shall review all proposed development projects to assure that any new residential or non-agricultural commercial uses located on agriculturally zoned land, except land designated as a Specific Plan Area, be adjoined on at least one entire property line to an area of existing urban uses. Developments that do not meet this criteria should not be approved.

Table 4.2-2 provides a General Plan goal and policy consistency evaluation for the projects.

County of Imperial Right to Farm Ordinance No. 1031

The purpose and intent of the County’s Right to Farm Ordinance is to reduce the loss to the County of its agricultural resources by clarifying the circumstances under which agricultural operations may be considered a nuisance. The ordinance includes a requirement for disclosure of agricultural operations as part of real estate transactions that may occur in the vicinity of agricultural operations.

Imperial County Memorandum of Understanding Regarding Solar Generating and Transmission Facilities on Agricultural Lands

The Imperial County Planning Department prepared a Memorandum of Understanding (MOU) that was issued in September 2011 with the intent of providing clarification in relation to the County’s review of solar projects proposed on agricultural lands. The MOU provides direction to applicants in terms of the standard conditions of approval and supporting mitigation requirements that will be applied to new solar projects proposed on agricultural lands within unincorporated portions of the County. This MOU provides specific direction in terms of mitigation requirements for non-prime and prime farmland, Williamson Act contracted lands, and fire protection for transmission facilities.

4.2.1.2 Existing Conditions

Agricultural Cropping Patterns

The proposed projects would be developed adjacent to productive agricultural lands. Much of the land base in the vicinity of and within the project study areas is considered productive farmland where irrigation water is available. Farming operations in this area generally consist of medium to large-scale crop production with related operational facilities. Crops generally cultivated in the area may include alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops (such as corn, melons, wheat) are also prominent in the area.

TABLE 4.2-2. PROJECT CONSISTENCY WITH APPLICABLE GENERAL PLAN AGRICULTURAL POLICIES

General Plan Policies	Consistency with General Plan	Analysis
Goal 1. All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by federal and state agencies, should be reserved for agricultural uses.	Consistent	The projects would temporarily convert land designated as Prime Farmland and Farmland of Statewide Importance to non-agricultural uses, but mitigation is provided to prevent a permanent conversion.
Objective 1.1. Maintain existing agricultural land uses outside of urbanizing areas and allow only those land uses in agricultural areas that are compatible with agricultural activities.	Consistent	The projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. Therefore, the proposed projects would be compatible with the existing surrounding uses.
Objective 1.2. Encourage the continuation of irrigation agriculture on Important farmland.	Consistent	The projects would temporarily convert Important Farmland on-site to non-agricultural uses, but the projects' indirect impact reduces the need for Imperial Irrigation District (IID) to fallow irrigated lands elsewhere in the County to meet IID water conservation goals.
Objective 1.3. Conserve Important Farmland for continued farm related (non-urban) use and development while ensuring its proper management and use.	Inconsistent	The projects would result in the temporary conversion of Important Farmland to non-agricultural uses. This would be considered an adverse impact requiring mitigation. <u>Reclamation Restoration</u> plans have been prepared for each of the project sites, which, when implemented, would return the sites to agricultural uses after the solar uses are discontinued.
Objective 1.4. Discourage the location of development adjacent to productive agricultural lands.	Consistent	The projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands have been approved (or have been proposed) for the development of utility-scale solar energy projects, and will transition into solar energy use over time. Additionally, this development would not include a residential component. The proposed projects are an allowable use within applicable agricultural zones (subject to approval of a Conditional Use Permit), and the existing zoning of the project study areas is consistent with the existing General Plan land use designation.
Objective 1.5. Direct development to less valuable farmland (i.e., Unique Farmland and Farmland of Local Importance rather than Prime Farmland or Farmland of Statewide Importance) when conversion of agricultural land is justified.	Consistent	The projects would temporarily convert land designated as Prime Farmland and Farmland of Statewide Importance to non-agricultural uses. However, with approval of a Conditional Use Permit, the proposed use would be consistent with Imperial County's Land Use Ordinance and thus is also consistent with the land use designation of the site. In addition, mitigation is required to prevent permanent conversion of valuable farmland. <u>Reclamation Restoration</u> plans have been prepared for each of the project sites, which, when implemented, would return the sites to agricultural uses after the solar uses are

4.2 Agricultural Resources

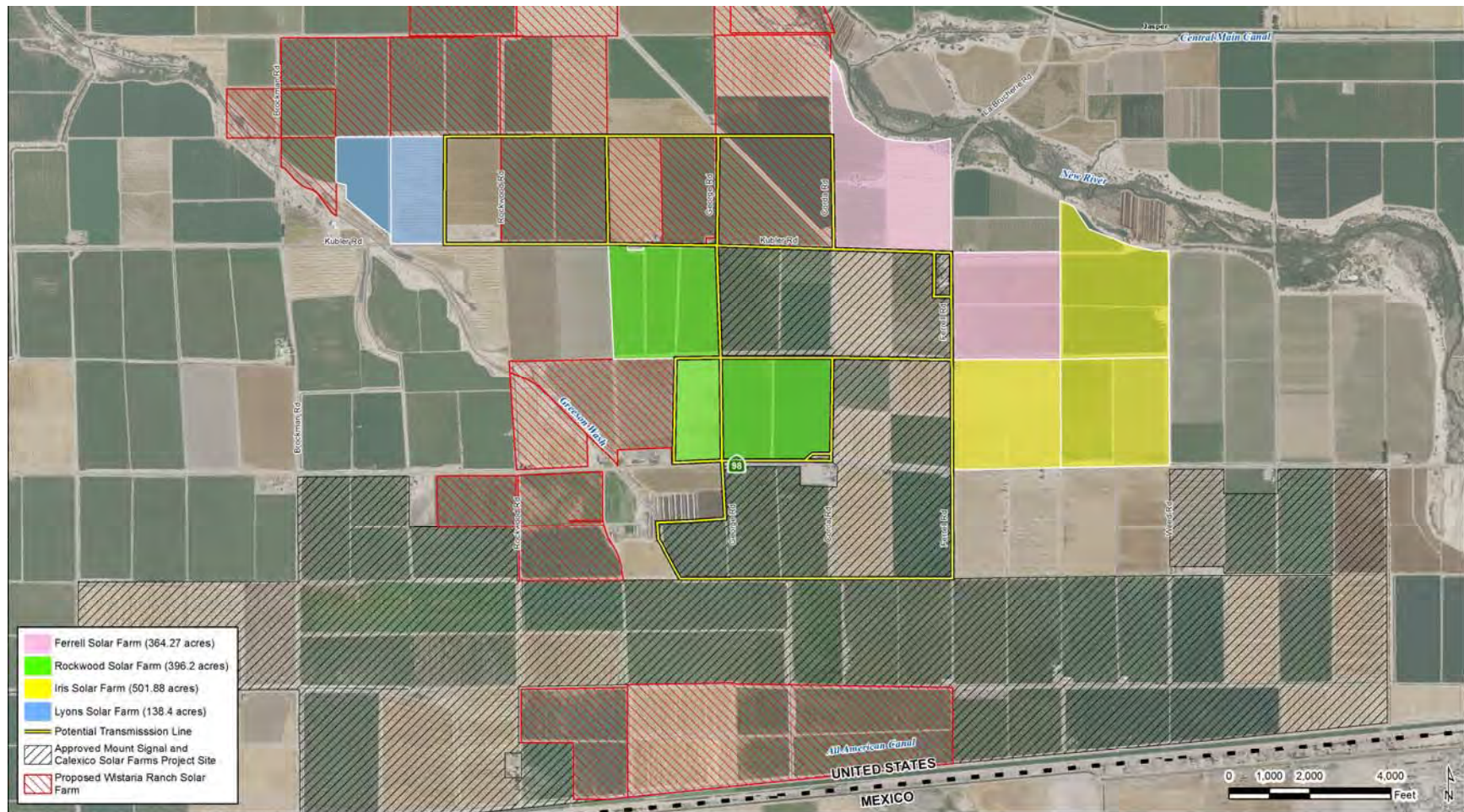
General Plan Policies	Consistency with General Plan	Analysis
		discontinued.
Objective 1.6. Recognize and preserve unincorporated areas of the County, outside the city sphere of influence areas, for irrigation agriculture, livestock production, aquaculture, and other special uses.	Consistent	The projects would temporarily convert land located in an unincorporated area to non-agricultural uses. However, with approval of a Conditional Use Permit, the projects would be considered an allowable use in an agricultural zone as a special use.
Objective 1.8. Allow conversion of agricultural land to non-agricultural uses only where a clear and immediate need can be demonstrated, based on population projections and lack of other available land (including land within incorporated cities) for such non-agricultural uses. Such conversion shall also be allowed only where such uses have been identified for non-agricultural use in a City General Plan or the County General Plan, and are supported by a study to show lack of alternative sites.	Consistent	The project study areas are designated as agriculture land uses. With approval of a Conditional Use Permit, the projects would be consistent with the County's Land Use Ordinance. Therefore, because the projects would be consistent with the Land Use Ordinance, it would also be consistent with the General Plan land use designation.
Goal 2. Adopt policies that prohibit "leapfrogging" or "checkerboard" patterns of nonagricultural development in agricultural areas and confine future urbanization to adopted Sphere of Influence area.	Consistent	The project study areas are designated for agriculture land use in the County General Plan. The projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. Additionally, this development would not include a residential component that would induce urbanization adjacent to the projects. Furthermore, with the approval of a Conditional Use Permit the projects would be consistent with the County's Land Use Ordinance. Consistency with the Land Use Ordinance implies consistency with the General Plan land use designation.
Objective 2.1. Do not allow the placement of new non-agricultural land uses such that agricultural fields or parcels become isolated or more difficult to economically and conveniently farm.	Consistent	A majority of the currently vacant agricultural lands surrounding the proposed projects have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. Neither construction nor operation of the solar facility would not make it difficult to economically or conveniently farm. After project implementation, the adjacent agricultural fields would remain contiguous to one another.
Objective 2.2. Encourage the infilling of development in urban areas as an alternative to expanding urban boundaries.	Consistent	The projects consist of the construction and operation of a solar facility. The projects are an industrial use and would not induce growth in the area nor result in the expansion of urban boundaries.
Objective 2.3. Maintain agricultural lands in parcel size configurations that help assure that viable farming units are retained.	Consistent	The projects would temporarily convert agricultural land to non-agricultural uses. However, the projects would not be subdivided into smaller parcels. The size of the existing parcels would be retained for future agricultural use following site restoration. Reclamation Restoration plans have been prepared for each of the project sites, which,

4.2 Agricultural Resources

General Plan Policies	Consistency with General Plan	Analysis
		when implemented, would return the sites to agricultural uses after the solar uses are discontinued.
Objective 2.4. Discourage the parcelization of large holdings.	Consistent	See response to Objective 2.3 above.
Objective 2.6. Discourage the development of new residential or other non-agricultural areas outside of city "sphere of influence" unless designated for non-agricultural use in the County General Plan, or for necessary public facilities.	Consistent	The projects are an allowable use within the agricultural zones of the property subject to approval of a Conditional Use Permit. Therefore, the projects are consistent with the agriculture land use designation of the General Plan.
Goal 3. Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property.	Consistent	With approval of a Conditional Use Permit, the projects would be an allowable use in agricultural zones. Additionally, the projects do not include the development of housing.
Objective 3.2. Enforce the provisions of the Imperial County Right-to-Farm Ordinance (No. 1031).	Consistent	The Imperial County Right-to-Farm Ordinance would be enforced.
Objective 3.3. Enforce the provisions of the State nuisance law (California Code Sub-Section 3482).	Consistent	The provisions of the State nuisance law would be incorporated into the projects.
Objective 3.5. As a general rule, utilize transitional land uses around urban areas as buffers from agricultural uses. Such buffers may include rural residential uses, industrial uses, recreational areas, roads, canals, and open space areas.	Consistent	The projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time.
Objective 3.6. Where a development permit is sought adjacent to agricultural land use, protect agricultural operations by requiring appropriate buffer zones between the agricultural land and new developments, and then keep these zones aesthetically pleasing and free of pests by cleaning them of all garbage and noxious vegetation. Vegetation for the purpose of dust control shall be planted and maintained in an attractive manner. The buffer shall occur on the parcel for which the development permit is sought and shall favor protection of the maximum amount of farmland.	Consistent	The project applicant would implement a noxious weed control plan during the construction and operational phases of the projects. The burden of maintaining public roads falls upon the County of Imperial.

Source: County of Imperial General Plan, as amended through 2008.

Figure 4.2-2. Surrounding Utility-Scale Solar Energy Projects



Areas further to the north are also utilized for irrigated agricultural production and non-irrigated pasture for cattle grazing. However, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands surrounding the project study areas have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. When surveyed as part of the biological resources assessment for the Iris Cluster Solar Farm, the project study areas were planted with Bermuda, alfalfa, sweet corn, melons, wheat, and sudan.

Farmland Quality

To assess the quality of the project study areas for agricultural cultivation, the LESA model¹ developed by the DOC was utilized for the FSF, RSF, ISF, and LSF. The LESA model is an approach used to rate the relative quality of land resources based upon six specific measureable features. Two land evaluation factors are based upon measures of soil resource quality. Four site assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. Based on the results for the LESA analysis, each of the four project study areas are classified as Important Farmland. The results of the LESA model for each of the four project study areas are provided in Appendix C.

Results obtained from the LESA model closely correlate with Important Farmland Maps produced by the DOC's FMMP. The 2008 Important Farmland maps for Imperial County indicate that a majority of the project study areas are comprised of Farmland of Statewide Importance. The FSF and ISF project study areas contain areas designated as Prime Farmland. These farmland designations are illustrated in Figure 4.2-1.

Prime Farmland, as defined by the U.S. Department of Agriculture (USDA), is farmland characterized by the best combination of physical and chemical features enabling it to sustain long-term agricultural production. Table 4.2-3 provides an acreage breakdown for the project study areas. Approximately 160.4 acres of Prime Farmland are classified within the project study areas. Farmland of Statewide Importance includes lands that are nearly Prime Farmland and may produce as high a yield as Prime Farmland when treated and managed according to acceptable farming methods. Some lands in this category may include those that are set aside by state law for agricultural purposes (DOC 2000). Approximately ~~1,229.054,250.7~~ acres of Farmland of Statewide Importance are classified within the project study areas. "Other Land" is defined as land not included in any other mapping category with common examples including low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and, water bodies smaller than 40 acres. Approximately 11.3 acres of "Other Land" are classified within the project study areas.

TABLE 4.2-3. FMMP DESIGNATIONS WITHIN THE PROJECT STUDY AREAS

Land Use Category	Study Area	FSF	RSF	ISF	LSF
Prime Farmland	160.4	113.0	--	47.4	--
Farmland of Statewide Importance	1,229.054,250.7	242.67245.5	396.1	452.88471.7	137.4
Other Land	11.3	8.6	0.1	1.6	1.0
Total	1,400.751,422.4	364.27367.1	396.2	501.88520.7	138.4

Source: DOC 2008.

¹ LESA is a point-based approach for rating the relative importance of agricultural land resources based upon specific measurable features. LESA evaluates measures of soil resource quality, a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, the factors are rated, weighted, and combined, resulting in a single numeric score. The project score becomes the basis for making a determination of a project's potential significance.

Soil Resources

The suitability of the local soil resource plays a crucial part in the determination of a plot's farmland designation. The land capability classification (LCC) system developed by the USDA, Natural Resources Conservation Service (NRCS), rates each of the soil types within the County in relation to its limitations for crop management. A soil rated as Class I is considered to have few limitations whereas a soil rated as Class VIII could have severe limitations that, in many circumstances, would preclude it from commercial crop production. According to the LESAs prepared for the projects, the project study areas are primarily comprised of soil types with LCC ratings of II and III, with soil wetness during winter months being the primary limitation to crop production.

Soils are also rated by the Storie Index, a numerical system expressing the relative degree of suitability, or value of a soil for general intensive agriculture use. The index considers a soil's color and texture, the depth of nutrients, presence of stones, and slope, all of which relate to the adequacy of a soil type for use in crop cultivation. The rating does not take into account other factors, such as the availability of water for irrigation, the climate, and the distance from markets. Values of the index range from 1 to 100 and are divided into six grades, with an index of 100 and a grade of 1 being the most suitable farmland. According to the LESAs prepared for the projects, the Storie Index for soil resources within the project study areas are generally classified as Grade 2 (Good) and 3 (Fair) with isolated areas classified as Grade 1 (Excellent).

4.2.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to agricultural resources, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.2.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to agricultural resources are considered significant if any of the following occur:

- Convert economically viable Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract in an area in which continued agriculture is economically viable;
- Involve other changes in the existing environment that, due to their location or nature, could individually or cumulatively result in loss of economically viable Farmland, to non-agricultural uses; or
- Impair agricultural productivity of the project site or use of neighboring areas.

4.2.2.2 Methodology

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description, to adversely impact agricultural resources within the project study areas based on the applied significance criteria as identified above. This analysis utilizes the LESA model in conjunction with other readily available information sources in assessing impacts on agriculture and farmland. As indicated in the environmental setting, four LESA models have been prepared that address each one of the projects (addressing the FSF, RSF, ISF, and LSF site locations). These reports are included as Appendix C. The analysis prepared for this EIR also relied on NRCS soil survey data, Important Farmland maps for Imperial County prepared by the State, and Williamson Act contract maps prepared by Imperial County. A combination of these sources was used to determine the agricultural significance of the lands in the project study areas.

Additionally, potential conflicts with existing agricultural zoning, incompatibility with existing Williamson Act contracts, or other changes resulting from the implementation of the projects, which could indirectly remove Important Farmland from agricultural production or reduce agricultural productivity were considered. Sources used in this evaluation included, but were not limited to, the Imperial County General Plan, as amended through 2008, and zoning ordinance. Additional background information on land uses was obtained through field review and consultation with appropriate agencies. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through 3.0-9.

4.2.2.3 Impact Analysis

Impact *Conversion of Important Farmlands to Non-Agricultural Use.*

4.2-1 *Implementation of the projects would result in the conversion of economically viable Important Farmland, including Prime Farmland and Farmland of Statewide Importance, to non-agricultural uses.*

Iris Cluster (FSF, RSF, ISF, and LSF)

Implementation of the projects as a whole would result in the temporary conversion of approximately ~~1,4004,422~~ acres of land currently under or available for agricultural production to non-agricultural uses. Approximately 160 acres of the project study areas are classified as Prime Farmland with ~~1,2294,254~~ acres identified as Farmland of Local Importance (see Table 4.2-3). The remaining 11 acres is identified as Other Land (see Table 4.2-3). The loss of agricultural land designated Prime Farmland and Farmland of Statewide Importance is typically considered a significant impact under CEQA.

To verify these farmland designations, the LESA model was used with the results provided in Appendix C. Based on the LESA's scoring methodology, a site scoring of 60 points or higher is typically considered "significant." The LESA scoring for the site locations analyzed in conjunction with the projects are provided in Table 4.2-4. As shown, the LESA scores for the projects support the farmland designations as identified in the FMMP. Hence, their conversion to non-agricultural use, albeit temporary, is considered a **significant impact**. Implementation of Mitigation Measure 4.2-1a would reduce these impacts to a level **less than significant**.

TABLE 4.2-4. LESA SCORING FOR THE STUDY AREA

Site Component	LESA Score	LE Factors ¹	SA Factors ²	Significant?
FSF	75.71	32.21	43.50	Yes
RSF	71.06	26.06	45.00	Yes
ISF	72.75	29.25	43.50	Yes
LSF	69.29	27.29	42.00	Yes

Source: Environmental Management Associates 2013.

Notes: 1. Land evaluation (LE) includes soil LCC and Storie Index.

2. Site assessment (SA) factors include water availability, project size, and Surrounding Agricultural Land & Surrounding Protected Resource Land.

As provided in Section 4.2.1.1 and Chapter 3, the project applicant would be required to restore the project study areas following project operations, therefore agricultural uses would be possible in the future. Given that the project facilities would be constructed near the existing grade, restoration of the project study areas to facilitate future cultivated agriculture would generally be feasible. However, with the projects, there would be a 40-year period where existing agricultural uses within the project study areas would no longer be possible until the site is restored. Additionally, although the project applicant is proposing agriculture as the proposed end use, it is possible that project-related activities (e.g., soil disturbance) and subsequent restoration of the site could result in a net reduction in Prime Farmland or Farmland of Statewide Importance within the project study areas. These acreage reductions could occur through alterations in soil productivity or the retention of project-related structures. Reclamation

~~Restoration~~ plans have been prepared for each of the project sites that provide guidance and performance criteria to ensure that no net reduction in Important Farmland occurs (see Appendix L). A short-term and potentially long-term net reduction in either of these two farmland classifications within the project study areas would be considered a **significant impact**. Implementation of Mitigation Measure 4.2-1b would reduce these impacts to a level **less than significant**. This measure will ensure that the project applicant adheres to the terms of the agricultural reclamation ~~restoration~~ plans prepared for each of the project sites.

FSF

The impacts described for the combined projects would be similar to impacts that could occur for the FSF site component; however, these impacts would occur at both a reduced severity and intensity. Development of the FSF would be limited to ~~364.27~~^{367.4} acres. The build-out of the FSF would include the conversion of approximately 113 acres of Prime Farmland, ~~242.67~~^{245.5} acres of Farmland of Statewide Importance, and 8.6 acres of Other Land. Similar to the discussion for the Iris Cluster, the conversion of these lands, albeit temporary, is considered a **significant impact**. Given that construction-related activities (e.g., soil disturbance) and subsequent restoration of the FSF site would result in a short-term and potentially long-term net reduction in Prime Farmland or Farmland of Statewide Importance acreages, this impact is considered significant. Implementation of Mitigation Measures 4.2-1a and 4.2-1b would reduce this impact to a level **less than significant**.

RSF

The impacts described for the combined projects would be similar to impacts that could occur for the RSF site component; however, these impacts would occur at both a reduced severity and intensity. Development of the RSF would be limited to 396.2 acres. Additionally, no Prime Farmland is designated within RSF. The build-out of the RSF would include the conversion of approximately 396.1 acres of Farmland of Statewide Importance and 0.1 acres of other land. Similar to the discussion for the Iris Cluster, the conversion of these lands, albeit temporary, is considered a **significant impact**. Given that construction-related activities (e.g., soil disturbance) and subsequent restoration of the RSF site would result in a short-term and potentially long-term net reduction in Farmland of Statewide Importance acreages, this impact is considered significant. Implementation of Mitigation Measures 4.2-1a and 4.2-1b would reduce this impact to a level **less than significant**.

ISF

The impacts described for the combined projects would be similar to impacts that could occur for the ISF site component; however, these impacts would occur at both a reduced severity and intensity. Development of the ISF would be limited to ~~501.88~~^{520.7} acres. The build-out of the ISF would include the conversion of approximately 47.4 acres of Prime Farmland, ~~452.88~~^{474.7} acres of Farmland of Statewide Importance, and 1.6 acres of Other Land. Similar to the discussion for the Iris Cluster, the conversion of these lands, albeit temporary, is considered a **significant impact**. Given that construction-related activities (e.g. soil disturbance) and subsequent restoration of the ISF site would result in a short-term and potentially long-term net reduction in Prime Farmland or Farmland of Statewide Importance acreages, this impact is considered significant. Implementation of Mitigation Measures 4.2-1a and 4.2-1b would reduce this impact to a level **less than significant**.

LSF

The impacts described for the combined projects would be similar to impacts that could occur for the LSF site component; however, these impacts would occur at both a reduced severity and intensity. Development of the LSF would be limited to 138.4 acres. Additionally, no Prime Farmland is designated within LSF. Nevertheless, the build-out of the LSF would include the conversion of approximately 137.4 acres of Farmland of Statewide Importance and 1.0 acres of Other Land. Similar to the discussion for the Iris Cluster, the conversion of these lands, albeit temporary, is considered a **significant impact**. Given

that construction-related activities (e.g. soil disturbance) and subsequent restoration of the LSF site would result in a short-term and potentially long-term net reduction in Farmland of Statewide Importance acreages, this impact is considered significant. Implementation of Mitigation Measures 4.2-1a and 4.2-1b would reduce this impact to a level **less than significant**.

Transmission Line

The project applicant would locate transmission towers along the fringe (or edge) of agricultural fields to minimize disruptions to Important Farmlands and facilitate future agricultural use following restoration of the project study areas. It should be noted that portions of the proposed transmission line route would overlap with the approved Calexico Solar Farm 2 Phase B and Mount Signal Solar Farm 1 projects, and therefore no additional acreages of Important Farmland would be impacted beyond those acreages described in the previously approved Mount Signal and Calexico Solar Farm Projects EIR. Once in operation, agricultural activities would be feasible within the new right-of-way to the extent practical and where solar arrays are not constructed. Based on these considerations, the transmission lines associated with the Iris Cluster Solar Farm Project would not result in the conversion of Important Farmland to non-agricultural use and the impact would be **less than significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, and LSF.

4.2-1a Payment of Agricultural and Other Benefit Fees. One of the following options included below is to be implemented prior to the issuance of a grading permit or building permit (whichever is issued first) for the Project:

A. Mitigation for Non Prime Farmland.

Option 1: Provide Agricultural Conservation Easement(s). The Permittee shall procure Agricultural Conservation Easements on a “1 to 1” basis on land of equal size, of equal quality farmland, outside the path of development. The conservation easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits.

Option 2: Pay Agricultural In-Lieu Mitigation Fee. The Permittee shall pay an “Agricultural In-Lieu Mitigation Fee” in the amount of 20 percent of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including programs costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner’s office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County; or,

Option 3: Public Benefit Agreement. The Permittee and County voluntarily enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; 2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy.

B. Mitigation for Prime Farmland.

Option 1: Provide Agricultural Conservation Easement(s). Agricultural Conservation Easements on a “2 to 1” basis on land of equal size, of equal quality farmland, outside the path of development. The Conservation Easement shall meet DOC regulations and shall be recorded prior to issuance of any grading or building permits; or

Option 2: Pay Agricultural In-Lieu Mitigation Fee. The Permittee shall pay an “Agricultural In-Lieu Mitigation Fee” in the amount of 30% of the fair market value per acre for the total acres of the proposed site based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including program costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee, will be placed in a trust account administered by the Imperial County Agricultural Commissioner’s office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County.

Option 3: Public Benefit Agreement. The Permittee and County enter into an enforceable Public Benefit Agreement or Development Agreement that includes an Agricultural Benefit Fee payment that is (1) consistent with Board Resolution 2012-005; (2) the Agricultural Benefit Fee must be held by the County in a restricted account to be used by the County only for such purposes as the stewardship, preservation and enhancement of agricultural lands within Imperial County and to implement the goals and objectives of the Agricultural Benefit program, as specified in the Development Agreement, including addressing the mitigation of agricultural job loss on the local economy; the Project and other recipients of the Project’s Agricultural Benefit Fee funds; or emphasis on creation of jobs in the agricultural sector of the local economy for the purpose of off-setting jobs displaced by this Project.

Option 4: Avoid Prime Farmland. The Permittee must revise their CUP Application/Site Plan to avoid Prime Farmland.

4.2-1b Site ~~Reclamation~~ Restoration Plan. The DOC has clarified the goal of a reclamation and decommissioning plan: the land must be restored to land which can be farmed. In addition to MM 4.2.1a for Prime Farmland and Non-Prime Farmland, the Applicant shall submit to Imperial County a Reclamation Plan prior to issuance of a grading permit. The Reclamation Plan shall document the procedures by which each CUP will be returned to its current agricultural condition/LESA score of 75.71 for FSF, 71.06 for RSF, 72.75 for ISF, and 69.29 for LSF. Permittee also shall provide financial assurance/bonding in the amount equal to a cost estimate prepared by a California-licensed general contractor or civil engineer for implementation of the Reclamation Plan in the event Permittee fails to perform the Reclamation Plan.

Significance After Mitigation

With the implementation of Mitigation Measure 4.2-1a, the project applicant would be required to minimize the permanent loss of valuable farmlands through either provision of an agricultural conservation easement, payment into the County agricultural fee program, or entering into a public benefit agreement. Mitigation Measure 4.2-1b will ensure that the project applicant adheres to the terms of the agricultural ~~reclamation~~ restoration plans prepared for each of the project sites, which would address the temporary conversion impact. This mitigation measure would reduce the impact on Important Farmlands, including Prime Farmland, to a **less than significant** level.

IMPACT

4.2-2

Result in the Non-Renewal or Cancellation of an Active Williamson Act Contract.

The projects could conflict with the existing agricultural zoning for the project study areas or with the provisions of an existing Williamson Act contract.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Williamson Act. As previously indicated in Section 4.2.1.1, the project study areas contain three active Williamson Act Contracts. These active contracts occur within FSF and ISF; however, petitions for cancellation have been filed for each of these active contracts by the associated landowners. Additionally, there are properties surrounding the project study areas under active Williamson Act Contracts (see Figure 4.2-1). As such, any activities associated with the projects that could create disincentives for adjacent properties to keep renewing their existing contracts would be considered significant. However, given that final land uses following the projects useful lifecycle would consist of agricultural uses, no new growth pressures are anticipated as a direct consequence of the projects. For this reason, the indirect impact of the projects on adjacent contracted lands is considered **less than significant**.

The Imperial County Board of Supervisors recently voted to not renew existing Williamson Act Contracts within the County due to the State's decision to discontinue funding for the program. This essentially means that all Williamson Act contracts in Imperial County will terminate on or before December 31, 2018. Although there remains a possibility that the State will reinstate funding for Williamson Act subventions, the fact the Board of Supervisors has already voted to discontinue funding for the program brings into question the continuation of the Williamson Act program within Imperial County. Although, landowners do have the option to protest the non-renewal, this option only allows them to keep their Williamson Act value until there is less than six years remaining in the non-renewal phase-out. Beyond four years, current tax incentives would no longer apply. Based on these circumstances, each of the active Williamson Act contracts could theoretically be in non-renewal status prior to project approval.

Nevertheless, the projects would require the cancellation of three active Williamson Act Contracts and, based on the applied significance criteria, this would be considered a **significant impact**. Further, it is important to understand that the cancellation process must be initiated by the properly owner. Given that the properties currently under the provision of the Williamson Act would be leased by the project applicant and, therefore, the burden of cancellation or non-renewal would be placed on the landowner. Additionally, per Government Code Section 51282(a), the County Board of Supervisors is required to make certain findings prior to tentative approval for the cancellation of a contract. Based on these considerations and the fact that petitions for cancellation have already been filed with the County, the projects' potential conflicts within the provisions of the Williamson Act are considered significant. Implementation of Mitigation Measure 4.2-1b and completion of the Williamson Act Cancellation process in accordance with Government Code Section 51282(a) would reduce this impact to a level **less than significant**.

Agricultural Zoning. Pursuant to the County General Plan, the project study areas are located on land designated for agricultural uses. The solar energy facility components of the projects would be constructed on lands currently zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural Zone), or A-3 (Heavy Agriculture). Solar energy plants are allowed uses within these zones, subject to the approval of a CUP. Upon approval of a CUP, the projects' use would be consistent with the Imperial County Land Use Ordinance and thus is also consistent with the General Plan land use designation of the site. Additionally, the operation of the solar generating facilities is not expected to inhibit or adversely affect adjacent agricultural operations through the placement of sensitive lands uses, generation of excessive dust or shading, or place additional development pressures on adjacent areas. Based on these considerations, the impact is considered **less than significant**.

Significance After Mitigation

With the implementation of Mitigation Measure 4.2-1b, the project applicant would be required to restore the project study areas to an agricultural use through the implementation of site reclamation ~~restoration~~ plans. Therefore, the implementation of Mitigation Measure 4.2-1b and adherence to the Williamson Act

Cancellation process in accordance with Government Code Section 51282(a) would reduce impacts related to the conversion of Williamson Act contracted land to a **less than significant** level.

IMPACT *Result in Other Effects that could Contribute to the Conversion of Active Farmlands to Non-Agricultural Use.*
4.2-3

The projects could result in direct and indirect impacts to adjacent agricultural lands that could indirectly contribute to conversion of active farmland to non-agricultural use.

Iris Cluster (FSF, RSF, ISF, and LSF)

The Agricultural Element of the County's General Plan serves as the primary policy statement for implementing development policies for agricultural land use in Imperial County. The goals, objectives, implementation programs, and policies found in the Agricultural Element provide direction for private development as well as government actions and programs. A summary of the relevant Agricultural goals and objectives and the projects' consistency with applicable goals and objectives is summarized in Table 4.2-2. As provided, the projects are generally consistent with certain Agricultural Element Goals and Objectives of the County General Plan, but mitigation is required for the projects.

Per County policy, agricultural land may be converted to non-agricultural uses only where a clear and immediate need can be demonstrated, such as requirements for urban housing, commercial facilities, or employment opportunities. Further, no agricultural land designated except as provided in Exhibit C shall be removed from the agriculture category except where needed for use by a public agency, for geothermal purposes, where a mapping error may have occurred, or where a clear long-term economic benefit to the County can be demonstrated through the planning and environmental review process. As discussed under Impact 4.2-1, although the projects would convert lands currently under agricultural production, the project applicant is proposing agriculture as the end use and has prepared a site-specific Reclamation Restoration Plan to minimize impacts related to short- and long-term conversion of farmland to non-agricultural use. Additionally, the County is requiring Mitigation Measure 4.2-1b to ensure that post-restoration of the project-facilitates result in no net reduction in Prime Farmland or Farmland of Statewide Importance. These measures in conjunction with project design features would be required to ensure the projects' consistency with applicable County General Plan goals and objectives. With implementation of Mitigation Measure 4.2-1b, this impact would be reduced to a level **less than significant**.

The nature of the projects warrants that they be located adjacent to existing electrical transmission infrastructure. Transmission infrastructure is currently under construction as part of the recently approved Mount Signal and Calexico Solar Farm Projects. The proposed projects would develop solar facilities adjacent to productive agricultural lands. A majority of the currently vacant agricultural lands surrounding the project study areas have been approved (or have been proposed) for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. The project study areas are located adjacent to three solar farms including the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project study areas border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. Development of the projects would not contribute to a "leapfrogging" pattern of development. Also, the use of the agricultural land is not considered permanent given that the project applicant will be conditioned to restore the project study areas back to agricultural use. In this context, the projects would be consistent with applicable General Plan policies and is considered **less than significant**.

The projects would not directly impact the movement of agricultural equipment on roads located within the agriculture category and access to existing agriculture-serving roads would not be precluded or hindered by the projects. No modifications to roadways are proposed in the study areas that would otherwise affect other agricultural operations in the area. Furthermore, existing nuisance issues such as noise, dust, and odors from existing agricultural use would not impact the projects given the general lack of associated sensitive uses (e.g. residences). Likewise, with mitigation measures proposed in other resource sections (e.g. air quality, noise, etc.) project-related activities would not adversely affect adjacent agricultural

operations. Additionally, the projects would not develop infrastructure that would attract or encourage new development of adjacent farmlands. Further, the provisions of the Imperial County Right-to-Farm Ordinance (No. 1031) and the State nuisance law (California Code Sub-Section 3482) would continue to be enforced. Based on these considerations, the projects are not expected to adversely impact adjacent landowners' abilities to economically and conveniently farm adjacent agricultural land and the impact is considered **less than significant**.

Transmission Line

The installation of the proposed transmission line is not expected to preclude agricultural activities within the right-of-way. The result impact is considered **less than significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF and LSF.

- Implement Mitigation Measure 4.2-1b.

Significance After Mitigation

With the implementation of Mitigation Measure 4.2-1b, the project applicant would be required to adhere to the terms of the agricultural reclamation ~~restoration~~ plans prepared for each of the project study areas. Implementation of Mitigation Measure 4.2-1b would reduce this impact to a **less than significant** level.

IMPACT *Adversely Affect Agricultural Productivity.*

4.2-4 *The projects could impair the agricultural productivity of the project study areas or use of neighboring areas for agricultural use.*

Iris Cluster (FSF, RSF, ISF, and LSF)

Agricultural productivity of the project study areas could be reduced as a result of the projects, even after final restoration of individual site components. The combination of planting on reintroduced, stockpiled topsoil or directly on subsoil materials could affect future cultivation of the individual site components and their associated rating under the FMMP.

As indicated in Chapter 3, the project applicant has prepared site reclamation ~~restoration~~ plans for each of the individual project sites. In any land restoration project, it is necessary to minimize disruption to topsoil or stockpiled topsoil for later use during restoration following project decommissioning. As previously noted in the setting discussion, soil resources within the study areas have a LCC rating ranging from II to III. Based on these classifications, one may conclude that on-site soil resources rank relatively high in terms of their suitability for agricultural cultivation (e.g., effective rooting depth, soil texture, nutrient holding capacity, etc.). With the implementation of the projects, it is possible that the physical and chemical makeup of the soil materials within the upper soil horizon may change during construction and associated stockpiling operations. Improper soil stockpiling and management of the stockpiles could result in increased decomposition of soil organic materials, increased leaching of plant-available nitrogen, and depletion of soil biota communities (e.g., Rhizobium or Frankia). Each of these circumstances could have an adverse effect on the future productivity of the restored soils. Any reductions in agricultural productivity could significantly limit the types of crops (e.g., deeper rooting crops, orchards, etc.) that may be grown within the project study areas in the future. This is considered a **significant impact** attributable to the projects. Implementation of Mitigation Measure 4.2-1b would reduce this impact to a level less than significant. Additionally, there is the potential that weeds or other pests may occur within the solar fields if these areas are not properly maintained and managed to control weeds and pests. This is considered a **significant impact**. Implementation of Mitigation Measure 4.2-2 would reduce this impact to a level **less than significant**.

Transmission Line

The installation of the proposed transmission line would result in minimal to no impact on the agricultural activity, since agricultural operations could be facilitated within the right-of-way. The result impact is considered **less than significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

4.2-2 Prior to the issuance of a grading permit or building permit (whichever occurs first), a Weed and Pest Control Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The plan shall provide the following:

1. Monitoring, preventative, and management strategies for weed and pest control during construction activities at any portion of the project (e.g., transmission line);
2. Control and management of weeds and pests in areas temporarily disturbed during construction where native seed will aid in site revegetation as follows;
 - Monitor for all pests including insects, vertebrates, weeds, and pathogens. Promptly control or eradicate pests when found, or when notified by the Agricultural Commissioner's office that a pest problem is present on the project site;
 - All treatments must be performed by a qualified applicator or a licensed pest control operator;
 - "Control" means to reduce the population of common pests below economically damaging levels, and includes attempts to exclude pests before infestation, and effective control methods after infestation. Effective control methods may include physical/mechanical removal, bio control, cultural control, or chemical treatments;
 - Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species such as A- and Q-rated pest species as defined by the California Department of Food Agriculture (CDFA). Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or CDFA;
 - Obey all pesticide use laws, regulations, and permit conditions;
 - Access shall be allowed by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties;
 - All project employees that handle pest control issues shall be appropriately trained and certified, and all required records shall be maintained and made available for inspection. All required permits shall be maintained current;
 - Records of pests found and controlled shall be maintained and available for review, or submitted to the Agricultural Commissioner's office on a quarterly basis;
3. A long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:
 - a. Use of specific types of herbicides and pesticides on a scheduled basis.
4. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.

Significance After Mitigation

With the implementation of Mitigation Measures 4.2-1b and 4.2-2, the project applicant would be required to adhere to the terms of the comprehensive reclamation ~~restoration~~ plan that would restore the project study areas to their existing conditions and reintroduce agricultural uses on the sites following decommissioning of the projects (after their use for solar generation activities) and implement a weed and pest control plan. Compliance with these measures would reduce this impact to a level **less than significant**.

4.2.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

As indicated in Chapter 3 and required by Mitigation Measure 4.2-1b, the project applicant shall adhere to the terms of the site reclamation ~~restoration~~ plan that has been submitted to Imperial County to return the property to its existing agricultural condition. In any land restoration project, it is necessary to minimize disruption to topsoil or stockpiled topsoil for later use during restoration following project decommissioning. As previously noted in the setting discussion, soil resources within the project study areas have a LCC rating ranging from II to III. Based on these classifications, one may conclude that on-site soil resources rank relatively high in terms of their suitability for agricultural cultivation (e.g., effective rooting depth, soil texture, nutrient holding capacity, etc.). With the implementation of the projects, it is possible that the physical and chemical makeup of the soil materials within the upper soil horizon may change during construction and associated stockpiling operations. Improper soil stockpiling and management of the stockpiles could result in increased decomposition of soil organic materials, increased leaching of plant-available nitrogen, and depletion of soil biota communities (e.g., Rhizobium or Frankia). Each of these circumstances could have an adverse effect on the future productivity of the restored soils. Any reductions in agricultural productivity could significantly limit the types of crops (e.g., deeper rooting crops, orchards, etc.) that may be grown within the project study areas in the future. This is considered a **significant impact** attributable to the projects. However, implementation of Mitigation Measure 4.2-1b would reduce this impact to a level **less than significant**.

Residual

With mitigation, issues related to the conversion of Important Farmland to non-agricultural use would be mitigated and reduced to a less than significant level. Operation of the projects, subject to the approval of a CUP, would generally be consistent with applicable federal, state, regional, and local plans and policies. Although the projects would require the non-renewal or cancellation of one or more active Williamson Act contracts, the mitigation prescribed in this section would reduce the physical impact associated with the cancellation of such contracts. Following the proposed use (e.g., solar facilities), the projects would be decommissioned and project study areas restored to facilitate agricultural cultivation. Based on these circumstances, the projects would not result in any residual significant and unmitigable impacts to agricultural resources.

4.3 AIR QUALITY

This section provides an overview of existing air quality within the project area and identifies applicable federal, state, and local policies related to air quality. The impact assessment provides an evaluation of potential adverse effects to air quality based on criteria derived from the California Environmental Quality Act (CEQA) Guidelines and the Imperial County Air Pollution Control District's (ICAPCD) Air Quality Handbook in conjunction with actions proposed in Chapter 3, Project Description. OB-1 Air Analyses prepared an Air Quality/Greenhouse Gas Report in April 2014 for the Iris Cluster Solar Project, which includes the FSF, RSF, ISF, and LSF. The report is included in Appendix D of this EIR.

4.3.1 Environmental Setting

Regional Setting

The project area is located in the Salton Sea Air Basin (SSAB) under the jurisdiction of the ICAPCD. The SSAB, which contains part of Riverside County and all of Imperial County, is governed largely by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in winter when the high is weakest and farthest south. When the fringes of mid-latitude storms pass through the Imperial Valley in winter, the coastal mountains create a strong "rainshadow" effect that makes Imperial Valley the second driest location in the United States. The flat terrain near the Salton Sea, intense heat from the sun during the day, and strong radiational cooling at night create deep convective thermals during the daytime and equally strong surface-based temperature inversions at night. The temperature inversions and light nighttime winds trap any local air pollution emissions near the ground. The area is subject to frequent hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and the temperature warms.

The lack of clouds and atmospheric moisture creates strong diurnal and seasonal temperature variations ranging from an average summer maximum of 108 degrees Fahrenheit (° F) down to a winter morning minimum of 38° F. The most pleasant weather occurs from about mid-October to early May when daily highs are in the 70s and 80s with very infrequent cloudiness or rainfall. Imperial County experiences significant rainfall an average of only four times per year (>0.10 inches in 24 hours). The local area usually has three days of rain in winter and one thunderstorm day in August. The annual rainfall in this region is less than three inches per year.

Winds in the area are driven by a complex pattern of local, regional and global forces, but primarily reflect the temperature difference between the cool ocean to the west and the heated interior of the entire desert southwest. For much of the year, winds flow predominantly from the west to the east. In summer, intense solar heating in the Imperial Valley creates a more localized wind pattern, as air comes up from the southeast via the Gulf of California. During periods of strong solar heating and intense convection, turbulent motion creates good mixing and low levels of air pollution. However, even strong turbulent mixing is insufficient to overcome the emissions that emanate from the Mexicali, Mexico area due to the limited air pollution controls on those emission sources. Imperial County is predominately agricultural land. This is a factor in the cumulative air quality of the SSAB. The agricultural production generates dust and small particulate matter through the use of agricultural equipment on unpaved roads, land preparation, and harvest practices. The Imperial County experiences unhealthy air quality from photochemical smog and from dust due to extensive surface disturbance and the very arid climate.

Major Air Pollutants

Criteria Pollutants

Air quality is defined by ambient air concentrations of specific pollutants determined by the United States Environmental Protection Agency (U.S. EPA) to be of concern with respect to the health and welfare of the general public. Seven major pollutants of concern, called criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter less than or

equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead (Pb). Table 4.3-1 describes the health effect of these criteria pollutants.

TABLE 4.3-1. HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Air Pollutant	Health Effects
Carbon Monoxide (CO)	Reduces ability of blood to bring oxygen to body cells and tissues; cells and tissues need oxygen to work. CO may be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.
Sulfur Dioxide (SO ₂)	Breathing problems; may cause permanent damage to lungs.
Nitrogen Dioxide (NO ₂)	Lung damage, illnesses of breathing passages and lungs (respiratory system).
Ozone (O ₃)	Breathing problems, reduced lung function, asthma, irritates eyes, stuffy nose, reduced resistance to colds or other infections, and may speed up aging of lung tissue.
Particulate Matter (PM ₁₀ and PM _{2.5})	Nose and throat irritation, lung damage, bronchitis, early death.
Lead (Pb)	Brain and other nervous system damage; children are at special risk. Some lead-containing chemicals cause cancer in animals. Lead causes digestive and other health problems.

Source: <http://www.epa.gov/oaqps001/urbanair/>

Toxic Air Contaminants

Toxic air contaminants (TACs) are substances that have the potential to be emitted into the ambient air that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources. There are almost 200 compounds that have been designated as TACs in California. The ten TACs posing the greatest known health risk in California, based primarily on ambient air quality data, are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, formaldehyde, methylene chloride, para-dichlorobenzene, perchloroethylene, and diesel particulate matter (DPM).

4.3.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

Federal

Federal Clean Air Act

The Federal Clean Air Act (CAA) requires areas with unhealthy levels of criteria pollutants to develop State Implementation Plans (SIPs) that describe how and when they will attain the National Ambient Air Quality Standards (NAAQS). SIPs are a compilation of state and local regulations, such as new and previously submitted plans and programs, and district rules that a state uses to achieve healthy air quality under the CAA. State and local agencies must involve the public in the adoption process before SIP elements are submitted to the U.S. EPA for approval or disapproval. The U.S. EPA must provide an opportunity for public comment before taking action on each SIP submittal. If the SIP is not acceptable to the U.S. EPA, the U.S. EPA can take over enforcing the CAA in that state (U.S. EPA 2011).

The 1990 amendments to the Federal CAA set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS. The promulgation of the new national 8-hour O₃ standard and PM_{2.5} standards in 1997 resulted in additional statewide air quality planning efforts. In response to new federal regulations, future SIPs will also address ways to improve visibility in national parks and wilderness areas.

The consistency of future projects with the SIP would be assessed through the land use and growth assumptions that are incorporated into the air quality planning document. If a project is consistent with the applicable General Plan of the jurisdiction where it is located, then the project presumably has been anticipated within the regional air quality planning process. Such consistency would ensure that the project would not have an adverse regional air quality impact.

National Ambient Air Quality

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The U.S. EPA establishes ambient air quality standards for criteria pollutants (NAAQS). The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume). Table 4.3-2 provides the federal and state ambient air quality standards.

TABLE 4.3-2. AMBIENT AIR QUALITY STANDARDS

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone (O3)	1 hour 8 hour	0.09 ppm 0.070 ppm	-- 0.075 ppm
Respirable Particulate Matter (PM10)	24 hour Mean	50 µg/m3 20 µg/m3	150 µg/m3 --
Fine Particulate Matter (PM2.5)	24 hour Mean	-- 12 µg/m3	35 µg/m3 12.0 µg/m3
Carbon Monoxide (CO)	1 hour 8 hour	20 ppm 9.0 ppm	35 ppm 9 ppm
Nitrogen Dioxide (NO2)	1 hour Mean	0.18 ppm 0.030 ppm	100 ppb 0.053 ppm
Sulfur Dioxide (SO2)	1 hour 24 hour	0.25 ppm 0.04 ppm	75 ppb --
Lead	30-day Rolling 3-month	1.5 µg/m3 --	-- 0.15 µg/m3
Sulfates	24 hour	25 µg/m3	No Federal Standard
Hydrogen sulfide	1 hour	0.03 ppm	
Vinyl chloride	24 hour	0.01 ppm	
Visibility-reducing particles	8 hour	Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more due to particles when relative humidity is less than 70%.	

Source: California Air Resources Board. Ambient Air Quality Standards (6/4/13). <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>

Notes: ppm = parts per million
ppb = parts per billion
µg/m³ = micrograms per cubic meter
30-day = 30-day average
mean = annual arithmetic mean

State

California Clean Air Act

The California Clean Air Act (CCAA) was enacted on September 30, 1988, and became effective January 1, 1989. The purpose of the CCAA is to achieve the more stringent health-based state clean air standards at the earliest practicable date. The state standards are more stringent than the federal air quality standards. Similar to the federal Clean Air Act, the CCAA also classifies areas according to

pollution levels. The California Air Resources Board (CARB) establishes the state ambient air quality standards (CAAQS). Table 4.3-2 identifies the CAAQS. The CCAA requires attainment of the standards at the earliest practicable date. Further, district-wide air emissions must be reduced at least five percent per year (averaged over three years) for each non-attainment pollutant or its precursors. A district may achieve a smaller average reduction if the district can demonstrate that, despite inclusion of every feasible measure in its air quality plan, it is unable to achieve the 5% annual reduction in emissions. On June 20, 2002, the CARB approved revisions to the PM₁₀ annual average standard, and established an annual average standard for PM_{2.5}.

Regional

Imperial County Air Pollution Control District

The ICAPCD is responsible for regulating stationary sources of air emissions in Imperial County. Stationary sources that have the potential to emit air pollutants into the ambient air are subject to the Rules and Regulations adopted by the ICAPCD. Monitoring of ambient air quality in Imperial County began in 1976. Since that time, monitoring has been performed by the ICAPCD, CARB, and by private industry. There are six monitoring sites in Imperial County from Niland to Calexico.

Ozone Air Quality Management Plan. Due to Imperial County's "moderate" nonattainment status for 1997 federal 8-hour ozone standards, the ICAPCD was required to develop an 8-hour Attainment Plan for Ozone. On December 3, 2009, the U.S. EPA made a final determination that the Imperial County attained the 1997 8-Hour NAAQS for ozone. As long as Imperial County continues to attain the 1997 8-hour ozone standard, the state does not have to submit an attainment demonstration, a reasonable further progress plan, contingency measure and other planning requirements. Because this determination does not constitute a re-designation to attainment under the CAA Section 107(d)(3), the designation status will remain "moderate" nonattainment for the 1997 8-hour ozone standard. However, the ICAPCD is required to submit a Modified Air Quality Management Plan (AQMP) to the U.S. EPA for approval. The final "Modified" 2009 8-hour Ozone Air Quality Management Plan was adopted by ICAPCD on July 13, 2010. On November 18, 2010, the CARB approved the Imperial County 8-Hour Ozone Air Quality Management Plan.

Particulate Matter State Implementation Plan. Imperial Valley is classified as nonattainment for federal and state PM₁₀ standards. As a result, the ICAPCD was required to develop a PM₁₀ Attainment Plan. The final plan was adopted by ICAPCD on August 11, 2009.

ICAPCD Rules and Regulations

The ICAPCD has the authority to adopt and enforce regulations dealing with controls for specific types of sources, emissions of hazardous air pollutants, and New Source Review. The ICAPCD Rules and Regulations are part of the SIP and are separately enforceable by the EPA.

Rule 310 – Operational Development Fee. The purpose of this rule is to provide the ICAPCD with a sound method for mitigating the emissions produced from the operation of new commercial and residential development projects throughout the County of Imperial and incorporated cities. All project proponents have the option to either provide: off-site mitigation, pay the operational development fee, or do a combination of both. This rule will assist the ICAPCD in attaining the State and federal ambient air quality standards for PM₁₀ and O₃.

Rule 403 - General Limitations on the Discharge of Air Contaminants. Rule 403 sets forth limitations on emissions of pollutants, including particulate matter, from individual sources.

Rule 407 - Nuisance. Rule 407 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or

safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Regulation VIII – Fugitive Dust Rules. Regulation VIII sets forth rules regarding the control of fugitive dust, including fugitive dust from construction activities. The regulation requires implementation of fugitive dust control measures to reduce emissions from earthmoving, unpaved roads, handling of bulk materials, and control of track-out/carry-out dust from active construction sites. Best Available Control Measures to reduce fugitive dust during construction and earthmoving activities include but are not limited to:

- Phasing of work in order to minimize disturbed surface area;
- Application of water or chemical stabilizers to disturbed soils;
- Construction and maintenance of wind barriers; and
- Use of a track-out control device or wash down system at access points to paved roads.

Compliance with Regulation VIII is mandatory on all construction sites, regardless of size. However, compliance with Regulation VIII does not constitute mitigation under the reductions attributed to environmental impacts. In addition, compliance for a project includes: (1) the development of a dust control plan for the construction and operational phase; and (2) notification to the Air District is required 10 days prior to the commencement of any construction activity. Furthermore, any use of engine(s) and/or generator(s) of 50 horsepower or greater may require a permit through the ICAPCD.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the designated metropolitan planning organization for Los Angeles, Ventura, Orange, San Bernardino, Riverside and Imperial Counties. CEQA requires that regional agencies like SCAG review projects and plans throughout its jurisdiction. SCAG, as the region's "Clearinghouse", collects information on projects of varying size and scope to provide a central point to monitor regional activity. SCAG has the responsibility of reviewing dozens of projects, plans, and programs every month. Projects and plans that are regionally significant must demonstrate to SCAG their consistency with a range of adopted regional plans and policies. The applicable SCAG goal for this analysis is the Regional Transportation Plan (RTP) Goal 5: Protect the environment, improve air quality and promote energy efficiency.

Imperial County General Plan

The Imperial County General Plan serves as the overall guiding policy for the county. The Conservation and Open Space Element includes objectives for helping the County achieve the goal of improving and maintaining the quality of air in the region. The Imperial County Board of Supervisors ultimately determines consistency with the General Plan. The following objectives are applicable to the projects:

- **Objective 9.1:** Ensure that all facilities shall comply with current federal and state requirements for attainment of air quality objectives.
- **Objective 9.2:** Cooperate with all federal and state agencies in the effort to attain air quality objectives.

As discussed in greater detail below, the proposed projects comply with these objectives through implementation of mitigation measures to reduce emissions of criteria pollutants to below a level of significance.

4.3.1.2 Existing Conditions

Currently, the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of 8-Hour ozone, PM₁₀, and PM_{2.5}. Imperial County is classified as a "serious" non-attainment area for PM₁₀ for the NAAQS and non-attainment for PM_{2.5} for the urban areas of Imperial County.

Air pollutants transported into the SSAB from the adjacent South Coast Air Basin (Los Angeles, San Bernardino County, Orange County, and Riverside County) and from Mexicali, Mexico substantially contribute to the non-attainment conditions in the SSAB. The closest air quality monitoring stations to the project sites are the Calexico-Ethyl station located within the City of Calexico (1029 Belcher Street, Calexico, CA 92231) and the El Centro-9th station within the City of El Centro (150 9th Street, El Centro, CA 92243). Both monitoring stations measure PM₁₀, PM_{2.5}, CO, and NO₂. The Calexico monitoring station also monitors SO₂. Tables 4.3-3 and 4.3-4 provide a summary of background air quality data representative of the area from 2007 to 2012. As shown, the area has experienced days measured at levels exceeding state and federal standards for O₃, PM₁₀, and PM_{2.5}, and NO₂ (federal standard only). Existing sources of air pollution, e.g., dust, in the project study areas include agricultural operations and traffic.

TABLE 4.3-3. AIR QUALITY MONITORING DATA – CALEXICO-ETHYL MONITORING STATION

Air Pollutant	Year					
	2007	2008	2009	2010	2011	2012
Ozone (O₃)⁽¹⁾						
Max 1-hour value (ppm)	0.112	0.128	0.104	0.102	0.097	0.114
Days above state standard (0.09 ppm)	10	8	5	4	2	11
Max 8-hour value (ppm)	0.094	0.093	0.083	0.082	0.076	0.095
Days above federal standard (0.075 ppm) ^(1,3)	9	7	4	2	3	12
Days above state standard (0.070 ppm)	20	17	9	6	5	26
Particulate matter less than or equal to 10 microns in diameter (PM₁₀)						
Max Daily California Measurement (µg/m ³)	282.0	109.7	265.8	117.3	83.9	387.3
Days above federal standard (150 µg/m ³)	1	0	3	0	0	2
Days above state standard (50 µg/m ³)	36	31	34	9	16	36
Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5})⁽²⁾						
Max Daily National Measurement (µg/m ³)	66.7	37.1	45.0	50.9	80.3	119.3
Days above federal standard (35 µg/m ³)	3	1	4	2	2	4
Carbon Monoxide (CO)						
Max 8-hour value (ppm)	7.53	6.34	7.46	4.46	6.06	4.47
Days above federal standard (9 ppm)	0	0	0	0	0	0
Days above state standard (9 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO₂)⁽⁴⁾						
Max Hourly value (ppb)	107	146	102	80	130	91
Days above federal standard (100 ppb)	1	3	1	0	2	0
Days above state standard (0.18 ppm)	0	0	0	0	0	0
Sulfur Dioxide (SO₂)						
Max 24-hour value (ppm)	0.004	0.007	0.004	0.004	N/A	N/A
Days above state standard (0.04 ppm)	0	0	0	0		

Source: <http://www.arb.ca.gov/adam/welcome.html>

Notes: > = exceed
 ppm = parts per million
 ppb = parts per billion
 µg/m³ = micrograms per cubic meter
 N/A = not available

TABLE 4.3-4. AIR QUALITY MONITORING DATA – EL CENTRO-9TH MONITORING STATION

Air Pollutant	Year					
	2007	2008	2009	2010	2011	2012
Ozone (O₃)⁽¹⁾						
Max 1-hour value (ppm)	0.118	0.135	0.111	0.122	0.103	0.111
Days above state standard (0.09 ppm)	8	4	9	3	5	9
Max 8-hour value (ppm)	0.094	0.084	0.085	0.082	0.084	0.091
Days above federal standard (0.075 ppm) ^(1,3)	8	2	11	10	12	14
Days above state standard (0.070 ppm)	23	9	30	29	21	26
Particulate matter less than or equal to 10 microns in diameter (PM₁₀)						
Max Daily California Measurement (µg/m ³)	196.0	88.7	233.7	70.2	80.3	72.1
Days above federal standard (150 µg/m ³)	1	0	2	0	0	0
Days above state standard (50 µg/m ³)	22	4	17	5	9	6
Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5})⁽²⁾						
Max Daily National Measurement (µg/m ³)	30.5	26.7	37.7	19.9	54.4	26.4
Days above federal standard (35 µg/m ³)	0	0	1	0	2	0
Carbon Monoxide (CO)						
Max 8-hour value (ppm)	1.67	1.71	3.20	5.61	9.01	3.64
Days above federal standard (9 ppm)	0	0	0	0	0	0
Days above state standard (9 ppm)	0	0	0	0	0	0
Nitrogen Dioxide (NO₂)⁽⁴⁾						
Max Hourly (ppb)	71.0	81.0	121.6	140.5	117.4	72.0
Days above federal standard (100 ppb)	0	0	1	1	1	0
Days above state standard (0.18 ppm)	0	0	0	0	0	0

Source: <http://www.arb.ca.gov/adam/welcome.html>

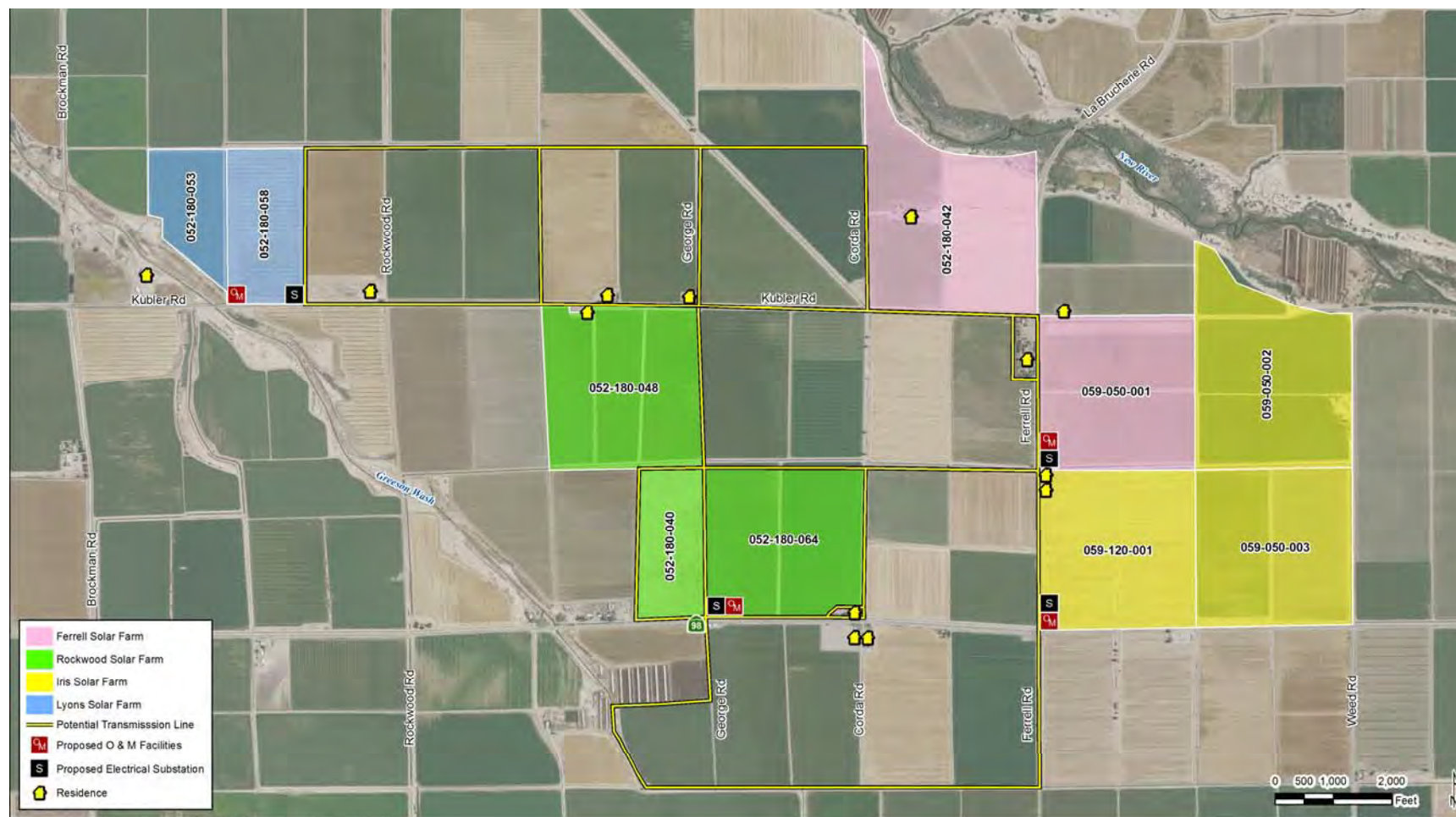
Notes: > = exceed
 ppm = parts per million
 ppb = parts per billion
 µg/m³ = micrograms per cubic meter

Sensitive Receptors

High concentrations of air pollutants pose health hazards for the general population, but particularly for the young, the elderly, and the sick. Typical health problems attributed to smog include respiratory ailments, eye and throat irritations, headaches, coughing, and chest discomfort. Certain land uses are considered to be more sensitive to the effects of air pollution. Schools, hospitals, residences, and other facilities where people congregate, especially children, the elderly and infirm, are considered particularly sensitive to air pollutants. Sensitive residential uses within and adjacent to the project study areas (within approximately 200 feet) are shown on Figure 4.3-1, Residence Locations, and include the following:

- **Ferrell Solar Farm (1 on-site and 2 off-site)** - The Corda residence and farm shop is located within the FSF project site off Corda Road. The Kubler residence, farm shop and yard are located adjacent to the FSF project site (southwest corner of Kubler and Ferrell Roads) and another residence is located on the northeast corner of Kubler and Ferrell Roads.
- **Rockwood Solar Farm (5 off-site)** - One residence is located along the northern boundary of the RSF project site, two residences are located on the north side of Kubler Road (one at the intersection of George and Kubler Roads), and three residences are located at the intersection of Corda Road (two located south of SR-98).

Figure 4.3-1. Residence Locations



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- **Iris Solar Farm (2 on-site)** - Two residences are located within the ISF project site, along Ferrell Road. An old farm worker labor camp is located within the ISF project site along Weed Road, which is now used for a farming equipment staging area. No additional residences border the project site.
- **Lyons Solar Farm. (2 off-site)** - Two residences are located outside of the LSF project site (one at the intersection of Kubler Road and Rockwood Road, and another across the Greeson Wash).

Some of the off site residences identified above are located within the site boundaries of previously approved solar projects including the Mount Signal and Calexico Solar Farm Projects; and the environmental effects on the off site residences have been previously evaluated in the respective EIR(s).

4.3.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to air quality, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.3.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to air quality are considered significant if any of the following occur:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Imperial County Air Pollution Control District

The ICAPCD amended the *Air Quality Handbook: Guidelines for the Implementation of CEQA* in November 2007. The ICAPCD established significance thresholds based on the state CEQA thresholds. The handbook was used to determine the proper level of analysis for the projects. The ICAPCD identifies two tiers of emission thresholds to evaluate whether operational impacts from a project have the potential for a significant air quality impact, and to address whether a project must implement additional feasible mitigation measures to reduce emissions to the extent possible. Table 4.3-5 presents the emission thresholds that are identified by the ICAPCD.

TABLE 4.3-5. ICAPCD SIGNIFICANCE THRESHOLDS FOR OPERATION

Criteria Pollutant	Tier 1	Tier 2
NO _x and ROG	Less than 55 lbs/day	55 lbs/day and greater
PM ₁₀ and SO _x	Less than 150 lbs/day	150 lbs/day and greater
CO	Less than 550 lbs/day	550 lbs/day and greater
Level of Significance	Less than Significant	Significant Impact

Source: ICAPCD 2007.

Projects with emissions below Tier 1 would not have a significant impact to air quality. Projects with emissions above Tier 1 but below Tier 2 would be required to implement all applicable standard mitigation measures. Projects with emissions above Tier 2 would be required to implement all applicable standard mitigation measures, plus all feasible discretionary mitigation measures as listed in the ICAPCD's guidance. These thresholds apply to operational emissions.

For construction projects, the Air Quality Handbook indicates that the significance threshold for NO_x is 100 lbs/day and for ROG is 75 lbs/day. As discussed in the ICAPCD's handbook, the approach to evaluating construction emissions should be qualitative rather than quantitative. In any case, regardless of the size of the project, the standard mitigation measures for construction equipment and fugitive PM₁₀ must be implemented at all construction sites. The implementation of discretionary mitigation measures, as listed in Section 7.1 of the ICAPCD's Air Quality Handbook, apply to those construction sites which are five acres or more for non-residential developments or 10 acres or more in size for residential developments. The mitigation measures found in Section 7.1 of the ICAPCD's handbook are intended as a guide of feasible mitigation measures and are not intended to be an all inclusive comprehensive list of all mitigation measures.

Diesel Toxic Risk Thresholds

There are inherent uncertainties in risk assessment with regard to the identification of compounds as causing cancer or other health effects in humans, the cancer potencies and Reference Exposure Levels (RELs) of compounds, and the exposure that individuals receive. It is common practice to use conservative (health protective) assumptions with respect to uncertain parameters. The uncertainties and conservative assumptions must be considered when evaluating the results of risk assessments.

There is debate as to the appropriate levels of risk assigned to diesel particulates. The U.S. EPA has not yet declared diesel particulates as a toxic air contaminant. Using the CARB threshold, a risk concentration of one in one million (1:1,000,000) per micrograms per cubic meter (µg/m³) of continuous 70-year exposure is considered less than significant.

4.3.2.2 Methodology

The analysis criteria for air quality impacts are based on the approach and methods discussed in the ICAPCD's Air Quality Handbook. The handbook establishes aggregate emission calculations for determining the potential significance of a project. In the event that the emissions exceed the established thresholds, air dispersion modeling may be conducted to assess whether the projects result in an exceedance of an air quality standard.

The criteria used to evaluate air emissions associated with the projects is based primarily on the combustion emissions generated by motor vehicles and area source emissions (paved and unpaved roads, construction projects, open areas, etc.). An air quality technical report was prepared by OB-1 Air Analyses in April 2014 (Appendix D). This report was used in the evaluation of construction and operational air quality impacts.

The air quality impacts are mainly attributable to the construction of the projects, including mobilization; clearing, grading, and trenching; construction of the framework foundations and frameworks; installation of the panels and system wiring; installation of the inverters and transformers; and cabling and connection to the switching station. Operational impacts include inspection and maintenance operations, which includes washing of the solar panels.

4.3.2.3 Impact Analysis

IMPACT 4.3-1 *Conflict with or Obstruct Implementation of the Applicable Air Quality Plan.*
The projects would not obstruct implementation of applicable air quality plans.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The Air Quality Attainment Plan (AQAP) for the SSAB, through the implementation of the AQMP (previously AQAP) and SIP for PM₁₀, sets forth a comprehensive program that will lead the SSAB into compliance with all federal and state air quality standards. The AQMP control measures and related emission reduction estimates are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. Conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans and/or population projections, meeting the land use designation set forth in the local General Plan, and comparing assumed emissions in the AQMP to proposed emissions. The projects must demonstrate compliance with all ICAPCD applicable rules and regulations, as well as local land use plans and population projections.

The projects do not contain a residential component; therefore, the projects would not result in an increase in regional population that exceeds the forecasts in the AQMP. Furthermore, the projects are consistent with future build-out plans for the project study areas under the General Plan as well as with the State's definition of an "eligible renewable energy resource" in Section 399.12 of the California Public Utilities Code and the definition of "in-state renewable electricity generation facility" in Section 25741 of the California Public Resources Code. The projects will not exceed future population forecasts for future AQMPs. As discussed in the Impact 4.3-2 discussion below, with implementation of mitigation and compliance with all ICAPCD applicable rules and regulations, the projects' operational contribution to PM₁₀ would be below a level of significance. The projects would therefore not interfere with the SIP for PM₁₀. A **less than significant** impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT 4.3-2 *Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation.*
The projects would result in a temporary increase of emissions during construction and operation activities.

The following analysis is broken out by a discussion of potential impacts during construction of the projects followed by a discussion of potential impacts during operation of the projects.

Construction

Air emissions are generated during construction through activities such as grading, clearing, hauling, underground utility construction, paving, and building assembly. Diesel exhaust emissions are generated through the use of heavy equipment such as dozers, loaders, scrapers, and vehicles such as dump/haul trucks. During site clearing and grading, PM₁₀ is released as a result of soil disturbance. Construction emissions vary from day-to-day depending on the number of workers, number and types of active heavy-duty vehicles and equipment, level of activity, the prevailing meteorological conditions, and the length over which these activities occur.

Construction activities are proposed to start in mid-2014. Construction for the Iris Cluster is expected to conservatively last 12 months and each separate site would be divided into five potentially overlapping broad phase activities: (1) Grading/Earthwork; (2) Solar Panel Installation; (3) O&M Building Construction; (4) Offsite Transmission Facilities; and (5) Paving. No single project is projected to take the entire 12 months. The proposed phase activity distribution per project is presented in Figure 3.0-10. Please refer to Chapter 3.0, Project Description for a discussion of construction equipment and construction workforce.

Emissions from off-road construction equipment used in construction of the projects were estimated based on the underlying emission and load factors of URBEMIS and CalEEMod computer models. Emissions from vehicular activity related to construction employees and vendors were estimated using CARB's EMFAC2011 Web Based Data Access. Grading fugitive dust was estimated using methodology described in Section 11.9, Western Surface Coal Mining, of the EPA AP-42 and as presented in the CalEEMod User's Guide.

Emissions are presented below for each of the four individual solar projects and the combined Iris Cluster. Since the thresholds for criteria pollutants are in pounds per day, emissions estimated from each activity phase for each project are combined with other activities where they overlap to generate the maximum emissions per day. There is some overlap of activity phases for each separate project, as well as some overlap between projects in the overall scheduling of the entire Iris Cluster. Emissions presented below are considered unregulated, which is to mean hypothetical emissions from construction activity, which does not apply equipment or activity restrictions or controls, even those required by ICAPCD regulations.

FSF

The FSF project is estimated to be completed within six months from project start. Table 4.3-6 presents the daily maximum hypothetical unregulated and regulated emissions for each month of construction for the FSF project, including the construction of transmission facilities (Phase 4). As shown in Table 4.3-6, the FSF project would exceed the PM₁₀ ICAPCD significance threshold if unregulated. Since construction is temporary in nature, these impacts would be short-term impacts and cease after construction is completed. All construction projects within Imperial County must comply with the requirements of ICAPCD Regulation VIII for the control of fugitive dust. In addition, the ICAPCD's Air Quality Handbook lists additional feasible mitigation measures that may be warranted to control emissions of fugitive dust and combustion exhaust. The impact is considered a **significant impact**. Implementation of mitigation measures listed below and compliance with ICAPCD Regulation VIII would reduce impacts to **less than significant**.

RSF

The RSF project is estimated to be completed within seven months from project start. Table 4.3-7 presents the daily maximum hypothetical unregulated and regulated emissions for each month of construction for the RSF project, including the construction of transmission facilities (Phase 4). As shown in Table 4.3-7, the RSF project would exceed the PM₁₀ ICAPCD significance threshold if unregulated. Since construction is temporary in nature, these impacts would be short-term impacts and cease after construction is completed. All construction projects within Imperial County must comply with the requirements of ICAPCD Regulation VIII for the control of fugitive dust. In addition, the ICAPCD's Air Quality Handbook lists additional feasible mitigation measures that may be warranted to control emissions of fugitive dust and combustion exhaust. The impact is considered a **significant impact**. Implementation of mitigation measures listed below and compliance with ICAPCD Regulation VIII would reduce impacts to **less than significant**.

TABLE 4.3-6. ESTIMATED CONSTRUCTION EMISSIONS FOR FSF

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO _x	PM ₁₀	PM _{2.5}
Unregulated Construction Emissions					
1st Month – Phases 1 & 2	6.6	53.6	51.6	197.4	23.7
2nd Month – Phase 2	3.3	30.3	27.3	125.9	14.8
3rd Month – Phases 2 & 3	4.7	37.2	38.9	141.4	16.9
4th Month – Phases 2, 3 & 5	5.3	40.8	43.8	148.0	17.9
5th Month – Phase 2	3.3	30.3	27.3	125.9	14.8
6th Month – Phase 4	1.5	7.3	8.5	12.9	1.9
FSF Maximum Daily	6.6	53.6	51.6	197.4	23.7
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Regulated and Mitigated Construction Emissions					
1st Month – Phases 1 & 2	2.8	53.6	40.5	86.2	10.8
2nd Month – Phase 2	1.6	30.3	22.3	54.6	6.7
3rd Month – Phases 2 & 3	2.1	37.2	30.4	61.3	7.6
4th Month – Phases 2, 3 & 5	2.3	40.8	34.2	64.2	8.1
5th Month – Phase 2	1.6	30.3	22.3	54.6	6.7
6th Month – Phase 4	0.9	7.3	6.9	5.7	1.0
FSF Maximum Daily	2.8	53.6	40.5	86.2	10.8
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: OB-1 Air Analyses 2014.

TABLE 4.3-7. ESTIMATED CONSTRUCTION EMISSIONS FOR RSF

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO _x	PM ₁₀	PM _{2.5}
Unregulated Construction Emissions					
1st Month – Phase 1	3.4	24.5	24.4	78.2	9.7
2nd Month – Phases 2 & 3	4.8	39.7	39.2	156.6	18.6
3rd Month – Phases 2 & 3	4.8	39.7	39.2	156.6	18.6
4th Month – Phases 2 & 5	4.0	36.3	32.6	146.7	17.3
5th Month – Phase 2	3.4	32.6	27.6	139.5	16.2
6th Month – Phase 2	3.4	32.6	27.6	139.5	16.2
7th Month – Phase 4	1.5	7.5	8.6	14.3	2.1
RSF Maximum Daily	4.8	39.7	39.2	156.6	18.6
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Regulated and Mitigated Construction Emissions					
1st Month – Phase 1	1.3	24.5	18.4	34.8	4.5
2nd Month – Phases 2 & 3	2.2	39.7	30.7	67.9	8.4
3rd Month – Phases 2 & 3	2.2	39.7	30.7	67.9	8.4
4th Month – Phases 2 & 5	1.9	36.3	26.4	63.6	7.8
5th Month – Phase 2	1.7	32.6	22.6	60.4	7.3
6th Month – Phase 2	1.7	32.6	22.6	60.4	7.3
7th Month – Phase 4	0.9	7.5	6.9	6.3	1.1
RSF Maximum Daily	2.2	39.7	30.7	67.9	8.4
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: OB-1 Air Analyses 2014.

ISF

The ISF project is estimated to be completed within seven months from project start. Table 4.3-8 presents the daily maximum hypothetical unregulated and regulated emissions for each month of construction for the ISF project, including the construction of transmission facilities (Phase 4). As shown in Table 4.3-8, the ISF project would exceed the PM₁₀ ICAPCD significance threshold if unregulated. Since construction is temporary in nature, these impacts would be short-term impacts and cease after construction is completed. All construction projects within Imperial County must comply with the requirements of ICAPCD Regulation VIII for the control of fugitive dust. In addition, the ICAPCD's Air Quality Handbook lists additional feasible mitigation measures that may be warranted to control emissions of fugitive dust and combustion exhaust. The impact is considered a **significant impact**. Implementation of mitigation measures listed below and compliance with ICAPCD Regulation VIII would reduce impacts to **less than significant**.

TABLE 4.3-8. ESTIMATED CONSTRUCTION EMISSIONS FOR ISF

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO _x	PM ₁₀	PM _{2.5}
Unregulated Construction Emissions					
1st Month – Phase 1	3.5	28.3	24.9	100.8	12.1
2nd Month – Phase 2	3.7	39.4	28.5	180.3	20.7
3rd Month – Phase 2	3.7	39.4	28.5	180.3	20.7
4th Month – Phase 2	3.7	39.4	28.5	180.3	20.7
5th Month – Phases 2, 3 & 5	5.7	51.3	45.2	211.6	24.8
6th Month – Phases 2 & 3	5.1	47.3	40.2	202.3	23.5
7th Month – Phases 2 & 4	5.2	47.6	37.1	198.7	23.2
ISF Maximum Daily	5.7	51.3	45.2	211.6	24.8
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Regulated and Mitigated Construction Emissions					
1st Month – Phase 1	1.4	28.3	18.9	44.7	5.6
2nd Month – Phase 2	2.0	39.4	23.5	78.14	9.2
3rd Month – Phase 2	2.0	39.4	23.5	78.1	9.2
4th Month – Phase 2	2.0	39.4	23.5	78.1	9.2
5th Month – Phases 2, 3 & 5	2.7	51.3	35.6	91.7	11.1
6th Month – Phases 2 & 3	2.5	47.3	31.7	87.6	10.5
7th Month – Phases 2 & 4	2.9	47.6	30.5	86.2	10.5
ISF Maximum Daily	2.9	51.3	35.6	91.7	11.1
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: OB-1 Air Analyses 2014.

LSF

The LSF project is estimated to be completed within five months from project start. Table 4.3-9 presents the daily maximum hypothetical unregulated and regulated emissions for each month of construction for the LSF project, including the construction of transmission facilities (Phase 4). As shown in Table 4.3-9, the LSF project would not exceed the ICAPCD significance threshold for any criteria pollutant. Although the LSF project would not result in a significant impact, the LSF project must still comply with the requirements of ICAPCD Regulation VIII for the control of fugitive dust. In addition, the ICAPCD's Air Quality Handbook lists additional feasible mitigation measures that may be warranted to control emissions of fugitive dust and combustion exhaust. A **less than significant** impact is identified.

TABLE 4.3-9. ESTIMATED CONSTRUCTION EMISSIONS FOR LSF

Month/Activity	Criteria Emissions (lbs/day)				
	ROG	CO	NO _x	PM ₁₀	PM _{2.5}
Unregulated Construction Emissions					
1st Month – Phases 1, 2 & 3	7.2	41.4	60.7	97.5	13.3
2nd Month – Phases 2 & 3	4.2	24.4	37.2	64.7	8.6
3rd Month – Phases 2 & 5	3.4	21.9	30.8	60.3	7.9
4th Month – Phase 2	2.8	18.9	25.9	57.2	7.3
5th Month – Phase 4	1.4	6.1	8.4	6.0	1.2
LSF Maximum Daily	7.2	41.4	60.7	97.5	13.3
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	
Regulated and Mitigated Construction Emissions					
1st Month – Phases 1, 2 & 3	2.5	41.4	46.2	43.1	6.3
2nd Month – Phases 2 & 3	1.5	34.4	28.8	28.2	4.0
3rd Month – Phases 2 & 5	1.3	21.9	24.6	26.4	3.7
4th Month – Phase 2	1.1	18.9	20.8	24.9	3.4
5th Month – Phase 4	0.8	6.1	6.8	2.8	0.7
LSF Maximum Daily	2.5	41.4	46.2	43.1	6.3
ICAPCD Thresholds	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: OB-1 Air Analyses 2014.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Table 4.3-10 shows the hypothetical unregulated combined emissions from the construction of all four solar projects, including the construction of transmission facilities within a 12-month period using the Phase Activity Distributions. A staggering of phase activity can distribute the air quality emissions from the entire Iris Cluster, reducing potential impacts locally and regionally. As shown in Table 4.3-10, the unregulated emissions from the construction of the entire Iris Cluster within a 12 month period would exceed the ICAPCD significance thresholds for PM₁₀ and NO_x. Since construction is temporary in nature, these impacts would be short-term impacts and cease after construction is completed. All construction projects within Imperial County must comply with the requirements of ICAPCD Regulation VIII for the control of fugitive dust. In addition, the ICAPCD's Air Quality Handbook lists additional feasible mitigation measures that may be warranted to control emissions of fugitive dust and combustion exhaust. The impact is considered a **significant impact**. However, as shown in Table 4.3-11, with implementation of mitigation measures and compliance with ICAPCD Regulation VIII, PM₁₀ and NO_x emissions would not exceed ICAPCD's significance thresholds.

Implementation of mitigation measures listed below and compliance with ICAPCD Regulation VIII would reduce impacts to **less than significant**.

TABLE 4.3-10. UNREGULATED CRITERIA TEMPORAL SUMMARY FOR THE IRIS CLUSTER

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO _x	PM ₁₀	PM _{2.5}
1	FSF	6.63	53.62	51.60	197.38	23.69
	LSF	7.24	41.40	60.72	97.87	13.33
	Month 1 Totals	13.9	95.0	112.3	295.2	37.0
2	FSF	3.31	30.33	27.32	125.86	14.76
	LSF	4.17	24.42	31.25	64.73	8.57
	Month 2 Totals	7.5	54.8	64.6	190.6	23.3
3	FSF	4.7	37.19	38.88	141.44	16.91
	LSF	3.43	21.90	30.76	60.32	7.88
	Month 3 Totals	8.1	59.1	69.6	201.8	24.8
4	RSF	3.37	24.53	24.43	78.94	9.74
	FSF	5.31	40.76	43.84	148.01	17.87
	LSF	2.84	18.90	25.87	57.18	7.30
	Month 4 Totals	11.5	84.2	94.1	284.1	34.9
5	RSF	4.80	39.72	39.20	156.65	18.56
	FSF	3.31	30.33	27.32	125.86	14.76
	LSF	1.44	6.12	8.40	6.04	1.17
	Month 5 Totals	9.6	76.2	74.9	288.6	34.5
6	ISF	3.53	28.28	24.91	101.66	12.21
	RSF	4.80	39.72	39.20	156.65	18.56
	FSF	1.49	7.27	8.55	12.92	1.92
	Month 6 Totals	9.8	75.3	72.7	271.2	32.7
7	ISF	3.69	39.40	28.48	180.34	20.69
	RSF	4.02	36.28	32.60	146.74	17.27
	Month 7 Totals	7.7	75.7	61.1	327.1	38.0
8	ISF	3.69	39.40	28.48	180.34	20.69
	RSF	3.41	32.60	27.61	139.48	16.24
	Month 8 Totals	7.1	72.0	56.1	319.8	36.9
9	ISF	3.69	39.40	28.48	180.34	20.69
	RSF	3.41	32.60	27.61	139.48	16.24
	Month 9 Totals	7.1	72.0	56.1	319.8	36.9
10	ISF	5.74	51.34	45.19	211.58	24.78
	RSF	1.50	7.49	8.58	14.29	2.06
	Month 10 Totals	7.2	58.8	53.8	225.9	26.8
11	ISF	5.12	47.32	40.17	202.28	23.53
	Month 11 Totals	5.1	47.3	40.2	202.3	23.5
12	ISF	5.22	47.58	34.14	198.71	23.19
	Month 12 Totals	5.2	47.6	37.1	198.7	23.2
Iris Cluster Maximum Daily		13.9	95.0	112.3	327.1	38.0
ICAPCD Threshold		75	550	100	150	N/A
Exceed Thresholds?		No	No	Yes	Yes	

Source: OB-1 Air Analyses 2014.

TABLE 4.3-11. REGULATED AND MITIGATED CRITERIA TEMPORAL SUMMARY FOR THE IRIS CLUSTER

Month #	Solar Farm	Criteria Emissions (lbs/day)				
		ROG	CO	NO _x	PM ₁₀	PM _{2.5}
1	FSF	2.85	53.62	40.54	86.24	10.62
	LSF	3.45	41.40	49.66	47.30	6.99
	Month 1 Totals	6.3	95.0	90.2	133.5	17.8
2	FSF	1.61	30.33	22.31	54.57	6.66
	LSF	2.47	24.42	32.23	32.49	4.69
	Month 2 Totals	4.1	54.8	54.5	87.1	11.4
3	FSF	2.06	37.19	30.41	61.34	7.64
	LSF	1.33	21.90	24.57	26.36	3.73
	Month 3 Totals	3.4	59.1	55.0	87.7	11.4
4	RSF	1.29	24.53	18.39	34.83	4.50
	FSF	2.27	40.76	34.20	64.24	8.12
	LSF	1.14	18.90	20.85	24.94	3.41
	Month 4 Totals	4.7	84.2	73.4	124.0	16.0
5	RSF	2.16	39.72	30.74	67.90	8.36
	FSF	1.61	30.33	22.31	54.57	6.66
	LSF	0.83	6.12	6.77	2.77	0.67
	Month 5 Totals	4.6	76.2	59.8	125.2	15.7
6	ISF	1.44	28.28	18.87	44.75	5.59
	RSF	0.45	7.12	8.14	7.46	1.05
	FSF	0.88	7.27	6.92	5.74	0.99
	Month 6 Totals	2.8	42.7	33.9	57.9	7.6
7	ISF	1.99	39.40	23.46	78.06	9.24
	RSF	1.92	36.28	26.40	63.64	7.82
	Month 7 Totals	3.9	75.7	49.9	141.7	17.1
8	ISF	1.99	39.40	23.46	78.06	9.24
	RSF	1.71	32.60	22.60	60.44	7.31
	Month 8 Totals	3.7	72.0	46.1	138.5	16.5
9	ISF	1.99	39.40	23.46	78.06	9.24
	RSF	1.71	32.60	22.60	60.44	7.31
	Month 9 Totals	3.7	72.0	46.1	138.5	16.5
10	ISF	2.70	51.34	35.55	91.66	11.13
	RSF	0.89	7.49	6.95	6.33	1.06
	Month 10 Totals	3.6	58.8	42.5	98.0	12.2
11	ISF	2.47	47.32	31.71	87.58	10.52
	Month 11 Totals	2.5	47.3	31.7	87.6	10.6
12	ISF	2.90	47.58	30.50	86.16	10.49
	Month 12 Totals	2.9	47.6	30.5	86.2	10.5
Iris Cluster Maximum Daily		6.3	95.0	90.2	141.7	17.8
ICAPCD Threshold		75	550	100	150	N/A
Exceed Thresholds?		No	No	No	No	

Source: OB-1 Air Analyses 2014.

Operation

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Operational emissions would include inspection and maintenance activities. The projects would be staffed with 24 full-time employees (6 for each project site) to maintain the project facilities seven days a week during normal daylight hours. Typically, up to 12 staff would work during the day shift (sunrise to

sunset), and the remainder during the night shifts and weekend. To ensure optimal PV (or CPV) output, the solar panels would be maintained 24 hours a day/7 days a week. Each of the individual site components would be staffed by up to four employees during the day. Equipment and supply deliveries would typically occur during the week and, on average, could entail up to two daily truck trips. The entire Iris Cluster would require 40 vehicle trips per day during operations (distributed between the four sites). Emissions would include travel on unpaved roads for solar panel washing and maintenance, as well as commuting emissions from workers. Emissions were calculated in the same manner as for construction emissions for vehicles and fugitive dust. Table 4.3-12 summarizes each project site's total project-related annual operational air emissions. As shown in Table 4.3-12, operational emissions would be below ICAPCD's Tier 1 Regional thresholds for operational emissions. Furthermore, the project applicant is required to submit a Dust Suppression Management Plan for both construction and operations to reduce fugitive dust emissions. The impact is considered **less than significant**.

TABLE 4.3-12. ESTIMATED OPERATIONAL CRITERIA EMISSIONS – IRIS CLUSTER

Solar Farm	Activity Type	Criteria Emissions (lbs/day)				
		ROG	CO	NO _x	PM ₁₀	PM _{2.5}
FSF	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.059	1.936	0.256	0.031	0.013
	FSF Total	0.06	2.10	0.28	0.03	0.01
RSF	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.064	2.108	0.278	0.034	0.014
	RSF Total	0.07	2.27	0.30	0.04	0.02
ISF	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.080	2.626	0.347	0.043	0.018
	ISF Total	0.08	2.79	0.37	0.05	0.02
LSF	Onsite Activity	0.005	0.163	0.022	0.003	0.001
	Offsite Activity	0.033	1.072	0.142	0.017	0.007
	LSF Total	0.04	1.24	0.16	0.02	0.01
Maximum Daily for Iris Cluster		0.3	8.4	1.1	0.1	0.1
ICAPCD Regional Thresholds		55	550	55	150	N/A
Exceed Thresholds?		No	No	No	No	

Source: OB-1 Air Analyses 2014.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF and LSF, and transmission line. Records sufficient to document compliance with mitigation measures shall be maintained on site at all times and available for ICAPCD inspection.

Fugitive Dust

4.3-2a Construction Equipment. Construction equipment shall be equipped with an engine designation of EPA Tier 2 or better (Tier 2+). A list of the construction equipment, including all off-road equipment utilized at each of the projects by make, model, year, horsepower and expected/actual hours of use, and the associated EPA Tier shall be submitted to the County Planning and Development Services Department and ICAPCD prior to the issuance of a grading permit. The ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The Planning and Development Services Department and ICAPCD shall verify implementation of this measure.

4.3-2b Fugitive Dust Control. Pursuant to ICAPCD, all construction sites, regardless of size, must comply with the requirements contained within Regulation VIII-Fugitive Dust Control Measures. Whereas these Regulation VIII measures are mandatory and are not considered project environmental mitigation measures, the ICAPCD CEQA Handbook's required

~~additional standard and enhanced~~ These mitigation measures listed below shall be implemented prior to and during construction. The County Department of Public Works will verify implementation and compliance with these measures as part of the grading permit review/approval process.

ICAPCD Standard Measures for Fugitive Dust (PM₁₀) Control

- All disturbed areas, including bulk material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.
- All on-site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
- All unpaved traffic areas one acre or more with 75 or more average vehicle trips per day shall be effectively stabilized and visible emission shall be limited to no greater than 20% opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.
- The transport of bulk materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of bulk material. In addition, the cargo compartment of all haul trucks shall be cleaned and/or washed at delivery site after removal of bulk material.
- All Track-Out or Carry-Out shall be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.
- Movement of bulk material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.
- The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a temporary unpaved road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

~~ICAPCD Standard Measures for Construction Combustion Equipment~~

- ~~• Use alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.~~
- ~~• Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.~~
- ~~• Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.~~
- ~~• Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).~~
- ~~• Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines.~~
- ~~• Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology.~~
- ~~• Keep vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same.~~

ICAPCD “Discretionary” Measures for Fugitive Dust (PM₁₀) Control

- Water exposed soil with adequate frequency for continued moist soil, including a minimum of three wettings per day during grading activities.
- Replace ground cover in disturbed areas as quickly as possible.
- Install automatic sprinkler system on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- Implement the trip reduction plan to achieve a 1.5 average vehicle ridership (AVR) for construction employees.
- Implement a shuttle service to and from retail services and food establishments during lunch hours.

Standard Mitigation Measures for Construction Combustion Equipment

- Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
- Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.
- Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

To help provide a greater degree of reduction of PM emissions from construction combustion equipment the ICAPCD recommends the following enhanced measures.

Enhanced Mitigation Measures for Construction Equipment

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak hour of vehicular traffic on adjacent roadways.
- Implement activity management (e.g., rescheduling activities to reduce short-term impacts).

~~Implementation of the above-listed fugitive dust control measures was assumed to control PM₁₀ emissions by 85%.~~

~~**4.3-2c Vehicular Emissions.** Pursuant to ICAPCD Policy Number 5, prior to construction activities, the project applicant shall pay an in-lieu impact fee as determined by ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM₁₀ and NO_x emissions. The applicable fee in Policy Number 5 is derived from utilizing the last three year Carl Moyer grant program average cost effectiveness for Imperial County multiplied by the amount of tons needed to be offset. Detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction.~~

4.3-2d Dust Suppression. The project applicant shall employ a method of dust suppression (such as water or chemical stabilization) approved by ICAPCD. The project applicant shall apply chemical stabilization as directed by the product manufacturer to control dust between the panels as approved by ICAPCD, and other non-used areas (exceptions will be the paved entrance and parking area, operations and maintenance building, and Fire Department access/emergency entry/exit points as approved by Fire/OES Department).

4.3-2e Dust Suppression Management Plan. ~~Prior to the issuance of building permits, Prior to any earthmoving activity, the project applicant shall submit and obtain approval from for the ICAPCD and Imperial County Planning and Development Services Department (ICPDSD) a construction Dust Control Plan. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from the ICAPCD and ICPDSD an Operations Dust Control Plan.~~

ICAPCD Rule 310 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed projects, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the proposed projects. review and approval an operational "Dust Suppression Management Plan" for both construction and operations. The project applicant shall pay an "Operational Fee" to the ICAPCD for the square footage of the operations and maintenance building and substation as determined applicable by the ICAPCD pursuant to Rule 310.

Significance After Mitigation

Mitigation Measure 4.3-2a would reduce ROG, NO_x, and CO emissions to a less than significant level. With implementation of fugitive dust control measures (Mitigation Measure 4.3-2b), emissions of PM₁₀ would be below the ICAPCD's significance threshold during all construction phases for each individual project and for the Iris Cluster. Emissions of NO_x would exceed the ICAPCD's significance threshold for construction of the Iris Cluster. However, implementation of Mitigation Measure 4.3-2c, which requires the payment of an in-lieu impact fee would reduce this impact to a less than significant level. As stated, detailed emission calculations shall be provided to the ICAPCD upon selection of the construction contractor, such that an accurate estimate of fees to be paid can be made prior to commencement of construction. Implementation of Mitigation Measures 4.3-2d and 4.3-2e would ensure that fugitive dust emissions would be reduced during operations. Therefore, with mitigation all air quality impacts during construction would be reduced to **less than significant**.

IMPACT 4.3-3 *Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment.*

The projects would result in a temporary increase of PM₁₀, CO, ROG, and NO_x (ozone precursors) during construction activities.

The following analysis is broken out by a discussion of potential impacts during construction of the projects followed by a discussion of potential impacts during operation of the projects.

Construction

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Imperial County is classified as a "serious" non-attainment area for PM₁₀ and a "moderate" non-attainment area for 8-hour ozone for the NAAQS and non-attainment for PM_{2.5} for the urban areas of Imperial County. As identified above in Impact 4.3-1, the projects would result in a significant increase in CO, ROG, and NO_x (ozone precursors). The projects' emissions of ozone precursors and particulate matter are mainly attributable to temporary construction activities. These activities would cease after approximately three years, and would therefore result in a temporary **cumulative impact**. Implementation of Mitigation Measures 4.3-2a through 4.3-2c would reduce the emissions to a level **less than significant**.

Operation

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The operational impacts associated with the projects were less than significant. However, the proposed projects, in conjunction with cumulative projects, could result in a cumulatively considerable impact

related to PM₁₀ before implementation of mitigation. With mitigation, a **less than significant** impact is identified. Please refer to Section 6.0 Cumulative Impacts.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Expose Sensitive Receptors to Substantial Pollutant Concentrations?*

4.3-4 *The projects would result in a temporary increase of PM₁₀, CO, ROG, and NO_x during construction activities, in addition to diesel particulate matter.*

Iris Cluster (FSF, RSF, ISF, and LSF)

As shown in Figure 4.3-1, there are residential uses within and adjacent to the project study areas (within approximately 200 feet) some of which have been included in prior environmental analyses for previously approved solar projects in the vicinity of the project study areas. Construction activities would result in emissions of diesel particulate matter from heavy construction equipment used on site and truck traffic to and from the site, as well as minor amounts of TAC emissions from motor vehicles (such as benzene, 1,3-butadiene, toluene, and xylenes). Health effects attributable to exposure to diesel particulate matter are long-term effects based on chronic (i.e., long-term) exposure to emissions. Health effects are generally evaluated based on a lifetime (70 years) of exposure. Due to the short-term nature of construction at the site, no adverse health effects would be anticipated from short-term diesel particulate emissions. In addition, motor vehicle emissions would not be concentrated in any one area but would be dispersed along travel routes and would not be anticipated to pose a significant health risk to receptors. Heavy construction would not occur immediately adjacent to any residence. The hours of construction will occur during the day when most people are at work. A **less than significant** impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Create Objectionable Odors Affecting a Substantial Number of People.*

4.3-5 *The projects would not result in objectionable odors during construction and operation.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

An odor impact depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies.

Among physical harms that are possible are inhalation of volatile organic compounds (VOCs) that cause smell sensations in humans. These odors can affect human health in four primary ways:

- The VOCs can produce toxicological effects;
- The odorant compounds can cause irritations in the eye, nose, and throat;
- The VOCs can stimulate sensory nerves that can cause potentially harmful health effects; and
- The exposure to perceived unpleasant odors can stimulate negative cognitive and emotional responses based on previous experiences with such odors.

Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, and concentrated agricultural feeding operations and dairies. The

construction and operation of a solar farm is not an odor producer and the project sites are not located near an odor producer.

No major sources of odors were identified in the vicinity of the project sites that could potentially affect proposed on-site land uses. Development of the projects could generate trace amounts (less than $1 \mu\text{g}/\text{m}^3$) of substances such as ammonia, carbon dioxide, hydrogen sulfide, methane, dust, organic dust, and endotoxins (i.e., bacteria are present in the dust). Additionally, proposed on-site uses could generate such substances as volatile organic acids, alcohols, aldehydes, amines, fixed gases, carbonyls, esters, sulfides, disulfides, mercaptans, and nitrogen heterocycles. Any odor generation would be intermittent and would terminate upon completion of the construction activities. It is unlikely that heavy construction that could result in the emission of objectionable odors will occur immediately adjacent to any residence. A **less than significant** impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

4.3.3 Decommissioning/ Restoration and Residual Impacts

Decommissioning/Restoration

Similar to construction activities, decommissioning and restoration of the project sites would result in certain criteria air emissions above allowable thresholds. A summary of the daily construction emissions for each of the projects is provided in Tables 4.3-5 through 4.3-9. A similar scenario would be expected to occur during the decommissioning and site restoration stage for each of the projects. Air quality emissions would be similar to or less than the emissions presented for construction. The mitigation measures stated below would apply to the decommissioning stage of the projects as well and would reduce impacts to below a level of significance.

Mitigation Measures 4.3a through 4.3-2c would reduce these impacts to a level **less than significant**.

Residual

The projects will result in short-term significant air quality impacts during construction. Implementation of Mitigation Measures 4.3-2a through 4.3-2c would reduce ROG, NO_x , PM_{10} , and CO emissions to a less than significant level. Operation of the projects, subject to the approval of a CUP, would be consistent with applicable federal, state, regional, and local plans and policies. Implementation of Mitigation Measures 4.3-2d and 4.3-2e would ensure that fugitive dust emissions would be reduced during operations. The projects would not result in any residual operational significant and unavoidable impacts with regards to air quality.

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4.4 BIOLOGICAL RESOURCES

This section discusses biological resources that may be impacted by the proposed projects. The following identifies the existing biological resources in the project area, analyzes potential impacts due to the implementation of the proposed projects, and recommends mitigation measures to avoid or reduce potential impacts of the proposed projects. Information for this section is summarized from the *Biological Resources Evaluation Technical Report for Iris Cluster Solar Farm* prepared by Barrett's Biological Surveys. The report is included in Appendix E of this EIR.

4.4.1 Environmental Setting

The Biological Technical Report (BTR) integrates information collected from a variety of literature sources and field surveys to describe the biological resources within the vicinity of the project sites. General biological surveys and focused burrowing owl surveys were conducted between April 2013 and July 2013. These surveys were conducted to map vegetation communities, inventory species present at the time of the survey, and assess the presence or potential for occurrence of sensitive and priority plant and animal species within the project area.

4.4.1.1 Regulatory Setting

Federal

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits anyone without a permit to “take” bald or golden eagles. ‘Take’ is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” ‘Disturb’ is defined as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS 2011).

Federal Endangered Species Act

Enacted in 1973, the federal Endangered Species Act (ESA) provides for the conservation of threatened and endangered species and their ecosystems. The ESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from the U.S. Fish and Wildlife Service (USFWS) through a permit under Section 4(d), 7 or 10(a) of the Act. Under the ESA, “take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Migratory Bird Treaty Act

Congress passed the Migratory Bird Treaty Act (MBTA) in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the U.S. and Great Britain, the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia.

Section 404 Permit (Clean Water Act)

The Clean Water Act (CWA) establishes a program to regulate the discharge of dredge and fill material into waters of the U.S. including wetlands. Activities regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. Either an individual 404b permit or authorization to use an existing U.S. Army Corps of Engineers (USACE)

Nationwide Permit will need to be obtained if any portion of the construction requires fill into a river, stream, or stream bed that has been determined to be a jurisdictional waterway. When applying for a permit a company or organization must show that they would avoid wetlands when practicable, minimize wetland impacts, and provide compensation for any unavoidable destruction of wetlands.

State

California Environmental Quality Act

Title 14 California Code of Regulations (CCR) 15380 requires that endangered, rare or threatened species or subspecies of animals or plants be identified within the influence of the project. If any such species are found, appropriate measures should be identified to avoid, minimize or mitigate to the extent possible the effects of the project.

California Department of Fish and Wildlife Code 1600 (as amended)

The California Department of Fish and Wildlife (CDFW) regulates activities that substantially diverts or obstructs the natural flow of any river, stream, or lake or uses materials from a streambed. This can include riparian habitat associated with watercourses.

California Department of Fish and Game Code Codes 3503, 3503.5, and 3513

CDFW Codes 3503, 3503.5, and 3513 protect migratory birds, bird nests and eggs including raptors (birds of prey) and raptor nests from take unless authorized by CDFW. Additionally, the State further protects certain species of fish, mammals, amphibians and reptiles, birds and mammals through CDFW's Fully Protected Animals which prohibits any take or possession of classified species. No licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Most Fully Protected Species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations (CDFW 2011).

California Fish and Game Code Sections 1900-1913 – Native Plant Protection Act

The Native Plant Protection Act (NPPA) prohibits the taking, possessing, or sale within the state of any plant listed by CDFW as rare, threatened, or endangered. An exception to this prohibition in the Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFW at least 10 days prior to the initiation of activities that would destroy them. The NPPA exempts from “take” prohibition “the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way.”

Porter-Cologne Water Quality Control Act, as Amended

Administered by the State Water Resource Control Board (SWRCB), protects water quality and is an avenue to implement California responsibilities under the CWA. This act regulates discharge of waste into a water resource.

Local

Imperial County General Plan

The 1993 Conservation Element and Open Space Element provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space. The purpose of the Conservation and Open Space Element is to promote the protection, maintenance, and use of the County's natural resources with particular emphasis on scarce resources, and to prevent wasteful exploitation, destruction, and neglect of the State's natural resources. Additionally, the purpose of this Element is to recognize that natural resources must be

maintained for their ecological value for the direct benefit to the public, protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety. It should be noted that Imperial County has received funding from the California Energy Commission (CEC) Renewable Energy and Conservation Planning Grant to amend and update the County's General Plan in order to facilitate future development of renewable energy projects. The CEC grant includes an update to the 1993 Conservation/Open Space Element to facilitate future development of renewable energy projects. The update of the 1993 Conservation/Open Space Element will assist in identifying areas that will conserve habitat areas on federal, state, military, tribal and private lands in the County. Table 4.4-1 analyzes the consistency of the projects with specific policies contained in the Imperial County General Plan (Imperial County, as amended through 2008) associated with biological resources.

TABLE 4.4-1. PROJECT CONSISTENCY WITH GENERAL PLAN BIOLOGICAL RESOURCE POLICIES

General Plan Policies	Consistency with General Plan	Analysis
<p>Open Space Conservation Policy: The County shall participate in conducting detailed investigations into the significance, location, extent, and condition of natural resources in the County.</p> <p>Program: Notify any agency responsible for protecting plant and wildlife before approving a project which would impact a rare, sensitive, or unique plant or wildlife habitat.</p>	Yes	<p>Biological assessments and reports have been conducted at the project study areas in regard to the proposed projects.</p> <p>Applicable agencies responsible for protecting plants and wildlife will be notified of the proposed projects and provided an opportunity to comment on this EIR prior to the County's consideration of any approvals for the projects.</p>
<p>Land Use Element Policy: The General Plan covers the unincorporated area of the County and is not site specific, however, a majority of the privately owned land is located in the area identified by the General Plan as "Agriculture," which is also the predominate area where burrowing owls create habitats, typically in the brims and banks of agricultural fields.</p> <p>Program: Prior to approval of development of existing agricultural land either in form of one parcel or a numerous adjoining parcels equally a size of 10 acres or more shall prepare a Biological survey and mitigate the potential impacts. The survey must be prepared in accordance with the United States Fish and Wildlife and California Department of Fish and Game regulations, or as amended.</p>	Yes	<p>See response to the Open Space Conservation Policy above.</p> <p>Additionally, Burrowing Owl Focused Surveys have been conducted in accordance with the wildlife agency protocols. The results and mitigation are provided in this section of this EIR.</p>

4.4.1.2 Existing Conditions

4.4.1.2.1 Vegetation Communities

Vegetation has been divided into communities that are groups of plants that usually coexist within the same area. A complete list of plant species observed in the project sites can be found in the BTR (Appendix E). One vegetation community, agricultural lands/rights of ways, was mapped within the survey area. Table 4.4-2 depicts the vegetation communities within the project area broken down for each project site.

TABLE 4.4-2. VEGETATION COMMUNITIES/LAND COVER TYPES WITHIN THE PROJECT STUDY AREAS

Vegetation Community/ Land Cover Type	FSF (acres)	RSF (acres)	ISF (acres)	LSF (acres)
Agricultural Lands/Right of ways	367.4364.27	396.2	520.8501.88	138.4

Source: Barrett's Biological Surveys 2013.

Notes: FSF = Ferrell Solar Farm
RSF = Rockwood Solar Farm
ISF = Iris Solar Farm
LSF = Lyons Solar Farm

Agriculture

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects are located entirely on active agricultural fields. The project sites are currently subject to agricultural operational activities, with crops including Bermuda, alfalfa, sweet corn, melons, wheat, and Sudan. No rare or special species plants were observed or expected in the agricultural areas.

Some sparse vegetation was found on site that would be considered ruderal vegetation (listed with scientific names in Appendix C of the BTR). The term "ruderal" refers to the type of vegetation which grows in response to human disturbance. In addition, the Imperial Irrigation District (IID) owns the canals, drains, and roads surrounding the agricultural fields. The IID facilities are also classified as disturbed/developed land of ruderal vegetation.

The proposed projects would include development of solar facilities adjacent to productive agricultural lands. A majority of the currently vacant agricultural lands surrounding the project study areas have been approved for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. Vegetation communities within the Transmission Line are limited to agriculture and disturbed/developed land.

4.4.1.2.2 Wildlife

The wildlife species observed during the surveys were typical of the agricultural habitats, which provide cover, foraging, and breeding habitat for a variety of native wildlife species. A complete list of all wildlife species observed on the FSF, RSF, ISF, LSF, and Transmission Line is included in the BTR (Appendix E). The observed species are summarized below:

Invertebrates

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

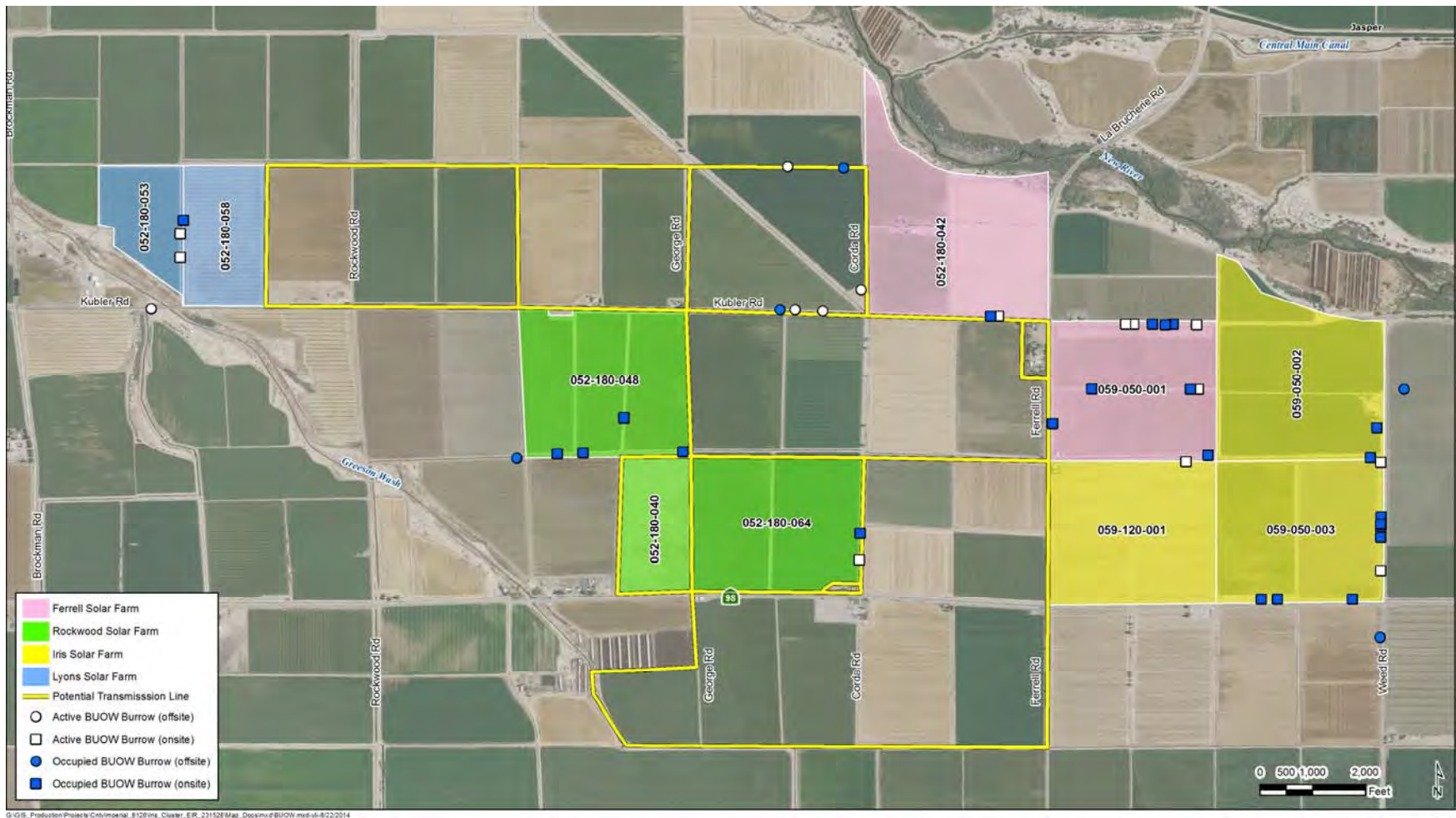
The project area contains suitable habitat for a wide variety of invertebrates. alfalfa butterfly (*Colias eurytheme*), assassin bug (*Reduviidae*), house fly (*Musca domestica*), ladybug (*Hippodamia spp.*), mosquito (*Culiseta longiareolata*) were observed on site.

Amphibians

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Most amphibians require moisture for at least a portion of their life cycle, with many requiring a permanent water source for habitat and reproduction. Terrestrial amphibians have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry season. Reliable moisture is a requirement for a portion of amphibian life cycle. The agricultural production cycle does not meet this requirement. The constant cultivating and harvesting of crops does not promote a habitat favorable to amphibians. No amphibians were observed on site. Due to the lack of available water, none would be expected. A bullfrog (*Rana catesbeiana*) was observed within the irrigation channels near the LSF.

Figure 4.4-1. Existing Biological Resources – Iris Cluster



Reptiles

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Reptiles utilize habitat dependent upon their dietary requirements. Some species' diet includes vegetation while others consume insects. All require vegetation for shelter. Reptiles could be expected in ruderal vegetation surrounding the project areas. A collared lizard (*Crotaphytus collaris*) was observed within LSF.

Birds

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Observed bird species include cattle egret (*Bubulcus ibis ibis*), killdeer (*Charadrius vociferous vociferous*), grackle (*Quiscalus mexicanus*), and red-winged blackbird (*Agelaius phoeniceus*). These species occurred as scattered individuals as well as flocks foraging in the agricultural fields.

Tree nesting raptors such as red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius sparverius*) were infrequently observed flying over or foraging over the agricultural fields. Burrowing owl (*Athene cunicularia hypugaea*) and their associated burrows were observed at numerous locations in the survey area. The burrows are often found in earthen berms adjacent to the smaller irrigation channels and ditches. The burrowing owl is a California species of special concern (see Section 4.4.1.2.4 below).

Mammals

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The constant cultivating and harvesting of crops does not promote a habitat favorable to mammals within agricultural fields. The following mammals are expected to occur around the peripheral areas of agricultural fields such as soil berms and other topographic features: cottontail (*Sylvilagus audubonii*), feral dogs and cats. Signs such as tracks, scat and direct observation were found during surveys.

4.4.1.2.3 Sensitive Plant Species

Special Status Plant Species

Sensitive plant species are determined by their rarity, endangerment and limited distribution. There are three listing authorities for sensitive plants in California: the CNPS, a private organization; CDFW; and the USFWS. Appendix A of the attached BTR (Appendix E of this EIR) lists all species found in the data search that have been found within quadrangles in which the projects are located and lists all plants found within the project sites during surveys.

Federal Listed Species

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

No federally listed plant species were found or expected to be found within the project sites. The current use of the project sites for agriculture does not promote a habitat favorable to special status plant species.

State Listed Species

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

No state listed plant species were found or expected to be found within the project sites. The current use of the project sites for agriculture does not promote a habitat favorable to special status plant species.

Priority Plant Species

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

No priority plant species were found or expected to be found within the project sites.

4.4.1.2.4 Sensitive Wildlife Species

Special Status Wildlife Species

Special-status species are defined as plants and animals that are legally protected under the ESA, California Endangered Species Act (CESA), CDFW, or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are typically the focus of avoidance, minimization, and mitigation requirements under CEQA. As a result of the data search, endangered, threatened species, and CDFW species of special concern were evaluated for the potential to occur within the project area. Special-status species with potential to occur in the vicinity of the project sites are detailed in Appendix A of the attached BTR.

Federally Listed Species

No federally listed species were observed in the project sites. No favorable habitat was found that would support species such as southwestern willow flycatcher (*Empidonax trailii eximius*), Yuma clapper rail (*Rallus longirostris yumanensis*), least Bell's vireo (*Vireo bellii pusillus*), or desert pupfish (*Cyprinodon macularis*).

State Listed Species

Greater Sandhill Crane

One state-listed bird was evaluated based on known occurrences in Imperial County and habitat availability in the project area: greater sandhill crane (*Grus Canadensis tabida*). The greater sandhill crane is state listed as threatened and is also on the MBTA list of sensitive birds. The Colorado River Valley population is estimated at 1,400-2,100 and is considered stable. The population breeds in northeastern Nevada and southwestern Idaho, migrates through Nevada and winters along the lower Colorado River Valley in California's Imperial Valley.

The greater sandhill crane is a very large bird with long neck, long legs with a gray body, which may be stained reddish. The head has a red forehead, white cheek; another characteristic is tufted feathers over rump.

There are bermuda fields adjacent the project sites and other adjacent fields that could rotate to either alfalfa and bermuda. The greater sandhill crane could be found on the project sites and could be found in adjacent fields, but not expected as this species has not been observed south of Interstate 8 (I-8).

State Species of Special Concern and Fully Protected Species

Burrowing Owl

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

In California, burrowing owls (*Athene cunicularia*) are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations (Bates 2006). They can inhabit annual and perennial grasslands and scrublands characterized by low-growing vegetation. They may be found in areas that include trees and shrubs if the cover is less than 30 percent (Bates 2006); however, they prefer treeless grasslands. Although burrowing owls prefer large, contiguous areas of treeless grasslands, they have also been known to occupy fallow agriculture fields, golf courses, cemeteries, road allowances, airports, vacant lots in residential areas and university campuses, and fairgrounds when nest burrows are present (Bates 2006; County of Riverside 2008). Suitable habitat within the project area was searched with a pedestrian survey for burrowing owls and their sign (burrows, pellets, feathers, scat, litter, and animal dung). The pedestrian surveys were conducted April 2013 through July 2013.

The Imperial Valley has a majority of the burrowing owl in southern California. Irrigation canals and drains are commonly used as nesting sites in this area. The burrowing owl is a CDFW Species of Special Concern, and a Federal Species of Concern listed on the MBTA. This survey was done using The CDFW Staff Report (CDFW 1995), which addresses survey and mitigation guidelines for the owl and communications with CDFW wildlife biologists, Bermuda Dunes, CA office. The burrowing owl is a small, pale, buffy-brown owl that nests in borrowed burrows. The entrances to burrows often have bits of animal dung, prey carcasses, feathers, and litter, among other objects. Up to 12 eggs are laid, primarily from February to May.

Burrowing owls were observed within the boundaries of the project sites and were also found off-site within the IID right-of-way (ROW). The project sites support active burrowing owl foraging habitat. Table 4.4-3 summarizes the burrowing owl and burrow observations within the project sites and IID ROW. There are 15 adult burrowing owls and one juvenile burrowing owl using eight occupied burrows and six active burrows within the project sites. There are 37 adults and seven juveniles using 22 occupied burrows and 10 active burrows off-site within the IID ROW.

TABLE 4.4-3. SUMMARY OF BURROWING OWLS/BURROWS

Location	Burrowing Owls	Burrows Active/Occupied
FSF		
<i>On Property</i>	9 adults; 1 juvenile	3/5
<i>IID Drain (off site)</i>	7 adults; 1 juvenile	2/10
<i>FSF Total</i>	16 adults; 2 juveniles	5/15
RSF		
<i>On Property</i>	4 adults	1/2
<i>IID Drain (off site)</i>	6 adults	1/3
<i>RSF Total</i>	10 adults	2/5
ISF		
<i>On Property</i>	1 adult	1/0
<i>IID Drain (off site)</i>	21 adults; 6 juveniles	2/10
<i>ISF Total</i>	22 adults; 6 juveniles	3/10
LSF		
<i>On Property</i>	0	0
<i>IID Drain (off site)</i>	1 adult	3/0
<i>LSF Total</i>	1 adult	3/0
Transmission Line		
<i>On Property</i>	2 adults	1/1
<i>IID Drain (off site)</i>	2 adults	1/4
<i>Transmission Line Total</i>	4 adults	2/5

Golden Eagle (*Aquila chrysaetos*)

This fully protected species is found throughout the United States, but is rarely observed in Imperial County and was not found in data base searches for the Mt. Signal and Heber Quadrangles. No suitable habitat was observed. Therefore this species is not expected to be found within or in the vicinity of the project area.

Loggerhead Shrike (*Lanius ludovicianus*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

This species is a CDFW species of special concern and is year-round resident of Imperial County. They have the interesting habit of impaling prey upon sticks or thorns. Mesquites are often utilized for this activity. They are generally associated with open areas such as agricultural fields for foraging and thickets for nesting. Due to suitable habitat found within the project area, there is potential for this species to be found on-site.

Yellow Warbler (*Dendroica petechial brewsteri*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The yellow warbler is a CDFW species of special concern and protected by the MBTA. It is known to both winter and breed in Imperial County. Due to suitable habitat found within the project area, there is potential for this species to be found on-site.

Ferruginous hawk (*Buteo regalis*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The ferruginous hawk is a CDFW species of special concern. This species is found in arid to semiarid regions, as well as grasslands and agricultural areas in the western United States. Due to suitable habitat found within the project area, there is potential for this species to be found on-site.

Mountain Plover (*Charadrius montanus*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

These species are CDFW species of special concern and proposed for federal listing. Additionally, this species is protected under the MBTA. The mountain plover avoids high dense cover and occurs in open grass plains, plowed fields with little vegetation, and open sagebrush areas. None were observed within the project area; however, suitable habitat is present for this species to occur.

LeConte's (*Toxostoma lecontei lecontei*) and Crissal Thrasher (*Toxostoma crissale*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

These species are CDFW species of special concern. The crissal thrasher prefers dense thickets of shrubs or low trees. The LeConte's thrasher occurs in desert scrub or desert wash areas. They were not observed or expected due to the lack of suitable habitat.

Long Billed Curlew (*Numenius americanus*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

These species are CDFW species of special concern. They typically nest in wet and dry uplands and can be found on wetlands, grain fields, lake and river shores, marshes, and beaches during wintertime and

migration. Due to suitable habitat found within the project area, there is a high propensity for this species to be found on-site.

Short Billed Dowitcher (*Limnodromus griseus*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

These species are CDFW species of special concern. They typically breed in muskegs of taiga to timberline, and barely into subarctic tundra. They winter on coastal mud flats and brackish lagoons. During migration, they prefer saltwater tidal flats, beaches, and salt marshes. They can also be found in freshwater mud flats and flooded agricultural fields. Due to suitable habitat found within the project area, there is a high propensity for this species to be found on-site.

Horned Lark (*Eremophila alpestris*)

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

These species are CDFW species of special concern. They are typically found in open, barren country, including dirt fields, gravel ridges, and shores and prefer bare ground to short grasses. Due to suitable habitat found within the project area, there is potential for this species to be found on-site.

4.4.1.2.5 Riparian Habitat or Sensitive Natural Communities

Sensitive vegetation communities are those that are considered rare or sensitive based on the level of disturbance or habitat conversion within their range. A high level of disturbance or habitat conversion within the range could convert the status of vegetative communities to rare or sensitive. Wetland or riparian habitat communities are considered sensitive by CDFW. No riparian habitat or sensitive natural communities were observed on site. The only riparian habitat that might be present would be found within IID drains and canals which are ROWs maintained by the IID and are covered by the draft Water Conservation and Transfer Project Habitat Conservation Plan.

4.4.1.2.6 Jurisdictional Waters

Wetlands and other “waters of the United States” that are subject to Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act are under the jurisdiction of the USACE. Typically, these waters include naturally occurring traditional navigable waters (TNWs), relatively permanent waters (RPWs), and/or ephemeral waters with a significant nexus to a TNW. Agricultural water conveyance systems which are manmade and constructed wholly in uplands are typically only considered jurisdictional if they are RPWs. Conversely, man-made drainages constructed solely in uplands that are not RPWs are generally not federally jurisdictional. IID drains and canals are part of an agricultural system and therefore by definition (USACE Wetlands Delineation Manual) are not classified as wetlands although typical wetland/riparian plant species are found within canals and drains. Canals and drains do not flow continuously as they are dependent upon irrigation events. Also, canals are non-flowing for three days each month as part of an IID pest control program.

With respect to non-tidal waters, federal jurisdiction over non-wetlands extends to the “Ordinary High Water Mark” (OHWM). 33 C.F.R. § 328.4(c)(1). The Ordinary High Water (OHW) zone in low gradient, alluvial ephemeral/intermittent channel forms in the Arid West is defined as the active floodplain. The dynamics of arid channel forms and the transitory nature of traditional OHWM indicators in arid environments render the limit of the active floodplain the only reliable and repeatable feature in terms of OHW zone delineation. The extent of flood model outputs for effective discharges (5 to 10 year events in arid channels) aligns well with the boundaries of the active floodplain. IID canals, drains, farmer head or tail ditches would not be considered an “arid or ephemeral channel” as they are manmade expressly for the conveyance of irrigation waters.

IID drains and canals are rights of ways maintained by the IID and are covered by the draft Water Conservation and Transfer Project Habitat Conservation Plan and are not part of the project area. No IID drains or canals will be removed or relocated. Therefore, no USACE, CDFW, or Regional Water Quality Control Board (RWQCB) resources would be affected.

4.4.1.2.7 Habitat Connectivity and Wildlife Corridors

The ability for wildlife to freely move about an area and not become isolated is considered connectivity and is important to allow dispersal of a species to maintain exchange genetic characteristics, forage (food and water), and escape from predation.

The proposed projects are agricultural in nature, which is surrounded by agricultural land use. All species are able to freely move throughout the survey area.

4.4.1.2.8 California Desert Conservation Area

The FSF, RSF, ISF, LSF, and Transmission Line are not within or immediately adjacent to the Yuha Basin which is an Areas of Critical Environmental Concern (ACEC) of the California Desert Conservation Area.

4.4.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to biological resources, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.4.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to biological resources are considered significant if any of the following occur:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW and USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish and wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.4.2.2 Methodology

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description, to interact with local biological resources in the project area. Based on the extent of these interactions, this analysis considers whether these conditions would result in an exceedance of one or more of the applied significance criteria as identified above.

As indicated in the environmental setting, Barrett's Biological Surveys prepared a BTR which covered the FSF, RSF, ISF, LSF, and transmission line site locations. The BTR is included as Appendix E of this EIR. The analysis prepared for this EIR also relied on GIS maps. The information obtained from these sources was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the significance criteria presented in this section. Impacts associated with biological resources that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, and duration of project construction and related activities; and several field visits. Conceptual site plans for the project were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through 3.0-9.

4.4.2.3 Impact Analysis

IMPACT *Possible Habitat Modification.*

4.4-1 The construction and operation of the proposed projects within the project area could result in the indirect or direct habitat alteration on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or the CDFW or USFWS.

Impact to Vegetation Communities

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The vegetation community type identified for the FSF, RSF, ISF, LSF, and transmission line is agricultural. The solar farms and transmission line have been in active agricultural cultivation and therefore does not support habitat for sensitive vegetation communities. Therefore, **no impact** is identified to sensitive vegetation communities.

Impact to Special Status Species

Special Status and Priority Plants

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The constant cultivating and harvesting of crops does not promote a habitat favorable to special status plant species within the agricultural fields or peripheral areas and therefore **no impacts** to special status plant species are identified.

Impacts to Sensitive Wildlife

Burrowing Owl

Construction Impacts

The CDFW Staff Report on Burrowing Owl (2012) lists impacts to burrowing owl as:

- Disturbance within 160 feet (September through January non-nesting season) or within 250 feet (February through August nesting season) of active burrows.
- Destruction of active burrows.
- Destruction/degradation of forage within 300-feet of active burrows.

Direct Impacts

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

A total of 15 adult burrowing owls and one juvenile burrowing owl were observed using eight occupied burrows and six active burrows within the project area. A total of 37 adults and seven juveniles using 22 occupied burrows and 10 active burrows off-site within the IID ROW.

The agricultural fields within the proposed solar fields provide habitat for burrowing owl. In accordance with the CDFW Staff Report on Burrowing Owl Mitigation (2012), impacts to the foraging habitat within 100 meters (approximately 300 feet; 6.5 acres) of each active burrow would be considered significant and would require mitigation. Eight occupied burrows and six active burrows were observed within the active agricultural fields, within the limits of grading for the proposed solar fields. Based on a 100-meter radius around each active burrow within the proposed solar fields, the impact to burrowing owl foraging habitat is considered a **significant impact** and will require mitigation. Therefore, potentially significant impacts are identified for burrowing owl. However, with the implementation of Mitigation Measures 4.4-1a and 4.4-1b, impacts would be reduced to levels **less than significant**.

An additional 10 active burrows and 22 occupied burrows were observed adjacent to the proposed solar fields, within IID easements (berms, drains, canals, etc.). The IID drains and canals, which provide foraging habitat for these burrowing owls, will not be impacted by the proposed projects. These burrows are covered under IID's Draft HCP, and no mitigation would be required for impacts adjacent to these burrows.

Additionally, a pre-construction survey should be conducted prior to grading, as the number and location of owls may change from year to year. These fields will be graded during construction activities, but no IID canals, drainages, or roads will be impacted. Direct impacts to any burrowing owl individuals and/or active burrowing owl burrows within the agricultural land to be graded would be considered **potentially significant**, and mitigation in the form of avoidance and impact minimization would be required to reduce the impacts to a level of **less than significant**. Similar measures would be required for any future decommissioning, restoration activities that may occur at the end of the currently anticipated 40-year life of the projects.

Indirect Impacts

Noise and vibrations from construction equipment may disturb or disrupt burrowing owl nesting behavior if construction takes place within 250 feet of an active burrow during breeding season for the burrowing owl. These impacts would be considered a **significant impact** and mitigation would be required to minimize and/or avoid these impacts. Implementation of these measures would reduce the impact to a level **less than significant**. Similar measures would be required for any future decommissioning, restoration activities that may occur at the end of the currently anticipated 40 year life of the projects.

Operation Impacts

After construction of the solar field is complete, burrowing owls are expected to persist along the perimeter of the solar fields along the IID canals, drains, and roads, which provide burrowing and foraging opportunities. The owls are also expected to utilize the solar field perimeter fence as a foraging perch.

Direct impacts to burrowing owls may occur during O&M activities within the solar fields and along the transmission line. Vehicles driving on access roads where burrowing owls are foraging may result in the direct mortality, injury, or harassment of this species. These impacts would be considered a **significant impact** and mitigation would be required. Mitigation Measure 4.4-1c requires preparation of a Worker Environmental Awareness Program (WEAP) and Mitigation Measure 4.4-1d requires that construction vehicles maintain a speed limit of 15 miles while driving on access roads. Implementation of these mitigation measures would reduce impacts to burrowing owls from O&M activities to **less than significant**.

After the solar fields are constructed, burrowing owls are expected to forage within the areas underneath the solar panels and within the solar facilities that provide foraging opportunities. While searching for prey, burrowing owls characteristically hover for periods of several minutes at heights of 8-15 meters (Coulumbe 1971). During the night the foraging behavior changes to suit the reduced visibility of small food items; they may pursue arthropods on the ground by walking and running. They also may glide about one meter above the ground when foraging for rodents (Coulumbe 1971). Given the static and highly visible nature of the solar panels and transmission towers, burrowing owls are not expected to collide with the structures during daytime foraging activities when they may be hovering or flying in search for prey. When foraging at night, they are not expected to collide with facility structures given their walking/hopping manner of foraging, coupled with the static and highly visible nature of the solar panels. **No impacts** to burrowing owl are anticipated due to collision with facility structures, and no mitigation would be required.

All permanent lighting within the solar field will be by low-profile fixtures that point inward toward the solar field with directional hoods or shades to reduce light from shining into the adjacent lands. In addition, any lighting not required daily for security purposes will have motion sensor or temporary use capabilities. No significant impacts due to lighting are expected to occur to this species, and no mitigation is required. No equipment or component of the solar field or transmission lines is expected to produce noise that would exceed ambient noise in the vicinity. **No significant impacts** due to noise are expected to occur to this species, and no mitigation is required.

Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Loggerhead Shrike, Horned Lark

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Construction Impacts

Although these species were not observed during site visits to the project study areas, due to the availability of suitable foraging habitat, there is a potential for these species to occur. Because the mountain plover is a naturally evasive species, they will readily move out of harms way to avoid construction related activities, such as site clearing and any possible grading activities. Additionally, minimal light and noise from the heavy equipment during construction is not expected to adversely modify the behavioral patterns of the foraging mountain plover. Long billed curlew, short billed dowitcher, horned lark, and loggerhead shrike typically use agricultural areas for foraging. Although the removal of potential forage areas for these species would not result in a reduction of sufficient prey base found within the vicinity, impacts are considered **potentially significant** in the absence of mitigation due to the possibility that these species could find suitable foraging habitat within the project area and mitigation measures would be provided. Implementation of Mitigation Measure 4.4-1e would reduce construction impacts to **less than significant**. Similar measures would be required for any future decommissioning, restoration activities that may occur at the end of the currently anticipated 40-year life of the projects.

Operation Impacts

General operation related activities, such as equipment inspection and/or repairs, solar panel washing, and site security are expected to result in minimal noise and therefore, would not result in disturbance to these species nor would it affect adjacent agricultural areas where they may forage. As a result, a **less than significant** impact is identified for this issue area.

Migratory Birds and Other Sensitive Non-Migratory Bird Species

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Construction Impacts

There are few tall trees within the project area that would encourage raptor nesting. The crops in the area do not encourage ground nesting of raptors such as northern harriers (*Circus cyaneus*). No osprey (*Pandion haliaetus*) nests were observed or expected due to the lack of available food sources. If nesting raptors are found within the project area, during construction, impacts to this issue area would be considered **potentially significant** and mitigation would be required in order to reduce the impact to a level less than significant. Implementation of Mitigation Measures 4.4-1f and 4.4-1g would reduce impacts to nesting birds during construction to **less than significant**.

Operations and Maintenance Impacts

Electrocution

All electrical components within the solar projects shall be either undergrounded or protected so that there will be no exposure to wildlife and therefore no potential for electrocution. The transmission line would be constructed in such a manner that energized components do not present an opportunity for "skin to skin" or wing span contact. However, the Avian Powerline Interaction Committee's (APLIC) 1996 report on power line electrocution in the United States reports that avian electrocution risk is highest along distribution lines (generally less than 69 kV) where the distance between energized phases, ground wires, transformers, and other components of an electrical distribution system are less than the length or skin-to-skin contact distance of birds. The distance between energized components along transmission lines (>69 kV) is generally insufficient to present avian electrocution risk. **No impact** to raptors is anticipated to occur due to electrocution along the proposed transmission line. Therefore, no mitigation would be required. However, a **potentially significant impact** may occur to avian mortality during O&M activities along the transmission lines. Therefore, an Avian and Bat Protection Plan (ABPP) will be developed that will incorporate guidance from USFWS (2010e) and the Avian Powerline Interaction Committee (APLIC 2006), and will include a wildlife mortality reporting program. Mitigation Measure 4.4-1f, specifically the ABPP, will provide the project applicant the vehicle to comply with the Bald and Golden Eagle Protection Act as well as the MBTA. Implementation of that mitigation measure would reduce impacts to **less than significant**.

Collisions

No incidences of avian ground wire collisions of existing transmission wires were observed during surveys. If collisions are found to be a problem, marking shall be applied to ground wires, which has been shown to decrease the incidence of bird collisions by 60 percent (Alonso, Alonso and Munoz-Pulido 1994); therefore, this impact is considered **less than significant**.

Mitigation Measure(s)

Burrowing Owls

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

4.4-1a Burrowing Owl Mitigation. Burrowing owls have been observed in the active agricultural fields within the project sites. The following measures will avoid, minimize, or mitigate potential impacts to burrowing owl during construction activities:

1. During non-breeding season (September through January) a distance of 160 feet shall be maintained between active burrows and construction activities. A qualified biologist may also employ the technique of sheltering in place (using hay bales to

shelter the burrow from construction activities). If this technique is employed, the sheltered area shall be monitored weekly by a qualified biologist.

2. If construction is to begin during the breeding season, the following measures (Measure 4 below) shall be implemented prior to February 1 to discourage the nesting of the burrowing owls within the project footprint. As construction continues, any area where owls are sighted shall be subject to frequent surveys by the qualified biologist for burrows before the breeding season begins, so that owls can be properly relocated before nesting occurs.
3. Within 30 days prior to initiation of construction, pre-construction clearance surveys for this species shall be conducted by qualified and agency-approved biologists to determine the presence or absence of this species within the project footprint. This is necessary, as burrowing owls may not use the same burrow every year; therefore, numbers and locations of burrowing owl burrows at the time of construction may differ from the data collected during previous focused surveys. The proposed project footprint shall be clearly demarcated in the field by the project engineers and biologist prior to the commencement of the pre-construction clearance survey. The surveys shall follow the protocols provided in the *Burrowing Owl Survey Protocol and Mitigation Guidelines*.
4. If active burrows are present within the project footprint, the following mitigation measures shall be implemented. Passive relocation methods are to be used by the biological monitors to move the owls out of the impact zone. Passive relocation shall only be done in the non-breeding season in accordance with the guidelines found in the *Imperial Irrigation District Artificial Burrow Installation Manual*. This includes covering or excavating all burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. A period of at least one week is required after the relocation effort to allow the birds to leave the impacted area before construction of the area can begin. The burrows shall then be excavated and filled in to prevent their reuse. The destruction of the active burrows on-site requires construction of new burrows at a mitigation ratio of 2:1 at least 50 meters from the impacted area and must be constructed as part of the above-described relocation efforts. The construction of new burrows will take place within open areas in the solar fields such as detention basins.
5. As the project construction schedule and details are finalized, an agency-approved biologist shall prepare a Burrowing Owl Mitigation and Monitoring Plan that will detail the approved, site-specific methodology proposed to minimize and mitigate impacts to this species. Passive relocation, destruction of burrows, construction of artificial burrows, and a Forage Habitat Plan shall only be completed upon prior approval by and in cooperation with the CDFW. The Mitigation and Monitoring Plan shall include success criteria, remedial measures, and an annual report to CDFW and shall be funded by the project applicant to ensure long-term management and monitoring of the protected lands.

4.4-1b Burrowing Owl Compensation. The project applicant shall compensate for impacts to burrowing owl habitat through the following measures:

1. CDFW's mitigation guidelines for burrowing owl (2012) require the acquisition and protection of replacement foraging habitat per pair or unpaired resident bird to offset the loss of foraging and burrow habitat on the project sites.

The project applicant shall landscape small pockets of land along the perimeter of the solar fields, and/or within the solar fields themselves, with native vegetation that will provide suitable foraging habitat for burrowing owls, pursuant to a Mitigation and

Monitoring Plan that is reviewed and approved by CDFW prior to the commencement of construction. Although the site plans show almost 100 percent coverage of solar panels, it is anticipated that due to the nature of solar panel configuration, there will be spaces at various locations, such as between the edges of the agricultural fields (i.e., outside of IID easements) and the solar project footprints. Sufficient open areas shall be set aside for burrowing owl habitat and burrow relocation for the lifespan of the solar projects. Due to County of Imperial requirements that the solar fields be returned to active agriculture after the life of the solar projects, it is assumed that when the land is returned to active agricultural crops, it will continue to provide habitat for burrowing owl. If the vegetation that is planted does not succeed, sufficient areas cannot be provided on-site, or planting is not feasible, alternative mitigation shall be provided, which CDFW determines provides equivalently effective mitigation. Such alternative mitigation may include off-site preservation of the required amount of foraging habitat through a CDFW-approved conservation easement, or an in-lieu fee in an amount approved by CDFW that is sufficient to acquire such conservation easements, or some combination of the two.

4.4-1c Worker Awareness Program. Prior to project initiation, a Worker Environmental Awareness Program (WEAP) shall be developed and implemented by a qualified biologist, and shall be available in both English and Spanish. Wallet-sized cards summarizing this information shall be provided to all construction, operation, and maintenance personnel. The education program shall include the following aspects:

- Biology and status of the burrowing owl;
- CDFW/USFWS regulations;
- Protection measures designed to reduce potential impacts to the species, function of flagging designated authorized work areas;
- Reporting procedures to be used if a burrowing owl (dead, alive, injured) is encountered in the field.

4.4-1d Speed Limit. The Designated Biologist or Biological Monitor(s) shall evaluate and implement best measures to reduce burrowing owl mortality along access roads.

- A speed limit of 15 miles per hour when driving access roads. All vehicles required for O&M must remain on designated access/maintenance roads.

Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Loggerhead Shrike, and Horned Lark

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

4.4-1e Temporary Construction Suspension. If a Designated Biological Monitor observes these species foraging within the project site, or in adjacent agricultural fields, construction shall cease until they disperse. Additionally, in order to reduce impacts to the Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Horned Lark, and Loggerhead Shrike, an Avian Bat Protection Plan (ABPP) shall be prepared following USFWS guidelines and subsequently implemented by the project applicant. The requirements of the ABPP are described in Mitigation Measure 4.4-1f.

Migratory Birds and Other Sensitive Non-Migratory Bird Species

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

- 4.4-1f Construction and O&M Mitigation Measures.** In order to reduce the potential indirect impact to migratory birds, bats and raptors, an Avian Bat Protection Plan ABPP shall be prepared following the USFWS's guidelines and implemented by the project applicant. This ABPP shall outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations and shall be developed by the project applicant in conjunction with and input from the USFWS.

Construction conservation measures to be incorporated into the ABPP include:

1. Minimizing disturbance to vegetation to the maximum extent practicable.
2. Clearing vegetation outside of the breeding season. If construction occurs between February 1 and September 15, an approved biologist shall conduct a pre-construction clearance survey for nesting birds in suitable nesting habitat that occurs within the project footprint. Pre-construction nesting surveys will identify any active migratory birds (and other sensitive non-migratory birds) nests. Direct impact to any active migratory bird nest should be avoided.
3. Minimize wildfire potential.
4. Minimize activities that attract prey and predators.
5. Control of non-native plants.

O&M conservation measures to be incorporated into the ABPP include:

1. Incorporate APLIC guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (APLIC 2006).
2. Minimize noise.
3. Minimize use of outdoor lighting.
4. Implement post-construction avian monitoring that will incorporate of the Wildlife Mortality Reporting Program.

- 4.4-1g Raptor and Active Raptor Nest Avoidance.** Raptors and active raptor nests are protected under CFGC 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact to nesting raptors such as red-tailed hawk, the following measures shall be implemented:

1. Initial grading and construction within the project sites should take place outside the raptors' breeding season of February 1 to July 15.
2. If construction occurs between February 1 and July 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting raptors in suitable nesting habitat (e.g., tall trees or transmission towers) that occurs within 500 feet of the survey area. If any active raptor nest is located, the nest area will be flagged, and a 500-foot buffer zone delineated, flagged, or otherwise marked. No work activity may occur within this buffer area, until a qualified biologist determines that the fledglings are independent of the nest.

Significance After Mitigation

The implementation of Mitigation Measures 4.4-1a through 4.4-1d would reduce impacts to burrowing owls to a level **less than significant**. Implementation of Mitigation Measure 4.4-1e would reduce the potential impact to mountain plover, long billed curlew, short billed dowitcher, horned lark, and loggerhead shrike to levels **less than significant**. Mitigation Measures 4.4-1f and 4.4-1g would reduce impacts to migratory and non-migratory birds and nesting raptors to levels **less than significant**.

IMPACT *Possible Impact to Riparian Habitats or Other Sensitive Natural Communities.*

4.4-2

Construction and operation of the proposed projects within the project sites would not impact riparian or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFW and USFWS.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project study areas contain active agricultural and ruderal vegetative communities and therefore do not have riparian or other sensitive natural communities. **No impacts** are identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Impact to Wetlands.*

4.4-3

Construction and operation of the proposed projects within the project sites would not impact jurisdictional resources as defined by Section 404 of the CWA (including, but not limited to: marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

No IID canal or drain structures would be removed; therefore, there would be no impact to riparian habitat or sensitive natural communities. No IID drains or canals would be removed or relocated and no washes are found within the project sites; therefore, no USACE, CDFW, or RWQCB jurisdictional resources will be directly affected and **no impact** is identified.

The development of approximately ~~4,422~~1,400 acres of land to a solar farm will decrease the amount of surface (tail water) and subsurface water (tile water) into several IID drains (e.g., Wistaria Drain) servicing these properties. Less water in these drains will result in a decrease in weed growth and gopher and muskrat washouts, which will reduce both the maintenance operations and total suspended solids (TSS) within the drains and ultimately to the Salton Sea. Less TSS will improve water quality in support of the drain water quality improvement plan. These drains will still receive agricultural runoff from agricultural fields not developed into solar farms and storm water flows to maintain a vegetative base to support habitat. In addition, storm water flows are estimated to be 3.6 percent of surface water inputs, and that water will still end up in the drains.

There are approximately 1,400 miles of drains which transport subsurface and surface agricultural drain water, storm water flows, municipal wastewater treatment plant effluent, ground water from East and West mesas and industrial effluent discharges. All aforementioned discharge sources contribute to the degradation of water quality within the IID water conveyance system. The IID is currently implementing a drain water quality improvement plan (Resolution No 93-145) to achieve water quality objectives to comply with the Clean Water Act 303(d). A component of the IID plan is to reduce maintenance operations which will result in a reduction of TSS.

These drains are all located within the far southernmost part of Imperial County and are not considered direct-to-Sea drains and therefore would not impact desert pupfish (*Cyprinodon macularius*). The drains are in the southwest corner of Imperial County and at the end of the water conveyance system; drain water generated by the agricultural fields that will be developed into a solar farm must travel over 35 miles to reach the Salton Sea. No more than 31 percent surface and subsurface runoff into the drains actually reaches the Salton Sea. Therefore, eliminating the volume this acreage has generated in the past should not adversely affect the elevation of the Salton Sea as the waters not utilized by these solar farms are expected to remain within the All American Canal Service area. It is expected that this water will be used on other agricultural crops and therefore will not be lost to the drainage system and the Salton Sea drainage. This impact is considered **less than significant**.

The potential effects to IID drainages as a result of shifting water use in the Imperial Valley is also discussed in EIR Chapter 6.0 Cumulative Impacts.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Impact to Wildlife Movement and Nursery Sites.*
4.4-4 *Construction and operation of the proposed projects within the project area would not interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects are located in a ruderal vegetative community which is surrounded by agricultural and industrial activities. The existing agricultural uses of the solar fields provide limited connectivity for terrestrial species based on the continued disturbance from cultivation practices. Under the proposed use, the mechanized disturbance would decrease once the solar panels are in place. The projects' ABPP will also ensure that movement and corridor uses to avian species will not be impacted by the proposed projects (Mitigation Measure 4.4-1f). Thus, there are no anticipated impacts to wildlife movement or nursery sites, and no additional mitigation would be required. Therefore, impacts identified for this issue area are **less than significant**.

Mitigation Measure(s)

No mitigation measures are required beyond those previously identified in this section for raptors (Mitigation Measure 4.4-1f).

Significance After Mitigation

With the implementation of the mitigation measure previously identified for raptors (Mitigation Measure 4.4-1f), impacts to wildlife movement would be reduced to **less than significant**.

IMPACT *Possible Conflict with Policies Protecting Biological Resources.*
4.4-5 *The projects do not conflict with local policies, such as a tree preservation policy, or ordinances.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects consist of the construction and operation of solar energy facilities and associated electrical transmission lines. Development of the solar facilities is subject to the County's zoning ordinance. Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" is a use that is permitted in the A-2, A-2-R, and A-3 zones, subject to securing a Conditional Use Permit (CUP). "Transmission lines, including supporting towers, poles, microwave towers, utility substations" are permitted uses within the A-3 Zone. Pursuant to Title 9, Division 5, Chapter 8, "Solar energy electrical generator," "Electrical power generating plant," "Major facilities relating to the generation and transmission of electrical energy," and "Resource extraction and energy development," are uses that are permitted in the A-2, A-3, and A-2-R zone subject to approval of a CUP from the County. As demonstrated in Table 4.4-1, with implementation of CUPs, and because the project sites are located in a disturbed, agricultural region, the projects would be consistent with Imperial County General Plan biological resources policies. Therefore, **no impacts** are identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Conflict with Local Conservation Plan(s).*
4.4-6 *Construction and operation of the proposed projects within the project area does not conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project sites are not located in a Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. **No impact** is identified.

Mitigation Measure(s)

No mitigation measures are required.

4.4.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

Decommissioning activities will require construction vehicles to drive across the solar farms, transmission line, and access roads, which could result in ground disturbance and transportation of invasive weeds. Mitigation measures required to reduce potential impacts to sensitive wildlife species (e.g., burrowing owl [BUOW], mountain plover, long billed curlew, short billed dowitcher, horned lark, loggerhead shrike, wildlife) would be applicable during the decommissioning phase of the project as well including the following Mitigation Measures: 4.4-1a through 4.4-1g, and would reduce this impact to a level **less than significant**.

Residual

The implementation of Mitigation Measures 4.4-1a through 4.4-1d would reduce impacts to burrowing owls to a level less than significant. Implementation of Mitigation Measure 4.4-1e would reduce the potential impact to mountain plover, long billed curlew, short billed dowitcher, horned lark, and loggerhead shrike to levels less than significant. Mitigation Measures 4.4-1f and 4.4-1g would reduce impacts to migratory and non-migratory birds and nesting raptors to levels less than significant. The projects would not result in residual significant and unmitigable impacts related to Biological Resources.

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4.5 CULTURAL RESOURCES

This section discusses cultural resources that may be impacted by the proposed projects. The following identifies the existing cultural resources in the project area, analyzes potential impacts due to the implementation of the proposed projects, and recommends mitigation measures to avoid or reduce potential impacts of the proposed projects. Information for this section is summarized from the *Literature Review for the 8minutenergy Iris Solar Farm Project (85JP)* prepared by AECOM and the Historic Resources Evaluation Report prepared by ESA. These reports are included in Appendix F of this Environmental Impact Report (EIR). ESA also prepared a *Phase I Cultural Resources Survey Report* for the proposed projects. Due to the confidential nature of the location of cultural resources, the *Phase I Cultural Resources Survey Report* is not included in the appendices.

4.5.1 Environmental Setting

The project area is located in the Imperial Valley, a part of the Salton Trough in the Colorado Desert physiographic province of California. The topography of the Imperial Valley is relatively flat, with few significant land features. The Salton Trough is bounded on the east and northeast by the San Andreas Fault and on the west by the San Jacinto fault zone. This trough is filled with more than 15,000 feet of Miocene and younger, marine and non-marine sediments capped by approximately 100 feet of Pleistocene and later lacustrine deposits that have been deposited by intermittent filling of the fresh-water Lake Cahuilla.

The County of Imperial is rich in cultural resources and within the county, archaeological work can be separated into two distinct sections: prehistoric and historic. All prehistoric archaeology deals with aboriginal culture and systems which existed prior to Spanish colonization in 1769. Historical archaeology deals with uncovering facts that no known historical documentation has provided.

Thousands of prehistoric (aboriginal culture and systems existing prior to 1769) and hundreds of historic (uncovered facts containing no known historical documentation) are found throughout Imperial County. Prehistoric evidence in the form of trails, rock art, geoglyphs, fish traps, and resource procurement and manufacturing locations are found in the regions surrounding the fertile valley portion of the county. From a historical standpoint, the intensive use of Imperial Valley for irrigation agriculture since the beginning of this century has impacted any resources that may have existed on land that is now farmland or under the Salton Sea. Historic resource sites date back to 1540, when the Hernando de Alcaron Expedition discovered Alta California from near the intersection of Interstate 8 and Highway 186. The next major historical event occurred in 1775 when Juan Bautista de Anza first passed through the area. The Anza Trail itself constitutes a significant cultural resource in the Yuha Desert, as does the later Sonoran/Southern Emigrant Trail which served as a major route to and from coastal California from 1825 to 1865. Although very few structures or artifacts may remain from the use of these trails, the routes themselves are of historical significance. Various other structures, such as missions (Spanish period 1769-1821) and a fort (Mexican period 1821-1848) are still evident in regions throughout the county (Imperial County).

4.5.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

Federal

National Historic Preservation Act (NHPA). Federal regulations (36 CFR Part 800.2) define historic properties as "any prehistoric or historic district, site, building, structure, or object included, or eligible for inclusion in, in the NRHP." Section 106 of the NHPA (Public Law 89-665; 80 Stat 915; USC 470, as amended) requires a federal agency with jurisdiction over a project to take into account the effect of the project on properties included in or eligible for the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The

term "cultural resource" is used to denote a historic or prehistoric district, site, building, structure, or object, regardless of whether it is eligible for the NRHP.

Native American Graves Protection and Repatriation Act (1990); Title 25, United States Code (USC) Section 3001, et seq. The statute defines "cultural items," "sacred objects," and "objects of cultural patrimony;" establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for the return of specified cultural items.

State

State Office of Historic Preservation. The State Office of Historic Preservation (OHP) administers state and federal historic preservation programs and provides technical assistance to federal, state, and local government agencies, organizations, and the general public with regard to historic preservation programs designed to *identify, evaluate, register, and protect* California's historic resources.

Section 15064.5 of the State California Environmental Quality Act (CEQA) Guidelines also requires that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains (Health and Safety Code [HSC] Section 7050.5, PRC Sections 5097.94 et seq.).

Assembly Bill (AB) 4239 established the Native American Heritage Commission (NAHC) as the primary government agency responsible for identifying and cataloging Native American cultural resources. The bill authorized the Commission to act in order to prevent damage to and insure Native American access to sacred sites and authorized the Commission to prepare an inventory of Native American sacred sites located on public lands.

Public Resources Code (PRC) 5097.97. No public agency and no private party using or occupying public property or operating on public property under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the *United States Constitution* and the *California Constitution*; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

Public Resources Code 5097.98 (b) and (e) require a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reenter the remains elsewhere on the property in a location not subject to further disturbance.

California Health and Safety Code, Section 7050.5. This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the County Coroner.

Local

Imperial County General Plan

The Imperial County General Plan provides goals, objectives, and policies for the identification and protection of significant cultural resources. The Open Space Element of the General Plan includes goals, objectives, and policies for the protection of cultural resources and scientific sites that emphasize

identification, documentation, and protection of cultural resources. While Section 4.10, Land Use and Planning of this EIR analyzes the project's consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors and Planning Commission ultimately make a determination as to the project's consistency with the *General Plan*. Goals and Objectives applicable to the proposed projects are summarized in Table 4.5-1.

**TABLE 4.5-1. PROJECT CONSISTENCY WITH APPLICABLE GENERAL PLAN
CULTURAL RESOURCES GOALS AND OBJECTIVES**

General Plan Goal/Objective	Consistency with General Plan	Analysis
Goal 3: Important prehistoric and historic resources shall be preserved to advance scientific knowledge and maintain the traditional historic element of the Imperial Valley landscape.	Yes	The proposed solar farms will not impact any important prehistoric or historic resources.
Objective 3.1 Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.	Yes	The proposed solar farms will not impact any significant cultural resources site.

4.5.1.2 Existing Conditions

Cultural Setting

The project area is located in the West Mesa of the Yuha Desert. The relic shoreline or 40-foot contour of the ancient Lake Cahuilla runs south and west of the projects. Lake Cahuilla was a freshwater lake that was filled by the Colorado River between 25,000 and 45,000 years ago during the late Pleistocene and then again during the late Holocene. There were numerous Lake Cahuilla filling and desiccation cycles during the late Holocene; however, the number of lakestands and their dates remain problematic (Schaefer 1994a; Waters 1980, 1983; Wilke 1978). These lakestands were significant water sources for prehistoric peoples. The Lake Cahuilla shoreline has been associated with extensive prehistoric use and occupation.

The prehistory of Imperial County, California, may be divided into four major temporal periods: Pre-projectile, Paleoamerican, Archaic, and Late Prehistoric. These time periods have regional expression through various regional archaeological complexes or archaeological cultures.

Ethnohistory

The project area was utilized prehistorically by a variety of Native American groups, including the Kumeyaay (the Kamia is a subset of this group), the Cocopah, and the Quechan. These three groups speak the language of the Yuman family of the Hokan language stock (Kroeber 1920).

Historic Period

The historic period is described as including the Spanish Period (1769-1821) in the Colorado Desert which begins with the Alarcon exploration up the Colorado River in 1540 and the land expedition to the Colorado River by Melchior Diaz in the same year, and the Mexican Period (1822-1848), in which the mission system was secularized by the Mexican government and these lands allowed for the dramatic expansion of the rancho system. The Mexican Period ended, when Mexico signed the Treaty of Guadalupe Hidalgo on February 2, 1848, concluding the Mexican-American War (1846-1848; Rolle 1998). California became a state in 1850 (Rolle 1998).

A great influx of Americans and Europeans followed the discovery of gold in northern California in 1848. The gold seekers and homesteaders traveled through the Colorado Desert using the same route as Kearny and the Mormon Battalion, then known as the Southern Emigrant Trail in the early 1900s. In 1853, the route was used by the Birch Overland Mail and later in 1858 by the Butterfield Southern Overland Mail

Line. After 1861, when the mail route stopped service, the route was used mostly for cattle drives from Mason and Vallecitos valleys to Carrizo Valley and the Fish Creek area in the desert (Cook and Fulmer 1980). In 1890, prospectors in search of minerals in the Anza-Borrego Desert began using the route (Cook and Fulmer 1980). Today this old Indian and pioneer route is called County Route S2, or the Great Southern Overland Stage Route of 1849, which connects Ocotillo at Interstate 8 with Warner Springs to the north.

The segment of the Southern Pacific Railroad that runs northeast of the project area was constructed in the 1870s (Pourade 1964). Around the turn of the century, the Imperial Valley experienced considerable population growth after the construction of irrigation projects, and agriculture became a prime focus of economic activity. By the turn of the 20th Century Dr. O. M. Wozencraft's vision of a vast irrigated agricultural land in Imperial County was coming to fruition with the first delivery of Colorado River water released through a newly constructed canal system in 1901 (Dowd 1956:7, 21-22). Part of that early canal system included what is now known as the West Side Main (CA-IMP-7834), but in the early 1900s went by the name of Encina Canal. This canal was constructed in Baja California at Sharp's Heading, crossed the New River—at that time a small channel—via a flume, then turned west and north, crossing the international border at a point approximately 10 miles west of Calexico (Dowd 1956:23).

Very early into the development of the canal system it was recognized that an all American system needed to be built in order to maintain control of the water supply entering the network. Ironically perhaps, the illegally built head gate on the Colorado River in Mexican territory failed to hold back the record seasonal flow of 1905-1907, resulting in the destruction of thousands of feet of flume, miles of canals, and thousands of acres of land. Improvements to the system followed and the West Side Main Canal was enlarged and improved, and by 1940 was tied in to the All-American Canal, just in time for it to continue service to the western agricultural fields when much of the network was shuttered following that year's earthquake (Dowd 1956:43, 45, 103-104). The construction of the All-American Canal to transport water from the Colorado River to Imperial Valley between 1934 and 1940 transformed agricultural development and settlement of the Imperial and Coachella valleys. The areas served by the canal have become one of the richest and most important agricultural areas in the U.S. since the completion of the canal in 1938 (Queen 1999).

Paleontological Resources

The project area is located in the Imperial Valley portion of the Salton Trough physiographic province of southern California. The Imperial Valley is directly underlain by geologic units comprised of quaternary lake deposits of the ancient Lake Cahuilla. Lakebed deposits of ancient Lake Cahuilla have yielded fossil remains from numerous localities in Imperial Valley. These include extensive freshwater shell beds, fish, seeds, pollen, diatoms, foraminifera, sponges, and wood. Lake Cahuilla deposits have also yielded vertebrate fossils, including teeth and bones of birds, horses, bighorn sheep, and reptiles. Therefore, the paleontological sensitivity of these lakebed deposits within the project area is considered to be high (Imperial Solar Energy Center South Final EIR/EA, Section 3.13, page 3.13-2). It is noted that the proposed projects and off-site transmission areas are located within active agricultural lands. Therefore, any surface or near-surface level paleontological resources are likely to have been disturbed already.

Records Search/Previously Recorded Resources

Cultural resources records searches were conducted for each of the project sites through the South Coastal Information Center (SCIC) at San Diego State University (SDSU). The information obtained from these record searches was used to determine if previous surveys had been conducted in the area of potential effect for the proposed projects, what resources might be expected, and whether any cultural resources have been recorded.

FSF

According to the results from SCIC and as shown in Table 4.5-2, 10 cultural resources have been recorded within a 1-mile radius of the FSF project area, consisting of an Indian trail (CA-IMP-1670), a collected pottery scatter (CA-IMP-3149), a U.S. military telegraph line (CA-IMP-3314), various cross roads (CA-IMP-3310, -3315, -3323, -3324, and -3326), and a mesquite grove (CA-IMP-3309). One cultural resource has been previously identified within the FSF project area and is identified as a mesquite thicket (CA-IMP-3325).

TABLE 4.5-2. PREVIOUSLY IDENTIFIED CULTURAL RESOURCES WITHIN A 1-MILE RADIUS OF THE FSF PROJECT

Primary Number (P-13-)	Permanent Trinomial (CA-IMP-)	Site Description	Date Recorded	Within 1-mile of the FSF Project Study Area	Within the Proposed FSF Project Study Area
0001670	1670	Indian Trail	--	✓	
0003149	3149	Collected Pottery Scatter	1979	✓	
0003309	3309	Mesquite Grove	--	✓	
0003310	3310	Cross Road	1978	✓	
0003314	3314	Cross U.S. Military Telegraph Line	1978	✓	
0003315	3315	Cross Road	1978	✓	
0003323	3323	Cross Road	--	✓	
0003324	3324	Destroyed Cross Road	1978	✓	
0003325	3325	Mesquite Thicket	--		✓
0003326	3326	Destroyed Cross Road	1978	✓	

Source: AECOM 2013

RSF

According to the results from SCIC and as shown in Table 4.5-3, seven cultural resources have been recorded within a 1-mile radius of the RSF project area, consisting of a segment of the Woodbine Canal (P-13-013076), historic wagon and cross roads (CA-IMP-3321, -3322, -3323, -3324, and -3326), and a mesquite thicket (CA-IMP-3325). No cultural resources have been previously identified within the RSF project area.

TABLE 4.5-3. PREVIOUSLY IDENTIFIED CULTURAL RESOURCES WITHIN A 1-MILE RADIUS OF THE RSF PROJECT

Primary Number (P-13-)	Permanent Trinomial (CA-IMP-)	Site Description	Date Recorded
013076	--	Segment of the Woodbine Canal	2010
0003321	3321	Wagon Road	--
0003322	3322	Wagon Road	--
0003323	3323	Cross Road	--
0003324	3324	Destroyed Cross Road	1978
0003325	3325	Mesquite Thicket	--
0003326	3326	Destroyed Cross Road	1978

Source: AECOM 2013

ISF

According to the results from SCIC and as shown in Table 4.5-4, 11 cultural resources have been recorded within a 1-mile radius of the ISF project area, consisting of an Indian trail (CA-IMP-1670), a collected pottery scatter (CA-IMP-3149), three Colorado Buff pot sherds (CA-IMP-3150), a U.S. military telegraph line (CA-IMP-3314), cross roads (CA-IMP-3310, -3315, -3316, -3324, and -3326), and a mesquite grove (CA-IMP-3309). Two cultural resources have been previously identified within the

ISF project area and are identified as a mesquite grove (CA-IMP-3309) and a destroyed cross road (CA-IMP-3326).

TABLE 4.5-4. PREVIOUSLY IDENTIFIED CULTURAL RESOURCES WITHIN A 1-MILE RADIUS OF THE ISF PROJECT

Primary Number (P-13-)	Permanent Trinomial (CA-IMP-)	Site Description	Date Recorded	Within 1-mile of the ISF Project Study Area	Within the Proposed ISF Project Study Area
0001670	1670	Indian Trail	--	✓	
0003149	3149	Collected Pottery Scatter	1979	✓	
0003150	3150	3 Colorado Buff Pot Sherds	1979	✓	
0003309	3309	Mesquite Grove	--		✓
0003310	3310	Cross Road	1978	✓	
0003314	3314	Cross U.S. Military Telegraph Line	1978	✓	
0003315	3315	Cross Road	1978	✓	
0003316	3316	Cross Road	1978	✓	
0003324	3324	Destroyed Cross Road	1978	✓	
0003325	3325	Mesquite Thicket	--	✓	
0003326	3326	Destroyed Cross Road	1978		✓

Source: AECOM 2013

LSF

According to the results from SCIC and as shown in Table 4.5-5, nine cultural resources have been recorded within a 1-mile radius of the LSF project area, consisting of two wagon roads (CA-IMP-3321, and -3322), segments of the Woodbine Canal (P-13-013073, -013074, -013075, -013076, and -013077), the Brockman Drain (P-13-013078), and the Wells Drains (P-13-013082). No cultural resources have been previously identified within the LSF project area.

TABLE 4.5-5. PREVIOUSLY IDENTIFIED CULTURAL RESOURCES WITHIN A 1-MILE RADIUS OF THE LSF PROJECT

Primary Number (P-13-)	Permanent Trinomial (CA-IMP-)	Site Description	Date Recorded
013073	--	Segments of the Woodbine Canal	2010
013074	--	Segments of the Woodbine Canal	2010
013075	--	Segments of the Woodbine Canal	2010
013076	--	Segments of the Woodbine Canal	2010
013077	--	Segments of the Woodbine Canal	2010
013078	--	Segments of the Brockman Canal	2010
013082	--	Segments of the Wells Drain	2010
0003321	3321	Wagon Road	--
0003322	3322	Wagon Road	--

Source: AECOM 2013

Field Inventory Results

A cultural resources pedestrian survey was conducted for each of the project sites (ESA 2014). Areas consisting of open agricultural fields with ground surface visibility greater than 0 percent were surveyed in a systematic manner using transects spaced at intervals of 15 meters or less. In areas with dense and steep slopes, an opportunistic survey approach was undertaken wherein areas where vegetation was not as dense, such as clearings and game trails, were subject to intensive inspection. Areas where ground surface was not visible were subject to reconnaissance-level surveys in order to identify the presence of historic built resources. A total of five new resources and one previously recorded resource (CA-IMP-3325) were identified as a result of the pedestrian survey. These resources consist of

a multicomponent archaeological site (Iris-Site-001M) and four historic built resources (Iris-Built-001, Iris-Built-002, Iris-Built-003, and Iris-Built-004). These resources are discussed below.

CA-IMP-3325

Resource-CA-IMP-3325 is a landscape feature of unknown age. It consists of a mesquite thicket. No artifacts or features were observed associated this resource.

Iris-Site-001M

Resource Iris-Site-001M is a multicomponent archaeological site that consists of two prehistoric ceramic sherds and a very diffuse, low-density scatter of historic and modern refuse. In addition, a single linear concrete feature is located in the western portion of the site. The site measures approximately 1,015 feet (NW/SE) by 109 feet (NE/SW) and is located along two generally east-west trending dirt roads that have been recently bladed. The site is bounded on the south by a generally northwest-southeast trending concrete lined ditch and alfalfa fields and to the north by the New River floodplain. The site has been highly disturbed by road grading. Many of the artifacts noted, including the two prehistoric ceramic sherds, were observed in push piles.

Artifacts observed within the site primarily consisted of beverage bottle fragments, tableware fragments, beverage and sanitary cans, colored decorative glass fragments, two tobacco tins, and two small vials that appear to have contained antibiotics or medicine for livestock. Many of the artifacts are concentrated in the eastern portion of the site.

The linear concrete feature in the western portion of the site is approximately 32 feet (E/W) by 5 inches wide (N/S) and may be associated with the northwest-southeast trending concrete-lined ditch that bounds the northern portion of the site.

Iris-Built-001

Resource Iris-Built-001 consists of a group of ten structures associated with farming operations. The observed structures included:

- A wood-framed residence with wooden siding and gabled roofs;
- Two wood-framed, square-shaped storage sheds with gabled roofs;
- A wood-framed, square-shaped pump house with a gabled roof on a raised concrete platform;
- A wood-framed, rectangular-shaped barn/garage with a gabled roof and two eaves overhanging the northeast and southwest corners;
- Two railroad cars modified into storage units;
- A square shaped, semi-subterranean, concrete-lined sump; and
- Two-wood framed, rectangular shaped office/bunk houses with gabled roofs.

The property is fenced off and has tamarisk and palo verde trees along its western perimeter. Two structures in the same general location as the resource are depicted on the 1940 Heber 7.5' topographic quadrangle, indicating that portions of the resource are at least 74 years old.

Iris-Built-002

Resource Iris-Built-002, located on the FSF, consists of five structures associated with farming operations. The observed structures included:

- An L-shaped, wood-framed residence that has stucco siding and a gabled roof;
- A second wood-framed residence that is rectangular-shaped and has stucco siding and a gabled roof;

- A third wood-framed residence, that is square-shaped, and has stucco siding and a gable roof;
- A small wood-framed shed with a gabled roof; and
- A wood-framed warehouse that is rectangular-shaped, and has corrugated metal siding and a gabled roof.

A number of citrus, eucalyptus, and ornamental trees were observed throughout the property. Two structures in the same general location as the resource are depicted on the 1940 Heber 7.5' topographic quadrangle, indicating portions of it are at least 74 years old.

Iris-Built-002 was evaluated for listing in the California Register based on the following criteria for designation:

- **Criterion 1** – Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
- **Criterion 2** – Associated with the lives of persons important to local, California or national history.
- **Criterion 3** – Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.
- **Criterion 4** – Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Based on the Historic Resources Evaluation Report prepared by ESA, Iris-Built-002 does not appear to meet the criteria for listing in the California Register under Criteria 1-4.

Iris-Built-003

Resource Iris-Built-003 is located on the RSF. The resource consists of a wood framed residence with stucco siding and a gabled roof. A single structure in the same general location as the resource is depicted on the 1957 Heber 7.5' topographic quadrangle, indicating that the resource is at least 57 years old.

Iris-Built-004

Resource Iris-Built-004 consists of the Wistaria Canal System, which bisects all four project sites. The Wistaria Canal System found within the project area includes the Wistaria Canal, Wistaria Drain 5, Wistaria Lateral 4, the Wistaria Drain, Wistaria Lateral 2, and Wistaria Lateral 3.

Wistaria Canal

Approximately 2.56 linear miles of the Wistaria Canal bounds and bisects various portions of the ISF and FSF. The canal is concrete-lined, has a trapezoidal cross-section and is approximately 20.25 feet wide. The canal appears on the 1940 Heber 15' topographic quadrangle, indicating that it is at least 74 years old.

Wistaria Drain 5

Approximately 0.5 linear miles of the north-south trending Wistaria Drain 5 bisects the center of the LSF. The earthen drain has a trapezoidal cross-section, and is approximately 30 feet wide at the top and eight feet wide at the bottom. The drain appears on the 1957 Heber and Mount Signal 7.5' topographic quadrangles, indicating that it is at least 57 years old.

Wistaria Lateral 4

Approximately 0.27 linear miles of the east-west trending Wistaria Lateral 4 bounds the southern portion of the LSF. The earthen drain has a trapezoidal cross-section, and is approximately 32 feet wide at the top and eight feet wide at the bottom. The drain appears on the 1957 Heber and Mount Signal 7.5' topographic quadrangles, indicating that it is at least 57 years old.

Wistaria Drain

Approximately 0.50 linear miles of the east-west trending Wistaria Drain bisects the center of the RSF. The earthen drain has a trapezoidal cross-section, and is approximately 40 feet wide at the top and 17 feet wide at the bottom. The drain appears on the 1940 Heber 15' topographic quadrangle, indicating that it is at least 74 years old.

Wistaria Lateral 2

Approximately one linear mile of the east-west trending Wistaria Lateral 2 bounds the southern portion of the ISF. The lateral is concrete-lined, has a trapezoidal cross-section, and measures approximately 13 feet wide at the top and four feet wide at the bottom. The lateral appears on the 1957 Heber 7.5' topographic quadrangle, indicating that it is at least 57 years old.

Wistaria Lateral 3

Approximately 0.42 linear miles of the north-south trending Wistaria Lateral 3 bounds the southeast portion of the FSF and the northwest portion of the ISF. The lateral is concrete-lined, has a trapezoidal cross-section, and measures approximately 18 feet wide at the top and eight feet wide at the bottom. The lateral appears on the 1957 Heber 7.5' topographic quadrangle, indicating that it is at least 57 years old.

4.5.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to cultural resources, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.5.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to cultural resources are considered significant if any of the following occur:

- Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

4.5.2.2 Methodology

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description, to interact with cultural resources in the project area. Based on the extent of these interactions, this analysis considers whether these conditions would result in an exceedance of one or more of the applied significance criteria as identified above.

As indicated in the environmental setting, literature reviews were conducted for the Iris Cluster which covers the FSF, RSF, ISF, and LSF project sites. This report is included as Appendix F of this EIR. The information obtained from these sources was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the significance criteria presented in this section. Impacts associated with cultural resources that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, and duration of project construction and related activities. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through Figures 3.0-9.

4.5.2.3 Impact Analysis

IMPACT *Impact to Historical Resources*

4.5-1 The proposed projects would not cause a substantial adverse change in the significance of a historical resource.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

To be considered historically significant, a resource must meet one of four criteria for listing outlined in the California Register of Historical Resources (CRHR) (CEQA Guidelines 15064.3 (a)(3)). In addition to meeting one of the criteria outlined in the CRHS, a resource must retain enough intact and undisturbed deposits to make a meaningful data contribution to regional research issues (CCR Title 14, Chapter 11.5 Section 4852 [c]). Further, based on CEQA Guidelines Section 15064.5(b), substantial adverse change would include physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource is materially impaired. This can occur when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR, National Register of Historic Resources, a local register, or historic resources.
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its identification in an historical resources survey meeting the requirements of PRC §5024.1(g), unless the public agency establishes by a preponderance of the evidence that the resource is not historically or culturally significant.

A total of five new resources and one previously recorded resource (CA-IMP-3325) were identified as a result of the pedestrian survey. These resources consist of a multicomponent archaeological site (Iris-Site-001M) and four historic built resources (Iris-Built-001, Iris-Built-002, Iris-Built-003, and Iris-Built-004). Based on the Historic Resources Evaluation Report prepared by ESA, Iris-Built-002 does not appear to meet the criteria for listing in the California Register under Criteria 1-4 and is therefore not a historical resource pursuant to CEQA. All six resources will be avoided by the proposed projects and as such, would not demolish or materially alter the physical characteristics of the resources. Therefore, **no impact** would occur.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT

Impact to Archaeological Resources

4.5-2

The proposed projects could cause a substantial adverse change in the significance of an archaeological resource.

Pursuant to CEQA Guidelines §15064.5(c)(1) and (2), an archaeological resource includes an archaeological site that qualifies as a significant historical resource as described for Impact 4.5-1. If an archaeological site does not meet any of the criteria outlined in the provisions under Impact 4.5-1, but meets the definition of a “unique archaeological resource” in PRC 21083.2, the site shall be treated in accordance with the provisions of PRC 21083.2, unless the project applicant and public agency elect to comply with all other applicable provisions of CEQA with regards to archaeological resources. “Unique archaeological resource” means an archaeological artifact, object or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- (3) Is directly associated with a scientifically recognized important historic event or person.

CEQA Guidelines 15064.5(c)(4) confirms that if an archaeological resource is neither a unique archaeological nor an historic resource, the effects of the projects on those resources shall not be considered a significant effect on the environment.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The literature review of the project area indicates there are archaeological resources that have been recorded within a 1-mile radius of the proposed projects (see Tables 4.5-2 through 4.5-5). No cultural resources have been previously identified within the RSF and LSF project sites. However, one cultural resource has been previously identified within the FSF project site and is identified as a mesquite thicket (CA-IMP-3325); and two cultural resources have been previously identified within the ISF project site, and are identified as a mesquite grove (CA-IMP-3309) and a destroyed cross road (CA-IMP-3326).

The historic map review indicates the project sites and surrounding area have been used primarily for agricultural purposes throughout much of the twentieth century. Aside from water conveyance infrastructure associated with agricultural activities, there has been little development within the project sites. However, the review did indicate that the project sites are located along what was a travel and communication corridor during the late 19th century. In addition, the historic maps indicate indigenous habitation with 1.50 miles of the projects during the ethnographic period. Moreover, one multicomponent archaeological site (Iris-Site-001M) was documented within the FSF project site during the pedestrian survey, which indicates there is potential for prehistoric and historic-period archaeological resources.

Based on the results of the records searches and pedestrian survey, the project sites should be considered moderately sensitive for the presence of archaeological resources. The projects include ground-disturbing activities that will extend to depths of 20 feet below the ground surface. As such, the projects have the potential to disturb previously undocumented cultural resources that could qualify as unique archaeological resources pursuant to CEQA. This is considered a **significant impact**. Implementation of proposed Mitigation Measures 4.5-2a through 4.5-2f would reduce the potential impact to a level **less than significant**.

The following mitigation measures are required for the FSF, RSF, ISF, LSF and transmission line.

- 4.5-2a Worker Awareness Training.** Workers conducting grading activities and their supervisors shall receive proper training prior to the commencement of grading from a qualified archaeologist regarding the potential for sensitive archaeological resources to be unearthed during these grading activities. The workers shall be directed to report any unusual specimens of bone, stone, ceramics or other archaeological artifacts observed during grading and/or other construction activities to their supervisor and to cease grading activities in the immediate vicinity of the discovery until the archaeological monitor is notified of the discovery by the Superintendent of the project site.
- 4.5.2b Archaeological and Tribal Monitoring.** Proper training of on-site personnel will be required and, if requested, certified observers (tribal monitors) will be on-site to insure proper avoidance and/or removal protocols are observed in the event that cultural resources are uncovered due to construction ground disturbance.
- 4.5.2c Accidental Discovery of Unknown Archaeological Resources.** In the event that unknown historic or unique archaeological resources are encountered during construction or operational repairs, archaeological monitors will be authorized to temporarily divert construction work within 100 feet of the area of discovery until the significance and the appropriate mitigation measures are determined by a Registered Professional Archaeologist familiar with the resources of the region.
- 4.5-2d Discovery of Archaeological Materials.** In the event archaeological resources potentially eligible for the CRHR are encountered, surface disturbing work in the immediate vicinity of the discovery shall temporarily halt until appropriate treatment of the resource is determined by a qualified archaeologist in accordance with the provisions of CEQA Section 15064.5. The archaeological monitor shall have the authority to re-direct construction equipment in the event archaeological resources potentially eligible for the CRHR are encountered. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the project applicant shall implement an archaeological data recovery program.
- 4.5-2e Cultural Resource Documentation and Treatment by Tribal Monitors.** If a cultural resource artifact, feature, or other cultural item is observed on the project site by the Tribal Monitor(s), the Tribal Monitor(s) will be given a reasonable opportunity to document, remove, and/or otherwise provide for treatment of the resource. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act (NAGPRA), the discovery of any cultural resource within the project area by the Tribal Monitor(s) shall not be grounds for a “stop work” notice or otherwise interfere with the project’s continuation except as set forth in this paragraph.
- 4.5-2f Project Applicant Shall Notify the County within 24 Hours.** Upon discovery of archaeological resources or materials, and after cessation of excavation, the contractor shall immediately contact the Imperial County Department of Planning and Development Services. The contractor shall not resume work until authorization is received from the County.

Significance After Mitigation

Implementation of Mitigation Measures 4.5-2a through 4.5-2f would reduce potentially significant impacts to unknown historic or unique archaeological materials during construction of the proposed projects to **less than significant**.

IMPACT***Impact to Paleontological Resources*****4.5-3**

The proposed projects would not directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Many paleontological fossil sites are recorded in Imperial County and have been discovered during construction activities. Paleontological resources are typically impacted when earthwork activities such as mass excavation cut into geological deposits (formations) with buried fossils. One area in which paleontological resources appear to be concentrated in this region is the shoreline of ancient Lake Cahuilla, which would have encompassed the present-day Salton Sea. The lake covered much of the Imperial Valley and created an extensive lacustrine environment. Lake Cahuilla experienced several fill-recession episodes before it finally dried up about 300 years ago. In 1905, the Colorado River overflowed into the Salton Basin creating the present-day Salton Sea. Because lacustrine environments typically provide the appropriate conditions for fossil preservation, there is a potential for paleontological resources to be present within the project sites and off-site transmission areas.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The proposed projects are located within active agricultural lands. Impacts to any surface or near-surface level paleontological resources are not anticipated due to the extensive grading and disturbance that has already occurred from farming activities within the project sites. Additionally, construction of the projects will not require mass grading or deep cuts/excavations greater than 20 feet below the ground surface. Therefore, **no impact** is anticipated.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT***Impact to Human Remains*****4.5-4**

The proposed projects could disturb and human remains, including those interred outside of formal cemeteries.

Iris Cluster (FSF, RSF, ISF, and LSF)

During the construction and operational phases of the proposed projects, grading, excavation and trenching will be required. While no potential human remains have been identified in the project area, subsurface activities always have some potential to impact previously unknown remains. This is considered a **potentially significant impact**. Mitigation Measure 4.5-4 will ensure that the potential project impacts to previously unknown human remains do not rise to the level of significance pursuant to CEQA. With implementation of Mitigation Measure 4.5-4, the impact will be **less than significant**.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.

4.5-4

Human Remains. In the event that any human remains or related resources are discovered on the project site, such resources shall be treated in accordance with federal, state, and local regulations and guidelines for disclosure, recovery, relocation, and preservation, as appropriate. All construction affecting the discovery site shall cease until, as required by CEQA Guidelines, Section 156064.5(e), the human remains are evaluated by the County Coroner for the nature of the remains and cause of death. All parties involved would ensure that any such remains are treated in a respectful manner and that all applicable federal, state, and local laws are followed.

If human remains are found to be of Native American origin, or if associated grave goods or objects of cultural patrimony are discovered, the provisions of the NAGPRA would be followed, and the Native American Heritage Commission shall be asked to determine the descendants who are to be notified or, if unidentifiable, to establish the procedures for burial.

Significance After Mitigation

Implementation of Mitigation Measure 4.5-4 would reduce potentially significant impacts to human remains to a **less than significant** level by stopping construction if human remains are discovered during construction. No further disturbance would occur until the remains are assessed and treated.

4.5.3 Decommissioning/ Restoration and Residual Impacts

Decommissioning/Restoration

No impact is anticipated from restoration activities as the ground disturbance and associated impacts to cultural resources will have occurred during the construction phase of the projects.

Residual

Implementation of Mitigation Measures 4.5-2a through 4.5-2f would reduce potentially significant impacts to unknown historic or unique archaeological materials during construction of the projects to a level less than significant. Implementation of Mitigation Measure 4.5-4 would reduce potential impacts to human remains to a level less than significant. No unmitigated impacts to cultural resources (i.e., historical resources and archaeological resources) and paleontological resources would occur with implementation of the projects.

4.6 GEOLOGY AND SOILS

This section provides an evaluation of the projects in relation to existing geologic and soils conditions within the project area. Information contained in this section is summarized from publications made available by the California Geological Survey (CGS) and site-specific geotechnical studies prepared by Landmark Consultants, Inc. (LCI), including a Preliminary Geotechnical and Geohazards Report for Ferrell Solar Farm (FSF) (LCI 2013a), a Preliminary Geotechnical and Geohazards Report for Rockwood Solar Farm (RSF) (LCI 2013b), a Preliminary Geotechnical and Geohazards Report for Iris Solar Farm (ISF) (LCI 2013c), and a Preliminary Geotechnical and Geohazards Report for Lyons Solar Farm (LSF) (LCI 2013d). The preliminary reports prepared by LCI are included in Appendix G of this Environmental Impact Report (EIR).

4.6.1 Environmental Setting

The project sites are located in the Colorado Desert Physiographic province of southern California. The dominant feature of the Colorado Desert province is the Salton Trough, a geologic structural depression resulting from large-scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity (LCI 2013a-d). Figure 4.6-1 illustrates the location of the project area in relation to regional faults and physiographic features.

The geologic conditions present within the County contribute to a wide variety of hazards that can result in loss of life, bodily injury, and property damage. Fault displacement is the principal geologic hazard affecting public safety in Imperial County. Strong ground shaking within the project sites would most likely be caused by displacement along the San Andreas or San Jacinto Fault Zones and may result in secondary geologic hazards including: differential ground settlement, soil liquefaction, rock and mudslides, ground lurching, or ground displacement along the fault.

4.6.1.1 Regulatory Setting

This section identifies and summarizes Federal, State, and local laws, policies, and regulations that are applicable to the projects.

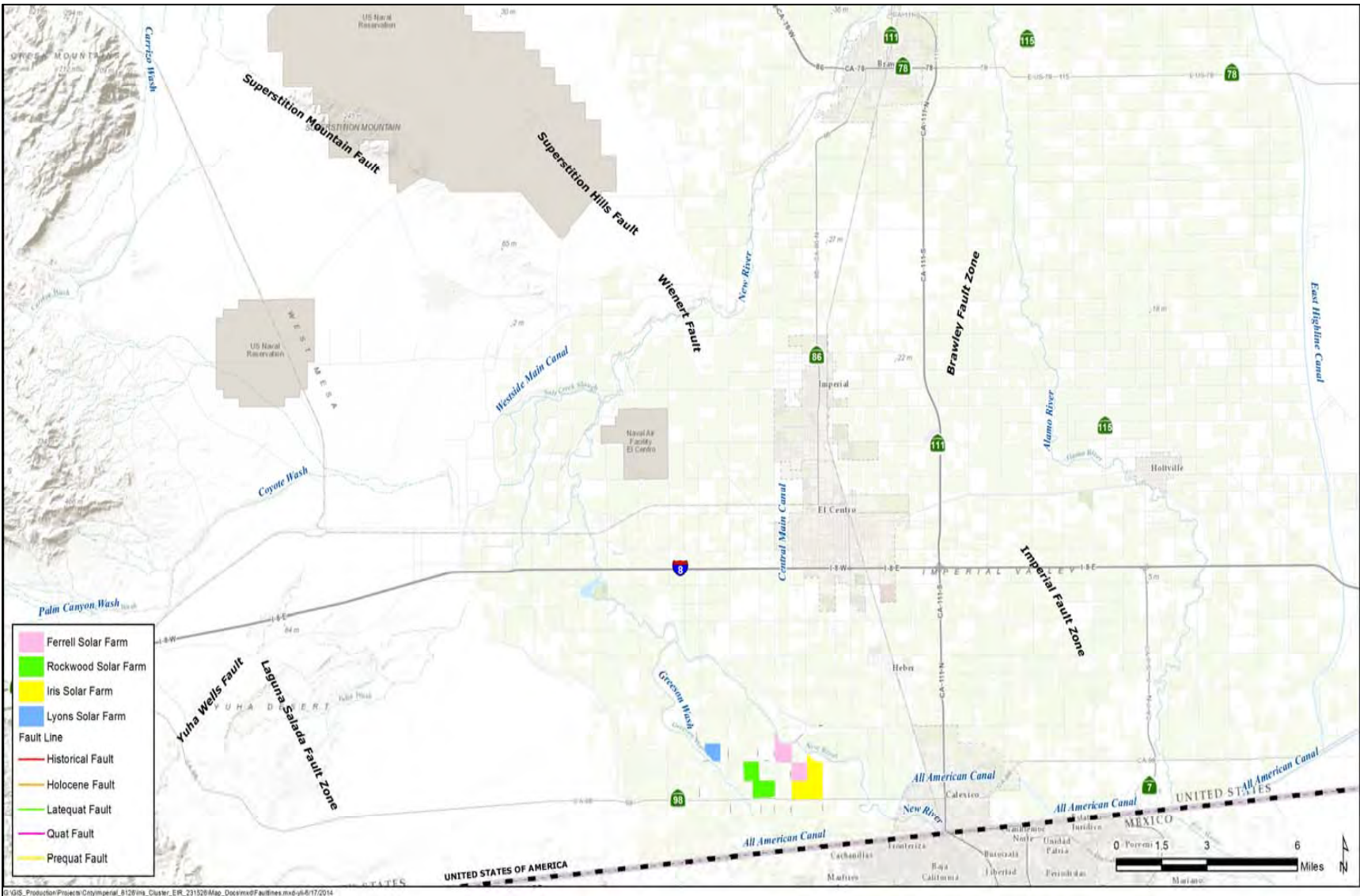
Federal

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and United States Geological Survey (USGS).

Figure 4.6-1. Regional Faults



State

Alquist-Priolo Special Studies Zone Act (1972)

The Alquist-Priolo Special Studies Zone Act (AP Act) was passed into law following the destructive February 9, 1971 San Fernando earthquake. The AP Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the AP Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. The State Geologist (Chief of the California Division of Mines and Geology) is required to identify “earthquake fault zones” along known active faults in California. Counties and cities must withhold development permits for human occupancy projects within these zones unless geologic studies demonstrate that there would be no issues associated with the development of a project. Based on a review of maps produced by the California Geologic Survey, no faults are mapped under the AP Act within the project area (Hart 1997).

California Building Code

The California Building Standards Commission is responsible for coordinating, managing, adopting, and approving building codes in California. California Code of Regulations Title 24 (CCR Title 24) is reserved for state regulations that govern the design and construction of buildings, associated facilities and equipment, known as building standards. The California Health and Safety Code Section 18980 Health and Safety Code Section 18902 give CCR Title 24 the name of California Building Standards Code.

In July 2007, the Commission adopted and published the 2006 International Building Code as the 2007 California Building Code (CBC). This new code was updated on January 1, 2010, and updated all the subsequent codes under the California Code of Regulations (CCR) Title 24. The geotechnical report was based on the CBC 2010 version. . Where no other building codes apply, Part 1, Chapter 18 of the 2010 CBC regulates excavation, foundations, and retaining walls. The CBC applies to building design and construction in the state and is based on the Federal Uniform Building Code (UBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis).

The 2007 CBC replaces the previous “seismic zones” (assigned a number from 1 to 4, where 4 required the most earthquake-resistant design) with new Seismic Design Categories A through F (where F requires the most earthquake-resistant design) for structures. With the shift from seismic zones to seismic design, the CBC philosophy has shifted from “life safety design” to “collapse prevention,” meaning that structures are designed for prevention of collapse for the maximum level of ground shaking that could reasonably be expected to occur at a site. Chapter 16 of the CBC specifies exactly how each seismic design category is to be determined on a site-specific basis through the site-specific soil characteristics and proximity to potential seismic hazards.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act aims to reduce the threat of seismic hazard to public health and safety by identifying and mitigating seismic hazards. Through the act, the California Department of Conservation, Division of Mines and Geology, is directed to delineate seismic hazard zones. State, County, and City agencies are directed to utilize such maps in land use and permitting processes. The act also requires geotechnical investigations particular to the site be conducted before permitting occurs on sites within seismic hazard zones. To date, a Seismic Hazards Map has not been prepared for areas encompassing the project sites.

Local

County of Imperial General Plan

The Seismic and Public Safety Element identifies goals and policies that will minimize the risks associated with natural and human-made hazards. The purpose of the Seismic and Public Safety

Element is directly concerned with reducing the loss of life, injury, and property damage that might result from disaster or accident. Additionally, known as the Imperial Irrigation District Lifelines, the Imperial Irrigation District (IID) has formal Disaster Readiness Standard Operating Procedure for the Water Department, Power Department, and the entire District staff for response to earthquakes and other emergencies. The Water Department cooperates with the Imperial County Office of Emergency Services (OES) and lowers the level in canals after a need has been determined, and only to the extent necessary.

Table 4.6-1 analyzes the consistency of the projects with specific policies contained in the County of Imperial General Plan associated with geology, soils, and seismicity.

TABLE 4.6-1. PROJECT CONSISTENCY WITH APPLICABLE GENERAL PLAN SEISMIC AND PUBLIC SAFETY POLICIES

General Plan Policies	Consistency with General Plan	Analysis
Goal 1. Include public health and safety considerations in land use planning.	Consistent	<p>Division 5 of the County Land Use Ordinance has established procedures and standards for development within earthquake fault zones. Per County regulations, construction of buildings intended for human occupancy which are located across the trace of an active fault are prohibited. An exception exists when such buildings located near the fault or within a designated Special Studies Zone are demonstrated through a geotechnical analysis and report not to expose a person to undue hazard created by the construction.</p> <p>Since the project area is located in a seismically active area, all proposed structures are required to be designed in accordance with the California Building Code (CBC) for near source factors derived from a Design Basis Earthquake (DBE) based on a peak ground acceleration (PGA) of 0.47 gravity (g) (LCI, 2010(a)). In addition, the only habitable structures would be the O&M (operations & maintenance) buildings, which would employ up to 24 full-time (up to six employees per site). In considering these factors in conjunction with mitigation requirements outlined in the impact analysis, the risks associated with seismic hazards would be minimized.</p> <p>Preliminary geotechnical reports have been prepared by LCI for the proposed projects. The preliminary geotechnical reports have been referenced in this environmental document. Additionally, design-level geotechnical investigations will be conducted to evaluate the potential for site specific hazards associated with seismic activity.</p>
Objective 1.1. Ensure that data on geological hazards is incorporated into the land use review process, and future development process.		
Objective 1.3. Regulate development adjacent to or near all mineral deposits and geothermal operations.		
Objective 1.4. Require, where possessing the authority, that avoidable seismic risks be avoided; and that measures, commensurate with risks, be taken to reduce injury, loss of life, destruction of property, and disruption of service.		
Objective 1.7. Require developers to provide information related to geologic and seismic hazards when siting a proposed project.		
Goal 2: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.		
Objective 2.2. Reduce risk and damage due to seismic hazards by appropriate regulation.		
Objective 2.5 Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.		
Objective 2.8 Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards including flooding, land subsidence, earthquakes, other geologic phenomena, levee or dam failure, urban and wildland fires and building collapse by appropriate planning and emergency measures.		

Source: County of Imperial General Plan, Seismic & Public Safety Element as amended through 2008

4.6.1.2 Existing Conditions

Geology

Topography within each of the project sites is relatively flat and primarily characterized by a level elevation. Elevations within the boundaries of the range from the highest elevation of 5 to 7 feet below mean sea level (BMSL) for the ISF, 8 to 10 BMSL for the FSF, 10 to 15 BMSL for the RSF, to 20 to 25 feet BMSL for the LSF (GS Lyon 2013).

The project area is directly underlain by lacustrine deposits, which consist of interbedded lenticular and tabular silt, sand, and clay. The predominant surface soil is a silty clay loams and sandy loams for the project area along the New River (FSF and ISF). At depth, these materials transition from late Pleistocene¹ to Holocene²-aged lake deposits that are expected to be less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed Lake Cahuilla (LCI 2013a-d). Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic³ granite and Paleozoic⁴ metamorphic rocks are estimated to exist at depths between 15,000 to 20,000 feet below the ground surface (LCI 2013a-d).

Seismicity

Earthquakes are the result of an abrupt release of energy stored in the earth. This energy is generated from the forces which cause the continents to change their relative position on the earth's surface, a process called "continental drift." The earth's outer shell is composed of a number of relatively rigid plates which move slowly over the comparatively fluid molten layer below. The boundaries between plates are where the more active geologic processes take place. Earthquakes are an incidental product of these processes. As a result, southern California is located in a considerably seismically active region as the Pacific Plate moves northward relative to the North American Plate at their boundary along the San Andreas Fault System.

The project area is located in a seismically active region, with potential for strong ground shaking associated with earthquakes. The faults/fault zones within the vicinity of (15 miles) and surrounding the project sites include (but are not limited to) the Brawley Fault Zone, Imperial Fault Zone, Laguna Salada Fault Zone, Superstition Hills Fault, Superstition Mountain Fault, Wienert Fault, and the Yuha Wells Fault (Figure 4.6-1). According to the Preliminary Geotechnical and Geohazards Report, the nearest mapped earthquake fault zone is an unnamed fault located approximately 3 miles west of the LSF. This unnamed fault was recently identified and zoned after the April 4, 2010 magnitude 7.2 M_w El Mayor-Cucaph earthquake.

Ground Shaking

Ground shaking is the byproduct of an earthquake and is the energy created as rocks break and slip along a fault (Christenson 1994). The amount of ground shaking that an area may be subject to during an earthquake is related to the proximity of the area to the fault, the depth of the hypocenter (focal depth), location of the epicenter and the size (magnitude) of the earthquake. Soil type also plays a role in the intensity of shaking. Bedrock or other dense or consolidated materials are less prone to intense ground shaking than soils formed from alluvial deposition.

The probability of earthquake occurrences and their associated peak ground accelerations for the project sites was estimated in the Preliminary Geotechnical and Geohazards Report (LCI 2013). A probabilistic seismic hazard assessment is typically expressed in terms of probability of exceeding a certain ground

¹ The Pleistocene is the epoch from 2,588,000 to 11,700 years before present. The end of the Pleistocene corresponds with the end of the last glacial period.

² The Holocene epoch extends from 11,700 years to present.

³ The Mesozoic epoch extends from 251 to 65.5 million years before present.

⁴ The Paleozoic epoch extends from 542 to 251 million years before present.

motion. The 2014 CBC general ground motion parameters are based on the Maximum Credible Earthquake (MCE) for a ground motion with a 2 percent probability of occurrence in 50 years. The site soils have been classified as Site Class D (stiff soil profile). Design earthquake ground motions are defined as the earthquake ground motions that are two-thirds of the corresponding MCE ground motions. The PGA value of 0.38g to 0.40g (force of gravity) was determined for liquefaction and seismic settlement analysis in accordance with 2010 CBC Section 1803.5.12 and CGS Note 49 ($PGA = S_{DS}/2.5$). The parameter S_{DS} is derived from the maximum considered earthquake spectral response acceleration for short periods.

Surface Rupture

Surface rupture occurs when movement along a fault results in actual cracking or breaking of the ground along a fault during an earthquake. However, it is important to note that not all earthquakes result in surface rupture. Surface rupture almost always follows preexisting fault traces, which are zones of weakness. Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. Fault creep is the slow rupture of the earth's crust. Sudden displacements are more damaging to structures because they are accompanied by shaking. No faults mapped under the Alquist-Priolo (AP) Act traverse the project sites (LCI 2013a-d). Ground failures (lateral spreading) were noted along the embankments of the All American Canal after the April 4, 2010 magnitude 7.2 M_W El Mayor-Cucapah earthquake. However, surface rupture due to faulting within the project sites is not expected to occur and hazards related to rupture along a known earthquake fault are considered unlikely (LCI 2013a-d).

Liquefaction

Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as those produced by earthquakes. With strong ground shaking, an increase in pore water pressure develops as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations.

Four conditions are generally required for liquefaction to occur: (1) the soil must be saturated (relatively shallow groundwater); (2) the soil must be loosely packed (low to medium relative density); (3) the soil must be relatively cohesionless (not clayey); and (4) groundshaking of sufficient intensity must occur to function as a trigger of mechanism. All of these conditions may exist to some degree within the project area.

Landslides

A landslide refers to a slow to very rapid descent of rock or debris caused by natural factors such as the pull of gravity, fractured or weak bedrock, heavy rainfall, erosion and earthquakes. The project sites are located on relatively flat topography with a low range in elevation. No ancient landslides are shown on geologic maps of the region and no indications of landslides were observed during site visits conducted by LCI (LCI 2013a-d).

Hydrocollapse

Hydrocollapse occurs when soils collapse as a result of being saturated with water. The project sites are dominantly underlain by clays that are not expected to collapse with the addition of water to the site and, therefore, the risk of hydro-collapse is considered very low (LCI 2013a-d).

Total and Differential Settlement

Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Typically, areas underlain by artificial fills, unconsolidated alluvial sediments, and slope wash, and areas with improperly engineered construction fills are susceptible to this type of settlement. Settlement of the

ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking. Given the extensive agricultural use within the project sites, transitions between compacted and non-compacted surfaces could present implications for utility infrastructure in the project sites and is discussed further in the impact analysis.

Regional Subsidence

Subsidence refers to the downward shifting motion relative to geologic units. Regional subsidence has not been documented in the area west of Calexico; therefore the risk of regional subsidence is considered low (LCI 2013a-d).

Volcanic Hazards

The project area is located 37 miles south of Salton Buttes, a lava dome located within the Salton Sea Geothermal Field (USGS Volcano Hazards Program). The geothermal system is fueled by heat emanating from zones of partially molten rock deep below the earth's surface. Eruptions occurring about 400,000 years ago were followed by a long lull in volcanic activity until about 18,000 years ago, and the most recent activity 9,000 years ago. According to the USGS, the available data are insufficient to establish a pattern of volcanic activity to determine the likelihood of eruption. The high heat flow from the area and the relatively young age of the Salton Buttes would indicate a potential for future eruptions.

Soil Resources

Figure 4.6-2 identifies the soil resources within the project sites. As shown in Figure 4.6-2, there are predominantly seven soil types that comprise the FSF, RSF, ISF, and LSF. The seven predominant soil types within the boundaries of the project area are described below (NRCS 2008):

Badland, (102) No slope listed: This steep to very steep miscellaneous area consists of barren land on unconsolidated, stratified alluvium, and is dissected by drainage ways.

Holtville silty clay (109 and 110), 0 to 3 percent slopes: The Holtville Series consists of very deep, well drained soils formed in mixed and stratified alluvium. Holtville soils occur on flood plains and basins. These soils are well drained, runoff is low, and permeability is slow.

Imperial silty clay (114), 0 to 2 percent slopes: The Imperial series is derived from clayey alluvium mixed sources and/or clayey lacustrine deposits derived from mixed sources. These soils are moderately well drained, runoff is slow or very slow, and permeability is very slow.

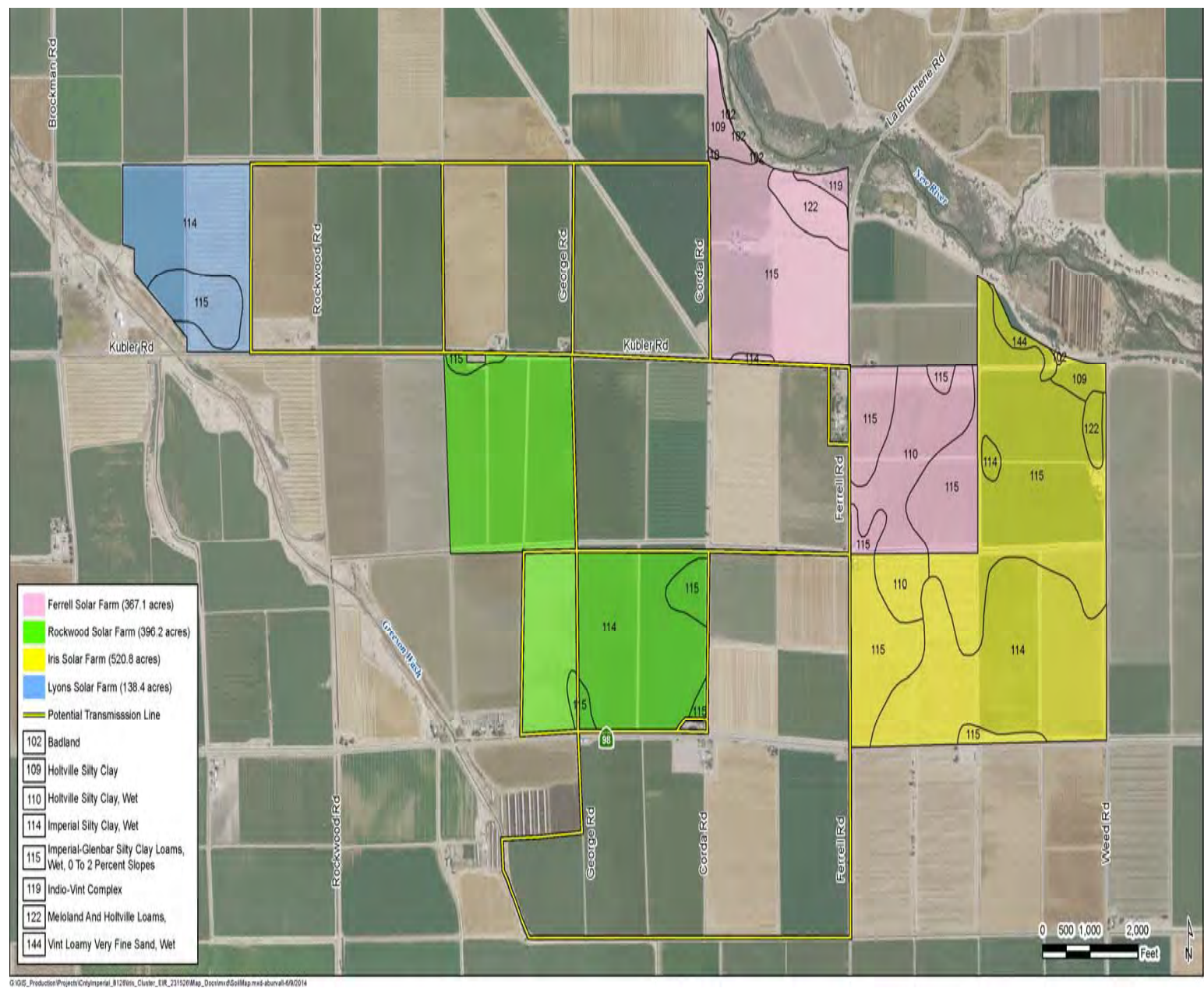
Imperial-Glenbar (115), silty clay loam, 0 to 2 percent slopes: The Imperial series is derived from clayey alluvium mixed sources and/or clayey lacustrine deposits derived from mixed sources. These soils are well drained, runoff is slow, and permeability is slow.

Indio Vint Complex (119), loamy fine sand, 0 to 3 percent slopes: These nearly level soils are on flood plains and alluvial basin floors. The unit averages about 35 percent Indio lam and 30 percent Vint loamy fine sand. The remaining 35 percent is Rositas, Meloland, and Holtville soils.

Meloland and Holtville loams (122), very fine sandy loam, 0 to 1 percent slopes: The Meloland soils are naturally well drained, but commonly have perched water tables under irrigation. Surface runoff is low or medium, and permeability is slow. Tile drains have been used extensively to improve drainage and remove salts in irrigated soils.

Vint loamy very fine sand (144), 0 to 3 percent slopes: The Vint series consists of very deep, soils formed in stratified stream alluvium. Vint soils occur on flood plains. Vint soils are somewhat excessively drained, runoff is very slow, and permeability is moderately rapid.

Figure 4.6-2. Soils Map



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Soil-Related Hazards

The physical properties of the soil base can greatly influence improvements constructed upon them. As an example, expansive soils are largely comprised of clays, which greatly increase in volume when water is absorbed and shrink when dried. This movement may result in the cracking of foundations for aboveground, paved roads, and concrete slabs. Clayey and silty clay soils occur throughout the project area that have a severe shrink-swell potential for small buildings and roadways (see Figure 4.6-2).

These clayey materials are generally comprised within one or more soil horizons within the upper five feet of the soil profile. Similarly, these types of soils can be corrosive and damage underground utilities including pipelines and cables, or weaken roadway structures. Soils within project area are classified as moderately corrosive to concrete and steel (NRCS 2008). These hazards are discussed further in the impact analysis.

4.6.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to geologic and soil conditions, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.6.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to geologic and soil conditions are considered significant if any of the following occur:

- Expose people or structures to potential substantive adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (Refer to Division of Mines and Geology Special Publication 42)
 - Strong seismic ground shaking;
 - Seismic related ground failure, including liquefaction;
 - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in the latest UBC, creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

4.6.2.2 Methodology

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description, to interact with local geologic and soil conditions in the project sites. Based on the extent of these interactions, this analysis considers whether these conditions would result in an exceedance of one or more of the applied significance criteria as identified above.

As discussed above, four separate Geotechnical and Geologic Hazards Reports have been prepared which covers the FSF, RSF, ISF, and LSF. These reports are included as Appendix G of this EIR. The analysis prepared for this EIR also relied on NRCS soil survey data ("Web Soil Survey"), and published geologic literature and maps. The information obtained from these sources was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the significance criteria presented in this section. Impacts associated with geology and soils that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, and duration of project construction and related activities; and a field visit. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through 3.0-9.

4.6.2.3 Impact Analysis

IMPACT *Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking.*

4.6-1 *The project area is located in an area of moderate to high seismic activity and, therefore, project-related structures could be subject to damage from seismic ground shaking and related secondary geologic hazards.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project area is located within a seismically active area and would likely experience at least one major earthquake (greater than moment magnitude 6 on the Richter scale) within the next 30 years, which is within the expected useful life of the projects. The closest mapped active faults to the project sites include: the Brawley Fault Zone (11.3 miles), Imperial Fault Zone (8.6 miles), Laguna Salada Fault Zone (11.3 miles), Superstition Hills Fault (9.9 miles), Superstition Mountain Fault (13.2 miles), Wienert Fault (8.5 miles), and the Yuha Wells Fault (13.5 miles) (see Figure 4.6-1).

In the event of an earthquake along one of these fault sources, seismic hazards related to ground motion could occur in susceptible areas within the project area. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the moment magnitude, and the duration of shaking. Given the estimated PGA of 0.38 to 0.40 g (LCI 2013a-d), ground motions within the project area could cause moderate structural damage to older structures, but damage would be less in newly constructed structures.

Even with the integration of building standards, ground shaking within the project area could cause some structural damage to the facility structures or, at least, cause unsecured objects to fall. During a stronger seismic event, ground shaking could expose employees to injury from structural damage or collapse of electrical distribution facilities. Given the potentially hazardous nature of the project facilities (e.g., danger from electrocution), the potential impact of ground motion during an earthquake is considered a **significant impact**, as proposed structures, such as the O&M buildings and transmission lines could be damaged.

Based on the underlying geology, generally consisting of cohesive soil materials (e.g., plastic silts and clays which bond together), the potential for liquefaction to occur during the expected peak ground acceleration is considered low. However, given the proximity of several active faults and the presence of a shallow (or perched) groundwater table, additional geotechnical investigation would be required to confirm the liquefaction hazards within the project area. Without additional geotechnical investigation, the potential for ground-related failures, such as ground lurching, differential settlement or lateral spreading, during a seismic event remain an inherent, significant risk to the projects. The potential impact to liquefaction is considered a **significant impact**.

No portion of the project area is located on an active fault or within a designated AP Zone and, therefore, the potential for ground rupture to occur within the project sites and off-site transmission area is unlikely. Ground failures (lateral spreading) were noted along the embankments of the All American Canal after the April 4, 2010 magnitude 7.2 M_w El Mayor-Cucapah earthquake. However, surface rupture due to

faulting within the project area is not expected to occur and hazards related to rupture along a known earthquake fault are considered unlikely (LCI 2013a-d). Similarly, in the context of the flat topography within the project area, the potential for earthquake induced landslides to occur at the site is unlikely. For these reasons, **no significant impact** has been identified associated with these geologic issues.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.

4.6-1 Prepare Geotechnical Report(s) for the Projects and Implement Required Measures. Facility design for all project components shall comply with the site-specific design recommendations as provided by a licensed geotechnical or civil engineer to be retained by the project applicant. The final geotechnical and/or civil engineering report shall address and make recommendations on the following:

- Site preparation;
- Soil bearing capacity;
- Appropriate sources and types of fill;
- Potential need for soil amendments;
- Road, pavement, and parking areas;
- Structural foundations, including retaining-wall design;
- Grading practices;
- Soil corrosion of concrete and steel;
- Erosion/winterization;
- Seismic ground shaking;
- Liquefaction; and
- Expansive/unstable soils.

In addition to the recommendations for the conditions listed above, the geotechnical investigation shall include subsurface testing of soil and groundwater conditions, and shall determine appropriate foundation designs that are consistent with the version of the CBC that is applicable at the time building and grading permits are applied for. All recommendations contained in the final geotechnical engineering report shall be implemented by the project applicant.

Significance After Mitigation

With the implementation of the above mitigation measure, potential impacts from strong seismic ground-shaking and liquefaction would be reduced to a **less than significant** level through the implementation of recommendations made by a licensed geotechnical engineer in compliance with the CBC prepared as part of a formal geotechnical investigation.

IMPACT *Unstable Geologic Conditions.*

4.6-2 *The projects could be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the projects.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Based on the discussions provided for geologic hazards within the setting description, the primary concerns related to local geologic conditions is related to settlement and differential settlement, and the potential for volcanic hazards. Settlement could potentially occur from the placement of new static loads with possibly half of the settlement taking place during construction or shortly thereafter. Differential settlement could occur between foundation blocks or slabs due to variability in underlying soil conditions. Total and differential settlement could therefore damage proposed foundations, structures, and utilities. Additionally, although unlikely, regional subsidence could cause potential damage to structures designed

with minimal tolerance for settlement. Therefore, these direct and indirect impacts are considered **significant impacts** and require mitigation. Upon implementation Mitigation Measure 4.6-1 listed above, geologic hazards in terms of total and differential settlement would be reduced to a **less than significant** level, because a licensed geotechnical or soils engineer would investigate the site-specific soil conditions and design the facilities to withstand settlement in accordance with the CBC.

The surrounding area has an identified lava dome, Salton Buttes, located 37 miles north of the project area. The surrounding area has a geothermal system that Imperial Irrigation District capitalizes on, by owning and operating several thermal generation facilities within their service territory. According to USGS, the most recent activity occurred 9,000 years ago. There is insufficient data to determine the likelihood of an eruption in the area; however, the high heat flow from the area and relatively young age of the Salton Buttes would indicate a potential for future eruptions. Given the nature of the uncertainty of an eruption and the distance from the lava dome to the projects, it is unlikely the projects would be impacted by a large volcanic eruption. Therefore, impacts related to volcanic hazards are considered **less than significant**.

Mitigation Measure(s)

No additional mitigation measures beyond Mitigation Measure 4.6-1 are required.

IMPACT Construction-Related Erosion.

4.6-3

Construction activities during project implementation would involve grading and movement of earth in soils subject to wind and water erosion as well as topsoil loss.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

During the site grading and construction phases, large areas of unvegetated soil would be exposed to erosive forces by water for extended periods of time. Unvegetated soils are much more likely to erode from precipitation than vegetated areas because plants act to disperse, infiltrate, and retain water. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation to surface waters. Construction could produce sediment-laden stormwater runoff (nonpoint source pollution), a major contributor to the degradation of water quality. If precautions are not taken to contain contaminants, construction related erosion impacts are considered a **significant impact**.

The projects are not expected to result in substantial soil erosion or the loss of topsoil over the long-term given the existing agricultural uses. In addition, ground cover will be planted between the arrays for the life-span of the solar facility is operations. Under existing conditions, lands within the project area are actively used for irrigated agriculture and are worked for planting and harvesting of crops. Under the projects, these lands would be covered with a combination of PV (or CPV) solar arrays and a cover crop or soil stabilizer used in between the solar arrays. This management approach would be less intense as compared to the baseline condition, and would effectively cover over 90 percent of each of the four project sites. Additionally, harvesting activities remove much of the crop residue off-site, thereby exposing the soil surface to increased erosion potential. Upon implementation of the projects, the quantity of groundcover would likely experience a net increase, since no crop residue would be exported off-site.

Further, the project applicant would be required to implement on-site erosion control measures in accordance with County standards, which require the preparation, review, and approval of a grading plan by the County Engineer. Given these considerations and the fact that the encountered soil types have a low to moderate erosion potential, the projects' long-term impact in terms of soil erosion and loss of topsoil would be **less than significant**. In addition, the implementation of Mitigation Measure 4.9-1 in Chapter 4.9, Hydrology/Water Quality, the potential **significant impact** associated with erosion from construction activities would be reduced to a **less than significant** level with the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), including Best Management Practices (BMPs) to reduce erosion from the construction site.

Mitigation Measure(s)

No additional mitigation measures beyond Mitigation Measure 4.9-1 are required.

Significance After Mitigation

With implementation of Mitigation Measure 4.9-1 in Chapter 4.9, Hydrology/Water Quality, potential impacts from erosion during construction activities would be reduced to a **less than significant** level with the preparation of a SWPPP and implementation of BMPs to reduce erosion from the construction site.

IMPACT *Exposure to Potential Hazards from Problematic Soils.*

4.6-4 *The projects could encounter expansive or corrosive soils thereby subjecting related structures to potential risk of failure.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As provided in the environmental setting, soil materials within the project sites and off-site transmission area generally contain a high percentage of clay, which may exhibit a moderate to high potential for shrink-swell. Unless properly mitigated, shrink-swell soils could exert additional pressure on buried structures and electrical connections producing shrinkage cracks that could allow water infiltration and compromise the integrity of backfill material. These conditions could be worsened if structural facilities are constructed directly on expansive soil materials. Likewise, corrosive soil materials could lead to deterioration of structural concrete footings. These impacts would be a **significant impact** as structures could be damage by these types of soils.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.

4.6-4 Implement Corrosion Protection Measures. As determined appropriate by a licensed geotechnical or civil engineer, the project applicant shall ensure that all underground metallic fittings, appurtenances, and piping include a cathodic protection system to protect these facilities from corrosion.

Significance After Mitigation

With implementation of the mitigation measure listed above, soil-related hazards in terms of expansive and corrosive soils would be reduced to a **less than significant** level because a licensed geotechnical or soils engineer would investigate the site-specific soil conditions and design the facilities to withstand expansive soil pressures and soil corrosivity.

IMPACT *On-site Wastewater Treatment and Disposal.*

4.6-5 *The on-site wastewater treatment system could violate water quality standards, waste discharge requirements, or otherwise degrade surface and groundwater quality.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As described in the setting discussion, the predominant soil types found within the project area consist of silty clays and clays that have a very low to low percolation rates and thus, are considered poor in supporting on-site septic systems and leach fields for wastewater disposal. The project applicant is proposing the use of a standard on-site septic tank and leach field for the treatment and disposal of on-site generated sanitary wastewater. This would occur only at the O&M buildings. According to the County Conditional Use Permit applications for each of the projects, each project site will have its own on-site leach field. In the event that O&M buildings are shared, the leach field will be located at the site of the shared O&M building. As described in Chapter 3, the wastewater system would be designed to meet

standard construction requirements and operations and maintenance guidelines required by Imperial County laws, ordinances, regulations, and standards to ensure that soils are capable of supporting the use of septic tanks.

Notwithstanding these design requirements, potential equipment failures or wastewater loading rates in excess of the design capacity of the treatment and disposal system could lead to water quality degradation. Additionally, the local soil survey notes that a shallow groundwater table is present throughout the project area, which could render infiltration of wastewater into the soil column temporarily infeasible at certain times of the year. This would be a **significant impact**.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, and LSF.

- 4.6-5 Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements.** The project's wastewater treatment and disposal system(s) shall demonstrate compliance with the Imperial County performance standards as outlined in Title 9, Division 10, Chapters 4 and 12 of the Imperial County Code. Prior to construction, and again prior to operation, the project applicant will obtain all necessary permits and/or approvals from the Imperial County Public Works Department. The project applicant shall demonstrate that the system adequately meets County requirements, which have been designed to protect beneficial uses and ensure that applicable water quality standards are not violated. This shall include documentation that the system will not conflict with the Regional Water Quality Control Board's Anti-Degradation Policy.

Significance After Mitigation

With implementation of the mitigation measure listed above, potential impacts related to infiltration of wastewater into the soil column and water quality degradation would be reduced to a **less than significant** level through compliance with County performance standards.

4.6.3 Decommissioning/ Restoration and Residual Impacts

Decommissioning/Restoration

Decommissioning and restoration of the sites at the end of their use as solar fields would involve the removal of structures and the reintroduction of agricultural operations. No geologic or soil impacts associated with the restoration activities would be anticipated, and therefore, **no impact** is identified.

Residual

With implementation of Mitigation Measures 4.6-1, 4.9-1, and 4.6-4, impacts related to strong seismic ground-shaking, construction-related erosion, and soil hazards related to settlement and corrosion, would be reduced to less than significant levels. With the implementation of Mitigation Measure 4.6-5, impacts resulting from new on-site wastewater treatment and disposal systems would be reduced to a less than significant level. Based on these circumstances, the projects would not result in residual significant and unmitigable impacts related to geology and soil resources.

4.7 GREENHOUSE GAS EMISSIONS

This section provides an overview of existing Greenhouse Gas (GHG) emissions within the project area and identifies applicable federal, state, and local policies related to global climate change. The impact assessment provides an evaluation of potential adverse effects with regards to GHG emissions based on criteria derived from the California Environmental Quality Act (CEQA) Guidelines in conjunction with actions proposed in Chapter 3, Project Description. OB-1 Air Analyses prepared an Air Quality/Greenhouse Gas Report in April 2014 for the Iris Cluster Solar project, which includes the FSF, RSF, ISF, and LSF. The report is included in Appendix D of this EIR.

4.7.1 Environmental Setting

Global Climate Change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), which are known GHGs. These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called GHGs, analogous to a greenhouse. GHGs are emitted by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Emissions from human activities, such as burning fossil fuels for electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

The State of California has been at the forefront of developing solutions to address GCC. GCC refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. GCC may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO₂ equivalent concentration is required to keep global mean warming below 3.6 degrees Fahrenheit (° Fahrenheit) (2° Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines GHGs as any of the following compounds CO₂, CH₄, N₂O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆) (California Health and Safety, Code Section 38505(g)).

The State of California GHG Inventory performed by the California Air Resources Board (CARB), compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO₂, CH₄, N₂O, SF₆, HFCs, and PFCs. The current inventory covers the years 2000 to 2011, and is summarized in Table 4.7-1. Data sources used to calculate this GHG inventory include California and Federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 2000 emissions level is the sum total of sources from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: agriculture, commercial and residential, electric power, industrial, transportation, recycling and waste, and high global warming potential (GWP) gases.

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO₂ equivalents (CO₂e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

TABLE 4.7-1. CALIFORNIA GHG EMISSIONS INVENTORY 2000-2011

Sector	Total 2000 Emissions (MMTCO ₂ e) ¹	Total 2011 Emissions (MMTCO ₂ e)
Agriculture	29.04	32.24
Commercial and Residential	43.64	45.47
Electric Power	104.86	86.57
Industrial	95.81	93.24
Transportation	176.29	168.42
Recycling and Waste	6.14	7.00
High GWP Gases	7.11	15.17

Source: CARB 2013.

Note: MMTCO₂e = million metric tons of CO₂ equivalent.

GHGs have varying GWP. The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas. The reference gas for GWP is CO₂; therefore, CO₂ has a GWP of 1. The other main GHGs that have been attributed to human activity include CH₄, which has a GWP of 21, and N₂O, which has a GWP of 310.

4.7.1.1 Regulatory Setting

On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders, most recently, Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management (January 24, 2007) was enacted. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

Federal

Recent actions by the U.S. EPA have allowed for the regulation of GHGs. On April 17, 2009, the U.S. EPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the U.S. EPA Administrator signed and finalized two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs: CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆ in the atmosphere threaten the public health and welfare of current and future generations.

Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the U.S. EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by U.S. EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of CO₂ per mile.

On March 10, 2009, in response to the Fiscal Year 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), the U.S. EPA proposed a rule that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and was published in the Federal Register on October 30, 2009.

The rule became effective on December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The U.S. EPA is requiring suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 MT or more per year of GHG emissions to submit annual reports to U.S. EPA. The gases covered by the proposed rule are CO₂, CH₄, N₂O, HFC, PFC, SF₆, and other fluorinated gases, including nitrogen trifluoride (NF₃) and hydrofluorinated ethers (HFE).

State

California Code of Regulations Title 24. Although not originally intended to reduce GHG emissions, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions. Therefore, increased energy efficiency results in decreased GHG emissions.

California Assemble Bill 1493. California Assembly Bill (AB) 1493 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030. The federal Corporate Average Fuel Economy (CAFE) standard determines the fuel efficiency of certain vehicle classes in the United States. In 2007, as part of the Energy and Security Act of 2007, CAFE standards were increased for new light-duty vehicles to 35 miles per gallon by 2020.

Executive Order S-01-07. Executive Order S-01-07 was enacted by the Governor on January 18, 2007. Essentially, the order mandates the following: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California. It is assumed that the effects of the LCFS would be a 10% reduction in GHG emissions from fuel use by 2020.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California," and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwarzenegger signed California AB 32, the global warming bill, into law. AB 32 directs CARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct

emission reduction measures, alternative compliance mechanisms, and potential monetary and nonmonetary incentives that reduce GHG emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.

- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.
- CARB approved a 1990 GHG emissions level of 427 MTCO₂e, on December 6, 2007 in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 MTCO₂e. It was estimated that the 2020 estimated BAU of 596 MTCO₂e would have required a 28 percent reduction to reach the 1990 level of 427 MTCO₂e.

In response to the requirements of AB 32, the CARB released a Scoping Plan in 2008. This Scoping Plan, developed by CARB in coordination with the Climate Action Team (CAT), proposed a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health. It was adopted by CARB in December 2008. According to the Scoping Plan, the 2020 target of 427 MTCO₂e requires the reduction of 169 MTCO₂e, or approximately 28.3 percent, from the State's projected 2020 BAU emissions level of 596 MTCO₂e.

In August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. The 2011 Scoping Plan expands the list of nine Early Action Measures into a list of 39 Recommended Actions.

Senate Bill 97. Senate Bill 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs Office of Planning and Research (OPR) to develop draft CEQA Guidelines “for the mitigation of GHG emissions or the effects of GHG emissions” by July 1, 2009, and directs the Resources Agency to certify and adopt the CEQA Guidelines by January 1, 2010.

On December 30, 2009, the Natural Resources Agency adopted amendments to the CEQA Guidelines in the California Code of Regulations. The amendments went into effect on March 18, 2010, and are summarized below:

- Climate action plans and other GHG reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the GHG emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. In addition, consideration of several qualitative factors may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. The Guidelines do not set or dictate specific thresholds of significance.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of GHG emissions in Appendix G of the CEQA Guidelines.
- The Guidelines are clear to state that “to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation.”
- The Guidelines promote the advantages of analyzing GHG impacts on an institutional, programmatic level, and therefore approve tiering of environmental analyses and highlights some benefits of such an approach.

- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential, pursuant to Appendix F of the CEQA Guidelines.

Senate Bill 375. Senate Bill 375 requires that regions within the State which have a metropolitan planning organization must adopt a sustainable communities strategy as part of their regional transportation plans. The strategy must be designed to achieve certain goals for the reduction of GHG emissions. The bill finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so, "it will be necessary to achieve significant additional GHG reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 provides that new CEQA provisions be enacted to encourage developers to submit applications and local governments to make land use decisions that will help the State achieve its goals under AB 32," and that "current planning models and analytical techniques used for making transportation infrastructure decisions and for air quality planning should be able to assess the effects of policy choices, such as residential development patterns, expanded transit service and accessibility, the walkability of communities, and the use of economic incentives and disincentives."

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08. SB 1078 initially set a target of 20 percent of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the Renewables Portfolio Standard (RPS) was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20 percent RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020.

Executive Order S-21-09. Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the CARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target as established in Executive Order S-14-08. Under Executive Order S-21-09, the CARB will work with the Public Utilities Commission (PUC) and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The CARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the CARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

Senate Bill X1-2. Senate Bill X1-2 was signed by Governor Brown, in April 2011. This new RPS preempts CARB's 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities (IOUs), electricity service providers, and community choice aggregators. All of these entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirement being met by the end of 2020. Renewable energy sources include wind, geothermal, and solar.

County of Imperial

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the State CEQA Guidelines to provide regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and GCC impacts. Formal CEQA thresholds for lead agencies must always be established through a public hearing process. Imperial County has not established formal quantitative or qualitative thresholds through a public rulemaking process, but CEQA permits the lead agency to establish a project-specific threshold of significance if backed by substantial evidence, until such time as a formal threshold is approved.

4.7.1.2 Existing Conditions

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes as well as human activities. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Scientific evidence indicates a trend of increasing global temperature over the past century, which a number of scientists attribute to an increase in GHG emissions from human activities. Recent observed changes due to global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (Intergovernmental Panel on Climate Change 2007). Generally accepted predictions of long-term environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack.

Human-caused sources of CO₂ include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO₂ concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO₂ have increased in the atmosphere since the industrial revolution. CH₄ is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure and cattle farming. Human-caused sources of N₂O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid. Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses. GHGs present in the project study areas primarily include CO₂ and N₂O from farm equipment and local traffic.

The California Climate Change Center (CCCC) used a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5° F); medium warming range (5.5 to 8.0° F); and higher warming range (8.0 to 10.5° F). The CCCC also presents an analysis of the future projected climate changes in California under each warming range scenario (CCCC 2006).

According to CCCC, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O₃ formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O₃ levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including PM_{2.5} could further compromise air quality. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from Northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring

snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasingly threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats.

4.7.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to GHGs, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.7.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to GHGs are considered significant if any of the following occur:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of GHG emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

- 1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead

agency should explain the limitations of the particular model or methodology selected for use; and/or

- 2) Rely on a qualitative analysis or performance based standards.

A lead agency should consider the following factors, among others, when assessing the significance of impacts from GHG emissions on the environment:

- 1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
- 2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
- 3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Different agencies and studies estimate different goals for reduction of emissions to achieve 1990 levels by the year 2020, as set forth in AB 32. Some agencies have estimated a reduction of 28 to 29 percent, based on the ARB's analysis that statewide 2020 business as usual GHG emissions would be 596 MMT CO₂e, with 1990 emissions of 427 MMTCO₂e, for a reduction of 28.35 percent (ARB 2010).

The Air Quality/Greenhouse Gas Report prepared by OB-1 Air Analyses (Appendix D of this EIR) proposes the use of the "Tier 3" quantitative thresholds for residential and commercial projects as recommended by the South Coast Air Quality Management District (SCAQMD). The SCAQMD proposes that if a project generates GHG emissions below 3,000 tonnes of carbon dioxide equivalents (tCO₂e), it could be concluded that the project's GHG contribution is not cumulatively considerable and is therefore considered less than significant under CEQA. If the project generates GHG emissions above the threshold, the analysis must identify mitigation measures to reduce GHG emissions.

4.7.2.2 Methodology

Projects that meet the criteria for conducting a climate change analysis are required to conduct a GHG inventory and disclose GHG emissions associated with project implementation and operation under business as usual conditions. Business as usual is defined as the emissions that would have occurred in the absence of reductions mandated under AB 32.

The main source of GHG emissions associated with the projects would be combustion of fossil fuels during construction of the projects. Emissions of GHGs were calculated using the same approach as emissions for overall construction emissions discussed in Chapter 4.3, Air Quality of this EIR. Emission calculations are provided in the Air Quality/Greenhouse Gas Report in Appendix D of this EIR. The potential effects of proposed GHG emissions are by nature global, and have cumulative impacts. As individual sources, GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

4.7.2.3 Impact Analysis

IMPACT 4.7-1 *Generate Greenhouse Gas Emissions, either Directly or Indirectly, that may have a Significant Impact on the Environment.*

Construction of the projects would result in a temporary increase in GHG emissions.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

During construction, GHG emissions would be generated from operation of both on-road and off-road equipment. Using the methods developed by the SCAQMD when comparing to their adopted GHG thresholds, GHGs are quantified as the sum of annual operational GHG emissions and total construction GHG emissions amortized over 30 years. As shown in Table 4.7-2, the amortized construction emissions for the Iris Cluster would be 48 tCO₂e. During operations, GHG emissions would be limited to vehicle trips associated with routine maintenance and monitoring activities at each of the sites. As shown in Table 4.7-2, operational emissions for the Iris Cluster would be 124 tCO₂e per year. The amortized construction plus annual operation for the Iris Cluster would be 172 tCO₂e per year. The proposed projects' CO₂ emissions would not exceed SCAQMD's threshold of 3,000 tCO₂e. Therefore, a **less than significant** impact is identified. A similar scenario would occur during the decommissioning and site restoration stage for each of the projects. GHG emissions would be similar to or less than the emissions presented for construction. Although the proposed projects would not exceed SCAQMD's threshold, consistent with the intent of AB 32, the proposed projects should demonstrate that policies are in place that would assist in providing a statewide reduction in CO₂ emissions. Therefore, GHG offset measures are included as Mitigation Measures 4.7-1a and 4.7-1b to provide additional reduction strategies to further improve air quality and reduce GHG emissions.

The proposed projects would be a renewable source of energy that could displace electricity generated by fossil fuel combustion and provide low-GHG electricity to consumers. Of the potential fossil fuels typically used for power generation, natural gas is one of the cleanest. To provide a conservative estimate, the Air Quality/Greenhouse Gas Report prepared for the projects, estimated emissions that would be generated from an equivalent amount of energy by natural gas generators to estimate the reduction in GHG emissions by electricity displacement by assuming that the solar power displaces electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the projects have a capacity factor of 26 percent. Approximately 360 MW generated by the Iris Cluster would displace 306,749 tCO₂e per year.

TABLE 4.7-2. SUMMARY OF CONSTRUCTION AND OPERATIONAL CO₂ EMISSIONS

Phase	Source	tCO ₂ e per year
Construction	FSF	346
	RSF	405
	ISF	429
	LSF	197
	Iris Cluster Construction Total	1,439
	Amortized over 30 years	48
Operation	FSF	30.9
	RSF	33.1
	ISF	39.7
	LSF	19.9
	Iris Cluster Operational Total	124
Total Annual Emissions		172
Annually Displaced Emissions		(306,749)
Net Project GHG Emissions		(306,557)

Source: OB-1 Air Analyses 2014.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

4.7-1a Diesel Equipment (Compression Ignition) Offset Strategies

- a. Use electricity from power poles rather than temporary diesel power generators.
- b. Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines.
- c. Construction equipment used for the project should utilize EPA Tier 2 or better engine technology (requirement under Mitigation Measure 4.3-1 as described in Chapter 4.3, Air Quality of this EIR).

4.7-1b Vehicular Trip (Spark Ignition) Offset Strategies

- a. Encourage commute alternatives by informing construction employees and customers about transportation options for reaching your location (i.e., post transit schedules/routes).
- b. Help construction employees “ride share” by posting commuter ride sign-up sheets, employee home, zip code, map, etc.
- c. When possible, arrange for single construction vendor who makes deliveries for several items.
- d. Plan construction delivery routes to eliminate unnecessary trips.
- e. Keep construction vehicles well maintained to prevent leaks and minimize emissions.

Significance After Mitigation

Although the proposed projects would not exceed SCAQMD’s threshold, Mitigation Measures 4.7-1a and 4.7-1b would provide additional reduction strategies to further improve air quality and reduce GHG emissions. Implementation of Mitigation Measure 4.7-1a would reduce emissions by 40-60 percent. Mitigation Measure 4.7-1b would reduce emissions by 30-70 percent. A **less than significant** impact is identified. Additionally, project construction would adhere to Mitigation Measures 4.3-1a and 4.3-1b outlined in Chapter 4.3, Air Quality of this EIR, further reducing GHG emissions.

IMPACT *Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing*
4.7-2 *the Emissions of Greenhouse Gases.*

The projects would generate additional solar power in order to meet the state of California's goals for the Renewable Portfolio Standard, which has been identified by the state as a means of meeting the goals of AB 32 to reduce emissions to 1990 levels by the year 2020. Therefore, the projects would not conflict with applicable plans, policies, or regulations.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As discussed in Impact 4.7-1, the projects would generate a relatively small amount of GHG emissions. One of the critical complementary measures directed at emission sources that are included in the cap-and-trade program is the RPS, which places an obligation on electricity supply companies to produce 33 percent of their electricity from renewable energy sources by 2020. A key prerequisite to reaching the target would be to provide sufficient electric transmission lines to renewable resource zones and system changes to allow integration of large quantities of intermittent wind and solar generation. The projects would help the State meet this goal by generating up to 360 MW of power to California’s current renewable portfolio. Therefore, the projects would help the state meet its goal under AB 32. The projects

would therefore not conflict with the goals of AB 32 in reducing emissions of GHG. A **less than significant impact** is identified.

Mitigation Measure(s)

No mitigation measures are required.

4.7.3 Decommissioning/ Restoration and Residual Impacts

Decommissioning/Restoration

Similar to construction activities, decommissioning and restoration at each of the project sites would result in CO₂e emissions below allowable thresholds. Although the proposed projects would not exceed SCAQMD's threshold, consistent with the intent of AB 32, the proposed projects should demonstrate that policies are in place that would assist in providing a statewide reduction in CO₂ emissions. Mitigation Measures 4.7-1a and 4.7-1b would provide additional reduction strategies to further improve air quality and reduce GHG emissions. Additionally, construction activities during decommissioning and restoration would adhere to Mitigation Measures 4.3-1a and 4.3-1b outlined in Chapter 4.3, Air Quality of this EIR, further reducing GHG emissions. Therefore, impacts are considered **less than significant**.

Residual

Mitigation Measures 4.7-1a, 4.7-1b, 4.3-1a and 4.3-1b would further the assist the proposed projects' consistency with the intent of AB 32. As described in this section, the projects do not result in significant GHG emissions impacts. Mitigation Measures 4.7-1a, 4.7-1b have been added to provide additional reduction strategies to further improve air quality and reduce GHG emissions, even though a significant impact was not identified. Operation of the projects, subject to the provision of a conditional use permit (CUP), would generally be consistent with AB 32. Based on these circumstances, the projects would not result in any residual significant and unavoidable impacts with regards to global climate change.

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4.8 HAZARDS AND HAZARDOUS MATERIALS

Information contained in this section is summarized from the *Phase I Environmental Site Assessment* (Phase I ESA) *Report Ferrell Solar Farm (May 2013)*, *Phase I ESA Report Rockwood Solar Farm (May 2013)*, *Phase I ESA Report Iris Solar Farm (May 2013)*, and *Phase I ESA Report for Lyons Solar Farm (May 2013)*, all prepared by GS Lyon Consultants, Inc. (GS Lyon). The Phase I ESAs prepared for the project sites were used to assess the potential hazards and hazardous materials found on-site or adjacent to the project sites. These documents are included in Appendix H of this Draft Environmental Impact Report (EIR). A Reflectivity Analysis was prepared to address potential glare (glint) impacts relative to roadway traffic by Aztec Engineering, (December 2013), included in Appendix B. This section addresses potential hazards and hazardous materials for construction and operational impacts.

4.8.1 Environmental Setting

The project area is located in a historical agricultural area of Imperial County. Agricultural operations include the use of aboveground storage tanks (ASTs) and underground storage tanks (USTs) for fuel storage, transmission facilities, intricate canal systems, the confluence of major surface arteries and rail systems, and the use of fertilizers and herbicides. Although a hazardous material accident can occur almost anywhere, particular regions are more vulnerable. The potential for an accident is increased in regions near major arterial roadways or railways that transport hazardous materials and in regions with agricultural or industrial facilities that use, store, handle, or dispose of hazardous material.

Historical Review

Environmental Data Research, Inc. (EDR) was contracted by GS Lyon to complete a database search of federal, state, local, and tribal environmental records containing information regarding hazardous materials occurrences on or within a one-mile radius of the project sites. Included in the EDR report were historical topographic maps, historical aerial photographs, historical telephone, and city directories. The historical data was reviewed to evaluate potentially adverse environmental conditions resulting from previous ownership, and land uses associated with the project sites. Additionally, state and federal regulatory lists containing information regarding hazardous materials on or within a one-mile radius (buffer zone) of the project sites were reviewed. Results of the background review are presented in the Phase I ESAs prepared by GS Lyon (Appendix H).

According to the historic aerial photographs (1949, 1972, and 1984), the project sites have been used for agricultural purposes prior to 1949. Building structures in the project area are primary farm residences and associated buildings to support the agriculture operations. Building structures are located on APN 052-180-042 (FSF), APN 059-050-001 (FSF), and APN 059-050-002 (ISF). In addition, building structures are located adjacent to APN 052-050-001 and APN 052-180-042 (FSF), APN 052-180-040 and APN 052-180-048 (RSF), and APN 052-180-058 (LSF). The historic building structures location onsite and adjacent to the four project sites were constructed prior to 1949. According to the historic aerials, the historic building configurations are consistent with the current building configurations.

A review of the historic telephone directories (years 1941, 1955, 1965, 1974, 1994, and 2004) for Imperial County, which included the City of Calexico businesses, was conducted. No service stations, chemical or petroleum manufacturers or distributors, or automotive repair facilities were noted at or in the immediate vicinity of the project sites and off-site transmission area.

The Sanborn fire maps did not cover the project sites. Telephone directories for Imperial County published in 1941, 1955, 1965, 1974, 1994, and 2004 were reviewed. No service stations, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted within or adjacent to the project sites and off-site transmission area. No additional information was obtained from the historical topographic maps.

Site Reconnaissance

A visual site reconnaissance was conducted within the project area by GS Lyon on May 8, 2013. The reconnaissance included observations of surface conditions at each of the project sites and of adjoining properties to the extent that they were visible from public access areas. Additionally, the reconnaissance also included site observations for the presence of polychlorinated biphenyls (PCBs) and/or asbestos containing materials (ACMs), indications of surface or subsurface hydrocarbon or pesticide contamination, the presence of on-site groundwater wells, pits or sumps, wastewater discharge practices, and surface water drainage patterns.

4.8.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

4.8.1.1.1 Federal

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over 5 years, \$1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified.

Emergency Planning Community Right-to-Know Act of 1986 (42 USC 11001 et seq.)

The Emergency Planning Community Right-to-Know Act (EPCRA) was included under the Superfund Amendments and Reauthorization Act (SARA) law and is commonly referred to as SARA Title III. EPCRA was passed in response to concerns regarding the environmental and safety hazards posed by the storage and handling of toxic chemicals. These concerns were triggered by the disaster in Bhopal, India, in which more than 2,000 people suffered death or serious injury from the accidental release of methyl isocyanate. To reduce the likelihood of such a disaster in the U.S., Congress imposed requirements on both states and regulated facilities. EPCRA establishes requirements for federal, state, and local governments, Indian Tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. SARA Title III requires states and local emergency planning groups to develop community emergency response plans for protection from a list of Extremely Hazardous Substances (40 CFR 355). The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. In California, SARA Title III is implemented through the California Accidental Release Prevention (CalARP).

Federal Insecticide, Fungicide and Rodenticide Act

The objective of Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) is to provide federal control of pesticide distribution, sale, and use. All pesticides used in the United States must be registered (licensed) by EPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment. Use of each registered pesticide must be consistent with use directions contained on the label or labeling.

Federal Water Pollution Control Act (Clean Water Act)

The objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. The Oil Spill Prevention, Control, and Countermeasures (SPCC) Program of the CWA specifically seeks to prevent oil discharges from reaching waters of the United States or adjoining shorelines. Further, farms are subject to the SPCC rule if they:

- Store, transfer, use, or consume oil or oil products, and
- Could reasonably be expected to discharge oil to waters of the United States or adjoining shorelines. Farms that meet these criteria are subject to the SPCC rule if they meet at least one of the following capacity thresholds:
 - Aboveground oil storage capacity greater than 1,320 gallons, or
 - Completely buried oil storage capacity greater than 42,000 gallons.

However, the following are exemptions to the SPCC rule:

- Completely buried storage tanks subject to all the technical requirements of the underground storage tank regulations.
- Containers with a storage capacity less than 55 gallons of oil.
- Wastewater treatment facilities.
- Permanently closed containers.
- Motive power containers (e.g., automotive or truck fuel tanks).

Hazardous Materials Transport Act – Code of Federal Regulations

The Hazardous Materials Transportation Act was published in 1975. Its primary objective is to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce by improving the regulatory and enforcement authority of the Secretary of Transportation. A hazardous material, as defined by the Secretary of Transportation is, any “particular quantity or form” of a material that “may pose an unreasonable risk to health and safety or property.” (EPA 2011)

Occupational Safety and Health Administration

Occupational Safety and Health Administration's (OSHA) mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. OSHA standards are listed in 29 CFR Part 1910.

The OSHA Process Safety Management of Highly Hazardous Chemicals (29 CFR Part 110.119) is intended to prevent or minimize the consequences of a catastrophic release of toxic, reactive, flammable, or explosive highly hazardous chemicals by regulating their use, storage, manufacturing, and handling. The standard intends to accomplish its goal by requiring a comprehensive management program integrating technologies, procedures, and management practices.

Resource Conservation and Recovery Act

The goal of the Federal Resource Conservation and Recovery Act (RCRA), a federal statute passed in 1976, is the protection of human health and the environment, the reduction of waste, the conservation of

energy and natural resources, and the elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments (HSWA) of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. The corresponding regulations in 40 CFR 260-299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste.

4.8.1.1.2 State

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources

The Division of Oil, Gas, and Geothermal Resources (DOGGR) was formed in 1915 to address the needs of the state, local governments, and industry by regulating statewide oil and gas activities with uniform laws and regulations. The Division supervises the drilling, operation, maintenance, and plugging and abandonment of onshore and offshore oil, gas, and geothermal wells, preventing damage to: (1) life, health, property, and natural resources; (2) underground and surface waters suitable for irrigation or domestic use; and (3) oil, gas, and geothermal reservoirs. The Division's programs include: well permitting and testing; safety inspections; oversight of production and injection projects; environmental lease inspections; idle-well testing; inspecting oilfield tanks, pipelines, and sumps; hazardous and orphan well plugging and abandonment contracts; and subsidence monitoring.

California Department of Toxic Substances Control

Each year, Californians generate two million tons of hazardous waste. One hundred thousand privately- and publicly-owned facilities generate one or more of the 800-plus wastes considered hazardous under California law. Properly handling these wastes avoids threats to public health and degradation of the environment.

The Department of Toxic Substances Control (DTSC) regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. Approximately 1,000 scientists, engineers, and specialized support staff make sure that companies and individuals handle, transport, store, treat, dispose of, and clean-up hazardous wastes appropriately. Through these measures, DTSC contributes to greater safety for all Californians, and less hazardous waste reaches the environment.

On January 1, 2003, the Registered Environmental Assessor (REA) program joined DTSC. The REA program certifies environmental experts and specialists as being qualified to perform a number of environmental assessment activities. Those activities include private site management, Phase I Environmental Site Assessments, risk assessment and more.

California Division of Occupational Safety and Health

The California Division of Occupational Safety and Health (Cal-OSHA) protects workers and the public from safety hazards through its Cal-OSHA programs and provides consultative assistance to employers. Cal-OSHA issues permits, provides employee training workshops, conducts inspections of facilities, investigates health and safety complaints, and develops and enforces employer health and safety policies and procedures.

California Environmental Protection Agency

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board (SWRCB) establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law.

California Emergency Response Plan

California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government and private agencies. Response to hazardous materials incidents is one part of this plan. The plan is managed by the State Office of Emergency Services, which coordinates the responses of other agencies including Cal-EPA, the California Highway Patrol, the California Department of Fish and Wildlife, the Regional Water Quality Control Board (RWQCB), Imperial County Sheriff's Department, Imperial County Fire Department (ICFD), and the City of Imperial Police Department.

4.8.1.1.3 Local

Imperial County General Plan

The Seismic and Public Safety Element identifies goals and policies that will minimize the risks associated with natural and human-made hazards, and specify the land use planning procedures that should be implemented to avoid hazardous situations. The purpose of the Seismic and Public Safety Element is directly concerned with reducing the loss of life, injury, and property damage that might result from disaster or accident. In addition, the Element specifies land use planning procedures that should be implemented to avoid hazardous situations. The policies listed in the Seismic and Public Safety Element are not applicable to the proposed project, as they address human occupancy development. The proposed project is a solar project and does not propose residential uses.

Imperial County Public Health Department

Hazardous Materials and Medical Waste Management

DTSC was appointed the Certified Unified Program Agency (CUPA) for Imperial County in January 2005. The Unified Program is the consolidation of six state environmental programs into one program under the authority of a Certified Unified Program Agency. The CUPA inspects businesses or facilities that handle or store hazardous materials; generate hazardous waste; own or operate ASTs or USTs; and comply with the CalARP Program. The CUPA Program is instrumental in accomplishing this goal through education, community and industry outreach, inspections and enforcement.

4.8.1.2 Existing Conditions

Iris Cluster (FSF, RSF, ISF, AND LSF)

The project sites are composed of several agricultural fields encompassing approximately 4,422.400 total acres that have been previously used or are currently in crop production. The farm buildings in the area are assumed to contain typical farm shop that may include the following activities: farm equipment with the necessary oils and gasoline; changing engine oil; and storing pesticides, herbicides, gasoline, and oil.

Industrial Areas

Frontier Agricultural Services and Johnson Brothers private airstrip is located on 204 Weed Road, approximately 0.50 mile southeast of the APN 059-050-003 (ISF) that includes a maintenance yard that utilizes pesticides and herbicides, and has gasoline ASTs. This private airstrip is used for crop dusting services which include the routine dispersal of fungicides or insecticides on growing crops. No previous industrial uses were identified in the historical review.

Drainage Features

Drainage features have been observed within the project area. Specifically, the Greeson Wash is located at the south boundary of APN 052-180-053 (LSF). Greeson Wash is part of a man made canal system located within the IID service area. While irrigation water for agricultural purposes is conveyed into the Valley by way of the All-American Canal, the area contains more than 1,400 miles of surface drains that collect surface and subsurface discharge waters from the Valley's agricultural fields. This irrigation system conveys water to the Salton Sea, either directly, or through the New River and Alamo River (Imperial Irrigation District 2005). Additionally, the New River is located approximately 0.04 miles north of the northernmost boundary for 052-180-042 (FSF) (Figure 3.0-2, Project Description).

4.8.1.2.1 Existing Environmental Hazards

Underground and Aboveground Storage Tanks, Drums, or Containers

No USTs were observed within the project sites during the site reconnaissance conducted by GS Lyon. Two ASTs were noted on the FSF project site on the south side of the Corda residence/farm shop, located within a concrete fuel containment area.

Surface Staining

No hydrocarbon stains, drums or oil containers were noted during the site reconnaissance. The project sites have the potential for hydrocarbon due to the machinery use associated with the agricultural land uses. In addition, hydrocarbons can migrate from on-road mobile sources and non-road mobile sources. Typical non-road mobile sources of hydrocarbon are primarily gasoline equipment or diesel equipment. Hydrocarbons are a precursor to ground-level ozone, a serious air pollutant. A key component of smog, ground-level ozone is formed by reactions involving hydrocarbons and nitrogen oxides in the presence of sunlight.

Sewer/Water

The FSF site has septic systems (septic tanks and leach fields) associated with two mobile homes. The ISF site has septic systems associated with two mobile homes and an abandoned labor camp. Irrigation water is supplied by IID via gravity flow canals for the agricultural fields. No sewer and potable water service are currently provided to the project study areas.

Irrigation Drain Water Quality

At the request of IID, United States Geologic Survey (USGS) performed a "one-time" water quality study of the 27 irrigation drains throughout Imperial Valley during the summer of 1994 and results indicated that the drains sampled contained less than the regulatory limits of arsenic, selenium, and nitrites for drinking water (Lyons 2013).

Groundwater and Wells

No evidence of groundwater, oil, or gas wells were observed within or adjacent to the project sites during the site reconnaissance conducted by GS Lyon in 2013. GIS Data obtained from the DOGGR website identified five abandoned geothermal wells located within or adjacent to the boundaries of the project sites. In addition, one oil well (in production) is located off-site, south of SR-98 and Ferrell Road. No other oil or gas wells were identified within or adjacent to the project sites. The location of the identified geothermal wells is presented in Figure 4.8-1 Oil, Gas, and Geothermal Wells.

Electromagnetic Fields

Electric and magnetic fields (EMF) are areas of energy that surround any electrical device. Power lines, electrical wiring, computers, televisions, hair dryers, household appliances and everything else that uses electricity are sources of EMF. The magnetic field is not blocked by buildings so outdoor sources like power lines can add to the EMF inside your home. However, the field decreases rapidly with distance so that most homes are too far from high voltage lines to matter.

Any potential health risk associated with EMF is considered low, as there are no sensitive uses in the immediate proximity to the sites. The California Department of Health Services (DHS), California Electric and Magnetic Fields Program provides information regarding known possible health effects from EMF created by the use of electricity. DHS references the National EMF Research and Public Information Dissemination Program, established by Congress as part the Energy Policy Act of 1992, which has published its findings concluding evidence of the risk of cancer from EMF around power lines is weak. The report recognizes that EMF exposure "cannot be recognized as entirely safe" but "believes that the probability that EMF exposure is truly a health hazard is currently small" with "marginal scientific support that exposure to this agent is causing any degree of harm. Furthermore, in a recent California Public Utilities Commission (CPUC) issued Decision D.06-01-042, the CPUC stated "at this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences."

Pursuant to California Environmental Quality Act (CEQA) Guideline 15145 "If, after a thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the lead agency should note its conclusion and terminate discussion of the impact." Because there are no conclusive studies on EMF impacts, it is too speculative to evaluate further in this EIR.

4.8.1.2.3 Hazardous Building Materials and Pesticides

Hazardous building materials and pesticides are associated with any older buildings due to their age and the agricultural land uses. There are a total of three residences located within the project sites and nine located adjacent to the project sites as shown in Figure 4.3-1, Residence Locations. The Corda residence and farm shop are located within the boundaries of the FSF project site, and contain two ASTs within a concrete fuel containment area. Additionally, the Kubler Shop is located within the FSF project site at the location of the proposed substation. The ISF project site contains an abandoned labor camp with a propane tank, an AST, and two newer mobile homes located onsite. An abandoned cattle feed yard is located north of the ISF project site on Kubler Road. GS Lyon identified the Corda residence and farm shop and the abandoned labor camp as possible sources of contaminants associated with asbestos and/or lead due to their age (pre-1949). Subsequent discussion focuses on the potential impacts associated with these identified structures.

Asbestos

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties, such as thermal insulation, chemical and thermal stability, and high tensile strength. Asbestos is made up of microscopic bundles of fibers that may become airborne when asbestos-containing materials are damaged or disturbed. When these fibers get into the air they may be inhaled into the lungs, where they can cause significant health problems. The Cal-OSHA defines asbestos

containing materials as any material that contains 0.1 percent asbestos by weight. Asbestos is commonly found in old buildings built between the 1940s and the mid-1970s.

Buildings on agricultural establishments and agribusinesses may contain asbestos or ACMs. Used for insulation and as a fire retardant, asbestos and ACMs can be found in a variety of building construction materials, including pipe and furnace insulation materials, asbestos shingles, millboard, textured paint and other coating materials, and floor tiles. Asbestos may also be found in vehicle brakes. Buildings built in the 1960s are more likely to have asbestos-containing sprayed- or troweled-on friable materials than other buildings (EPA 2012). Given the age of the older buildings as identified by GS Lyon, it is likely the buildings contain asbestos.

Pesticides and Herbicides

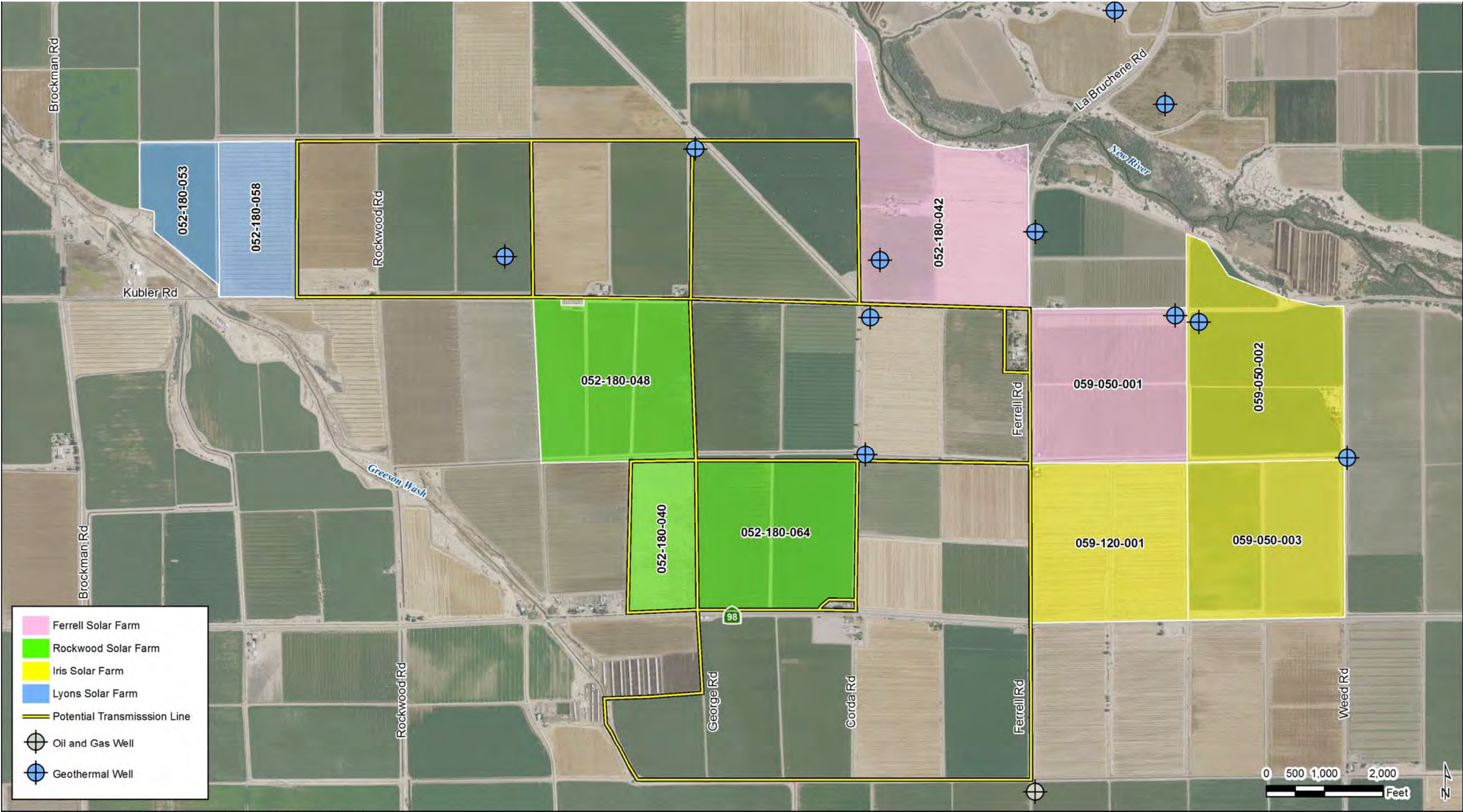
Dichlorodiphenyltrichloroethane/Dichlorodiphenyldichloroethylene (DDT/DDE) and Dichlorodiphenyldichloroethane (DDD) (a degradation byproduct of DDT) was developed as the first of the modern synthetic insecticides in the 1940s. It was initially used with great effect to combat malaria, typhus, and the other insect-borne human diseases among both military and civilian populations and for insect control in crop and livestock production, institutions, homes, and gardens. DDT's quick success as a pesticide and broad use in the United States and other countries led to the development of resistance by many insect pest species (EPA 2012). Initially, DDT was regulated by the US Department of Agriculture from the late 1950s to the 1960s. The EPA was formed in 1970 and subsequent regulatory responsibility of DDT was transferred over. Although the EPA issued a cancellation order in 1972 for DDT, due to its ability to accumulate in fatty tissue and its persistence in the environment, residues of concern from historical use still remain (EPA 2012). DDT and its byproducts bind strongly to soils and as a result, can remain in some soils for a long time, potentially hundreds of years. The length of time that DDT will last in soil depends on many factors including temperature, type of soil, and moisture content of soil. DDT persists for a much shorter time in tropical environments where chemical evaporation and microorganism degradation are accelerated. Additionally, DDT will persist for a much shorter length of time in areas where soils are routinely flooded or are moist than where soils are arid (Agency for Toxic Substances and Disease Registry 2002). Because DDT binds to soils, there's a potential for it to enter into lakes and rivers through runoff. However, although DDT or its breakdown products are still present in some air, water, and soil samples, levels in most air and water samples are presently so low that exposure is of little concern.

The project sites have been used for and are currently in agricultural production. The predominant agriculture cultivated within the project sites primarily consist of alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops are also prominent in the project sites. Consequently, there is a potential for the project sites to contain hazards related to pesticide and herbicide use from aerial and/or ground application. The ISF project site contains an abandoned labor camp, and the FSF project site contains a residence with a farm shop that could have been utilized for pesticide and herbicide storage. Although many agricultural fields are burned after crop removal (wheat stubble, asparagus, etc.) pesticide residue can still be found in soils. In addition, pesticides and herbicides can migrate via surface run-off. According to the Phase I ESA, these insecticides may be present in the soils within the project sites, the concentrations of DDT/DDE and DDD levels are well below (25 to 50 percent) regulatory action levels.

Lead

Lead is a highly toxic metal that was used until the late 1970s in a number of products, most notably paint. Lead may cause a range of health effects, from behavioral problems and learning disabilities to seizures and death. Primary sources of lead exposure are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated soil. Lead contamination can also come from cars built prior to the early 1980s.

Figure 4.8-1. Oil, Gas, and Geothermal Wells



Lead-based paint on an agricultural establishment or agribusiness farm will typically be found on interiors and exteriors of buildings constructed before 1978. During renovation and demolition, paint removal has the potential to impact human health and the environment as fibers, dust, and paint chips are released. Paint chips and dust can cause indoor air contamination during renovation and soil contamination from demolition or improper disposal (EPA 2012). Given the age of the older buildings (pre 1949), the Corda residence and farm shop on the FSF project site, and the abandoned labor camp buildings located on the ISF project site have the potential to contain lead based paint.

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were manufactured from 1932 until the manufacture of the product was banned in 1978. Because of its versatility (non-flammability, chemical stability, high boiling point, and electrical insulation properties), PCBs were used in various industrial and commercial applications: electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications (EPA 2012). Although no longer used in the US, there is the potential for PCBs to be found electrical transformers manufactured before 1979.

Pole-mounted transformers were noted within the project sites ; however, no evidence of leakage from the transformers within the boundaries of the project sites was observed by GS Lyon. Additionally, IID (the power provider for the area) maintains a test-and-replace policy for PCB-containing transformers.

4.8.1.2.4 Environmental Database Research

Environmental Data Research (EDR) was contracted by GS Lyon to complete a database search of federal, state, local, and tribal environmental records containing information regarding hazardous materials occurrences on or within a one-mile radius of the project sites in April 2013¹. The Kubler farms is located adjacent to the project area and the Kubler shop is located within the FSF project site. The identified sites within a one-mile radius of the project sites are listed below and are illustrated in Figure 4.8-2, Database Sites Listed within the Project Area.

1. Kubler Farms, 420 West Kubler Road (Map Code 1). This site is located adjacent to the FSF project site. The ISF Phase I ESA listed the site with an AST. No demolition or construction deeper than two feet is anticipated in this area; therefore, this site is not considered a recognized environmental concern (REC).
2. Kubler Shop, 595 Ferrell Road (Map Code 2). This site is located within the FSF project site. The ISF Phase I ESA listed this site with a Historic UST, and Certified Unified Program Agency (CUPA). This site has the potential for an UST. Due to the lack of agency documentation that the UST was removed it is undetermined if the tanks were removed. Considering the timeframe (1960s), there is a potential that the tanks were left in place and were not removed. This site is the potential location of the FSF substation site. This site has the potential to have USTs and potential ground contamination; therefore, this site is considered a REC.
3. Frontier Agricultural Service (Map Code 3), 304 Weed Road. This site is located 0.5 mile southeast of the ISF. Listings include Historic UST, and CUPA. This site is not located within or adjacent to the project sites; therefore, this site is not a REC.
4. Studer's Dairy Site (Map Code 4), 876 West State Highway 98, located 0.037 mile west of the RSF project site. Listings include Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) No Further Remedial Action Planned (NFRAP), and Historic Cortese. This site was not identified in the Phase 1 ESA site reconnaissance or identified as a REC. This site is located southeast of the RSF project site and would not be impacted by the project. In addition, the groundwater flows in a southeast direction toward the Greens Wash, away from the project site.

¹ Considering the rural nature of this area, the addresses for mapping in the EDR reports can be unreliable.

4.8.1.2.2 Airport Land Use Compatibility Plan

The eastern border of the project area is located approximately 2.5 miles west of the Calexico International Airport. According to the Imperial County Airport Land Use Compatibility Plan (ALUCP) for Calexico International Airport, no portion of the project area (project sites and off-site transmission area) is located within the Calexico Airport land use capability zones (Imperial County, ALUCP 1996). No individual airport policies specific to the Calexico International Airport have been adopted in conjunction with the ALUCP.

The projects would require the use of transmission towers of up to 140 feet in height. Imperial County has established a maximum height of 120 feet for structures: "Non-residential structures and commercial communication towers shall not exceed 120 feet in height, and shall meet the Airport Land Use Compatibility Plan requirements." Although the project is not located within the Calexico ALUCP, a variance application would be required to be approved by the County of Imperial. If the variance is approved, the new towers would be built to a height of 140 feet. Section 4.10, Land Use Planning provides a more detailed discussion regarding the project study area's proximity to the ALUCP and the required height variance.

Frontier Agricultural Services and Johnson Brothers private airstrip is located approximately 0.5 mile southeast of the APN 059-050-003 (ISF). This private airstrip operates a crop dusting service for the surrounding agricultural land use.

4.8.2 Impacts and Mitigation Measures

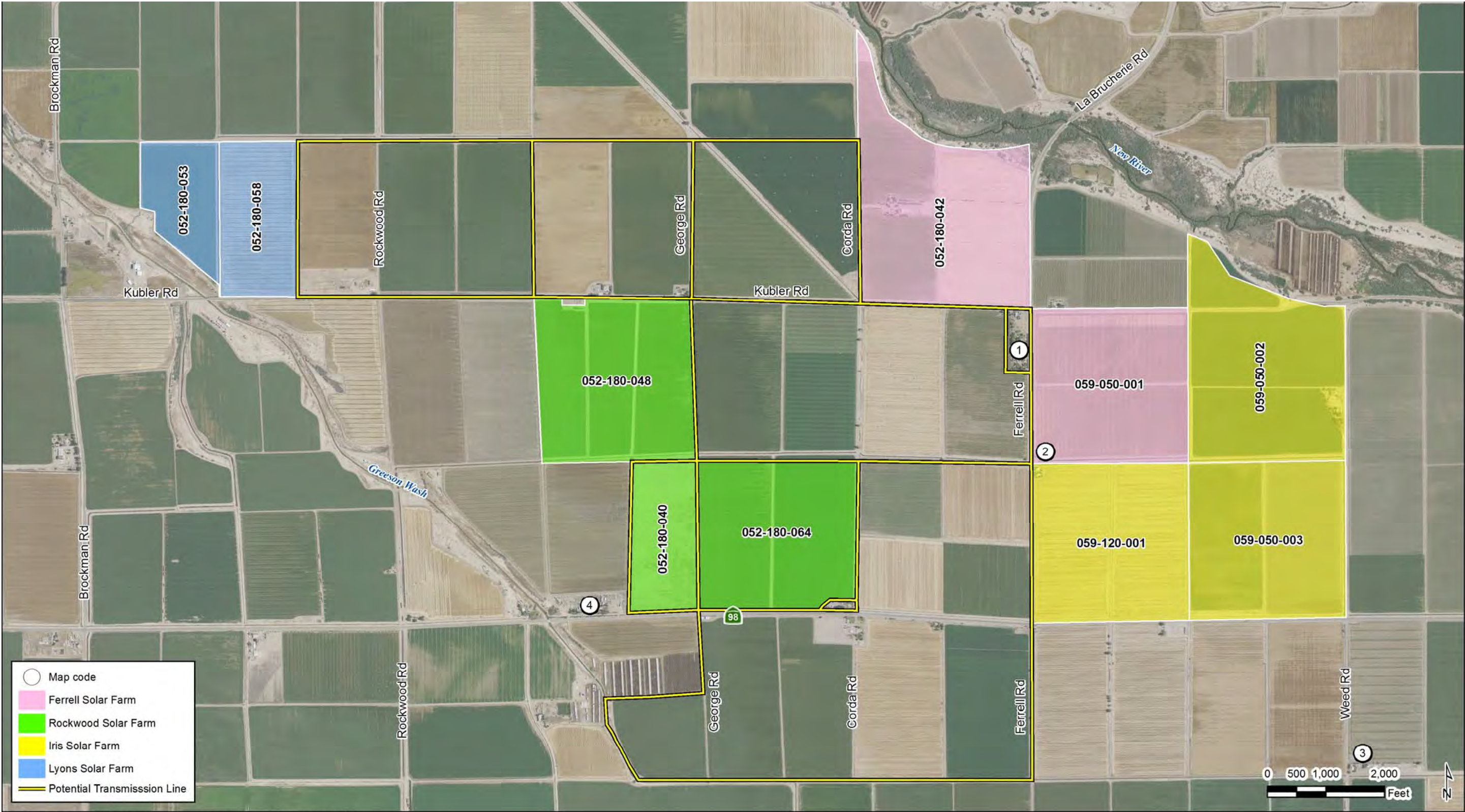
This section presents the significance criteria used for considering project-related impacts related to hazards and hazardous materials, the methodology employed for the evaluation, and mitigation requirements, if necessary.

4.8.2.1 Thresholds of Significance

Consistent with the CEQA Guidelines and the professional judgment of the County's staff and environmental consultants, the projects would result in a significant impact on the environment if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Figure 4.8-2. Database Sites Listed within the Project Area



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4.8.2.2 Methodology

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description to result in significant impacts related to hazards and hazardous materials on or within the one-mile buffer zone of the project sites. This analysis considers whether these conditions would result in an exceedance of one or more of the applied significance criteria as identified above.

As indicated in the environmental setting, four separate Phase I ESAs have been prepared for the FSF, RSF, ISF, and LSF project sites, including a one-mile buffer surrounding each site. The Phase I ESAs are included as Appendix H of this EIR. The analysis prepared for this section also relied on information contained on the EPA's website pertaining to potential hazardous materials that may be found on-site. The information obtained from these sources was reviewed and summarized to present the existing conditions, in addition to identifying potential environmental impacts, based on the significance criteria presented above. Impacts associated with hazards and hazardous materials that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, duration of project construction, and related activities. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Section 3.0, Project Description (see Figures 3.0-6 through 3.0-9).

4.8.2.3 Impact Analysis

Impact 4.8-1 Possible Risk to the Public or Environment through Routine Transport, Use, or Disposal of Hazardous Materials.

The projects would not result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Although considered minimal, it is anticipated that the projects will generate the following materials during construction, operation, and long term maintenance: insulating oil (used for electrical equipment; lubricating oil (used for maintenance vehicles); various solvents/detergents (equipment cleaning); and gasoline (used for maintenance vehicles). These materials have the potential to be released into the environment as a result of natural hazard (i.e., earthquake) related events, or due to human error. However, all materials contained on-site will be stored in appropriate containers (not to exceed a 55-gallon drum) protected from environmental conditions, including rain, wind, and direct heat and physical hazards such as vehicle traffic and sources of heat and impact. In addition, if the on-site storage of hazardous materials necessitate, at any time during construction and/or operations and long term maintenance, quantities in excess of 55-gallons, a Hazardous Material Management Program (HMMP) would be required. The HMMP developed for the projects will include, at a minimum, procedures for:

- Hazardous materials handling, use and storage;
- Emergency response;
- Spill control and prevention;
- Employee training; and
- Record keeping and reporting.

Additionally, hazardous material storage and management will be conducted in accordance with requirements set forth by the ICFD, Imperial County Office of Emergency Services, DTSC, and CUPA for storage and handling of hazardous materials. Further, construction activities would occur according to OSHA regulatory requirements; therefore, it is not anticipated that the construction activities for the proposed projects would release hazardous emissions or result in the handling of hazardous or acutely hazardous materials, substances, or waste. This could include the release of hazardous emissions, materials, substances, or wastes during operational activities. With the implementation of an HMMP and adherence to requirements set forth by the ICFD, Imperial County Office of Emergency Services, DTSC, OSHA regulatory requirements and CUPA would reduce the impact to a level of **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Risk to the Public or Environment through Release of Hazardous Materials.*
4.8-2 *The project may result in an accidental release of hazardous materials into the environment from project-related activities.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Pesticides/Fertilizers

The project study areas have been used in the past and present for agricultural purposes. Typical agricultural practices in the Imperial Valley consist of aerial and ground application of pesticides and the application of chemical fertilizers to both ground and irrigation water. According to the professional opinion of GS Lyons, although these insecticides may be present in the soils within the project study areas, the concentrations of DDT/DDE and DDD levels are well below (25 to 50 percent) regulatory action levels. The FIFRA provides federal control of pesticide distribution, sale, and use. All pesticides used in the United States must be registered (licensed) by the EPA. Registration assures that pesticides will be properly labeled and that, if used in accordance with specifications, they will not cause unreasonable harm to the environment. Use of each registered pesticide must be consistent with use directions contained on the label or labeling. The construction phase, operations and long term maintenance of the facility would not result in additional application of pesticides or fertilizers. Therefore, a **less than significant** impact has been identified for this issue area.

Hazardous Materials

The Phase I ESA identified that the Corda residence and farm shop located within the FSF project site contain two ASTs that are located within a concrete fuel containment area. These ASTs will not be removed as part of the construction of the project and therefore, this site is not considered a REC.

Although the FSF Phase I ESA report did not identify any on site RECs for the FSF project site, the ISF Phase I ESA identified the Kubler Shop, which is adjacent to the ISF project site but within the FSF project site, with a historic UST from the 1960s (see Map Code 2). As a general practice during that timeframe, USTs were abandoned onsite. The FSF or ISF Phase I ESAs did not identify any evidence or absence of UST during the site reconnaissance. In addition, no interviews were conducted with the land owners to confirm if the tanks had been removed. Site specific mapping in regulatory documentation or previous Phase I ESAs would serve to confirm the absence or presence of USTs. Due to the lack of regulatory files to confirm that the USTs at the Kubler Shop have not been removed, this is considered a data gap that alters the ranking or REC classification of the site. Considering the age of the tank (if present), there is potential for onsite soil contamination during ground disturbance and construction of the FSF substation; therefore, a **potential impact** has been identified for this issue area. The potential impact is considered **significant**.

Lead and Asbestos

Given the age of the older buildings at the Corda residence and farm shop within the FSF project site, and the abandoned labor camp buildings within the ISF project site, there is a potential for unknown hazardous materials (lead and asbestos) to be encountered during site preparation or construction activities. It is undetermined whether or not buildings will be demolished as part of the project; therefore, potential impacts related to the release of lead and/or asbestos would be considered a **significant impact**.

Oil, Gas, and Geothermal Wells

As discussed, according to the GIS mapping obtained from DOGGR, there are five abandoned geothermal wells located within or adjacent to the project site. In addition, one oil well (in production) is located south of SR-98 and Ferrell Road; however, no oil or gas wells were identified within or adjacent to the project site. It is not anticipated that project construction will require the removal of the identified abandoned wells; however, this will be determined during final engineering. Hazards associated with the potential exposure of the wells or alteration of the abandonment plugs is considered a **potential impact** in the absence of mitigation. The potential impact is considered **significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF and ISF:

- 4.8-2a Phase II Environmental Site Assessment.** A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the FSF substation is to be constructed in the area of the Kubler Shop. This ESA will assist to determine if the previous USTs are still onsite and if soil contamination exists.
- 4.8-2b Hazardous Materials Discovery.** All construction contractor(s) shall be instructed to immediately stop all subsurface construction activities in the event that petroleum is discovered, an odor is identified, or significantly stained soil is visible during construction. Contractors shall be instructed to follow all applicable regulations regarding discovery and response for hazardous materials encountered during the construction process.
- 4.8-2c Lead and Asbestos.** Prior to the demolition of any buildings, the contractor shall conduct testing to determine if lead and/or asbestos are present. Testing will help to identify the proper removal procedures to follow per state and local guidelines.
- 4.8-2d Well Abandonment.** Prior to issuance of a grading permit, the project applicant shall submit evidence demonstrating that the locations of all known wells on-site have been reviewed by the DOGGR and that all well abandonment requirements, including gas leakage testing, have been completed according to DOGGR specifications, including construction Project Site Review and Well Abandonment Procedures.

Significance After Mitigation

With the implementation of Mitigation Measures 4.8-2a through 4.8-2d, potential impacts related to the release of hazardous materials would be reduced to a level of **less than significant**.

IMPACT *Hazardous Emissions or Hazardous Materials Substances, or Waste within ¼ mile of an*
4.8-3 *Existing or Proposed School.*

The projects would not pose a risk to nearby (within ¼ mile) schools or proposed school facilities.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project sites and off-site transmission area are not located within ¼ mile of any existing or proposed schools. Therefore, **no significant impact** is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Projects Located on a Site Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5.*
4.8-4

The projects are not located on a site included on a list of hazardous materials sites pursuant to Government Code Section 65962.5.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project sites are not identified in the EDR report as a hazardous materials site pursuant to Government Code Section 65962.5 and as a result, **no significant impact** has been identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Safety Hazard to the Public Residing or Working Within an Airport Land Use Plan or Within Two Miles of a Public Airport or Public Use Airport.*
4.8-5

The projects are not located within an airport land use plan or within two miles of a public airport.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The nearest public airport is the Calexico International Airport, located approximately 2.5 miles east of the ISF. The FSF, RSF, ISF, and LSF, as well as the off-site transmission area are not located within the Calexico International Airport Land Use Plan, nor are they located within a “sphere of influence” for Calexico International Airport. The Federal Aviation Administration, Notice Criteria Tool and the Department of Defense Preliminary Screening Tool was utilized to determine if proposed project factors, such as height, proximity to an airport or military operations, glare, or emitted frequencies would require coordination with the FAA compliance with CFR Title 14 Part 77.9. The project components are not anticipated to have any impacts related to weather surveillance radar, long-range radar, or military operations.

Chapter 4.10, Land Use and Planning addresses site adjacency considerations with the Calexico International Airport ALUCP as well as the height variance required for the route of the proposed transmission towers (proposed up to 140 feet in height). The sites are not physically located within any of the influence zones within the ALUCP. The County’s land use review process will allow for the opportunity to review the proposed projects to determine consistency with the ALUCP, including the variance application for the transmission tower height. On August 13, the Imperial County Airport Land Use Commission reviewed the project and determined that the project is consistent with the ALUCP. Therefore, this impact is considered **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Safety Hazard to the Public Residing or Working Within Proximity to a Private Airstrip.*
4.8-6

The projects proximity to a private airstrip would not create safety hazards.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Frontier Agricultural Services and Johnson Brothers private airstrip is located approximately 0.50 mile southeast of the APN 059-050-003 (ISF). This private airstrip operates a crop dusting service for the surrounding agricultural land use. The project features overhead 230 kilovolt transmission lines, lighting, and the use of cranes during construction and maintenance that are not expected to result in conflicts

with commercial aerial application operations associated with farming in the area, especially with the presence of nearby solar farms approved or currently proposed in the immediate vicinity of the proposed projects. Considering the agricultural land use of the property and the surrounding parcels are in the process of solar development, the agricultural crop dusting will be reduced in the immediate area. This impact is considered **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Impediment to Emergency Plans.*

4.8-7 *The projects would not interfere with an adopted emergency response plan or emergency evacuation plan.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The Imperial County Draft Operational Area Emergency Operations Plan (July 2007) does not identify specific emergency roadway routes as part of their emergency operations plan (EOP). The City of Calexico General Plan, Section 8.0 Safety Element, identifies the major evacuation routes as SR 11, SR 98, and Interstate 8. The projects are not expected to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The project applicant will be required, through the conditions of approval, to prepare a street improvement plan for the projects that will include emergency access points and safe vehicular travel. In addition, local building codes would be followed to minimize flood, seismic, and fire hazard. Therefore, a **less than significant** impact is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Risk to People or Structures Caused by Wildland Fires.*

4.8-8 *The project sites are not located in an area susceptible to wildland fires.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

According to the Draft Cal Fire Hazard Severity Zones in Imperial County Land Responsibility Area Map (2007), the project area is located within a local responsibility area, which are identified as an “unzoned” or “moderate” risk area for wildland fires. The City of Calexico General Plan Section 8.0 Safety Element, states the City has a low risk of damage from wildfires due to a lack of fuel. Chapter 4.12, Public Services, addresses the proposed projects’ increased need for fire protection services and project design features proposed to reduce the risk of fire. Because the proposed projects are not located in proximity to a wildland fire hazard area, a **less than significant impact** is identified.

Mitigation Measure(s)

No mitigation measures are required.

4.8.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

During decommissioning and restoration of the project sites, the applicant or its successor in interest would be responsible for the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on each of the project sites. The project applicant anticipates using the best available recycling measures at the time of decommissioning. Any potentially hazardous materials located on the site would be disposed of, and/or remediated as required by Mitigation Measure 4.8-1 prior to

4.8 Hazards and Hazardous Materials

construction of the solar facilities. The operation of the solar facilities would not generate hazardous wastes and therefore, implementation of applicable regulations and mitigation measures identified for construction and operations would ensure restoration of the project sites to agricultural uses during the decommissioning process in a manner that would be **less than significant**. Furthermore, decommissioning/restoration activities would not result in a potential impact associated with ALUCP consistency (structures would be removed and agricultural uses could be restored), wildfires (the project study areas are not susceptible to wildfires), or impediment to an emergency plan (agricultural uses do not conflict with emergency plans).

Residual

With implementation of applicable mitigation measures, impacts related to the transportation of hazardous materials, abandoned wells, and impacts associated with height exceedance of the transmission towers would be reduced to levels **less than significant**. Based on these circumstances, the proposed projects would not result in residual significant and unmitigable impacts related to hazards and hazardous materials.

4.9 HYDROLOGY/WATER QUALITY

This section provides a description of existing water resources within the project area and pertinent local, state, and federal plans and policies regarding the protection, management, and use of water resources (Section 4.9.1, Environmental Setting). Potential hydrological and water quality effects of the project-related facilities, as described in Chapter 3.0, Project Description are considered in Section 4.9.2 and, if necessary, mitigation is proposed based on the anticipated level of significance. Section 4.9.3 concludes by describing significant residential impacts following the application of mitigation, if any.

4.9.1 Environmental Setting

The project area lies within the Imperial Valley Planning Area of the Colorado River Basin (Regional Water Quality Control Board [RWQCB] 2005). As shown in Figure 4.9-1, the project sites are situated just west of the New River approximately 27.5 miles south of the Salton Sea. According to watershed maps produced by the U. S. Geological Survey (USGS), the project sites are contained within the Upper New River hydrologic sub-basin, which is located in the southernmost portion of the Imperial Valley Hydrologic Unit (HUC 18100200) (USGS 2014). The Imperial Valley is characterized as a closed basin and, therefore, all runoff generated within the New River Basin discharges into the Salton Sea.

The project area is characterized by a typical desert climate with dry, warm winters, and hot, dry summers. Most of the rainfall occurs in conjunction with monsoonal conditions between May and September, with an average annual rainfall of less than 3 inches for the project area. The 10-year, 24-hour estimated precipitation amount for the project sites is 1.8 inches; while the 100-year, 24-hour estimated precipitation is 3 inches (Western Regional Climate Center 2004).

4.9.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

Federal

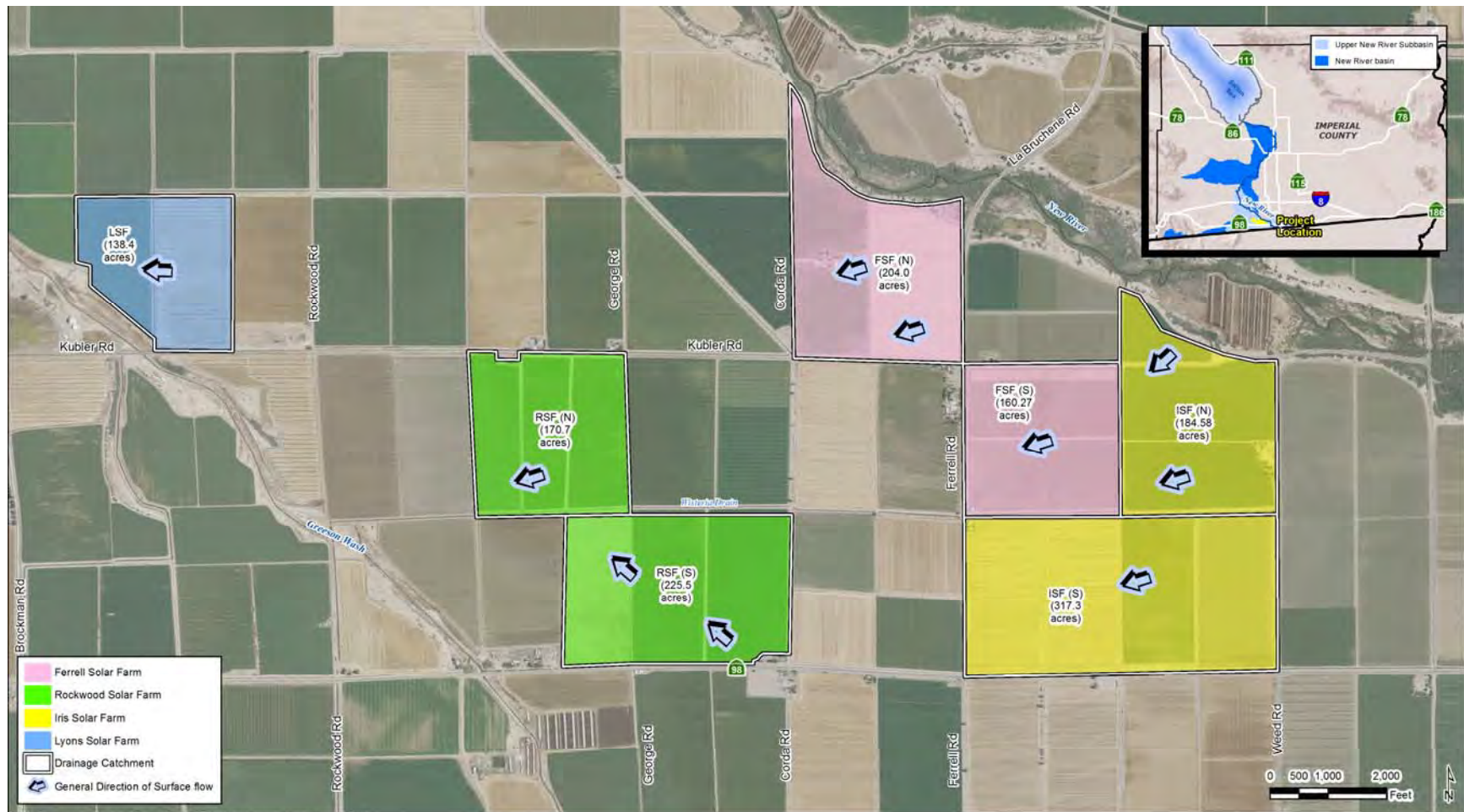
Federal plans, policies, and regulations that are applicable to the projects are presented below under the following headings.

Clean Water Act

The U.S. Environmental Protection Agency (U.S. EPA) is the lead Federal agency responsible for managing water quality. The Clean Water Act (CWA) of 1972 is the primary Federal law that governs and authorizes the U.S. EPA and the states to implement activities to control water quality. The various elements of the CWA that address water quality and that are applicable to the projects are discussed below. Wetland protection elements administered by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA, including permits for the discharge of dredged and/or fill material into waters of the United States, are discussed in Chapter 4.4, Biological Resources.

Under Federal law, the U.S. EPA has published water quality regulations under Volume 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question; and (2) criteria that protect the designated uses. Section 304(a) requires the U.S. EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. The U.S. EPA is the federal agency with primary authority for implementing regulations adopted under the CWA. The U.S. EPA has delegated the State of California the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act), described below.

Figure 4.9-1. Regional Hydrology and Localized Drainage



Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S. must obtain a water quality certification from the State Water Resources Control Board (SWRCB) in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate.

CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit program to control point source discharges from industrial, municipal, and other facilities if their discharges go directly to surface waters. The 1987 amendments to the CWA created a new section of the CWA devoted to regulating storm water or nonpoint source discharges (Section 402[p]). The EPA has granted California primacy in administering and enforcing the provisions of the CWA and the NPDES program through the SWRCB. The SWRCB is responsible for issuing both general and individual permits for discharges from certain activities. At the local and regional levels, general and individual permits are administered by RWQCBs.

CWA Section 303(d) Impaired Waters List

CWA Section 303(d) requires states to develop lists of water bodies that will not attain water quality standards after implementation of minimum required levels of treatment by point-source dischargers. Section 303(d) requires states to develop a total maximum daily load (TMDL) for each of the listed pollutants and water bodies. A TMDL is the amount of loading that the water body can receive and still be in compliance with applicable water quality objectives and applied beneficial uses. TMDLs can also act as a planning framework for reducing loadings of a specific pollutant from various sources to achieve compliance with water quality objectives. TMDLs prepared by the state must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. The TMDL must also include an analysis that shows links between loading reductions and the attainment of water quality objectives.

The impaired water bodies listed on the 303(d) list for the New River Basin include the Imperial Valley Drains (managed by the Imperial Irrigation District), New River, and the Salton Sea. The Imperial Valley Drains are responsible for draining the area. Further discussion of specific pollutant listings is provided in Section 4.9.1.2.

Antidegradation Policy

The Federal Antidegradation Policy, established in 1968, is designed to protect existing uses, water quality, and national water resources. The Federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- Existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected.
- Where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development.
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

The Federal Anti-Degradation Policy is applicable to the proposed on-site wastewater system and is implemented by the RWQCB and County's Public Health Department.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations that limit development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection covered by the FIRMs is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 (0.01) annual exceedance probability [AEP]) (i.e., the 100-year flood event). The project sites are included on southern portions of FIRMs 06025C2075C and 06025C2050C (FEMA 2008). According to these FIRMs, the project sites are contained within Zone X and outside the limits of the 100-year flood zone (FEMA 2008). Both the FSF and ISF project sites are located immediately south of the New River and are located adjacent to areas contained within areas designated Zone A, which delineates areas subject to the 100-year flood event.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this act, the state must adopt water quality policies, plans, and objectives that protect the state's waters. The act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Water Quality Control Plans and establishment of water quality objectives. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

Water Quality Control Plan for the Colorado River Basin

The Water Quality Control Plan for the Colorado River Basin (or Basin Plan) prepared by the Colorado River Basin RWQCB (Region 7) identifies beneficial uses of surface waters within the Colorado River Basin region, establishes quantitative and qualitative water quality objectives for protection of beneficial uses, and establishes policies to guide the implementation of these water quality objectives (RWQCB 2005). According to the Basin Plan (RWQCB 2005), the beneficial uses established for the Imperial Valley Drains, which include the Wistaria Drain, Greens Wash, New River, and the Salton Sea include: industrial service supply; freshwater replenishment; water contact recreation; non-contact water recreation; warm freshwater habitat; wildlife habitat; preservation of rare, threatened, or endangered species; and aquaculture.

California Toxics Rule

Under the California Toxics Rule (CTR), the U.S. EPA has proposed water quality criteria for priority toxic pollutants for inland surface waters, enclosed bays, and estuaries. These federally promulgated criteria create water quality standards for California waters. The CTR satisfies CWA requirements and protects public health and the environment. The U.S. EPA and the SWRCB have the authority to enforce these standards, which are incorporated into the NPDES permits that regulate the current discharges in the project area.

NPDES General Industrial and Construction Permits

The NPDES General Industrial Permit requirements apply to the discharge of stormwater associated with industrial sites. The permit requires implementation of management measures that will achieve the performance standard of the best available technology economically achievable and best conventional pollutant control technology. Under the statute, operators of new facilities must implement industrial Best Management Practices (BMPs) in the projects' Stormwater Pollution Prevention Plan (SWPPP) and perform monitoring of stormwater discharges and unauthorized non-stormwater discharges. Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff

Associated with Construction Activity (General Construction Permit) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds one acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a Notice of Intent (NOI) to comply with the General Construction Permit. The SWPPP includes a description of BMPs to minimize the discharge of pollutants from the sites during construction. Typical BMPs include temporary soil stabilization measures (e.g., mulching and seeding), storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or stormwater, and using filtering mechanisms at drop inlets to prevent contaminants from entering storm drains. Typical post-construction management practices include street sweeping and cleaning stormwater drain inlet structures. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

Local

County of Imperial General Plan

Due to the economic, biological, and agricultural significance water plays in the Imperial County, the Water Element and the Conservation and Open Space Element of the General Plan contain policies and programs, created to ensure water resources are preserved and protected. Table 4.9-1 identifies General Plan policies and programs for water quality and flood hazards that are relevant to the projects and summarizes the projects' consistency with the General Plan. While this EIR analyzes the projects' consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

County of Imperial Land Use Ordinance, Title 9

The County's Ordinance Code provides specific direction for the protection of water resources. Applicable ordinance requirements are contained in Division 10, Building, Sewer and Grading Regulations, and summarized below.

Chapter 4 - Uniform Plumbing Code. The Uniform Plumbing Code, 1997 Edition, including the appendices, as adopted by the International Association of Plumbing and Mechanical Officials, is incorporated by reference. Section 91004.01, Modification of the Uniform Plumbing Code, of the Ordinance Code includes additional requirements in terms of minimum spacing requirements and minimum septic tank sizing.

Chapter 10 - Grading Regulations. Section 91010.02 of the Ordinance Code outlines conditions required for issuance of a Grading Permit. These specific conditions include:

1. If the proposed grading, excavation or earthwork construction is of irrigatable land, that said grading will not cause said land to be unfit for agricultural use;
2. The depth of the grading, excavation or earthwork construction will not preclude the use of drain tiles in irrigated lands;
3. The grading, excavation or earthwork construction will not extend below the water table of the immediate area; and
4. Where the transition between the grading plane and adjacent ground has a slope less than the ratio of one and one-half feet on the horizontal plane to one-foot on the vertical plane, the plans and specifications will provide for adequate safety precautions.

TABLE 4.9-1. PROJECT CONSISTENCY WITH APPLICABLE GENERAL PLAN WATER RESOURCES POLICIES

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
1) Structural development normally shall be prohibited in the designated floodways. Only structures which comply with specific development standards should be permitted in the floodplain.	Consistent	The projects do not contain a residential component nor would it place housing or other structures within a 100-year flood hazard area.
Water Element		
1) The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.	Consistent	Mitigation measures contained in Section 4.9.2.3 will require that the project applicant prepare a site-specific drainage plan and water quality management plan to minimize adverse effects to local water resources. Further, Sections 4.6 and 4.8 include additional mitigation requirements for the projects' septic waste treatment and disposal system and the management of hazardous materials and waste during the construction and operation of the projects. These mitigation requirements will be made conditions approval in conjunction with the County's approval of the Conditional Use Permit(s) (CUPs) for the projects.
2) All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity, and shall be required to implement appropriate mitigation measures for any significant impacts.	Consistent	See response for Water Element Policy 1) above.

Imperial Irrigation District

The Imperial Irrigation District (IID) is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 et seq. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley, operation and maintenance of the drainage canals and facilities, including those in the project area, and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

- The Law of the River and historical Colorado River decisions, agreements and contracts;
- The Quantification Settlement Agreement and Transfer Agreements;
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the Quantification Settlement Agreement (QSA) commitments;
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water rights;
- Existing IID standards and guidelines for evaluation of new development and define IID's role as a responsible agency and wholesaler of water; and
- Integrated Water Resources Management Plan, November 2009.

In relation to the projects, IID maintains regulation over the drainage of water into their drains, including the design requirements of stormwater retention basins. IID requires that retention basins be sized to

handle an entire rainfall event in case the IID system is at capacity. Additionally, IID requires that outlets to IID facilities be no larger than 12 inches in diameter and must contain a backflow prevention device (IID 2009).

Imperial County Engineering Guidelines Manual

Based on guidance contained in the County's Engineering Guidelines Manual, the following drainage requirements would be applicable to the projects.

III A. GENERAL REQUIREMENTS

1. All drainage design and requirements are recommended to be in accordance with the Imperial Irrigation District (IID) "Draft" Hydrology Manual or other recognized source with approval by the County Engineer and based on full development of upstream tributary basins. Another source is the Caltrans I-D-F curves for the Imperial Valley.
2. Public drainage facilities shall be designed to carry the ten-year six-hour storm underground, the 25-year storm between the top of curbs provided two 12-foot minimum width dry lanes exist and the 100-year frequency storm between the right-of-way lines with at least one 12-foot minimum dry lane open to traffic. All culverts shall be designed to accommodate the flow from a 100-year frequency storm.
3. Permanent drainage facilities and right of way, including access, shall be provided from development to point of satisfactory disposal.
4. Retention volume on retention or detention basins should have a total volume capacity for a three-inch minimum precipitation covering the entire site with no C reduction factors. Volume can be considered by a combination of basin size and volume considered within parking and/or landscaping areas. There is no guarantee that a detention basin outletting to an IID facility or other storm drain system will not back up should the facility be full and unable to accept the project runoff. This provides the safety factor from flooding by ensuring each development can handle a minimum 3-inch precipitation over the project sites.
5. Retention basins should empty within 72 hours and no sooner than 24 hours in order to provide mosquito abatement. Draining, evaporation or infiltration, or any combination thereof can accomplish this. If this is not possible then the owner should be made aware of a potential need to address mosquito abatement to the satisfaction of the Environmental Health Services (EHS) Department. Additionally, if it is not possible to empty the basin within 72 hours, the basin should be designed for 5 inches, not 3 inches as mentioned in Item #4 above. This would allow for a saturation condition of the soil due to a 5" storm track. EHS must review and approve all retention basin designs prior to County Public Works approval. Nuisance water must not be allowed to accumulate in retention basins. EHS may require a nuisance water abatement plan if this occurs.
6. The minimum finish floor elevation shall be 12 inches above top of fronting street curb unless property is below street level and/or 6 inches above the 100-year frequency storm event or storm track. A local engineering practice is to use a 5-inch precipitation event as a storm track in the absence of detailed flood information. The 100-year frequency storm would be required for detention calculations.
7. Finish pad elevations should be indicated on the plans, which are at or above the 100-year frequency flood elevation identified by the engineer for the parcel. Finish floor elevations should be set at least 6 inches above the 100-year flood elevation.
8. The developer shall submit a drainage study and specifications for improvements of all drainage easements, culverts, drainage structures, and drainage channels to the Department of Public Works for approval. Unless specifically waived herein, required plans and specifications shall provide a drainage system capable of handling and disposing of all surface waters originating within the subdivision and all surface waters that may flow onto the subdivision from adjacent lands. Said drainage system shall include any easements and structures required by the Department of Public Works or the affected Utility Agency to properly handle the drainage on-site.

and off-site. The report should detail any vegetation and trash/debris removal, as well as address any standing water.

9. Hydrology and hydraulic calculations for determining the storm system design shall be provided to the satisfaction of the Director, Department of Public Works. When appropriate, water surface profiles and adequate field survey cross-section data may also be required.
10. An airtight or screened oil/water separator or equivalent is required prior to permitting on-site lot drainage from entering any street right of way or public storm drain system for all industrial/commercial or multi residential uses. A maximum 6-inch drain lateral can be used to tie into existing adjacent street curb inlets with some exceptions. Approval from the Director of Public Works is required.
11. The County is implementing a storm water quality program as required by the State Water Resources Control Board, which may modify or add to the requirements and guidelines presented elsewhere in this document. This can include ongoing monitoring of water quality of storm drain runoff, implementation of BMPs to reduce storm water quality impacts downstream or along adjacent properties. Attention is directed to the need to reduce any potential of vectors, mosquitoes or standing water.
12. A Drainage Report is required for all developments in the County. It shall include a project description, project setting including discussions of existing and proposed conditions, any drainage issues related to the site, summary of the findings or conclusions, off-site hydrology, on-site hydrology, hydraulic calculations and a hydrology map.

4.9.1.2 Existing Conditions

The project sites are located within the Upper New River hydrologic sub-basin, which is part of the New River Hydrologic Basin and drains areas within the south-central portion of the Imperial Hydrologic Unit (HUC 18100200); an enclosed basin. Natural surface water features located in the local watershed include the Greeson Wash and New River. The natural hydrology within the project sites is highly altered by a network of engineered drains constructed by the IID. Within the immediate proximity to the project sites, these drain facilities discharge into the Greeson Wash, which flows north into New River and ultimately the Salton Sea. The total watershed area within the Upper New River hydrologic sub-basin is approximately 65,208 acres (USGS 2014). Localized drainage conditions within each of the project site is further described below.

Due to the discontinuous nature of the project sites, different portions of each project drain into different drain features owned and operated by IID. However, all flows generated within the project sites ultimately drain into Greeson Wash to the west. The IID drainage system largely consists of earthen open channels paralleling irrigation canals on the downstream side of the fields (IID 2009). The drains collect excess surface flows from the agricultural fields (tailwater), subsurface flows from a system of tile drains underlying the fields (tilewater), and operational spill from the canals and laterals. The entire system was designed strictly to drain excess irrigation water; consequently, the system has no more than incidental capacity to intercept and convey storm runoff from the surrounding desert, mountains, or the urban areas in the Imperial Valley (IID 2009). In addition, some site locations include an on-site drainage system comprised of perforated tile drains that may also convey flows to the IID drain system.

Table 4.9-2 provides the acreages for each of the respective drainage areas for the FSF, RSF, ISF and LSF.

Localized Drainage Conditions

FSF

As depicted in Figure 4.9-1, the FSF project site is subdivided into a northern (FSF[N]) and southern (FSF[S]) drainage area. FSF is bisected by Kubler Road, which acts as a drainage divide within FSF. Flows to the south of Kubler Road discharge into the Wistaria Drain, which in turn travels west to the

Greeson Wash. This watershed area is referred to as drainage area FSF(S) (see Figure 4.9-1). Runoff to the Wistaria Drain is controlled via inlet structures owned and maintained by IID. To the north of Kubler Road, runoff from FSF(N) flows to the west and southwest and enters an unnamed drainage ditch that parallels Kubler Road to the north (see Figure 4.9-1).

RSF

RSF is bisected by the Wistaria Drain, which acts as a drainage divide within the RSF project site. Areas within RSF to the north of the Wistaria Drain are contained within the RSF(N) drainage area and flow to southwest. The drainage area to the south of the Wistaria Drain is referred to as RSF(S). Runoff within the RSF(S) drainage area travels to the northwest prior to discharging into the Wistaria Drain (see Figure 4.9-1).

TABLE 4.9-2. PRELIMINARY DRAINAGE CATCHMENTS WITHIN THE PROJECT SITES

Drainage Catchment	Total Drainage Area (Acres)	Point of Off-site Discharge ¹
FSF		
FSF(N)	204	Wistaria Drain
FSF(S)	463.4 160.27	Wistaria Drain
RSF		
RSF(N)	170.7	Kubler Road
RSF(S)	225.5	Wistaria Drain
ISF		
ISF(N)	488.4 184.58	Wistaria Drain
ISF(S)	332.7 317.3	Wistaria Drain
LSF		
LSF	138.4	Greeson Wash

Source: USGS 1976 and 1978; HDR 2011.

Note: ¹ Preliminary discharge locations requires verification through a site specific drainage study.

ISF

As depicted in Figure 4.9-1, both the ISF(N) and ISF(S) drain into the Wistaria Drain. On-site drainage generally flows to the west or southwest (ISF[N]).

LSF

The topography of the LSF project site is level with on-site drainage discharging directly into the Greeson Wash; which is located adjacent to the project site (see Figure 4.9-1 and Table 4.9-2).

Flooding

As described in Section 4.9.1.1, the project sites are included within the southern portions of FIRMs 06025C2075C and 06025C2050C. According to these FIRMs, for each of the four project sites, the entire project site is contained within Zone X and outside the limits of the 100-year flood zone (FEMA 2008). Zone X delineates areas within the limits of the 500-year flood. Flood protection for the project sites is provided by a levee feature that borders the northern edges of FSF and ISF and delineates the limits of the 100-year flood zone for New River.

Surface Water Quality

The surface waters of the Imperial Valley depend primarily on the inflow of irrigation water from the Colorado River via the All American Canal. Excessive salinity concentrations have long been one of the

major water quality problems of the Colorado River, a municipal and industrial water source to millions of people, and a source of irrigation water for approximately 700,000 acres of farmland (Imperial County 1993b, p. 39). The heavy salt load in the Colorado River results from both natural and human activities. Land use and water resources are unequivocally linked. A variety of natural and human factors can affect the quality and use of streams, lakes, and rivers. Surface waters may be impacted from a variety of point and non-point discharges. Examples of point sources may include wastewater treatment plants, industrial discharges, or any other type of discharge from a specific location (commonly a large-diameter pipe) into a stream or water body. In contrast, non-point source pollutant sources are generally more diffuse in nature and connected to a cumulative contribution of multiple smaller sources. There are no comprehensive water quality monitoring stations located within in the project sites, and water quality data are limited.

Common non-point source contaminants within the project area may include, but are not limited to: sediment, nutrients (phosphorous and nitrogen), trace metals (e.g., lead, zinc, copper, nickel, iron, cadmium, and mercury), oil and grease, bacteria (e.g., coliform), viruses, pesticides and herbicides, organic matter, and solid debris/litter. Vehicles account for most of the heavy metals, fuel and fuel additives (e.g., benzene), motor oil, lubricants, coolants, rubber, battery acid, and other substances. Nutrients result from excessive fertilizing of agricultural areas, while pesticides and herbicides are widely used in agricultural fields and roadway shoulders for keeping right-of-way areas clear of vegetation and pests. Additionally, the use of on-site septic systems for wastewater disposal can degrade shallow groundwater by contributing nitrate. All these substances are entrained by runoff during wet weather and discharged into local drain facilities operated by IID and eventually into the Salton Sea.

Based on the 305(b)/303(d) Integrated Report prepared by the Colorado River Basin RWQCB, the following water features within the Brawley Hydrologic Area includes the Imperial Valley Drains, New River, and the Salton Sea. Specific impairments listed for each of these water bodies (or Category 5) are identified below (SWRCB 2012):

- Imperial Valley Drains: Impaired for chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan, polychlorinated biphenyls (PCBs), sedimentation/siltation; toxaphene, and selenium;
- New River: Impaired for chlordane, chlorpyrifos, copper, DDT, diazinon, dieldrin, hexachlorobenzene/HCB, mercury, nutrients, organic enrichment/low dissolved oxygen, PCBs, pathogens, sediment, selenium, toxicity, toxaphene, trash, and zinc;
- Salton Sea: Impaired for arsenic, chlorpyrifos, DDT, enterococcus, nutrients, salinity, and selenium.

In relation to the Imperial Valley Drains, the listings for DDT, dieldrin, and, endosulfan only apply to drains that are not responsible for draining the immediate project sites (SWRCB 2012).

Groundwater Hydrology

The project area overlies the southern end of the Imperial Valley Groundwater Basin (DWR Basin Number: 7-30), which covers approximately 1,870 square miles (DWR 2003). The physical groundwater basin extends across the border into Baja California where it underlies a contiguous part of the Mexicali Valley (DWR 2003). However, the southern boundary of the Imperial Valley Groundwater Basin is defined politically as the U.S./Mexico border. The basin has two major aquifers, separated at depth by a semi-permeable aquitard¹ that averages 60 feet thick and reaches a maximum thickness of 280 feet (DWR 2003). The average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. As much as 80 feet of fine-grained, low permeability prehistoric lake deposits have accumulated on the valley floor, which result in locally confined aquifer conditions (DWR 2003).

Groundwater recharge within the basin is primarily from irrigation return. Other recharge sources are deep percolation of rainfall and surface runoff, underflow into the basin, and seepage from unlined canals

¹ An aquitard is a zone within the earth that restricts the flow of groundwater from one aquifer to another.

which traverse the valley (DWR 2003). Groundwater levels within a majority of the basin have remained stable from 1970 to 1990 because of relatively constant recharge and an extensive network of subsurface drains (DWR 2003).

4.9.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to hydrology and water quality, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.9.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to hydrology/water quality are considered significant if any of the following occur:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade groundwater water quality;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would decline to a level which would not support existing land uses or planned uses for which permits have been granted);
- Alter the existing surface hydrology;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation, or flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Place within a 100-year (0.01 AEP) flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Result in inundation by seiche, tsunami, or mudflow.

4.9.2.2 Methodology

This analysis considers the potential for the projects to impact local and regional surface hydrology and water quality based on the components described in Chapter 3, Project Description. The impact analysis focuses on foreseeable changes to existing hydrologic and water quality conditions in the context of the significance criteria listed above. The impact analysis provides a discussion for each of the major project components in the context of proposed construction activities and post-construction operations. In the absence of a formal drainage plan, potential hydromodification impacts resulting from new impervious surfaces associated the projects were assessed by using the Rational Method ($Q=CiA$) to calculate pre- and post-construction runoff. Rainfall intensities for the 100-year rainfall intensity were derived from the Western Regional Climate Center (WRCC 1977). Appendix I contains the assumptions applied, which are intended to be conservative and not for design purposes.

4.9.2.3 Impact Analysis

IMPACT *Violation of Water Quality Standards During Construction.*

4.9-1

Construction of the projects could generate discharges to surface water resources that could potentially violate water quality standards or waste discharge requirements.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Construction of the project facilities would involve excavation, soil stockpiling, grading, and the installation of solar arrays, access roads, and electrical distribution, transmission, and substation facilities. There are multiple construction related activities that could have potential direct or indirect impacts on the water quality of local surface water features and shallow groundwater resources including sedimentation, erosion, handling hazardous materials, dewatering, if required, and canal and drain crossings by the electrical distribution lines of access roads. Further drain crossings, if required, could result in the disturbance of the drainage bed or bank, which could also weaken the bank's structure and increase its susceptibility to erosion. Disturbing the geomorphic characteristics and stability of the channel bed and banks may initiate chronic erosion in natural and engineered channels thereby resulting in increased turbidity. A similar circumstance could occur upon decommissioning of the projects prior to site restoration. In both cases, such impacts could be exacerbated if surface vegetation is not reestablished and stabilized prior to the next high-flow or precipitation event and could result in significant direct impacts within the immediate vicinity of construction and indirect impacts to water quality further downstream. This is considered a **significant impact**. Implementation of Mitigation Measures 4.9-1a and 4.9-1b would reduce these impacts to a level **less than significant**.

Hazardous materials associated with construction would be limited to substances associated with mechanized equipment, such as gasoline and diesel fuels, engine oil, and hydraulic fluids. If precautions are not taken to contain contaminants, accidental spills of these substances during construction could produce contaminated stormwater runoff (nonpoint source pollution), a major contributor to the degradation of water quality in surface waters. Without proper containment and incident response measures in place, the operation of construction equipment could result in significant direct and indirect impacts to water quality. This is considered a **significant impact**. Implementation of Mitigation Measures 4.9-1a and 4.9-1b would reduce these impacts to a level **less than significant**.

Construction of the projects could, at times, also require dewatering of shallow, perched groundwater in the immediate vicinity of excavations and installation of underground features at a limited number of areas where groundwater depths are shallow. Groundwater withdrawn from the construction areas would be subsequently discharged to local drainage ditches or via land application. These discharges may contain sediments, dissolved solids, salts, and other water quality constituents found in the shallow groundwater, which could degrade the quality of receiving waters. Degradation of local receiving waters from the introduction of shallow groundwater during construction dewatering could result in a significant impact to receiving waters. This is considered a **significant impact**. Implementation of Mitigation Measures 4.9-1a and 4.9-1b would reduce these impacts to a level **less than significant**.

Prior to construction and grading activities, the project applicant is required to file an NOI with the SWRCB to comply with the General NPDES Construction Permit and prepare a SWPPP, which addresses the measures that would be included during project construction to minimize and control construction and post-construction runoff to the "maximum extent practicable." In addition, NPDES permits require the implementation of BMP's that achieve a level of pollution control to the maximum extent practical, which may not necessarily be completely protective of aquatic life or address water quality impairments for local waterways. This represents a **significant, direct and indirect impact**. For these reasons, the implementation of the prescribed mitigation would be required to ensure that the project SWPPPs and Grading Plan(s) include measures necessary to minimize water quality impacts as a result of project construction and post-construction runoff. Implementation of Mitigation Measures 4.9-1a and 4.9-1b would reduce impacts to a level **less than significant**. In addition, given that site

decommissioning would result in similar activities as identified for construction, these impacts could also occur in the future during site restoration activities.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

4.9-1a Acquire Appropriate Clean Water Act Regulatory Permits, Prepare SWPPP, and Implement BMPs Prior to Construction and Site Restoration. The project applicant or its contractor shall prepare a SWPPP specific to the projects and be responsible for securing coverage under SWRCB's NPDES stormwater permit for general construction activity (Order 2009-0009-DWQ). The SWPPP shall identify specific actions and BMPs relating to the prevention of stormwater pollution from project-related construction sources by identifying a practical sequence for site restoration, BMP implementation, contingency measures, responsible parties, and agency contacts. The SWPPP shall reflect localized surface hydrological conditions and shall be reviewed and approved by the project applicant prior to commencement of work and shall be made conditions of the contract with the contractor selected to build and decommission the projects. The SWPPP(s) shall incorporate control measures in the following categories:

- Soil stabilization and erosion control practices (e.g., hydroseeding, erosion control blankets, mulching);
- Dewatering and/or flow diversion practices, if required (see Mitigation Measure 4.9-1b);
- Sediment control practices (temporary sediment basins, fiber rolls);
- Temporary and post-construction on- and off-site runoff controls;
- Special considerations and BMPs for water crossings, wetlands, and drainages;
- Monitoring protocols for discharge(s) and receiving waters, with emphasis placed on the following water quality objectives: dissolved oxygen, floating material, oil and grease, pH, and turbidity;
- Waste management, handling, and disposal control practices;
- Corrective action and spill contingency measures;
- Agency and responsible party contact information, and
- Training procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP.

The SWPPP shall be prepared by a qualified SWPPP practitioner with BMPs selected to achieve maximum pollutant removal and that represent the best available technology that is economically achievable. Emphasis for BMPs shall be placed on controlling discharges of oxygen-depleting substances, floating material, oil and grease, acidic or caustic substances or compounds, and turbidity. Given that Imperial Valley Drains would accept runoff from the project sites and are listed as impaired for sediment, the SWPPP shall include BMPs sufficient for Risk Level 2 projects. BMPs for soil stabilization and erosion control practices and sediment control practices will also be required. Performance and effectiveness of these BMPs shall be determined either by visual means where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.

- 4.9-1b Properly Dispose of Construction Dewatering in Accordance with the Colorado River Basin Regional Water Quality Control Board.** If required, all construction dewatering shall be discharged to an approved land disposal area or drainage facility in accordance with Colorado River Basin RWQCB requirements. The project applicant or its construction contractor shall provide the Colorado River Basin RWQCB with the location, type of discharge, and methods of treatment and monitoring for all groundwater dewatering discharges. Emphasis shall be placed on those discharges that would occur directly or in proximity to surface water bodies and drainage facilities.

Significance After Mitigation

With the implementation of the above mitigation measures, impacts to surface water quality as attributable to the projects would be reduced to a **less than significant** level through the inclusion of focused BMPs for the protection of surface water resources. Monitoring and contingency response measures would be included to verify compliance with water quality objectives for all surface waters crossed during construction. Particular emphasis would be placed on dissolved oxygen, floating material, oil and grease, and turbidity (or sediment) as these are generally the water quality constituents of most concern during construction-related activities.

IMPACT *Violation of Water Quality Standards During Operation.*

4.9-2 *Operation of the projects' O&M facilities, solar arrays, electrical substation and distribution facilities, and access roads could involve the use of materials or substances that could be entrained in surface runoff and discharged to surface waterways or groundwater.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Post-construction runoff from the constructed facilities would carry two main water quality impacts that could impact surface water drainages and drains within the project sites and the Greens Wash, which accepts drainage from the project sites, and empties into the New River. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over developed surfaces, water can entrain a variety of potential pollutants including, but not limited to, oil and grease, pesticides, trace metals, and nutrients. These pollutants can become suspended in runoff and carried to receiving waters. These effects are commonly referred to as non-point source water quality impacts.

Long-term operation of the projects' solar facilities is expected to pose limited threat to surface water quality after the completion of construction. Each of the projects would be subject to the County's Grading Regulations as specified in Section 91010.02 of the Ordinance Code. However, since the project sites are located in unincorporated Imperial County and not subject to a Municipal Separate Storm Sewer System (MS4) or NPDES General Industrial Permit, there is no regulatory mechanism in place to address post-construction water quality concerns. Based on this consideration, the projects have the potential to result in both direct and indirect water quality impacts that could be significant. This is considered a **significant impact**. Implementation of Mitigation Measure 4.9-2 would reduce impacts to a level **less than significant**.

Long term point discharges from the projects would be minimal, but could result in reductions in water quality where the water released is of lower quality than ambient conditions. These discharges would be infrequent, but could include landscape irrigation, uncontaminated pumped ground water, and discharges of potable water during water tank cleaning [as defined in 40 CFR 35.2005(21)]. In this context, long-term water quality impacts from point sources would be **less than significant**.

The second potential impact from post-construction runoff is a potential increase in the quantity of water delivered to adjacent or nearby water bodies during storms. Increased impervious surfaces can interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt, concrete, and other compacted surfaces and routed to drainage systems where large volumes of runoff are discharged to the nearest receiving water. This process is referred to as hydromodification and can contribute to stream bank scouring and downstream flooding, which can

result in impact aquatic life and damage property. Drainage runoff from the project above-ground facilities would enter one of numerous drain features owned and operated by IID (see Table 4.9-2). For these reasons, the projects could result in on- and off-site discharges that could indirectly impact downstream surface waters by increasing drain scour and/or sedimentation. Therefore, this **indirect impact is considered significant**. Implementation of Mitigation Measure 4.9-2 would reduce impacts to a level **less than significant**.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.

- 4.9-2 Incorporate Post-Construction Runoff BMPs into Project Drainage Plan and Maximize Opportunities for Low Impact Development.** The project Drainage Plan shall adhere to County and IID guidelines to treat, control, and manage the on- and off-site discharge of stormwater to existing drainage systems. Low Impact Development opportunities, including but not limited to infiltration trenches or bioswales, will be investigated and integrated into the Drainage Plan to the maximum extent practical. The Drainage Plan shall provide both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and treatment of runoff generated from project impervious surfaces prior to off-site discharge.

The project applicant shall ensure the provision of sufficient outlet protection through the use of energy dissipaters, vegetated rip-rap, soil protection, and/or other appropriate BMPs to slow runoff velocities and prevent erosion at discharge locations for the operations and maintenance (O&M) facilities, access roads, electrical distribution and substation facilities, and solar array locations. A long-term maintenance plan shall be developed and implemented to support the functionality of drainage control devices. The facility layout(s) shall also include sufficient container storage and on-site containment and pollution-control devices for drainage facilities to avoid the off-site release of water quality pollutants, including, but not limited to oil and grease, fertilizers, treatment chemicals, and sediment.

Significance After Mitigation

With the implementation of Mitigation Measure 4.9-2, potential water quality impacts resulting from post-construction discharges during project operations would be reduced to a **less than significant** level. With the proposed mitigation, any stormwater runoff generated from the project sites would be subject to on-site treatment and retention and, therefore, would not pose a significant threat to local surface water features or shallow groundwater resources. Potable water discharges generated during operations would be of limited quantity and sufficient quality that they would pose a **less than significant** threat to the environment.

IMPACT *Impacts to Groundwater Recharge, Supply, and Adjacent Wells.*

4.9-3 *The projects would not involve the use of groundwater, which could otherwise carry the potential for interference with current groundwater recharge, possible depletion of groundwater supplies, or interference with adjacent wells.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As described in Chapter 3.0, Project Description the projects would utilize existing water service contracts with IID and would not involve the use of groundwater and no construction of new well facilities is proposed. For this reason, the projects would not carry the potential to create drawdown effects that could otherwise adversely affect adjacent wells. Although groundwater dewatering may be necessary during construction, these activities would only result in temporarily reductions in groundwater levels within and directly adjacent to construction areas. Any localized lowering of the groundwater table would recover quickly following pumping and would not cause a net deficit in aquifer volume or a lowering of the groundwater table in the Imperial Valley Groundwater Basin. As a result, **no significant impacts** to groundwater levels are expected.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT 4.9-4 *Alternation of Drainage Patterns and Off-site Flooding.*

The projects could result in the alteration of existing drainage patterns thereby increasing the rate or amount of surface runoff in a manner that could result in on or off-site flooding and downstream erosion and sedimentation.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project solar array grids, O&M facilities, access roads, substations, and transmission tower foundations would involve the placement of impervious surfaces, which would alter the infiltration characteristics of the ground surface on the facility sites and carry the potential to result in increases in peak runoff flows. Although individually the facility sites are relatively small, when combined, the net increase in peak runoff could contribute to on-site flooding or flooding at downstream locations. These **direct and indirect impacts could be significant**. Implementation of Mitigation Measure 4.9-4 would reduce impacts to a level **less than significant**.

The projects are located in the extreme southern portion of the Upper New River hydrologic sub-basin and drained by numerous drain facilities owned and operated by IID. These drain features all contribute flows to Greens Wash to the west of the project sites (see Figure 4.9-1) and ultimately contribute flow to New River watershed. Without the retention and dissipation of post-construction runoff, these facilities could collectively contribute to hydro-modification within their respective drainage catchments and scour in receiving waters. Additionally, post-construction drainage flows could result in localized, off-site discharges that may exceed the capacity of existing IID drainage inlet structures or otherwise affect existing improvements. These **direct and indirect impacts could be significant**. Implementation of Mitigation Measure 4.9-4 would reduce impacts to a level **less than significant**.

To calculate projected changes in runoff within the project sites, the Rational Method was used to quantify pre- and post-construction runoff flows from each of the drainage catchments illustrated in Figure 4.9-1. Based on conditions observed on site, existing site conditions were assumed to have 20 percent or less impervious surface cover. Under the projects conditions, the impervious surface cover was increased to 50 percent to provide a worst-case estimate of peak runoff. Table 4.9-3 provides the pre- and post-construction runoff volumes for each drainage catchment along with the net change in runoff following the projects.

TABLE 4.9-3. PRELIMINARY DRAINAGE CATCHMENTS WITHIN THE PROJECT AREA

Drainage Catchment ¹	Existing Conditions (100-Year)(cfs)	Proposed Conditions (100-Year)(cfs) ¹	Projects' Net Change in Runoff (100-Year)(cfs)
FSF			
FSF(N)	233	299	66
FSF(S)	186	239	53
RSF			
RSF(N)	195	250	55
RSF(S)	257	338	81
ISF			
ISF(N)	214	277	62
ISF(S)	379	495	116
LSF			
LSF	158	212	55

Source: Caltrans Highway Manual 2006; HDR 2014.

Notes: ¹ Not intended for design purposes.

The results reveal the estimated rate of stormwater runoff (in cfs) produced within each drainage catchment for a 100-year, 24-hour storm event. Rates of runoff are the absolute maximum that would occur during a 24-hour storm and, therefore, provide a conservative estimate for determining the net change in post-construction runoff. Additionally, because the project applicant is considering a few different technology options for the solar array fixtures (e.g., tracking or fixed-tilt), this analysis assumes the use of fixed-tilt systems because their land coverage is greater when compared to tracking mount systems. As provided in Table 4.9-3, the projects would collectively increase peak runoff discharges from each of the watershed areas contained within the project sites. Appendix I provides the calculations and assumptions used to derive these values.

The net increase in peak runoff as a result of the projects would likely be partially attenuated by several of the containment areas, landscaped areas, paved walkways, and crushed rock roadways included as part of the projects' conceptual design and, therefore, it is reasonable to conclude that the above values likely over-estimate post-construction drainage flows. Additionally, given that much of the project sites are rural, the projects' total area in relation to the total watershed area is minor and unlikely to contribute substantially to hydromodification. However, based on the results, it is reasonable to conclude that the project facilities would result in a net increase in drainage discharge. This increase in peak flows, could contribute to additional downstream flooding, impact existing drainage infrastructure, including IID and County roadway drain inlet structures, and/or increase bank scour in receiving waters. These potential drainage impacts are considered a **significant impact**. Implementation of Mitigation Measure 4.9-4 would reduce impacts to a level **less than significant**.

Mitigation Measure(s)

The following mitigation measure is required for the FSF, RSF, ISF, LSF, and transmission line.

- 4.9-4 Prepare Drainage Plan(s) for Structural Facilities.** The project applicant shall prepare a site specific Drainage Plan for all facilities constructed in conjunction with the projects that meets County Department of Public Works and IID requirements, where applicable. The Drainage Plan shall incorporate measures to maintain off-site runoff during peak conditions to pre-construction discharge levels. Design specifications for the detention, retention, and/or infiltration facilities shall provide sufficient temporary storage capacity to accommodate the 100-year, 24-hour storm event to pre-project conditions.

Significance After Mitigation

With the implementation of the above mitigation measure, impacts to on and off-site drainage patterns would be mitigated to a **less than significant** level through the preparation of a formal drainage plan and incorporation of measures that will maintain off-site run-off during peak conditions to pre-construction discharge levels, thereby minimizing the potential for on-site or downstream flooding.

IMPACT *Placement of Housing within a 100-Year Floodplain.*

- 4.9-5** *The projects would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects would not involve the construction of residential housing and, therefore, would not place housing within a 100-year flood hazard area as mapped on the most recent FIRMs for the project sites. There are no flood protection facilities including dam impoundments upstream of the project sites. Although levees provide flood protection from the New River for the project area, no residential structures would be constructed that could otherwise be subject to hazards from a levee failure. Additionally, no modifications or crossings at levee structures that border FSF and ISF are proposed, which could otherwise indirectly impact existing residents. Therefore, **no impact** is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Impede or Redirect Flood Flows.*

4.9-6 *The projects would not require the placement of structures within a 100-year flood hazard area, which would impede or redirect flood flows.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects' facilities would not be constructed within a delineated 100-year flood hazard area or floodway. As a result, the construction and operation of the projects would not place structures within a 100-year flood hazard area as mapped on the most recent federal FIRM. Following construction, any structures that are required to cross IID drainage facilities would be required to be strung over the drain feature or submerged a minimum of five feet below the ground surface and set back from local waterways. Additionally, construction of these facilities, particularly at water crossings, would likely occur during the late summer months and would be of limited duration and, therefore, would be unlikely to expose workers to significant risk of injury or death as a result of flooding. Based on these considerations, the resulting impact is considered **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Inundation from Flooding or Mudflows.*

4.9-7 *The projects would not expose people or structures to a significant risk of loss, injury or death involving inundation by flooding, including flooding as a result of the failure of a levee or dam, seiche, or tsunami or inundation by mudflows.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

In recognition of the project areas' inland location, the threat of tsunamis or seiche originating from the Salton Sea is considered negligible. As described in Chapter 4.6, Geology and Soils, the topography within the vicinity of project areas is generally level and, therefore, the hazard of mudflows adversely affecting the project facilities is very low. For this reason, **no significant impact** would occur.

Mitigation Measure(s)

No mitigation measures are required.

4.9.3 Decommissioning/ Restoration and Residual Impacts**Decommissioning/Restoration**

Decommissioning and restoration activities would result in similar impacts to hydrology and water quality as would occur during construction of the proposed projects. The primary water quality issue associated with decommissioning/restoration would be potential impacts to surface water quality, as the decommissioning activities would be similar to construction activities, and would be considered a **significant impact**. However, with implementation of Mitigation Measures 4.9-1a and 4.9-1b, impacts to surface water quality would be reduced to a level **less than significant** through the inclusion of focused BMPs for the protection of surface water resources. Impacts to other water resource issues, including alteration of drainage patterns, contributing to off-site flooding, impacts to groundwater recharge and supply, would be **less than significant**. There would be **no impact** associated with placement of

housing within a 100-year floodplain, impeding or redirecting flows, or inundation from flooding or mudflows.

Residual

With implementation of the mitigation measures listed above, implementation of the projects would not result in any residual significant impacts related to increased risk of flooding from stormwater runoff, from water quality effects from long-term urban runoff, or from short-term alteration of drainages and associated surface water quality and sedimentation. With the implementation of the required mitigation measures during construction and decommissioning of the projects, water quality impacts would be minimized to a less than significant level. Based on these circumstances, the projects would not result in any residual significant and unmitigable adverse impacts to surface water hydrology and water quality.

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4.10 LAND USE/PLANNING

This section provides information regarding current land use, land use designations, and land use policies within and in the vicinity of the project sites. Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines states that “[t]he EIR shall discuss any inconsistencies between the projects and applicable general plans and regional plans.” This section fulfills this requirement for the projects. In this context, this section reviews the land use assumptions, designations, and policies of the Imperial County (County) General Plan and other applicable federal, state, and local requirements, which governs land use within the project area and evaluates the projects’ potential to conflict with policies adopted for the purpose of avoiding or mitigating significant environmental effects. Where appropriate, mitigation is applied and the resulting level of impact identified.

4.10.1 Environmental Setting

As discussed in Chapter 2.0, Environmental Setting of this Environmental Impact Report (EIR), the project area is located on privately owned, primarily undeveloped agricultural land, approximately two miles west of Calexico, California in southern Imperial County. The project area is located in an unincorporated area of the County, and is designated as Agriculture under the County’s General Plan (as amended through 2008). The project sites and off-site transmission area is located within the General Agriculture (A-2), General Agriculture Rural (A-2-R) and Heavy Agriculture (A-3) zoning designations (see Figure 4.10-1, General Plan Land Use and Zoning Designations). The project area is generally located between State Route 98 to the south, Kubler Road and Preston Road to the north, Weed Road to the east, and Brockman Road to the west. The project area is currently under agricultural production, consisting of annual crops, with some scattered rural residential and commercial structures. The project sites, including the off-site transmission area are located adjacent to three solar farms including the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project area borders the Calexico II-B and Wistaria Ranch Solar Farms on three sides. The surrounding region resembles a highly modified landscape, which up until the early 1930s, generally consisted of a desert landscape; similar to areas further west. With the completion of several water conveyance facilities, including the All American Canal which was authorized by the 1928 Boulder Canyon Project Act and completed in the mid-1930s, irrigated agriculture was made possible.

4.10.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

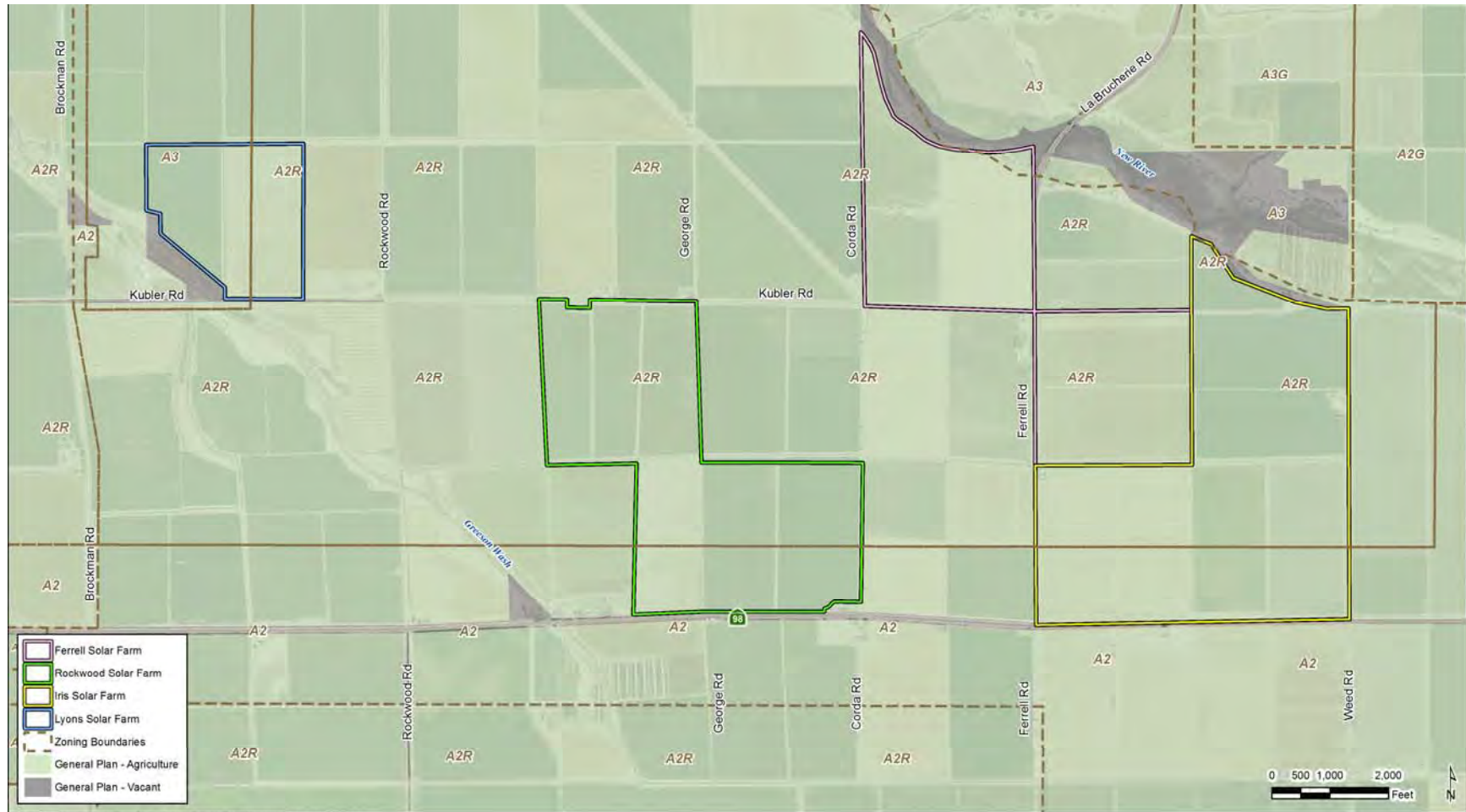
State

State Planning and Zoning Laws

California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city’s or county’s judgment, bears relation to its planning. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city’s or county’s vision for the area. The general plan is a long-range document that typically addresses the physical character of an area over a 20-year period or more. Finally, although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan’s goals.

The State Zoning Law (California Government Code Section 65800 et seq.) establishes that zoning ordinances, which are laws that define allowable land uses within a specific zone district, are required to be consistent with the general plan and any applicable specific plans.

Figure 4.10-1. General Plan Land Use and Zoning Designations



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Local

Regional Comprehensive Plan and Regional Transportation Plan

The Southern California Association of Governments' (SCAG) Intergovernmental Review (IGR) section, part of the Environmental Planning Division of Planning and Policy, is responsible for performing consistency review of regionally significant local plans, projects, and programs. Regionally significant projects are required to be consistent with SCAG's adopted regional plans and policies such as the Regional Comprehensive Plan (RCP) and the Regional Transportation Plan (RTP). The criteria for projects of regional significance are outlined in State CEQA Guidelines Sections 15125 and 15206. According to the SCAG Intergovernmental Review Procedures Handbook, "new or expanded electrical generating facilities and transmission lines" qualify as regionally significant projects. For this reason, Table 4.10-1 provides a consistency evaluation for the projects with applicable SCAG IGR policies.

County of Imperial General Plan

The purpose of the County's General Plan (as amended through 2008) is to direct growth, particularly urban development, to areas where public infrastructure exists or can be provided, where public health and safety hazards are limited, and where impacts to the County's abundant natural, cultural, and economic resources can be avoided. The following ten elements comprise the County's General Plan: Land Use; Housing; Circulation and Scenic Highways; Noise; Seismic and Public Safety; Conservation and Open Space; Agricultural; Geothermal/Alternative Energy and Transmission; Water; and Parks and Recreation. Together, these elements satisfy the seven mandatory general plan elements as established in the California Government Code. Goals, objectives, and implementing policies and actions programs have been established for each of the elements.

Imperial County has received funding from the California Energy Commission's (CEC) Renewable Energy and Conservation Planning Grant to amend and update the County's General Plan in order to facilitate future development of renewable energy projects. The Geothermal/Alternative Energy and Transmission Element was last updated in 2006. Since then, there have been numerous renewable projects proposed, approved and constructed within Imperial County as a result of California's move to reduce greenhouse gas emissions, develop alternative fuel resources and implement its RPS. The General Plan update of the Geothermal/Alternative Energy and Transmission Element is currently in progress. A community meeting was held on June 19, 2014 to obtain input from stakeholders who will be potentially affected by the revised Geothermal/Alternative Energy and Transmission Element. The CEC grant also includes an update to the 1993 Conservation/Open Space Element to facilitate future development of renewable energy projects. The update of the 1993 Conservation/Open Space Element will assist in identifying areas that will conserve habitat areas on federal, state, military, tribal and private lands in the County. This is in order to implement the conservation goals of the Desert Renewable Energy Conservation Plan in a manner consistent with Government Code Section 65041.1(b).

As previously indicated, the County's General Plan designates the project area as "Agriculture." The County identifies agricultural land as a form of open space. According to the Conservation and Open Space Element of the General Plan, open space is "any parcel or area of land or water, which is essentially unimproved and devoted to one of the following categories of uses: Preservation of Natural Resources; Managed Production of Resources; Outdoor Recreation; and, Protection of the Public Health and Safety." As such, outdoor recreational activities including hunting, bike riding, walking, and bird watching can take place in agricultural areas.

An analysis of the projects' consistency with the General Plan goals and objectives relevant to the projects is provided in Table 4.10-1, Project Consistency with Applicable Plan Policies. A detailed analysis of the project's consistency with the General Plan goals, objectives and policies regarding Agriculture is provided in Section 4.2 Agriculture and Forestry Resources of this EIR. While this EIR analyzes the project's consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Planning Commission and Board of Supervisors retain authority for the determination of the project's consistency with the General Plan.

TABLE 4.10-1. PROJECT CONSISTENCY WITH APPLICABLE PLAN POLICIES

Applicable Policies	Consistency Determination	Analysis
Imperial County General Plan, Land Use Element		
<i>Public Facilities, Objective 8.7.</i> Ensure the development, improvement, timing, and location of community sewer, water, and drainage facilities will meet the needs of existing communities and new developing areas.	Consistent	The projects include the necessary supporting infrastructure and would not require new community-based infrastructure. The projects would be required to construct supporting drainage and wastewater treatment and disposal infrastructure on-site consistent with County requirements and mitigation measures prescribed in Sections 4.6, Geology and Soils, and 4.9, Hydrology and Water Quality, of the EIR. Potable water would be required for domestic use, solar panel washing and fire protection and would be provided by the Imperial Irrigation District (IID). Water supplies for the projects would come from existing water service contracts with IID with demand for the combined projects expected to be less than current water demands to support irrigated agriculture.
<i>Public Facilities, Objective 8.8.</i> Ensure that the siting of future facilities for the transmission of electricity, gas, and telecommunications is compatible with the environment and County regulation.	Consistent	With the approval of a CUP and associated conditions, the projects would be a permitted use within the Agricultural land use designation and associated zoning designation.
<i>Public Facilities, Objective 8.9.</i> Require necessary public utility rights-of-way when appropriate.	Consistent	The projects would include the dedication of necessary right-of-way (ROW) to facilitate the placement of electrical distribution and transmission infrastructure.
<i>Protection of Environmental Resources, Objective 9.6.</i> Incorporate the strategies of the Imperial County Air Quality Attainment Plan (AQAP) in land use planning decisions and as amended.	Consistent	Due to the minimal grading of the site during construction and limited travel over the site during operations, local vegetation is anticipated to remain largely intact which will assist in dust suppression. Furthermore, dust suppression will be implemented including the use of water and soil binders during construction. Chapter 4.3, Air Quality, discusses the projects' consistency with the AQAP in more detail.
Imperial County General Plan, Circulation and Scenic Highways Element		
<i>Safe, Convenient, and Efficient Transportation System, Objective 1.1.</i> Maintain and improve the existing road and highway network, while providing for future expansion and improvement based on travel demand and the development of alternative travel modes.	Consistent	The projects would include limited operational vehicle trips once constructed and would not be expected to reduce the current level of service (LOS) at affected intersections, roadway segments, and highways. The projects do not propose any forms of residential or commercial development and therefore would not require new forms of alternative transportation to minimize impacts to existing roadways.
<i>Safe, Convenient, and Efficient Transportation System, Objective 1.2.</i> Require a traffic analysis for any new development which may have a significant impact on County roads.	Consistent	As discussed in Chapter 3, Project Description, the projects at build out would entail up to 24 additional two-way trips on local roadways on an average day. Further, these trips would be distributed throughout the project area. This level of trip generation is well below the threshold of requiring a formal traffic study. However, as discussed in Chapter 4.14, Transportation and Traffic, traffic studies were prepared for the projects and demonstrate that project operations would have a less than significant impact on the circulation network.

Applicable Policies	Consistency Determination	Analysis
Imperial County General Plan, Noise Element		
<i>Noise Environment.</i> Objective 1.3. Control noise levels at the source where feasible.	Consistent	The proposed location of the projects' solar facilities generally avoids the placement of new structures in proximity to noise-sensitive uses. In instances where construction-related and operational noise would occur in closer proximity to noise sensitive land uses (e.g. less than 500 feet), the County would condition the projects to maintain conformance with County noise standards.
<i>Project/Land Use Planning.</i> Goal 2: Review Proposed Actions for noise impacts and require design which will provide acceptable indoor and outdoor noise environments.	Consistent	As discussed in Section 4.11, Noise and Vibration, the projects would be required to comply with the County's noise standards during both construction and operation.
<i>Long Range Planning.</i> Goal 3: Provide for environmental noise analysis inclusion in long range planning activities which affect the County.	Consistent	The EIR contains a noise analysis that considers and evaluates long-term noise impacts related to project operations. As discussed in Section 4.11, Noise and Vibration, the projects would result in less than significant noise impacts.
Imperial County General Plan, Conservation and Open Space Element		
<i>Conservation of Environmental Resources for Future Generations</i> Objective 1.5 Provide for the most beneficial use of land based upon recognition of natural constraints.	Consistent	The solar field site parcels would be converted from actively cultivated agricultural land to a solar energy facility (refer to Section 4.2, Agricultural Resources). The proposed projects would provide a beneficial use of the land by creating local jobs during construction and to a lesser degree during operation. Section I(C) of the Imperial County General Plan Geothermal/Alternative Energy and Transmission Element explains that the County adopted the element after determining that the benefits of alternative energy development in the County include: 1) Fiscal benefit of expanded property tax revenues; 2) Fiscal benefit of sales tax revenues from purchase of goods and services; 3) Royalty and lease benefits to local landowners and County; 4) Social and fiscal benefits from increased economic activity and employment opportunities; 5) Improvements in technology to reduce costs of electrical generation; 6) Potential air quality improvement by displacement of fossil-fueled generated electricity with geothermal/alternative energy power which does not add to the Greenhouse effect; 7) Contributes toward meeting the State of California's Renewables Portfolio Standard (RPS). In addition, the generation of 360 MW of renewable energy is a benefit that would otherwise be generated by non-renewable fossil fuels. Therefore, the proposed Project is consistent with this objective. See Appendix M, Economic Impact Analysis of this EIR for a further evaluation of the economic impacts of the projects.
<i>Preservation of Biological Resources.</i> Goal 2: The County will preserve the integrity, function, productivity, and long-term viability of environmentally sensitive habitats, and plant and animal species.	Consistent	A biological resources survey was conducted for the project area. As discussed in Section 4.4, Biological Resources, there are potentially significant biological resources located within the project Area. However, with the implementation of mitigation in Section 4.4, Biological Resources, these impacts are reduced to a level less than significant.
<i>Preservation of Cultural Resources.</i> Objective 3.1 Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.	Consistent	A cultural resources records search was conducted for the project area. As discussed in Section 4.5, Cultural Resources, there are previously recorded cultural resources found within the project area. However, with the implementation of mitigation in Section 4.5, Cultural Resources, these impacts are reduced to a level less than significant.

Applicable Policies	Consistency Determination	Analysis
<i>Preservation of Agricultural Lands.</i> Goal 4: The County will actively conserve and maintain contiguous farmlands and prime soil areas to maintain economic vitality and the unique lifestyle of the Imperial Valley.	Consistent	The projects are consistent with this goal, since the projects would not permanently convert existing agricultural uses to non-agricultural uses. Please refer to Section 4.2, Agricultural Resources, which provides a more detailed analysis of the projects' consistency with applicable agricultural goals and objectives.
<i>Conservation of Energy Sources.</i> Goal 6: The County shall seek to achieve maximum conservation practices and maximum development of renewable alternative sources of energy.	Consistent	The projects entail the construction and operation of a solar energy facility, which is considered an alternative source of energy.
<i>Conservation of Energy Sources.</i> Objective 6.2 Encourage the utilization of alternative passive and renewable energy resources.	Consistent	The projects consist of the construction and operation of a solar energy facility, which is considered an alternative source of energy. With implementation of the projects, a new source of solar energy would be identified.
<i>Conservation of Energy Sources.</i> Objective 6.6 Encourage compatibility with National and State energy goals and city and community general plans.	Consistent	The projects are consistent with California Public Utilities Code § 399.11 et seq., "Increasing the Diversity, Reliability, Public Health and Environmental Benefits of the Energy Mix." California's electric utility companies are required to use renewable energy to produce 20 percent of their power by 2010 and 33 percent by 2020. The projects would contribute toward this goal.
Imperial County General Plan, Geothermal/Alternative Energy and Transmission Element		
<i>Agricultural Lands and Biological Resources. Objective 2.3.</i> Utilize existing easements or right-of-way and follow field boundaries for electric and liquid transmission lines.	Consistent	The transmission facilities constructed in the conjunction with the projects would be constructed along existing field boundaries and housed within a dedicated ROW.
<i>Agricultural Lands and Biological Resources, Objective 2.4.</i> Carefully analyze the potential impacts on agricultural and biological resources from each project.	Consistent	Please refer to Section 4.2, Agricultural Resources, for a description of existing agricultural resources within the project area and a discussion of potential impacts attributable to the projects. A biological resources report has been prepared for these projects, which is summarized in Section 4.4, Biological Resources, along with potential impacts attributable to the projects. With incorporation of mitigation identified in Sections 4.2, Agricultural Resources and 4.4, Biological Resources, less than significant impacts would result.
<i>Locating Transmission Line Corridors. Goal 5.</i> When planning and designing transmission lines, the County will consider impacts to agricultural lands, wildlife, and the natural desert landscape.	Consistent	In conjunction with the CUP approval process, the County has considered impacts to agricultural and desert resources. Please refer to Section 4.2, Agricultural Resources, and 4.4 Biological Resources, for discussion and consideration of potential impacts to agricultural lands and natural areas.
<i>Locating Transmission Line Corridors. Objective 5.1.</i> Require all major transmission lines to be located in designated federal and IID corridors or other energy facility corridors such as those owned by investor owned utilities and merchant power companies.	Consistent	The transmission facilities constructed in the conjunction with the projects would be constructed along existing field boundaries and housed within a dedicated ROW.

Applicable Policies	Consistency Determination	Analysis
<i>Development of Geothermal/Alternative Energy Resources. Goal 1.</i> The County of Imperial supports and encourages the full, orderly, and efficient development of geothermal/alternative energy resources while at the same time preserving and enhancing where possible agricultural, biological, human, and recreational resources.	Consistent	With the approval of all CUPs, Variances and discretionary permits, the proposed projects would be an allowable use within the existing land use and zoning designations. In addition, the projects would promote Imperial County's renewable energy policies and would be consistent with the County's goal, as stated in its April 20, 2010 proclamation.
<i>Development of Geothermal/Alternative Energy Resources. Objective 1.1.</i> Design for the co-location of energy facilities through the designation of "energy park" zones to increase certainty and facilitate power generation development and to provide for efficient use of land resources.	Consistent	See response above.
Imperial County Land Use Compatibility Plan		
<i>Safety Objective 2.1.</i> The intent of land use safety compatibility criteria is to minimize the risks associated with an off-airport accident or emergency landing.	Consistent	The project area is not located within a designated ALUCP area and, therefore, no portion of the project (solar facility sites and off-site transmission area) is not located within a flight hazard zone. This is discussed further below.
Southern California Area of Governments Regional Comprehensive Plan and Regional Transportation Plan		
3.05: Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.	Consistent	The projects involve the construction and operation of new renewable energy infrastructure that would interconnect with other proposed and approved transmission infrastructure thereby maximizing the use of existing facilities. The projects would not involve new forms of urban development that could other increase demands for existing infrastructure.
3.14: Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.	Consistent	The projects do not propose an increase in urban densities along regional commuter rail, transit systems, and activity centers and is not in proximity to these areas.
3.16: Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.	Consistent	The projects are located in an agriculturally designated portion of unincorporated Imperial County and would not discourage new development in and around existing activity centers, transportation corridors, underutilized infrastructure systems, or areas in need of recycling and redevelopment.
3.17: Support and encourage settlement patterns which contain a range of urban densities.	Consistent	The projects would not increase urban densities because the projects consist of new renewable energy infrastructure and not residential or commercial development.
3.18: Encourage planned development in locations least likely to cause adverse environmental impact.	Consistent	The projects are not characterized as "Planned Development" and are appropriately located to minimize adverse impacts to sensitive lands uses and take advantage of anticipated utility infrastructure needs.
RTP G6: Encourage land use and growth patterns that complement our transportation investments and improve the cost-effectiveness of expenditures.	Consistent	See discussion under Policy 3.16 above.

Applicable Policies	Consistency Determination	Analysis
GV P1.1: Encourage transportation investments and land use decisions that are mutually supportive.	Consistent	See discussion under Policy 3.16 above.
GV P4.2: Focus development in urban centers and existing cities.	Consistent	The projects consist of new renewable energy infrastructure and do not include residential or commercial forms of development that should otherwise be directed toward urban centers or existing cities.
GV P4.3: Develop strategies to accommodate growth that uses resources efficiently, eliminate pollution and significantly reduce waste.	Yes	See discussion under Policy 3.16 above.

Source: Imperial County General Plan 2008, as amended, SCAG Regional Comprehensive Plan and Regional Transportation Plan 2008.

County of Imperial Land Use Ordinance

The County's Land Use Ordinance provides the physical land use planning criteria for development within the jurisdiction of the County. As depicted in Figure 4.10-1, the project area is zoned as follows: General Agriculture (A-2), General Agriculture Rural (A-2-R) and Heavy Agriculture (A-3). The purpose of the A-2 and A-2-R zoning designations is to "designate areas that are suitable and intended primarily for agricultural uses (limited) and agricultural related compatible uses" (County of Imperial 1998). The purpose of the A-3 zoning designation is to "designate areas that are suitable for agricultural land uses; to prevent the encroachment of incompatible uses onto and within agricultural lands; and to prohibit the premature conversion of such lands to non-agricultural uses" (County of Imperial 1998). Uses in the A-2, A-2-R and A-3 zoning designations are limited primarily to agricultural-related uses and agricultural activities that are compatible with agricultural uses.

Sections 90508.02 and 90509.02 of the Land Use Ordinance identify the permitted and conditional uses within the A-2, A-2-R and A-3 zoning designations. Uses identified as conditionally permitted require a Conditional Use Permit (CUP), which is subject to the discretionary approval of the County Board of Supervisors (Board) per a recommendation by the County Planning Commission. The projects include several uses identified as conditionally permitted within the A-2, A-2-R, and A-3 zones. These uses include electrical substations in an electrical transmission system (500 kilovolt (kV)/230 kV/161 kV); facilities for the transmission of electrical energy (100-200 kV); solar energy plants; and solar energy electrical generators. Sections 90508.07 and 90509.07 of the Land Use Ordinance limit the height of all non-residential structures within the A-2, A-2-R and A-3 zones to 120 feet. Specifically, Sections 90508.07 (C) and 90509.07 (C) state, "Non-Residential structures and commercial communication towers shall not exceed one hundred twenty (120) feet in height, and shall meet ALUC Plan requirements."

County of Imperial Right to Farm Ordinance No. 1031

The County of Imperial Right to Farm Ordinance (No. 1031) was approved by the County Board of Supervisors on August 7, 1990. The purpose and intent of the Ordinance is to reduce the loss to the County of its agricultural resources by clarifying the circumstances under which agricultural operations may be considered a nuisance. The Ordinance permits operation of properly conducted agricultural operations within the County. The Ordinance promotes a good neighbor policy by disclosing to purchasers and users of adjacent properties the potential problems and inconveniences associated with agricultural operations.

Imperial County Airport Land Use Compatibility Plan

The eastern border of the project area is located approximately 2.5 miles west of the Calexico International Airport. According to the Imperial County Airport Land Use Compatibility Plan (ALUCP) for

Calexico International Airport, no portion of the project area is located within the Calexico Airport land use capability zones (County of Imperial, ALUCP 1996). No individual airport policies specific to the Calexico International Airport have been adopted in conjunction with the ALUCP.

4.10.1.2 Existing Conditions

FSF consists of two parcels totaling ~~367.1~~364.27 acres within the central and northern portions of the project area. The FSF project site includes the following APNs: 052-180-042 and 059-150-001. The FSF is generally level and currently used for agricultural production (see Section 4.2, Agricultural Resources, for further discussion). As shown in Figure 4.10-1, on-site zoning designations include A-2-R (see Table 3-1 for parcel specific zoning). Agricultural fields are located to the north, south, and east of the FSF project site. The Calexico Solar Farm 2 Phase B Project is being constructed immediately west and south of the FSF project site.

RSF consists of three parcels totaling 396.2 acres within the central portions of the project area. The RSF project site includes the following APNs: 052-180-040; 052-180-048; and 052-180-064. As shown in Figure 4.10-1, on-site zoning designations include A-2 and A-2-R (see Table 3-1 for parcel specific zoning). Agricultural fields are located to the north, west and east of the RSF project site. The Calexico Solar Farm 2 Phase B Project and Mount Signal Solar Farm 1 Project are being constructed immediately east and south of the RSF project site, respectively.

ISF consists of three parcels totaling ~~520.8~~501.88 acres within the eastern portion of the project area. The ISF project site includes the following APNs: 059-050-002; 059-050-003; and 059-120-001. As shown in Figure 4.10-1, on-site zoning designations include A-2 and A-2-R (see Table 3-1 for parcel specific zoning). Agricultural fields are located to the north, south, and east of the ISF project site. The Calexico Solar Farm 2 Phase B Project is being constructed immediately adjacent to the west of the ISF project site.

LSF consists of two parcels totaling 138.4 acres within the western portion of the project area. The LSF project site includes the following APNs: 052-180-053 and 052-180-058. As shown in Figure 4.10-1, on-site zoning designations include A-2-R and A-3 (see Table 3-1 for parcel specific zoning). Agricultural fields are located to the north, east, south, and west of the LSF project site.

The interconnection for the proposed projects will occur at the 230 kV side of the SDG&E IV Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and it's shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

4.10.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to land use and planning, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.10.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to land use and planning are considered significant if any of the following occur:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating a significant environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.10.2.2 Methodology

This analysis evaluates the projects' consistency with applicable federal, state, and local land uses plans and policies. In order to analyze land-use consistency and land-use impacts, the following approach was employed:

- The projects were reviewed relative to the land-use assumptions, policies, and designations of the Imperial County General Plan and applicable land-use plans, policies, and regulations; and
- The projects were reviewed to identify any potential conflicts between the proposed land uses and existing or proposed land uses in the vicinity.

In some instances, the land use for the project poses potential physical environmental consequences, such as traffic. In these cases, the consequences are discussed in the specific section of this EIR that focuses on that issue. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through 3.0-9.

Given that the projects involve the potential construction and operation of solar energy facilities and supporting infrastructure that would be able to take advantage of regional transmission infrastructure and favorable market demands, the projects would not include a residential or commercial component that could be subject to future blight conditions. For this reason, this analysis would not provide further consideration of issues relating to future urban decay or urban blight.

4.10.2.3 Impact Analysis

IMPACT *Physically Divide an Established Community.*

4.10-1 *The projects would not physically divide an established community.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects are located in a sparsely populated, agriculturally zoned portion of southern Imperial County. On and off-site uses are comprised of irrigated agriculture with isolated residential structures scattered sparsely throughout the project area. The proposed projects would include solar facilities adjacent to productive agricultural lands; however, a majority of the currently vacant agricultural lands surrounding the project sites have been approved for the development of utility-scale solar energy projects, and are anticipated to transition into solar energy use over time. The project area is located adjacent to three solar farms including the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project area borders the Calexico II-B and Wistaria Ranch Solar Farms on three sides. As a result, the implementation of the projects would not divide an established community. The nearest residentially designated land uses are located over a mile east in the City of Calexico. For these reasons, **no significant impact** would result.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Conflict with Applicable Land Use Plan, Policies, or Regulations.*

4.10-2 *The projects could conflict with an applicable land-use plan, policy, or regulation of an agency with jurisdiction over the projects (including, but not limited to the general plan, airport land use plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The County's General Plan applies to the solar energy facility and supporting infrastructure portions associated with the projects. These components are located within the jurisdiction of the County of

Imperial. Solar energy facilities are not specifically referenced in the Land Use Element of the General Plan, other than a statement in the Imperial County Land Use Element that “Electrical and other energy generating facilities are heavy industrial uses, except geothermal, hydroelectric, wind, solar facilities may be regulated differently than other types of power plants by implementing zoning.” However, the Land Use Element recognizes that geothermal plants, a similar use to the extent that it represents a renewable energy resource, are permitted uses within the “Agriculture” land use category, so long as a CUP is approved and environmental review is completed. In this context, with the approval of a CUP and completion of a supporting environmental analysis, as provided in this EIR, the projects’ solar facilities would be considered a permitted use.

As discussed previously in this section, Imperial County has received funding from the CEC Renewable Energy and Conservation Planning Grant to amend and update the County’s General Plan in order to facilitate future development of renewable energy projects. As part of the CEC grant, the 2006 Geothermal/Alternative Energy and Transmission Element and 1993 Conservation/Open Space Element will be updated.

Development of the solar facility is subject to the County’s zoning ordinance. Pursuant to Title 9, Division 5, Chapter 9, “Solar Energy Plants” is a use that is permitted in the A-2, A-2-R, and A-3 zones, subject to approval of a CUP. “Transmission lines, including supporting towers, poles, microwave towers, utility substations” are permitted uses within the A-3 Zone. Pursuant to Title 9, Division 5, Chapter 8, “Solar energy electrical generator,” “Electrical power generating plant,” “Major facilities relating to the generation and transmission of electrical energy,” and “Resource extraction and energy development,” are uses that are permitted in the A-2, A-3, and A-2-R zone subject to approval of a CUP from the County.

The projects would require the use of transmission towers up to 140 feet in height, which would exceed the height limit in the A-2, A-2-R, and A-3 zones. Title 9 Division 5, Imperial County has established a maximum height of 120 feet for structures: “Non-Residential structures and commercial communication towers shall not exceed one hundred twenty (120) feet in height, and shall meet the Airport Land Use Compatibility Plan requirements.” As part of the projects, approval of a Variance for each project will be required to allow the new towers to be built at 140 feet in height. As part of the approval of the Variance, findings pursuant to Title 9 Division 2, §90202.08 of the Imperial County Land Use Ordinance would be required. Without the obtainment of the Variance, the transmission tower component of the projects would be inconsistent with the County’s zoning code. With approval of the Variance for each project, a **less than significant** impact is identified.

The Land Use Compatibility Matrix (see Table 4 of the Land Use Element) identifies land designated as “Agriculture” as compatible with lands zoned A-2, A-2-R, and A-3. As described above, the project facilities are a conditionally permitted use under the A-2, A-2-R, and A-3 zones and, therefore, are considered consistent with the Agriculture General Plan land use designation. As a result, no General Plan land use amendment would be required for construction and operation of solar facility. Further, post-project restoration of the project sites would ensure future agricultural production and substantial conformance with the goals and objectives of the County’s General Plan. In this context and based on the findings in Table 4.10-1, which presents a summary determination of the consistency of the projects with the relevant plans and policies, the projects are generally consistent with the County’s General Plan, Land Use Element, and **no significant impact** would occur.

However, as provided in Section 4.2, Agricultural Resources, the projects could be inconsistent with specific goals, policies and objectives associated with agriculture. The County identifies agricultural land as a form of open space. According to the Land Use Element of the General Plan, the permitted uses and standards on agricultural lands include open space/recreation. “Open space and recreation land uses within this category consist of environmentally sensitive areas, parks, fault zones, floodways and floodplains, agricultural lands, and areas designated for the managed production of mineral resources.” The projects would convert the sites from agricultural land to a solar energy facility. As such, although no formerly-designated recreational uses would be removed, there may be some limited recreational utility lost associated with the agriculture fields as a result of the projects because such activity would be restricted to those with legal access. With implementation of Mitigation Measure 4.2-1, which requires a

~~reclamation restoration~~ plan that would prescribe site-specific requirements for farmland quality and a supporting bond to offset loss of agriculture land pursuant to the County's approval of the applicable CUPs, the projects would not conflict with the County's General Plan, Agricultural Element. Therefore, this significant impact to agricultural resources would be reduced to a **less than significant** level with implementation of the prescribed mitigation.

Compatibility with Adjacent Uses

The solar energy facility portions of the projects are not in proximity to urban areas and are generally surrounded by agricultural uses and other approved and/or proposed solar facilities including the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project area borders the Calexico II-B and Wistaria Ranch Solar Farms on three sides. However, as provided in Section 4.3, Air Quality, there are several residential structures located within and in the vicinity of the project sites. These locations are illustrated in Figure 4.3-1, Residence Locations. As shown, these sensitive uses are generally located at distances of greater than 1,000 feet from proposed O&M and sub-station facilities and, therefore, unlikely to result in nuisance-related impacts, such as noise, glare, or access disruptions that could otherwise conflict with adjacent uses (see Sections 4.1, Aesthetics, 4.3, Air Quality, 4.8, Hazards and Hazardous Materials, and 4.11, Noise and Vibration). Noise associated with solar panel operation (e.g., tracking) would also meet the County's noise ordinance requirements at the projects' property lines. Based on these considerations and the fact that the projects are an allowable use within the applicable agricultural zoning designation, the projects would result in **less than significant** land use conflicts with adjacent uses.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Conflict with an Adopted Habitat Conservation Plan or Natural Communities Conservation*
4.10-3 *Plan.*

The projects would not conflict with any applicable habitat conservation plan or natural community conservation plan.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The project sites are not within the boundaries of any adopted habitat conservation plan (HCP) (16 USC §1539) or natural community conservation plan (NCCP) (Cal. Fish & Game Code § 2800 et seq.). The County is not within the boundary of any adopted HCP or NCCP. Based on these considerations, the project solar energy facilities and supporting infrastructure would not conflict with any HCP or NCCP and would result in **no significant impact**.

Mitigation Measure

No mitigation measures are required.

4.10.3 Decommissioning/ Restoration and Residual Impacts

Decommissioning/Restoration

No impacts to land use and planning are anticipated to occur during decommissioning and restoration of the project sites after their 40 year life. Decommissioning and restoration would not physically divide an established community or conflict with any applicable land use or habitat conservation plan. Through each projects decommissioning and subsequent restoration to agricultural uses, the uses of the project sites (agricultural) would remain consistent with the General Plan and zoning designations of the sites, which allow agricultural uses. Therefore, **no impact** is identified and no mitigation is required.

Residual

With mitigation as prescribed in other sections of this EIR, issues related to the conversion of Important Farmland to non-agricultural use would be mitigated and reduced to a less than significant level. Similarly, with the approval of a CUP and ~~reclamation restoration~~ plan to address post-project decommissioning, and coordination with the ALUC, the projects would generally be consistent with applicable federal, state, regional, and local plans and policies. Likewise, the projects would not conflict with the provisions of an adopted HCP or NCCP. Based on these circumstances, the projects would not result in any residual significant and unmitigable land use impacts.

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4.11 NOISE AND VIBRATION

This section provides a description of the existing ambient noise environment for the project area and describes applicable federal, state, and local regulations (Section 4.11.1). Potential noise or vibration impacts associated with the project-related facilities, as described in Chapter 3.0, Project Description, are considered in Section 4.11.2 and, if necessary, mitigation is proposed based on the anticipated level of significance. Section 4.11.3 concludes by describing significant residential impacts following the application of mitigation, if any.

4.11.1 Environmental Setting

Noise is defined as unwanted sound. Pressure waves traveling through air exert a force registered by the human ear as sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level), which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Consequently, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz to imitate the human ear's decreased sensitivity to low and extremely high frequencies. This emulation of the human ear's frequency sensitivity is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A weighting follows an international standard method of frequency de-emphasis and is typically applied to community noise measurements. In practice, the specific sound level from a source is measured using a meter incorporating an electrical filter corresponding to the A-weighting curve. All noise levels reported are A-weighted unless otherwise stated.

Noise Exposure and Community Noise

Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources that constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. Community noise is constantly changing throughout the day due to short duration single event noise sources, such as aircraft flyovers, vehicle passbys, and sirens. These successive additions of sound to the community noise environment vary the community noise level from instant to instant. This requires the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below (Caltrans 1998):

- L_{eq} : the equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- L_{max} : the instantaneous maximum noise level for a specified period of time.
- L_{dn} : 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 PM and 7:00 AM is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises. Similar to L_{dn} , Community Noise Equivalent Level (CNEL) adds a 5 dBA "penalty" for the evening hours between 7 PM and 10 PM in addition to a 10 dBA penalty between the hours of 10 PM and 7 AM.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

1. Subjective effects of annoyance, nuisance, dissatisfaction;
2. Interference with activities such as speech, sleep, learning; and
3. Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial settings can experience noise in the last category. A satisfactory method for measuring the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction does not exist. However, a wide variation in individual thresholds of annoyance does exist, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted; i.e., the "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans 1998):

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a nonlinear fashion hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dB, the combined sound level would be 53 dB, not 100 dB. Because of this sound characteristic, if there are two noise emission sources, one producing a noise level greater than 9 dB than the other, the contribution of the quieter noise source is negligible and the sum of the noise sources is that of the louder noise source.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans 1998).

The project area is characterized by an agricultural landscape and, therefore, soft surfaces are generally present throughout.

4.11.1.1 Regulatory Setting

This section presents federal, state, and local laws, plans, and regulations governing noise levels and allowable limits applicable to the projects.

Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck passby noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. In addition to noise standards for individual vehicles, under regulations established by the U.S. Department of Transportation's Federal Highway Administration (FHWA), noise abatement must be considered for certain federal or federally-funded projects. Abatement is an issue for new highways or significant modification of an existing freeway. The agency must determine if the project would create a substantial increase in noise or if the predicted noise levels approach or exceed the Noise Abatement Criteria.

State

The state has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (California Code of Regulations, Title 24). The noise insulation standards set forth an interior standard of L_{dn} 45 dB for any habitable room. They also require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than L_{dn} 60 dB. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

The State of California General Plan Guidelines, published by the Governor's Office of Planning and Research (OPR) in 1998, also provides guidance for the acceptability of projects within specific CNEL/ L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. The County of Imperial has utilized the adjustment factors provided and has modified the state's Land Use Compatibility standards for the purpose of implementing the Noise Element of its General Plan. Table 4.11-1 summarizes the acceptable and unacceptable community noise exposure limits for various land use categories as currently defined by the State of California. These community noise exposure limits are also incorporated into the County of Imperial General Plan Noise Element.

Local

County of Imperial General Plan

The County of Imperial General Plan Noise Element identifies and defines existing and future environmental noise levels from sources of noise within or adjacent to the County of Imperial; establishes goals and objectives to address noise impacts, and provides Implementation Programs to implement adopted goals and objectives. Table 4.11-2 summarizes the projects' consistency with the applicable General Plan noise policies. While this Environmental Impact Report (EIR) analyzes the projects' consistency with the General Plan pursuant to State California Environmental Quality Act (CEQA) Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Noise Impact Zones. A Noise Impact Zone is an area that is likely to be exposed to significant noise. The County of Imperial defines a Noise Impact Zone as an area which may be exposed to noise greater than 60 dB CNEL or 75 dB $L_{eq}(1)$.

TABLE 4.11-1. LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use Category	Community Noise Exposure – L _{dn} or CNEL (dBA)											
	50	55	60	65	70	75	80					
Residential	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
Transient Lodging – Motel, Hotel	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
Schools, Libraries, Churches, Hospitals, Nursing Homes	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
	Blue	Blue	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green
Auditorium, Concert Hall, Amphitheaters	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Sports Arena, Outdoor Spectator Sports	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Playgrounds, Neighborhood Parks	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Office Buildings, Business, Commercial and Professional	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Industrial, Manufacturing, Utilities, Agriculture	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Blue	Normally Acceptable		Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.									
Green	Conditionally Acceptable		New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.									
Yellow	Normally Unacceptable		New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.									
Red	Clearly Unacceptable		New construction or development generally should not be undertaken.									

Source: OPR 1998; Imperial County General Plan 2008, as amended.

TABLE 4.11-2. PROJECT CONSISTENCY WITH APPLICABLE GENERAL PLAN NOISE POLICIES

General Plan Policies	Consistency with General Plan	Analysis
<p><i>1. Acoustical Analysis of proposed projects.</i> The County shall require the analysis of proposed discretionary projects, which may generate excessive noise, or which may be impacted by existing excessive noise levels.</p>	Consistent	<p>Under existing conditions, the ambient noise environment is characterized as relatively quiet with peak noise levels influenced by agricultural operations. Given that the projects are not characterized as a sensitive land use, project facilities would be unaffected by existing noise levels. The project facilities would be constructed within areas zoned for agricultural use with noise levels up to 70 dBA identified as normally acceptable. Project operations are expected to produce noise levels that would not exceed County standards and, hence impacts are expected to be less than significant.</p> <p>This EIR provides an analysis of the potential short- and long-term noise impacts of the projects. As discussed, short-term and long-term noise levels were found to be less than significant.</p>
<p><i>2. Noise/Land Use Compatibility.</i> Where acoustical analysis of a proposed project is required, the County shall identify and evaluate potential noise/land use conflicts that could result from the implementation of the project. Projects which may result in noise levels that exceed the "Normally Acceptable" criteria of the Noise/Land Use Compatibility Guidelines shall include mitigation measures to eliminate or reduce the adverse noise impacts to an acceptable level.</p>	Consistent	<p>Noise levels associated with project operations are unlikely to exceed noise limits for the A-2, A-2-R, and A-3 zones. See Section 4.11.1.2 for additional discussion.</p>
<p><i>4. Interior Noise Environment.</i> Where acoustical analysis of a proposed project is required, the County shall identify and evaluate projects to ensure compliance to the California (Title 24) interior noise standards and the additional requirements of this Element.</p>	Consistent	<p>As described under General Plan Noise Policy 1, short-term and long-term noise impacts would be minimized through the implementation of the prescribed mitigation. Noise levels associated with project operations would be unlikely to exceed noise limits for the A-2, A-2-R, and A-3 zones.</p>
<p><i>5. New Noise Generating projects.</i> The County shall identify and evaluate projects which have the potential to generate noise in excess of the Property Line Noise Limits. An acoustical analysis must be submitted which demonstrates the project's compliance.</p>	Consistent	<p>As described under General Plan Noise Policy 1, short-term and long-term noise impacts would be minimized through the implementation of the prescribed mitigation. Noise levels associated with project operations would be unlikely to exceed noise limits for the A-2, A-2-R, and A-3 zones.</p>
<p><i>6. Projects Which Generate Off-site Traffic Noise.</i> The acoustical analysis shall identify and evaluate projects which will generate traffic and increase noise levels on off-site roadways. If the project site has the potential to cause a significant noise impact to sensitive receptors along those roadways, the acoustical analysis report shall consider noise reduction measures to reduce the impact to a level less than significant.</p>	Consistent	<p>As described in Chapter 3, the projects would involve a minimal number of operational related vehicle trips and therefore, is unlikely to produce any increase in traffic noise levels on local roadways.</p>

Source: Imperial County General Plan Noise Element.

The County of Imperial has established the following interior noise standards to be considered in acoustical analyses:

- The interior noise standard for detached single family dwellings shall be 45 dB CNEL; and
- The interior noise standard for schools, libraries, offices and other noise-sensitive areas where the occupancy is normally only in the day time, shall be 50 dB averaged over a one-hour period ($L_{eq}(1)$).

Construction Noise Standards

Construction noise, from a single piece of equipment or a combination of equipment, shall not exceed 75 dB L_{eq} when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual receptor of days or weeks.

Construction equipment operation shall be limited to the hours of 7 AM to 7 PM, Monday through Friday, and 9 AM to 5 PM Saturday. No commercial construction operations are permitted on Sundays or holidays.

County of Imperial Noise Ordinance

Noise generating sources in Imperial County are regulated under the County of Imperial Codified Ordinances, Title 9, Division 7 (Noise Abatement and Control). Noise limits are established in Chapter 2 of this ordinance. Under Section 90702.00 of this rule, 70 dB is the normally acceptable limit for the Industrial, Manufacturing, Utilities, and Agricultural category of land use.

Imperial County Right-to-Farm Ordinance

In recognition of the role of agriculture in the county, the County of Imperial has adopted a “right-to-farm” ordinance (County of Imperial Codified Ordinances, Division 2, Title 6: Right to Farm). A “right-to-farm” ordinance creates a legal presumption that ongoing standard farming practices are not a nuisance to adjoining residences and requires a disclosure to land owners near agricultural land operations or areas zoned for agricultural purposes. The disclosure advises persons regarding potential discomfort and inconvenience that may occur from operating machinery as a result of conforming and accepted agricultural operations.

4.11.1.2 Existing Conditions

The predominant sources of noise in the project area includes vehicular traffic on local roads and highways and agricultural operations. Activities involving the use of heavy-duty equipment such as front-end loaders, forklifts, and diesel-powered trucks are common noise sources typically associated with agricultural uses. Noise typically associated with agricultural operations, including the use of heavy-duty equipment, can reach maximum levels of approximately 85 dBA at 50 feet (Caltrans 1998). With the soft surfaces characterizing the agricultural landscape, these noise levels attenuate to ~60 dBA at distances over 800 feet. Based on field observations of the project study areas, the existing noise environment is generally influenced by the noise produced from the following sources:

- Vehicle traffic along major roadways including Ferrell Road, George Road, Rockwood Road, Kubler Road, and State Route (SR) 98;
- Crop dusting operations based out of Johnson Brothers Private Airstrip; and
- Agricultural operations throughout the project area including the operation of heavy equipment and vehicles.

Based on the availability of a previously prepared noise study in conjunction with a recently approved Imperial Solar Energy Center South Project (Imperial County 2011), which is south and west of the

project area, the proximity of the measurements, and timing in which the data was collected (2010), the previously-acquired noise measurements are considered to be representative of existing conditions and appropriate for use in this EIR. Based on this circumstance, these measures were used to characterize ambient noise conditions for the project study areas.

The ambient noise levels within the project area are generally representative of a rural agricultural setting with quiet ambient noise levels of 43.3 dBA L_{eq} and periodic peak noise levels of 66.8 L_{max} from far-field agricultural operations (Imperial County 2011). These noise levels were slightly more elevated in closer proximity to the U.S./Mexico border with the increase attributed to the infrequent movement of U.S. Border Patrol units with ambient noise levels of 44.2 dBA L_{eq} and periodic peak noise levels of 78.8 L_{max} (Imperial County 2011). In addition to site-specific ambient noise sampling, the EIR prepared for the Imperial Solar Energy Center South Project included traffic modeling of the local roadway network. The existing (2010) traffic noise levels in the eastern portion of the Imperial Energy Center Solar South study area were established in terms of the CNEL metric by modeling the roadway for the current traffic and speed characteristics. In general, the 60 CNEL contour for all roadways within the project study areas, including SR 98, extends 70 feet or less from the roadway centerline (see Imperial Solar Energy Center South Final Environmental Impact Report/Environmental Assessment (EIR/EA), Section 3.8, page 3.8-9).

Sensitive Receptors

Although noise pollution can affect all segments of the population, certain groups and land uses are considered more sensitive to ambient noise levels than others, sensitivity being a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. Children, the elderly, and the chronically or acutely ill are the most sensitive population groups..

Residential land uses are also generally more sensitive to noise than commercial and industrial land uses. Sensitive residential uses within and adjacent to the project area (within approximately 200 feet) are shown on Figure 4.3-1 (see Section 4.3, Air Quality), and include the following:

- Ferrell Solar Farm (1 onsite & 2 offsite) - The Corda residence and farm shop is located within the FSF project site off of Corda Road. The Kubler residence, farm shop and yard are located adjacent to the FSF project site (southwest corner of Kubler and Ferrell Roads) and another residence is located on the northeast corner of Kubler and Ferrell Roads.
- Rockwood Solar Farm (6 offsite) – One residence is located along the northern boundary of the RSF project site, two residences are located on the north side of Kubler Road (one at the intersection of George and Kubler Roads), and three residences are located at the intersection of Corda Road and SR 98 (two located south of SR-98).
- Iris Solar Farm (2 onsite) - Two residences are located within the ISF project site, along Ferrell Road. An old farm worker labor camp is located within the ISF project site along Weed Road, which is now used for a farming equipment staging area. No additional residences border the project site.
- Lyons Solar Farm. (2 offsite) - Two residences are located outside of the LSF project site (one at the intersection of Kubler and Rockwood Roads, and another across the Greeson Wash).

Some of the off site residences identified above are located within the site boundaries of previously approved solar projects including the Mount Signal and Calexico Solar Farm Projects; and the environmental effects on the off site residences have been previously evaluated in the respective EIR(s).

Groundborne Vibration

Groundborne vibration consists of rapidly fluctuating motions or waves, which are also measured in decibels. Construction activities, train operations, and street traffic are some of the most common external sources of vibration that can be perceptible inside structures. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by

different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. High frequency vibrations reduce much more rapidly than low frequencies, so that low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases. While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings may be perceived as motion of building surfaces or rattling of windows, items on shelves, and pictures hanging on walls. Vibration of building components can also take the form of an audible low-frequency rumbling noise, which is referred to as groundborne noise.

Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when the structure and the source of vibration are connected by foundations or utilities, such as sewer and water pipes. To assess a project's vibration impacts, Caltrans has prepared a publication concerning vibration impact assessment, entitled the "Transportation and Construction-Induced Vibration Guidance Manual," which was prepared in 2004. The guidance manual uses peak particle velocity (PPV) to quantify vibration amplitude. Peak particle velocity is defined as the maximum instantaneous peak of the vibratory motion (Caltrans 2004). Table 4.11-3 identifies acceptable vibration limits for transportation and construction projects based on guidelines prepared by Caltrans.

Table 4.11-3. Typical Groundborne Vibration Thresholds

Structure and Condition	Transient Sources PPV at 25 feet (in/sec)	Continuous/Frequent Intermittent Sources PPV at 25 feet (in/sec)
Extremely fragile historic buildings, ruins, and ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
New residential structures with gypsum board walls/ceilings	1.00	0.50
Modern Industrial/commercial buildings	2.00	0.50
Strongly perceptible	0.90	0.10

Source: Caltrans 2004.

Notes: PPV = Peak particle velocity
In/sec = Inches per second

4.11.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to noise and vibration, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.11.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to noise and vibration would be considered significant if any of the following occurs:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

- Create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

4.11.2.2 Methodology

The significance of project-related noise impacts was determined by comparing estimated project-related noise levels, based on published literature, to existing noise levels within the project area as described in other recently-prepared environmental documents for other projects near the project area including the Imperial Solar Energy Center South EIR/EA (Imperial County 2011). For the purposes of analysis, an increase of at least 3 dBA is usually required before most people will perceive a change in noise levels, and an increase of 5 dBA is required before the change will be clearly noticeable. Based on the County's criteria, exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance would occur if:

1. Post-project noise levels will be greater than the "conditionally acceptable," "normally acceptable," or "clearly acceptable" noise levels as shown in Table 4.11-3 for Industrial, Manufacturing, Utilities and Agriculture Uses (or generally greater than 70 dB); or
2. Construction noise will be greater than 75 dB L_{eq} over an eight-hour period from the nearest sensitive receptor (see Figure 4.3-1).

Conceptual site plans provided in Figures 3.0-6 through 3.0-9 for the projects were used in considering distances from sensitive receptor locations. Given the agricultural landscape of the project study areas, noise attenuation was assumed to be 7.5 dBA for stationary sources and 4 dBA for line sources (e.g. vehicles). As provided in Chapter 3, Project Description, the projects would generate a low volume of daily vehicle trips under project operations and these trips would be distributed throughout the project study areas. Based on this circumstance and experience with projects of similar land use and development intensity, project-related increases traffic noise levels on off-site roadways were assumed to be less than 3.0 dBA as measured from residential receptor locations illustrated in Figure 4.3-1.

4.11.2.3 Impact Analysis

IMPACT *Temporary, Short-Term Exposure of Sensitive Receptors to Increased Equipment Noise*
4.11-1 *from Project Construction.*

The projects could expose persons to or generate noise levels in excess of applicable County standards.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Construction of the projects would occur in rural portions of southern Imperial County. Over the entire span of the combined 1,400~~4~~,422-acre area, which comprises the four project sites, there are approximately 13 rural residences that would be located within 100 to 200 feet of project construction. Two residences are located outside of the LSF site boundary, but the distance from the site boundary to the residences exceeds 500 feet. Construction activities would generally involve grading, earth movement, stockpiling, steel work, and truck hauling. Similar activities would occur upon site decommissioning. These activities would generate temporary and intermittent noise at and near the project sites. Noise levels would fluctuate depending on the particular type, number, and duration of use

of various pieces of construction equipment. In addition, construction-related material haul trips would raise ambient noise levels along haul routes depending on the number of haul trips and the types of vehicles used. These activities would be more pronounced at the operation and maintenance (O&M) and substation sites where construction activities would occur for an extended time period. Table 4.11-4 shows typical noise levels produced by various types of construction equipment at a distance of 50 feet.

In addition to actual solar array grid installation, staging areas would be located at various points throughout the project area and directed out of a more centralized location, such as the O&M sites (see Figure 3.0-3 through 3.0-6). These areas would be used to store PV/CPV solar panels, equipment, and other construction related material. In some cases, staging areas would be used for the duration of project construction. In other cases, the area would be moved to another location within the project sites to minimize the hauling distances and avoid disrupting any one area for an extended period of time. Staging areas could be noticeable sources of noise, particularly if equipment is accessed and moved during evening hours when individuals are more sensitive to intrusive noise.

Table 4.11-4. Typical Noise Levels for Construction Equipment

Equipment	Typical Noise Levels (dBA, at 50 feet)	Equipment	Typical Noise Levels (dBA, at 50 feet)
Front loaders	85	Forklifts	76-82
Backhoes, excavators	80-85	Pumps	76
Tractors, dozers	83-89	Generators	81
Graders, scrapers	85-89	Compressors	83
Trucks	88	Pneumatic tools	85
Concrete pumps, mixers	82-85	Jack hammers, rock drills	98
Cranes (movable)	83	Pavers	89
Cranes (derrick)	88	Compactors	82
Pipelayers	83-88	Drill rigs	70-85

Source: Adapted from U.S. Department of Transportation, Federal Transit Administration, Noise and Vibration Impact Assessment Guidelines 2006.

Based on the noise levels provided in Table 4.11-4 and assuming conservative rates of attenuation, noise levels generated during project construction could range from 74 to 79 dBA at the nearest receptor locations (e.g., 100 feet) depending on the types of equipment in operation. Additionally, back-up beepers (in order to be discernible and protect construction worker safety as required by Occupational Safety and Health Administration (OSHA) (29 CFR 1926.601 and 29 CFR 1926.602)) associated with trucks and equipment used for material loading and unloading at the staging areas would generate significantly increased noise levels over the ambient noise environment. The Noise Element of the Imperial County General Plan identifies sensitive receptors as areas of habitation and may also be non-human species (i.e., sensitive bird species). There are 13 residences located within or in close proximity to the project sites and in the vicinity. Three residences are located within the boundaries of the FSF and ISF project sites, as described above and shown on Figure 4.3-1, Residence Locations. As shown, noise associated with construction equipment could exceed the 75 dB L_{eq} threshold identified in the County of Imperial Noise Element; thus the noise could disturb potential adjacent sensitive receptors (areas of habitation) per the requirements by the County of Imperial.

In addition and as discussed in Chapter 4.4, Biological Resources of this EIR, burrowing owls and other sensitive birds were observed within the project area. Chapter 4.4, Biological Resources provides a detailed discussion on the potential impacts to burrowing owls and other sensitive bird species (non-human sensitive receptor) and mitigation measures that will avoid, minimize, or mitigate potential impacts to these species.

Because existing daytime noise levels in the vicinity of the project construction are generally less than 50 to 60 dBA, daytime construction work associated with the projects would significantly affect the noise environment of residences in proximity to construction activities by increasing ambient noise levels by five

dBA or more and peak noise levels of 84 to 89 dBA. While construction activities would occur when a majority of people are at work, retired persons, people who work at home, and people caring for their children in their homes could be significantly affected, although temporarily, by noise when construction activities are occurring in the immediate vicinity. This temporary and short-term impact is considered a **significant impact** in the absence of mitigation. However, the implementation of Mitigation Measures 4.11-1a through 4.11-1e would reduce these levels to **less than significant**.

Mitigation Measure(s)

The following mitigation measures are required for the FSF, RSF, ISF, LSF, and transmission line.

- 4.11-1a Limit Construction Hours.** Construction and decommissioning activities shall be limited to daylight hours between 7 AM and 7 PM Monday through Friday, and 9 AM and 5 PM on Saturday for those construction areas that are located within 2,500 feet of noise-sensitive receptors. No construction shall be allowed on Sundays or holidays.
- 4.11-1b Minimize Noise from Construction Equipment and Staging.** Construction equipment noise shall be minimized during project construction and decommissioning by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools, where used. The project applicant's construction specifications shall also require that the contractor select staging areas as far as feasibly possible from sensitive receptors. All contractor specifications shall include a requirement that equipment located within 2,500 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings or other noise reducing technology such that noise levels are no more 85 dBA at 50 feet. If necessary the line of sight between the equipment and nearby sensitive receptors shall be blocked by portable acoustic barriers and/or shields to reduce noise levels.
- 4.11-1c Maximize the Use of Noise Barriers.** Construction and decommissioning contractors shall locate fixed construction equipment (such as compressors and generators) as far as possible from nearby residences. If feasible, noise barriers shall be used at the construction site and staging area. Temporary walls, stockpiles of excavated materials, or moveable sound barrier curtains would be appropriate in instances where construction noise would exceed 85 dBA and occur within less than 200 feet from a sensitive receptor. The final selection of noise barriers shall be subject to the project applicant's approval and shall provide a minimum 5 dBA reduction in construction noise levels, where noise levels would exceed 85 dBA without the barrier.
- 4.11-1d Prohibit Non-Essential Noise Sources During Construction.** No amplified sources (e.g., stereo "boom boxes") shall be used in the vicinity of residences during project construction or decommissioning.
- 4.11-1e Provide a Mechanism for Filing Noise Complaints.** The project applicant shall provide a mechanism for residents, businesses, and agencies to register complaints with the County if construction noise levels are overly intrusive or construction occurs outside the required hours.

Significance After Mitigation

Implementation of the above mitigation measures would reduce construction noise, so that construction and decommissioning-related noise levels would not exceed the Imperial County standards regarding construction noise. Mitigation would reduce temporary, short-term construction and decommissioning impacts-related impacts to a **less than significant** level.

IMPACT

4.11-2

Exposure to and/or Generation of Groundborne Vibration.

The projects would not expose persons to or generate excessive groundborne vibration or groundborne noise levels.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Construction and site decommissioning activities associated with the projects would result in groundborne vibration, with the primary sources including solar array installation, grading activities, and other construction vehicle movements. In addressing the range of potential issues associated with ground vibration, there are generally two forms of impacts that should be addressed: (1) annoyance to individuals or the community; and (2) damage to buildings. Vibration from typical construction activities is typically below the threshold of perception when the activity is more than about 50 feet from the receiver. However, given that construction activities would not encroach within 100 feet of existing residential structures, the level of vibration impact at these receptors would be **less than significant**.

In relation to the potential for structural damage at adjacent residential and agricultural structures, PPV is the maximum instantaneous positive or negative peak of the vibration signal, measured as a distance per time (such as millimeters or inches per second). The PPV measurement has been used historically to evaluate shock-wave type vibrations from actions like blasting, pile driving, and mining activities, and their relationship to building damage.

As provided in Table 4.11-3, the level of potential impact resulting from project construction is generally contingent on the structural composition of the buildings potentially affected. As shown in Table 4.11-3, new residential structures with gypsum board walls/ceilings have a PPV threshold of 1.0 inches per second (in/sec), respectively and would be the types of structures most likely to be impacted by project construction activities. No historical structures are presented within or adjacent to the project study areas. Given that construction activities would employ the use of equipment similar to those identified in Table 4.11-5, would not involve the use of blasting, and would be situated 100 feet or more from existing structures, project construction is unlikely to generate vibration levels in excess of the thresholds identified in Table 4.11-3. For this reason, groundborne vibration-related impacts during construction and site decommissioning are expected to be **less than significant**.

TABLE 4.11-5. CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Equipment PPV at 25 feet (in/sec)	Equipment PPV at 25 feet (in/sec)
Blasting	1.13
Vibratory roller	0.210
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Permanent Increase in Ambient Noise Levels.*

4.11-3 *The projects could create a substantial permanent increase in ambient noise levels in the vicinity of new O&M and substation facilities.*

FSF

As described in Section 3.1.1.2, the ambient noise environment within the project area ranges from 43 to 66 dBA with peak noise measurements of up to 78 dBA (Imperial County 2011). The principle long-term, operational noise impacts resulting from the projects would include light duty vehicle traffic for security patrols, maintenance operations, including solar panel washing, central operations at O&M facilities, including stationary mechanical equipment (e.g., HVAC), and low level of noise from high voltage transmission lines and transformers. Additionally, based on measurements provided by the project applicant, noise levels associated with a tracker mounting system were measured at 45 dBA at 100 feet. The on-site water storage tanks located at each of the O&M buildings would require associated pumping and would operate intermittently. The level of noise generated by these combined sources would depend on: characteristics of the noise source, number of noise sources clustered together, type and effectiveness of building enclosure, and operational characteristics.

Operation of the O&M facilities, substations, and electrical distribution facilities would result in a minor increase in the use of motor vehicles, primarily associated with employees traveling to and from these facilities and routine maintenance and inspection activities. It is expected that no more than 24 staff personnel would be on site at any one time for typical operation and maintenance of these facilities, most during typical working hours, 7 AM to 5 PM. Assuming an average of two trips per employee, operation of the proposed facilities would result in approximately 48 one-way daily employee trips. Additionally, these trips would be distributed through the roadway network. Due to the relatively low volume of project-generated traffic, operation of the proposed facilities would not result in noticeable changes in the traffic noise along area roadways in relation to existing and projected roadway traffic volumes. As a result, long-term increases in traffic noise levels would be **less than significant**.

The projects would be required to comply with the County of Imperial Codified Ordinances Division 7 Noise Abatement and Control. This ordinance governs fixed operational noise within the project study areas. The 1-hour average sound level limit for the A-2, A-2-R, and A-3 zones is 75 dBA and noise levels up to 70 dBA L_{dn} are identified as normally acceptable (see Table 4.11-1). The noise generated during these collective operations would be required to comply with the noise standards contained in the County's Noise Ordinance. The noise associated with O&M facilities is does not represent a significant noise source, and would involve less intensive activities and operation of equipment as compared to existing agricultural operations in the area. The impact would be **less than significant**.

RSF, ISF, and LSF

Development of the project facilities at these site locations would entail the placement and operation of the same facilities as described above. However, unlike the FSF site, these facilities would result in the placement of the O&M and substation facilities at distances of greater than 1,000 feet from the nearest residential receptor. Although portions of these project sites are located in proximity to existing residences, the major noise generating operations for these projects would be located a sufficient distance to where any increase in ambient noise levels would be unnoticeable at the nearest sensitive receptor. Based on these considerations, long term impacts to the ambient noise environment at these site locations would be **less than significant**.

Transmission Line

Operation of the transmission lines would **not impact** adjacent receptors.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Airport Noise.*

4.11-4 *The projects would not result in the exposure of people residing or working in the project study areas to excessive noise levels from public and private airport operations.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects would not involve the construction of sensitive land uses. No O&M facilities would be constructed within two miles of a public airport and, therefore, would not expose people to excessive airport noise levels. The project facilities would be located within proximity to the Johnson Brothers private airstrip; however, based on the frequency and limited number of planes using this private facility, noise levels are considered **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

4.11.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

Decommissioning activities would result in similar activities that are involved during construction such as grading, earth movement, stockpiling, steel work, and truck hauling. These activities would generate temporary and intermittent noise. Noise levels would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. As a result, these impacts are considered a **significant impact** and require the implementation of mitigation measures. Mitigation Measures 4.11-1a through 4.11-1d, identified above under Impact 4.11-1, would address any noise impacts associated with decommissioning activities and upon implementation, reduce these impacts to levels **less than significant**.

Given that decommissioning activities would employ the use of equipment similar to those identified in Table 4.11-5, would not involve the use of blasting, and would be situated 100 feet or more from existing structures, decommissioning is unlikely to generate vibration levels in excess of the thresholds identified in Table 4.11-3. For this reason, groundborne vibration-related impacts during site decommissioning are expected to be **less than significant**.

Residual

After implementation of feasible mitigation, construction and decommissioning noise impacts would be less than significant. The operational noise impacts associated with the projects in proximity to existing residential receptors would be mitigated to a less than significant level through the incorporation of buffering requirements for O&M, transformer facilities, and storage tank pumps. The projects are situated at a sufficient distance where the effects of construction related vibration would **not impact** adjacent receptors.

4.12 PUBLIC SERVICES

This section includes an evaluation of potential impacts for identified public services that could result from implementation of the proposed projects. Public services typically include fire protection, law enforcement, schools, and other public facilities such as parks, libraries, post offices. Each subsection includes descriptions of existing facilities, service standards, and potential environmental impacts resulting from implementation of the proposed projects, and mitigation measures where appropriate. Section 4.14, Utilities/Service Systems, of this Environmental Impact Report (EIR) evaluates impacts related to water supply, wastewater, and other utilities. The impact assessment provides an evaluation of potential adverse effects to public services based on criteria derived from the California Environmental Quality Act (CEQA) Guidelines in conjunction with actions proposed in Chapter 3, Project Description.

The Initial Study/Notice of Preparation prepared for this EIR determined that the projects would not result in impacts to schools, parks and other public facilities (libraries and post offices). Therefore, these issue areas will not be discussed further. The Initial Study/Notice of Preparation (IS/NOP) is included in Appendix A of this EIR.

4.12.1 Environmental Setting

The project area is located in unincorporated Imperial County, east of the City of Calexico and just north of State Route (SR) 98. The project sites are located within the Imperial County Fire Department and Office of Emergency Services (ICFD/OES) and the Imperial County Sheriff Department's areas of service.

4.12.1.1 Regulatory Setting

This section identifies and summarizes State, and local laws, policies, and regulations that are applicable to the projects.

State

Fire Codes and Guidelines

The California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout the State of California (CBSC 2010). The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

Local

Imperial County General Plan

The Imperial County General Plan Seismic and Public Safety Element contains goals and objectives that relate to fire protection and law enforcement pertinent to the proposed projects.

General Plan Policies	Consistency with General Plan	Analysis
<p>Goal 1: Include public health and safety considerations in land use planning.</p> <p>Objective 1.8 Reduce fire hazards by the design of new developments.</p>	Consistent	<p>The project Conditional Use Permit (CUP) applications and site plans will be reviewed by the Imperial County Fire Department to ensure that all site facilities comply with state and local fire codes and fire safety features are met. Additionally, the project applicant has included site design measures into each of the projects to reduce the potential for fire hazards including on-site water tanks for the operations and maintenance (O&M) buildings, and sufficient turnaround areas to allow clearance for fire trucks per fire department standards (70 feet by 70 feet, and 20 foot-wide access road).</p>
<p>Goal 2: Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.</p> <p>Objective 2.5 Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.</p>	Consistent	<p>See response above for a discussion on how the projects would implement all state and local fire codes and provide site design measures to reduce the potential for fire hazards.</p> <p>With regards to public safety and security, the projects would include perimeter security fencing with cameras, controlled access gates, and enhanced security fencing where substation areas are located.</p>

Imperial County Office of Emergency Services – Emergency Operations Plan

The Imperial County Fire Department (ICFD) is the local Office of Emergency Services in Imperial County. The OES Coordinator is the County Fire Chief, who is assisted by an Assistant OES Coordinator who maintains the OES program for the County of Imperial. The Fire Department acts as the lead agency for the Imperial County Operational Area (OA) and provides leadership in all phases of developing the emergency management organization, including public education, training, EOC operations, interagency coordination, and plan development.

The Imperial County Operational Area Emergency Operations Plan (EOP) provides a comprehensive, single source of guidance and procedures for the County to prepare for and respond to significant or catastrophic natural, environmental, or conflict-related risks that produce situations requiring coordinated response. The EOP is consistent with the requirements of the Standardized Emergency Management System (SEMS) as defined in Government Code Section 8607(a) and the U.S. Department of Homeland Security National Incident Management System (NIMS) for managing response to multi-agency and multi-jurisdictional emergencies.

County Evacuation Plans

As mentioned above, the Imperial County EOP provides guidance and procedures for the County to prepare for and respond to emergencies. The EOP designates the Sheriff's Department as having jurisdiction in an emergency involving evacuation within the unincorporated areas of the county and within contract cities.

4.12.1.2 Existing Conditions

Fire Protection Services

The project sites are located within the ICFD/OES area of service. ICFD/OES currently has seven fire stations serving the entire 4,500 square miles of unincorporated Imperial County. The stations are located in the following areas: Station 1, Imperial; Station 2, Heber; Station 3, Seeley; Station 4, Imperial (under

contract with the City of Imperial); and Station 5, Palo Verde, Station 6 (Ocotillo), and Station 7 (Niland). The ICFD/OES currently has a total staff of 78 personnel with 8 staff personnel, 36 full-time suppression personnel, and 28 reserve personnel. All county stations are staffed 24 hours a day and 7 days a week with at least three firefighters, except for Station 5, which has two persons 24/7 and now Station #7 which has two persons 24/7 and a supervisor from 8 a.m. to 5 p.m. The ICFD Emergency Units strive to respond immediately after receiving the initial tone for service. The actual response time would be determined by the area of response throughout the vast response area covered.

The closest fire station to the project sites is Station 2 at 1078 Dogwood Road in Heber California. This station is approximately 3.5 miles northeast of the FSF site. .

Police Protection Services

Imperial County Sheriff's Department is responsible for police protection services in the unincorporated areas of Imperial County and the City of Holtville. The patrol function is divided between North County Patrol, South County Patrol, Palo Verde Patrol and Winterhaven Patrol. Deputies assigned to the Patrol Divisions are the "first responders" to a call for law enforcement service. The main patrol station is located in El Centro on Applestill Road. Sheriff substations are located in the communities of Brawley, Niland, Salton City, and Winterhaven, with resident deputies located in the unincorporated community of Palo Verde. Under an existing mutual aid agreement, additional law enforcement services would be provided if and when required by all of the cities within the county as well as with Border Patrol and the California Highway Patrol (CHP). The CHP provides traffic regulation enforcement, emergency accident management, and service and assistance on state roadways and other major roadways in the unincorporated portions of Imperial County.

4.12.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to public services, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.12.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to public services are considered significant if the projects would result in the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- Fire protection;
- Police protection;
- Schools;
- Parks; and
- Other public facilities.

As mentioned previously, it was determined through the preparation of an Initial Study that the projects would not result in impacts to schools, parks or other public facilities. Therefore, those issue areas will not be discussed further.

4.12.2.2 Methodology

Evaluation of potential fire and police service impacts of the proposed projects was based on consultation with the ICFD, Sheriff's Department and review of other development projects in the area.

4.12.2.3 Impact Analysis

IMPACT *Increased Demand on the ICFD.*

4.12-1

Implementation of the projects would not result in the need for additional fire protection services during construction and operational activities.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects would result in a minor increase in demand for fire protection services over existing levels. Up to four operations and maintenance (O&M) buildings are contemplated and would include their own emergency power, fire suppression, and potable water systems. Additional auxiliary facilities would include lighting, grounding, backup uninterruptible power supply (UPS) systems and diesel power generators, fire and hazardous materials safety systems, security systems, chemical safety systems, and emergency response facilities. As discussed in the CUP applications for the projects, fire protection measures are incorporated as part of project design features including portable carbon dioxide (CO₂) fire extinguishers mounted outside inverter/electrical distribution containers on pads throughout the solar arrays. The facilities will maintain the required volume of water required for fire fighting, based on the number and sizes of structures located on the sites. As discussed in Chapter 3.0 Project Description, a 10,000-gallon on-site water storage tank would be provided for each of the O&M buildings constructed and are intended for the fire protection of the O&M buildings. The firewater storage tanks will be located within 150 feet of the O&M buildings. The O&M building would also have access to a wet-fire connection to provide sufficient fire protection. Both the access and service roads (along the perimeter of the project facilities) would have turnaround areas to allow clearance for fire trucks per fire department standards (70 feet by 70 feet, and 20-foot-wide perimeter access road). Additionally, fire protection for the projects will be provided by vegetation management programs as part of project design measures. As such, the projects would not result in a need for fire facility expansion. Decommissioning of the projects at the end of their 40-year life would occur through implementation of a required Reclamation Restoration Plan. These activities would not be anticipated to result in an increased need for fire protection services.

Imperial County requires payment of impact fees for new development projects. Fire Impact Fees are imposed pursuant to Ordinance 1418 §2 (2006), which was drafted in accordance with the County's TischlerBise Impact Fee Study. The ordinance has provisions for non-residential industrial projects based on square footage. The project applicant will be required to pay the fire protection services' impact fees. These fees would be included in the Conditions of Approval for the CUPs. No new fire stations or facilities would be required to serve the projects. Impacts would therefore be **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Increased Demand on the Imperial County Sheriff Department.*

4.12-2

Implementation of the projects would not result in the need for additional police protection services during construction and operational activities.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects would result in a minor increase in demand for law enforcement protection services over existing levels. Emergency response times can vary due to the large patrol area of the County. Depending on the location of the deputy, response times can range from approximately five minutes to one hour; however, emergency calls involving public safety would take priority.

The projects do not include a residential component; therefore, it would not result in a substantial addition of residents to the Sheriff Department's service area. The combined projects would be staffed with up to 24 full-time employees (up to six for each site) to maintain the facilities seven days a week during normal

daylight hours. Typically, up to 12 staff would work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekend. The perimeter of the project facilities would be secured with low voltage security fencing (i.e., for security cameras and sensors), with barbed wire, and no less than eight feet high along each public road. The fence is proposed to be a chain link fence with tan slats. Access to each of the site locations would be provided using a 20-foot minimum swinging or sliding gate. Additionally, controlled access gates would be maintained at entrances into the each of the project sites. Emergency response personnel (County Fire and Border Patrol) would be provided with manual override capability in order to access the site facilities. Each of the substation areas would be secured by an eight-foot high enhanced security chain-link fence. Lastly, cameras would be utilized throughout the facility and equipped with remote monitoring capabilities to deter vandalism. With these features installed on-site, the security on the solar facilities would be adequate and would not require the addition of staff to the Sheriff's Department. As such, the projects would not result in a need for police facility expansion. Decommissioning of the projects at the end of their 40-year life would occur through implementation of a required Reclamation Restoration Plan. These activities would not be anticipated to result in an increased need for police services.

Imperial County requires payment of impact fees for new development projects. Police services Impact Fees are imposed pursuant to Ordinance 1418 §2 (2006), which was drafted in accordance with the County's TischlerBise Impact Fee Study. The ordinance has provisions for non-residential industrial projects based on square footage. The project applicant will be required to pay the police protection services' impact fees. These fees would be included in the Conditions of Approval for the CUPs. Impacts would therefore be **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

4.12.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

Decommissioning and restoration of the project sites at the end of their 40-year life would occur and would not result in an increased need for fire and police protection services. These activities would be in the form of disassembling project components, and then restoring the sites to agricultural uses, both of which would not create an increase in demand for police or fire service beyond the level required for the proposed solar operations. Therefore, **no impact** is identified and no mitigation is required for this phase.

Residual

With payment of the development impact fees for fire and police protection services, project impacts would be **less than significant**. No mitigation is required, and no residual significant and unmitigated impacts would result.

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4.13 TRANSPORTATION/TRAFFIC

This section addresses the projects' impacts on traffic and the surrounding roadway network associated with construction and operation of the projects. The following discussion describes the existing environmental setting in the surrounding area, the existing federal, state, and local regulations regarding traffic, and an analysis of the potential impacts of the proposed projects. The *Traffic Impact Analysis for Iris Cluster Solar Farm (February 10, 2014)*, completed by Linscott, Law and Greenspan (LLG), was used for this traffic analysis and is included in Appendix J.

4.13.1 Environmental Setting

The project area is located within the County of Imperial on privately owned, undeveloped agricultural land collectively encompassing 1,400~~4,422~~ acres approximately two miles west of Calexico, California.

4.13.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

State

California Department of Transportation

The California Department of Transportation (Caltrans) manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Specifically, Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System. Within the project area, Caltrans is responsible for maintaining and managing State Route (SR) 98. Specific thresholds for assessing project-related impacts on State highways are further discussed in Section 4.13.2.1.2 of this chapter.

Regional Plans

2012-2035 Regional Transportation Plan/Sustainable Communities Strategy: Towards a Sustainable Future

On April 4, 2012, the Southern California Association of Governments (SCAG) adopted the 2012-2035 *Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future*. The RTP emphasizes the importance of system management, goods movement, and innovative transportation financing and identifies a regional investment framework to address the region's transportation and related challenges. The RTP also looks to strategies that preserve and enhance the existing transportation system and integrate land use into transportation planning.

SCAG is committed to integrated transportation and land use by creating a SCS as part of the RTP. The SCS integrates transportation, land use, housing, and environmental planning with the goal of reducing regional greenhouse gas (GHG) emissions, specifically to address Senate Bill 375. The RTP/SCS is a long-range regional transportation plan that provides a blueprint to coordinate the regional transportation system by creating a vision for transportation investment throughout the region and identifying regional transportation and land use strategies to address mobility needs. Consistency with the RTP/SCS is addressed in Section 4.10, Land Use and Planning.

Local

County of Imperial Circulation and Scenic Highways Element

The Circulation and Scenic Highways Element identifies the location and extent of transportation routes and facilities. It is intended to meet the transportation needs of local residents and businesses, and as a source for regional coordination. The inclusion of Scenic Highways provides a means of protecting and enhancing scenic resources within highway corridors in Imperial County. The purpose of the Circulation and Scenic Highways Element is to provide a comprehensive document which contains the latest knowledge about the transportation needs of the County and the various modes available to meet these needs. Additionally, the purpose of this Element is to provide a means of protecting and enhancing scenic resources within both rural and urban scenic highway corridors.

County of Imperial Bicycle Master Plan Update: Final Plan

In ~~2012, 2014~~, the County of Imperial adopted an updated Bicycle Master Plan to serve as the guiding document for the development of an integrated network of bicycle facilities and supporting programs designed to link the unincorporated areas and attractive land uses throughout the County. This document is an update to the previously adopted Countywide Bicycle Master Plan; and was prepared to accomplish the following goals:

1. To promote bicycling as a viable travel choice for users of all abilities in the County,
2. To provide a safe and comprehensive regional connected bikeway network,
3. To enhance environmental quality, public health, recreation and mobility benefits for the County through increased bicycling

The County of Imperial's General Plan, Circulation Element and Open Space Element, provide a solid planning basis for the Bicycle Master Plan. In spite of the fact that there are a limited number of bicycle facilities in Imperial County and no comprehensive bicycle system, there is a growing interest in cycling and numerous cyclists bike on a regular basis for both recreation and commuting to work and school.

4.13.1.2 Existing Conditions

This section presents the significance criteria used for considering project-related impacts, the methodology employed for the evaluation, and mitigation requirements, if necessary.

Existing Circulation Network

The following roadway classifications are derived from the County of Imperial General Plan Circulation and Scenic Highways Element:

Expressway. The main function of this classification is to provide regional and intra-county travel services. Features include high design standards with six travel lanes; wide landscaped medians; highly restricted access; provisions for public transit lanes, including but not limited to, bus lanes, train lanes, or other mass transit type means; and no parking. Minimum right-of-way (ROW) is 210 feet consisting of three travel lanes per direction, a 56-foot median, and shoulders along both sides of the travel way. The ROW width is exclusive of necessary adjacent easements such as for the Imperial Irrigation District (IID) facilities as these vary. The minimum intersection spacing is one (1) mile. (Note: ROWs may be greater if the road segment also serves as a corridor for public utilities).

Prime Arterial. The main function of this classification is to provide regional, sub regional, and intra-county travel services. Features include high design standards with four to six travel lanes, raised and landscaped medians, highly restricted access, which in most cases will be a one (1) mile minimum, provisions for public transit lanes, including but not limited to bus lanes, train lanes, or other mass transit type means and no parking. The absolute minimum ROW without public transit lanes is 136 feet. ROW

dimensions are specified in the standards for specific road segments. Please refer to the appropriate standards section (ROWs may be greater if the road segment also serves as a corridor for public utilities).

Minor Arterial. These roadways provide intra-county and sub regional service. Access and parking may be allowed, but closely restricted in such a manner as to ensure proper function of this roadway. Typical standards include the provision for four and six travel lanes with raised landscaped medians for added safety and efficiency by providing protected left turn lanes at selected locations. Some may also contain provisions for public transit lanes or other mass transit type means. Minimum ROW is 102 feet for four lanes and 126 feet for six lanes.

Major Collector (Collector). These roadways are designed to provide intra-county travel as a link between the long haul facilities and the collector/local facilities. Although it frequently provides direct access to abutting properties, that is not its primary purpose. Typical design features include provision for four travel lanes without a raised median and some may also contain provisions for public transit lanes or other mass transit type means. Minimum ROW is 84 feet. Parking is generally not permitted.

Minor Local Collector (Local Collector). This is designed to connect local streets with adjacent Collectors or the arterial street system. Design standards include provision for two travel lanes and parking, except in specific locations where parking is removed to provide a turn lane at intersections. Local Collector streets frequently provide direct access to abutting properties, although that should be avoided where feasible. Minimum ROW is 70 feet.

Residential Street. This street type includes residential cul-de-sac and loop streets and is designed to provide direct access to abutting properties and to give access from neighborhoods to the Local Street and Collector Street system. This classification should be discontinuous in alignment such that through trips are discouraged. Typical design standards include provision for two travel lanes, parking on both sides, and direct driveway access. Minimum ROW is 60 feet.

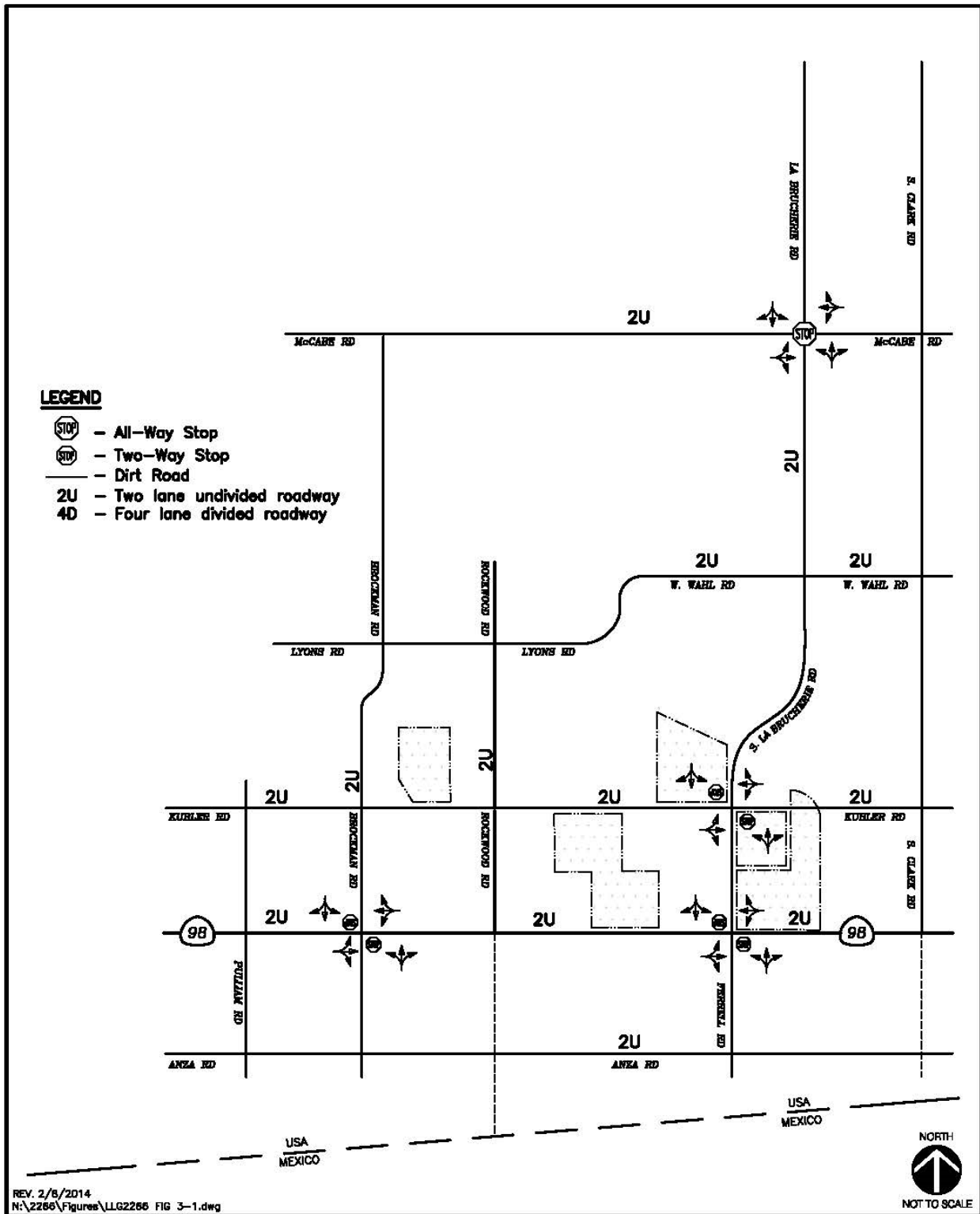
Following is a brief description of the street segments within the vicinity of the project study areas. Figure 4.13-1 illustrates the existing conditions, including lane geometry, for the key intersections in the project study areas:

State Route 98 (SR-98) is classified as a State Highway/Expressway in the Imperial County General Plan Circulation Element and Scenic Highways. Within the project area, SR-98 is constructed as a two-lane undivided east-west roadway, providing one lane of travel per direction. Bike lanes are provided. No bus stops are provided, and parking is not permitted along either side of the roadway. The posted speed limit is 40 mph. Wistaria Lateral Two runs east-west on the north side of SR-98 in the vicinity of the ISF project area.

McCabe Road is classified as a Major Collector in the Imperial County General Plan Circulation and Scenic Highways Element west of La Brucherie Road and as a Minor Arterial east of La Brucherie Road up to SR-111. Within the project area, McCabe Road is constructed as a two-lane undivided east-west roadway, providing one lane of travel per direction. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project area.

La Brucherie Road is classified as a Major Collector in the Imperial County General Plan Circulation and Scenic Highways Element between the El Centro City Limits and Kubler Road. Within the project area, La Brucherie Road is constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project area. Wistaria Lateral Four crosses La Brucherie Road at Kubler Road in the vicinity of the FSF.

Figure 4.13-1. Existing Conditions



Ferrell Road is classified as a Major Collector in the Imperial County General Plan Circulation and Scenic Highways Element between Kubler Road and SR-98. Within the project area, Ferrell Road is constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project sites. Wistaria Lateral Four runs parallel to Ferrell Road on the east side in the vicinity of the FSF.

Brockman Road (S30) is classified as a Major Collector in the Imperial County General Plan Circulation and Scenic Highways Element. Within the project study areas, Brockman Road is constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project sites.

Kubler Road is classified as a Minor Collector on the Imperial County General Plan Circulation Element. Within the project study areas, Kubler Road is constructed as a two-lane undivided east-west roadway, providing one lane of travel per direction. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project sites. In the vicinity of the LSF, Wistaria Lateral Four runs parallel to Kubler Road along the north side from Ferrell Road west to Wistaria Drain Five, east of Brockman Road. Wistaria Lateral Three runs north-south, south of Kubler Road in the vicinity of the FSF and ISF project sites.

Weed Road is an unclassified roadway in the Imperial County General Plan Circulation Element. Within the project area, Weed Road is a paved roadway south of SR-98 and constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction. North of SR-98, Weed Road is a dirt road. No bike lanes or bus stops are provided, and parking is not permitted along either side of the roadway. There is no speed limit posted in the vicinity of the project sites.

Level of Service

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection are measured. LOS ranges from A through F, where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating needs. Additionally, with the growth of Imperial County, transportation management and systems management will be necessary to preserve and increase roadway "capacity." LOS standards are used to assess the performance of a street or highway system and the capacity of a roadway. Table 4.13-1 illustrates the description for each LOS category.

Unsignalized Intersections

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement. LOS is not defined for the intersection as a whole. Table 4.13-1 depicts the criteria, which are based on the average control delay for any particular minor street movement.

LOS F exists when there are insignificant gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This LOS is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits.

TABLE 4.13-1. INTERSECTION LOS DESCRIPTIONS AND LOS THRESHOLDS FOR UNSIGNALIZED INTERSECTIONS

LOS	Description	Average Control Delay Per Vehicle (Seconds/Vehicle)	Expected Delay to Minor Street Traffic
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	$0.0 \leq 10.0$	Little or no delay
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	10.1 to 15.0	Short traffic delays
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. Then number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	15.1 to 25.0	Average traffic delays
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	25.1 to 35.0	Long traffic delays
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	35.1 to 50.0	Very long traffic delays
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	≥ 50.0	Severe congestion

Source: LLG 2014

LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

Study Intersections

Four study intersections were identified for traffic analysis because they are locations where the greatest concentrations of project traffic would occur making them the most likely locations for potential traffic impacts. The intersections identified for analysis are listed below; all intersections are stop-controlled (unsignalized).

- La Brucherie Road/McCabe Road
- La Brucherie Road/Kubler Road
- SR-98/Ferrell Road
- SR-98/Brockman Road

Existing Intersection Traffic Volumes

A traffic analysis was conducted for the roadways in the vicinity of the project sites. The project trip generation consists of two phases—trips during construction and post-construction operational/maintenance trips. AM and PM peak hour intersection turning movement volume counts conducted by LLG Engineers in October 2010 for another project at the following locations are used in this analysis. The following intersections and segments are expected to carry the majority of the construction traffic for the projects:

FSF

- La Brucherie Road/McCabe Road
- La Brucherie Road/Kubler Road
- SR-98/Ferrell Road

RSF

- La Brucherie Road/McCabe Road
- La Brucherie Road/Kubler Road
- SR-98/Ferrell Road

ISF

- La Brucherie Road/ McCabe Road
- La Brucherie Road/Kubler Road
- SR-98/Ferrell Road
- SR-98/Weed Road

LSF

- La Brucherie Road/ McCabe Road
- La Brucherie Road/Kubler Road
- SR-98/Brockman Road

Segment Volumes

Average Daily Traffic (ADT) volume counts were conducted by LLG in October 2010. Information was also obtained from Caltrans 2012 traffic volume data.

Figure 4.13-2 and Table 4.13-2 include the segment ADT volumes and the peak hour intersection turning movement volumes at all the project area segments.

Appendix J of this EIR includes the *Traffic Impact Analysis for the Iris Cluster Solar Farm Project (February 2014)* contains the manual intersection and segment count sheets and Caltrans 2009 traffic volumes for each project component.

Peak Hour Intersection Levels of Service

The project sites are located in a rural setting and all intersections are unsignalized. As illustrated in Table 4.13-3, all project site intersections are calculated to currently operate at a level of service (LOS) C or better during both the AM and PM peak hours. LOS standard ranges are further described in Section 4.13.1.3, Methodology, within this chapter.

TABLE 4.13-2. EXISTING TRAFFIC VOLUMES

Street Segment		Source	Date	ADT ¹ Volumes			
				FSF	RSF	ISF	LSF
Ferrell Road	Kubler Road to SR-98	LLG	2010	800	800	800	N/A
SR-98	Pulliam Road to Brockman Road	Caltrans	2012	N/A	N/A	N/A	1,750
	Brockman Road to Ferrell Road	LLG	2010	N/A	1,730	N/A	1,730
	East of Ferrell Road	Caltrans	2012	2,300	2,300	2,300	2,300

Source: LLG 2014.

Notes: ¹ Average Daily Traffic

TABLE 4.13-3. EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing							
			FSF		RSF		ISF		LSF	
			Delay ¹	LOS ²	Delay	LOS	Delay	LOS	Delay	LOS
La Brucherie Road/McCabe Road	AWSC ³	AM	18.5	C	18.5	C	18.5	C	18.5	C
		PM	8.9	A	8.9	A	8.9	A	8.9	A
La Brucherie Road/Kubler Road	MSSC ⁴	AM	10.7	B	10.7	B	10.7	B	10.7	B
		PM	9.7	A	9.7	A	9.7	A	9.7	A
SR-98/Ferrell Road	MSSC	AM	9.7	A	9.7	A	9.7	A	9.7	A
		PM	10.0	A	10.0	A	10.0	A	10.0	A
SR-98/Brockman Road	MSSC	AM	N/A	N/A	N/A	N/A	N/A	N/A	9.3	A
		PM	N/A	N/A	N/A	N/A	N/A	N/A	9.7	A

Source: LLG 2014.

Notes: ¹ Delay per vehicle in seconds² LOS = Level of service³ AWSC = All-Way STOP Controlled intersection⁴ MSSC = Minor street STOP Controlled intersection. Minor street left-turn delay is reported

Street Segments

Street segments were analyzed based upon the comparison of ADT to the County of Imperial Roadway Classifications, LOS, and ADT table (Table 4.13-4 below). Table 4.13-4 provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. Segment analysis is a comparison of ADT volumes and an approximate daily capacity on the subject roadway.

TABLE 4.13-4. IMPERIAL COUNTY STANDARD STREET CLASSIFICATION AVERAGE DAILY VEHICLE TRIPS

Road		LOS W/ADT*				
Class	X-Section	A	B	C	D	E
Expressway	128/210	30,000	42,000	60,000	70,000	80,000
Prime Arterial	106/136	22,200	37,000	44,600	50,000	57,000
Minor Arterial	82/102	14,800	24,700	29,600	33,400	37,000
Collector	64/84	13,700	22,800	27,400	30,800	34,200
Local Collector	40/70	1,900	4,100	7,100	10,900	16,200
Residential Street	40/60	*	*	<1,500	*	*
Residential Cul-de-Sac/Loop Street	40/60	*	*	<1,500	*	*
Industrial Collector	76/96	5,000	10,000	14,000	17,000	20,000
Industrial Local Street	44/64	2,500	5,000	7,000	8,500	10,000

Source: LLG 2014.

Note: *Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

Alternative/Public Transportation

Fixed Route Transportation

Imperial Valley Transit (IVT) is an inter-city fixed route bus system, subsidized by the Imperial Valley Association of Governments (IVAG), administered by the County Department of Public Works and operated by a public transit bus service. The service is wheelchair accessible and Americans with Disabilities Act (ADA) compliant. Existing ridership averages approximately 23,000 passengers a month. Service is provided from 6:00am until 11:00pm weekdays, and 6:00am to 6:00pm on Saturdays, within the areas classified as the Primary Zone; a north-south axis throughout Brawley, Imperial Valley College (IVC), Imperial, El Centro, Heber and Calexico, and from 6:00am until 6:45pm in the Secondary Zones; outlying cities and communities of Niland, Calipatria, Westmorland, Seeley, and Holtville. The outlying Remote Zone community of Ocotillo is served once a week on Thursdays, by request one day ahead. Remote Zone communities east and west of the Salton Sea, including Desert Shores, Salton City, Salton Sea Beach, and the far eastern portion of the County, including Winterhaven, are served once a week, via Lifeline.

According to the Caltrans SR-98 Transportation Concept Summary, needs identified for SR-98 within San Diego and Imperial Counties include the need to: improve roadway safety and cross-border efficiency for trade and goods movement between the City of Calexico, California and the Municipality of Mexicali, Baja California, Mexico; and improve roadway capacity to better accommodate traffic flow and safety concerns for the high volume of cars and trucks on the existing highway. Additionally, to further facilitate adequate east-west access for interregional, intraregional and international travel, an expansion or restructure of transit services is recommended. The project sites are not within the Fixed Route Transportation system and therefore, would not receive regular bus service to the project sites or within the vicinity of the project sites.

Bicycle Facilities

Although none of the roadway segments within proximity of the project sites are designated a bikeway classification, as defined in the Caltrans *Highway Design Manual*, according to the SR-98 Transportation Concept Summary, bicycle travel is permissible on all segments of SR-98 in Imperial County. The *Highway Design Manual* classifies bikeways into three types:

- Class I Bike Path – Provides for bicycle travel on a right-of-way completely separated from the street
- Class II Bike Lane – Provides a striped lane for one-way travel within the street
- Class III Bike Routes – Provides routes that are signed but not striped

Additionally, the County of Imperial Bicycle Master Plan Update lays out a framework for creating and expanding programs and improvements designed to increase bicycling activity in the County of Imperial. Two Class II bicycle routes are proposed to traverse through the project area: Routes 1 and 2.

Route 1 (Ross Road – Drew Road/La Brucherie Road/Anza Road) would include a 32-mile Class II Bike Route beginning at the western edge of the City of El Centro along Ross Road proceeding to Sunbeam Lake Park, a distance of 6.5 miles. At Drew Road the bicycle lane would proceed south to SR-98 a distance of approximately ten miles. At SR-98, the bicycle lane would proceed east to Pulliam Road, where the bicycle lane would then turn south towards Anza Road. At Anza Road and Pulliam Road, the route would proceed easterly towards the City of Calexico along Anza Road to La Brucherie Road (Ferrell Road), a distance of four miles. The route would turn north and continue to the City of El Centro, a distance of eight miles.

Route 2 (McCabe Road/Brockman Road/Anza Road/Dogwood Road) would include a 25.4-mile Class II Bike Route beginning at the southern edge of the City of El Centro. This bicycle lane would proceed westerly along McCabe Road a distance of 3.6 miles to Brockman Road. At Brockman Road, the bicycle

route would head southerly towards the Mexican border, a distance of six miles. At Anza Road, the route would continue easterly for 3.6 miles, then north on La Brucherie Road (Route 1) to the point of origin for 4.4 miles. Within the project area, both routes run along Anza Road, Ferrell Road, Brockman Road, and a portion of SR-98.

Daily Street Segment Levels of Service

As previously described, the project sites are located in a rural setting and all segments are two-lane facilities. As illustrated in Table 4.13-5, all project area roadway segments are calculated to currently operate at LOS B or better.

4.13.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to transportation and traffic, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.13.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to transportation and traffic are considered significant if any of the following occur:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

4.13.2.1.1 County of Imperial

The County of Imperial does not have published significance criteria. However, the County General Plan does state that the LOS goal for intersections and roadway segments is to operate at LOS C or better. Therefore, if an intersection or segment degrades from LOS C or better to LOS D or worse with the addition of project traffic, the impact is considered significant. If the location operates at LOS D or worse with and without project traffic, the impact is considered significant if the project causes the intersection delta to increase by more than two (2) seconds, or the volume to capacity (V/C) ratio to increase by more than 0.02. V/C ratios provide a quantitative description of traffic conditions for signalized intersections. These amounts are consistent with those used in the City of El Centro and County of Imperial in numerous traffic studies.

TABLE 4.13-5. EXISTING STREET SEGMENT OPERATIONS

Street Segment		Functional Roadway Classification ¹	Capacity (LOS E) ²	FSF			RSF			ISF			LSF		
				ADT ³	LOS ⁴	V/C ⁵	ADT	LOS	V/C	ADT	LOS	V/C	ADT	LOS	V/C
Ferrell Road	Kubler Road to SR-98	2-lane Local Collector	16,200	800	A	0.05	800	A	0.05	800	A	0.05	N/A	N/A	N/A
SR-98	Pulliam Road to Brockman Road	2-lane Local Collector	16,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,750	A	0.11
	Brockman Road to Ferrell Road	2-lane Local Collector	16,200	N/A	N/A	N/A	1,730	A	0.11	N/A	N/A	N/A	1,730	A	0.11
	East of Ferrell Road	2-lane Local Collector	16,200	2,300	B	0.14	2,300	B	0.14	2,300	B	0.14	2,300	B	0.14

Source: LLG 2014**Notes:** ¹ County of Imperial Valley roadway classification² Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.³ Average Daily Traffic volumes⁴ Level of Service⁵ Volume/Capacity (V/C) ratio.

4.13.2.1.2 Caltrans

A project is considered to have a significant impact on Caltrans facilities if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds for Caltrans maintained roadway segments and intersections are defined in Table 4.13-6. If the project exceeds the thresholds addressed in the table below, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated when affecting any state highway facilities (Caltrans 2002).

4.13.2.2 Methodology

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

This analysis evaluates the potential for the projects, as described in Chapter 3, Project Description, to impact the roadway system in the project area and to determine the effects of the construction and operation phases for the projects on the existing circulation system. Quantitative analyses have been completed for key off-site intersections and roadway segments in the vicinity of the project sites affected by project traffic. Based on the extent of these interactions, this analysis considers whether these conditions would result in an exceedance of one or more of the applied significance criteria as identified in Section 4.13.2.1, Thresholds of Significance.

TABLE 4.13-6. TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

LOS ¹ with Project ^a	Allowable Increase Due to Project Impacts ^b					
	Freeways		Roadway Segments		Intersections Delay ⁴ (seconds)	Ramp Metering Delay (minutes)
	V/C ²	Speed ³ (mph)	V/C	Speed (mph)		
D, E, & F (or ramp meter delays above 15 minutes)	0.01	1	0.02	1	2	2 ^c

Source: LLG 2014.

Notes: ^a All level of service measurements are based upon Highway Capacity Manual (HCM) procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 4.13-6 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

^b If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

^c The allowable increase in delay at a ramp meter with more than 15 minutes of delay and freeway LOS E is 2 minutes and at LOS F is 1 minute.

1. LOS = Level of Service

2. V/C = Volume to Capacity Ratio

3. Speed = Arterial speed measured in miles per hour

4. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.

As indicated previously, a traffic impact analysis was prepared by LLG which covers the FSF, RSF, ISF, and LSF project sites. The information obtained from the *Traffic Impact Analysis for the Iris Cluster Solar Farm Project (February 2014)* was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the significance criteria presented in this section. Impacts associated with transportation/circulation that could result from project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; materials, locations, and duration of project construction and related activities; and a field visit. With all four projects under concurrent construction, it is estimated that up to 400 workers per day would be required during the peak construction periods. Conceptual site plans for the projects were also used to evaluate potential impacts. These conceptual exhibits are provided in Figures 3.0-6 through 3.0-9.

Existing roadway volumes and network have been completed with the assumption that construction of the proposed projects is scheduled for 2014, sequential construction will occur, and the activities described in Section 3.0 could occur over several sites at once. As a result, existing volumes have been increased by a 5 percent growth factor to account for any cumulative project development that may occur between 2010 (date of traffic counts) and 2014. In addition, conservative traffic volume assignments for several alternative energy projects proposed in Imperial County have been included in the baseline condition. The following scenarios were used to determine impacts during construction:

FSF

- Existing (Year 2010) – refers to current conditions and includes existing traffic counts and existing lane configurations at intersections.
- Baseline without Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 without implementation of the proposed project.
- Baseline + Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 if the proposed project is implemented and built-out (total project traffic added onto the year 2014 forecasted traffic volumes).

RSF

- Existing (Year 2010) – refers to current conditions and includes existing traffic counts and existing lane configurations at intersections.
- Baseline without Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 without implementation of the proposed project.
- Baseline + Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 if the proposed project is implemented and built-out (total project traffic added onto the year 2014 forecasted traffic volumes).

ISF

- Existing (Year 2010) – refers to current conditions and includes existing traffic counts and existing lane configurations at intersections.
- Baseline without Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 without implementation of the proposed project.
- Baseline + Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 if the proposed project is implemented and built-out (total project traffic added onto the year 2014 forecasted traffic volumes).

LSF

- Existing (Year 2010) – refers to current conditions and includes existing traffic counts and existing lane configurations at intersections.
- Baseline without Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 without implementation of the proposed project.
- Baseline + Construction Project (Year 2014) – refers to future conditions which are expected to occur in the year 2014 if the proposed project is implemented and built-out (total project traffic added onto the year 2014 forecasted traffic volumes).

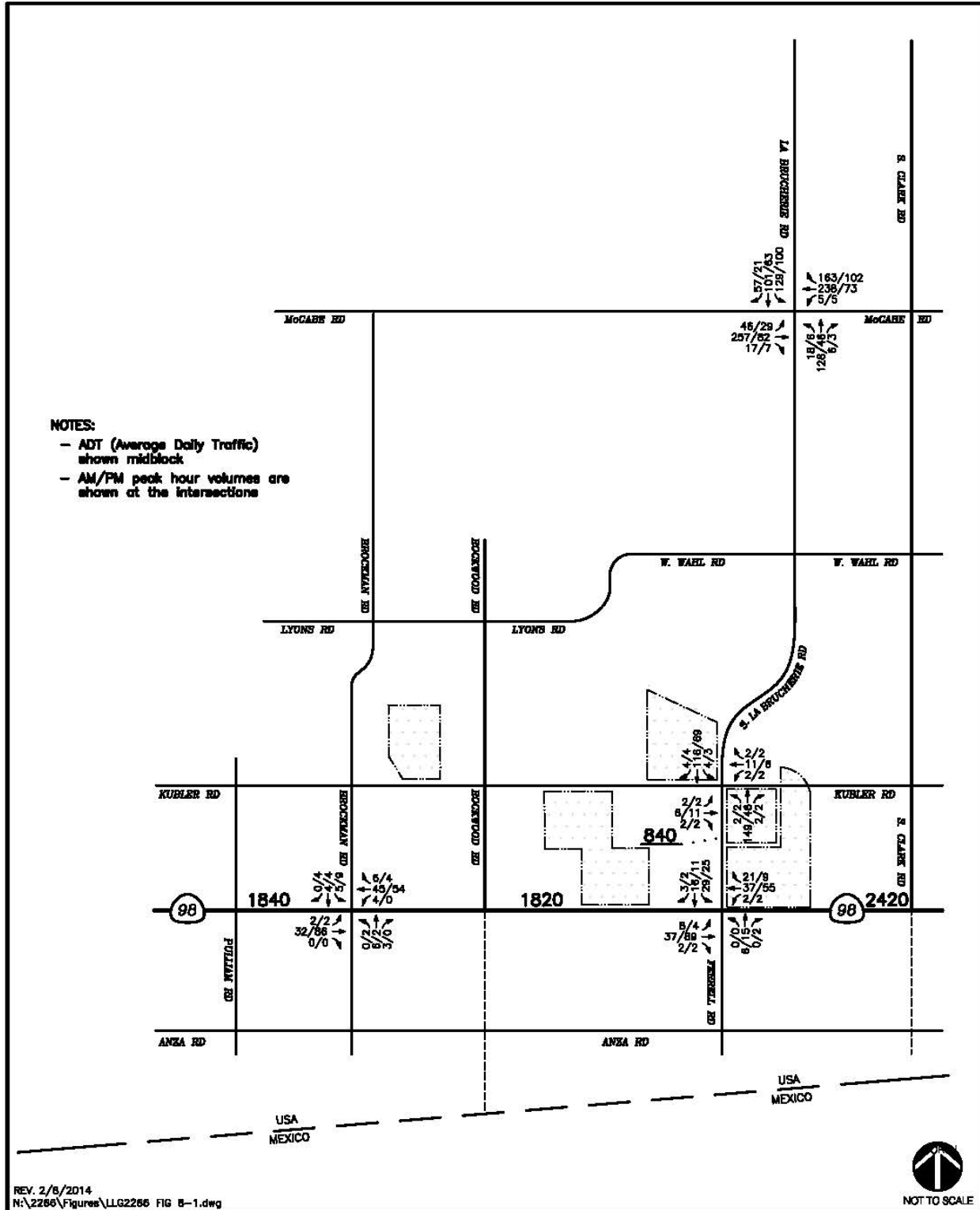
Construction Year Impacts

To assess construction year impacts for the projects, a baseline condition representing ambient traffic growth in the area was established. Project construction is anticipated to start in 2014 for the proposed projects. To account for potential cumulative project traffic increases that may occur between 2010 (existing) and the time of construction, a five percent growth factor was applied to all existing 2010 traffic volumes throughout the project area. This five percent growth would conservatively represent the amount of traffic that may utilize the street system in the project vicinity proposed from future unapproved development projects planned in Imperial County, as well as several other alternative energy projects proposed for the Imperial Valley. While it is most likely that these projects will be constructed sequentially over the course of the next few years, for purposes of being conservative, half of all construction traffic for all identified projects within the project vicinity were assigned to the street system in addition to the 5 percent cumulative growth rate applied for the development projects. Figure 4.13-3 shows the Baseline without Construction Project traffic volumes for the projects.

Project Trip Generation

Project traffic generation was determined for each project using methodology developed for a similar solar project in the vicinity of the proposed project. It is anticipated that an average of up to 400 workers per day would be required during the peak construction period. The two phases for the proposed project are: construction, and operations with maintenance. The construction phase is expected to commence in the third quarter of 2014, with opening year planned for the end of the year 2015. Trip generation for each phase is based on-site-specific trip generating characteristics provided by the project applicant.

Figure 4.13-3. Baseline Without Construction Traffic Volumes: AM/PM Peak Hours and ADT



The trip generations for the projects are based on trip generation calculations completed for similar projects in the vicinity of the proposed project. Assumptions about construction and maintenance and operations traffic characteristics for similar sites were increased accordingly to reflect the anticipated traffic activity associated with development and operations of the proposed projects.

Based on these calculations, a maximum of 831 ADT, during construction, could be generated by passenger vehicles, with 271 inbound trips during the AM peak hour and 271 outbound trips during the PM peak hour. Also, a maximum of 55 ADT could be generated by trucks, with 10 inbound and 10 outbound trips during the AM and PM peak hours, respectively. A passenger car equivalence (PCE) factor of 2.0 is applied to these trips for the purposes of the analysis to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow. It should be noted that the ISF project would result in the largest traffic contribution of any single site, and represents the "Project" traffic in this analysis.

Table 4.13-7 shows that the construction traffic is substantially greater than the O&M traffic. This validates the analysis that construction impacts would represent the worst-case potential traffic impacts of the projects. The total construction traffic analyzed is 886 ADT, with 281 inbound trips during the AM peak hour, and 281 outbound trips during the PM peak hour.

Project Trip Distribution

Regional trip distribution for construction truck traffic was estimated based on information from the project applicant that material deliveries will be from the Los Angeles area. Figure 4.13-4 shows the distribution of truck traffic, which is primarily oriented along La Brucherie Road and SR-98 in the project area.

It is anticipated that the majority of construction workers will be from the local population centers of Calipatria, El Centro, and Calexico. Figure 4.13-5 shows the distribution of construction employee passenger car traffic north, west and east of the site. The majority of employee traffic (95 percent) is anticipated to be to/from north and east of the site, from the local labor pool utilizing I-8 and SR-98 as their primary routes to work.

For the purposes of this analysis, 100 percent of the construction traffic was assumed to use the SR-98/Ferrell Road intersection. This provides a worst-case analysis because it focuses the highest intensity of the construction phase traffic at one location. It should be noted that additional access to some parcels may be possible via roadways surrounding the projects (e.g., Rockwood Road, Brockman Road, Weed Road); however, no new impacts would be expected given the minimal nature of this traffic relative to the worst-case analysis presented in the traffic study.

Project Trip Assignment

The trip generation summaries for each of the projects are shown in Table 4.13-7. Due to the ISF having the largest traffic contribution of any single site, the trip generation summaries for the ISF were multiplied by the related truck and employee distribution percentages shown on Figures 4.13-4 and 4.13-5, respectively. The construction truck traffic assignment is shown on Figure 4.13-4. Similarly, Figure 4.13-5 shows the employee vehicle traffic assignment. Figure 4.13-6 depicts the total construction traffic generated.

TABLE 4.13-7. PROJECT TRIP GENERATION – MSSF1

Trip Type	Daily Total (ADT) ¹	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
FERRELL SOLAR FARM - NW							
Construction							
Vehicles	104	34	0	34	0	34	34
Trucks	7	1	0	1	0	1	1
Total (w/PCE ²)	111	35	0	35	0	35	35
FERREL SOLAR FARM – SE							
Construction							
Vehicles	104	34	0	34	0	34	34
Trucks	7	1	0	1	0	1	1
Total (w/PCE ³)	111	35	0	35	0	35	35
Operations and Maintenance (O&M)							
Vehicles	40	8	2	10	2	8	10
ROCKWOOD SOLAR FARM							
Construction							
Vehicles	231	75	0	75	0	75	75
Trucks	15	3	0	3	0	3	3
Total (w/PCE ³)	246	78	0	78	0	78	78
Operations and Maintenance (O&M)							
Vehicles	40	8	2	10	2	8	10
IRIS SOLAR FARM							
Construction							
Vehicles	300	98	0	98	0	98	98
Trucks	20	4	0	4	0	4	4
Total (w/PCE ³)	320	102	0	102	0	102	102
Operations and Maintenance (O&M)							
Vehicles	40	8	2	10	2	8	10
LYONS SOLAR FARM							
Construction							
Vehicles	92	30	0	30	0	30	30
Trucks	6	1	0	1	0	1	1
Total (w/PCE ³)	98	31	0	31	0	31	31
Operations and Maintenance (O&M)							
Vehicles	40	8	2	10	2	8	10
TOTALS							
Construction							
Vehicles	831	271	0	271	0	271	271
Trucks	55	10	0	10	0	10	10
Total (w/PCE ³)	886	281	0	281	0	281	281
Shared Operations and Maintenance (O&M)							
Vehicles	120	24	6	30	6	24	30
Trucks	0	0	0	0	0	0	0
Total (w/PCE ³)	40	8	2	10	2	8	10

Source: LLG 2014.

Notes: ¹ ADT = Average Daily Traffic (24-hour total bi-directional traffic on a roadway segment)² PCE = Passenger Car Equivalent, used to reflect the additional impacts of heavy vehicles in the technical analyses.

Figure 4.13-4. Construction Project Distribution: Truck Trips

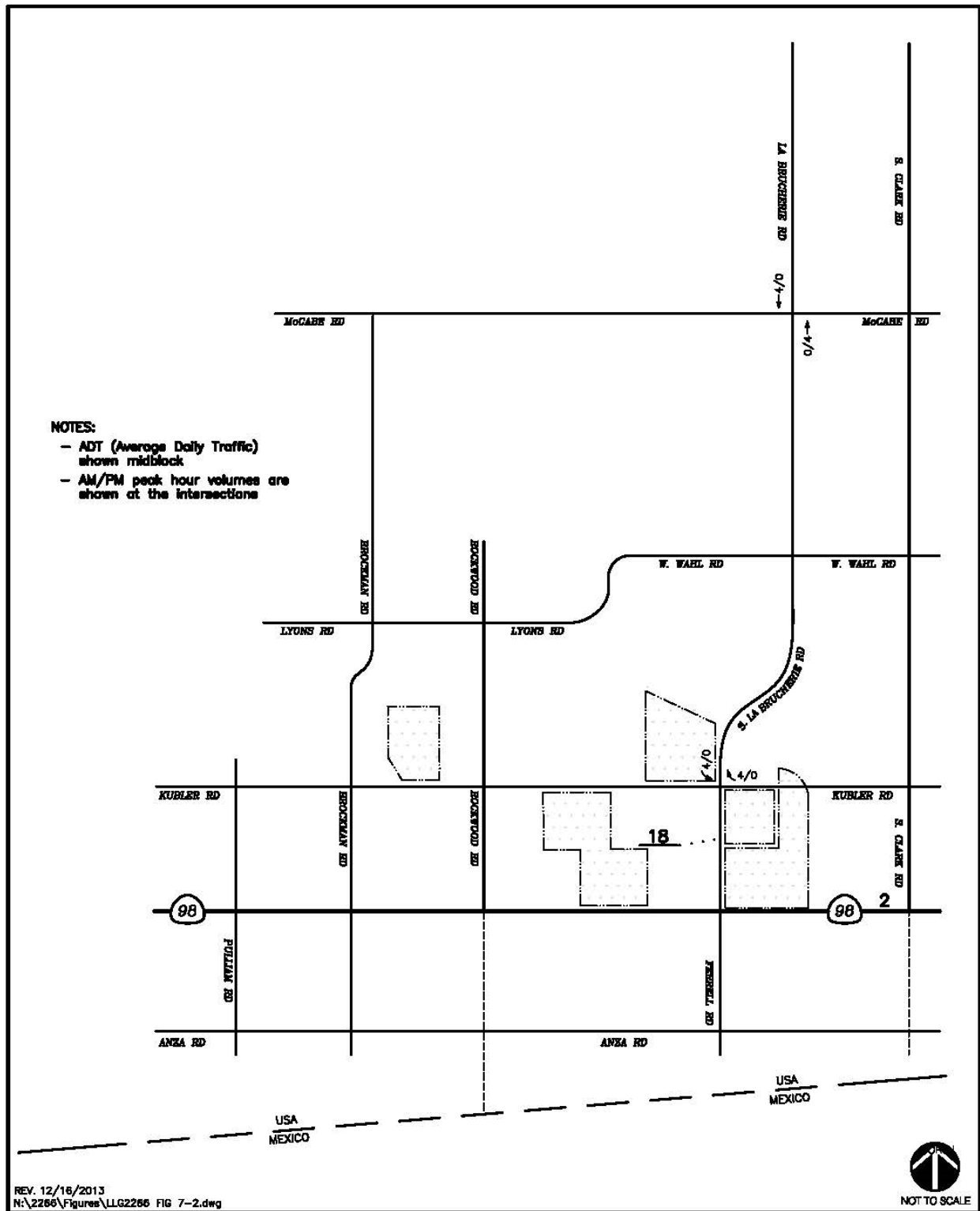


Figure 4.13-5. Construction Project Distribution: Employee Trips

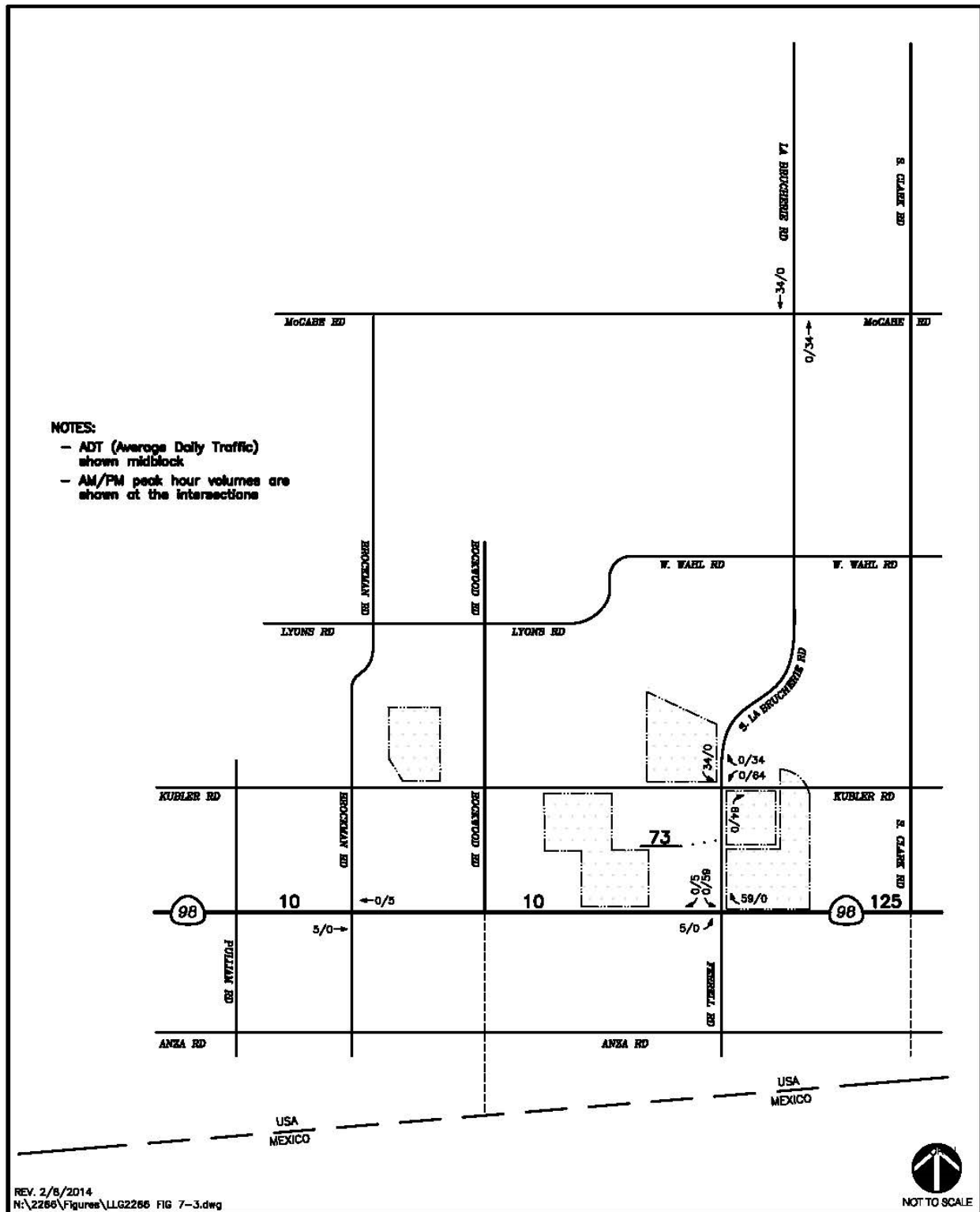
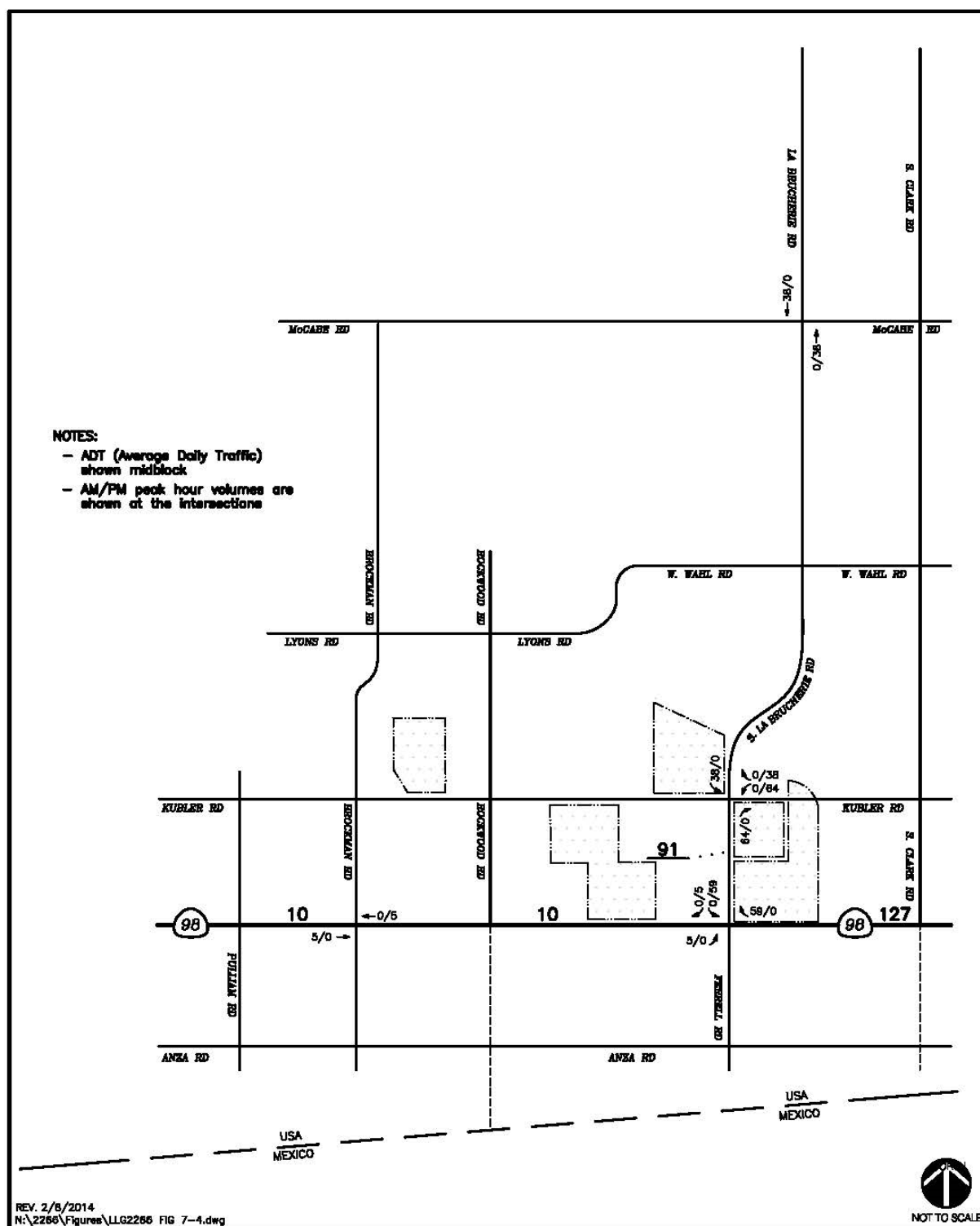


Figure 4.13-6. Total Construction Project Traffic Volumes: AM/PM Peak and ADT



4.13.2.3 Impact Analysis

IMPACT 4.13-1

Possible Conflict with Applicable Plan, Ordinance, or Policy.

The development of the project sites with the proposed projects would not cause a substantial increase in traffic affecting the efficiency of the circulation system; this includes all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, such as highways and freeways, pedestrian and bicycle paths, and mass transit.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Currently, there is no regular bus service to the general area and project related construction and operations and maintenance phases would not impact mass transit. During the construction phase of the projects (FSF, RSF, ISF, and LSF), bicycle routes may be affected on SR -8. However, SR-98 does not currently have a designated bikeway classification, as defined by the Caltrans Highway Design Manual, and therefore these projects would not conflict with any bike plans. Future operations and maintenance of the projects could potentially impact proposed Bike II class designated routes along Brockman, Ferrell, and Anza Roads. The projects, however, do not propose modifications be made to existing roadways serving future designated bikeway routes. Instead, the perimeter of the projects will be fenced-in along the project boundaries and would not interfere with potential future designated bike routes. Therefore, the FSF, RSF, ISF, and LSF projects would not impact potential future designated bike routes traversing through the project area and impacts to this issue area are identified as **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT 4.13-2

Possible Conflict with Applicable Congestion Management Program.

The construction and/or operation of the proposed projects within the project area would not exceed a level of service standard established by the County Congestion Management Agency for designated roads or highways.

Imperial County currently does not have a Congestion Management Agency (CMA) or an applicable Congestion Management Program (CMP). Therefore, traffic impact assessment criteria established by Caltrans (for Caltrans maintained roads) or LOS standards outlined in the County General Plan were used to determine whether project construction and/or project operation would result in impacts to roadway segments and intersections. The thresholds outlined in the County General Plan or established by Caltrans are provided above in Section 4.13.2.1 within this Chapter of the EIR.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Baseline without Construction Project

Intersection Operations

Table 4.13-8 summarizes the intersection operations throughout the project area given the projected Baseline without Construction Project traffic volumes. This table shows that all of the unsignalized intersections in the project area are forecasted to operate at LOS C or better during the AM and PM peak hours.

TABLE 4.13-8. CONSTRUCTION YEAR INTERSECTION OPERATIONS – FSF, RSF, ISF, AND LSF SITES

Intersection	Control Type	Peak Hour	Baseline Without Construction Project Traffic		Baseline With Construction Project Traffic		Δ^3 Delay
			Delay ¹	LOS ²	Delay	LOS	
La Brucherie Road/McCabe Road	AWSC ⁴	AM	22.4	C	25.7	D	3.3
		PM	9.0	A	9.2	A	0.2
La Brucherie Road/McCabe Road	MSSC ⁵	AM	10.6	B	11.8	B	1.2
		PM	9.7	A	9.8	A	0.1
SR-98/Ferrell Road	MSSC ⁵	AM	9.6	A	10.3	B	0.7
		PM	10.1	B	10.5	B	0.4
SR-98/Brockman Road	MSSC	AM	9.4	A	9.4	A	0.00
		PM	9.8	A	9.8	A	0.0

Source: LLG 2014.

Notes: 1. Average delay expressed in seconds per vehicle.

2. Level of Service.

3. Δ denotes an increase in delay due to project.

4. AWSC = All-Way Stop Controlled intersection.

5. MWSC = Minor Street Stop Controlled intersection. Minor street left turn delay is reported.

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

Segment Analysis

Table 4.13-9 summarizes the street segment operations throughout the project area given the projected Baseline without Construction Project traffic volumes. This table shows that all of the street segments in the project study areas are forecasted to operate at LOS B or better.

TABLE 4.13-9. CONSTRUCTION YEAR STREET SEGMENT OPERATIONS – FSF, RSF, ISF, AND LSF SITES

Street Segment	Functional Roadway Classification	Existing Capacity (LOS E) ¹	Baseline Without Construction Project Traffic			Baseline With Construction Project Traffic			Δ ⁵
			ADT ²	V/C ³	LOS ⁴	ADT	V/C	LOS	
Ferrell Road									
Kubler Road to SR-98	2-Ln Local Collector	16,200	840	0.05	A	931	0.06	A	0.01
SR-98									
Pulliam Road to Brockman Road	2-Ln Local Collector	16,200	1,840	0.11	A	1,850	0.11	A	>0.01
Brockman Road to Ferrell Road	2-Ln Local Collector	16,200	1,820	0.11	A	1,830	0.11	A	>0.01
East of Ferrell Road	2-Ln Local Collector	16,200	2,420	0.15	B	2,547	0.16	B	0.01

Source: LLG 2014.

Notes: 1. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.

2. Average Daily Traffic volumes

3. Volume/Capacity ratio.

4. Level of Service

5. Increase in V/C due to construction traffic.

Baseline with Construction Project

The total construction project traffic was added to the baseline without construction project traffic, and the potential impacts associated with the proposed projects were calculated by comparing the results. The following is a summary of the intersection and segment analyses. Figure 4.13-7 shows the Baseline + Construction Project traffic volumes in the project area.

Intersection Analysis

Table 4.13-8 also summarizes the Baseline + Construction Project peak hour intersection operations. As seen in Table 4.13-8 all project area intersections are calculated to operate at LOS D or better with the addition of the construction project traffic. The increase in delay due to the construction traffic varies between 0.0 and 3.3 seconds at these intersections.

Segment Analysis

Table 4.13-9 also summarizes the street segment operations throughout the project area given the projected Baseline + Construction Project traffic volumes. This table shows that all project area segments are calculated to continue to operate at LOS B or better with the addition of the construction project traffic. The increase in V/C due to the construction traffic varies between 0.0 and 0.01 at these segments.

Construction Impacts Summary

The projects are located in an agricultural area and not subject to traffic congestion. Existing ADT volumes for roadways within the project area result in street segment operations of LOS B or better. The traffic study determined an additional 886 ADT (see Table 4.13-7) would be added due to construction traffic. During construction, segment operations throughout the project area will continue to operate at an LOS B or better with an increase in V/C between 0.0 and 0.01 seconds and intersection operations will operate at an LOS D or better, with an increase in delay between 0.0 and 3.3 seconds at the intersections. The aforementioned increase in V/C and delay are both considered **less than significant** according to both Imperial County and Caltrans significance thresholds.

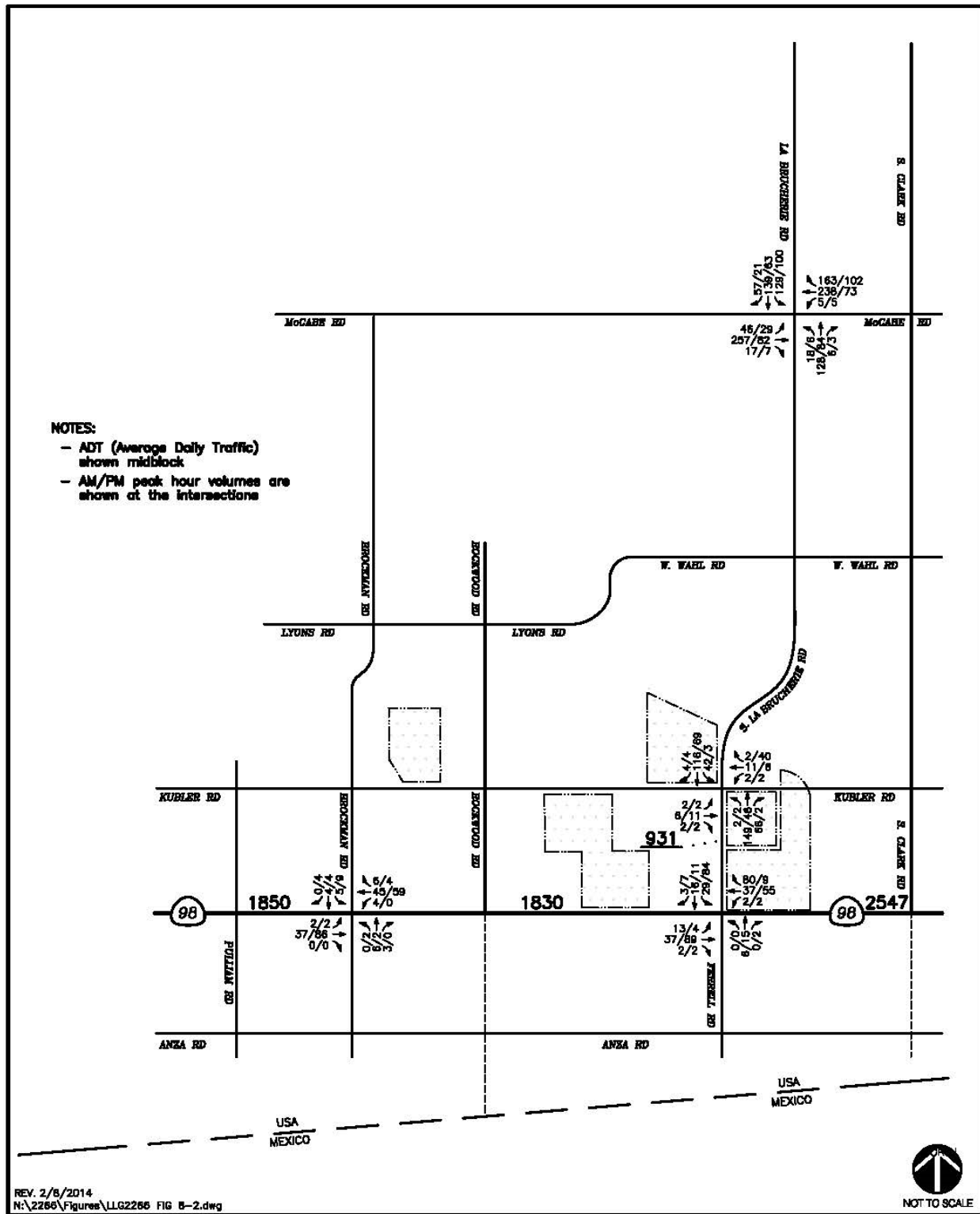
Operations Impacts Summary

During operations and long term maintenance phases, it is anticipated that the projects would only generate 40 ADT with 10 maximum total peak hour volumes during either peak hour. The ADT levels would remain far below the county's existing segment capacity levels (LOS E) of 16,000 ADT. Therefore, the projects would not result in a substantial increase in traffic (see Table 4.13-7). Therefore, impacts to this issue area are identified as **less than significant** according to both Imperial County and Caltrans significance thresholds.

Mitigation Measure(s)

No mitigation measures are required.

Figure 4.13-7. Baseline Traffic Volumes (with Construction): AM/PM Peak Hours and ADT



IMPACT *Possible Modification in Air Traffic Patterns or Traffic Levels.***4.13-3**

Development of the proposed projects within the project area would not result in changes to air traffic patterns or roadway traffic resulting in safety issues.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The proposed projects include solar panels that may be elevated up to 30 feet above ground, but would not be at a height that would interfere with air traffic patterns. Additionally, the proposed projects do not include changes to the existing roadways. The proposed solar panels will be arranged in continuous rows of up to approximately 500 feet in length and arrays will be grouped together to form 500-foot by 500-foot grids. Additional 20-foot wide, all weather access roads will be implemented into the project design and located within each 500-foot “grids” to provide emergency units vehicle access and to allow access to the inverter modules. Additionally, a 20-foot wide all-weather gravel road with additional clearance area in the corners of the project sites will exist between the perimeter fence and solar panels allowing easy facility access and maneuverability for emergency unit vehicles. These access roads would not increase hazards due to design features or incompatible uses. Therefore, a **less than significant** impact is identified for this issue area.

The project area is not located within an Airport Compatibility Land Use Plan (ALUCP) or within a “sphere of influence” for Calexico International Airport. At its August 13, 2014 meeting, the County Airport Land Use Commission found the project to be consistent with the ALUP. Also, two private aerial application businesses are located in the proximity to the project sites, which include small aircraft operations. To meet Airport Land Use Compatibility requirements for the established height limit of 120 feet within the A-2, A 2-R, and A-3 zones the project sites and off-site transmission area are located within, approval of a Variance for these projects would be required. Approval by the County would allow the transmission towers to be built at 140 feet in height.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Safety Hazard from Design Features.***4.13-4**

Design features related to the project sites would not result in hazards or incompatible land uses.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As discussed under impact 4.13-3, the projects do not include changes to existing roadways. 20-foot wide, access roads will be implemented into the project design and located within each 500-foot “grid” to provide emergency units vehicle access and to allow access to the inverter modules. Additionally, a 20-foot wide gravel road with additional clearance area in the corners of the project study areas will exist between the perimeter fence and solar panels allowing easy facility access and maneuverability for emergency unit vehicles.

As a condition of approval for the projects, the project applicant will be required to conduct a pre- and post-construction roadway condition survey to document existing roadway conditions prior to the commencement of construction activities so that any damages to local roadways are repaired after construction. These access roads would not increase hazards due to design features or incompatible uses and a **less than significant** impact is identified.

The route of the proposed transmission facilities may traverse Caltrans owned facilities, e.g., SR-98 and therefore, may require the submittal of an encroachment permit. The use of Caltrans owned facilities for other than normal transportation purposes may require written authorization from Caltrans. As the responsible entity for protecting the public's investment in the State highway system, Caltrans reviews all requests from utility companies, developers, volunteers, nonprofit organizations, etc., desiring to conduct

various activities within the right of way. With the issuance of the required Caltrans encroachment permit, the transmission facilities would have **less than significant** impacts related to safety hazards on Caltrans facilities.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Safety Hazard from Inadequate Emergency Access.*
4.13-5 *Development of the project sites with the proposed projects would not result in inadequate emergency access.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

20-foot wide access roads will be implemented into the project design for each project. These roads would be located within each 500-foot “grids” to provide emergency units vehicle access and to allow access to the inverter modules. Additionally, a 20-foot wide all weather gravel road with additional clearance area in the corners of the project sites will exist between the perimeter fence and solar panels allowing easy facility access and maneuverability for emergency unit vehicles. Additionally, as a condition of approval of the project, the County will require the project applicant to submit a street improvement plan for each of the projects. This plan will be required to provide emergency access points and safe vehicular travel. Therefore, the projects would not result in a possible safety hazard or interfere with emergency access. Therefore, a **less than significant impact** is identified for this issue area..

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Possible Conflict with Adopted Policies, Plans or Programs.*
4.13-6 *Development of the project sites with the proposed projects would not result in a decrease in performance or safety of adopted policies, plans programs for public transit, bicycle, or pedestrian facilities.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As stated previously, there currently is no regular bus service to the general area and project related construction and operations and maintenance phases would not impact mass transit. During the construction phase of each of the projects, bicycle routes may be affected on SR-98. However, SR-98 does not currently have a designated bikeway classification, as defined by the Caltrans Highway Design Manual and therefore the projects would not conflict with any bike plans. Future operations and maintenance of the project area could potentially impact proposed Bike II class designated routes along Brockman, Ferrell, and Anza Roads. The projects, however, do not propose modifications to be made to existing roadways serving future designated bikeway routes. In the event of any damages to local roads during construction (as identified during pre- and post-construction roadway condition survey), these roadways will be repaired to a pre-project condition. Instead, the perimeter of each of the projects will be fenced-in along the project boundaries and would not interfere with potential future designated bike routes. Therefore, the projects would not impact potential future designated bike routes traversing through the project area. Therefore, impacts to this issue area are identified as **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

4.13.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

This section included an analysis of construction traffic for the proposed projects. As presented above, construction traffic would not result in a significant impact to any of the project area intersections. A similar scenario would occur during the decommissioning and site restoration stage for each of the projects. ADT would be similar to or less than the ADT required for construction. Similarly, the decommissioning activities would not result in a significant impact related to modification of air traffic patterns, possible safety hazards, or possible conflicts with adopted policies, plans, or programs as the decommissioning and subsequent restoration would revert the project sites to agricultural uses. Therefore, decommissioning and restoration of the project sites would not generate traffic resulting in a significant impact to the circulation network. **No impact** is identified and no mitigation is required.

Residual

The construction and operation of the proposed projects would not result in direct impacts to intersections, roadway segments, and freeway segments. Therefore, less than significant impacts have been identified. No mitigation is required and no residual unmitigated impacts would occur with implementation of the projects.

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4.14 UTILITIES/SERVICE SYSTEMS

This section includes an evaluation of potential impacts for identified Utilities/Service Systems that could result from implementation of the projects. Utilities/Service Systems include wastewater treatment facilities, storm drainage facilities, water supply and treatment, solid waste disposal, and energy consumption. The impact analysis provides an evaluation of potential impacts to Utilities/Service Systems based on criteria derived from the California Environmental Quality Act (CEQA) Guidelines in conjunction with actions proposed in Chapter 3, Project Description. Development Design & Engineering prepared a Water Supply Assessment (WSA) in July 2014 (updated November 2014) for the projects. The WSA is included as Appendix K of this Environmental Impact Report (EIR).

The Initial Study/Notice of Preparation (IS/NOP) prepared for this EIR determined that impacts with regards to solid waste disposal, storm drainage, and wastewater treatment would be less than significant. Solid waste generation would be minor for the construction and operation of the project. Trash is anticipated to be hauled to the Callexico Solid Waste Facility. This site has ample landfill capacity, and no anticipated closure date. The project does not require expanded or new storm drainage facilities (other than on-site detention areas) because the proposed solar facilities would not generate a significant increase in the amount of impervious surfaces that would increase runoff during storm events. Water from solar panel washing would continue to percolate through the ground, as a majority of the surfaces within the project sites would remain pervious. The project operations and maintenance (O&M) buildings will use septic systems, and would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. Therefore, solid waste disposal, wastewater treatment, and storm drain facilities will not be discussed further. The IS/NOP is included in Appendix A of this EIR.

4.14.1 Environmental Setting

Water

The Imperial Valley area is located within the south-central part of Imperial County and is bound by Mexico on the south, the Algodones Sand Hills on the east, the Salton Sea on the north and San Diego County on the northwest, and the alluvial fans bordering the Coyote Mountains and the Yuha Desert to the southwest. This valley is an irrigated agricultural area. Approximately one-fifth of the nearly three million acres in Imperial County is irrigated for agricultural purposes, of which the majority are located within the Imperial Valley. The Imperial Valley area encompasses a total of 989,450 acres, of which 512,163 acres are irrigated. Imperial County's incorporated cities, unincorporated communities and supporting facilities, comprises approximately one percent of Imperial County's area, and the Salton Sea accounts for approximately 7 percent of Imperial County's surface area.

The source of nearly all surface waters in Imperial County is the Colorado River. The water is diverted from the Colorado River at the Palo Verde Weir north of Blythe by the Palo Verde Irrigation District for use in the Palo Verde Valley of northeast Imperial County and southeast Riverside County; and at the Imperial Dam into the All-American Canal by the Imperial Irrigation District (IID) and the Bard Irrigation District for use in the Imperial, Yuma, Bard, and Coachella Valleys. The 82-mile All-American Canal, the three-mile New Briar Canal, and 52 miles of drains are owned by the Bureau of Reclamation and are operated and maintained by IID. The IID serves irrigation water and electric power to farmers and residents in the lower southeastern portion of California's desert.

Approximately 97 percent of IID's water is used for agricultural purposes. The remaining 3 percent of its water deliveries supply seven municipalities, one private water company, two community water systems, as well as a variety of industrial uses and rural homes or businesses.

The IID has a specific area that it is responsible for supplying water to, which is referred to as the Imperial Unit. In addition to agricultural irrigation, the Imperial Unit includes the seven incorporated cities of Brawley, Callexico, Calipatria, El Centro, Holtville, Imperial and Westmorland. The three unincorporated communities in the Imperial Unit are Heber, Niland and Seeley.

Energy

The IID supplies electricity to Imperial County. IID's 2010 Integrated Resource Plan (IRP) addresses the current challenges to meet retail load requirements, adapt to new renewable energy portfolio standards and reduce greenhouse gas emissions. The IRP includes implementation of energy programs necessary to reduce current energy load by at least 5 percent by 2015, with a 10 percent reduction goal set for 2020. In addition, the Plan calls for generating 20 percent of energy requirements for its service area from renewable sources by 2012, 23 percent by 2014, 26 percent by 2017, and at least 33 percent by 2020; and reducing 2009 greenhouse gas emission levels by at least 35 percent by 2020. The IID is also implementing an energy efficiency program with the goal of reducing peak demand by up to 50 megawatts (MW) within five years (IID 2010).

4.14.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

State

California Senate Bill 610

California Senate Bill (SB) 610 is an act that amended Section 21151.9 of the Public Resources Code (PRC), and Sections 10631, 10656, 10910, 10911, 10912, and 10915 of the Water Code. SB 610 repealed Section 10913, and added and repealed Section 10657 of the Water Code. SB 610 was approved by the Governor and filed with the Secretary of State on October 9, 2001, and became effective January 1, 2002.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in environmental documentation for certain projects (as defined in Water Code 10912 [a]) subject to CEQA. Due to increased population, land use changes and water demands, this water bill seeks to improve the link between information on water availability and certain land use decisions made by cities and counties. As per California Department of Water Resources policy, "Even though a water supplier may not be a 'public water system' or become a 'public water system' as a result of serving the proposed project, it will still be involved, in a consultation role, in the preparation of the assessment." SB 610 takes a significant step toward managing the demand of California's water supply as it provides regulations and incentives to preserve and protect future water needs. The intent of this bill is to coordinate local water supply and land use decisions to help provide California's cities, farms, rural communities and industrial developments with adequate water supplies.

Project Determination According to SB 610

Senate Bill 610 – Water Supply Assessment

With the introduction of SB 610, any project under CEQA shall provide a WSA if:

- The project meets the definition of the Water Code Section 10912:

For the purposes of this part, the following terms have the following meanings:

(a) "Project" means any of the following:

- (1) A proposed residential development of more than 500 dwelling units.
- (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- (3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

- (4) A proposed hotel or motel, or both, having more than 500 rooms.
- (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
- (6) A mixed-use project that includes one or more of the projects specified in this subdivision.
- (7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

(b) If a public water system has fewer than 5,000 service connections, then “project” means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system’s existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system’s existing service connections.

After review of Water Code Section 10912, the solar facilities are deemed “projects” because they propose a demand of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project; and/or because they are a proposed industrial use occupying more than 40 acres of land.

It should be noted that California enacted SB 267, amending the California Water Code’s Section 10912 definition of a “project” that would trigger a WSA. The amended definition excludes low-water demand photovoltaic projects. Specifically, SB 267 states, “A proposed photovoltaic or wind energy generation facility approved on or after the effective date of the amendments made to this section at the 2011-12 Regular Session is not a project if the facility would demand no more than 75 acre-feet of water annually.” (California Water Code §10912 (a)(5)(B). However, collectively, the proposed projects would create an annual water demand greater than 75 acre-feet; therefore, a WSA has been prepared for the projects. The WSA includes a collective assessment for the (FSF, RSF, ISF, and LSF.

California Water Code

California Water Code (Water Code) Sections 10656 and 10657 restrict state funding for agencies that fail to submit their urban water management plan to the Department of Water Resources. In addition, Water Code Section 10910 describes the WSA that must be undertaken for projects referred under PRC Section 21151.9, including an analysis of groundwater supplies. Water agencies are given 90 days from the start of consultation in which to provide a WSA to the CEQA lead agency. Water Code Section 10910 also specifies the circumstances under which a project for which a WSA was once prepared would be required to obtain another assessment. Water Code Section 10631, directs that contents of the urban water management plans include further information on future water supply projects and programs and groundwater supplies.

Urban Water Management Planning Act – Assembly Bill 797

The Urban Water Management Planning Act was established by Assembly Bill 797 (AB 797) on September 21, 1983. Passage of this law was recognition by state legislators that water is a limited resource and a declaration that efficient water use and conservation would be actively pursued throughout the state. The law requires water suppliers in California, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet per year (AFY) of water, to prepare and adopt a specific plan every five years which defines their current and future water use, sources of supply and its reliability, and existing conservation measures.

4.14.1.2 Existing Conditions

The project sites are currently undeveloped agricultural land. Existing agricultural water service at the project sites is currently provided via numerous IID canals. Estimated agricultural water consumption for the project sites based on 10 consecutive years of delivery records from IID is illustrated in Table 4.14-1.

TABLE 4.14-1. HISTORICAL ANNUAL WATER DELIVERY AVERAGE FOR PROJECT SITES (2001-2010)

Project Component	Annual Average (AFY)	10-Year Total (AFY)
FSF	1,931.7	19,317
RSF	1,899.4	18,994
ISF	2,506.8	25,068
LSF	532.3	5,323
Total	6,870.2	68,702

Source: Development, Design & Engineering 2014.

IID's Equitable Distribution Plan (revised October 28, 2013) apportions water to its municipal, commercial and industrial users prior to calculating the agricultural apportionment. The agricultural apportionment ranges from 2.86 AF/AC to 7.86 AF/AC for calendar year 2014. As demonstrated below, the historic annual average agricultural water usage is consistent with the range of these allocations:

Annual Water Usage for FSF

- $1,931.7 \text{ AFY} \div 367.1 = \mathbf{5.26 \text{ AFY}}$

Annual Water Usage for RSF

- $1,899.4 \text{ AFY} \div 396.2 = \mathbf{4.79 \text{ AFY}}$

Annual Water Usage for ISF

- $2,506.8 \text{ AFY} \div 520.8 = \mathbf{4.81 \text{ AFY}}$

Annual Water Usage for LSF

- $532.3 \text{ AFY} \div 138.4 = \mathbf{3.85 \text{ AFY}}$

Total Annual Water Usage for the Project Sites

- $6,870.2 \text{ AFY} \div 1,422.4 = \mathbf{4.83 \text{ AFY}}$

As previously discussed in Chapter 3.0, Project Description, up to four O&M buildings are contemplated for the project sites and would be located at each of the four solar facilities. Each O&M building would include its own emergency power, fire suppression, potable water system and septic system. Water would be used at FSF, RSF, ISF, and LSF to irrigate crop cover (used as a dust control measure), panel washing, domestic use, landscape irrigation, and fire suppression (for the O&M buildings).

The water for the projects will be supplied by IID. The IID's 2009 Interim Water Supply Policy (IWSP) allocates 25,000 AFY for non-agricultural projects, and is incorporated by reference into the Final Imperial Integrated Regional Water Management Plan (IRWMP). Of the IWSP's 25,000 AFY, IID has approved two water supply agreements totaling 1,809 AFY. IID recognizes having a remaining balance of IWSP water in the amount of 23,191 AFY.

Energy

The project sites are primarily undeveloped and utilized for agricultural production. There are a few residences and a farm shop located within the project area. Therefore, the site's current energy demand is minimal. The IID would provide electricity service to the project sites (i.e., during non-generating hours for the facility). IID meets its annual resource requirements through a mix of the IID-owned generation and a number of purchase power contracts that can take the form of must-take contracts and call options. The IID's generation resources range from hydroelectric resources on the All-American Canal System to San Juan Unit 3, a coal plant in New Mexico to the Palo Verdes Nuclear Generation Station near Phoenix. The IID also owns thermal generation facilities within its service territory, fueled by natural gas or diesel.

The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal includes: decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources.

4.14.2 Impacts and Mitigation Measures

This section presents the significance criteria used for considering project impacts related to utilities/service systems, the methodology employed for the evaluation, an impact evaluation, and mitigation requirements, if necessary.

4.14.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to utilities/service systems are considered significant if any of the following occur:

Water Supply

- Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

Energy

- Result in the need for new systems or supplies, or a substantial expansion or alteration to electricity, natural gas, or telephone that results in a physical impact on the environment.
- Result in inefficient energy uses of fuel type for each stage of the project including construction, operation, maintenance, and/or removal.
- Result in negative effects on local and regional energy supplies and require additional capacity.
- Result in increased effects to peak and base period demands for electricity and other forms of energy.
- Result in noncompliance with existing energy standards.
- Result in negative effects on energy resources.

As stated previously, it was determined through the preparation of the IS/NOP that impacts with regards to solid waste disposal and policies and wastewater treatment would be less than significant. Therefore, these issue areas will not be discussed further. Impacts associated with water quality are discussed in Section 4.9, Hydrology/Water Quality of this EIR.

4.14.2.2 Methodology

Project-specific data was used to calculate the projects water consumption during construction and at build-out collectively (“operational”). Imperial Unit water availability has been assessed for a 42-year projection (2015-2057), which is concurrent with the proposed construction and operational life of the projects. This EIR incorporates by reference previously prepared environmental documentation for other solar projects in the project vicinity including the Imperial Solar Energy Center South Environmental Impact Report (EIR)/Environmental Assessment (EA), and the Mount Signal and Calexico Solar Farm Projects Final EIR.

4.14.2.3 Impact Analysis

Water Supply

IMPACT *Construction of New or Expansion of Existing Water Facilities.*

4.14-1 *The projects would utilize water supply from an on-site water systems and small water treatment plant.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As discussed in Chapter 3.0 Project Description, O&M buildings are proposed for each of the projects. Each of the proposed O&M buildings would be a maximum of 5,000 square feet. . Above-ground water storage tank(s) with total capacity of up to approximately 80,000 gallons may be placed within the project area near the O&M buildings. The storage tank(s) near the O&M buildings will have the appropriate fire department connections in order to be used for fire suppression purposes. 10,000 gallons of water at each O&M site will be exclusively dedicated for O&M firefighting purposes, i.e., to protect the O&M building only. A small Point of Entry (POE) Water Treatment System may be required to reduce sediment levels prior to panel cleaning use and, if required, would be placed at the O&M building(s). The point of entry system requires filtration and disinfection treatment or an alternative treatment technology such as reverse osmosis. The proposed facilities would not require large parcels of land therefore, the water treatment facilities and storage tanks located within the project sites would not result in significant environmental impacts. Therefore, a **less than significant** impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Increase in Water Demand.*

4.14-2 *The projects would utilize water supply from an on-site water system with water supplies delivered from the Imperial Irrigation District (IID).*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

According to the WSA prepared by Development, Design & Engineering in July 2014, construction of the projects over a 2-year duration would require approximately 1,000 AFY of water (3.3 million gallons)¹ and operation of the projects would require approximately 520 AFY of water (1.7 million gallons) (see Tables 4.14-4, 4.14-6, 4.14-8 and 4.14-10). The WSA factored the construction water usage into the annual usage numbers provided in the discussion below. The WSA determined that construction (and operation) of the FSF, RSF, ISF, and LSF would not result in impacts to water supply. The WSA concluded that there is sufficient water to construct and operate the facilities because IID has a remaining balance in the amount of 23,191 AFY. Water would also be required during decommissioning of the projects and site restoration at the end of the project's 40-year life. However, it is anticipated that this water need would be

¹ * one acre-foot is 325,851 gallons

less than what is required for construction and operation of the projects. A **less than significant** impact is identified.

Table 4.14-2 provides a summary of the annual water use for the project study areas as a whole.

TABLE 4.14-2. SUMMARY OF ANNUAL WATER USE (PROJECT SITES)

Project Years	Total Annual Use
2015	1,000 AFY
2016	1,000 AFY
2017 - 2057 (Operation)	520 AFY

Source: Development, Design & Engineering 2014.

Operational Water Usage

As shown in Table 4.14-2, collectively, the projects are expected to use approximately 520 AFY of water for operational use. See Tables 4.14-4, 4.14-6, 4.14-8, and 4.14-10 for operational water use for each project site, respectively. Table 4.14-3 provides a comparison of the agricultural and operational water usage for the combined project sites. As shown in Table 4.14-3, the result is a decrease in usage at build-out during operation of 92.43% (+/-) when compared to the historical annual delivery average for the project sites under current agricultural production.

TABLE 4.14-3. AGRICULTURAL AND OPERATIONAL WATER USAGE COMPARISON FOR THE PROJECT SITES

	Agriculture	Proposed Projects			
		Construction (2 yrs)		Operation (2017 – 2057)	
		Use	Decrease (%)	Use	Decrease (%)
Annual Use	6,870 AFY	1,000 AFY	85.44%	520 AFY	92.43%

Source: Development, Design & Engineering 2014.

The WSA prepared by Development, Design & Engineering concluded that the IID's water supply in association with the IWSP is sufficient to meet the projects needs. Imperial Unit water availability has been assessed for a 42-year projection (2017-2057), which is concurrent with the proposed construction and operational life of the projects. Since industrial water users in the Imperial Unit have the second highest apportionment priority for water supply available for equitable distribution during years of supply-demand-imbalance, the projects' water supply from IID is considered to be reliable.

As mentioned previously, the IWSP allocates 25,000 AFY for non-agricultural projects, and these allocations are incorporated into the Final IRWMP. The WSA determined that IID has adequate policies, programs and projects in place to provide water to agricultural, commercial, industrial and municipal users in the Imperial Unit. Adequate supply is currently available, as well as during normal water years. IID's Equitable Distribution Plan (EDP) (October 2013) is considered to be sufficient to manage water supply during multiple dry water years. Conservation plans and measures are available to reduce the probability of supply demand imbalance from occurring.

The area that would be taken out of agricultural production as a result of the projects is estimated to use 6,870 AFY as farmland based on the calculations presented above, which uses a consumption rate ranging from 2.86 AF/AC to 7.86 AF/AC. Based on the history of water delivered to the same area by the IID from 2003-2013, on average the project sites have received 68,702 AFY. The project applicant proposes to use 520 AFY for operation of the projects. When compared to agricultural water usage for the project sites, the result is a decrease in usage at build-out during operation of approximately 92 percent (Table 4.14-3) when compared to existing conditions. Therefore, the impact is **less than significant**.

FSF

Table 4.14-4 summarizes the annual project construction and operational water use based on the information in the Chapter 3.0, Project Description and the WSA for the FSF facility. The facility is projected to have a 40-year life.

TABLE 4.14-4. ANNUAL PROJECT CONSTRUCTION AND OPERATIONAL WATER USE FOR FSF

Project Component	Project Years	Construction* (AFY)	Operational Use (AFY)	Total (AFY)
FSF	2015	500	68**	568
	2016-2056	N/A	136	136

Source: Development, Design & Engineering, 2014.

Notes: *Assumes 6-month construction window (Jan – June).

** Projected to use half of estimated annual usage due to 6 months of operation first year.

Table 4.14-5 provides a comparison of the agricultural water usage and operational water usage for FSF project site. As shown in Table 4.14-5, throughout operation, the FSF facility would use approximately 93 percent less water than the current agricultural production. Therefore, the impact is **less than significant**.

TABLE 4.14-5. AGRICULTURAL AND OPERATIONAL WATER USAGE COMPARISON FOR FSF

	Agriculture	Proposed Project - FSF			
		Construction (6 mos.)		Operation (2016 – 2056)	
		Use	Decrease (%)	Use	Decrease (%)
Annual Use	1,931.7 AFY	500 AFY	74.12%	136 AFY	92.96%

RSF

Table 4.14-6 summarizes the annual project construction and operational water use based on the information in the Chapter 3.0, Project Description and the WSA for the RSF facility. The facility is projected to have a 40-year life.

TABLE 4.14-6. ANNUAL PROJECT CONSTRUCTION AND OPERATIONAL WATER USE FOR RSF

Project Component	Project Years	Construction* (AFY)	Operational Use (AFY)	Total (AFY)
RSF	2015	500	74**	574
	2016-2056	N/A	147	147

Source: Development, Design & Engineering, 2014.

Notes: *Assumes 6-month construction window (Jan – June).

** Projected to use half of estimated annual usage due to 6 months of operation first year.

Table 4.14-7 provides a comparison of the agricultural water usage and operational water usage for RSF project site. As shown in Table 4.14-7, throughout operation, the RSF facility would use approximately 91-percent less water than the current agricultural production. Therefore, the impact is **less than significant**.

TABLE 4.14-7. AGRICULTURAL AND OPERATIONAL WATER USAGE COMPARISON FOR RSF

	Agriculture	Proposed Project - RSF			
		Construction (6 mos.)		Operation (2016 – 2056)	
		Use	Decrease (%)	Use	Decrease (%)
Annual Use	1899.4 AFY	500 AFY	73.68%	174 AFY	90.84%

ISF

Table 4.14-8 summarizes the annual project construction and operational water use based on the information in the Chapter 3.0, Project Description and the WSA for the ISF facility. The facility is projected to have a 40-year life.

TABLE 4.14-8. ANNUAL PROJECT CONSTRUCTION AND OPERATIONAL WATER USE FOR ISF

Project Component	Project Years	Construction* (AFY)	Operational Use (AFY)	Total (AFY)
ISF	2016	500	97**	597
	2017-2057	N/A	193	193

Source: Development, Design & Engineering, 2014.

Notes: *Assumes 6-month construction window (Jan – June).

** Projected to use half of estimated annual usage due to 6 months of operation first year.

Table 4.14-9 provides a comparison of the agricultural water usage and operational water usage for ISF project site. As shown in Table 4.14-9, throughout operation, the ISF facility would use approximately 92 percent less water than the current agricultural production. Therefore, the impact is **less than significant**.

TABLE 4.14-9. AGRICULTURAL AND OPERATIONAL WATER USAGE COMPARISON FOR ISF

	Agriculture	Proposed Project - ISF			
		Construction (6 mos.)		Operation (2017 – 2057)	
		Use	Decrease (%)	Use	Decrease (%)
Annual Use	2506.8 AFY	500 AFY	80.05%	193 AFY	92.30%

LSF

Table 4.14-10 summarizes the annual project construction and operational water use based on the information in the Chapter 3.0, Project Description and the WSA for the LSF facility. The facility is projected to have a 40-year life.

TABLE 4.14-10. ANNUAL PROJECT CONSTRUCTION AND OPERATIONAL WATER USE FOR LSF

Project Component	Project Years	Construction* (AFY)	Operational Use (AFY)	Total (AFY)
LSF	2016	500	26**	526
	2017-2057	N/A	51	51

Source: Development, Design & Engineering, 2011.

Notes: *Assumes 6-month construction window (June – June).

** Projected to use half of estimated annual usage due to 6 months of operation first year.

Table 4.14-11 provides a comparison of the agricultural water usage and operational water usage for LSF project site. As shown in Table 4.14-11, throughout operation, the LSF facility would use approximately 93 percent less water than the current agricultural production. Therefore, the impact is **less than significant**.

TABLE 4.14-11. AGRICULTURAL AND OPERATIONAL WATER USAGE COMPARISON FOR LSF

	Agriculture	Proposed Project - LSF			
		Construction (6 mos.)		Operation (2017 – 2057)	
		Use	Decrease (%)	Use	Decrease (%)
Annual Use	532.3 AFY	500 AFY	6.07%	51 AFY	90.42%

Mitigation Measure(s)

No mitigation measures are required.

Energy Consumption

IMPACT *Result in the Need for New Systems or Supplies, or a Substantial Expansion or Alteration to*
4.14-3 *Electricity, Natural Gas, or Telephone.*

The projects include the construction of a large utility scale renewable energy facility and would not require a substantial expansion of new utility service.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

As currently proposed, the power generated by the projects will be delivered to customers in San Diego Gas and Electric's (SDG&E) service territory. The projects would assist SDG&E in meeting California's mandate to procure 20 percent of its power from renewable resources. SDG&E has voluntarily committed to achieving 33 percent of its power from renewable resources by 2020. SDG&E's long-term plan includes a portfolio of renewable energy sources including biogas and biomass, geothermal, hydroelectric, wind, solar and fuel cells.

The electricity generation process associated with the projects would utilize solar technology to convert sunlight directly into electricity. Solar PV or CPV technology is consistent with the definition of an "eligible renewable energy resource" in Section 399.12 of the California Public Utilities Code and the definition of "in-state renewable electricity generation facility" in Section 25741 of the California Public Resources Code. The projects would generate and transmit renewable energy resources and is considered a beneficial effect rather than an impact. The use of energy associated with the projects includes both construction and operational activities. Construction activities typically include site grading, clearing, transmission line construction, and transmission tower placement. Operational activities would include energy consumption associated with vehicular use, and the O&M facility during generating and non-generating hours for the projects.

The projects would not use natural gas during the construction or operation of the projects. The O&M buildings would include telephone service; however, the usage would be minimal, limited to normal business hours and emergencies. The projects would not result in the need for additional natural gas or telephone facilities. Therefore, a **less than significant** impact is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Result in Inefficient Energy Uses of Fuel Type.*

4.14-4 *The projects will require the consumption of fossil fuels during construction activities.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Lines**Construction-Related Energy Consumption**

Construction activities consume energy through the use of heavy construction equipment and truck and worker traffic. Table 4.14-12 provides a summary of the typical heavy equipment used during construction (see Section 3.4 of this EIR).

TABLE 4.14-12. CONSTRUCTION EQUIPMENT

Construction Phase	Equipment	Number
Grading/Clearing/Hauling	Front-end Loader	1
	Grader	1
	Water Truck	2
	Dump/Haul Trucks	4
	Scraper	1
Underground Utility Construction	Track-mounted excavators	1
	Loader/Drill	1
	Backhoe	2
	Water Truck	2
	Boring machine/drill rig	?
	Concrete Truck	8
	Compactor	1
	Dump/Haul Trucks	2
	Flat-bed delivery trucks	?
	Helicopters (transmission line stringing)	1
Solar System Installation	Compressors/jack hammers	?
	Hydraulic Crane	2
	Dump/Haul Trucks	4
	Paver and roller	1
	Flat-bed delivery truck	1
	Forklift	

The projects will use energy-conserving construction equipment, including standard mitigation measures for construction combustion equipment recommended in the Imperial County Air Pollution Control District CEQA Air Quality Handbook as discussed in Section 4.3, Air Quality of this EIR. The use of better engine technology, in conjunction, with the ICAPCD's standard mitigation measures will reduce the amount of energy used for the projects. The standard mitigation measures for construction combustion equipment include:

- Using alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
- Minimizing idling time either by shutting equipment off when not in use or reducing the time of idling to five minutes as a maximum.
- Limiting the hours of operation of heavy-duty equipment and/or the amount of equipment in use.
- Replacing fossil fueled equipment with electrically driven equivalents (provided they are not run on a portable generator set).
- Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines.
- Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology.
- Keeping vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same.

Consistent with the intent of AB 32, the projects would demonstrate that there are policies in place that would assist in providing a statewide reduction in CO₂. The following greenhouse gas offset measures have been shown to be effective by CARB and would be implemented wherever possible.

Diesel Equipment (Compression Ignition) Offset Strategies (40% to 60% Reduction)

1. Use electricity from power poles rather than temporary diesel power generators.
2. Construction equipment operating on-site should be equipped with two to four degree engine timing retard or precombustion chamber engines.
3. Construction equipment used for the projects should utilize EPA Tier 2 or better engine technology.

Vehicular Trip (Spark Ignition) Offset Strategies (30% to 70% Reduction)

4. Encourage commute alternatives by informing construction employees and customers about transportation options for reaching your location (i.e. post transit schedules/routes).
5. Help construction employees rideshare by posting commuter ride sign-up sheets, employee home zip code map, etc.
6. When possible, arrange for a single construction vendor who makes deliveries for several items.
7. Plan construction delivery routes to eliminate unnecessary trips.
8. Keep construction vehicles well maintained to prevent leaks and minimize emissions, and encourage employees to do the same.

Implementation of ICAPCD's standard mitigation measures and the greenhouse gas offset measures listed above will ensure that the projects' energy consumption during construction is **less than significant**.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

Operational-Related Energy Consumption

The U.S. Energy Information Administration reports the net energy generation for the state from all sources is approximately 199,518,567 megawatt-hours (MW-h). Tables 4.14-13 and 4.14-14 provide a typical scenario for energy usage during generating and non-generating hours for the proposed projects. Each component would result in similar generating and non-generating hours. These energy usage amounts would be the same for FSF, RSF, ISF, and LSF. The projects are expected to use approximately 3.99 MW-h during generating hours and 5.82 MW-h during the non-generating hours, which is substantially less than the overall state energy usage level. With the use of energy-saving light bulbs and other energy conservation measures, this minimal usage of energy would not result in a significant impact. Furthermore, the electricity generation process associated with the projects would use solar PV (or CPV) technology to convert sunlight directly into electricity. Solar PV (or CPV) technology is consistent with the definition of an "eligible renewable energy resource" in Section 399.12 of the California Public Utilities Code and the definition of "in-state renewable electricity generation facility" in Section 25741 of the California Public Resources Code. The projects would generate renewable energy resources and is considered a beneficial effect rather than an impact. The transmission lines would not result in operational energy consumption. Therefore, a **less than significant** impact is identified for operational-related energy consumption.

Mitigation Measure(s)

No mitigation measures are required.

TABLE 4.14-13. GENERATING HOURS (PEAK ELECTRICITY CONSUMPTION)

	No. of Units	Power Requirements per Unit (W)	Total Power Consumption (kW)
Inverters Tare Losses	200	140	28
Inverter HVAC	200	1,400	280
O&M Building	1	50,000	50
SCADA System	1	5,000	5
Total Power Consumption by Plant (kW):			363.0
Total Electrical Consumption over 11 Hours (MW-h):			3.99

Source: ISE 2000. Imperial Solar Energy Center South Final EIR/EA, Chapter 7, page 7-8.

Assumptions:

Maximum 200 MW_{AC} power production from facility.

Maximum 1000 kW_{AC} voltage inverter size.

HVAC systems required for cooling of inverter assemblies.

Daily total of 11 hours of generation, 13 hours of non-generation.

TABLE 4.14-14. NON-GENERATING HOURS (PEAK ELECTRICITY CONSUMPTION)

	No. of Units	Power Requirements per Unit (W)	Total Power Consumption (kW)
Inverters Tare Losses	200	140	28
Inverter HVAC	200	1,400	280
O&M Building	1	50,000	50
SCADA System	1	5,000	5
House Lighting	485	175	84.9
Total Power Consumption by Plant (kW):			447.9
Total Electrical Consumption over 13 Hours (MW-h):			5.82

Source: ISE 2000. Imperial Solar Energy Center South Final EIR/EA, Chapter 7, page 7-8.

Assumptions:

Maximum 200 MW_{AC} power production from facility.

Maximum 1000 kW_{AC} voltage inverter size.

HVAC systems required for cooling of inverter assemblies.

Daily total of 11 hours of generation, 13 hours of non-generation.

IMPACT 4.14-5 *Result in Negative Effects on Local and Regional Energy Supplies Requiring Additional Capacity.*

The projects are the construction of a large utility scale renewable energy facility and would therefore provide additional capacity to the regional supply.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The projects would assist SDG&E in meeting California's mandate to procure 20 percent of its power from renewable resources. SDG&E has voluntarily committed to achieving 33 percent of its power from renewable resources by 2020. SDG&E's long-term plan includes a portfolio of renewable energy sources including biogas and biomass, geothermal, hydroelectric, wind, solar and fuel cells. Please see analysis discussion under Impact 4.14-1 above. The projects would not result in negative effects on local and regional energy supplies requiring additional capacity. Therefore, a **less than significant** impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Result in Increased Effects to Peak and Base Period Demands for Electricity and Other Forms of Energy.*
4.14-6

The projects would not result in increased effects to peak and base period demands for electricity and other forms of energy.

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Lines

Tables 4.14-13 and 4.14-14 above provide the expected energy usage during generating and non-generating hours for the proposed projects. Each component would result in similar generating and non-generating hours. These energy usage amounts would be the same for FSF, RSF, ISF, and the LSF. The projects would use 3.99 MW-h during generating hours and 5.82 MW-h during the non-generating hours, which is substantially less than the overall state energy usage level. With the use of energy-saving light bulbs and other energy conservation measures, this minimal usage of energy would not result in a significant impact. Furthermore, the electricity generation process associated with the projects would use solar PV (or CPV) technology to convert sunlight directly into electricity. Solar PV (or CPV) technology is consistent with the definition of an “eligible renewable energy resource” in Section 399.12 of the California Public Utilities Code and the definition of “in-state renewable electricity generation facility” in Section 25741 of the California Public Resources Code. The projects would generate renewable energy resources and therefore, this is considered a beneficial effect rather than an impact. The transmission lines would not have operational energy consumption.

Additionally, implementation of ICAPCD’s standard mitigation measures and the greenhouse gas offset measures listed above will ensure that the projects energy consumption during construction is **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

IMPACT *Result in Noncompliance with Existing Energy Standards.*
4.14-7 *The projects would assist SDG&E in meeting California’s mandate to procure 20 percent of its power from renewable resources.*

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Line

The electricity generation process associated with the projects would utilize solar technology to convert sunlight directly into electricity. Solar PV (or CPV) technology is consistent with the definition of an “eligible renewable energy resource” in Section 399.12 of the California Public Utilities Code and the definition of “in-state renewable electricity generation facility” in Section 25741 of the California Public Resources Code.

The use of energy associated with the projects includes both construction and operational activities. Implementation of ICAPCD’s standard mitigation measures and the greenhouse gas offset measures listed above will ensure that the projects energy consumption during construction is reduced to a level below significance. The projects would not result in noncompliance with existing energy standards. The projects would generate renewable energy resources, resulting in beneficial effects. Therefore, impacts would be **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

<i>IMPACT</i>	<i>Result in negative effects on energy resources.</i>
<i>4.14-7</i>	<i>The projects would assist SDG&E in meeting California's mandate to procure 20 percent of its power from renewable resources.</i>

Iris Cluster (FSF, RSF, ISF, and LSF) and Transmission Lines

The projects would not result in negative effects on energy resources. The projects would assist SDG&E in meeting California's mandate to procure 20 percent of its power from renewable resources, which is considered a beneficial impact. Therefore, impacts would be **less than significant**.

Mitigation Measure(s)

No mitigation measures are required.

4.14.3 Decommissioning/Restoration and Residual Impacts

Decommissioning/Restoration

It is anticipated that a small quantity of water would be required during decommissioning of the projects and site restoration at the end of the projects' 40-year life. However, it is anticipated that this water need would be less than what is required for construction and operation of the projects, and the amount of water usage would be similar to existing agricultural operations when crops are reintroduced at the project study areas. Therefore, a **less than significant** impact is identified and no mitigation is required. Decommissioning and restoration activities would not require energy so no impact is identified and no mitigation is required.

Residual

The projects will not result in significant impacts to the water supply or energy resources of Imperial County; therefore, no mitigation is required. The projects will not result in residual impacts.

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5.0 ANALYSIS OF LONG-TERM EFFECTS

5.1 GROWTH INDUCING IMPACTS

In accordance with Section 15126.2(d) of the California Environmental Quality Act (CEQA) Guidelines, an Environmental Impact Report (EIR) must:

“discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth ... Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.”

Projects promoting direct growth will impose burdens on a community by directly inducing an increase in population, or resulting in the construction of additional developments in the same area. For example, infrastructure projects involving the expansion, modifications, or additions to infrastructure could have the potential to directly promote growth by removing existing physical barriers or allowing for additional development through capacity increases. New roadways leading into a previously undeveloped area directly promote growth by removing previously existing physical barriers to development and a new wastewater treatment plant would allow for further development within a community by increasing infrastructure capacity. Because these types of infrastructure projects directly serve related projects and result in an overall impact to the local community, associated impacts cannot be considered isolated. Indirect growth typically includes substantial new permanent employment opportunities and can result from these aforementioned modifications.

The proposed projects are located within the unincorporated area of Imperial County and do not involve the development of permanent residences that would result in a direct population growth in the area. The proposed projects involve the construction and operation of a solar facilities and transmission facilities that would be located along local roadways. According to the project applicant, the construction workforce is expected to reach a peak of approximately 400 temporary workers for construction of the projects. The unemployment rate in Imperial County, as of April 2014 (not seasonally adjusted) was 21.6 percent. The applicant expects to utilize construction workers from the local and regional area. Based on the unemployment rate, and the availability of the local workforce, construction of the proposed projects would not have a growth-inducing effect related to workers moving into the area and increasing the demand for housing and services. After the construction of the proposed projects, no permanent construction workers would be hired. The proposed projects would only require the employment of 24 full-time personnel in total to maintain the project facilities seven days a week during normal daylight hours. As such, the proposed projects would not induce substantial population growth in the area.

While the proposed projects would contribute to energy supply, which indirectly supports population growth, the proposed development of these projects is a response to the State's need for renewable energy to meet its Renewable Portfolio Standard. Unlike a gas-fired power plant, the proposed projects are not being developed as a source of base-load power in response to growth in demand for electricity. The power generated would be added to the State's electricity grid with the intent that it would displace fossil fueled power plants and their associated environmental impacts, consistent with the findings and declarations in Senate Bill 2 (2011) that a benefit of the Renewable Portfolio Standard is displacing fossil fuel consumption within the state. In addition, the Energy Policy Act of 2005 (Title II, Section 211) helps the Department of Interior (DOI) work towards achieving the goal of approving at least 10,000 megawatts (MW) of renewable energy on public lands by 2015. The projects are being proposed in response to State and Federal policy and legislation promoting development of renewable energy.

The proposed projects would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth because (1) the additional energy would be used to ease the burdens of meeting existing statewide energy demands within and beyond the area of the project sites; (2) the energy would be used to support already-projected growth; or, (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and uncertain to merit further analysis.

Under CEQA, an EIR should consider potentially significant energy implications of a project (see CEQA Guidelines Appendix F(II); Pub. Res. Code Section 21100(b)(3)). However, the relationship between the proposed project's increased electrical capacity and the growth-inducing impacts outside the surrounding area is too speculative and uncertain to warrant further analysis. When a project's growth-inducing impacts are speculative, the lead agency should consider 14 California Code of Regulations §15145, which provides that, if an impact is too speculative for evaluation, the agency should note this conclusion and terminate discussion of the impact. As the court explained in *Napa Citizens for Honest Gov't v. Napa County Board of Supervisors* (2001) 91 Cal. App.4th 342, 368: "Nothing in the Guidelines, or in the cases, requires more than a general analysis of projected growth." *Napa Citizens*, 91 CA4th at 369. The problem of uncertainty of the proposed project's growth-inducing effects cannot be resolved by collection of further data due to the diversity of factors affecting growth.

While this document has considered that the proposed projects, as energy projects, might foster regional growth, the particular growth that could be attributed to the proposed projects is unpredictable, given the multitude of variables at play, including uncertainty about the nature, extent, and location of growth and the effect of other contributors to growth besides the proposed projects. No accurate and reliable data is available that could be used to predict the amount of growth outside the area that would result from the proposed project's contribution of additional electrical capacity. The County of Imperial has not adopted a threshold of significance for determining when an energy project is growth-inducing. Further evaluation of this impact is not required under CEQA.

Additionally, the projects would not involve the development of any new roadways, new water systems, or sewer and thus, the projects would not further facilitate additional development into outlying areas. Potable water would be trucked into each of the sites to serve the Operations and Maintenance (O&M) buildings. Sewage treatment for the O&M buildings will be served by a septic system. Therefore, infrastructure improvements to serve each of the projects are limited and would not be available to serve surrounding areas. For these reasons, none of the projects would be growth-inducing.

5.2 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

In accordance with CEQA Guidelines Section 15126.2(c), an EIR must identify any significant irreversible environmental changes that would be caused by implementation of the proposed projects being analyzed. Irreversible environmental changes may include current or future commitments to the use of non-renewable resources or secondary growth-inducing impacts that commit future generations to similar uses.

Energy resources needed for the construction of the proposed projects would contribute to the incremental depletion of renewable and non-renewable resources. Resources such as timber used in building construction are generally considered renewable and would ultimately be replenished. Non-renewable resources such as petrochemical construction materials, steel, copper, lead and other metals, gravel, concrete, and other materials are typically considered finite and would not be replenished over the lifetime of each of the projects. Thus, the projects would irretrievably commit resources over the anticipated 40-year life of the projects. However, after 40 years, these projects are planned to be decommissioned and the project applicant is required to restore land to its pre-project state. Consequently, some of the resources on the sites could potentially be retrieved after the sites have been decommissioned. The applicant anticipates using the best available recycling measures at the time of decommissioning. Additionally, the project applicant will implement a ~~reclamation~~ restoration plan which will include a performance standard to assess the success of post-project vegetation.

Implementation and operation of the proposed projects would promote the use of renewable energy and contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes. Therefore, the incremental reduction in fossil fuels would be a positive effect of the commitment of nonrenewable resources. Additionally, the projects are consistent with future buildout plans for the project study areas under the General Plan as well as with the State's definition of an "eligible renewable energy resource" in Section 399.12 of the California Public Utilities Code and the definition of "in-state renewable electricity generation facility" in Section 25741 of the California Public Resources Code.

5.3 UNAVOIDABLE ADVERSE IMPACTS

In accordance with CEQA Guidelines Section 15126(b), EIRs must include a discussion of significant environmental effects that cannot be avoided if the proposed project is implemented. The impact analysis, as detailed in Section 4.0 of this Draft EIR, concludes that no unavoidable significant impacts were identified. Where significant impacts have been identified, mitigation measures are proposed, that when implemented, would reduce the impact level to less than significant.

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6.0 CUMULATIVE IMPACTS

This Environmental Impact Report (EIR) provides an analysis of overall cumulative impacts of the projects with other past, present, and probable future projects producing related impacts, as required by the State California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations [CCR] Section 15130). The purpose of this analysis is twofold: first, to determine whether the overall long-term impacts of all such projects would be cumulatively significant and second, to determine whether the projects would cause a “cumulatively considerable” (and thus significant) incremental contribution to any such cumulatively significant impacts (see the State CEQA Guidelines [CCR Sections 15064(h), 15065(c), 15130(a), 15130(b), and 15355(b)]. In other words, the required analysis first creates a broad context in which to assess the projects’ incremental contribution to anticipated cumulative impacts, viewed on a geographic scale well beyond the project sites themselves. The analysis then determines whether the projects’ incremental contribution to any significant cumulative impacts from all projects is itself significant (i.e., “cumulatively considerable”).

Cumulative impacts are defined in the State CEQA Guidelines (CCR Section 15355) as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact occurs from “the change in the environment which results from the incremental impact of the projects when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time” (CCR Section 15355[b]).

Consistent with the State CEQA Guidelines (CCR Section 15130[a]), the discussion of cumulative impacts in this EIR focuses on significant and potentially significant cumulative impacts. The State CEQA Guidelines (CCR Section 15130[b]) state that:

The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the projects alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

Where feasible, mitigation measures for cumulative impacts are provided along with the analysis of each issue area in Section 6.3 below. In those cases where project-specific mitigation measures would reduce the cumulative level of significance, those mitigation measures are identified. This EIR evaluates the cumulative impacts of the projects for each resource area, using the following steps:

- (1) Define the geographic and temporal scope of cumulative impact analysis for each cumulative effects issue, based on the project’s reasonably foreseeable direct and indirect effects.
- (2) Evaluate the cumulative effects of the projects in combination with past and present (existing) and reasonably foreseeable future projects in the study areas and, in the larger context of the Imperial Valley.
- (3) Evaluate the projects’ incremental contribution to the cumulative effects on each resource considered in Chapter 4, Environmental Analysis. When the projects’ incremental contribution to a significant cumulative impact is considerable, mitigation measures to reduce the projects’ “fair share” contribution to the cumulative effect are discussed, where required.

6.1 GEOGRAPHIC SCOPE AND TIMEFRAME OF THE CUMULATIVE EFFECTS ANALYSIS

The geographic area of cumulative effects varies by each resource area considered in Chapter 4. For example, air quality impacts tend to disperse over a large area, while traffic impacts are typically more localized. Similarly, impacts to the habitats of special-status wildlife species need to be considered within its range of movement and associated habitat needs. The analysis of cumulative effects in this EIR

considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the project sites and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects of a project, but not beyond the scope of the direct and indirect effects of that project.

The cumulative development scenario includes projects that extend through year (2030), which is the planning horizon of the County of Imperial General Plan. Likewise, the lease term for the solar fields is 40 years with land restoration commencing thereof. It is likely that other similar projects would be developed between the year 2030 and the end of the lease term. However, due to uncertain development patterns that far in the future, it is too speculative to accurately determine the type and quantity of cumulative projects beyond the planning horizon of the County's adopted County General Plan.

6.2 PROJECTS CONTRIBUTING TO POTENTIAL CUMULATIVE IMPACTS

The CEQA Guidelines identify two basic methods for establishing the cumulative environment in which the projects are to be considered: the use of a list of past, present, and probable future projects (the "list approach") or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the "plan approach"). For this EIR, the list approach has been utilized to generate the most reliable future projections of possible cumulative impacts. When the impacts of the projects are considered in combination with other past, present, and future projects to identify cumulative impacts, the other projects considered may also vary depending on the type of environmental impacts being assessed. As described above, the general geographic area associated with different environmental impacts of the projects defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. Figure 6-1 provides the general location for each of these projects in relation to the project study areas.

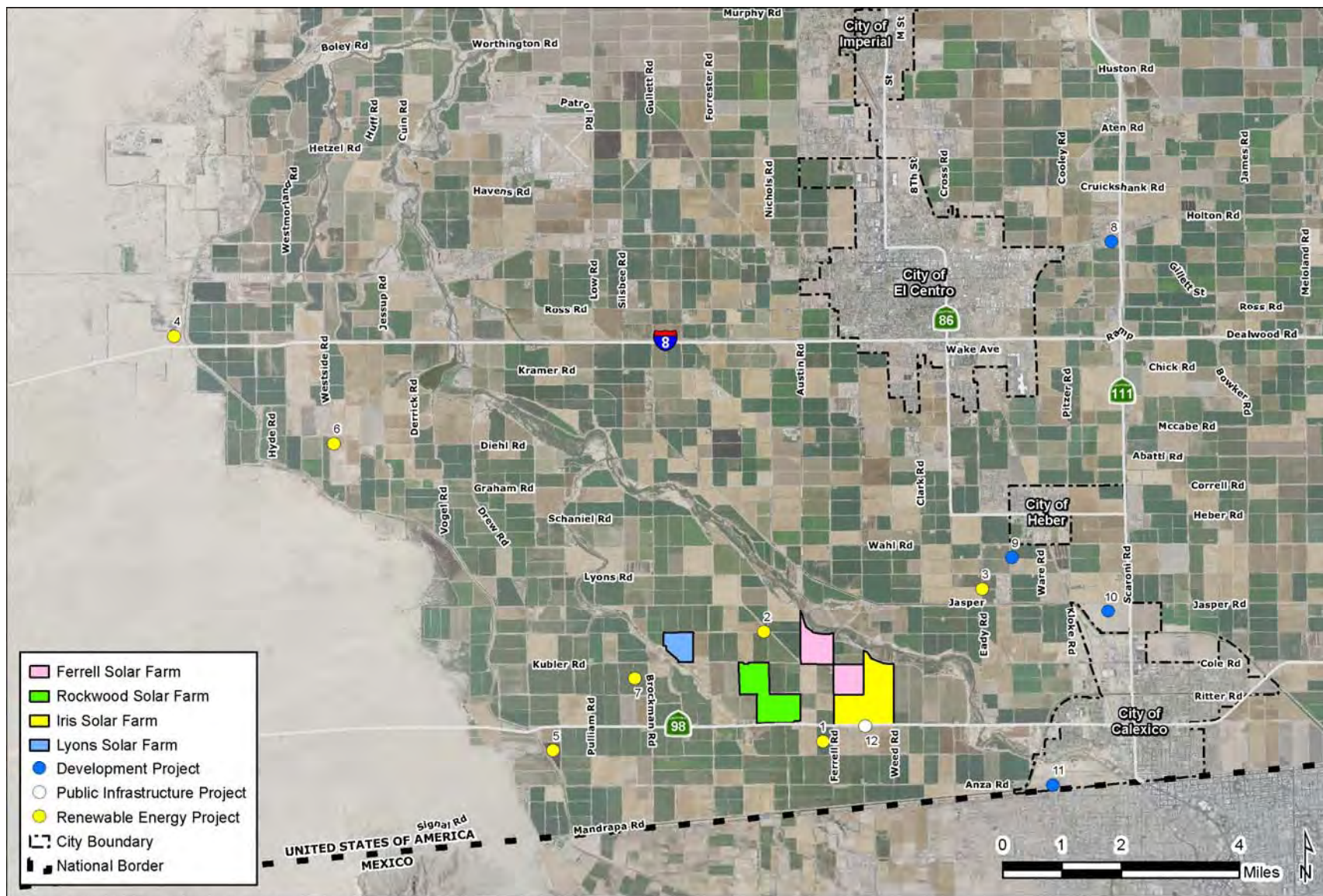
6.3 CUMULATIVE IMPACT ANALYSIS

This cumulative impact analysis utilizes an expanded list method (as defined under CEQA) and considers environmental effects associated with those projects identified in Table 6-1 in conjunction with the impacts identified for the projects in Chapter 4 of this EIR. Table 6-1 includes projects known at the time of release of the Notice of Preparation (NOP) of the Draft EIR, as well as additional projects that have been proposed since the NOP date. Figure 6-1 provides the general geographic location for each of these projects.

6.3.1 Aesthetics

The cumulative study area for projects considered in the visual resources cumulative impact analysis considers a five mile radius from the project sites. Views beyond five miles are obstructed by a combination of the flat topography coupled with the Earth's curvature. The short-term visual impacts of the projects would be in the form of general construction activities including grading, use of construction machinery, and installation of the transmission poles and stringing of transmission lines. Longer-term visual impacts of the projects would be in the form of the presence of solar array grids, inverter modules and transformer stations, an electrical distribution and transmission system, operations and maintenance (O&M) buildings, and, substations (where constructed). The projects would be enclosed by a security fence, significantly limiting views onto the site, and screening most of the proposed equipment at the site from adjacent and nearby roadways.

Figure 6-1. Cumulative Projects



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TABLE 6-1. PROJECTS CONSIDERED IN THE CUMULATIVE IMPACT ANALYSIS

Project Name	Description of Project	Size/ Location	Status
Solar and Electrical Transmission Projects			
Mount Signal and Calexico Solar Farm Projects	<p>The proposed projects consist of five separate CUP and Variance applications for the following properties:</p> <ul style="list-style-type: none"> • Mount Signal Solar Farm • Calexico Solar Farm 1 Phase A • Calexico Solar Farm 1 Phase B • Calexico Solar Farm 2 Phase A • Calexico Solar Farm 2 Phase B. <p>The projects involve the construction and operation of solar energy facilities and transmission infrastructure, and supporting uses.</p>	The project sites encompass a total of 4,228 acres of land located approximately six miles west of Calexico, California in southern Imperial County (see #1 in Figure 6-1).	Approved in April 2012. Construction has begun on the Mount Signal Solar Farm and Solar Farm 2 Phase B sites.
Wistaria Ranch Solar	Proposed solar farm. Additional details not available.	3,288-acre site (see #2 in Figure 6-1)	In Progress
Imperial Solar 1 LLC (Heber Solar Energy Facility)	Proposed solar farm. Additional details not available.	North of Jasper Road and east of Corfman Road (see #3 in Figure 6-1).	Application filed with County.
Imperial Solar Energy Center–West (CACA-51644)	Imperial Solar Energy Center–West consists of two primary components: (1) the construction and operation of the 250 MW Imperial Solar Energy Center West solar energy facility; and (2) the construction and operation of the electrical transmission line and associated access/ maintenance road that would connect from the solar facility to the existing Imperial Valley substation. The development of the solar energy center is on 1,130 acres of vacant land previously utilized for agricultural purposes.	North of I-8 and immediately west of Westside Main Canal (see #4 in Figure 6-1).	Final EIR certified in June 2011.
Imperial Solar Energy Center–South (CACA51645)	The Imperial Solar Energy Center–South consists of the construction and operation of the 200 MW Imperial Solar Energy Center South solar energy facility; the construction and operation of the electrical transmission lines that would connect from the solar power facility to the existing Imperial Valley substation; and widening of an existing access road along the west side of the Westside Main Canal.	The site is located on 946.6 gross acres of privately-owned, undeveloped and agricultural lands, in the unincorporated County. Immediately west of study area (see #5 in Figure 6-1).	FEIR certified by County in September 2011; BLM adopted FONSI for EA in August 2011.
Campo Verde Solar	The Campo Verde Project is located on a 1,400-acre site. The electricity generated at the facility powers nearly 48,000 homes.	Accessed by Diehl Road and south of I8 (see #6 in Figure 6-1).	Approved. Commercial operation began in October 2013.
Centinela Solar Power, LLC	A 170 MW solar power plant located on 2,067 acres of previously disturbed private land.	Approximately 10 to 12 miles southwest of El Centro, Imperial County (see #7 in Figure 6-1).	Approved on December 27, 2011.
Other Projects			
Alder 70	A Specific Plan including a mix of single-family detached residences, attached townhomes, a cluster of manufactured homes and a commercial area consisting of a self-storage facility and a small business area.	South of Gillett Road, west of SR-111, and, east of the City of El Centro (see #8 in Figure 6-1).	Draft EIR issued March 2009.

6.0 Cumulative Impacts

Project Name	Description of Project	Size/ Location	Status
Mosaic	The Mosaic project is a residential project of 1,156 single-family units and 2.7 acres of commercial.	Located in the County of Imperial. South of SR-86 and bisected by Dogwood Ranch (see #9 in Figure 6-1).	EIR in process.
Manzanita Casino	A mixed-use project of residential, commercial, and casino. The casino facility would include an approximately 93,880 square foot casino; 63,000 square feet of food/beverage and retail components; 38,660 square foot entertainment venue; and, 218,081 square feet of other operational facilities.	Southwest corner of SR-111 and Jasper Road (see #10 in Figure 6-1).	Approved.
Calexico Gran Plaza	The project applicant (Charles Company) proposes to develop the site with a total of approximately 561,650 square feet of commercial/retail uses.	The approximately 62-acre project site abuts the Mexican border in the southwestern portion of the City of Calexico (see #11 in Figure 6-1).	Existing
SR-98 Widening, SR-111 to SR-7	The plan calls for widening and/or realigning SR-98 between SR-111 and SR-7 from two to four lanes (six in some locations).	East of Calexico (see #12 in Figure 6-1)	Construction date unknown; subject to funding.

Source: Compiled by HDR 2014.

As provided in Section 4.1, Aesthetics, the solar facility portions of the project sites are comprised of an agricultural landscape that is altered from its natural desert landscape. Although the projects would entail a substantial change in the existing visual character of the project area to solar generating uses and transmission infrastructure, these uses would be located in an area with a general lack of any distinctive visual features, such as varied topography or other topographical features. These factors all contribute to only low to moderate levels of vividness and intactness. Because the visual changes associated with the projects would be located in a remote area viewed by a minimal number of people, the project sites are not located within scenic vistas, and are not readily viewable from any frequently travelled interstates or scenic highways. Additionally, with the exception of the transmission line, the projects' structural features would generally be less than 30 feet in height and, therefore, would not substantially disrupt background view of mountains to the west and association landscape unity. Further, the project sites would be restored to agricultural uses following the decommissioning of the solar uses. As a result, although the visual character of the project area would change from that of a rural agricultural nature to one with developed characteristics, a less than significant impact associated with the proposed projects has been identified.

Development of the proposed projects in conjunction with the cumulative projects identified in Table 6-1 will gradually change the visual character of this portion of the Imperial Valley. Projects located within private lands and/or under the jurisdiction of the County of Imperial are being designed in accordance with the County of Imperial's General Plan and Land Use Ordinance, which includes policies to protect visual resources in the County.

Cumulative projects including the Imperial Solar Energy Center South, Imperial Solar Energy Center West, Centinela, Wistaria Ranch, Campo Verde, and others south of Interstate 8 (I-8) would not have a cumulative effect on a scenic vista because they are located in an area that is not identified as a designated scenic resource and would not affect a scenic vista. All cumulative projects would not impact scenic resources within a state scenic highway as no designated state scenic highway is located within five miles of these cumulative projects.

Finally, all projects listed in Table 6-1 would not produce a substantial amount of light and glare, as no significant source of light or glare is proposed, or the projects will otherwise comply with the County lighting ordinance. Based on these considerations, no significant cumulatively considerable aesthetic impact is anticipated.

6.3.2 Agriculture and Forestry Resources

The geographic scope of cumulative impacts related to agricultural resources is Imperial County because the Imperial Valley Agricultural Complex is 500,000 acres of more-or-less contiguous farm fields located in the Imperial Valley and surrounded by desert and mountain habitat. Irrigated agriculture within the Imperial Valley is made possible by the Colorado Aqueduct. The timeframe considered is the life of the projects since the land would be returned to agriculture after the projects are dismantled in accordance with a project-specific Reclamation Restoration Plan.

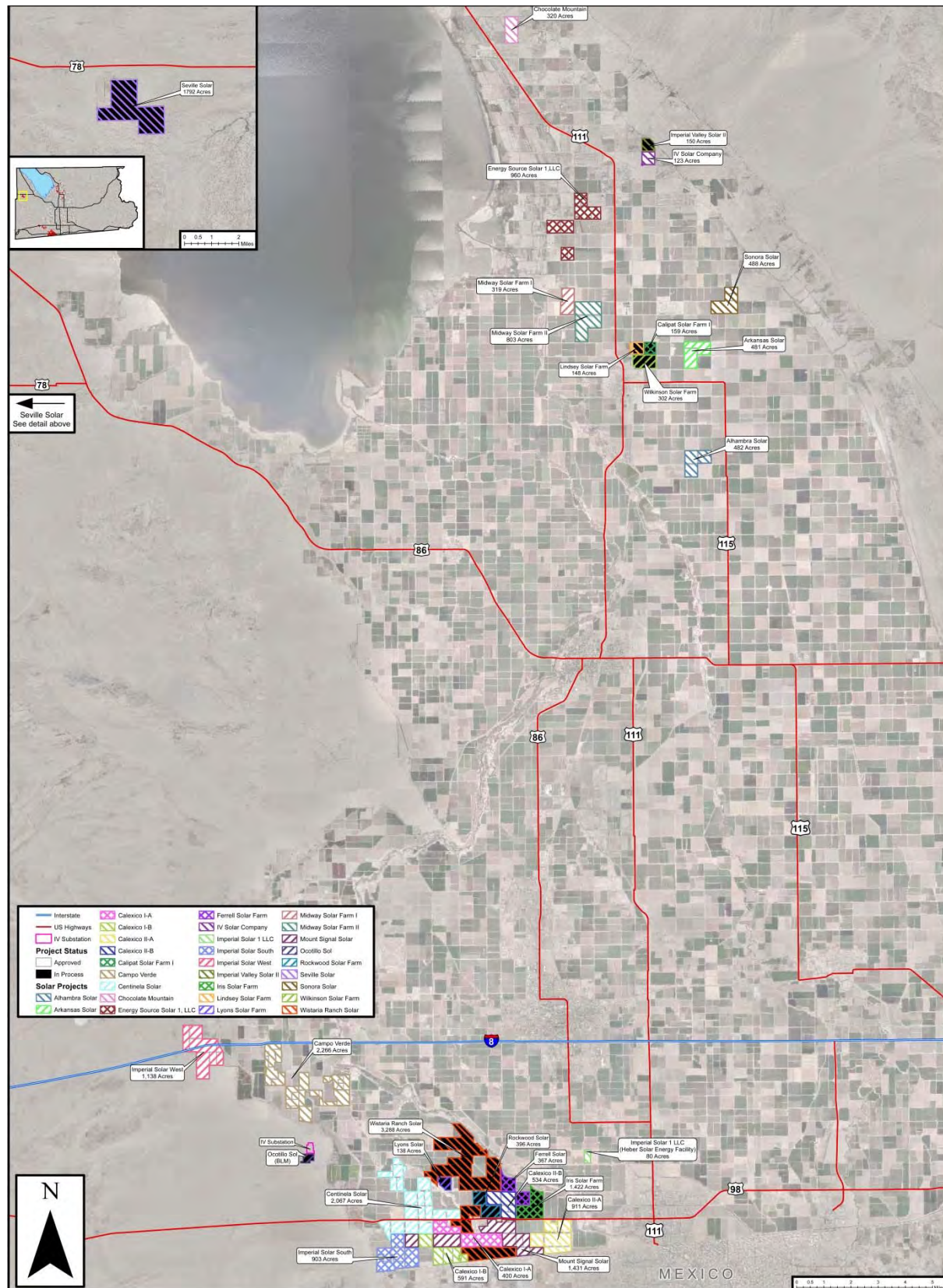
Continuing development within the Imperial County would result in the conversion of land currently utilized for agricultural production to urban and other land uses. This agricultural conversion has been a continuing trend in the County; based on Department of Conservation (DOC) farmland conversion reports (see Table 4.2-1). Since 1984, the DOC has recorded an approximately 21,190-acre reduction in important farmland to non-agricultural use (DOC 2010). Of this total, approximately 18,368 acres were designated as Prime Farmland. Based on records maintained by DOC, the annual average loss in Important Farmland within the County is approximately 883 acres; with 765 acres designated as Prime Farmland and 296 acres designated as Farmland of Statewide Importance (DOC 2010).

Up until a few years ago, agricultural land conversion in the County was attributable to more traditional types of development, such as residential subdivisions. However, the residential housing market has fallen, but has been essentially replaced with an influx of renewable energy projects. In particular, the County has experienced a rapid influx of applications for solar development in very recent years. Currently, there are approximately 29 solar-related projects, including FSF, RSF, ISF and LSF, proposed within the County. Figure 6-2 depicts the various proposed solar projects in the County and their relationship to agricultural lands. The cumulative projects identified in Table 6-1 for which acreages of impacts is available would impact approximately 11,343 acres of farmland; for other projects, quantitative information was not available and, therefore, was not included within this evaluation. It is anticipated that up to 20,000 acres of farmland could be converted from agricultural uses to alternative energy projects. This acreage corresponds to a theoretical Megawatt Production that is essentially limited by the ultimate capacity of existing and planned transmission lines that would carry the power to other regions. While approximately 11,343 acres of farmland are proposed for solar energy use, it should also be noted that many of these projects may not ultimately be realized as they may not be able to obtain Power Purchase Agreements (PPAs) with applicable energy companies.

As discussed in Section 4.2, Agricultural Resources, the projects would result in the temporary conversion of 1,4004,422 acres of Important Farmland, which would correspond with the duration of the lease of the properties for solar farm use. With the implementation of Mitigation Measure 4.2-1, this impact would be reduced to a level less than significant. As with the projects, cumulative projects would be required to provide mitigation for any impacts to agricultural resources. The cumulative impact associated with project-related agricultural conversion is less than 0.3 percent (1,4004,422 acres/539,273 total acres) of all County-wide Important Farmlands. The projects' conversion of up to 160.4 acres of Prime Farmland is approximately 20 percent of the annual average on record with the DOC. Mitigation Measure 4.2-1a is proposed to minimize this impact to a less than significant level.

Cumulative projects would be required to provide mitigation for any impacts to agricultural resources. Current agricultural acreage in the County for alfalfa and Bermuda grass alone is approximately 415,365 acres. County-wide Important Farmland totaled 473,311 acres in 2013. In the County, the amount of agricultural land in production in any one year varies widely. Tens of thousands of acres of farmland is either out of production or intentionally fallowed at any given time. The cumulative impact of the projects quantified falls well within the annual variation of out-of-production/fallowed farmland.

Figure 6-2. Proposed Solar Projects in Imperial County



Combined, the cumulative impact of agricultural conversion associated with the theoretical megawatt (MW) production is conservatively estimated at approximately 3.7 percent of all County-wide Important Farmland with the assumption that all the land converted is "Important." For all of these reasons, the contribution of the proposed projects to any potentially significant loss of farmland, if any, would not be considerable. The incremental impact of the loss of 1,4004,422 acres of farmland would be mitigated via full restoration of the project study areas to comparable agricultural production post-project, purchase of an agricultural easement at a 2:1 ratio, or payment into the County's agricultural mitigation fund, which the County uses at its discretion to mitigate for farmland loss consistent with its General Plan policies.

Imperial Irrigation District (IID) currently implements a fallowing program with willing land owners and/or lessees with the IID to fallow fields to meet IID's Salton Sea mitigation water needs for the first 15 years of the IID's Quantification Settlement Agreement Compromise Delivery Schedule. Starting in 2018, efficiency conservation replaces all fallowing. Each field's participation in the fallowing program is limited to two out of every four years. As a result, notwithstanding the landscape changes attributable to the projects, tens of thousands of acres of farmland are either out of production or intentionally fallowed at any given time within the Imperial Valley. In this context, the projects' impacts to agriculture would fall well within this annual variation of out-of-production/fallowed farmland and, therefore, is not cumulatively considerable.

Given that the incremental impact of the loss of approximately 1,4004,422 acres would be mitigated via full restoration of the project sites per the project ~~Reclamation~~ Restoration Plan to comparable agricultural production under post-project conditions, following the conclusion of the lease, project-related agricultural conversion impacts would be minimized to a less than significant level. Additionally, with the County's decision to no longer participate in the Williamson Act program, parcels under existing active contracts within the project sites are anticipated to convert to non-renewal status with or without the projects. Nevertheless, based on criteria presented in the CEQA Guidelines, the cancellation of properties contracted under the Williamson Act to facilitate the projects is considered significant from a broader perspective and requires the application of Mitigation Measure 4.2-1a to reduce the impact to a less than significant level. Based on these circumstances, the projects would not result in any residual impacts to agricultural resources that could otherwise be cumulatively considerable.

6.3.3 Air Quality

The Salton Sea Air Basin (SSAB) is used as the geographic scope for the analysis of cumulative air quality impacts due to the geographic factors which are the basis for designating the SSAB, the existence of an Air Quality Management Plan (AQMP), State Implementation Plan (SIP), and requirements set forth by the Imperial County Air Pollution Control District (ICAPCD), which apply to both the construction and operational aspects of all cumulative projects within the SSAB. Table 6-1 lists the projects considered for the air quality cumulative impact analysis. As shown in Table 6-1, many of these projects are large-scale renewable energy generation projects, where the main source of air emissions would be generated during the construction phases of these projects; however, there would also be limited operational emissions associated with operations and maintenance activities for these facilities.

As identified in Section 4.3, Air Quality, currently the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of 8-HOUR ozone, PM₁₀, and PM_{2.5}. More specifically, Imperial County is classified as a "serious" non-attainment area for PM₁₀ and a "moderate" non-attainment area for 8-hour ozone for the National Ambient Air Quality Standards (NAAQS) and non-attainment for PM_{2.5} for the urban areas of Imperial County.

The Air Quality Attainment Plan (AQAP) for the SSAB, through the implementation of the AQMP (previously AQAP) and SIP for PM₁₀, sets forth a comprehensive program that will lead the SSAB into compliance with all federal and state air quality standards. With respect to PM₁₀, the ICAPCD implements Regulation VIII – Fugitive Dust Rules, to control these emissions and ultimately lead the basin into compliance with air standards, consistent with the AQAP. Within Regulation VIII are Rules 800 through 806, which address construction and earthmoving activities, bulk materials, carry-out and track-out, open areas, paved and unpaved roads, and conservation management practices. Best Available Control

Measures to reduce fugitive dust during construction and earthmoving activities include but are not limited to:

- Phasing of work in order to minimize disturbed surface area;
- Application of water or chemical stabilizers to disturbed soils;
- Construction and maintenance of wind barriers; and
- Use of a track-out control device or wash down system at access points to paved roads.

Compliance with Regulation VIII is mandatory on all construction sites, regardless of size. However, compliance with Regulation VIII does not constitute mitigation under the reductions attributed to environmental impacts. In addition, compliance for a project includes: (1) the development of a dust control plan for the construction and operational phase; and (2) notification to the air district is required 10 days prior to the commencement of any construction activity.

Construction

Potential short-term impacts of the proposed FSF, RSF, ISF, and LSF projects would result due to vehicle and dust emissions associated with construction activities. Similar effects would also be realized upon site decommissioning, which would be carried out in conjunction with the projects' restoration plan, and subject to applicable ICAPCD standards. Likewise, the other cumulative projects identified in Table 6-1 would result in the generation of air emissions during construction activities.

With respect to the proposed FSF, RSF, ISF, and LSF projects, during the construction and decommissioning phases, the projects would generate particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), reactive organic gas (ROG), and nitrogen oxide (NO_x) emissions during each active day of construction.

The applied thresholds for PM_{10} and NO_x would be exceeded by air emissions during construction, which represents a significant air quality impact. The projects' impact could be cumulatively considerable because: (1) portions of the SSAB are nonattainment already (PM_{10} and $PM_{2.5}$), although mitigated by ICAPCD Regulations as discussed above; and, (2) project construction would occur on most days, including days when ozone already in excess of State standards. Additionally, the effects would again be experienced in the future during decommissioning in conjunction with site restoration. With the implementation of the mitigation prescribed in Section 4.3, Air Quality, construction-related air quality emissions as a result of the proposed projects would be reduced to a level less than significant. The proposed projects, in conjunction with the construction of other cumulative projects as identified in Table 6-1 could result in a cumulatively considerable increase in the generation of PM_{10} and NO_x ; however, like the proposed projects, cumulative projects would be subject to mitigation as pursuant to County ICAPCD's Regulations and Rules, and the cumulative impact would be reduced to a level less than significant through compliance with these measures. Because the projects will be required to implement measures consistent with ICAPCD regulations designed to alleviate the cumulative impact associated with PM_{10} , the proposed project's contribution is rendered less than cumulatively considerable.

Operation

In the long-term, operation of the FSF, RSF, ISF, and LSF projects would result in minor emissions associated with operation and maintenance activities. Table 4.3-11 (see Section, 4.3 Air Quality) summarizes the operational air emissions associated with the projects, and indicates that all operational emissions would not exceed significance thresholds; therefore, the impact would be less than significant. Operational impacts of other renewable energy facilities identified in Table 6-1 would also be similar, as, although these cumulative projects involve large areas, their operational requirements are very minimal, requiring minimal staff or use of machinery or equipment that generate emissions. Further, alternative energy projects, such as the projects, would assist attainment of regional air quality standards and improvement of regional air quality by providing clean, renewable energy sources. Consequently, the projects would provide a positive contribution to the implementation of applicable air quality plan policies and compliance with Executive Order S-3-05.

However, from a cumulative air quality standpoint, the potential cumulative impact associated with the generation of PM₁₀ and PM_{2.5} emissions during operation of the cumulative projects is a concern due to the fact that Imperial County is classified as a "serious" non-attainment area for PM₁₀ and a "moderate" non-attainment area for 8-hour ozone for the NAAQS and non-attainment for PM_{2.5} for the urban areas of Imperial County. With respect to PM_{2.5}, the cumulative development identified in Table 6-1, including the proposed projects are not located within urban areas of the Imperial Valley, therefore, the contribution of PM_{2.5} emissions is not considered cumulatively considerable.

As shown in Table 4.3-10, the projects' operational contribution to PM₁₀ is below a level of significance. However, when combined with other cumulative projects, the operational PM₁₀ emissions would likely exceed daily thresholds which is considered a potentially significant cumulative impact. As with the construction phases, the cumulative projects would be required to comply with ICAPCD's Regulation VIII for dust control (Regulation VIII applies to both the construction and operational phases of projects). As a result, the ICAPCD would require compliance with the various dust control measures and may, in addition be required to prepare and implement dust control plans as approved by the ICAPCD, which is a component of ICAPCD's overall framework of the AQAP for the SSAB, which sets forth a comprehensive program that will lead the SSAB into compliance with all federal and state air quality standards. Therefore, the projects would not contribute to long-term cumulatively considerable air quality impacts and the projects would not result in cumulatively significant air quality impacts.

6.3.4 Biological Resources

The geographic scope for considering cumulative impacts on biological resources includes the Imperial Valley and related biological habitats. The geographic scope also allows for the consideration of the Pacific Migration Flyway. Table 6-1 lists the projects considered for the biological resources cumulative impact analysis.

In general terms, in instances where a potential impact could occur, the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) have promulgated a regulatory scheme that limits impacts to these species. The effects of the projects would be rendered less than significant through mitigation requiring compliance with all applicable regulations that protect plant, fish, and animal species, as well as waters of the U.S. and State. Other cumulative projects in the project study areas would also be required to avoid impacts to special-status species and/or mitigate to the satisfaction of the CDFW and USFWS for the potential loss of habitat. As described in Section 4.4, Biological Resources, the projects have the potential to result in impacts to biological resources. These impacts are generally focused on potential construction-related affects to burrowing owl, raptor species, migratory birds, mountain plover, long billed curlew, short billed dowitcher, horned lark, and loggerhead shrike.

Burrowing Owls are protected by the CDFW mitigation guidelines for burrowing owl (2012) and Consortium guidance (1993), which require a suite of mitigation measures to ensure direct effects to burrowing owls during construction activities are avoided and indirect effects through burrow destruction and loss of foraging habitat are mitigated at prescribed ratios. Mitigation Measures 4.4-1a and 4.4-1b contain these requirements thereby minimizing potential impacts to these species to a less than significant level. Additionally, as provided in Section 4.4, Biological Resources, the project sites contain suitable habitat for migratory birds, raptors, mountain plover, long billed curlew, short billed dowitcher, horned lark, and loggerhead shrike. As a result of project-related construction activities, one or more of these species could be harmed. However, with the implementation of Mitigation Measures 4.4-1e, 4.4-1f, and 4.4-1g as identified in Section 4.4 Biological Resources, these impacts would be reduced to a level of less than significant. Similarly, the cumulative projects within the geographic scope of the projects would be required to comply with the legal framework as described above. Based on these considerations, impacts to biological resources would not be cumulatively considerable.

As with the proposed projects, each of the cumulative projects would be required to provide mitigation for impacts to biological resources. Although some quantitative information regarding cumulative project biological impacts was available, such information was not available for most. Therefore, the analysis below is conducted qualitatively and in the context that the cumulative projects would be subject to a variety of statutes and administrative frameworks that require mitigation for impacts to biological resources.

Birds listed at 50 CFR 10.3 are protected by the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), a Federal statute that implements treaties with several countries on the conservation and protection of Birds listed at 50 CFR 10.3 are protected by the MBTA (16 U.S.C. 703 et seq.), a Federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The MBTA is enforced by USFWS. This act prohibits the killing of any migratory birds without a valid permit. Any activity which contributes to unnatural migratory bird mortality could be prosecuted under this act. With few exceptions, most birds are considered migratory under this act. Raptors and active raptor nests are protected under California Fish and Wildlife Codes 3503.5, 3503, 3513.

The Federal Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act provide protection for water-related biological resources by controlling pollution, setting water quality standards, and preventing jurisdictional streams, lakes, and rivers from being filled without a federal permit. No jurisdictional wetlands are located with the project sites or off-site transmission area that could otherwise be directly impacted by construction of the proposed projects. Likewise, Mitigation Measures 4.9-1a and 4.9-4 would be required to avoid or minimize potential water quality impacts that could otherwise indirectly impact biological resources.

The proposed projects would comply with these and other laws, regulations and guidelines and therefore would not contribute substantially to a cumulative biological resources impact. Similarly, the cumulative actions within the geographic scope of the proposed projects will be required to comply with the legal frameworks set forth above, as well as others. The cumulative actions will be required to mitigate their impacts to a less than significant level.

Indirect Impacts to Salton Sea

The proposed projects will result in a temporary fallowing of agricultural land as a result of conversion of the project sites to solar energy generation uses. Other cumulative projects which are proposed on privately-owned agricultural land will also result in this temporary conversion. Unlike a permanent conversion of agricultural land to urban or industrial use, the solar projects are required to restore the sites back to agricultural use. Unlike a permanent conversion of agricultural land to urban or industrial use, the solar projects are akin to a long-term fallowing because the project applicant is required to restore the project sites back to agricultural use pursuant to the terms of its lease. Although there is a reduction in water use as a result of the projects, the project sites will continue to contribute IID water to the New River and the Salton Sea via stormwater collection systems. In this context, changes in the quality and quantity of agricultural runoff caused by the projects' temporary agricultural land conversion to solar use is less than significant in relation to the total flows in New River that empty into the Salton Sea.

With respect to the proposed projects, the development of approximately 1,4004,422 acres of land to a solar farm will decrease the amount of surface (tail water) and subsurface water (tile water) into several IID drains (e.g., Wistaria Drain) servicing these properties. Less water in these drains will result in a decrease in weed growth and gopher and muskrat washouts, which will reduce both the maintenance operations and total suspended solids (TSS) within the drains and ultimately to the Salton Sea. Less TSS will improve water quality in support of the drain water quality improvement plan. These drains will still receive agricultural runoff from agricultural fields not developed into solar farms and storm water flows to maintain a vegetative base to support habitat. In addition, storm water flows are estimated to be 3.6 percent of surface water inputs, and that water will still end up in the drains.

There are approximately 1,400 miles of drains which transport subsurface and surface agricultural drain water, storm water flows, municipal wastewater treatment plant effluent, ground water from East and West mesas and industrial effluent discharges. All aforementioned discharge sources contribute to the degradation of water quality within the IID water conveyance system. The IID is currently implementing a drain water quality improvement plan (Resolution No 93-145) to achieve water quality objectives to comply with the Clean Water Act 303(d). A component of the IID plan is to reduce maintenance operations which will result in a reduction of TSS.

These drains are all located within the far southernmost part of Imperial County and are not considered direct-to-Sea drains and therefore would not impact desert pupfish (*Cyprinodon macularius*). The drains are in the southwest corner of Imperial County and at the end of the water conveyance system; drain water generated by the agricultural fields that will be developed into a solar farm must travel over 35 miles to reach the Salton Sea. No more than 31 percent surface and subsurface runoff into the drains actually reaches the Salton Sea. Therefore, eliminating the volume this acreage has generated in the past should not adversely affect the elevation of the Salton Sea as the waters not utilized by the projects are expected to remain within the All American Canal Service area. It is expected that this water will be used on other agricultural crops and therefore will not be lost to the drainage system and the Salton Sea drainage. The projects impact related to this issue is considered less than significant.

The proposed projects' reduction in agricultural water use would support IID's needs in fulfilling its legal obligations under State Water Resources Control Board (SWRCB) orders, the Quantification Settlement Agreement and IID Water Transfer Agreement, which includes mitigation of water quality and biological impacts to the Salton Sea. As such, the proposed projects are consistent with the IID Water Transfer Agreement Habitat Conservation Plan (HCP) EIR/EIS, the existing Section 7 Biological Opinion, and IID California Endangered Species Act (CESA) Permit 2081. Further, IID has created an Equitable Distribution Plan (EDP) to give itself the flexibility to meet changing circumstances in supply and demand. The EDP would essentially create an agricultural fallowing incentive program in the event of a supply/demand imbalance. By October of each year, IID staff must forecast water demand and available supply and recommend whether there will be a supply/demand imbalance (SDI). With the knowledge that the proposed projects are anticipated to use only 1,310 acre-feet per year (AFY) of water during its long lease period, instead of a more intense agricultural water use, IID can account for this lower water demand when determining whether there will be a SDI and may help prevent the need to activate the EDP, which will allow more agricultural landowners to use their agricultural water supply, which is expected to result in a neutral net impact on water flowing to the sea (Imperial County 2011).

Likewise, in the years when IID must trigger the EDP, the water conservation from the proposed projects reduces the need to induce fallowing on as many agricultural acres to generate the additional water conservation needed to meet its transfer obligations and Salton Sea mitigation obligations. According to IID's EDP Negative Declaration, in 2003, IID implemented a rotation fallowing program to successfully create conserved water to deliver to the Salton Sea and now IID plans to increase fallowing incrementally to a maximum of about 25,000 acres. With the knowledge that the proposed projects will be using less water, IID can fallow less than the 25,000 acres to produce the same amount of water needed to meet its transfer obligations and conserve water to deliver to the Salton Sea (Imperial County 2011). In this context, to the extent IID believes mitigation is needed in implementing the EDP, IID controls the mitigation by selecting how many farmland acres to enroll in its fallowing program to create the Salton Sea mitigation water.

In addition, IID acknowledged in its Negative Declaration adopting the EDP that the fallowing necessary to provide the transfer and Salton Sea mitigation water would not have a significant impact on water quality or biology. Specifically, it states for biology, "Implementation of the EDP would not have an effect on any biological resources within the IID water service area. The EDP could result in minor short-term changes in the location of water use and therefore, the volume of flows in the drains. However, any changes in the location of flows are expected to be both short-term and negligible, and well within historic variations, and therefore not to result in any adverse effects on biological resources that rely on the drains for habitat....[i]t is expected that under an SDI [state and federal refuges in the IID service area] will have sufficient supplied to maintain current uses and operations and/or to fulfill obligations under environmental permits issued to IID (Imperial County 2011). This EIR incorporates by reference finding the no impact determination for cumulative impacts related to the EDP as identified in the Imperial Solar Energy Center South Project EIR/EA.

For water quality, it states, "The proposed EDP would not result in any impacts associated with hydrology and water quality....the magnitude of any potential change is anticipated to be minimal and, due to constant variation in cropping patterns and locations of idled lands, most likely to undetectable when

compared to the existing condition" (Imperial County 2011). This finding is incorporated by reference from the Imperial Solar Energy Center South Project EIR/EA into this EIR.

Finally, Figure 3 of the Negative Declaration shows how insignificant the IID's EDP following program is in comparison with the historic variation in following levels in Imperial Valley. This EIR tiers off this conclusion and incorporates it by reference into the proposed projects' analysis. Therefore, not only do the projects reduce the need for as much following under the Equitable Distribution Plan, but Figure 3 demonstrates, even without aiding the IID's EDP, the projects' long-term following of agricultural lands is not significant compared to the historic levels of following in Imperial County. As such, this EIR incorporates by reference finding the less than significant impact determination for cumulative impacts related to the proposed projects' reduction in agricultural use water use as compared to historic levels of agricultural use water reductions as attributed to following and identified in the Imperial Solar Energy Center South Project EIR/EA.

The IID's EDP Negative Declaration also analyzed the cumulative impacts of the EDP following program and concluded "Because there are no environmental impacts associated with implementation of the EDP, there are no cumulative impacts to consider." These findings are incorporated by reference in conjunction with the Imperial Solar Energy Center South Project EIR/EA. Based on these findings, it is reasonable to conclude that the proposed projects' conservation of water reduces the need for IID to declare a supply/demand imbalance, aids IID in meeting its water transfer and mitigation water obligations, and is within the range of historic levels of following within Imperial County and, therefore, the County concludes that no cumulatively considerable impact would occur.

6.3.5 Cultural Resources

As discussed in Section 4.5, Cultural Resources, a total of five new resources and one previously recorded resource (CA-IMP-3325) were identified as a result of the pedestrian survey. These resources consist of a multicomponent archaeological site (Iris-Site-001M) and four historic built resources (Iris-Built-001, Iris-Built-002, Iris-Built-003, and Iris-Built-004). All six resources will be avoided by the proposed projects. Therefore, the projects would not impact cultural resources and would not contribute to a cumulative impact to cultural resources.

As with the projects, the other cumulative projects would likely be required to provide similar mitigation for any direct impacts to cultural resources to reduce impacts. Because the cultural resources within the geographic scope of this cumulative impact analysis are important for their potential contribution to knowledge of history, additional mitigation measures are included in this EIR to ensure the proper collection and systematic data recovery for any undocumented archaeological resources that may be encountered during construction. Implementation of these mitigation measures would reduce the potential for cumulative impacts to these resources as a result of the projects.

Based on these findings, there would be no net loss in the cumulative value/context of cultural resources within the geographic scope of the cumulative analysis. With the inclusion and compliance with the required mitigation measures, the value of any undocumented archaeological resources encountered during construction would be exhausted through a data recovery program. Therefore, the projects would not result in a cumulative cultural resources impact.

6.3.6 Geology and Soils

The Imperial Valley portion of the Salton Trough physiographic province of Southern California is used as the geographic scope for the analysis of cumulative impacts on geology/soils and mineral resources. Cumulative development would result in an increase in population and development that could be exposed to hazardous geological conditions, depending on the location of proposed developments. Geologic and soil conditions are typically site specific and can be addressed through appropriate engineering practices. Cumulative impacts to geologic resources would be considered significant if the projects would be impacted by geologic hazard(s) and if the impact could combine with off-site geologic hazards to be cumulatively considerable. None of the projects identified within the geographic scope of

potential cumulative impacts would intersect or be additive to the projects' site-specific geology and soils impacts; therefore, no cumulative effects are identified for geology/soils.

With regards to mineral resources, no mineral resources are located within the boundaries of the project study areas. Therefore, the projects would not result in a cumulative geology/soils impact for mineral resources.

6.3.7 Greenhouse Gas Emissions

Emissions of greenhouse gases (GHGs) have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Although the emissions of the projects alone would not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate low-lying areas; affect rainfall and snowfall, leading to changes in water supply; and affect habitat, leading to adverse effects on biological resources. The South Coast Air Quality Management District (SCAQMD) has proposed a threshold of 3,000 tonnes of carbon dioxide equivalents (tCO_2e), for residential and commercial projects; which was applied to the project analysis as provided in Section 4.7, Greenhouse Gases. As provided, the proposed projects' CO_2 emissions would not exceed SCAQMD's threshold of 3,000 tCO_2e . Although the proposed projects would not exceed SCAQMD's threshold, consistent with the intent of AB 32, the proposed projects should demonstrate that policies are in place that would assist in providing a statewide reduction in CO_2 emissions. Therefore, Mitigation Measures 4.7-1a and 4.7-1b are prescribed as additional reduction strategies to further improve air quality and reduce GHG emissions.

Given that the projects are characterized as renewable energy projects and places emphasis on solar power generation, project operations would be almost carbon-neutral with the majority of the operational GHG emissions associated with employee vehicle trips. Based on these considerations, no significant long-term operational GHG impacts would occur and, therefore, project-related GHG impacts would not be cumulatively considerable.

6.3.8 Hazards/Hazardous Materials

The geographic scope considered for cumulative impacts from health, safety and hazardous materials is the area within one mile of the boundary of the project sites. One mile is the standard American Society of Testing and Materials (ASTM) standard search distance for hazardous materials.

As discussed, according to the DOGGR database, there are four plugged and abandoned oil wells located within the project sites. Mitigation Measure 4.8-1 would reduce the project-specific hazard to a less than significant impact by ensuring that all well abandonment requirements will be completed according to DOGGR specifications. Under cumulative conditions, implementation of the projects in conjunction with development of projects listed in Table 6-1 is not anticipated to present a public health and safety hazard to residents. Additionally, the projects and related projects would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operation. Impacts from these activities are less than significant for the projects because the storage, use, disposal, and transport of hazardous materials are extensively regulated by various Federal, state, and local laws, regulations, and policies. It is foreseeable that the projects and related projects would implement and comply with these existing hazardous materials laws, regulations, and policies. Therefore, the related projects would not cause a cumulative impact, and the projects would not result in a cumulatively considerable incremental contribution to a cumulative impact related to use or routine transport of hazardous materials.

The proposed transmission line would connect with other off-site proposed and planned transmission infrastructure to the west of the project sites and run parallel to these facilities. As a result of this circumstance, the cumulative projects would be contained within the same right of way as the off-site project facilities and would not subject additional land areas to hazards associated with hazardous

materials. Thus, the projects' incremental contribution to any potential cumulative impacts would not be considerable.

6.3.9 Hydrology/Water Quality

Table 6-1 lists the projects considered for the hydrology and water quality cumulative impact analysis. The geographic scope for considering cumulative hydrology and water quality impacts is the Imperial Valley Hydrologic Unit as defined by the Colorado Basin Regional Water Quality Control Board (RWQCB) Basin Plan (2005). The construction of the projects are expected to result in short-term water quality impacts. It is expected that some of the cumulative projects, which are not yet built, could be under construction at the same time as the projects. Therefore, substantial short-term cumulative water quality impacts may occur during simultaneous construction of the projects and other cumulative projects identified in Table 6-1. However, compliance with the SWRCB's National Discharge Pollution Discharge Elimination System (NPDES) general permit for activities associated with construction (2009-0009-DWQ) would reduce water quality impacts. As with the projects, each of the cumulative projects would be required to comply with the Construction General Permit. The SWRCB has determined that the Construction General Permit protects water quality, is consistent with the Clean Water Act, and addresses the cumulative impacts of numerous construction activities throughout the State. This determination in conjunction with the implementation of Mitigation Measures 4.9-1a and 4.9-1b would ensure short-term water quality impacts are not cumulatively considerable.

The projects are not expected to result in long-term operations-related impacts related to water quality. The projects would mitigate potential water quality impacts by implementing site design, source control, and treatment control BMPs. Some cumulative projects would require compliance with the SWRCB's NPDES general permit for industrial activities, as well as rules found in the Federal Clean Water Act, Section 402(p)(1) and 40 CFR 122.26, and implemented Order No. 90-42 of the RWQCB. Quantitative information for cumulative projects considered for long-term water quality impacts was not available; however, with implementation of SWRCB, CRRWQCB, and County policies, plans, and ordinances governing land use activities that may degrade or contribute to the violation of water quality standards, cumulatively considerable impacts to water quality would be minimized to a less than significant level.

Based on a review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the project sites and the majority of the cumulative projects listed in 6-1 are located within Zone X, which is an area determined to be outside of the 100-year floodplain. As such, the projects would not result in a significant cumulatively considerable impact to floodplains by constructing new facilities within an identified flood hazard zone. Additionally, under the projects, operation could contribute additional stormwater runoff to local drains owned and operated by IID and the Greason Wash, resulting in potential downstream flooding. Implementation of Mitigation Measures 4.9-2 and 4.9-4, in Section 4.9, Hydrology/Water Quality, and conformance with applicable state and regulations regulating surface water runoff, including the procedures outlined the County's Engineering Manual would reduce the long-term impacts from changes in drainage and runoff patterns to a less than significant level. Based on these considerations, the projects would not contribute to or result in a significant cumulatively considerable adverse hydrological or water quality impact.

6.3.10 Land Use and Planning

The geographic scope for the analysis of cumulative land use and planning impacts is typically defined by government jurisdiction. The geographic scope for considering potential inconsistencies with the General Plan's policies, including agriculture, from a cumulative perspective includes all lands within the County's jurisdiction and governed by its currently adopted General Plan. In contrast, the geographic scope for considering potential land use impacts or incompatibilities include the project study areas plus a one-mile buffer to ensure a consideration for reasonably anticipated potential direct and indirect effects.

As provided in Section 4.10, Land Use and Planning, the projects would not involve any facilities that could otherwise divide an established community. Based on this circumstance, no cumulatively considerable impacts would occur. As discussed in Section 4.10, Land Use and Planning, the projects

would not conflict with the goals and objectives of the County of Imperial General Plan. In addition, a majority of the cumulative projects identified on Table 6-1 would not result in a conflict with applicable land use plans, policies, or regulations. In the event that incompatibilities or land use conflicts are identified for other projects listed in Table 6-1, similar to the projects, the County would require mitigation to avoid or minimize potential land use impacts. Based on these circumstances, no cumulatively considerable impact would occur.

In contrast to the rest of the projects, the transmission line component of the projects would extend above the height restrictions for the A-2, A-2-R, and A-3 zones of 120 feet. However, these facilities would be similar composition and structure as other transmission facilities within the Imperial Valley. Additionally, these facilities would interconnect with other approved or proposed transmission facilities that would be constructed in proximity to and blend with existing electrical transmission infrastructure. Based on these circumstances, no cumulatively considerable impact would occur.

6.3.11 Noise and Vibration

When determining whether the overall noise (and vibration) impacts from related projects would be cumulatively significant and whether the projects' incremental contribution to any significant cumulative impacts would be cumulatively considerable, it is important to note that noise and vibration are localized occurrences; as such, they decrease rapidly in magnitude as the distance from the source to the receptor increases. Therefore, only those related projects and identified in Table 6-1 that are in the direct vicinity of the project study areas and those that are considered influential in regards to noise and vibration would have the potential to be considered in a cumulative context with the projects' incremental contribution.

Construction equipment noise from the related projects identified in Table 6-1 would be similar in nature and magnitude to those discussed for the projects in Section 4.11, Noise and Vibration. Specifically, noise levels from on-site construction activities would fluctuate depending on the particular type, number, and duration of usage for the varying equipment. The site preparation phase would be anticipated to generate the most substantial noise levels as the on-site equipment associated with grading, compacting, and excavation tend to be the loudest. Although detailed information is not currently available, construction of the related projects would be anticipated to result in noise levels of approximately 74 decibels (dBA) equivalent sound level (L_{eq}) to a maximum noise level of 79 dBA (L_{max}) at 100 feet from the simultaneous operation of heavy-duty equipment. These noise levels would exceed applicable standards at nearby sensitive receptors and/or result in substantial increases in ambient noise levels especially during the more noise-sensitive hours of the day. While temporary, short-term construction source noise levels from the related projects could be considered exempt if such noise would only occur during the daytime hours, there is no guarantee that all of the related projects would include such restrictions. Therefore, the related projects could generate significant impacts related to short-term exposure of sensitive receptors to increased equipment noise. Construction of the projects could also result in a significant impact from temporary, short-term equipment noise levels in the direct vicinity and possible during the same time frame as the related projects. Implementation of Mitigation Measures 4.11-1a through 4.11-1e, by the project applicant's construction contractor would be required to achieve reductions in these noise levels and may include the use of temporary noise barriers. These measures are expected to be sufficient in minimizing construction noise related impacts to a less than significant level. Thus, the incremental contribution of the projects to significant cumulative air quality impact would not be cumulatively considerable.

Groundborne noise and vibration levels from construction of the aforementioned related projects would be similar in nature and magnitude to those discussed in Section 4.11, Noise and Vibration. Specifically, construction activities would result in varying degrees of temporary groundborne noise and vibration, depending on the specific construction equipment used and activities involved (see, for example, Table 4.11-5). Although detailed information is not currently available, construction of the related projects would be anticipated to result in maximum groundborne noise and vibration levels associated with bulldozing activities. According to the Federal Transit Administration (FTA), levels associated with the use of a large bulldozer are 0.089 inches per second (in/sec) peak particle velocity (PPV) at 25 feet, respectively. With respect to the prevention of structural damage, bulldozing would not exceed the

Caltrans-recommended level of 0.2 in/sec PPV even at a distance of 25 feet. Given that all adjacent structures would generally be 100 feet or more from construction activities, the projects would result in less than significant vibration impacts and, therefore, these impacts are not cumulatively considerable.

Stationary-source and vehicular noise from the aforementioned related projects would be similar in nature and magnitude to those discussed for the projects in Section 4.11, Noise and Vibration, for mechanical heating, ventilation, and air conditioning (HVAC) equipment, emergency electrical generators, pumps, parking lot activities, delivery activities, employee vehicular trips, and electrical substation and transmission facilities. Operation of the related projects could result in the long-term stationary source noise levels that exceed applicable standards at nearby sensitive receptors and/or result in substantial increases in ambient noise levels. Given that the project facilities would be constructed within the A-2, A-2-R, or A-3 zones, long-term operational noise levels are not expected to exceed normally acceptable noise levels for these zones (e.g., 70 dBA day-night average sound level [L_{dn}]). Thus, the incremental contribution of the projects to significant cumulative noise impacts would not be cumulatively considerable.

6.3.12 Public Services

The projects would result in increased demand for public services (fire protection service and law enforcement services) (see Section 4.12, Public Services). Future development in the Imperial Valley, including projects identified in Table 6-1, would also increase the demand for public services. In terms of cumulative impacts, the appropriate service providers are responsible for ensuring adequate provision of public services within their jurisdictional boundaries. In conjunction with the projects' approval, the project applicant would also be conditioned to ensure sufficient funding is available for any fire protection or prevention needs and law enforcement services. Based on the type of projects proposed (e.g. solar energy generation), their relatively low demand for public services other than fire and police, it is reasonable to conclude that the projects would not increase demands for education, or other public services. Service impacts associated with the projects related to fire and police would be addressed through payment of impact fees as part of the project's Conditions of Approval to ensure that the service capabilities of these departments are maintained. Therefore, no cumulatively considerable impacts would occur.

6.3.13 Transportation/Traffic

The geographic scope of the cumulative analysis for transportation/circulation is based on the roadways in the vicinity of the project sites that, based on the Traffic Impact Analysis (LL&G Engineers 2014), may be impacted by traffic generated by the projects and cumulative projects. As provided in the Traffic Impact Analysis, which is provided in Appendix J of this EIR, vehicle trips generated during construction-related (up to 400 employees) would be substantially higher as those compared to project operations (up to 24 employees) (see Section 4.13, Transportation/Traffic). Based on these trip generation rates, construction-related traffic was used in the assessment of the projects' cumulative impacts to local roadway operations.

To account for potential cumulative project traffic increases that may occur between existing conditions (2010) and the time of construction (2014), a 5 percent growth factor was applied to all existing 2010 traffic volumes throughout the project sites. This 5 percent growth was assumed to conservatively represent the amount of traffic that may utilize the street system in the projects' vicinity proposed from future unapproved development and other solar energy projects planned in Imperial County, including those projects identified in Table 6-1. While it is most likely that these projects will be constructed sequentially over the course of the next few years, to be conservative, the cumulative analysis assumes that half of all construction traffic for all identified projects within the vicinity of the project study areas were assigned to the street system in addition to the 5 percent cumulative growth rate applied for the development projects.

As provided in Section 4.13, Transportation/Traffic, the intersection analysis revealed that all study intersections would continue to operate at Level of Service (LOS) D or better with the addition of project-

related construction traffic (LL&G Engineers 2014). Although an increase in delay would occur, the delay would be minimal and would vary between 0.0 and 3.3 seconds at these intersections (LL&G Engineers 2014). This increase in delay is considered less than significant and, therefore, is not cumulatively considerable. See Appendix J for additional details. Similarly, roadway segments analyzed under the cumulative condition are calculated to operate at LOS B or better with the addition of the construction project traffic (LL&G Engineers 2014). Although an increase in volume to capacity ratio (V/C) due to the construction traffic would occur, V/C would vary between 0.0 and 0.01 at these segments and, is therefore, considered less than significant. Based on these findings, the projects would not result in cumulatively considerable roadway or intersection impacts.

6.3.14 Utilities/Service Systems

Future development in Imperial County would increase the demand for utility service in the region. In terms of cumulative impacts, the appropriate service providers are responsible for ensuring adequate provision of public utilities within their jurisdictional boundaries. As indicated in Sections 4.14, Utilities/Service Systems, the necessary public utilities would be provided to the projects by IID; however, the projects by themselves are not expected to substantially increase demands for any particular service provider. The related projects identified in Table 6-1 would rely on similar service providers. Further, as provided in Table 4.14-3, the projects' water requirements are over 90 percent less than existing agricultural uses within the project sites. Likewise, limited on-site wastewater facilities would be constructed for the projects and, therefore, no extension of sanitary sewer service would be required. Similarly, the projects would connect with existing drainage infrastructure owned and operated by IID or the County. Additionally, the projects would be comprised of mostly recyclable materials and would not generate significant volumes of solid waste that could otherwise contribute to significant decreases in landfill capacity. Based on these considerations, the projects would result in less than significant impacts to existing utility providers and, therefore, would not result in cumulatively considerable impacts.

7.0 EFFECTS FOUND NOT TO BE SIGNIFICANT

In accordance with Section 15128 of the California Environmental Quality Act (CEQA) Guidelines, an Environmental Impact Report (EIR) must contain a statement briefly indicating the reasons that various potential significant effects of a project were determined not to be significant. Based on the Initial Study and Notice of Preparation prepared for the proposed projects (Appendix A), Imperial County has determined that the proposed projects would not have the potential to cause significant adverse effects associated with the topics identified below. Therefore, these topics are not addressed in this EIR; however, the rationale for eliminating these topics is briefly discussed below.

7.1 FORESTRY RESOURCES

The project sites are located on privately owned, undeveloped agricultural land. No portion of the project sites (or the immediate vicinity) is zoned or designated as forest lands, timberlands, or Timberland Production. As such, the projects would not result in a conflict with existing zoning or cause rezoning. Therefore, implementation of the proposed projects would not impact forestry resources.

7.2 MINERAL RESOURCES

The project sites are not used for mineral resource production and the projects do not any form of any mineral extraction. According to the Conservation and Open Space Element of the County of Imperial General Plan, no known mineral resources occur within the project sites, nor do the project sites contain mapped mineral resources. As such, the proposed projects would not adversely affect the availability of any known mineral resources within the project area.

7.3 RECREATION

Combined the four projects would be staffed with up to 24 full-time employees, which would not significantly increase the use or accelerate the deterioration of regional parks or other recreational facilities. The temporary increase of population during construction that might be caused by an influx of workers would be minimal and not cause a detectable increase in or impact on the use of parks. Additionally, the projects do not include or require the expansion of recreational facilities.

7.4 POPULATION AND HOUSING

The proposed project sites have been used for and are currently being used for agricultural production. Development of housing is not proposed as part of the projects. The four projects combined will be staffed with up to 24 full time employees to maintain the facility seven days a week during normal daylight hours. The facilities will operate seven days per week, generating electricity during normal daylight hours when the solar energy is available. To ensure optimal photovoltaic (PV) (or concentrated photovoltaic [CPV]) output, the solar panels will be maintained 24 hours a day/seven days a week. The proposed projects would not result in a substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. A total of four residences are located within the project sites. These residences would not be relocated as part of the proposed project; therefore, no impact associated with displacement would result.

7.5 PUBLIC SERVICES

Schools, Parks and Other Facilities

The proposed projects do not include the development of residential land uses that would result in an increase in population or student generation. Construction of the proposed projects would not result in an increase in student population within any school district that would serve the project sites. Therefore, the proposed projects would have no impact on Imperial County schools.

Operation of the proposed projects would require minimal full-time staff (for security, maintenance, etc.). Therefore, substantial permanent increases in population that would adversely affect local parks, libraries and other public facilities (such as post offices) are not expected. Therefore, no impacts are identified for these issue areas.

7.6 UTILITIES

Wastewater and Stormwater

The proposed projects would generate a minimal volume of wastewater during construction. During construction activities, wastewater would be contained within portable toilet facilities and disposed of at an approved site. Operation of the proposed projects could include up to four operations and maintenance (O&M) buildings. Wastewater generation would be minimal and would be treated via an on-site septic system associated with each of the O&M buildings. The proposed projects would not exceed wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB). The projects do not require new storm drainage facilities because the proposed solar facilities would not generate a significant increase in the amount of runoff water during operations. Water from solar panel washing would continue to percolate through the ground, as a majority of the surfaces within the project area would remain pervious; therefore the projects would not result in impacts with regards to wastewater or storm drainage facilities.

Solid Waste

During construction and operation of the projects, waste generation will be minor. Solid waste will be disposed of using a locally-licensed waste hauling service, most likely Allied Waste. There are over 40 solid waste facilities listed in Imperial County in the CalRecycle database. Trash would likely be hauled to the Calexico Solid Waste Site located in Calexico or the CR&R Material Recovery Transfer Station located in El Centro. The Calexico Solid Waste site has approximately 1.1 million cubic yards of capacity (reporting date July 2009) and is estimated to remain in operation through 2077. The CR&R Material Recovery and Transfer station has a maximum permitted throughput of 99 tons/day. No closure date has been reported for this facility (<http://www.calrecycle.ca.gov/SWFacilities/Directory/13-AA-0109/Detail/>). Therefore, there is ample landfill capacity throughout the County to receive the minor amount of solid waste generated by project construction and operation.

Additionally, because the proposed projects would generate solid waste during construction and operation, they will be required to comply with state and local requirements for waste reduction and recycling; including the 1989 California Integrated Waste Management Act and the 1991 California Solid Waste Reuse and Recycling Access Act of 1991. Also, conditions of the conditional use permit (CUP) for each project will contain provisions for recycling and diversion of construction waste per policies of the County.

Further, when the proposed projects reach the end of their operational life, the components will be decommissioned and deconstructed. Decommissioning of the projects will require removal of the solar panels and associated infrastructure and returning the landscape to agriculture. Decommissioning of the transmission line will include the following: disconnecting transmission lines from the bulk power grid; recycling or selling poles, towers and wires; demolishing concrete foundations at or below ground level and either recycling or using the concrete that was removed as fill; and restoring any areas disturbed during the removal process to agricultural use. It is expected that many components will be suitable for recycling or reuse and the facility decommissioning will be designed to optimize such salvage as circumstances allow and in compliance with all local, state, and federal regulations as they exist at the time of decommissioning. Although the disposal of ~~1,4001,422~~ acres of solar panels represents a challenge, commercially reasonable efforts will be used to recycle or reuse materials from the decommissioning. All other materials will be disposed of at a licensed facility. Therefore, no impacts are identified for this issue.

8.0 ALTERNATIVES

8.1 INTRODUCTION

The identification and analysis of alternatives is a fundamental concept under the California Environmental Quality Act (CEQA). This is evident in that the role of alternatives in an Environmental Impact Report (EIR) is set forth clearly and forthrightly within the CEQA statutes. Specifically, CEQA §21002.1(a) states:

“The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided.”

The CEQA Guidelines require an EIR to “describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives” (CEQA Guidelines §15126.6(a)). The CEQA Guidelines direct that selection of alternatives focus on those alternatives capable of eliminating any significant environmental effects of the project or of reducing them to a less-than significant level, even if these alternatives would impede to some degree the attainment of project objectives, or would be more costly. In cases where a project is not expected to result in significant impacts after implementation of recommended mitigation, review of project alternatives is still appropriate.

The range of alternatives required within an EIR is governed by the “rule of reason” which requires an EIR to include only those alternatives necessary to permit a reasoned choice. The discussion of alternatives need not be exhaustive. Furthermore, an EIR need not consider an alternative whose implementation is remote and speculative or whose effects cannot be reasonably ascertained.

Alternatives that were considered but were rejected as infeasible during the scoping process should be identified along with a reasonably detailed discussion of the reasons and facts supporting the conclusion that such alternatives were infeasible.

Based on the alternatives analysis, an environmentally superior alternative is designated among the alternatives. If the environmentally superior alternative is the No Project Alternative, then the EIR shall identify an environmentally superior alternative among the other alternatives (CEQA Guidelines §15126.6(e)(2)).

8.2 CRITERIA FOR ALTERNATIVES ANALYSIS

As stated above, pursuant to CEQA, one of the criteria for defining project alternatives is the potential to attain the project objectives. Established objectives of the project applicant for the proposed projects include:

Overall objective: To utilize Imperial County’s abundance of available solar energy (sunlight) to generate renewable energy, consistent with the County General Plan renewable energy objectives. The project applicant and the County identified the following objectives for the projects:

- Construct and operate a solar energy facility capable of producing up to 360 megawatts (MW) of electricity to help meet the State-mandated Renewable Energy Portfolio Standard (RPS) of providing 33 percent renewable energy by 2020.
- Construct and operate a solar power facility with minimal impacts to the environment.
- Operate a facility at a location that ranks amongst the highest in solar resource potential in the nation.

- Construct a facility at a location near the U.S. border to avoid issues of leapfrog development and dividing stretches of agricultural land.
- Interconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the ISO controlled transmission network, and maximize opportunities for the sharing or use of existing utility transmission corridor(s).
- Encourage economic investment and diversify the economic base for Imperial County.
- Operate a renewable energy facility that does not produce significant noise, emit any greenhouse gases, and minimizes water use.
- Help reduce reliance on foreign sources of fuel.
- Supply on-peak power to the electrical grid in California.
- Help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006).
- Sustain and stimulate the economy of Southern California by helping to ensure an adequate supply of renewable electrical energy while simultaneously creating additional construction and operations employment and increased expenditures in many local businesses.
- Contribute to Imperial County's economic growth and reputation as the renewable energy capital of the nation.

8.3 ALTERNATIVE 1: NO PROJECT/NO DEVELOPMENT ALTERNATIVE

The CEQA Guidelines require analysis of the No Project Alternative (Public Resources Code Section 15126). According to Section 15126.6(e), “the specific alternative of ‘no project’ shall also be evaluated along with its impacts. The ‘no project’ analysis shall discuss the existing conditions at the time the Notice of Preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.”

The No Project/No Development Alternative assumes that the FSF, RSF, ISF and LSF projects, as proposed, would not be implemented and the project sites would not be developed. The No Project/No Development Alternative would not meet any of the project objectives.

Environmental Impact of Alternative 1 – No Project/No Development Alternative

Aesthetics: Because the No Project/No Development Alternative would not modify the existing project sites or add construction to the project sites, there would be no changes to the existing condition of the sites. A significant glare impact has been identified associated with the projects potential to create glare on certain roadways where solar panels would face south. As such, this alternative would avoid the potential ground-level glare impact associated with the projects.

Agriculture: Under the No Project/No Development Alternative, the project sites would continue to be used for active agricultural uses. No conversion of farmland including land of Statewide Importance and Prime Farmland would occur and this alternative would not contribute to the conversion of agricultural lands or otherwise adversely affect agricultural operations. Cancellation of Williamson Act contracts would not be required under this alternative. The proposed projects result in a less than significant impact with regards to agricultural resources with mitigation incorporated. Compared to the proposed projects, this alternative would avoid the significant impact associated with the conversion of agricultural lands and the need for future restoration of the project study areas to enable for future agricultural use.

Air Quality: Under the No Project/No Development Alternative, there would be no air emissions due to project construction or operation, and no project- or cumulative-level air quality impact would occur. Therefore, no significant impacts to air quality or violation of air quality standards would occur under this

alternative. Moreover, this alternative would be consistent with existing air quality attainment plans and would not result in the creation of objectionable odors.

During construction, the projects would require incorporation of mitigation to minimize significant air quality impacts to a less than significant level. Therefore, this alternative would result in less air quality emissions compared to the proposed projects. It is important to note, however, that agricultural operations likely contribute to greater long-term and cumulative air quality impacts through soil preparation, dust generation, and operation of heavy equipment as compared to operations of the proposed solar farms. Additionally, the No Project/No Development Alternative would not reduce the long-term need for renewable electricity generation. As a consequence, while the No Project/No Development Alternative would not result in new impacts to air quality as a result of construction, it would likely not realize the overall benefits to regional air quality when compared to the operation of the proposed projects.

Biological Resources: Under the No Project/No Development Alternative, existing biological resource conditions within the project sites would largely remain unchanged and no impact would be identified. Also, unlike the proposed projects which require mitigation for impacts to raptor species such as burrowing owl, this alternative would not result in construction of solar facilities that could otherwise result in significant impacts to these biological resources. As with the proposed projects, this alternative would avoid any impacts associated with habitat modification, riparian or wetlands, the movement of fish and wildlife species, and would not conflict with policies or ordinances relative to protection biological species or any provisions of an applicable habitat conservation plan. Compared to the proposed projects, this alternative would avoid impacts to biological resources.

Cultural Resources: Based on the results of the records searches and pedestrian survey, the project sites should be considered moderately sensitive for the presence of archaeological resources. The projects include ground-disturbing activities that will extend to depths of 20 feet below the ground surface. As such, the projects have the potential to disturb previously undocumented cultural resources that could qualify as unique archaeological resources pursuant to CEQA. No significant paleontological resources impact has been identified for the proposed projects. Compared to the proposed projects, this alternative would avoid impacts to cultural resources.

Geology and Soils: Because there would be no development at the project sites under the No Project/No Development Alternative, no grading or construction of new facilities such as operations and maintenance buildings would occur. Therefore, there would be no impacts to project-related facilities as a result of local seismic or liquefaction hazards, unstable or expansive soils, or suitability of soils for supporting septic tanks. In contrast, the proposed projects would require the incorporation of mitigation measures to minimize impacts to a less than significant level. This alternative would also avoid the need for new on-site wastewater systems and the corresponding mitigation requirements for the projects. Compared to the proposed projects, this alternative would avoid significant impacts related to local geological and soil conditions.

Greenhouse Gas Emissions: Under the No Project/No Development Alternative, there would be no greenhouse gas (GHG) emissions resulting from project construction or operation. Therefore, no impact to global climate change would result from project-related GHG emissions, primarily associated with construction activities. For the proposed projects, a less than significant impact was identified for construction-related GHG emissions, and in the long-term, the projects would result in an overall beneficial impact to global climate change as the result of creation of renewable energy. While this alternative would not further implement policies (e.g., SB X1-2) for GHG reductions, this alternative would also not directly conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This alternative would not create any new GHG emissions during construction but would not lead to a long-term beneficial impact to global climate change. Compared to the proposed projects, while the No Project/No Development Alternative would not result in new GHG emissions during construction, it would be less beneficial to global climate change as compared to the proposed projects.

Hazards and Hazardous Materials: The No Project/No Development Alternative would not include any new construction. Therefore, no potential exposure to hazardous materials would occur. Workers would not be exposed to potential sources of lead and asbestos associated with the demolition of existing

on-site structures and oil wells would remain unchanged. Therefore, no impact is identified for this alternative for hazards and hazardous materials. As with the proposed projects, this alternative would not result in safety hazards associated with airport operations. The proposed projects resulted in less than significant impacts with mitigation incorporated. Compared to the proposed projects, this alternative would have less of an impact related to hazards and hazardous materials.

Hydrology/Water Quality: The No Project/No Development Alternative would not result in modifications to the existing drainage patterns or volume of storm water runoff as attributable to the proposed projects, as existing site conditions and on-site pervious surfaces would remain unchanged. In addition, implementation of the No Project/No Development Alternative would not require stormwater treatment controls that would be required for new project-related O&M and transmission facilities. Furthermore, no changes with regard to water quality would occur under this alternative. However, in the context of existing sediment TMDLs for local drainages, this alternative would not realize the benefits that could be attributed to the projects in terms of reductions in exposed soil surfaces which are identified as a principle contributor to existing water quality impairments. In this context, this alternative would not contribute to any real reduction in the potential for water quality impacts especially, since the projects would require additional mitigation, which would not otherwise be required under this alternative to address existing water quality impairments. Compared to the proposed projects, from a drainage perspective, this alternative would avoid changes to existing hydrology, which will require the implementation of mitigation to avoid potential impacts to existing County and IID drainage facilities to a less than significant level. Similar to the proposed projects, this alternative would not result in the placement of structures within a 100-year flood zone.

Land Use and Planning: The No Project/No Development Alternative would not result in the modification of the existing agricultural land use on the project sites and would maintain the current agricultural operations. Similar to the proposed projects, the No Project/No Development Alternative would not divide an established community. Unlike the proposed projects, the No Project/No Development Alternative would not require the issuance of a CUP and Variance to maintain the projects' consistency with the County's General Plan. As with the proposed projects, this alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan. Compared to the proposed projects, this alternative would have less of an impact related to land use and planning.

Noise: This alternative would not require construction or operation of the project facilities; therefore, this alternative would not increase ambient noise levels within the vicinity of the project sites. For this reason, no significant noise impacts would occur. The proposed projects could result in significant noise impacts to a limited number of receptors and, therefore, would require mitigation to reduce these impacts to a less than significant level. Compared to the proposed projects, this alternative would reduce any potentially significant noise impacts and eliminate the need for the applied mitigation measures.

Public Services: The No Project/No Development Alternative would not increase the need for public services which would otherwise be required for the proposed projects (additional police or fire protection services). Therefore, no impact to public services is identified for this alternative. The proposed projects result in less than significant impacts; subject to payment of law enforcement and fire service fees. Compared to the proposed projects, this alternative would have fewer impacts related to public services.

Transportation/Traffic: Because there would be no new development under the No Project/No Development Alternative, no increase in vehicular trips during construction or operation would result for this alternative. For these reasons, no impact would occur and this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Although the proposed projects would result in less than significant transportation/traffic impacts, compared to the proposed projects, this alternative would avoid an increase in vehicle trips on local roadways, and any safety related hazards that could occur in conjunction with the increase vehicle trips and truck traffic.

Utilities: The No Project/No Development Alternative would not require the expansion or extension of existing utilities, since there would be no new project facilities that would require utility service. The proposed projects would not result in any significant impacts to existing utilities and, in the case of water supply, would result in desirable benefits as a result of substantially reduced water demands. Compared to the proposed projects, this alternative would not realize the benefits of reduced water demands.

Conclusion: Implementation of the No Project/No Development Alternative would generally result in reduced impacts for a majority of the environmental issues areas considered in Chapter 4, Environmental Analysis when compared to the proposed projects. A majority of these reductions are realized in terms of significant impacts that are identified as a result of project construction. However, this alternative would not realize the benefits of reduced GHG emissions associated with energy use and reduced water supply demands, which are desirable benefits that are directly attributable to the proposed projects.

Comparison of the No Project/No Development Alternative to Project Objectives

The No Project/No Development Alternative would not meet any of the objectives of the projects. Additionally, the No Project/No Development Alternative would not help California meet its statutory and regulatory goal of increasing renewable power generation, including GHG reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006).

8.4 ALTERNATIVE 2: REDUCED ACREAGE ALTERNATIVE (AVOID PRIME FARMLAND)

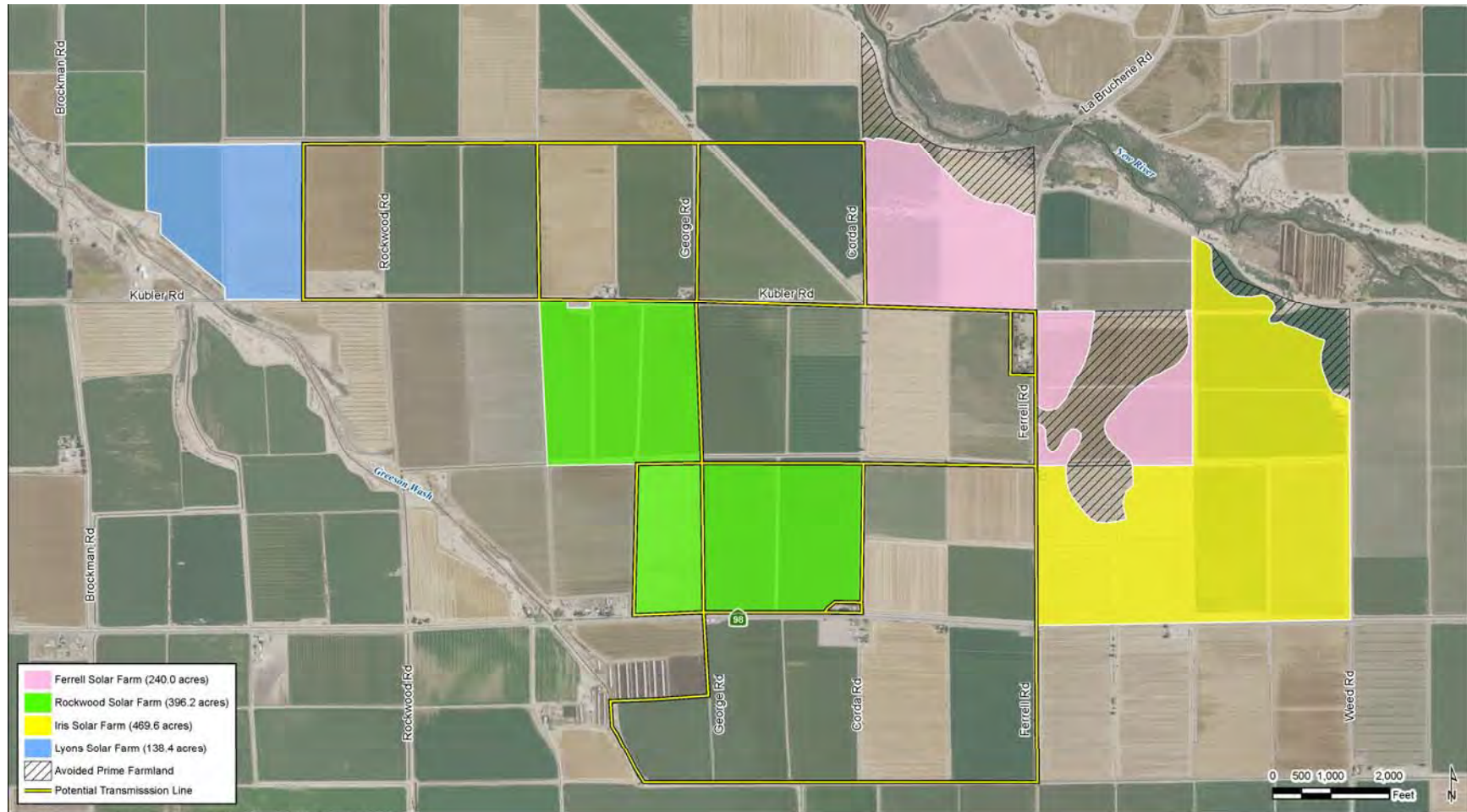
The purpose of this alternative is to avoid the Prime Farmlands located within the project sites, specifically associated with the FSF and ISF. The 2010 Important Farmland maps for Imperial County indicate that a majority of the project sites are comprised of Farmland of Statewide Importance with small isolated areas designated as Prime Farmland and “other.” This alternative is illustrated in Figure 8.0-1, which shows the location of the Prime Farmland that would be avoided (approximately 160.4 acres) and the total acreage of the projects with the exclusion of Prime Farmland. (NOTE: this alternative would not avoid several pockets of Prime Farmland as shown on Figure 8.0-1 as these represent small, isolated pockets of land, which would likely not remain economically viable or practically feasible to farm as they would be surrounded by solar uses.)

Environmental Impact of Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)

Aesthetics: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), the overall size of the solar energy facilities would be reduced. However, the transmission line would still be required, which would connect through the project area and ultimately to the Imperial Valley Substation. No significant visual aesthetic impact associated with the proposed projects has been identified as the project facilities would not impact scenic resources, or result in the degradation of the existing visual character of the project study areas. However, a significant ground level glare impact has been identified. Because this alternative would also involve installation of solar panels that would face in a southerly direction, this alternative would also have the potential for a significant ground level glare impact. As such, this alternative would not avoid or reduce any significant impacts identified for the projects and the aesthetic impact would be similar to the proposed project.

Agriculture: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), the majority of the project sites that contain Prime Farmlands would continue to be used for active agricultural uses. However, since this alternative would include the use of large acreages of Farmland of Statewide Importance for the solar facilities, similar mitigation would be required for this alternative to reduce significant farmland impacts to a less than significant level. Impacts associated with contributing to the conversion of other agricultural lands or otherwise affecting agricultural operations would still occur. Compared to the proposed projects, this alternative would reduce the significant impacts associated with these agricultural issues.

Figure 8.0-1. Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)



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Air Quality: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), air emissions during construction would be less than the proposed projects because the reduced site development. A less than significant impact with mitigation incorporated has been identified for the proposed projects during construction. The same mitigation measures would be required for this alternative as with the proposed projects. This alternative would be consistent with existing air quality attainment plans and would not result in the creation of objectionable odors. It is important to note, however, that agricultural operations contribute more to long-term and cumulative air quality impacts through soil preparation and dust creation than would operation of the proposed solar farms. Additionally, this alternative would provide less megawatt generation as compared to the proposed projects, thereby reducing its ability to provide a long-term source of renewable energy. Compared to the proposed projects, while Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would result in less air quality impacts, it would likely provide less desirable benefits to overall regional air quality as attributable to the proposed projects.

Biological Resources: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), potential impacts to several of the burrowing owl locations identified within the project area and indirect impacts associated with burrowing owls in the adjacent drainage canals, especially along Kubler Road would be avoided as compared to the proposed projects. Mitigation would still be required for impacts to burrowing owl; however, the overall number of burrowing owl locations potentially impacted would be less. Impacts to wetlands, migratory corridors, and other wildlife and habitats would be similar to that described for the projects. Compared to the proposed projects, this alternative would result in a reduction in impacts to biological resources, but would still require mitigation.

Cultural Resources: Based on the results of the records searches and pedestrian survey, the project sites are considered moderately sensitive for the presence of archaeological resources. Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), ground-disturbing activities will extend to depths of 20 feet below the ground surface, similar to the proposed projects. As such, this alternative has the potential to disturb previously undocumented cultural resources that could qualify as unique archaeological resources pursuant to CEQA. Mitigation is required, in the form of monitoring during construction, to ensure that should unanticipated discovery of cultural resources or human remains be encountered, and proper measures are implemented to ensure these potential impacts are addressed. Compared to the proposed projects, this alternative would incur similar impacts to cultural and paleontological resources by virtue that the project sites would still be developed with solar uses in the same general location as the proposed projects.

Geology and Soils: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), while the overall project footprint would be reduced, grading and construction of new facilities such as O&M buildings, transmission facilities, and solar arrays would still occur. Therefore, this alternative would still be subject to potential impacts related to seismic or liquefaction hazards and unstable or expansive soils. Additionally, this alternative would require the construction of on-site wastewater facilities, which could be constructed on poorly suited soils thereby requiring the prescribed mitigation. Similar to the projects, this alternative would require the incorporation of mitigation measures identified for the proposed projects to minimize these impacts to a less than significant level. Compared to the proposed projects, this alternative would result in similar geological and soil impacts.

Greenhouse Gas Emissions: Under Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland), the overall project footprint would be reduced thereby contributing to reductions in GHG emissions during project construction. However, as a consequence of the reduced size of the projects, this alternative would result in a reduced power production capacity as compared to the proposed projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would also be reduced. This alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Similar to the proposed projects, this alternative would not exceed SCAQMD's threshold of 3,000 tCO_{2e}. Compared to the proposed projects, this alternative would contribute to similar and desirable reductions in GHG emissions and associated contribution to global climate change through the production of renewable energy, although to a lesser degree.

Hazards and Hazardous Materials: Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would have the potential for exposure of construction workers to lead and asbestos associated with the demolition of existing on-site structures and plugged and abandoned oil wells. Therefore, this alternative would have a similar impact with associated mitigation measures as the proposed projects related to known hazards and hazardous materials within the project sites. Impacts associated with wildfire hazards and airport safety would be similar to that described for the proposed projects. Compared to the proposed projects, this alternative would result in similar hazards and hazardous materials impacts.

Hydrology/Water Quality: Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would result in modifications to the existing drainage patterns and the volume of storm water runoff, as this alternative would introduce impervious area on-site, although to a lesser degree than the proposed projects. Because the overall project footprint would be reduced, this alternative would realize a minor reduction in the corresponding impacts to hydrology and on-site drainage; however, the same mitigation measures would be applicable to this alternative. Similar to the proposed projects, no impacts would result from flooding and facilities will not be placed within floodplains. Compared to the proposed projects, this alternative would result in fewer hydrology/water quality impacts.

Land Use and Planning: Similar to the proposed projects, Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would not divide an established community or result in incompatibilities with adjacent agricultural uses. Similar to the proposed projects, Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would require the approval of a CUP and Variance to maintain consistency with the County's General Plan. As with the proposed projects, this alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan. Compared to the proposed projects, land use and planning impacts resulting from this alternative would be similar to those identified for the proposed projects.

Noise: As with the proposed projects, Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would result in significant, but mitigable noise impacts associated with construction activities. Compared to the proposed projects, this alternative would require the operations of the same facilities required for the projects and, therefore, would not reduce any significant noise impacts nor eliminate the need to incorporate mitigation measures. As with the proposed projects, operational impacts associated with this alternative would not expose persons or generate noise levels in excess of applicable noise standards, expose persons to, or generate excessive groundborne vibration, or expose persons to excessive aircraft noise. Compared to the proposed projects, this alternative would result in a similar impact related to noise for the proposed projects.

Public Services: Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would require increased public services, specifically law enforcement and fire protection services. While the overall project footprint would be slightly smaller, the impacts of this alternative to public services and associated service ratios would be similar. Like the proposed projects, this alternative would be conditioned to provide law enforcement and fire service development impact fees. Compared to the proposed projects, this alternative would result in a similar impact related to public services.

Transportation/Traffic: This alternative would result in a similar level of vehicle and truck trips within the project sites as compared to the proposed projects. However, the increase in vehicular traffic was identified as a less than significant impact for the proposed projects. In this context, Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would not reduce or avoid an impact related to transportation/traffic, and would result in less than significant impacts similar to the proposed projects. As with the proposed projects, this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Compared to the proposed projects, this alternative would result in a similar impact related to transportation/traffic.

Utilities: Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would require water service and energy for the operation of the proposed projects. This alternative would allow agricultural operations to continue for a portion of the project sites, which utilizes more water than solar farm

activities. As a consequence, this alternative would result in increased water demands when compared to the proposed projects, but would continue to experience desirable benefits related to the reductions in agricultural water demands. Compared to the proposed projects, this alternative would result in a similar impact related to utilities.

Conclusion: Implementation of Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, greenhouse gas emissions (construction phase only), and hydrology/water quality. This alternative would not result in any greater environmental impacts when compared to the proposed projects.

Comparison of Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) to Project Objectives

Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would meet most of the basic objectives of the proposed projects and should remain under consideration. However, this alternative would make it more difficult to achieve the overall objective of providing a total of 360 megawatts of renewable solar energy, as there would be less area available for the placement of PV or CPV structures.

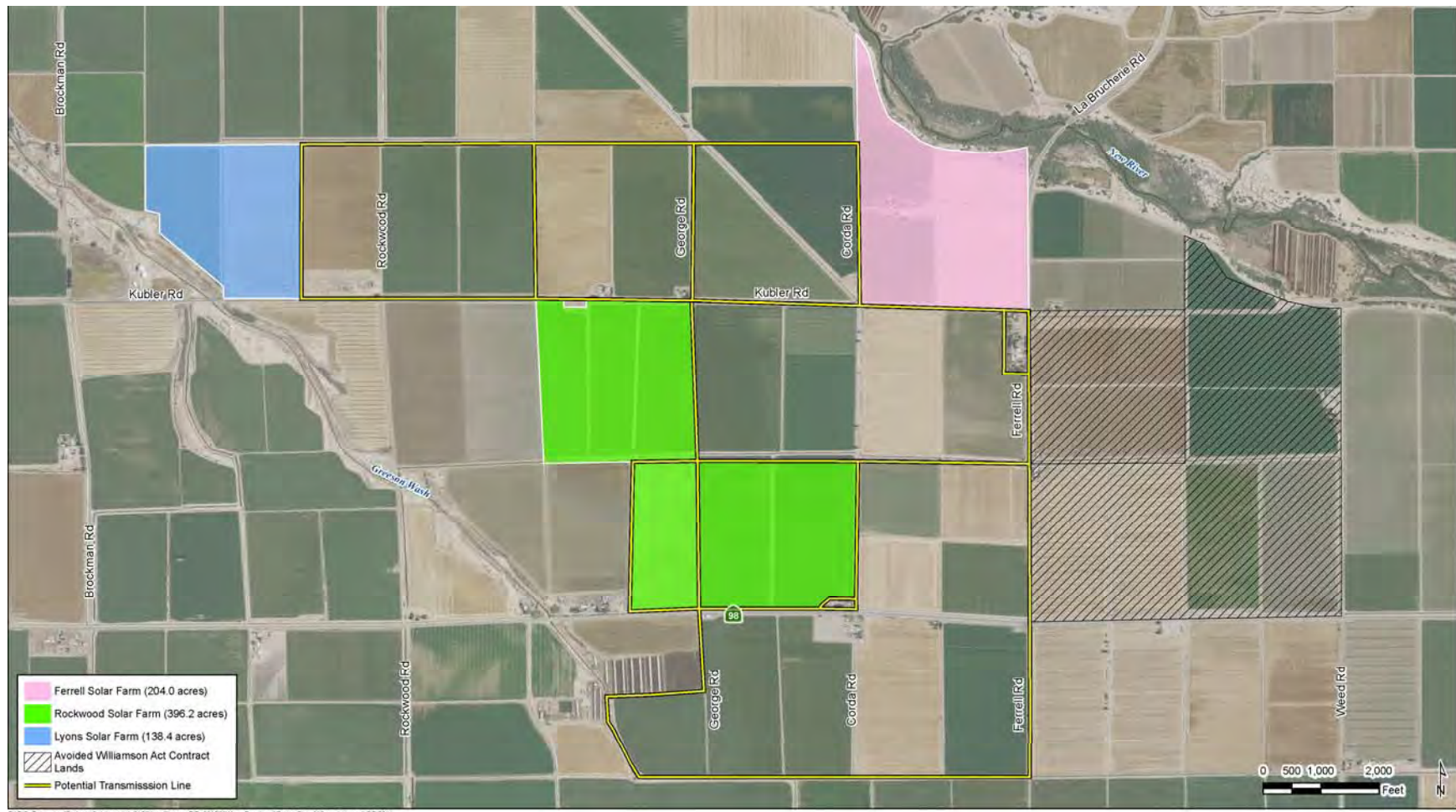
8.5 ALTERNATIVE 3: REDUCED ACREAGE (AVOID WILLIAMSON ACT LAND)

The purpose of this alternative is to avoid Williamson Act Contract lands that are located within the project sites, specifically the FSF and ISF sites. Figure 8.0-2 depicts the configuration of this alternative and the total acreage of the projects with the exclusion of Williamson Act Contract lands. This alternative would reduce the size of the projects by approximately ~~662~~684 acres as compared to the proposed projects. Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the County to maintain agricultural or open space use of their lands in return for reduced property tax assessment. The contract is self-renewing and the landowner may notify the County at any time of intent to withdraw the land from its preserve status. Withdrawal involves a ten-year period of tax adjustment to full market value before protected open space can be converted to urban uses. Consequently, land under a Williamson Act Contract can be in either a renewal status or a nonrenewable status. Lands with a nonrenewable status indicate the farmer has withdrawn from the Williamson Act Contract and is waiting for a period of tax adjustment for the land to reach its full market value. Nonrenewable and cancellation lands are candidates for potential urbanization within a period of ten years.

There are three active Williamson Act Contracts within the FSF and ISF project sites. Agricultural Preserve 160 includes the two parcels associated with Contract 2003-02 (APNs: 059-050-003 and 059-120-001); and one parcel associated with Contract 2004-01 (APN: 059-050-002) within the ISF project study area. One parcel associated with Contract 2003-001 (APN: 059-050-001) is also part of Agricultural Preserve 160 and is located within the FSF project site.

It is important to note that the continuation of the Williamson Act program within Imperial County is now in question as a result of a vote by the Board of Supervisors to discontinue funding for the program. On February 23, 2010, the Imperial County Board of Supervisors voted to not accept any new Williamson Act contracts and not to renew existing contracts, due to the elimination of the subvention funding from the state budget. The County reaffirmed this decision in a vote on October 12, 2010, and notices of nonrenewal were sent to landowners with Williamson Act contracts following that vote. The applicable deadlines for challenging the County's actions have expired, and therefore all Williamson Act contracts in Imperial County will terminate on or before December 31, 2018.

Figure 8.0-2. Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land)



Environmental Impact of Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land)

Aesthetics: This alternative would reduce the overall size of the solar facilities. However, the transmission line would still be required, which would connect through the project area and ultimately to the Imperial Valley Substation. Similar to the proposed projects, no significant aesthetic impact would occur given that the project facilities would not be constructed within a scenic vista or in close proximity to a designated scenic highway. However, this alternative would result in a similar glare impact as the proposed project. Compared to the proposed projects, this alternative would not avoid or reduce any aesthetic impacts identified for the projects and would result in similar impacts to visual resources and aesthetics.

Agriculture: Under Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land), a majority of the project sites that contain Prime farmlands and land under Williamson Act Contracts would continue to be used for active agricultural uses. In this context and when compared to the proposed projects, this alternative would reduce significant impacts associated with the conversion of Prime Farmland and Williamson Act contracted lands, and would also reduce impacts associated with conversion of other agricultural lands that would otherwise affecting agricultural operations. The reduction in project size under this alternative would not remove the remaining portions of the project sites that are designated as Farmland of Statewide Importance. As a result, mitigation prescribed for the projects would still be required to minimize impacts to Important Farmlands and ensure the future agricultural productivity of the project sites following site restoration. Compared to the proposed projects, by virtue that this alternative reduces the amount of Important Farmland impacted by the projects, this alternative would result in fewer impacts to agricultural resources.

Air Quality: Under Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land), air emissions during project construction would be less than the proposed projects because the reduced site development. Because less overall development would occur, this alternative would result in fewer air quality emissions during construction compared to the proposed projects, although the same mitigation measures would be required. This alternative would be consistent with existing air quality attainment plans and would not result in the creation of objectionable odors. It is important to note, however, that agricultural operations contribute more to long-term and cumulative air quality impacts through soil preparation and dust creation than would operation of the proposed solar farm. Additionally, this alternative would provide less megawatt generation as compared to the proposed projects, thereby reducing the project's ability to provide a long-term source of renewable energy. Compared to the proposed projects, while this alternative would result in fewer air quality impacts during construction, it would likely provide less desirable benefits to overall regional air quality as attributable to the proposed projects.

Biological Resources: Under Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land), potential direct and indirect impacts to several of the burrowing owl locations identified on the project sites and within adjacent drainage canals, especially along Kubler Road would be avoided as compared to the proposed projects. Mitigation would still be required for impacts to burrowing owl; however, the overall number of burrowing owl locations potentially impacted would be less. Impacts to wetlands, migratory corridors, and other wildlife and associated habitats would be similar to that described for the projects. Compared to the proposed projects, this alternative would result in fewer impacts to biological resources, but would still require mitigation.

Cultural Resources: Based on the results of the records searches and pedestrian survey, the project sites are considered moderately sensitive for the presence of archaeological resources. Under Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land), ground-disturbing activities will extend to depths of 20 feet below the ground surface, similar to the proposed projects. As such, this alternative has the potential to disturb previously undocumented cultural resources that could qualify as unique archaeological resources pursuant to CEQA. Mitigation is required, in the form of monitoring during construction, to ensure that should unanticipated discovery of cultural resources or human remains be encountered, proper measures are implemented to ensure these potential impacts are addressed.

Compared to the proposed projects, this alternative would incur similar impacts to cultural and paleontological resources by virtue that the project sites would be located in the same general location as the proposed projects.

Geology and Soils: While the overall projects footprint would be reduced under this alternative, grading and construction of new facilities such as an O&M building and auxiliary facilities would still occur. Therefore, impacts related to seismic or liquefaction hazards and unstable or expansive soils would be similar under this alternative when compared to the proposed projects. Likewise, this alternative would require on-site wastewater facilities which could be constructed on poorly suited soils. Compared to the proposed projects, this alternative would result in similar impacts related to geologic and soil hazards and would require the incorporation of mitigation measures similar to the proposed projects.

Greenhouse Gas Emissions: Under Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land), the overall project footprint would be reduced thereby contributing to reductions in GHG emissions during project construction. However, as a consequence of the reduced size of the projects, this alternative would result in a reduced power production capacity as compared to the proposed projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would also be reduced. This alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Although this alternative would result in reduced construction emissions, this alternative would still require mitigation during construction, similar to the proposed projects, to reduce the identified impact to a less than significant level. Compared to the proposed projects, this alternative would contribute to similar and desirable reductions in GHG emissions and associated contribution to global climate change through the production of renewable energy, although to a lesser degree.

Hazards and Hazardous Materials: Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would have the potential exposure of construction workers to lead and asbestos associated with the demolition of existing on-site structures and plugged and abandoned oil wells. Therefore, this alternative would have a similar impact with associated mitigation measures as the proposed projects related to known hazards and hazardous materials within the project sites. Impacts associated with wildfire hazards and airport safety would be similar to that described for the proposed projects. Compared to the proposed projects, this alternative would result in similar hazards and hazardous materials impacts.

Hydrology/Water Quality: Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would result in modifications to the existing drainage patterns and the volume of storm water runoff, as this alternative would introduce impervious area on-site, although to a lesser degree than the proposed projects. Because the overall project footprint would be reduced, this alternative would realize a minor reduction in the corresponding impacts to hydrology and on-site drainage; however, the same mitigation measures would be applicable to this alternative. Similar to the proposed projects, no impacts would result from flooding and facilities would not be placed within floodplains. Compared to the proposed projects, this alternative would result in fewer hydrology/water quality impacts.

Land Use and Planning: Similar to the proposed projects, Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would not divide an established community or result in incompatibilities with adjacent agricultural uses. Similar to the proposed projects, Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would require the approval of a CUP and Variance to maintain consistency with the County's General Plan. As with the proposed projects, this alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan. Compared to the proposed projects, land use and planning impacts resulting from this alternative would be similar to those identified for the proposed projects.

Noise: As with the proposed projects, Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would result in significant, but mitigable noise impacts associated with construction activities. Compared to the proposed projects, this alternative would not reduce any potentially significant impacts to noise nor eliminate the need to incorporate mitigation measures. Impacts associated with this alternative would not expose persons or generate noise levels in excess of applicable noise standards,

exposure persons to, or generate excessive groundborne vibration, or expose persons to excessive aircraft noise. Compared to the proposed projects, operational and construction-related noise impacts under this alternative would be similar to the proposed projects.

Public Services: Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would require increased public services, specifically law enforcement and fire protection services. While the overall project footprint would be smaller, the impact to public services would be similar, and this alternative would be conditioned to provide law enforcement and fire service fees. Compared to the proposed projects, this alternative would result in a similar impact to public services.

Transportation/Traffic: Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would not reduce or avoid an impact to transportation/traffic as this alternative would increase vehicle and truck trips on local roadways. However, given that these increases are minor and identified as less than significant for the proposed projects, this finding would also be applicable to this alternative. As with the proposed projects, this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Compared to the proposed projects, this alternative would result in a similar impact related to transportation/traffic.

Utilities: Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would require water service and energy for the operation of the proposed projects. This alternative would allow agricultural operations to continue for a portion of the project sites, which utilizes more water than solar farm activities. As a consequence, this alternative would result in increased water demands when compared to the proposed projects, but would continue to experience desirable benefits related to the reductions in agricultural water demands. Compared to the proposed projects, this alternative would result in a similar impact related to utilities.

Conclusion: Implementation of Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, greenhouse gas emissions (construction phase only), and hydrology/water quality. This alternative would not result in any greater environmental impacts when compared to the proposed projects.

Comparison of Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) to Project Objectives

Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) would meet most of the basic objectives of the proposed projects and should remain under consideration. However, this alternative would make it more difficult to achieve the overall objective of providing a total of 360 megawatts of renewable solar energy, as there would be less area available for the placement of PV or CPV structures.

8.6 ALTERNATIVE 4: ALTERNATIVE LOCATION – PRIVATELY OWNED, NON-AGRICULTURAL LAND

In certain cases, an evaluation of an alternative location in an EIR is necessary. Section 15126(f)(A) of the CEQA Guidelines states, “Key question. The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.”

The purpose of this alternative is to develop the proposed projects on privately owned, non-agricultural land. This alternative would avoid the temporary conversion of agricultural land to non-agricultural uses associated with the proposed projects. This alternative is illustrated in Figure 8.0-3.

Figure 8.0-3. Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land



As shown on the Imperial County Land Use Plan map, the majority of private land in the County is designated for agricultural purposes and these lands are generally used for agricultural production.

Within the County, there are pockets of non-agriculturally designated lands that are designated as urban area and specific plan areas. The Mesquite Lake Specific Plan Area (SPA) consists of approximately 5,100 acres located in central Imperial County between SR-86 on the west and SR-111 plus ¼ mile on the east, and bordered by Harris Road on the south and Keystone Road on the north. The SPA is already in use by the Holly Sugar Plant, the Mesquite Lake Recovery Facility, and the Imperial Valley Resource Recovery Plant. The SPA is made up of approximately 70 parcels with 52 landowners. The County designated the Mesquite Lake SPA on the 1993 General Plan to provide an opportunity to develop new job-producing light, medium, and heavy industrial uses. The overall goal of the Specific Plan is to support economic development within Imperial County, and allow for heavy industrial development in an area that is away from urban conflicts and its cities through job creation in the employment sectors of manufacturing, fabrication, processing, wholesaling, transportation, and energy resource development; and to create and preserve an area where a full range of industrial uses with moderate to high nuisance characteristics may locate.

As described in the Specific Plan, existing infrastructure needed to serve industrial development is very limited. Required improvements would include water and sewage treatment facilities, electrical substation, a fire station, stormwater retention basins, and extensive road improvements.

Although crop production is a principal existing use, encompassing approximately 1,420 acres within the SPA, extensive fallow areas also exist as a result of the high alkaline soils that reduce agricultural productivity. This high alkaline condition results in marginal agricultural productivity in comparison to typical conditions found in other irrigated farmland of the Imperial Valley. Based on a review of the Department of Conservation's FMMP maps, Prime Farmland is generally located in the southwest portion of the SPA. East of Dogwood Road, the SPA contains land classified as Other Land. The northwestern portion of the SPA is classified as Urban and Built-Up Land. This alternative would include development of the proposed projects within the portion of the SPA classified as Other Land and Built-Up Land by the Department of Conservation.

Aesthetics: The SPA is surrounded by agricultural lands. Residential areas are located approximately one mile south of the SPA. The transmission line would still be required, which would need to be constructed to serve the solar facilities and ultimately connect to the Imperial Valley Substation. These proposed transmission lines would be placed in closer proximity to urban areas (Cities of Imperial and El Centro to the south). Depending on the route of the proposed transmission line, the transmission line would be more readily visible to more people as compared to the proposed projects. Compared to the proposed projects, this alternative would result in slightly greater impacts.

Agriculture: This alternative would avoid impacts associated with the conversion of agricultural lands to non-agricultural uses. Based on a review of the Department of Conservation's FMMP maps, Prime Farmland is generally located in the southwest portion of the SPA. East of Dogwood Road, the SPA contains land classified as Other Land. The northwestern portion of the SPA is classified as Urban and Built-Up Land. This alternative would include development of the proposed projects within the portion of the SPA classified as Other Land and Built-up Land by the Department of Conservation. Compared to the proposed projects, this alternative would avoid impacts associated with the conversion of agricultural lands to non-agricultural uses.

Air Quality: Similar to the proposed projects, this alternative would develop ~~1,400~~1,422 acres with solar farms and supporting uses. Based on this consideration, this alternative would generate air emissions similar to the proposed projects. A less than significant impact with mitigation incorporated was identified for the proposed projects during construction. This alternative would be consistent with existing air quality attainment plans and would not result in the creation of objectionable odors. It is important to note, however, that agricultural operations contribute more to long-term and cumulative air quality impacts through soil preparation and dust creation than would operation of the proposed solar farms. Residential areas are located approximately one mile south of the SPA. Depending on the route of the proposed transmission line, the transmission line would be constructed near more sensitive receptors compared to

the proposed projects. Compared to the proposed projects, this alternative could expose more people to construction-related emissions, and would result in slightly greater impacts than the proposed projects.

Biological Resources: Under this alternative, potential impacts to burrowing owl locations identified within the project sites and indirect impacts associated with burrowing owls in the adjacent drainage canals would be avoided as compared to the proposed projects. However, this alternative would also require the construction of supporting infrastructure that has the potential to result in biological impacts. Additionally, there is the potential presence of wetlands along the drainage swales and natural depressions in portions of the SPA (EDAW Inc., 2006). While these areas are highly altered by agricultural operations and degraded by off-road vehicle activity, potential wetland areas may, nonetheless, be regulated by state and federal agencies. Compared to the proposed projects, development of this site would result in greater impacts to Waters of the U.S., particularly to wetlands.

Cultural Resources: This alternative would require the construction of supporting infrastructure that has the potential to result in cultural resources impacts. While this alternative may avoid the specific impacts on the proposed project sites, this alternative would also require the construction of supporting infrastructure that has the potential to result in cultural resources impacts. Compared to the proposed projects, although this alternative would try to avoid cultural resources to the extent feasible, depending on the route of the proposed transmission line, this alternative could result in greater impacts to cultural resources.

Geology and Soils: The Imperial Fault passes through the SPA, generally on a north-south alignment. The area in the vicinity of the fault is within the Alquist-Priolo Special Studies Zone. Ground shaking can expose employees to injury from structural damage or collapse of electrical distribution facilities. The County enforces the Alquist-Priolo Earthquake Fault Zoning Act to ensure that habitable structures, built on or near active faults, be designed and constructed in compliance with the County Land Use Ordinance. Compared to the proposed projects, this alternative could result in greater impacts related to geology and soils.

Greenhouse Gas Emissions: This alternative would result in the same power production capacity as the proposed projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would be the same. This alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Although this alternative would result in construction emissions, this alternative would still require mitigation during construction, similar to the proposed projects, to reduce the identified impact to a less than significant level. Compared to the proposed projects, this alternative would contribute similar and desirable benefits to reductions in global climate change through the production of renewable energy.

Hazards and Hazardous Materials: As previously mentioned, the County designated the Mesquite Lake SPA on the 1993 General Plan to provide an opportunity to develop new job-producing light, medium, and heavy industrial uses. As such, siting the proposed projects within the SPA has the potential to expose employees to hazards and hazardous materials associated with industrial processes. There are other hazards that could result from implementation of this alternative, depending on the specific locations and conditions of the various sites that would need to be developed. Certain sites needed in order to implement this alternative would need to be remediated before implementation of the alternative. Compared to the proposed projects, the degree of impact related to hazards and hazardous materials associated with this alternative would likely be similar to the proposed projects.

Hydrology/Water Quality: With implementation of the proposed mitigation measures, potential hydrology/water quality impacts under this alternative would be similar to those associated with the proposed projects. The SPA is designated Zone C, “indefinite minor flooding,” and contains a depressed “sink” area adjacent to Keystone Road that causes water to be detained during heavy rainstorms and can make Keystone Road impassible. Because of this condition of intermittent flooding, the Specific Plan includes requirements for stormwater management and a master drainage plan to be implemented through construction of retention basins. The construction and operation of the proposed projects would not place structures within a 100-year flood hazard area as mapped on the most recent federal Flood

Insurance Rate Map. Compared to the proposed projects, this alternative would result in a greater impact.

Land Use and Planning: As previously mentioned, the County designated the Mesquite Lake SPA on the 1993 General Plan to provide an opportunity to develop new job-producing light, medium, and heavy industrial uses. Similar to the proposed projects, this alternative would not divide an established community or result in incompatibilities with adjacent agricultural uses. Alternative fuel power-generating facilities (anaerobic digesters, biomass, biosolid, and solar conversion and/or transformation) are allowed uses within the Mesquite Lake Heavy Industrial (MLI-3) zone, subject to approval of a CUP from the County. As with the proposed projects, this alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan. Compared to the proposed projects, land use and planning impacts resulting from this alternative would be similar to those identified for the proposed projects.

Noise: The SPA is surrounded by agricultural lands and is already in use by the Holly Sugar Plant, the Mesquite Lake Recovery Facility, and the Imperial Valley Resource Recovery Plant. Residential areas are located approximately one mile south of the SPA. As with the proposed projects, this alternative would result in significant, but mitigable noise impacts associated with construction activities. The transmission line would still be required, which would need to be constructed to serve the solar facilities and ultimately connect to the Imperial Valley Substation. These proposed transmission lines would be placed in closer proximity to urban areas (cities of Imperial and El Centro to the south). Depending on the route of the proposed transmission line, the construction of the transmission line could expose more sensitive receptors to construction noise. Compared to the proposed projects, this alternative could result in greater impacts than the proposed projects.

Public Services: This alternative would require increased public services, specifically law enforcement and fire protection services. Similar to the projects, this alternative would be conditioned to provide law enforcement and fire service fees. Compared to the proposed projects, this alternative would result in a similar impact to public services.

Transportation/Traffic: This alternative would not reduce or avoid an impact to transportation/traffic as this alternative would increase vehicle and truck trips on local roadways. As with the proposed projects, this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Compared to the proposed projects, this alternative would result in a similar impact to the proposed projects.

Utilities: This alternative would require water service and energy for the operation of the proposed projects. As with the proposed projects, panel washing and other maintenance would be required. Compared to the proposed projects, this alternative would have similar water demands and associated impacts related to utilities.

Conclusion: Compared to the proposed projects, implementation of Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land would avoid impacts on agriculture. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology/water quality, and noise.

Comparison of Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land to Project Objectives

Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land would meet most of the basic objectives of the proposed projects. However, this alternative would not meet the following objectives:

- Construct and operate a solar power facility with minimal impacts to the environment;

- Construct a facility at a location near the U.S. border to avoid issues of leapfrog development and dividing up stretches of agricultural land; and
- Interconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the ISO controlled transmission network, and maximize opportunities for the sharing or use of existing utility transmission corridor(s).

The proposed project sites are located in a portion of the County that will achieve the project objectives of constructing a solar facility at a location near the U.S. border to avoid issues of leapfrog development and dividing up stretches of agricultural land, and more importantly, interconnecting with electrical transmission infrastructure either planned or being constructed by other nearby projects, maximizing opportunities for the sharing or use of existing utility transmission corridor(s). The ability to share electrical transmission infrastructure is very important to the feasibility of the projects, and to the extent that sharing infrastructure minimizes impacts to the environment. Locating the projects in another portion of the County (which would be required in order to locate the projects on privately owned, non-agricultural land) would require the construction of additional transmission infrastructure in order to connect to the Imperial Valley Substation. With respect to the proposed projects, sharing transmission with the adjacent Mount Signal and Calexico Solar Farm Projects maximizes this utility and minimizes potential environmental impacts. Alternative 4: Alternative Location – Privately Owned, Non-Agricultural Land would avoid impacts on agriculture. However, this alternative would result in greater environmental impacts on other issue areas including aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology/water quality, and noise.

Furthermore, this alternative site location is not available for purchase and development within a reasonable timeframe due to the large number of parcels and individual land owners (e.g., 70 parcels and 52 landowners), makes securing the site impracticable.

8.7 ALTERNATIVE 5: ALTERNATIVE LOCATION – DESERT LAND

The purpose of Alternative 5: Alternative Location – Desert Land is to develop the proposed projects on desert land to avoid the conversion of agricultural land to non-agricultural uses. This alternative would include development of the proposed projects in the Yuha Desert, taking advantage of the existing Utility Corridor “N,” other nearby solar projects (i.e., Imperial Solar Energy Center West), and the existing Imperial Valley Substation. This alternative would minimize the construction of miles of additional transmission infrastructure because it would share transmission with adjacent projects to maximize this utility and minimize potential environmental impacts. This alternative would avoid the construction of the solar farms on agricultural lands, as well as miles of additional transmission infrastructure on agricultural lands in order to connect to the Imperial Valley Substation. This alternative would require a right-of-way (ROW) grant with the BLM to construct, operate, maintain, and decommission the proposed projects on BLM lands. The California Desert Conservation Act (CDCA) Plan would also need to be amended to identify the projects as suitable for solar energy development.

Aesthetics: The overarching management goals for visual resources in the area are established by the CDCA Plan. Visual resources are susceptible to impacts from surface disturbing activities, construction activities, the presence of solar panels, and ancillary buildings associated with solar energy development. These impacts contribute to visual contrast, considered by BLM to be the leading indicator of visual-impact between the project facilities and the adjacent landscape. Depending on the location of the proposed projects under this alternative, this alternative could affect views from areas such as National Historic Trails, Wilderness areas, or culturally sensitive landscapes. Excessive dust generated by construction could also be considered a visual quality impact. Compared to the proposed projects, this alternative could result in greater aesthetics impacts.

Agriculture: Under this alternative, the projects would be developed on desert land. The Yuha Desert does not contain agricultural land. Compared to the proposed projects, this alternative would avoid impacts associated with the conversion of agricultural lands to non-agricultural uses.

Air Quality: Because a majority of roads in the desert are not paved, construction vehicles would have to travel on access roads, which are typically unpaved and would likely result in higher amounts of dust emissions. Compared to the proposed projects, although mitigation measures would be implemented to reduce emissions to a less than significant level, overall, this alternative is anticipated to result in greater air quality impacts.

Biological Resources: Under this alternative, the projects would be developed in the Flat-tailed Horned Lizard (FTHL) Rangelwide Management Strategy, Yuha Basin Management Area (MA). In accordance with the Rangelwide Management Strategy, occupancy of FTHL within the MA is assumed; therefore, there is a potential to impact FTHL within the MA. There is a one percent disturbance threshold within the Yuha MA. Based on the Record Decision for the Ocotillo Sol Project (BLM/CA/EA-2013/022+1793), the total disturbance (with the Ocotillo Sol Project) in the MA is 0.805 percent. This leaves approximately 112 acres before the BLM reaches the 1 percent disturbance cap. The four solar energy facilities would encompass ~~1,400~~^{1,422} acres. Based on the remaining acres allowed before the BLM reaches the 1 percent disturbance cap, the projects would exceed this threshold. This is considered a significant impact. Compared to the proposed projects, this alternative would result in greater biological resource impacts.

Cultural Resources: This alternative would require construction has potential to result in cultural resources impacts. Compared to the proposed projects, this alternative has a higher potential to disturb cultural resources because of the desert's generally undisturbed nature as opposed to the project study areas that have been disturbed due to disking over time from farming activity. For example, 29 prehistoric sites, one historic site, and eight isolates were reported as being located within the project footprint of the transmission corridor (located on BLM lands) associated with the Imperial Solar Energy South Project. The potential of finding cultural resources on a highly disturbed site is anticipated to be lower compared to a generally undisturbed site. Compared to the proposed projects, this alternative is likely to result in greater cultural resource impacts.

Geology and Soils: Grading and construction of new facilities such as transmission facilities and solar facilities would still occur under this alternative. Similar to the proposed projects, this alternative would require the incorporation of mitigation measures identified for the proposed projects to minimize these impacts related to geology and soils to a less than significant level. Compared to the proposed projects, this alternative would result in similar geology and soil impacts.

Greenhouse Gas Emissions: This alternative would result in the same power production capacity as the proposed projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would be the same. This alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Although this alternative would result in construction emissions, this alternative would still require mitigation during construction, similar to the proposed projects, to reduce the identified impact to a less than significant level. Compared to the proposed projects, this alternative would contribute to similar and desirable reductions in GHG emissions and associated contribution to global climate change through the production of renewable energy.

Hazards and Hazardous Materials: Depending on the specific locations and conditions of the various sites that would need to be developed, certain hazards and hazardous materials may be encountered; however, they are less likely to be encountered in the desert areas. Sites needed in order to implement this alternative may need to be remediated before implementation of the alternative. Overall, the degree of impact associated with hazards and hazardous materials would likely be similar to the proposed project.

Hydrology/Water Quality: This alternative would result in modifications to the existing drainage patterns and the volume of storm water runoff, as this alternative would introduce impervious area on-site. The desert area contains many natural drainage features that could be impacted with the development of the proposed projects in otherwise currently undisturbed land. Also, there are generally no existing drainage systems that the projects could connect to; therefore, it is likely that more topographic alteration would be

needed in order to properly control runoff. This is compared to the proposed project, where the topography has been altered over time from farming activity. Water quality impacts under this alternative would require mitigation similar to that proposed for the projects. Compared to the proposed projects, even with implementation of the proposed mitigation measures, potential hydrology impacts under this alternative would be greater to those associated with the proposed projects.

Land Use and Planning: Compared to the proposed projects, this alternative would require a ROW grant from the BLM to construct, operate, maintain, and decommission the proposed projects on BLM lands. The CDCA Plan would also need to be amended to identify the projects as suitable for solar energy development. With an authorized ROW and amendment of the CDCA Plan, this alternative would not result in significant land use and planning impacts. Compared to the proposed projects, this alternative would result in similar impacts related to land use and planning.

Noise: This alternative would be developed on desert lands and construction noise is unlikely to affect any nearby sensitive receptors. As with the proposed projects, operational impacts associated with this alternative would not expose persons or generate noise levels in excess of applicable noise standards, exposure persons to, or generate excessive groundborne vibration, or expose persons to excessive aircraft noise. Compared to the proposed projects, this alternative would result in similar impacts related to noise.

Public Services: This alternative would require increased public services, specifically law enforcement and fire protection services. Similar to the proposed projects, this alternative would be conditioned to provide law enforcement and fire service fees. Compared to the proposed projects, this alternative would result in a similar impact related to public services.

Transportation/Traffic: Similar to the proposed projects, this alternative would temporarily increase the number of vehicles and truck trips on local roadways during construction. However, these construction vehicles and truck trips would be traveling on access roads, which are typically unpaved. Depending on the location of the proposed projects under this alternative, access (including emergency access) to the sites may be more difficult. Compared to the proposed projects, this alternative would result in a greater impact related to transportation/traffic.

Utilities: This alternative would require water service and energy for the operation of the proposed projects. As with the proposed projects, panel washing and other maintenance would be required. Compared to the proposed projects, this alternative would result in similar impacts related to utilities.

Conclusion: Compared to the proposed projects, implementation of Alternative 5: Alternative Location – Desert Land would avoid impacts on agriculture. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, and transportation/traffic.

Comparison of Alternative 5: Alternative Location – Desert Land to Project Objectives

Alternative 5: Alternative Location – Desert Land would meet most of the basic objectives. However, this alternative would not result in construction and operation of a solar power facility with minimal impacts to the environment because it would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, and transportation/traffic than the proposed project.

8.8 ALTERNATIVE 6: NO UTILITY-SCALE SOLAR DEVELOPMENT – DISTRIBUTED COMMERCIAL AND INDUSTRIAL ROOFTOP SOLAR ONLY ALTERNATIVE

This alternative would involve the development of a number of geographically distributed small to medium solar PV systems (100 kilowatts to 1 MW) within existing developed areas, typically on the rooftops of commercial and industrial facilities throughout Imperial County. Under this alternative, no new land would be developed or altered and agricultural land would not be temporarily converted to non-agricultural uses. Depending on the type of solar modules installed and the type of tracking equipment used, a similar or

greater amount of acreage (i.e., greater than ~~1,400~~¹~~4,422~~ acres of total rooftop area) may be required to attain the proposed projects' capacity of 360 MW of solar PV generating capacity. This alternative would involve placement of PV structures, transmission lines, and development of additional supporting facilities, such as switching stations and substations at various locations throughout the County. This alternative assumes that rooftop development would occur primarily on commercial and industrial structures due to the greater availability of large, relatively flat roof areas necessary for efficient solar installations.

This alternative would require thousands of installation locations across Imperial County, many of which would require approval of discretionary actions, such as design review, CUPs, or zone variances depending on local jurisdictional requirements. Similar to the proposed projects, this alternative would be designed to operate year-round using PV panels to convert solar energy directly to electrical power. This alternative would involve the construction of transmission lines and development of additional supporting facilities, such as switching stations and substations at various locations throughout the County to distribute the energy.

Rooftop PV systems exist in small areas throughout California. Larger distributed solar PV installations are becoming more common. An example of a distributed PV system is 1 MW of distributed solar energy installed by Southern California Edison on a 458,000 square-foot industrial building in Chino, California.¹

Similar to utility-scale PV systems, the acreage of rooftops or other infrastructure required per MW of electricity produced is wide ranging, which is largely due to site-specific conditions (e.g., solar insolation levels, intervening landscape or topography, PV panel technology, etc.). Based on SCE's use of 458,000-square feet for 1 MW of energy, approximately 164,880,000 square feet (approximately 3,785 acres) would be required to produce 360 MW.

Environmental Impact of Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative

Aesthetics: This alternative would reduce the overall size of the solar energy fields. However, this alternative would involve placement of PV structures, transmission lines, and development of additional supporting facilities, such as switching stations and substations at various locations throughout the County. There could be significant aesthetic impacts in certain areas depending on the locations of these facilities. Transmission lines would need to be constructed to serve the PV generation sites, all of which would be placed in closer proximity to urban areas, and all of which would be more readily visible to more people as compared to the proposed projects. Compared to the proposed projects, this alternative could result in greater aesthetics impacts.

Agriculture: Under this alternative, the project sites would continue to be used for active agricultural uses. Unlike the proposed projects, this alternative would not include the use of large acreages of Prime Farmland, or Farmland of Statewide Importance for the solar generation facilities. Therefore, this alternative would avoid the proposed projects' impact to agricultural lands. Compared to the proposed projects, this alternative would avoid the significant impacts associated with the agricultural issues.

Air Quality: Under this alternative, air emissions due to project construction could be less than the proposed projects on a localized level; however, PV facilities and supporting infrastructure would still need to be constructed to support this alternative, which would still involve short-term construction emissions. These emissions would likely be spread-out geographically throughout the basin, and would occur over a longer period of time, as this alternative would involve a longer overall timeframe for implementation. Furthermore, the construction efficiencies that can be obtained by mobilizing equipment and crews in one general location over a shorter timeframe would not be realized. By the nature of the alternative, in that solar panels would be constructed on habitable structures throughout the County, this alternative has the potential to expose more people to more localized construction-related emissions.

¹ <http://newsroom.edison.com/releases/california-regulators-approve-southern-california-edison-proposal-to-create-nations-largest-solar-panel-installation-program>

Compared to the proposed projects, this alternative would develop less renewable energy megawatt generation in the near-future, thereby reducing its ability to provide a long-term source of renewable energy and meeting renewable energy goals, and air quality impacts could be greater under this alternative.

Biological Resources: Under this alternative, potential impacts to burrowing owl locations identified within the project sites and indirect impacts associated with burrowing owls in the adjacent drainage canals would be avoided as compared to the proposed projects. However, this alternative would also require the construction of supporting infrastructure that has the potential to result in biological impacts. As such, while this alternative may avoid the specific impacts associated with the proposed projects, it could also result in greater biological impacts in other areas of the County where supporting infrastructure is required to support Distributed Energy facilities.

Cultural Resources: This alternative would require the construction of supporting infrastructure that has the potential to result in cultural resources impacts. While this alternative may avoid the specific impacts on the project sites, it could also result in additional cultural resource impacts in other areas of the County where supporting infrastructure is required to support Distributed Energy facilities. Furthermore, if rooftop solar panels were proposed on historic buildings, this alternative could affect the historic character and integrity of the buildings. Implementation of this alternative would require historic surveys and investigations to evaluate the eligibility of potentially historic structures that are over 50 years old, and either avoidance of such buildings, or incorporation of design measures to minimize impacts on historic integrity of historically-significant structures. Compared to the proposed projects, this alternative could result in greater impacts related to cultural resources.

Geology and Soils: Grading and construction of new facilities such as transmission facilities, and solar arrays would still occur. Similar to the projects, this alternative would require the incorporation of mitigation measures identified for the proposed projects to minimize impacts to a less than significant level. Compared to the proposed projects, this alternative would result in similar geological and soil impacts.

Greenhouse Gas Emissions: Under this alternative, the project footprint would be reduced; however, in order to achieve the same megawatt capacity as the proposed projects, this alternative would also involve a surface area similar in size to the project sites. Therefore, while this alternative could reduce or eliminate GHG emissions during project construction at the project sites, an equivalent level of GHG emissions is likely to occur, as a result of constructing solar panels and supporting infrastructure throughout the valley. Furthermore, as a consequence of the reduced PV footprint associated with the utility-scale solar farm, this alternative would result in a reduced power production capacity as compared to the proposed projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would also be reduced. As with the proposed project, this alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. This alternative would still require mitigation during construction at individual sites throughout the County, similar to the proposed projects. Compared to the proposed projects, although this alternative would result in reduced construction emissions at the project sites, overall, a similar level of emissions would be expected.

Hazards and Hazardous Materials: Hazards and hazardous materials- related impacts, including the potential for accidental discovery of undocumented hazardous materials during construction would be avoided. However, there are other hazards that could result from implementation of this alternative, depending on the specific locations and conditions of the various sites that would need to be developed. For example, electrical infrastructure would be placed on top of, or in closer proximity to habitable structures, such as office buildings. Electrical transmission systems would still be required in order to connect the various distributed energy systems to the electrical grid; therefore, there would be additional poles and other structures that could interfere with aviation, depending on their locations. Certain sites needed in order to implement this alternative may also contain hazardous materials that would need to be remediated before implementation of the alternative. Overall, the degree of impact associated with hazards and hazardous materials would likely be similar to the proposed projects.

Hydrology/Water Quality: This alternative would likely avoid any impacts associated with modifications to the existing drainage patterns and the volume of storm water runoff, as this alternative would introduce less impervious surface areas (this alternative would involve construction of PV facilities on existing structures and within existing developed areas). Compared to the proposed projects, this alternative would result in fewer impacts related to hydrology/water quality.

Land Use and Planning: Similar to the proposed projects, this alternative would not divide an established community or result in incompatibilities with adjacent agricultural uses. Unlike the projects this alternative could involve multiple planning approvals (e.g., variances, CUPs, rezones) in order to accommodate the solar generating uses within other zones of the County that currently do not allow such uses. Compared to the proposed projects, land use and planning impacts resulting from this alternative would be potentially greater than those identified for the proposed projects.

Noise: As with the proposed projects, this alternative would result in significant, but mitigable noise impacts associated with construction activities. Because this alternative would involve construction of PV facilities in the more developed areas of the County, it is likely that this alternative would result in exposure of sensitive receptors to excessive construction noise levels at various locations (e.g., construction of PV on top of office buildings, or in areas where residential uses are located in proximity). Compared to the proposed projects, this alternative would require the operations of the same facilities required for the projects and, therefore, would not reduce any significant noise impacts nor eliminate the need to incorporate mitigation measures. As with the proposed projects, operational impacts associated with this alternative would not expose persons or generate noise levels in excess of applicable noise standards, expose persons to, or generate excessive groundborne vibration, or expose persons to excessive aircraft noise. Compared to the proposed projects, significant noise impacts as a result of this alternative could be greater with respect to construction activities, and for operations would be similar to the proposed projects.

Public Services: This alternative would require increased public services, specifically law enforcement and fire protection services. It is anticipated that public services and associated service ratios would, at a minimum, be similar to the proposed projects as the facilities would require fire and law enforcement protection, and this alternative could result in a greater impact as the facilities would be distributed over a much larger geographical area. Similar to the proposed projects, this alternative would be conditioned to provide law enforcement and fire service fees. Compared to the proposed projects, this alternative would result in a similar impact related to public services.

Transportation/Traffic: This alternative would not reduce or avoid an impact to transportation/traffic and would result in less than significant impacts similar to the proposed projects. As with the proposed projects, this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Compared to the proposed projects, this alternative would result in a similar impact related to transportation/traffic.

Utilities: This alternative would require water service and energy for the operation of the projects. As with the proposed projects, panel washing and other maintenance would be required. This alternative would also allow agricultural operations to continue at the project study areas, which utilizes more water than solar farm activities. Compared to the proposed projects, this alternative would have increased water demands and therefore, greater impacts related to utilities.

Conclusion: Implementation of Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative would result in reduced impacts for the following environmental issue areas as compared to the proposed projects: agriculture and hydrology/water quality. Overall, this alternative would result in greater impacts related to aesthetics, air quality, biological resources, cultural resources, land use and planning, noise, and utilities.

Comparison of Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative to Project Objectives

Alternative 6: No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only Alternative would achieve most of the basic objectives of the proposed projects. However, this alternative would have a number of drawbacks, including, but not limited to the following:

- Difficulties with respect to buildout of the system within a timeframe that would be similar to that of the proposed projects;
- Given the distributed nature of such a network of facilities, management and maintenance would not be as efficient, and total capital costs would likely be higher;
- The requirement to negotiate with a large number of individual property owners to permit placement of solar panels on rooftops;
- The difficulty of ensuring proper maintenance of a large number of smaller solar installations; and
- The lack of an effective electricity distribution system for large numbers of small electricity producers.

8.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 8.4-1 provides a qualitative comparison of the impacts for each alternative compared to the proposed projects. As noted in Table 8.4-1, the No Project/No Development Alternative would be considered the environmentally superior alternative, since it would eliminate all of the significant impacts identified for the projects. However, CEQA Guidelines Section 15126.6(e)(2) states that "if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." The environmentally superior alternative would be Alternative 3: Reduced Acreage Alternative (Avoid Williamson Act Land) because it would reduce impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, greenhouse gas emissions (construction phase only), and hydrology/water quality.

TABLE 8.4-1. COMPARISON OF ALTERNATIVE IMPACTS TO PROPOSED PROJECT

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Aesthetics	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact
Agriculture	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)
Air Quality	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact
Biological Resources	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Cultural Resources	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact (avoid)	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Similar impact	CEQA Significance: Potentially significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level of significance Comparison to Projects: Greater impact	CEQA Significance: Potentially Significant Comparison to Projects: Greater impact
Geology and Soils	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact
Greenhouse Gas Emissions	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact during construction. Would not achieve GHG emission reductions to the extent of the proposed project as less renewable energy would be produced	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact during construction. Would not achieve GHG emission reductions to the extent of the proposed project as less renewable energy would be produced	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Hazards and Hazardous Materials	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact
Hydrology/ Water Quality	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Less impact
Land Use/Planning	Less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact	CEQA Significance: Less than significant Comparison to Projects: Greater impact
Noise	Mitigated to below a level less than significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Similar impact	CEQA Significance: Mitigated to below a level less than significant Comparison to Projects: Greater impact

8.0 Alternatives

Environmental Issue Area	Proposed Project	Alternative 1 No Project/ No Development	Alternative 2 Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3 Reduced Acreage Alternative (Avoid Williamson Act Land)	Alternative 4 Alternative Location – Private Land	Alternative 5 Alternative Location – Desert Land	Alternative 6 No Utility-Scale Solar Development – Distributed Commercial and Industrial Rooftop Solar Only
Public Services	Less than Significant	CEQA Significance: No impact Comparison to Projects: Less impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar impact
Transportation/ Traffic	Less than significant	CEQA Significance: No impact Comparison to Projects: Similar	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Greater Impact	CEQA Significance: Less than significant Comparison to Projects: Similar
Utilities	Less than Significant	CEQA Significance: No impact Comparison to Projects: Greater impact (water use)	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Similar Impact	CEQA Significance: Less than significant Comparison to Projects: Greater impact (water use)

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