Final Environmental Impact Report

Laurel Cluster Solar Farms Project

SCH No. 2017121078

Imperial County, California

August 2018

Prepared for

County of Imperial
801 Main Street
El Centro,
CA 92243

Prepared by

HDR Engineering, Inc.
8690 Balboa Avenue,
Suite 200
San Diego, CA
92123

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Table of Contents

Tables

Figures

Appendices

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Acronyms

°	degrees
AB	Assembly Bill
ABPP	avian and bat protection plan
AC	alternating current
AF	acre-feet
AFY	acre-feet per year
ALUCP	Airport Land Use Compatibility Plan
AP	Alquist-Priolo
APN	assessor parcel number
AQAP	air quality attainment plan
AQMP	air quality management plan
AST	aboveground storage tank
BAU	business as usual
BLM	Bureau of Land Management
BMP	best management practice
BTR	Biological Technical Report
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CH_4	methane
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	Imperial County
CRHR	California Register of Historic Resources
CUP	conditional use permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	a-weighted decibel
DC	direct current
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenylethylene
DDT	Dichlorodiphenyltrichloroethane
DOC	Department of Conservation
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FGC	Fish and Game Code
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map

FMMP	Farmland Mapping and Monitoring Program
GHG	greenhouse gas
GWP	global warming potential
HCP	habitat conservation plan
HFC	hydrofluorocarbon
HMMP	hazardous material management program
HSC	Health and Safety Code
ICAPCD	Imperial County Air Pollution Control District
ICFD	Imperial County Fire Department
ICPDS	Imperial County Planning and Development Services Department
IGR	Intergovernmental Review
IID	Imperial Irrigation District
IS	Initial Study
ISO	independent system operator
IWSP	Interim Water Supply Policy
KOP	key observation point
kV	kilovolt
LCFS	low carbon fuel standard
L_{dn}	day-night average sound level
LE	land evaluation
L_{eq}	equivalent sound level
LESA	land evaluation site assessment
L_{max}	maximum noise level
LOS	level of service
LSF1	Laurel 1 Solar Farm
LSF2	Laurel 2 Solar Farm
LSF3	Laurel 3 Solar Farm
LSF4	Laurel 4 Solar Farm
MBTA	Migratory Bird Treaty Act
MHMP	Multi-Hazard Mitigation Plan
MLD	most likely descendant
$MTCO_2e$	metric tons of CO_2 equivalent
$MMTCO_2e$	million metric tons of CO_2 equivalent
MW	megawatt
N/A	not available
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	natural community conservation plan
No.	Number
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
O_2	Oxygen
O_3	ozone
OES	Office of Emergency Services
OHP	Office of Historic Preservation
OHW	ordinary high water
OHWM	ordinary high water mark
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	lead

PCBs	polychlorinated biphenyls
PFC	perfluorocarbon
PGA	peak ground acceleration
Phase I ESA	Phase I Environmental Site Assessment
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
POE	point of entry
POU	publicly owned utility
PPA	power purchase agreement
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PUC	Public Utilities Commission
PV	photovoltaic
PVC	Polyvinyl chloride
Q=CiA	Rational Method
QSA	Quantification Settlement Agreement
RCP	Regional Comprehensive Plan
RCRA	Resource Conservation and Recovery Act
RE	Renewable Energy
REC	Renewable-Energy Credits
RECUP	Renewable Energy Conditional Use Permit
REL	reference exposure level
ROG	reactive organic gases
ROW	right-of-way
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SA	site assessment
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCAG	Southern California Association of Governments
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
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SLF	Sacred Lands File
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
sq-ft	square feet
SR	State Route
SSAB	Salton Sea Air Basin
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
tCO2e	tonnes of carbon dioxide equivalents
TIA	traffic impact analysis
TMDL	total maximum daily load
TNW	traditional navigable water
TSS	total suspended solids
UBC	Uniform Building Code
UPS	uninterruptable power supply

USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
V/C	volume to capacity
VOC	volatile organic compound
WB	west bound
WEAP	Worker Environmental Awareness Program
WSA	Water Supply Assessment
µg/m^3	microgram per cubic meter

0.1 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 Laurel (formerly "Big Rock") Cluster Solar Farm Project EIR is comprised of the following:

- Draft Environmental Impact Report, Big Rock Cluster Solar Farm Project (April 2018) (SCH No. 2017121078); and
- This Final EIR document, dated July 2018, that incorporates the information required by §15132.

Format of the Final EIR

Section 0.1 Introduction

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

Section 0.2 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 0.3 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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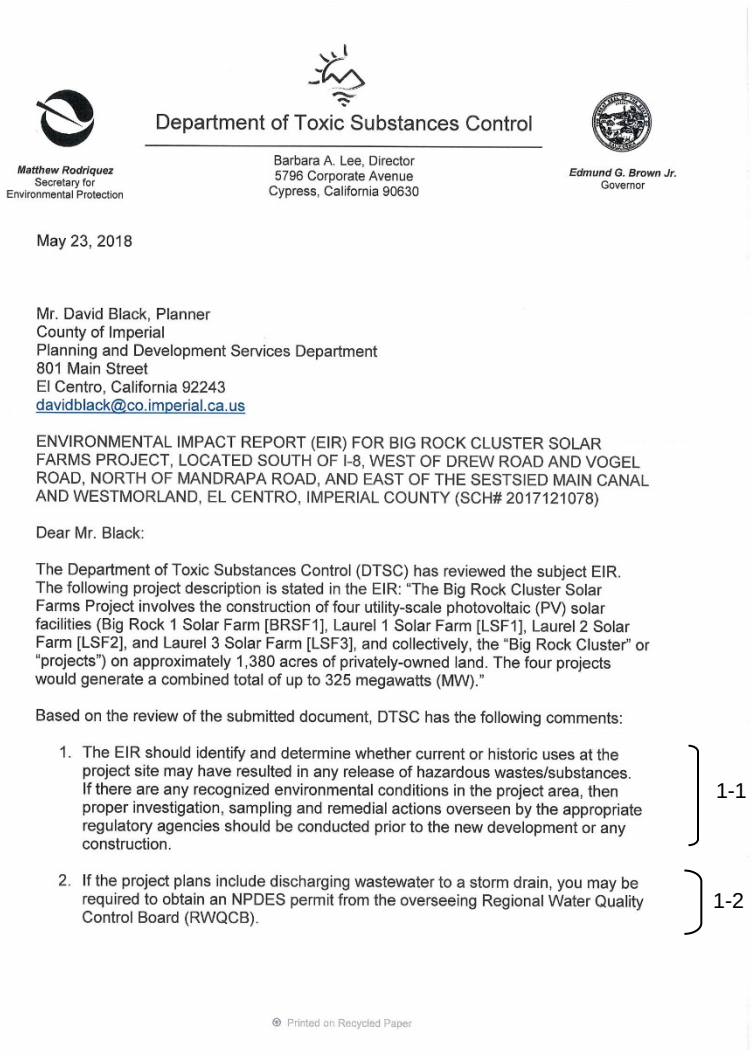
0.2 Response to Comments

This section contains responses to all comment letters received on the April 2018 Draft Environmental Impact Report (DEIR). Five letters were received during the comment period, which began on April 11, 2018 and closed on May 31, 2018. 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 0.2-1.

Table 0.2-1. Laurel Cluster Solar Farm Project Draft EIR Comment Letters

Letter No.	Commenter	Date
1	Department of Toxic Substances Control	05/23/18
2	Imperial County Air Pollution Control District	06/01/18
3	Native American Heritage Commission	05/30/18
4	Rochelle Dickerson	05/23/18
5	Law Offices of Stephan C. Volker	05/30/18



Department of Toxic Substances Control

Barbara A. Lee, Director
5796 Corporate Avenue
Cypress, California 90630

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

May 23, 2018

Mr. David Black, Planner
County of Imperial
Planning and Development Services Department
801 Main Street
El Centro, California 92243
davidblack@co.imperial.ca.us

ENVIRONMENTAL IMPACT REPORT (EIR) FOR BIG ROCK CLUSTER SOLAR FARMS PROJECT, LOCATED SOUTH OF I-8, WEST OF DREW ROAD AND VOGEL ROAD, NORTH OF MANDRAPA ROAD, AND EAST OF THE SESTSIED MAIN CANAL AND WESTMORLAND, EL CENTRO, IMPERIAL COUNTY (SCH# 2017121078)

Dear Mr. Black:

The Department of Toxic Substances Control (DTSC) has reviewed the subject EIR. The following project description is stated in the EIR: "The Big Rock Cluster Solar Farms Project involves the construction of four utility-scale photovoltaic (PV) solar facilities (Big Rock 1 Solar Farm [BRSF1], Laurel 1 Solar Farm [LSF1], Laurel 2 Solar Farm [LSF2], and Laurel 3 Solar Farm [LSF3], and collectively, the "Big Rock Cluster" or "projects") on approximately 1,380 acres of privately-owned land. The four projects would generate a combined total of up to 325 megawatts (MW)."

Based on the review of the submitted document, DTSC has the following comments:

1. The EIR should identify and determine whether current or historic uses at the project site may have resulted in any release of hazardous wastes/substances. If there are any recognized environmental conditions in the project area, then proper investigation, sampling and remedial actions overseen by the appropriate regulatory agencies should be conducted prior to the new development or any construction. 1-1

2. If the project plans include discharging wastewater to a storm drain, you may be required to obtain an NPDES permit from the overseeing Regional Water Quality Control Board (RWQCB). 1-2

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1-1 A *Phase I Environmental Site Assessment* (Phase I ESA) was prepared for each of the project sites (LSF1, LSF2, LSF3, and LSF4) by GS Lyon Consultants, Inc. The Phase I ESA prepared for the project sites was used to assess the potential hazards and hazardous materials found on-site or adjacent to the project sites. This report is included in Appendix I of the EIR.

The Phase I ESA included historical database review, review of historical aerial photography, a site reconnaissance, and interview with the property owner. Based on the Phase I ESA, no potential for hazardous materials or other recognized environmental conditions (REC) were identified on LSF2, LSF3, and LSF4.

Historical records have noted that in 1975, a septic system was present at the southeast corner of Derrick and West Diehl Road on the LSF1 project site. There are no records of removal or abandonment. Considering the age of the system (if present), the Phase I ESA identified that there is potential for onsite soil contamination during ground disturbance and construction of the LSF1 project; therefore, a potential impact has been identified for this issue area. The potential impact is considered significant.

Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce the potential impact associated with an accidental release of hazardous materials into the environment from project-related activities to a level less than significant (see EIR page 4.8-11). These measures require that a Phase II ESA (drilling, sampling, and analytical program) shall be completed if the LSF1 project is to be constructed in the area of the septic system. This Phase II ESA will determine if the previous septic system is still onsite and if soil contamination exists. Additionally, Mitigation Measure HAZ-2 requires that 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.
	1-2	Comment noted. As proposed, the project would not involve discharging wastewater into a storm drain; therefore, it is not anticipated that an NPDES permit would be required.

3. The EIR states, "Based on the review of environmental records, historical documents, and site conditions, the property has been in agricultural use since the late 1940s." The EIR further states, "The presence and concentration of near surface pesticides at this site can be accurately characterized only by site-specific sampling and testing." DTSC recommends investigation and mitigation, as necessary, to address potential impact to human health and environment from residual pesticides. 1-3

4. DTSC recommends evaluation, proper investigation and mitigation, if necessary, of onsite areas with current or historic PCB-containing transformers. 1-4

5. The EIR states, "As shown on Figure 3-2, the projects are generally located south of I-8, west of Drew Road and Vogel Road, north of Mandrapa Road, and east of the Westside Main Canal and Westmorland Road." Aerially deposited lead (ADL) is generally encountered in unpaved or formerly unpaved areas adjoining older roads, primarily as a result of deposition from historical vehicle emissions when gasoline contained lead. As the project site is adjacent to I-8 Freeway, this issue should be addressed in accordance with all applicable and relevant laws and regulations. 1-5

6. If the project development involves soil export/import, proper evaluation is required. If soil contamination is suspected or observed in the project area, then excavated soil should be sampled prior to export/disposal. If the soil is contaminated, it should be disposed of properly in accordance with all applicable and relevant laws and regulations. In addition, if imported soil was used as backfill onsite and/or backfill soil will be imported, DTSC recommends proper evaluation/sampling as necessary to ensure the backfill material is free of contamination. 1-6

7. If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate health and safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the EIR should identify how any required investigation and/or remediation will be conducted and the appropriate government agency to provide regulatory oversight. 1-7

1-3 The Phase I ESA did not recommend further soils testing for residual pesticides.

The EIR states that the concentrations of the pesticides referenced in this comment, found on other Imperial Valley agricultural sites are typically less than 25 percent of the current regulatory threshold limits and are not considered a significant environmental hazard. Further, according to the professional opinion of GS Lyons Consultants, Inc., although 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 (EIR page 4.8-11).

1-4 No potential PCB containing equipment, such as electrical transformers, capacitors, and hydraulic equipment, were observed during the site reconnaissance on the project sites or immediate vicinity (EIR page 4.8-8).

1-5 While the EIR notes that the project site is located south of I-8, the project site is not located in immediate proximity to the I-8 right away. The northern portion of the project site is located approximately 1,000 feet south of I-8, and the potential to encounter aerial deposited lead is considered less than significant. It should also be noted that the proposed project sites are currently active farmland and are subject to ongoing soil disturbance and farming activity. The proposed project would not disturb soils not already disturbed by on-going farming activities.

1-6 Implementation of the proposed project will involve minimal grading activities. No soil export/import is proposed.

1-7 The Phase I ESA did not identify the potential for soil or groundwater contamination and no remediation measures are recommended.

If you have any questions regarding this letter, please contact me at (714) 484-5380 or by email at Johnson.Abraham@dtsc.ca.gov. 1-8

Sincerely,

Johnson P. Abraham
Project Manager
Brownfields Restoration and School Evaluation Branch
Site Mitigation and Restoration Program – Cypress

kl/sh/ja

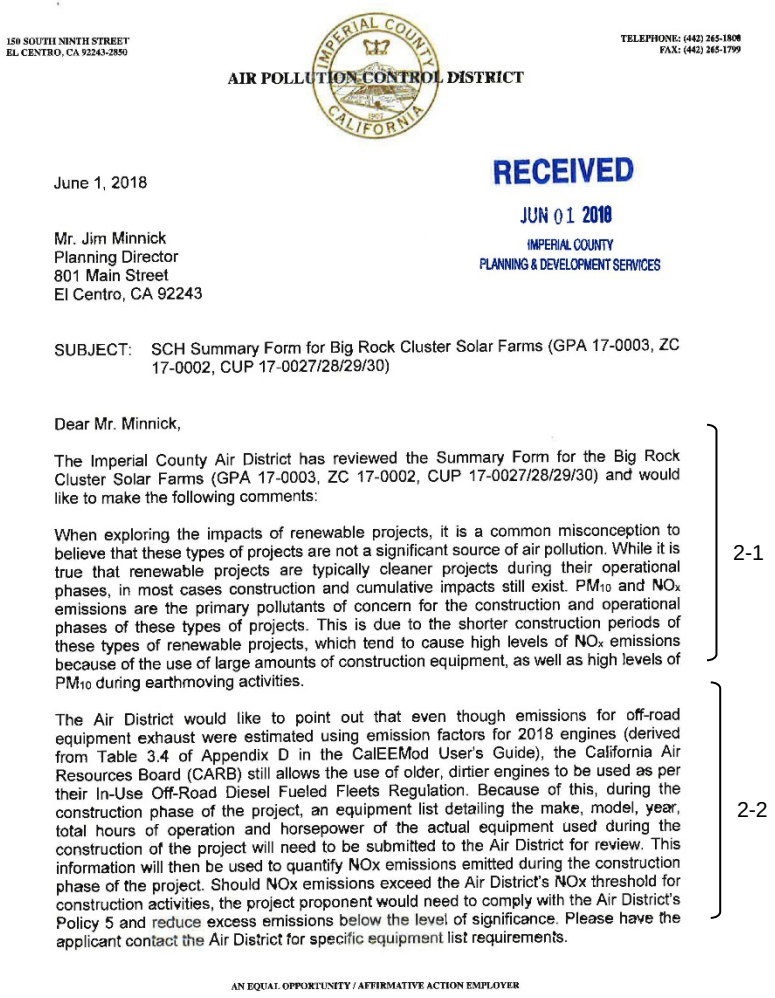
cc: Governor's Office of Planning and Research (via e-mail)
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044
State.clearinghouse@opr.ca.gov

Mr. Dave Kereazis (via e-mail)
Office of Planning & Environmental Analysis
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

Mr. Shahir Haddad, Chief (via e-mail)
Schools Evaluation and Brownfields Cleanup
Brownfields and Environmental Restoration Program - Cypress
Shahir.Haddad@dtsc.ca.gov

CEQA# 2017121078

1-8 Comment noted.



150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (442) 265-1800
FAX: (442) 265-1799

AIR POLLUTION CONTROL DISTRICT

RECEIVED
JUN 01 2018
IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

June 1, 2018

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

SUBJECT: SCH Summary Form for Big Rock Cluster Solar Farms (GPA 17-0003, ZC 17-0002, CUP 17-0027/28/29/30)

Dear Mr. Minnick,

The Imperial County Air District has reviewed the Summary Form for the Big Rock Cluster Solar Farms (GPA 17-0003, ZC 17-0002, CUP 17-0027/28/29/30) and would like to make the following comments:

When exploring the impacts of renewable projects, it is a common misconception to believe that these types of projects are not a significant source of air pollution. While it is true that renewable projects are typically cleaner projects during their operational phases, in most cases construction and cumulative impacts still exist. PM_{10} and NO_x emissions are the primary pollutants of concern for the construction and operational phases of these types of projects. This is due to the shorter construction periods of these types of renewable projects, which tend to cause high levels of NO_x emissions because of the use of large amounts of construction equipment, as well as high levels of PM_{10} during earthmoving activities.

2-1

The Air District would like to point out that even though emissions for off-road equipment exhaust were estimated using emission factors for 2018 engines (derived from Table 3.4 of Appendix D in the CalEEMod User's Guide), the California Air Resources Board (CARB) still allows the use of older, dirtier engines to be used as per their In-Use Off-Road Diesel Fueled Fleets Regulation. Because of this, during the construction phase of the project, an equipment list detailing the make, model, year, total hours of operation and horsepower of the actual equipment used during the construction of the project will need to be submitted to the Air District for review. This information will then be used to quantify NOx emissions emitted during the construction phase of the project. Should NOx emissions exceed the Air District's NOx threshold for construction activities, the project proponent would need to comply with the Air District's Policy 5 and reduce excess emissions below the level of significance. Please have the applicant contact the Air District for specific equipment list requirements.

2-2

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

2-1 Comment noted. The OB-1 Air Analyses prepared an *Air Quality/Greenhouse Gas Report* (EIR Appendix E) provides an evaluation of potential adverse effects to air quality based on criteria derived from the CEQA Guidelines and the ICAPCD's Air Quality Handbook. The analysis includes an analysis of the proposed project's potential impacts associated with both construction and operation of the project, and includes an evaluation of PM_{10} and NO_X emissions.

2-2 EIR Mitigation Measure AQ-1 requires that:

> AQ-1 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 ICPDS and ICAPCD prior to the issuance of a grading permit. ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The ICPDS and ICAPCD shall verify implementation of this measure.

Additionally, compliance with Regulation VIII is required for all construction activities, as well as notification 10 days prior to the commencement of all construction activities. Our rules and regulations can be found on our website at www.co.imperial.ca.us/AirPollution under the planning section. If any questions arise, please feel free to contact our office at (442) 265-1800. 2-3

Sincerely,

Axel Salas
APC Environmental Coordinator

2-3 EIR Mitigation Measure AQ-2 requires that:

AQ-2 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 compliance with these measures as part of the grading permit review/approval process.

STATE OF CALIFORNIA — Edmund G. Brown Jr., Governor
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471

May 30, 2018

David Black
Imperial County
801 Main Street
El Centro, CA 92243

Also sent via e-mail: davidblack@co.imperial.ca.us

Re: SCH# 2017121078, Big Rock Cluster Solar Farms Project, Community of Seeley; Imperial County, California

Dear Mr. Black:

The Native American Heritage Commission (NAHC) has reviewed the Draft Environmental Impact Report (DEIR) prepared for the project referenced above. The review included the Executive Summary; the Introduction and Project Description; and the Environmental Impact Analysis, section 5.4 Cultural Resources prepared by HDR, Inc. for Imperial County. We have the following concerns:

1. There is no Tribal Cultural Resources section or subsection in the Executive Summary or Environmental Checklist as per California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf — 3-1
2. While there is evidence that **SB-18 consultation outreach was begun on February 27, 2018**, this consultation should have been completed in the planning phase (General Plans, General Plan amendments, Specific Plans) of the project prior to completion of the project design. The timeline for comments from tribes under SB-18 is 90 days. The DEIR was released prior to the expiration of the allotted time for tribes to comment based on the stated SB-18 consultation outreach. — 3-2
3. There is no documentation of **government-to-government consultation by the lead agency UNDER AB-52** with Native American tribes traditionally and culturally affiliated to the project area as required by statute, or that mitigation measures were developed in consultation with the tribes. Discussions under AB-52 may include the type of document prepared; avoidance, minimization of damage to resources; and proposed mitigation. Contact by consultants during the Cultural Resources Assessments is not formal consultation. Consultation with tribes under AB-52 is required within 14 days of determining that an application for a project is complete or of the decision by a public agency to undertake the project. Consultation should be completed prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project. — 3-3
4. There are no mitigation measures specifically addressing Tribal Cultural Resources separately and distinctly from Archaeological Resources. Mitigation measures must take Tribal Cultural Resources into consideration as required under AB-52, **with or without consultation** occurring. Mitigation language for archaeological resources is not always appropriate for or similar to measures specifically for handling Tribal Cultural Resources. Sample mitigation measures for Tribal Cultural Resources can be found in the CEQA guidelines at http://opr.ca.gov/docs/Revised_AB_52_Technical_Advisory_March_2017.pdf — 3-4

The NAHC recommends lead agencies consult with all California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. — 3-5

A brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments is also attached.

Please contact me at gayle.totton@nahc.ca.gov or call (916) 373-3714 if you have any questions.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D
Associate Governmental Project Analyst

Attachment

cc: State Clearinghouse

3-1 EIR Appendix A provides the Notice of Preparation and initial Study for the EIR. Tribal Cultural Resources is addressed in Section VII Tribal Cultural Resources of the Initial Study. As stated in Section VII (page 2-14 of the Initial Study), Assembly Bill 52 was passed in 2014 and took effect July 1, 2015. It established a new category of environmental resources that must be considered under CEQA called tribal cultural resources (Public Resources Code 21074) and established a process for consulting with Native American tribes and groups regarding those resources. Assembly Bill 52 requires a lead agency to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed projects.

Imperial County has consulted with appropriate tribes with the potential for interest in the region. Based on this consultation, the project site is not located in an area identified as having the potential for a tribal cultural resource.

3-2 This comment does not correctly state certain consultation requirements under SB-18. SB-18 does not require that the release of the public review Draft EIR cannot occur until after the 90-day time limit for tribes to comment. Rather, SB-18 requires local governments to consult with tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process. Consistent with both AB 52 and SB 18, the County initiated Native American consultation at the on-set of the preliminary CUP application review and initiation of the CEQA environmental review process.

No land use decisions have been made with respect to the proposed project. Rather, the applicant has applied for a General Plan Amendment and Zone Change that will be considered by the County's Planning Commission and Board of Supervisors. It should be noted that neither of these land use decision involve the dedication of open

	space or an actual change to the underlying land use designation of the project site. It should also be noted that the principal objective of SB 18 is to preserve and protect cultural places of California Native Americans. No cultural places or artifacts have been identified on the project site. Specifically, SB-18 states, "Prior to the adoption or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the NAHC) of the opportunity to conduct consultations for the purpose of preserving, or mitigating impacts to, cultural places located on land within the local government's jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe." The County has received one request for consultation from the Colorado Indian Tribes regarding this project in response to the County's initial AB 52 and SB 18 Native American outreach efforts. The Tribe provided written correspondence. In response to the Tribes' consultation request letter, the County contacted representatives from the Tribe in a written communication on May 24th, and subsequently followed-up with Mr. Bryan Etsitty, Acting Director with the Colorado River Indian Tribes via verbal communication on June 12th. The Tribe indicated they would review the project and communicate with the County if needed. To date, no further responses have been received, Also, under SB-18, local governments must send notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written requires for such notice. Should the County receive such a request, the County will comply with this provision of SB-18 as well.
	3-3 As stated on EIR page 4.5-16, in accordance with AB 52, the County provided notification of the proposed projects to Native American tribes that the County understands to

		be traditionally and culturally affiliated with the geographic areas of the proposed projects. The County has requested for tribes to provide any information regarding any Traditional Cultural Properties, Sacred Sites, resource collecting areas, or any other areas of concern known to occur in the project area. The County began the SB 18 consultation process by contacting the NAHC and local tribal representatives. On February 27, 2018, the County sent a letter to each of these tribes, inviting them to enter into consultation regarding the General Plan Amendment. One tribe, the Colorado River Indian Tribes provided a response. Please refer to response to comment 3-2.
	3-4	As stated in response to comment 3-1, based on AB 52 consultation, the project site is not located in an area identified as having the potential for a tribal cultural resource; therefore, there is no potential for an impact to tribal cultural resources as a result of the proposed project is anticipated. Mitigation measures are proposed to address the potential inadvertent discovery of cultural resource materials.
	3-5	Comment noted. Please refer to preceding responses to comments 3-1 through 3-4.

ADDITIONAL INFORMATION:

The California Environmental Quality Act (CEQA)[1], specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.[2] If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.[3] In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended in 2014 by Assembly Bill 52. (AB 52).[4] **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** AB 52 created a separate category for "tribal cultural resources"[5], that now includes "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.[6] Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.[7] Your project may also be subject to **Senate Bill 18 (SB 18)** (Burton, Chapter 905, Statutes of 2004), Government Code 65352.3, if it also involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space. **Both SB 18 and AB 52 have tribal consultation requirements**. Additionally, if your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966[8] may also apply.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

Agencies should be aware that AB 52 does not preclude agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52. For that reason, we urge you to continue to request Native American Tribal Consultation Lists and Sacred Lands File searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/. Additional information regarding AB 52 can be found online at http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf, entitled "Tribal Consultation Under AB 52: Requirements and Best Practices".

Pertinent Statutory Information:

Under AB 52:

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice.

A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.[9] and **prior to the release of a negative declaration, mitigated negative declaration or environmental impact report**. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18).[10]

The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.
b. Recommended mitigation measures.
c. Significant effects.[11]

1. The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.
b. Significance of the tribal cultural resources.
c. Significance of the project's impacts on tribal cultural resources.

If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. [12]

With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process **shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10.** Any information submitted by a California Native

[1] Pub. Resources Code § 21000 et seq.
[2] Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b); CEQA Guidelines Section 15064.5 (b)
[3] Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1); CEQA Guidelines § 15064 (a)(1)
[4] Government Code 65352.3
[5] Pub. Resources Code § 21074
[6] Pub. Resources Code § 21084.2
[7] Pub. Resources Code § 21084.3 (a)
[8] 154 U.S.C. 300101, 36 C.F.R. § 800 et seq.
[9] Pub. Resources Code § 21080.3.1, subds. (d) and (e)
[10] Pub. Resources Code § 21080.3.1 (b)
[11] Pub. Resources Code § 21080.3.2 (a)
[12] Pub. Resources Code § 21080.3.2 (a)

- Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation.[22]

NAHC Recommendations for Cultural Resources Assessments:

- Contact the NAHC for:
  - A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - A Native American Tribal Contact List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
    - The request form can be found at http://nahc.ca.gov/resources/forms/.
- Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
  - If part or the entire APE has been previously surveyed for cultural resources.
  - If any known cultural resources have been already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

Examples of Mitigation Measures That May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- Avoidance and preservation of the resources in place, including, but not limited to:
  - Planning and construction to avoid the resources and protect the cultural and natural context.
  - Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protecting the cultural character and integrity of the resource.
  - Protecting the traditional use of the resource.
  - Protecting the confidentiality of the resource.
- Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed.[23]
- Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.[24]

The lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

- Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources.[25] In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be

[22] (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).
[23] (Civ. Code § 815.3 (c)).
[24] (Pub. Resources Code § 5097.991).
[25] per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)).

American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.[13]
If a project may have a significant impact on a tribal cultural resource, **the lead agency's environmental document shall discuss** both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource.[14]

Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.[15]

Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 **shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program**, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable.[16]
If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, **the lead agency shall consider feasible mitigation** pursuant to Public Resources Code section 21084.3 (b).[17]
An environmental impact report **may not be certified**, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days.[18]

This process should be documented in the Tribal Cultural Resources section of your environmental document.

Under SB 18:
Government Code § 65352.3 (a) (1) requires consultation with Native Americans on general plan proposals for the purposes of "preserving or mitigating impacts to places, features, and objects described § 5097.9 and § 5091.993 of the Public Resources Code that are located within the city or county's jurisdiction. Government Code § 65560 (a), (b), and (c) provides for consultation with Native American tribes on the open-space element of a county or city general plan for the purposes of protecting places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code.

- SB 18 applies to **local governments** and requires them to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf
- Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.**[19]
- There is no Statutory Time Limit on Tribal Consultation under the law.
- Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research,[20] the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction.[21]
- Conclusion Tribal Consultation: Consultation should be concluded at the point in which:
  - The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or

[13] Pub. Resources Code § 21082.3 (c)(1)
[14] Pub. Resources Code § 21082.3 (b)
[15] Pub. Resources Code § 21080.3.2 (b)
[16] Pub. Resources Code § 21082.3 (a)
[17] Pub. Resources Code § 21082.3 (e)
[18] Pub. Resources Code § 21082.3 (d)
[19] (Gov. Code § 65352.3 (a)(2)).
[20] pursuant to Gov. Code section 65040.2,
[21] (Gov. Code § 65352.3 (b)).

3

followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

5

Rochelle Dickerson
5/23/18

COMMENTS ON THE

DRAFT ENVIRONMENTAL IMPACT REPORT FOR

BIG ROCK CLUSTER I SOLAR PROJECT

On page 2.5, section 2.2.10 Land Use/Planning paragraph 3, it incorrectly states one residence north of intersection of Westside Road and West Vaughn Road. There are two residences at that site, with land subdivided for a possible third residence. 4-1

Again noted on page 4.1-2, section 4.1.1 Environmental Setting Project Sites paragraph 2 as one residence instead of two. 4-2

On page 4.3-8 in the second paragraph it should state seven residences, and two residences located at above mentioned location. 4-3

On page 4.1-13, section 4.1.2.3 Impact Analysis paragraph 2, it is stated that "The solar arrays (up to a height of approximately 20 feet) would not create a permanent visual obstruction for the background views of the mountains". Twenty foot high arrays could indeed obstruct views of the southern mountains, such as Mt. Signal as seen in Figure 4.1-7 photos on page 4.1-21. Furthermore, the KOP proposed photo is only shown with chain link fencing, not the fence slats as recommended in the draft EIR so further obstruction of views would occur with recommended fencing material. 4-4

On page 4.1-28, in table 4.1-4, the recommendation is made for fence slats due to possible glare due to fixed-tilt trackers facing West Vaughn Road. With the unsightliness of the pending project an aesthetically pleasing block wall would better suit the need. 4-5

4-1 EIR page 2-5 has been modified as follows:

- Two ~~One~~ residences north of the intersection of Westside Road and West Vaughn Road

4-2 EIR page 4.1-2 has been modified as follows:

- Two ~~One~~ residences north of the intersection of Westside Road and West Vaughn Road

4-3 EIR page 4.3-8 has been modified as follows:

However, there are seven ~~six~~ off-site rural residences located within 500 feet of the project sites: one residence located near the northwestern LSF3 boundary (north of West Vaughn Road); one residence located at the northern extent of LSF3 along Westside Road; two ~~one~~ residences north of the intersection of Westside Road and West Vaughn Road; two residences located along Liebert Road, one is located immediately west of LSF4, and the second is located due south of the intersection of West Diehl Road and Jessup Road; and one residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road.

4-4 Figure 4.1-7 does demonstrate that Mount Signal would be obstructed from view from this specific location; however, this visual obstruction would only be temporary to motorists (a few seconds) and generally would not be obstructed to motorists traveling southbound along Westside Road.

As noted on EIR page 4.1-15, the visual simulations show the solar arrays mounted on dual axis tracker blocks, which are the largest of the three types of PV structures that could be installed within the projects (fixed-mounted, single-axis, and double-axis tracker systems).

EIR page 4.1-13 has been modified to clarify as follows:

	o The solar arrays (up to a height of approximately 20 feet) would not create a permanent visual obstruction for the background views of the mountains to motorists driving south along Westside Road, and the view would generally remain visible to motorists. As described in the EIR, because of the speed of travel of these travelers, the duration of exposure is quick and not directly adjacent to the project site. The terrain within the project area is relatively flat, which provides open space viewing opportunities. Roadway traveler's (traveling north) awareness would be visually drawn toward the background views of the mountains to the west. Roadway traveler's (traveling south) awareness would be visually drawn toward the background views of the El Centinela Mountain to the south. Roadway traveler exposure is considered to be low. Regarding chain link fencing, the analysis determined that installation of fix tilt structures adjacent to roadways have the potential to create glare to the roadways adjacent to the project sites, with the exception of I-8. The Reflectivity Analysis recommends the installation of fence slats for all portions of the project sites with fixed-tilt trackers installed that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. The installation of fence slats would reduce potential glare or glint impacts on roadway travelers. It should be noted that the Reflectivity Analysis is based on preliminary design of the project, including the conceptual layout of the solar arrays and conceptual specifications of the actual PV panels that will be installed. The potential glare impact associated with fix tilt structures only (EIR 4.1-28). VQ-1 For areas where Fixed Tilt PV panels are proposed, as a component of submittal of final engineering and design for the site plan layouts, PV array position and configuration, PV panel

	type, the potential glint and glare shall be studied based on the more detailed final engineering plans to determine whether fencing slats are required in specific locations of the perimeter fencing adjacent to project roadways. This measure is required for any proposed fixed-tilt trackers proposed to be installed in locations that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. This measure is not required for single-axis and double-axis tracker systems. Regardless, the periodic visual obstruction of distant mountains to motorists traveling south would not be attributed to any fence slats (if required), rather, the greater in height solar arrays. Therefore, it is not anticipated that further obstruction of views would occur if slats are installed at certain locations. **4-5** Comment noted. Please refer to response to comment 4-4.

The east section of Vaughn Road is a dirt road. Prolific traffic associated with the completion of the project will be the cause of excessive dust. When intentionally watered or if weather turns foul, heavy traffic will cause track out and rapid deterioration of the dirt road, ruts will be created, and thus make it unpassable for residential vehicles. 4-6

The report did not address the visible aesthetics that will be lacking once the solar fields of photovoltaic cells and metal replace the fields of lush green vegetation. The sun setting over manmade materials is not quite comparable to nature's end-of-the day glory. Nor was there mention of the lack of wildlife that the change of surroundings will bring. No longer will the barn owls make their nests nearby. The now local hawks and other notable wildlife will no longer stay in surrounding areas without habitat or food supply. 4-7

Lacking in the report is the fact that residents in the area may want to move with the demise of country living as they once knew it. A drive down the once rich green field-lined country roads already feels like a drive down a prison lane. With additional solar projects completely encompassing the area, this imprisoned feeling will only increase. In turn, with rental income coming from these residents, people's sources of income are at stake. In addition, land once leased for hay storage will no longer be a feasible source of revenue since fields will no longer be in close proximity. 4-8

4-6 The proposed projects involve approval of Conditional Use Permits (CUPs) by the County Planning Commission and Board of Supervisors.

The Applicant will be required to comply with various Conditions of Approval (COA) during construction and operation of the project. Among these, it is anticipated that as a condition of approval, the County Department of Public Works will require that a routing plan be provided. This plan will include making a distinction between paved and unpaved roads that will be utilized for construction, and the applicant will be required to provide improvements to unpaved road to be mitigated for PM10 impacts. Mitigation Measures are also proposed to address potential PM10 impacts.

Furthermore, as a Condition of Project Approval (CUP Condition), the Applicant will be required to enter into a Roadway Maintenance Agreement prior to the issuance of a grading permit. The Applicant will be responsible for paying its proportionate fair share 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.

The Department of Public Works will identify the specific roadway preparation work and pavement improvements required of the project as part of developing the overall Conditions of Approval for the project.

4-7 A detailed analysis of the potential aesthetic impacts associated with the proposed project is provided in EIR Section 4.1

Agricultural fields, earthen berms, and overhead utility lines dominate the scenery in the project area. The project sites are located immediately adjacent to the Campo Verde solar facility, undeveloped agricultural lands generally to the north and further east, and desert

		lands on the south and further west. Similar to the southwestern portion of Imperial County near the U.S./Mexico border, undeveloped agricultural lands in the project vicinity are currently transitioning to renewable energy developments (Campo Verde solar facility, Imperial Solar Energy Center West). The existing visual character of the project sites is dominated by agricultural uses. Existing features within the project sites and surrounding area contributing to the existing visual form are existing solar farms, local roads, and overhead utilities. As explained in the EIR, a variety of factors are considered in determining the potential aesthetic impacts including visual character, visual quality, vividness, intactness, unity, viewer response, viewer exposure and viewer sensitivity. The EIR acknowledges 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. However, based on the methodology and approach to the visual impact assessment, a less than significant impact was identified related to the change in visual character as a result of the project.
	4-8	These comments are acknowledged but do not raise issues germane to the environmental analysis in the EIR.

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11.223.01

May 30, 2018

VIA EMAIL
davidblack@co.imperial.ca.us

David Black
Planner IV
Imperial County Planning and Development Services
801 Main Street
El Centro, CA 92243

Re: Comments of Farms for Farming, Danny Robinson, Robco Farms, Inc., Joe Tagg and West-Gro Farms, Inc. on the Big Rock Cluster Solar Project DEIR (SCH# 2017121078)

Dear Mr. Black:

On behalf of Farms for Farming, Danny Robinson, Robco Farms, Inc., Joe Tagg and West-Gro Farms, Inc. (collectively, "Farms for Farming"), and pursuant to the California Environmental Quality Act ("CEQA"), Public Resources Code ("PRC") section 21000 *et seq.*, and Imperial County's (the "County's") solicitation of public comment, we respectfully submit the following comments on the Big Rock 1 Solar, Laurel 1 Solar, Laurel 2 Solar and Laurel 3 Solar projects (collectively, the "Big Rock Cluster Solar Project" or the "Project"), and the draft environmental impact report ("DEIR") prepared thereon. Please include these comments in the public record for Imperial County (the "County's") consideration and decision on 92JT 8me LLC and 90FI 8me LLC's permitting applications for the Project.

The Project would industrialize approximately 1,380 acres of farmland – the *vast majority* of which is either prime farmland or farmland of statewide importance (DEIR at 4.2-10) – with a 325-megawatt ("MW") solar photovoltaic ("PV") electrical generation facility, at least one battery storage system, at least one on-site substation, electrical gen-tie lines, new roads, fending, retention basis, at least one operations and maintenance building and other infrastructure. Farms for Farming opposes this Project as an unnecessary industrialization of the County's irreplaceable farmland. The County has already allowed tens of thousands of acres of farmland to be converted to electrical generation and transmission uses.[1] Enough is enough.

5-1

[1] See Exhibits 1 (County map of North-end solar projects), 2 (County map of South-end solar projects), 3 (County map of Ocotillo wind power installation).

5-1 The County acknowledges receipt of the "Farms for Farming" May 30, 2018 comment letter on the Draft EIR for the Big Rock Cluster Solar Farm Project (now referred to as the "Laurel 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 County acknowledges that the proposed project site is currently located outside the RE Overlay Zone. As explained in Chapter 3 of the EIR, approval by the Board of Supervisors of a General Plan Amendment and Rezone would be required for project implementation. The County's General Plan and Land Use Ordinance allows that for renewable energy projects proposed on land classified in a non-RE Overlay zone, that the land on which the project is located may be included/classified in the RE Overlay Zone if the renewable energy project: 1) would be located adjacent to an existing RE Overlay Zone; 2) is not located in a sensitive area; 3) is located in proximity to renewable energy infrastructure; and, 4) and would not result in any significant environmental impacts. All impacts have been identified to be less than significant, or mitigated to a level of less than significant with implementation of proposed mitigation measures.

David Black
Planner IV
Imperial County Planning and Development Services
May 30, 2018
Page 2

Farms for Farming urges the County to maintain the renewable energy overlay boundaries it set in October 2015, just two-and-a-half years ago, boundaries that *exclude* the proposed Project site. DEIR at 3-5 ("the project sites are located outside the RE Overlay Zone"). Farms for Farming encourages the County to analyze and adopt an alternative to the proposed Project programs to develop or incentivize the development of distributed PV generation projects *near energy demand centers in already-disturbed areas.* The County should abide by its own policy prescriptions and not approve any further renewable energy developments outside the overlay zone, especially not projects, like the Project here, that would destroy precious and productive farmland or "result in any [other] significant environmental impacts." Imperial County General Plan, Renewable Energy and Transmission Element, Section IV(D), p. 35. As the DEIR affirms, the "RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established uses." DEIR at 3-5. The Project sites were *omitted* from the overlay zone for a reason - they are not the "most suitable" areas for renewable energy development. The County should not now modify the zone boundaries *ad hoc* to accommodate private development interests.

5-1 cont.

In further expression of these major concerns and others, Farms for Farming submit the following comments on the proposed Project and the DEIR prepared for it.

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

> 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.

5-2

5-2 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 page 4.10-15:

> Development of the solar energy facility and supporting infrastructure is subject to the County's zoning ordinance. The project sites are located on 18 privately-owned legal parcels zoned A-2, A-2-R, and A-3. Pursuant to Title 9, Division 5, Chapter 8, the following uses are permitted in the A-2 and A-2-R zones subject to approval of a CUP from Imperial County: 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. Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" and "Transmission lines, including supporting towers, poles microwave towers, utility substations" are uses that are permitted in the A-3 Zone, subject to

approval of a CUP. Therefore, with approval of a CUP for each project, the proposed projects would not conflict with the County's zoning ordinance.

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 pages 4.10-5 through 4.10-10), 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.

Further, Table 4.10-2 (EIR page 4.10-15), analyzes the Project Consistency with "Island Overlay" Criteria.

As stated in the RE and Transmission Element:

CUP applications proposed for specific RE projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. An amendment to the overlay zone would only be approved by the County Board of Supervisors if a future RE project met one of the following two conditions:

- Adjacent to the Existing RE Overlay Zone: An amendment may be made to allow for development of a future RE project located adjacent to the existing RE Overlay Zone if the project:

    - Is not located in a sensitive area

- Would not result in any significant impacts

- "Island Overlay": An amendment may be made to allow for development of a future RE project that is not located adjacent to the existing RE Overlay Zone if the project:
  - Is located adjacent (sharing a common boundary) to an existing transmission source
  - Consists of the expansion of an existing RE operation
  - Would not result in any significant environmental impacts.

The project sites are located outside of the RE Overlay Zone. Therefore, the applicant is requesting an amendment to the County's General Plan, Renewable Energy and Transmission Element to include/classify the project sites into the RE Overlay Zone. Additionally, the project sites are not located adjacent to an existing RE Overlay Zone; therefore, the projects will need to meet the criteria identified for the "Island Overlay" to obtain approval of an amendment to the RE Overlay Zone. Table 4.10-2 provides an analysis of the projects' consistency with the "Island Overlay" criteria.

With the approval of all CUPs, General Plan Amendment and Zone change, 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.

Id. (emphasis added).

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*." *Id.*

5-2 cont.

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 the entire Project site. DEIR at 3-4 (all Project parcels are zoned as either A-2, A-2-R or A-3), 4.10-1 ("the project sites are designated as Agriculture under the County's General Plan). 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. . . .

5-3

Imperial County General Plan, Land Use Element (Revised 2015), page 48 (emphasis added).

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

5-4

5-3 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." The potential economic benefits of the proposed project 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. Please also refer to response to comment 5-2 related to the project's consistency with the RE Overlay Zone.

5-4 Please refer to response to comment 5-2 as it relates to the project's overall consistency with the County's Renewable Energy and Transmission Element. In addition, it should be noted that the proposed project does not involve a re-designation of the underlying Agriculture land use of the project sites. 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 4.2-19 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.

operations." *Id.* (emphasis added). 5-4 cont.

Here, it is undisputed that the proposed industrial-scale solar facility uses would eliminate and prevent (for at least 30 years) all agricultural use on nearly 1,400 acres of prime farmland and farmland of statewide importance. DEIR at 4.2-13. 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 4 and 5) to the Imperial County Planning and Development Services Department regarding other solar projects previously proposed for lands designated for Agriculture on the County General Plan, commercial solar uses are *completely incompatible* with agricultural uses. 5-5

Furthermore, the Project could impede agricultural operations elsewhere in the County and reduce employment, income, sales and tax revenue. As former Imperial County Agricultural Commissioner Valenzuela noted in her February 25, 2011 comments (attached hereto as Exhibit 6) 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.*" As these projects convert more and more agricultural land to non-agricultural uses, more and more agriculture-serving businesses will be forced to close. And as the quantity and quality of agriculture-serving businesses decreases in the County, more and more farmers will find it uneconomical or impractical to keep farming and sell, lease or use their lands for non-agriculture purposes. 5-6

Because the proposed solar energy generation and transmission uses would eliminate the potential for farming on the Project sites and "have a" potentially "significant adverse effect on agricultural production" elsewhere in the County, the Project is specifically forbidden by the General Plan. 5-7

II. THE PROJECT IS NOT NEEDED.

Objective 1.8 of the County General Plan Agricultural Element "[a]llow[s] conversion of agricultural land to non-agricultural uses including renewable energy *only* where a *clear* and *immediate need can be demonstrated*, based on economic benefits, population projections and lack of other available land (including land within incorporated cities) for such non-agricultural uses." Imperial County General Plan, Agricultural Element (Revised 2015), page 30 (emphasis added). At least two circumstances render the proposed Project not only unnecessary, but plainly harmful. 5-8

First, statewide, Californians are "using less electricity."[2] As reported by the *Los Angeles*

[2] Penn, I. and R. Menezes, February 5, 2017, "Californians are paying billions for power they don't need," *Los Angeles Times* (attached hereto as Exhibit 7, and also available here:

5-5 The comment states that the projects would terminate and prevent agricultural uses on the project sites for the projects' operational life for at least 30 years. This project-related impact is disclosed in Impact 4.2.1 of the Draft EIR which states that. "…, there would be a 30- to 40-year period where existing agricultural uses within the project sites would no longer be possible until the site is restored." (see EIR page 4.2-14). This impact was determined to be significant prior to implementation of proposed mitigation measures. 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. Please also refer to response to comment 5-4 regarding the projects' compatibility with agricultural uses.

5-6 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.

Economic, employment, and fiscal factors will be considered as part of the Planning Commission and the Board of Supervisors consideration for approval of the projects. Like other previously-approved solar projects in the County, it is anticipated that the proposed project would have an overall economic, employment and fiscal benefit as compared to the existing agricultural use of the project sites; however the final determination will be made as part of the Planning Commission and Board of Supervisors hearings on the project.

5-7 Please refer to responses to comments 5-3, 5-4, and 5-5.

5-8 CEQA does not require that an EIR demonstrate the need for a project. This comment appears to confuse the requirements under the National Environmental Policy Act (NEPA) related to the establishment of the underlying purpose and need for a project, with the CEQA requirement that an EIR contain a statement of project objectives. Specifically, the NEPA regulations require a description of "the underlying purpose and need to which the agency is responding" in considering a project (40 CFR §1502.13). Whereas, the CEQA Guidelines require that an EIR contain a "statement of objectives sought by the proposed project (14 CCR §15124(b))." In compliance with this provision, the objectives of the proposed project are provided in Chapter 3, Project Description of the EIR.

As stated on EIR page 3-6, one of the objectives of the project is to:

- Construct and operate a solar energy facility capable of producing up to 325 MW of electricity to help meet the state-mandated RPS of providing 50 percent renewable energy by 2030

The project objective of providing up to 325 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 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 Operate a facility at a location that ranks amongst the highest in solar resource potential in the nation, interconnect directly to the IID or San Diego Gas and Electric's (SDG&E) electrical transmission system, operate a renewable energy facility that does not produce significant noise nor emit any GHGs, help reduce reliance on foreign sources of fuel, supply on-peak power to the electrical grid in California, and provide an investment in California and Imperial County that would create jobs and other economic benefits.

Times, and as evidenced by data compiled by the U.S. Energy Information Administration ("EIA") and California Energy Commission ("CEC"), California's "power plants are on track to be able to produce at least 21% more electricity than it needs by 2020." Exhibit 7 at 2 (quote); EIA, 2017, California Electricity Profile 2015;[3] CEC, 2017, Installed In-State Electric Generation Capacity by Fuel Type (MW).[4] With California's electricity usage flatlining, and rooftop solar and other distributed generation capacity increasing rapidly, there is less need than ever for industrial-scale projects like the proposed Big Rock Cluster Solar Project - and much less justification for the Project's massive environmental impacts. *Id.*

Second, wildfire risk in southern California is higher than previously estimated, and getting worse with global warming. This risk would both impact and be exacerbated by the Project, which would be located in a "'moderate' risk area for wildland fires." DEIR at 4.8-14. For example, as reported in the August 2017 Climate Change Vulnerability Assessment for adjacent San Diego County,[5] CalAdapt's wildfire tool estimates that under both a low-GHG-emissions scenario and a high-emissions scenario, substantially more land in the County will burn due to wildfire by 2099. San Diego County, Draft Climate Action Plan, Appendix D, p. 12. Under the low-emissions scenario, over 3,500 more acres are expected to burn *every year* by 2099. *Id.* Under a high-emissions scenario, the additional annual acreage scorched by wildfire increases to nearly 8,500. *Id.* Even the DEIR recognizes that global warming will cause "[e]arlier snowmelt, higher temperatures, and longer dry periods over a longer fire season," which "will directly increase wildfire risk." DEIR at 4.7-9.

Furthermore, less harmful renewable energy production alternatives to the Project exist, as demonstrated below in Section V of these comments. And the County General Plan provides that conversion of agricultural land to non-agricultural uses "shall . . . be allowed only where" it is "supported by a study to show a lack of alternative sites." Imperial County General Plan, Agricultural Element (Revised 2015), page 30 (emphasis added).

5-8 cont.

III. THE EIR MUST PROVIDE A FULL AND ACCURATE PROJECT DESCRIPTION.

5-9

http://www.latimes.com/projects/la-fi-electricity-capacity/).

[3] Available here: https://www.eia.gov/electricity/state/california/

[4] Available here: http://www.energy.ca.gov/almanac/electricity_data/electric_generation_capacity.html/

[5] Available here: http://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/CAPfilespublicreview/Appendix%20D%20Climate%20Change%20Vulnerability%20Assessment.pdf

5-9 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. 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 and a full description of these facilities, including proposed conceptual site plans that depict the locations of the facilities are provided in Chapter 3. Please refer to response to comment 5-11 regarding the water source for the project.

"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. In addition, "[t]he data in an EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project." *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* ("*Vineyard*") (2007) 40 Cal.4th 412, 431.

The DEIR fails to fully or consistently describe the Project. For example, it fails to consistently state the Project's operational life, alternating between a 30-year life and a 40-year life. *Compare* DEIR at 3-28 ("30-year project life") *with* DEIR at 3-31 ("operating life" is "expected to be up to 40 years"). The DEIR also fails to identify the Project's water supplies with requisite certainty, listing multiple different potential water sources and making it unclear to the public where in fact the Project's construction, operational and decommissioning water supplies will originate. *Compare* DEIR at 3-28 ("Water will be obtained from the landowners' water supply or delivered via truck from off-site source(s)") *with* DEIR at 4.14-8 ("The project applicant is proposing to use Schedule 7 General Industrial Water or enter into an Interim Water Supply Policy (IWSP) Water Supply Agreement with IID to meet the projects' water demands"). Nor does the DEIR provide any will-serve letter or other written assurance of Project water provision from the Imperial Irrigation District ("IID") or other potential water supplier. CEQA requires more. *Vineyard*, 40 Cal.4th at 434. 5-9 cont.

IV. THE EIR MUST ANALYZE THE FULL RANGE OF PROJECT IMPACTS.

CEQA mandates that the DEIR adequately analyze the Project's environmental impacts in order to foster informed decisionmaking and to allow the public to understand the Project's impacts. Public Resources Code § 21002.1; 14 Cal. Code Regs. [CEQA Guidelines ("Guidelines")] §§ 15121, 15126. 15126.2. The DEIR fails to adequately analyze numerous Project impacts.

A. The DEIR Fails to Analyze Significant Agricultural Impacts from the Project

The DEIR correctly acknowledges that "[a]griculture has been the single most important economic activity of Imperial County throughout the 1900s." DEIR at 4.2-1. But in blindly asserting that agriculture "is expected to play a major economic role in the foreseeable future," the DEIR brushes under the rug the Project's indirect impacts on County agriculture. DEIR at 4.2-1. 5-10

The DEIR acknowledges that the Project would convert to non-agricultural uses the existing farmland on the Project sites. But it fails to acknowledge how the Project would *indirectly* and *cumulatively* affect agriculture *countywide*. As utility-scale energy projects convert more and more agricultural land to non-agricultural uses, more and more agriculture-

5-10 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.

The projects' cumulative effects to agricultural resources, including important farmlands, are considered on pages 6-8 through 6-10 of the Draft EIR. As provided, the incremental impact of the loss of 1,400 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.

As shown in Table 6-2, the Prime Farmland and Farmland of Statewide Importance within the project sites comprises approximately (one-half of a percent or 0.53) percent (0.26 + 0.27) of the total Important Farmland in the County. Thus, the proposed projects would temporarily convert a very small fraction of the total Important Farmlands in the County and have a minimal effect on agricultural land on a cumulative scale. Furthermore, the conversion would be temporary and last for the duration of the projects' useful life which is expected to be up to 30 to 40 years.

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. One need look no further than the increasingly dense maps of solar and wind energy facilities in the County to see these effects, the ever increase conversion of farmland to industrial uses. *See* Exhibits 1-3. Yet the DEIR turns a blind eye to this "spiral of death," blithely concluding that the "projects' contribution to this impact would be less than cumulatively considerable" because each cumulative project "ha[s] been, and [is] expected to continue to provide mitigation for any impacts on agricultural resources." DEIR at 6-10. CEQA requires more. The County cannot continue to brush aside these cumulatively massive impacts until the entire County is covered with solar panels.

5-10 cont.

B. The DEIR Fails to Identify Sufficiently Specific Water Sources for the Project

CEQA requires the County to identify in its DEIR the likely water sources for the Project, and analyze the "environmental impacts of exploiting those sources" and "how those impacts are to be mitigated." *Vineyard*, 40 Cal.4th at 421 (quote), 434, 440-441. "An EIR that neglects to explain the likely sources of water and analyze their impacts, but leaves long-term water supply considerations to later stages of the project, does not serve the purpose of sounding an environmental alarm bell." *Id.* at 441 (internal quotations and citation omitted).

> If the uncertainties inherent in long-term land use and water planning make it impossible to confidently identify the future water sources, [the] EIR may satisfy CEQA if it acknowledges the degree of uncertainty involved, discusses the reasonably foreseeable alternatives – including alternative water sources and the option of curtailing the development if sufficient water is not available for later phases – and discloses the significant foreseeable environmental effects of each alternative, as well as mitigation measures to minimize each adverse impact.

Id. 434 (emphasis in original).

5-11

Here, as also discussed above regarding the DEIR's Project description, the DEIR fails to identify the Project's water supplies with requisite certainty. Instead, it lists multiple different potential water sources and makes it unclear to the public where in fact the Project's construction, operational and decommissioning water supplies will originate. *Compare* DEIR at 3-28 ("Water will be obtained from the landowners' water supply or delivered via truck from off-site source(s)") *with* DEIR at 4.14-8 ("The project applicant is proposing to use Schedule 7 General Industrial Water or enter into an Interim Water Supply Policy (IWSP) Water Supply Agreement with IID to meet the projects' water demands"). Nor does the DEIR provide any

5-11 With respect to water source, a Water Supply Assessment (WSA) has been prepared for the proposed project, and is provided in Final EIR Appendix L. This WSA has been prepared pursuant to the requirements of CWC Section 10910, as amended by Senate Bill (SB) 610 (Costa, Chapter 643, Stats. 2001). The purpose of SB 610 is to advance water supply planning efforts in the State of California, therefore SB 610 requires the lead agency (ICPDS), to identify any public water system or water purveyor that may supply water for the Project, to prepare the WSA after a consultation.

The Project location lies within IID's Imperial Unit and as such is eligible to receive water service. IID has adopted an Interim Water Supply Policy for Non-Agricultural Project (IWSP) from which water supplies can be contracted to serve new non-agricultural developments within IID's water service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

The Project water demand of approximately 133.3 AFY represents 0.1% of the unallocated supply set aside for new nonagricultural projects, which would not affect IID's ability to provide water to other users in IID's Imperial Unit.

As stated in the WSA, Untreated Colorado River water will be supplied to the Project via the adjacent delivery gates, potable drinking water will be obtained for the duration of the Project from a state-approved provider. For other water usage in the O&M building(s), canal water will be treated through a Point-of-Entry (POE) water purification system to a level necessary to meet any applicable health department standards. No groundwater will be utilized due to the poor groundwater quality in the region.

will-serve letter or other written assurance of Project water provision from the Imperial Irrigation District ("IID") or other potential water supplier. Without a will-serve letter, the DEIR cannot simply assume that IID will provide the necessary water. CEQA requires more, particularly with increasingly dry conditions due to global warming. *Vineyard*, 40 Cal.4th at 434; DEIR at 4.7-9 ("improved climate models shift towards drier conditions by the mid-to-late 21st century in Central, and most notably, Southern California").

5-11 cont.

C. The DEIR Fails to Adequately Analyze the Project's Impacts to Birds

The DEIR's analysis of the Project's impacts to birds is deficient for at least two reasons. First, the DEIR entirely fails to analyze the "pseudo-lake effect," which occurs when solar projects' reflective panels resemble water from above, and attract birds – especially migratory birds – searching for water. Once tricked, the birds can – and often do – dive into the solar panels as if they were water. This "pseudo-lake effect" is suspected to be a primary cause of migratory bird trauma and death at the Desert Sunlight PV facility in Riverside County.[6]

5-12

Second, the DEIR relies for its primary burrowing owl mitigation measure – BIO-1 – on an amorphous "Burrowing Owl Mitigation and Monitoring Plan that will detail the approved, site-specific methodology proposed to minimize and mitigate impacts on this species." DEIR at 4.4-12. Rather than provide the details CEQA requires, the DEIR merely notes that the "Mitigation and Monitoring Plan shall include success criteria, remedial measures, and an annual report to CDFW." *Id.* CEQA prohibits this kind of mitigation measure deferral, where the EIR fails to provide any specific performance criteria to constrain the measures to be developed later. Guideines § 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).

D. The DEIR Fails to Adequately Analyze the Project's Wildfire Impacts

As discussed above in Section II of these comments, and as the DEIR recognizes, global warming is increasing the frequency and severity of wildfires in Southern California. DEIR at 4.7-9. Yet the DEIR provides almost no substantive analysis of how the Project would contribute to those increasing wildfire risks. Rather than discuss the Project's numerous ignition sources and how it would impede firefighting, the DEIR summarily concludes that "[b]ecause the proposed projects are not located in proximity to a wildland fire hazard area, implementation of the proposed projects would result in a less than significant impact related to the possible risk to people and structures caused by wildland fires." DEIR at 4.8-14. The DEIR also fails to explain

5-13

[6] Kagan, R.A, T.C. Vimer, P.W. Trail, and E.O. Espinoza, "Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis," Report of the National Fish and Wildlife Forensics Laboratory (attached hereto as Exhibit 8).

5-12 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.

5-13 As stated on EIR page 4.8-14, according to the Draft Cal Fire Hazard Severity Zones in Imperial County Land Responsibility Area Map (2007), the project sites are located within a local responsibility area, which is identified as a "moderate" risk area for wildland fires. However, it should be noted that the project area topography is flat, contains primarily irrigated croplands and/or disced fields and is bordered at many locations by existing, developed solar facilities. The project sites are not located in immediate proximity to a wildland fire hazard area.

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 severe wildland fire hazard area, implementation of the proposed projects would result in a less than significant impact related to the possible risk to people or structures caused by wildland fires.

The County of Imperial Fire Department has reviewed the proposed project and determined that appropriate fire protection systems that must be included in the project for fire safety (such as the inclusion of 10,000-gallon water

	storage tanks dedicated for fire suppression purposes). These systems will be installed as part of the project site. Furthermore, utility-scale solar facilities have been operating in the County for over 10 years with no incidence of fire or significant fire risk.

how the Project would *not* be located in "proximity to a wildland fire hazard area," when, as the DEIR separately acknowledges, it would be located in a "'moderate' risk area for wildland fires." DEIR at 4.8-14. The DEIR similarly fails to discuss whether the local firefighting services, as well as on-site fire protection measures, are equipped for the type of electrical and chemical fires the Project could cause, with electrical generation, transmission and battery storage components all on site.

5-13 cont.

E. The DEIR Fails to Fully Analyze the Project's Greenhouse Gas Emissions

The DEIR fails to analyze the Project's lifecycle emissions – it looks solely at the Project's construction and operational emissions, without an analysis of the greenhouse gases emitted to produce the components used to build the Project's PV panels.

5-14

V. THE EIR MUST ANALYZE A FULL RANGE OF ALTERNATIVES.

CEQA requires EIRs to "describe a range of reasonable alternatives to the project . . . which would feasibly attain most of 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." Guidelines § 15126.6(a). Alternatives that would lessen significant effects should be considered even if they "would impede to some degree the attainment of the project objectives, or be more costly." *Id.* § 15126.6(b). The range of alternatives considered must "foster informed decisionmaking and public participation." *Id.* § 15126.6(a). Alternatives may only be eliminated from "detailed consideration" when substantial evidence in the record shows that they either (1) "fail[] to meet most of the basic project objectives," (2) are "infeasibl[e]," or (3) do not "avoid significant environmental impacts." *Id.* § 15126.6(c).

Among other alternatives, the DEIR should have, yet fails to, analyze programs to develop or incentivize the development of distributed PV generation projects *near energy demand centers in already-disturbed areas.* These alternatives are not only feasible, they could generate far more energy than the Project, and with far fewer environmental impacts. For example, a recent study shows that installing photovoltaic ("PV") and concentrating solar power ("CSP") technologies throughout California's built environment could substantially exceed the state's forecasted 2020 energy needs.[7] Another recent study estimates that deploying PV and CSP solely on developed land (built environment), land with salt-affected soils, contaminated land and reservoirs in California's Central Valley "could meet CA's projected 2025 needs for electricity consumption between 10-13 times over" (for PV technologies) and "over two times

5-15

[7] Hernandez, R.R., M.K. Hoffacker, M.L. Murphy-Mariscal, G. Wu, and M.F. Allen, 2015, "Solar Energy Development Impacts on Land-Cover Change and Protected Areas," *Proceedings of the National Academy of Sciences*, 112(44) (attached hereto as Exhibit 9).

5-14 CEQA does not require that the EIR analyze the greenhouse gasses emitted to produce the components used to build PV panels that may be utilized for the project. Pursuant to CEQA Guideline 15277, "Any emissions or discharges that would have a significant effect on the environment in the State of California are subject to CEQA where a California public agency has authority over the emissions or discharges."

The specific manufacturer of the solar PV panels that would be installed on the project sites has not been identified; however, they would likely be derived from an imported source (e.g., China). Should panels be obtained from a factory within California, the environmental impacts associated with the manufacturing of those panels (included GHG emissions) would have been analyzed and considered pursuant to CEQA as part of any discretionary approvals associated with construction and operation of that particular manufacturing facility.

5-15 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 325 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.

This comment also alleges that the EIR fails to examine the benefits of a Renewable Distributed Generation alternative. The commenter is directed to the Alternatives section of the EIR. As provided, as provided, this alternative 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 this Alternative, it was not considered environmentally superior to the Reduced Acreage Alternative (Avoid Williamson Act Land).

over with CSP technologies."[8] Exhibit 4 at 14479. Before the County could approve the Project, it would need to consider less-impactful alternatives like these in an EIR. CEQA § 21100; Guidelines § 15126.6. 5-15 cont.

For each of these reasons, Farms for Farming opposes the Project as currently proposed, and requests that the EIR be recirculated after analyzing all of the impacts and alternatives discussed above. 5-16

Respectfully submitted,

Stephan C. Volker
Attorney for Farms for Farming, *et al.*

SCV:taf

Attachment: Exhibit 1 - Imperial County Planning Department, September 3, 2015, "Imperial County Solar Projects - North End Projects," Map.

Exhibit 2 - Imperial County Planning Department, September 3, 2015, "Imperial County Solar Projects - South End Projects," Map.

Exhibit 3 - Imperial County Planning Department, October 31, 2013, "Imperial County Wind Farm Project - Pattern Energy, Ocotillo Express Wind Farm," Map.

Exhibit 4 - 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.

Exhibit 5 - 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.

[8] Hoffacker, M.L., M.F. Allen, and R.R. Hernandez, 2017, "Land-Sparing Opportunities for Solar Energy Development in Agricultural Landscapes: A Case Study of the Great Central Valley, CA, United States," *Environmental Science & Technology* 51:14472-14482 (attached hereto as Exhibit 10).

5-16 The County has evaluated all the potential impacts of the proposed project in accordance with the provisions of CEQA and recirculation of the EIR is not necessary pursuant to CEQA Guidelines Section 15162.

Exhibit 6 - 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.

Exhibit 7 - Penn, I. and R. Menezes, February 5, 2017, "Californians are paying billions for power they don't need," *Los Angeles Times*.

Exhibit 8 - Kagan, R.A., T.C. Viner, P.W. Trail, and E.O. Espinoza, "Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis," Report for the National Fish and Wildlife Forensics Laboratory, available at: here: http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN201977_20140407T161504_Center_Supplemental_Opposition_to_Motion.pdf

Exhibit 9 - Hernandez, R.R., M.K. Hoffacker, M.L. Murphy-Mariscal, G. Wu, and M.F. Allen, 2015, "Solar Energy Development Impacts on Land-Cover Change and Protected Areas," *Proceedings of the National Academy of Sciences*, 112(44).

Exhibit 10 - Hoffacker, M.L., M.F. Allen, and R.R. Hernandez, 2017, "Land-Sparing Opportunities for Solar Energy Development in Agricultural Landscapes: A Case Study of the Great Central Valley, CA, United States," *Environmental Science & Technology* 51:14472-14482.

EXHIBIT 1

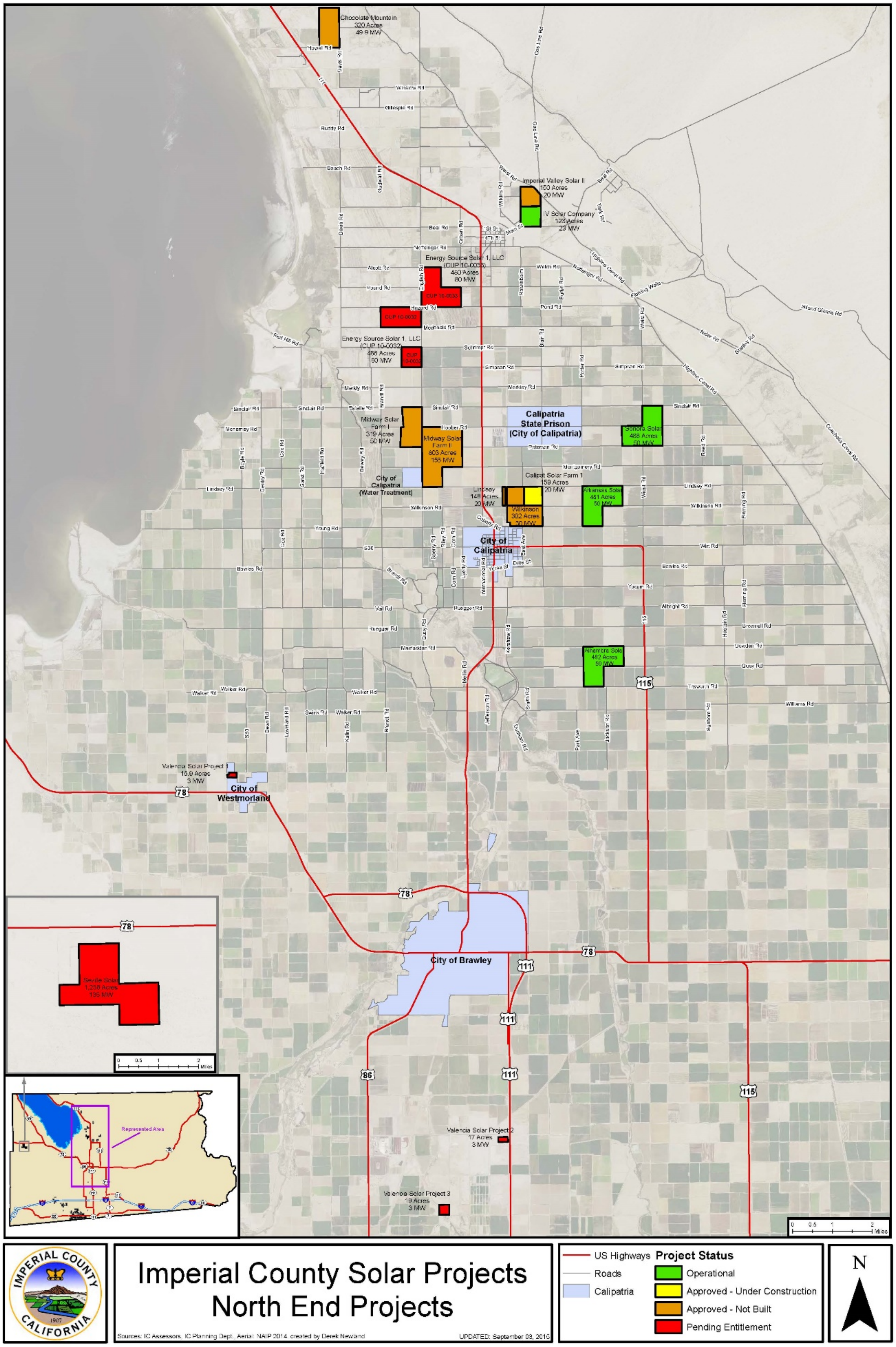
Imperial County Solar Projects
North End Projects
Sources: IC Assessors, IC Planning Dept. Aerial: NAIP 2014. created by Derek Newland
UPDATED: September 03, 2015
US Highways
Roads
Calipatria
Project Status
Operational
Approved - Under Construction
Approved - Not Built
Pending Entitlement
N
Chocolate Mountain
320 Acres
49.9 MW
Imperial Valley Solar II
150 Acres
20 MW
IV Solar Company
120 Acres
23 MW
Calipatria
State Prison
(City of Calipatria)
City of Calipatria
City of Westmorland
City of Brawley
Valencia Solar Project 2
17 Acres
3 MW
Valencia Solar Project 3
19 Acres
3 MW
Represented Area

EXHIBIT 2

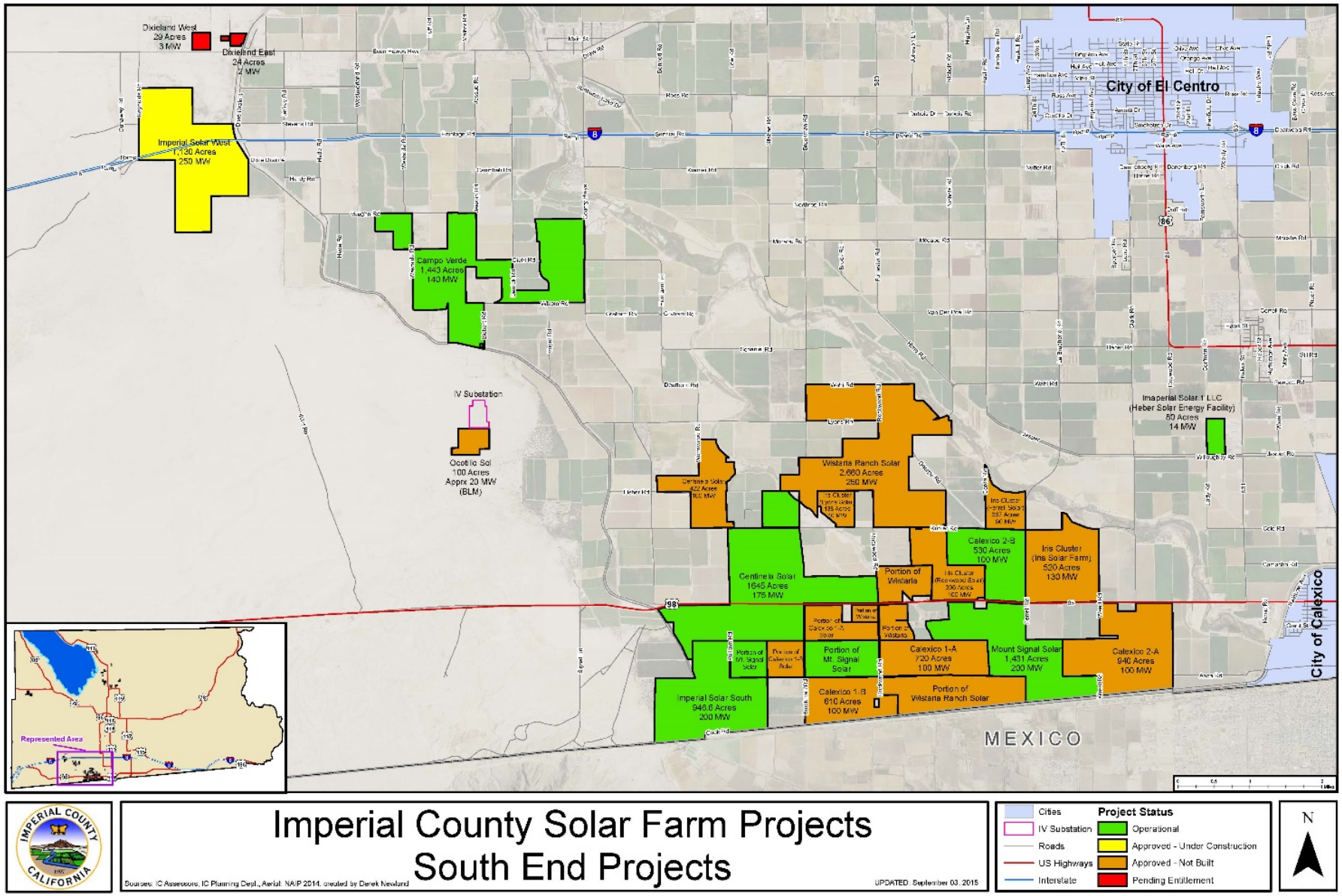
Dixieland West
29 Acres
3 MW
Dixieland East
24 Acres
2 MW
Imperial Solar West
1,130 Acres
250 MW
Campo Verde
1,443 Acres
140 MW
IV Substation
Ocotillo Sol
100 Acres
Approx 20 MW
(BLM)
City of El Centro
Imperial Solar 1 LLC
(Heber Solar Energy Facility)
80 Acres
14 MW
Wistaria Ranch Solar
2,660 Acres
250 MW
Centinela Solar
1645 Acres
175 MW
Calexico 2-B
530 Acres
100 MW
Iris Cluster
(Iris Solar Farm)
520 Acres
130 MW
Portion of
Wistaria
Calexico 1-A
720 Acres
100 MW
Mount Signal Solar
1,431 Acres
200 MW
Calexico 2-A
940 Acres
100 MW
Portion of
Mt. Signal
Solar
Calexico 1-B
610 Acres
100 MW
Portion of
Wistaria Ranch Solar
Imperial Solar South
946.6 Acres
200 MW
City of Calexico
MEXICO
Represented Area
Imperial County Solar Farm Projects
South End Projects
Sources: IC Assessors, IC Planning Dept., Aerial: NAIP 2014, created by Derek Newland
UPDATED: September 03, 2015
Cities
IV Substation
Roads
US Highways
Interstate
Project Status
Operational
Approved - Under Construction
Approved - Not Built
Pending Entitlement
N

EXHIBIT 3

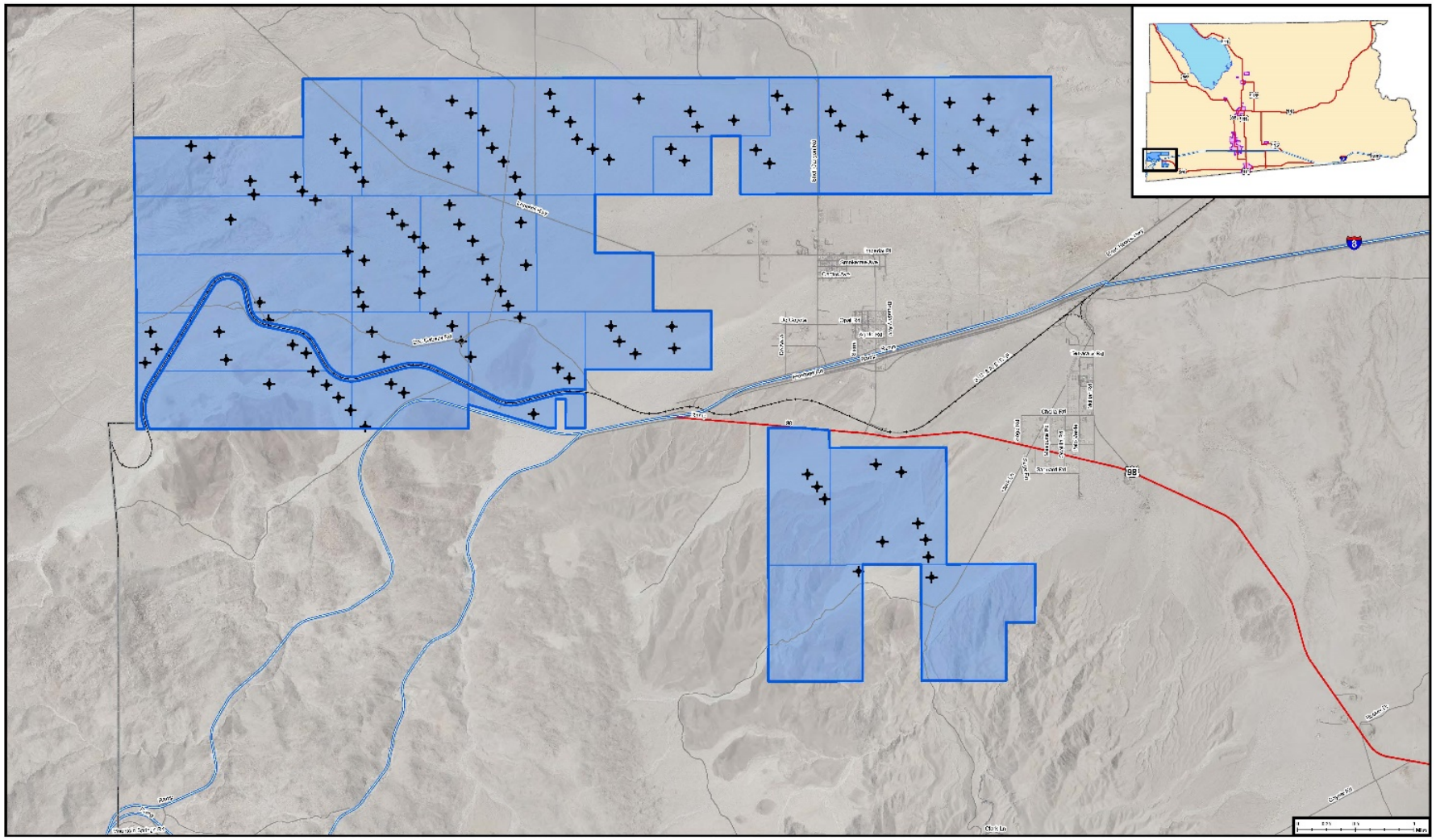
Imperial County Wind Farm Project
Pattern Energy, Ocotillo Express Wind Farm
US Highways
Interstate
Roads
Railroad
Wind Turbines
Ocotillo Express
County Boundary
N

EXHIBIT 4

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 eth 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):

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.

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[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 discontiguous parcels. (GC section 51282).

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 statuary 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.

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 5

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 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.

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/qh_lesa.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

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 6

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

(760) 482-4314
Fax: (760) 353-9420

E-mail: agcom@co.imperial.ca.us

February 25, 2011

Armando G. Villa
Planning & Development Services Director
801 Main Street
El Centro, CA 92243

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
Agricultural Commissioner
Sealer of Weights and Measures

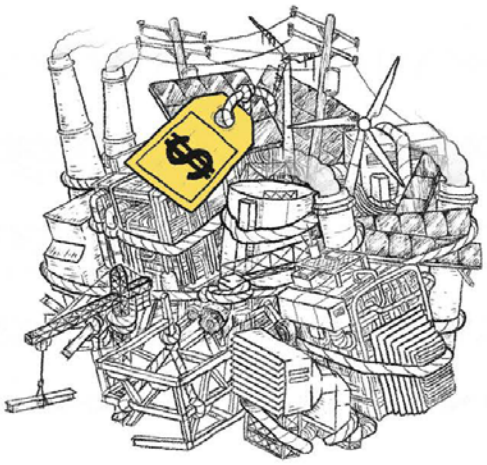
RECEIVED
FEB 25 2011
IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

EEC ORIGINAL PKG

EXHIBIT 7

Los Angeles Times (HTTP://WWW.LATIMES.COM/)

Californians are paying billions for power they don't need



We're using less electricity. Some power plants have even shut down. So why do state officials keep approving new ones?

By IVAN PENN (HTTP://WWW.LATIMES.COM/LA-BIO-IVAN-PENN-STAFF.HTML) and RYAN MENEZES (HTTP://WWW.LATIMES.COM/LA-BIO-RYAN-MENEZES-STAFF.HTML) | Reporting from Yuba City, Calif.

FEB. 5, 2017

Read the story

View the graphic (/projects/la-fi-electricity-capacity-graphic/)

The bucolic orchards of Sutter County north of Sacramento had never seen anything like it: a visiting governor and a media swarm — all to christen the first major natural gas power plant in California in more than a decade.

At its 2001 launch, the Sutter Energy Center was hailed as the nation's cleanest power plant. It generated electricity while using less water and natural gas than older designs.

A year ago, however, the $300-million plant closed indefinitely, just 15 years into an expected 30- to 40-year lifespan. The power it produces is no longer needed — in large part because state regulators approved the construction of a plant just 40 miles away in Colusa that opened in 2010.

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"We are building more power plants in California than ever before. Our goal is to make California energy self-sufficient." - Gov. Gray Davis at the opening of Sutter Energy Center in 2001. (Carolyn Cole / Los Angeles Times)

Sutter Energy Center has been offline since 2016, after just 15 years of an expected 30- to 40-year lifespan. (David Butow / For The Times)

Two other large and efficient power plants in California also are facing closure decades ahead of schedule. Like Sutter, there is little need for their electricity.

California has a big — and growing — glut of power, an investigation by the Los Angeles Times has found. The state's power plants are on track to be able to produce at least 21% more electricity than it needs by 2020, based on official estimates. And that doesn't even count the soaring production of electricity by rooftop solar panels that has added to the surplus.

To cover the expense of new plants whose power isn't needed — Colusa, for example, has operated far below capacity since opening — Californians are paying a higher premium to switch on lights or turn on electric stoves. In recent years, the gap between what Californians pay versus the rest of the country has nearly doubled to about 50%.

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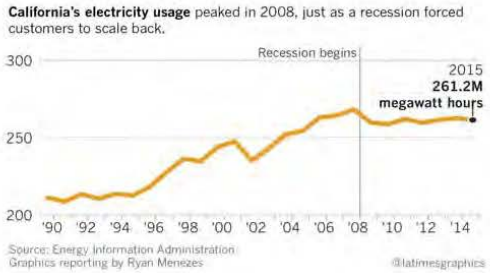
This translates into a staggering bill. Although California uses 2.6% less electricity annually from the power grid now than in 2008, residential and business customers together pay $6.8 billion more for power than they did

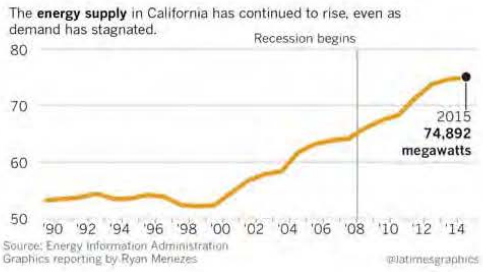
then. The added cost to customers will total many billions of dollars over the next two decades, because regulators have approved higher rates for years to come so utilities can recoup the expense of building and maintaining the new plants, transmission lines and related equipment, even if their power isn't needed.

How this came about is a tale of what critics call misguided and inept decision-making by state utility regulators, who have ignored repeated warnings going back a decade about a looming power glut.

"In California, we're blinding ourselves to the facts," said Loretta Lynch, a former president of the California Public Utilities Commission, who along with consumer advocacy groups has fought to stop building plants. "We're awash in power at a premium price."

California regulators have for years allowed power companies to go on a building spree, vastly expanding the potential electricity supply in the state. Indeed, even as electricity demand has fallen since 2008, California's new plants have boosted its capacity enough to power all of the homes in a city the size of Los Angeles — six times over. Additional plants approved by regulators will begin producing more electricity in the next few years.





The missteps of regulators have been compounded by the self-interest of California utilities, Lynch and other critics contend. Utilities are typically guaranteed a rate of return of about 10.5% for the cost of each new plant regardless of need. This creates a major incentive to keep construction going: Utilities can make more money building new plants than by buying and reselling readily available electricity from existing plants run by competitors.

Regulators acknowledge the state has too much power but say they are being prudent. The investment, they maintain, is needed in case of an emergency — like a power plant going down unexpectedly, a heat wave blanketing the region or a wildfire taking down part of the transmission network.

"We overbuilt the system because that was the way we provided that degree of reliability," explained Michael Picker, president of the California Public Utilities Commission. "Redundancy is important to reliability."

Some of the excess capacity, he noted, is in preparation for the retirement of older, inefficient power plants over the next several years. The state is building many new plants to try to meet California environmental standards requiring 50% clean energy by 2030, he said.

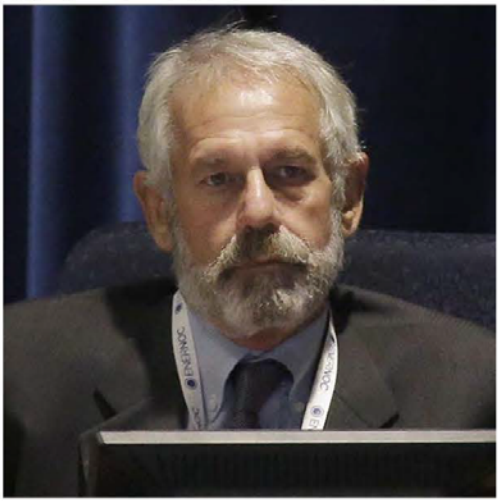
In addition, he said, some municipalities — such as the Los Angeles Department of Water and Power — want to maintain their own separate systems, which leads to inefficiencies and redundancies. "These are all issues that people are willing to pay for," Picker said.

Critics agree that some excess capacity is needed. And, in fact, state regulations require a 15% cushion. California surpasses that mark and is on pace to exceed it by 6 percentage points in the next three years, according to the Western Electricity Coordinating Council, which tracks capacity and reliability. In the past, the group has estimated the surplus would be even higher.

Michael Picker, current president of California's Public Utilities Commission, said the state's excess power supply is a strategic decision to ensure reliability. Loretta Lynch, who held the same position from 2002 to 2005, has been a critic of overbuilding since she chaired the regulatory agency. (Associated Press)

Even the 15% goal is "pretty rich," said Robert McCullough of Oregon-based McCullough Research, who has studied California's excess electric capacity for both utilities and regulators. "Traditionally, 10% is just fine. Below 7% is white knuckle. We are a long way from white-knuckle time" in California.

Contrary to Picker's assertion, critics say, customers aren't aware that too



much capacity means higher rates. "The winners are the energy companies," Lynch said. "The losers are businesses and families."

The over-abundance of electricity can be traced to poorly designed deregulation of the industry, which set the stage for blackouts during the energy crisis of 2000-2001.

Lawmakers opened the state's power business to competition in 1998, so individual utilities would no longer enjoy a monopoly on producing and selling electricity. The goal was to keep prices lower while ensuring adequate supply. Utilities and their customers were allowed to buy electricity from new, unregulated operators called independent power producers.

The law created a new exchange where electricity could be bought and sold, like other commodities such as oil or wheat.

Everyone would benefit. Or so the thinking went.

In reality, instead of lowering electricity costs and spurring innovation, market manipulation by Enron Corp. and other energy traders helped send electricity

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prices soaring.

That put utilities in a bind, because they had sold virtually all their natural gas plants. No longer able to produce as much of their own electricity, they ran up huge debts buying power that customers needed. Blackouts spread across the state.

State leaders, regulators and the utilities vowed never to be in that position again, prompting an all-out push to build more plants, both utility-owned and independent.

"They were not going to allow another energy crisis due to a lack of generation," said Alex Makler, a senior vice president of Calpine, the independent power producer that owns the Sutter Energy plant not far from Sacramento.

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But the landscape was starting to change. By the time new plants began generating electricity, usage had begun a decline, in part because of the economic slowdown caused by the recession but also because of greater energy efficiency.

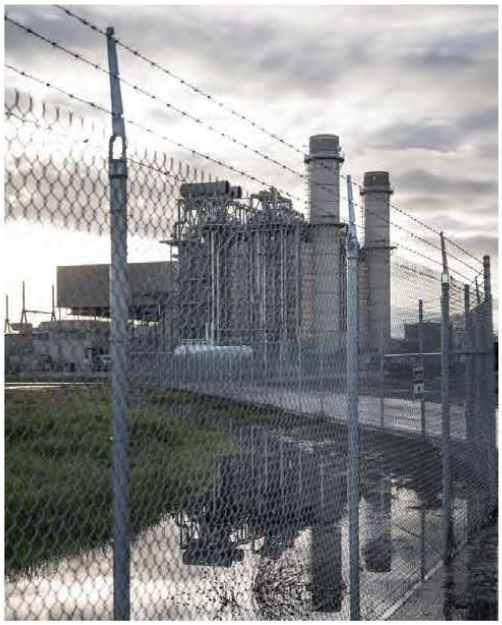
The state went from having too little to having way too much power.

"California has this tradition of astonishingly bad decisions," said McCullough, the energy consultant. "They build and charge the ratepayers. There's nothing dishonest about it. There's nothing complicated. It's just bad planning."

> California has this tradition of astonishingly bad decisions.
>
> — Robert McCullough, energy consultant

The saga of two plants — Sutter Energy and Colusa — helps explain in a microcosm how California came to have too much energy, and is paying a high price for it.

Sutter was built in 2001 by Houston-based Calpine, which owns 81 power plants in 18 states.



Sutter Energy Center, now closed, made money only if Calpine Corp. found customers for the plant's power. Other large, natural gas plants in the state also face early closures. (David Butow / For The Times)

Colusa Generating Station opened in 2010. Pacific Gas & Electric will charge ratepayers more than $700 million over the plant's lifespan, to cover its operating costs and the profit guaranteed to public utility companies. (Rich Pedroncelli / AP)

Independents like Calpine don't have a captive audience of residential customers like regulated utilities do. Instead, they sell their electricity under contract or into the electricity market, and make money only if they can find customers for their power.

Sutter had the capacity to produce enough electricity to power roughly 400,000 homes. Calpine operated Sutter at an average of 50% of capacity in its early years — enough to make a profit.

But then Pacific Gas & Electric Co., a regulated, investor-owned utility, came along with a proposal to build Colusa.

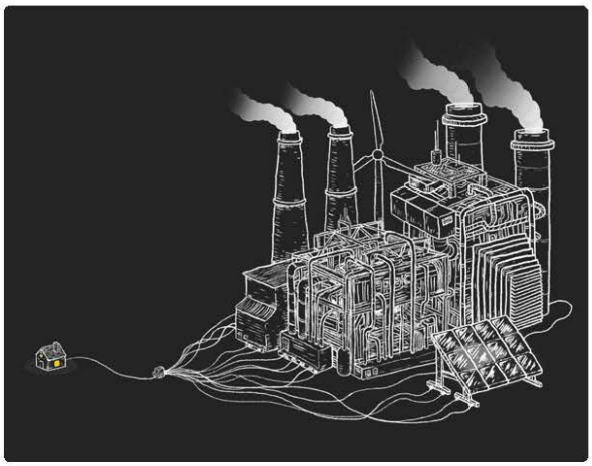
It was not long after a statewide heat wave, and PG&E argued in its 2007 request seeking PUC approval that it needed the ability to generate more power. Colusa — a plant almost identical in size and technology to Sutter — was the only large-scale project that could be finished quickly, PG&E said.

More than a half-dozen opponents, including representatives of independent power plants, a municipal utilities group and consumer advocates filed objections questioning the utility company. Wasn't there a more economical alternative? Did California need the plant at all?

They expressed concern that Colusa could be very expensive long-term for customers if it turned out that its power wasn't needed.

That's because public utilities such as PG&E operate on a different model.

If electricity sales don't cover the operating and construction costs of an independent power plant, it can't continue to run for long. And if the independent plant closes, the owner — and not ratepayers — bears the burden of the cost.



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In contrast, publicly regulated utilities such as PG&E operate under more accommodating rules. Most of their revenue comes from electric rates approved by regulators that are set at a level to guarantee the utility recovers all costs for operating the electric system as well as the cost of building or buying a

power plant — plus their guaranteed profit.

Protesters argued Colusa was unnecessary. The state's excess production capacity by 2010, the year Colusa was slated to come online, was projected to be almost 25% — 10 percentage points higher than state regulatory requirements.

The looming oversupply, they asserted, meant that consumers would get stuck with much of the bill for Colusa no matter how little customers needed its electricity.

And the bill would be steep. Colusa would cost PG&E $673 million to build. To be paid off, the plant will have to operate until 2040. Over its lifetime, regulators calculated that PG&E will be allowed to charge more than $700 million to its customers to cover not just the construction cost but its operating costs and its profit.

Pacific Gas & Electric's Colusa Generating Station has operated at well below its generating capacity — just 47% in its first five years. (Rich Pedroncelli / AP)

The urgent push by PG&E "seems unwarranted and inappropriate, and potentially costly to ratepayers," wrote Daniel Douglass, a lawyer for industry groups that represent independent power producers.

The California Municipal Utilities Assn. — whose members buy power from public utilities and then distribute that power to their customers — also complained in a filing that PG&E's application appeared to avoid the issue of how Colusa's cost would be shared if it ultimately sat idle. PG&E's "application is confusing and contradicting as to whether or not PG&E proposes to have the issue of stranded cost recovery addressed," wrote Scott Blaising, a lawyer representing the association. ("Stranded cost" is industry jargon for investment in an unneeded plant.)

The arguments over Colusa echoed warnings that had been made for years by Lynch, the former PUC commissioner.

A pro-consumer lawyer appointed PUC president in 2000 by Gov. Gray Davis, Lynch consistently argued as early as 2003 against building more power plants.

"I was like, 'What the hell are we doing?' " recalled Lynch.

She often butted heads with other commissioners and utilities who pushed for more plants and more reserves. Midway though her term, the governor replaced her as president — with a former utility company executive.

One key battle was fought over how much reserve capacity was needed to guard against blackouts. Lynch sought to limit excess capacity to 9% of the

state's electricity needs. But in January 2004, over her objections, the PUC approved a gradual increase to 15% by 2008.

"We've created an extraordinarily complex system that gives you a carrot at every turn," Lynch said. "I'm a harsh critic because this is intentionally complex to make money on the ratepayer's back."

With Lynch no longer on the PUC, the commissioners voted 5-0 in June 2008 to let PG&E build Colusa. The rationale: The plant was needed, notwithstanding arguments that there was a surplus of electricity being produced in the market.

PG&E began churning out power at Colusa in 2010. For the nearby Sutter plant, that marked the beginning of the end as its electricity sales plummeted.

In the years that followed, Sutter's production slumped to about a quarter of its capacity, or just half the rate it had operated previously.

Calpine, Sutter's owner, tried to drum up new business for the troubled plant, reaching out to shareholder-owned utilities such as PG&E and other potential buyers. Calpine even proposed spending $100 million to increase plant efficiency and output, according to a letter the company sent to the PUC in February 2012.

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PG&E rejected the offer, Calpine said, "notwithstanding that Sutter may have been able to provide a lower cost."

Asked for comment, PG&E said, "PG&E is dedicated to meeting the state's clean energy goals in cost-effective ways for our customers. We use competitive bidding and negotiations to keep the cost and risk for our customers as low as possible." It declined to comment further about its decision to build Colusa or on its discussions with Calpine.

Without new contracts and with energy use overall on the decline, Calpine had little choice but to close Sutter.

During a 2012 hearing about Sutter's distress, one PUC commissioner, Mike Florio, acknowledged that the plant's troubles were "just the tip of the proverbial iceberg." He added, "Put simply, for the foreseeable future, we have more power plants than we need."

Colusa, meanwhile, has operated at well below its generating capacity — just 47% in its first five years — much as its critics cautioned when PG&E sought approval to build it.

Sutter isn't alone. Other natural gas plants once heralded as the saviors of California's energy troubles have found themselves victims of the power glut. Independent power producers have announced plans to sell or close the 14-year-old Moss Landing power plant at Monterey Bay and the 13-year-old La Paloma facility in Kern County.

> Put simply, for the foreseeable future, we have more power plants than we need.
>
> — Mike Florio, former PUC commissioner

Robert Flexon, chief executive of independent power producer Dynegy Inc., which owns Moss Landing, said California energy policy makes it difficult for normal market competition. Independent plants are closing early, he said, because regulators favor utility companies over other power producers.

"It's not a game we can win," Flexon said.

Since 2008 alone — when consumption began falling — about 30 new power plants approved by California regulators have started producing

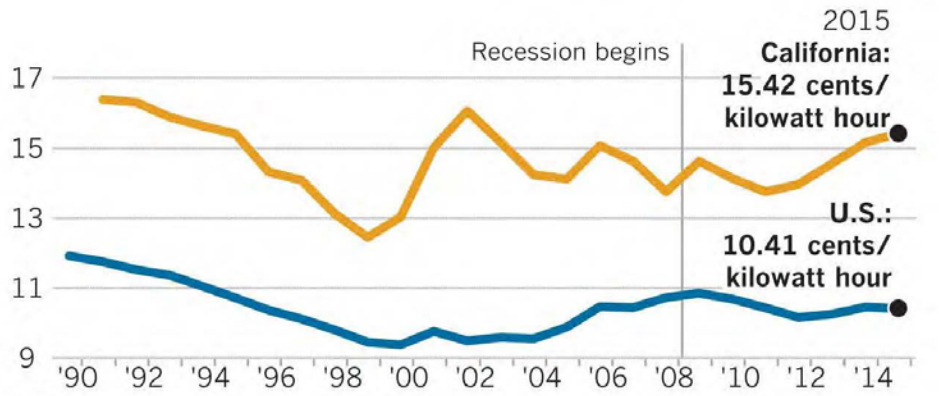
electricity. These plants account for the vast majority of the 17% increase in the potential electricity supply in the state during that period.

Hundreds of other small power plants, with production capacities too low to require the same level of review by state regulators, have opened as well.

Most of the big new plants that regulators approved also operate at below 50% of their generating capacity.

So that California utilities can foot the bill for these plants, the amount they are allowed by regulators to charge ratepayers has increased to $40 billion annually from $33.5 billion, according to data from the U.S. Energy Information Administration. This has tacked on an additional $60 a year to the average residential power bill, adjusted for inflation.

Another way of looking at the impact on consumers: The average cost of electricity in the state is now 15.42 cents a kilowatt hour versus 10.41 cents for users in the rest of the U.S. The rate in California, adjusted for inflation, has increased 12% since 2008, while prices have declined nearly 3% elsewhere in the country.



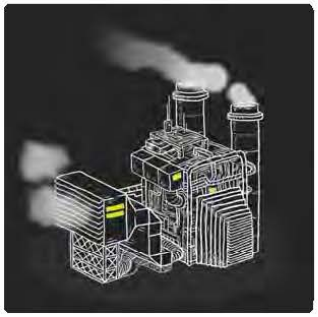
California utilities are "constantly crying wolf that we're always short of power and have all this need," said Bill Powers, a San Diego-based engineer and consumer advocate who has filed repeated objections with regulators to try to stop the approval of new plants. They are needlessly

trying to attain a level of reliability that is a worst-case "act of God standard," he said.

Even with the growing glut of electricity, consumer critics have found that it is difficult to block the PUC from approving new ones.

In 2010, regulators considered a request by PG&E to build a $1.15-billion power plant in Contra Costa County east of San Francisco, over objections that there wasn't sufficient demand for its power. One skeptic was PUC commissioner Dian Grueneich. She warned that the plant wasn't needed and its construction would lead to higher electricity rates for consumers — on top of the 28% increase the PUC had allowed for PG&E over the previous five years.

The PUC was caught in a "time warp," she argued, in approving new plants as electricity use fell. "Our obligation is to ensure that our decisions have a legitimate factual basis and that ratepayers' interest are protected."



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Her protests were ignored. By a 4-to-1 vote, with Grueneich the lone dissenter, the commissioners approved the building of the plant.

Consumer advocates then went to court to stop the project, resulting in a rare victory against the PUC. In February 2014, the California Court of Appeals overturned the commission, ruling there was no evidence the plant was needed.

Recent efforts to get courts to block several other PUC-approved plants have failed, however, so the projects are moving forward.

Contact the reporters (mailto:ivan.penn@latimes.com; ryan.menezes@latimes.com?subject=The Power Boom). For more coverage follow @ivanlpenn (https://twitter.com/ivanlpenn) and @ryanvmenezes (https://twitter.com/ryanvmenezes)

Times data editor Ben Welsh contributed to this report. Illustrations by Eben McCue. Graphics by Priya Krishnakumar and Paul Duginski. Produced by Lily Mihalik

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EXHIBIT 8

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

PRELIMINARY

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.

			Foraging Zone			Residency Status	
SITE	No. Remains	Identifiable Remains	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.

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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 Omnichrome 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).

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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.

				Foraging Zone			Residency Status	
SITE	No. Species	No. Remains	Identifiable Remains	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

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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	*Podilymbus podiceps*	water	migrant	1
Eared Grebe	*Podiceps nigricollis*	water	migrant	3
Sora	*Porzana carolina*	water	migrant	1
American Avocet	*Recurvirostra americana*	water	migrant	1
Cinnamon/Blue-winged Teal	*Anas discors/clypeata*	water	migrant	1
Western Grebe	*Aechmophorus occidentalis*	water	migrant	9
Brown Pelican	*Pelecanus occidentalis*	water	migrant	2
Double-crested Cormorant	*Phalacrocorax auritus*	water	migrant	2
Black-crowned Night-Heron	*Nycticorax nycticorax*	water	migrant	1
Yuma Clapper Rail	*Rallus longirostris*	water	resident	1
American Coot	*Fulica americana*	water	migrant	5
Mourning Dove	*Zenaida macroura*	terr	resident	3
White-winged Dove	*Zenaida asiatica*	terr	resident	1
Lesser Nighthawk	*Chordeiles acutipennis*	air	resident	2
Common Poorwill	*Phalaenoptilus nuttallii*	air	resident	1
Costa's Hummingbird	*Calypte costae*	air	resident	1
Ash-throated Flycatcher	*Myiarchus cinerascens*	air	resident	1
Black-throated/Sage Sparrow	*Amphispiza sp.*	terr	resident	1
Black Phoebe	*Sayornis nigricollis*	air	resident	1
Loggerhead Shrike	*Lanius ludovicianus*	terr	resident	2
Common Raven	*Corvus corax*	terr	resident	1
Horned Lark	*Eremophila alpestris*	terr	migrant	1
Tree Swallow	*Tachycineta bicolor*	air	migrant	1
Townsend's Warbler	*Setophaga townsendi*	terr	migrant	2
Common Yellowthroat	*Geothlypis trichas*	terr	migrant	1
Savannah Sparrow	*Passerculus sandwichensis*	terr	migrant	1
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	terr	migrant	1
Wilson's Warbler	*Cardellina pusilla*	terr	migrant	2
Western Tanager	*Piranga ludoviciana*	terr	migrant	2
Black-headed Grosbeak	*Pheucticus melanocephalus*	terr	migrant	1
Great-tailed Grackle	*Quiscalus mexicanus*	terr	resident	2
Brown-headed Cowbird	*Molothrus ater*	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	*Podiceps nigricollis*	water	migrant	2
Great Blue Heron	*Ardea herodias*	water	migrant	1
American Kestrel	*Falco sparverius*	air	resident	1
Ring-billed Gull	*Larus delawarensis*	water	migrant	2
California Gull	*Larus californianus*	water	resident	1
White-winged Dove	*Zenaida asiatica*	terr	resident	1
Lesser Nighthawk	*Chordeiles acutipennis*	air	resident	2
Say's Phoebe	*Sayornis saya*	air	resident	2
Tree Swallow	*Tachycineta bicolor*	air	migrant	2
Cliff Swallow	*Petrochelidon pyrrhonota*	air	resident	5
Hermit Warbler	*Setophaga occidentalis*	terr	migrant	1
Black-headed Grosbeak	*Pheucticus melanocephalus*	terr	migrant	1
Chipping Sparrow	*Spizella passerina*	terr	resident	1
Bullock's Oriole	*Icterus bullockii*	terr	resident	2
Brown-headed Cowbird	*Molothrus ater*	terr	resident	6

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Table 4. Species identified from avian remains at the Ivanpah power tower solar facility. Total identified birds = 127

IVANPAH		Zone	Residency	MNI
Cinnamon Teal	*Anas cyanoptera*	water	migrant	4
Cooper's Hawk	*Accipiter cooperii*	air	migrant	1
Red-shouldered Hawk	*Buteo lineatus*	terr	migrant	1
American Kestrel	*Falco sparverius*	air	resident	1
Peregrine Falcon	*Falco peregrinus*	air	resident	1
American Coot	*Fulica americana*	water	migrant	7
Sora	*Porzana carolina*	water	migrant	1
Spotted Sandpiper	*Actitis maculatus*	water	migrant	2
Greater Roadrunner	*Geococcyx californianus*	terr	resident	5
Yellow-billed Cuckoo	*Coccyzus americanus*	terr	migrant	1
Mourning Dove	*Zenaida macroura*	terr	resident	11
Barn Owl	*Tyto alba*	terr	resident	1
Lesser Nighthawk	*Chordeiles acutipennis*	air	resident	3
Common Poorwill	*Phalaenoptilus nuttallii*	air	resident	1
White-throated Swift	*Aeronautes saxatalis*	air	resident	1
Allen's/Rufous Hummingbird	*Selasphorus sp.*	air	migrant	1
Northern Flicker	*Colaptes auratus*	terr	resident	1
Ash-throated Flycatcher	*Myiarchus cinerascens*	air	resident	1
Loggerhead Shrike	*Lanius ludovicianus*	terr	resident	3
Warbling Vireo	*Vireo gilvus*	terr	migrant	1
Common Raven	*Corvus corax*	terr	resident	2
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	air	migrant	2
Tree Swallow	*Tachycineta bicolor*	air	migrant	2
Verdin	*Auriparus flaviceps*	terr	resident	3
Blue-gray Gnatcatcher	*Polioptila caerulea*	terr	resident	1
Northern Mockingbird	*Mimus polyglottos*	terr	resident	1
American Pipit	*Anthus rubescens*	terr	migrant	4
Orange-crowned Warbler	*Oreothlypis celata*	terr	migrant	1
Lucy's Warbler	*Oreothlypis luciae*	terr	resident	1
Black-throated Gray Warbler	*Setophaga nigrescens*	terr	migrant	1
Yellow-rumped Warbler	*Setophaga coronata*	air	migrant	14
Townsend's Warbler	*Setophaga townsendi*	terr	migrant	2
Yellow Warbler	*Setophaga petechia*	terr	migrant	1
Black-and-white Warbler	*Mniotilta varia*	terr	migrant	1
Wilson's Warbler	*Cardellina pusilla*	terr	migrant	2
MacGillivray's Warbler	*Oporornis tolmei*	terr	migrant	1
Western Tanager	*Piranga ludoviciana*	terr	migrant	2
Lazuli Bunting	*Passerina amoena*	terr	migrant	1
Blue Grosbeak	*Passerina caerulea*	terr	resident	1
Green-tailed Towhee	*Pipilo chlorurus*	terr	migrant	1
Brewer's Sparrow	*Spizella breweri*	terr	resident	3
Chipping Sparrow	*Spizella passerina*	terr	resident	3
Black-throated Sparrow	*Amphispiza bilineata*	terr	resident	3
Savannah Sparrow	*Passerculus sandwichensis*	terr	migrant	2
White-crowned Sparrow	*Zonotrichia leucophrys*	terr	migrant	6

IVANPAH		Zone	Residency	MNI
Pine Siskin	*Spinus pinus*	terr	migrant	1
House Finch	*Carpodacus mexicanus*	terr	resident	13
Brown-headed Cowbird	*Molothrus ater*	terr	resident	1
Great-tailed Grackle	*Quiscalus mexicanus*	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).

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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.

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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 muscling. 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.

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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 horizonal 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

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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.

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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 (Beaufrere, 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 (particulary 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.

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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.

Figure 7 Ivanpah solar power facilities
http://ivanpahsolar.com/about

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).

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.

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.

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Temperatures required to burn feathers

Many of the carcasses recovered from the Ivanpah Solar plant after the plant became operational showed singing 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)

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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.

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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	*Anas cyanoptera*	water	migrant	DS,IV	5
Pied-billed Grebe	*Podilymbus podiceps*	water	migrant	DS	1
Western Grebe	*Aechmorphorus occidentalis*	water	migrant	DS	9
Eared Grebe	*Podiceps nigricollis*	water	migrant	DS,GN	5
Brown Pelican	*Pelecanus occidentalis*	water	migrant	DS	2
Double-crested Cormorant	*Phalacrocorax auritus*	water	migrant	DS	2
Great Blue Heron	*Ardea herodias*	water	migrant	GN	1
Black-crowned Night-Heron	*Nycticorax nycticorax*	water	migrant	DS	1
Cooper's Hawk	*Accipiter cooperii*	air	migrant	IV	1
Red-shouldered Hawk	*Buteo lineatus*	terr	migrant	IV	1
American Kestrel	*Falco sparverius*	air	resident	GN,IV	2
Peregrine Falcon	*Falco peregrinus*	air	resident	IV	1
American Coot	*Fulica americana*	water	migrant	DS, IV	12
Yuma Clapper Rail	*Rallus longirostris yumanensis*	water	resident	DS	1
Sora	*Porzana carolina*	water	migrant	DS,IV	2
American Avocet	*Recurvirostra americana*	water	migrant	DS	1
Spotted Sandpiper	*Actitis maculatus*	water	migrant	IV	2
Ring-billed Gull	*Larus delawarensis*	water	migrant	GN	2
California Gull	*Larus californianus*	water	resident	GN	1
Greater Roadrunner	*Geococcyx californianus*	terr	resident	IV	5
Yellow-billed Cuckoo	*Coccyzus americanus*	terr	migrant	IV	1
Mourning Dove	*Zenaida macroura*	terr	resident	DS, IV	14
White-winged Dove	*Zenaida asiatica*	terr	resident	DS,GN	2
Barn Owl	*Tyto alba*	terr	resident	IV	1
Lesser nighthawk	*Chordeiles acutipennis*	air	resident	DS,GN,IV	7
Common Poorwill	*Phalaenoptilus nuttallii*	air	resident	DS,IV	2
White-throated Swift	*Aeronautes saxatalis*	air	resident	IV	1
Costa's Hummingbird	*Calypte costae*	air	resident	DS	1
Allen's/Rufous Hummingbird	*Selasphorus sp.*	air	migrant	IV	1
Northern Flicker	*Colaptes auratus*	terr	resident	IV	1
Ash-throated Flycatcher	*Myiarchus cinerascens*	air	resident	DS,IV	2
Say's Phoebe	*Sayornis saya*	air	resident	GN	2
Black Phoebe	*Sayornis nigricollis*	air	resident	DS	1
Loggerhead shrike	*Lanius ludovicianus*	terr	resident	DS,IV	5
Warbling Vireo	*Vireo gilvus*	terr	migrant	IV	1
Common Raven	*Corvus corax*	terr	resident	DS,IV	3
Horned Lark	*Eremophila alpestris*	terr	migrant	DS	1
Tree Swallow	*Tachycineta bicolor*	air	migrant	DS,GN,IV	5

SPECIES		Zone	Residency	Sites	MNI
Cliff Swallow	*Petrochelidon pyrrhonota*	air	resident	GN	5
No. Rough-winged Swallow	*Stelgidopteryx serripennis*	air	migrant	IV	2
Verdin	*Auriparus flaviceps*	terr	resident	IV	3
Blue-gray Gnatcatcher	*Polioptila caerulea*	terr	resident	IV	1
Northern Mockingbird	*Mimus polyglottos*	terr	resident	IV	1
American Pipit	*Anthus rubescens*	terr	migrant	IV	4
Orange-crowned Warbler	*Oreothlypis celata*	terr	migrant	IV	1
Lucy's Warbler	*Oreothlypis luciae*	terr	resident	IV	1
Yellow-rumped Warbler	*Setophaga coronata*	air	migrant	IV	14
Black-throated Gray Warbler	*Setophaga nigrescens*	terr	migrant	IV	1
Hermit Warbler	*Setophaga occidentalis*	terr	migrant	GN	1
Townsend's warbler	*Setophaga townsendi*	terr	migrant	DS,IV	4
Yellow Warbler	*Setophaga petechia*	terr	migrant	IV	1
Black-and-white Warbler	*Mniotilta varia*	terr	migrant	IV	1
MacGillivray's Warbler	*Oporornis tolmei*	terr	migrant	IV	1
Wilson's Warbler	*Cardellina pusilla*	terr	migrant	DS,IV	4
Common Yellowthroat	*Geothlypis trichas*	terr	migrant	DS	1
Western Tanager	*Piranga ludoviciana*	terr	migrant	DS,IV	4
Black-headed Grosbeak	*Pheucticus melanocephalus*	terr	migrant	DS,GN	2
Lazuli Bunting	*Passerina caerulea*	terr	migrant	IV	1
Blue Grosbeak	*Passerina caerulea*	terr	resident	IV	1
Green-tailed Towhee	*Pipilo chlorurus*	terr	migrant	IV	1
Brewer's Sparrow	*Spizella breweri*	terr	resident	IV	3
Chipping Sparrow	*Spizella passerina*	terr	resident	GN,IV	4
Black-throated Sparrow	*Amphispiza bilineata*	terr	resident	DS,IV	4
Savannah Sparrow	*Passerculus sandwichensis*	terr	migrant	DS,IV	3
White-crowned Sparrow	*Zonotrichia leucophrys*	terr	migrant	IV	6
Pine Siskin	*Spinus pinus*	terr	migrant	IV	1
House Finch	*Carpodacus mexicanus*	terr	resident	IV	13
Great-tailed Grackle	*Quiscalus mexicanus*	terr	resident	DS,IV	5
Brown-headed Cowbird	*Molothrus ater*	terr	resident	DS,GN,IV	8
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	terr	migrant	DS	1
Bullock's Oriole	*Icterus bullockii*	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	*Setophaga coronata*	12
House finch	*Carpodacus mexicanus*	10
Chipping sparrow	*Spizella passerina*	2
Unidentified warbler	*Parulidae*	2
Verdin	*Auriparus flaviceps*	2
Great-tailed grackle	*Quiscalus mexicanus*	2
Lucy's warbler	*Oreothlypis luciae*	1
Wilson's warbler	*Cardellina pusilla*	1
MacGillivray's warbler	*Oporornis tolmei*	1
Black-throated gray warbler	*Setophaga nigrescens*	1
Townsend's warbler	*Setophaga townsendi*	1
Orange-crowned warbler	*Oreothlypis celata*	1
Blue-gray gnatcatcher	*Polioptila caerulea*	1
Unidentified swallow	*Hirundinidae*	1
Northern rough-winged swallow	*Stelgidopteryx serripennis*	1
Warbling vireo	*Vireo gilvus*	1
Unidentified hummingbird	*Selasphorus sp.*	1
Unidentified passerine	Passeriformes	1
Unidentified finch	*Carpodacus sp.*	1
Lazuli bunting	*Passerina caerulea*	1
Unidentified sparrow	*Spizella species*	1
Unidentified blackbird	*Icteridae*	1
Peregrine falcon	*Falco peregrinus*	1

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EXHIBIT 9

Correction

ECOLOGY, SUSTAINABILITY SCIENCE

Correction for "Solar energy development impacts on land cover change and protected areas," by Rebecca R. Hernandez, Madison K. Hoffacker, Michelle L. Murphy-Mariscal, Grace C. Wu, and Michael F. Allen, which appeared in issue 44, November 3, 2015, of *Proc Natl Acad Sci USA* (112:13579–13584; first published October 19, 2015; 10.1073/pnas.1517656112).

The authors note that on page 13579, right column, first full paragraph, lines 12–16, the following statement published incorrectly: "If up to 500 GW of USSE may be required to meet United States-wide reduction of 80% of 1990 greenhouse gas emissions by 2050, 71,428 km^2 of land may be required (roughly the land area of the state of South Carolina) assuming a capacity factor of 0.20 (an average capacity factor for PV; Table S1)." The statement should instead appear as: "For example, up to 500 GW of USSE may be required to meet United States-wide reduction of 80% of 1990 greenhouse gas emissions by 2050 (33). This requires about 14,285 km^2 of land [roughly the area of the state of Connecticut, (9)], underscoring the possible vast area requirements for energy needs in the United States." Additionally, the authors note ref. 33 was omitted from the published article. The full reference appears below.

9. Hernandez RR, Hoffacker MK, Field CB (2014) Land-use efficiency of big solar. *Environ Sci Technol* 48(2):1315–1323.
33. Mai T, et al. (2012) Exploration of high-penetration renewable electricity futures. *Vol. 1 of Renewable Electricity Futures Study*, eds Hand MM et al. (National Renewable Energy Laboratory, Golden, CO).

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PNAS

Solar energy development impacts on land cover change and protected areas

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Decisions determining the use of land for energy are of exigent concern as land scarcity, the need for ecosystem services, and demands for energy generation have concomitantly increased globally. Utility-scale solar energy (USSE) [i.e., ≥1 megawatt (MW)] development requires large quantities of space and land; however, studies quantifying the effect of USSE on land cover change and protected areas are limited. We assessed siting impacts of >160 USSE installations by technology type [photovoltaic (PV) vs. concentrating solar power (CSP)], area (in square kilometers), and capacity (in MW) within the global solar hot spot of the state of California (United States). Additionally, we used the Carnegie Energy and Environmental Compatibility model, a multiple criteria model, to quantify each installation according to environmental and technical compatibility. Last, we evaluated installations according to their proximity to protected areas, including inventoried roadless areas, endangered and threatened species habitat, and federally protected areas. We found the plurality of USSE (6,995 MW) in California is sited in shrublands and scrublands, comprising 375 km^2 of land cover change. Twenty-eight percent of USSE installations are located in croplands and pastures, comprising 155 km^2 of change. Less than 15% of USSE installations are sited in "Compatible" areas. The majority of "Incompatible" USSE power plants are sited far from existing transmission infrastructure, and all USSE installations average at most 7 and 5 km from protected areas, for PV and CSP, respectively. Where energy, food, and conservation goals intersect, environmental compatibility can be achieved when resource opportunities, constraints, and trade-offs are integrated into siting decisions.

concentrating solar power | conservation | greenhouse gas emissions | land use | photovoltaics

The need to mitigate climate change, safeguard energy security, and increase the sustainability of human activities is prompting the need for a rapid transition from carbon-intensive fuels to renewable energy (1). Among renewable energy systems, solar energy has one of the greatest climate change mitigation potentials with life cycle emissions as low as 14 g CO_2-eq·kW·h^{-1} [compare this to 608 g CO_2-eq·kW·h^{-1} for natural gas (2)]. Solar energy embodies diverse technologies able to capture the sun's thermal energy, such as concentrating solar power (CSP) systems, and photons using photovoltaics (PV). In general, CSP is economically optimal where direct normal irradiance (DNI) is 6 kW·h·m^{-2}·d^{-1} or greater, whereas PV, able to use both diffuse and DNI, is economically optimal where such solar resources are 4 kW·h·m^{-2}·d^{-1} or greater. Solar energy systems are highly modular ranging from small-scale deployments (≤1 MW; e.g., residential rooftop modules, portable battlefield systems, solar water heaters) to centralized, utility-scale solar energy (USSE) installations (≥1 MW) where a large economy of scale can meet greater energy demands. Nonetheless, the diffuse nature of solar energy necessitates that large swaths of space or land be used to collect and concentrate solar energy into forms usable for human consumption, increasing concern over potential adverse impacts on natural ecosystems, their services, and biodiversity therein (2–5).

Given the wide range of siting options for USSE projects, maximizing land use efficiency and minimizing land cover change is a growing environmental challenge (6–8). Land use efficiency describes how much power or energy a system generates by area (e.g., watts per square meter, watt-hours per square meter, respectively). For example, USSE installations have an average land use efficiency of 35 W·m^{-2} based on nameplate capacity under ideal conditions (9). The ratio of the realized generation of an installation to maximum generation under ideal conditions over a period is the capacity factor. Using these two terms, we can quantify land requirements for USSE at larger spatial scales. If up to 500 GW of USSE may be required to meet United States-wide reduction of 80% of 1990 greenhouse gas emissions by 2050, 71,428 km^2 of land may be required (roughly the land area of the state of South Carolina) assuming a capacity factor of 0.20 (an average capacity factor for PV; Table S1). This underscores the possible vast area requirements for meeting energy needs in the United States and elsewhere. Increasing the land use efficiency of each installation—e.g., decreasing space between rows of PV modules or CSP mirrors—and prudent siting decisions that incorporate the weighting of environmental trade-offs and synergies can reduce land cover change impacts broadly (10).

Land cover change owing to solar energy has received increasing attention over concerns related to conflicts with biodiversity goals (2–4) and greenhouse gas emissions, which are released when

Significance

Decisions humans make about how much land to use, where, and for what end use, can inform innovation and policies directing sustainable pathways of land use for energy. Using the state of California (United States) as a model system, our study shows that the majority of utility-scale solar energy (USSE) installations are sited in natural environments, namely shrublands and scrublands, and agricultural land cover types, and near (<10 km) protected areas. "Compatible" (≤15%) USSE installations are sited in developed areas, whereas "Incompatible" installations (19%) are classified as such owing to, predominantly, lengthier distances to existing transmission. Our results suggest a dynamic landscape where land for energy, food, and conservation goals overlap and where environmental cobenefit opportunities should be explored.

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biomass, including soil, is disturbed or removed during the lifetime of a power plant (11, 12). Siting USSE installations in places already impacted by humans (e.g., parking lots, rooftops) reduces the likelihood that adverse environmental impacts will occur and can exceed generation demands for renewable energy goals in places with moderate- to high-quality solar resources (8, 10, 13), including California. When sites within the built environment are inaccessible, siting that minimizes land use and land cover change within areas acting as carbon sinks, avoids extirpation of biodiversity, and does not obstruct the flow of ecosystem services to residents, firms, and communities, can serve to mitigate adverse environmental impacts (2, 3, 9, 10, 14, 15). Siting within the built environment also reduces the need for complex decision making dictating the use of land for food or energy (16).

Recent studies have underscored the role that proximity of threats to protected areas plays in meeting conservation goals (16–20). Protected areas may preclude habitat loss within boundaries; however, a prevailing cause of degradation within protected areas is land use and land cover change in surrounding areas. Specifically, protected areas are effective when land use nearby does not obstruct corridor use, dispersion capabilities, nor facilitate invasions of nonnative species through habitat loss, fragmentation, and isolation—including those caused by renewable energy development. Quantifying both internal and external threats is necessary for assessing vulnerability of individual protected areas to conversion and landscape sustainability overall. Siting decisions can be optimized with decision support tools (10, 14) that differentiate areas where direct (e.g., land cover change) and proximate effects (e.g., habitat fragmentation) are lowest on the landscape.

Several studies have made predictions regarding which specific land cover types may be impacted by solar energy development (7, 21); however, few studies have evaluated actual siting decisions and their potential or realized impact on land cover change (9, 11). In this study, our objectives were to (*i*) evaluate potential land cover change owing to development of utility-scale PV and CSP within the state of California (United States) and describe relationships among land cover type and the number of installations, capacity, and technology type of USSE; (*ii*) use the decision support tool, the Carnegie Energy and Environmental Compatibility (CEEC) model (10), to develop a three-tiered spatial environmental and technical compatibility index (hereafter called Compatibility Index; "Compatible," "Potentially Compatible," and "Incompatible") for California that identifies environmentally low-conflict areas using resource constraints and opportunities; and (*iii*) compare utility-scale PV and CSP installation locations with the Compatibility Index and their proximity to protected areas to quantify solar energy development decisions and their impact on land cover change (see *Supporting Information* for details).

We selected the state of California as a model system owing to its relatively early, rapid, and ambitious deployment of solar energy systems, 400,000 km^2 of land area (greater than Germany and 188 other countries), large human population and energy demands, diverse ecosystems comprising 90% of the California Floristic Province biodiversity hot spot, and its long-standing use in elucidating the interrelationship between land and energy (9, 10, 22, 23).

Results

We identified 161 planned, under construction, and operating USSE installations throughout 10 land cover types (Figs. 1 and 2) among 16 total in the state of California (Table S2). Broadly, PV installations are concentrated particularly in the Central Valley and the interior of southern California, whereas CSP power plants are sited exclusively in inland southern California (Figs. 1 and 2). For all technology types, the plurality of capacity (6,995 MW) is found in shrubland and scrubland land cover type,

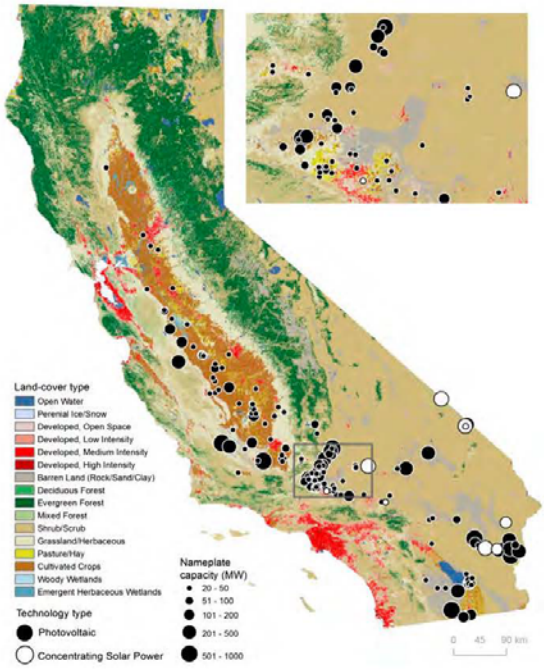

Fig. 1. Map showing land cover types across California and the size and location of USSE installations.

necessitating 375 km^2 of land (Table 1). This area is approximately two times greater than USSE development occurring within cultivated croplands, representing 4,103 MW of capacity within 118 km^2. Over 2,000 MW of existing or proposed USSE capacity is sited within the built environment, particularly within relatively lower density areas.

PV power plants are found in 10 land cover types; the plurality of capacity is sited within shrubland/scrublands (6,251 MW; Table 1), representing 26.0% of all PV installations (Fig. 2). Capacity for utility-scale PV installations is also represented within cultivated croplands (3,823 MW), barren land (2,102 MW), developed (2,039 MW), and grassland/herbaceous (1,483 MW) land cover types. Within the developed land cover types, open space is most used (1,205 MW) for utility-scale PV capacity. For CSP, 1,000 MW are located within 34 km^2 of barren land land cover types, and conjointly within shrubland/scrublands (744 MW, 32 km^2).

Using the decision support tool, CEEC (Fig. 3), we identified 22,028 and 77,761 km^2 of Compatible and Potentially Compatible area, respectively, in California for developing PV (Fig. S1). Generation-based potential within Compatible areas—comprising 5.4% of California's area—is 8,565 $TW{\cdot}h{\cdot}y^{-1}$ for fixed-tilt modules and up to 11,744 $TW{\cdot}h{\cdot}y^{-1}$ for dual-axis modules. For CSP technologies, we found 6,274 and 33,489 km^2 of Compatible and Potentially Compatible area. Generation-based potential for CSP within Compatible areas—comprising 1.5% of California's area—is 5,947 $TW{\cdot}h{\cdot}y^{-1}$.

USSE installations vary in the environmental compatibility of their actual or proposed site (Fig. 4 *A* and *B*). The majority (71.7%) of PV USSE installations are in Potentially Compatible areas, whereas 11.2% are located in Compatible areas. PV installations classified as Incompatible are due to distances from existing transmission infrastructure exceeding 10 km (45.9%), slope exceeding the recommended threshold (41.9%), and to a

Table 1. USSE installations and land cover type

Land cover type	Nameplate capacity, MWdc				Area, km²			
	PV	%	CSP	%	PV	%	CSP	%
Barren land (rock/sand/clay)	2,102	12	**1,000**	**48**	77	11	**34**	**45**
Cultivated crops	3,823	22	280	14	110	15	8	11
Developed (all)	2,039	12	50	2	70	10	1	1
Developed, high intensity	50	0	0	0	1	0	0	0
Developed, medium intensity	624	4	0	0	17	2	0	0
Developed, low intensity	160	1	0	0	9	1	0	0
Developed, open space	1,205	7	50	2	43	6	1	1
Emergent herbaceous wetlands	60	0	0	0	1	0	0	0
Grass/herbaceous	1,483	9	0	0	72	10	0	0
Pasture/hay	1,397	8	0	0	37	5	0	0
Shrubland/scrubland	**6,251**	**36**	744	36	**343**	**48**	32	43

The nameplate capacity [in megawatts (MWdc)], footprint (in square kilometers), and number of photovoltaic (PV) and concentrating solar power (CSP) USSE installations (>20 MW) in California (in planning, under construction, operating) by land cover type. Bold data represent the greatest value among all land cover types.

lesser degree, owing to development on endangered and threatened species habitat (9.7%) and federally preserved land (3.2%; Fig. 4 *A* and *B*). For CSP installations, 55.5% are located in either Compatible or Potentially Compatible areas. Siting incompatibilities for CSP were either due to slope (25.0%) or distance from transmission lines (75.0%). PV and CSP installations on Compatible areas range in capacity between 20 and 200 MW, and are located within the Central Valley and inland southern California regions, excepting one PV facility in Yolo County (Fig. 4*A*). PV facilities on Incompatible land are found throughout all of California and, excepting one facility (250 MW; San Luis Obispo County), are 200 MW in capacity or less.

PV and CSP USSE installations average 7.2 ± 0.9 and 5.3 ± 2.3 km, respectively, from the closest protected area (Fig. 5). Federally protected areas are the nearest protected area type (7.8 ± 1.0) to land use and land cover change for PV development, whereas both endangered and threatened species habitat (5.7 ± 2.4) and federally protected areas (5.3 ± 2.3) are nearest for CSP development. Of PV installations, 73.7% were less than 10 km and 47.4% were less than 5 km away from the nearest protected area. Of CSP installations, 90.0% were less than 10 km away and 60.0% were less than 5 km away from the nearest protected area.

Discussion

Evaluation of siting decisions for USSE is increasingly relevant in a world of mounting land scarcity and in which siting decisions are as diverse as their deployment worldwide. For example, China has emphasized utility-scale, ground-mounted PV and residential, small-scale solar water heating installations (24), whereas Germany is notable for achieving up to 90% development within the built environment (25). In California, a large portion of USSE installations is sited far from existing transmission infrastructure. New transmission extensions are expensive, difficult to site due to social and environmental concerns, and require many years of planning and construction. Such transmission-related siting incompatibilities not only necessitate additional land cover change but also stand in the way of cost-efficient and rapid renewable energy deployment.

Environmental regulations and laws, which vary drastically from one administrative area to the next, may also cause incongruities in siting decisions. Inherent ambiguities of such policies allows for further inconsistencies. A study in southern Italy (11) found that two-thirds of authorizations for USSE were within environmentally "unsuitable" areas as defined by municipal and international criteria (e.g., United Nations Educational, Scientific and Cultural Organization sites), with adverse implications for land cover change-related CO_2 emissions. Studies (7, 21) including our own reveal that regulations and policies to date have deemphasized USSE development in California, the United States, and North America, respectively, within the built environment and near population centers in favor of development within shrublands and scrublands. California's shrublands and scrublands comprise, in part, the California Floristic Province, a biodiversity hot spot known for high levels of species richness and endemism and where 70% or more of the original extent of vegetation has been lost due to global environmental change-type threats, including land cover change (26, 27). In biologically rich areas like this, land cover change has the potential to greatly impact ecological value and function. Globally, the extent of shrubland and scrubland is vast; therefore, in areas where biodiversity is low, goods and services of shrublands may include diverse recreational opportunities, culturally and historically significant landscapes, movement corridors for wildlife, groundwater as a drinking source, and carbon (sequestration), which may also be adversely impacted by land cover conversion (28).

Proximity impacts result from the fragmentation and degradation of land near and between protected areas, reducing ecological flows of energy, organisms, and goods (16–20). In a study of 57

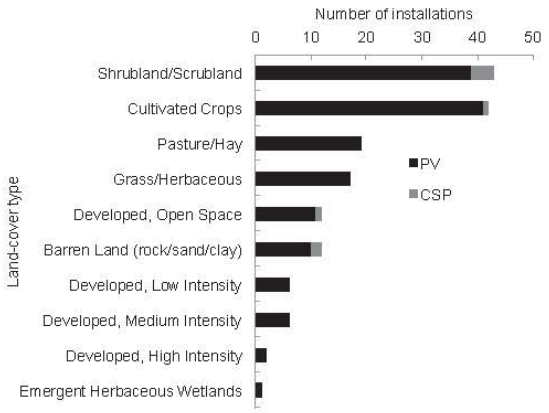

Fig. 2. Number of photovoltaic (PV) and concentrating solar power (CSP) installations (planned, under construction, operating) by land cover type in California; represented in order of most installations to least for both technologies.

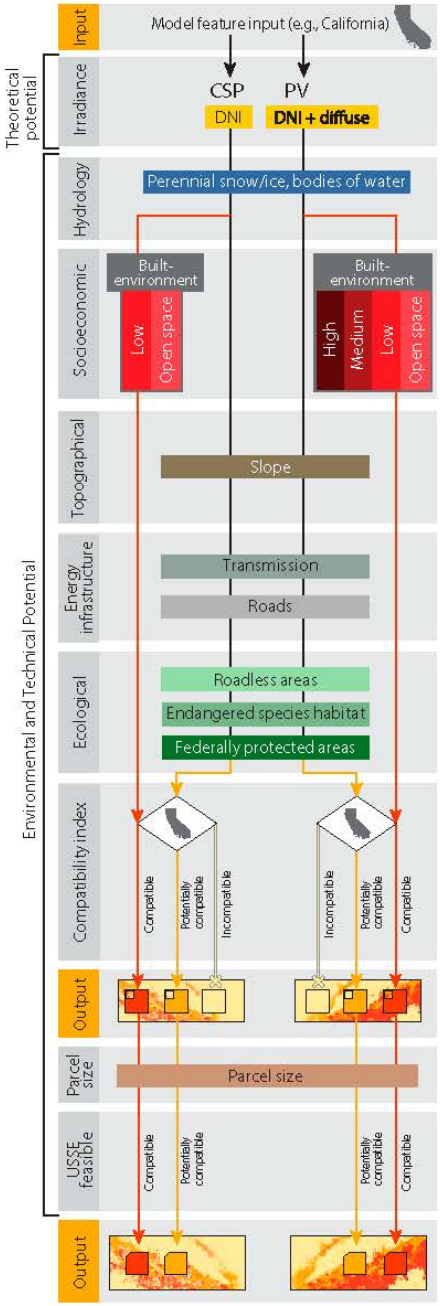

Fig. 3. Workflow of the Carnegie Energy and Environmental Compatibility (CEEC) model, a decision support tool, showing model inputs (resource opportunities and constraints), Environmental and Technical Compatibility Index, and model outputs.

US protected areas, Hansen et al. (16) found such zones extended an average of 18 times (in area) beyond the park area (e.g., Mojave National Preserve, three times protected area, i.e., ~30 km radially beyond preserve boundary). Additionally, Hamilton et al. (17) used distances of 5, 25, and 75 km from all US protected area boundaries to represent three spatial scales (i.e., buffers) of proximity impacts owing to US land cover and land use change. Last, the US Fish and Wildlife Service's Partners for Fish and Wildlife Program, seeks to reduce adverse proximity impacts by augmenting protected areas with private land restoration, targeting land within a maximum distance of 75 km from existing protected areas. Thus, our results confirm USSE development in California engenders important proximity impacts, for example, encompassing all three spatial scales from Hamilton et al. (17) and decreasing land available for US Fish and Wildlife Service partner restoration programs.

Industrial sectors—including energy and agriculture—are increasingly responsible for decisions affecting biodiversity. Concomitantly, target-driven conservation planning metrics (e.g., percentage of remaining extant habitat does not fall below 40%), geospatial products (e.g., decision support tools), and the monetization of carbon and ecosystem services are increasing and may be effective in compensating for the lack of target-driven regulation observed in policy (29).

Last, development decisions may overlook environmental resources unprotected by policies but valued by interest groups [e.g., important bird areas, essential connectivity areas, vulnerability of caliche (i.e., mineralized carbon) in desert soils, biodiversity hot spots, percent habitat loss]. Several elements of the environment providing ecosystem services that humans depend upon remain widely unprotected by laws and regulations and vastly understudied. By integrating land conservation value earlier in the electricity procurement and planning process, preemptive transmission upgrades or expansions to low-impact regions could improve the incentive to develop in designated zones, avoiding future incompatible development. However, zones themselves must also be carefully designated. The landscape-scale Desert Renewable Energy Conservation Plan initially provided a siting framework—including incidental take authorizations of endangered and threatened species—for streamlining solar energy development within the 91,000 km^2 of mostly desert habitat in public and private lands and designated as the Development Focus Area (DFA). After accounting for unprotected environmental attributes like biodiversity, Cameron et al. (14) identified ~7,400 km^2 of relatively low-value conservation land within the Mojave Desert Ecoregion (United States) that can meet California's 33% renewable portfolio standard for electricity sales seven times over. Since this publication, the Desert Renewable Energy Conservation Plan's DFA has now been restricted to only public lands, which some argue to be more intact, and to the ire of certain local interest groups and government agencies. Hernandez et al. (10) developed a satellite-based decision support tool, the CEEC model, that showed that generation-based technical potential of PV and CSP within the built environment could meet California's total energy demand 4.8 and 2.7 times over, respectively. Development decisions may also overlook synergistic environmental cobenefit opportunities. Environmental cobenefit opportunities include the utilization of degraded or contaminated lands, colocation of solar and agriculture, hybrid power systems, and building-integrated PV (2).

This study found that nearly 30% of all USSE installations are sited in croplands and pastures; signifying perhaps an increasing affinity for using agricultural lands for renewable energy, specifically within the Central Valley of California, renowned for agricultural productivity globally. The growing demand for food, affordable housing, water, and electricity puts considerable pressure on available land resources, making recent land use decisions in this region a noteworthy case study for understanding the food–energy–water nexus that should be explored. Opportunities to minimize land use change include colocating renewable energy systems with food production and converting degraded and salt-contaminated lands, unsuitable for agriculture, to sites for

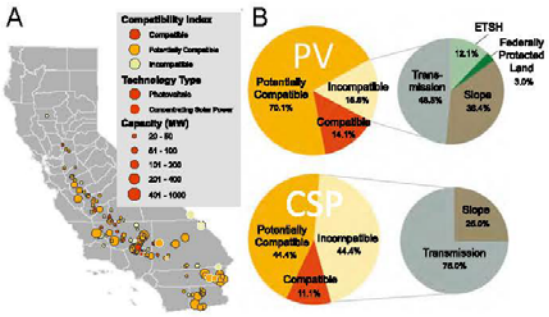

Fig. 4. (*A*) Map of California showing utility-scale solar energy (USSE) (planned, under construction, operating) installations' compatibility by technology [i.e., photovoltaic (PV), concentrating solar power (CSP)], site, and capacity (in megawatts). (*B*) Percentage of USSE installations sited in Compatible, Potentially Compatible, and Incompatible areas. For USSE installations in incompatible sites, we provide the percentage of each incompatibility type.

renewable energy production. Using unoccupied spaces such as adjacent to and on top of barns, parking lots, and distribution centers in agricultural areas is another win–win scenario. In sub-Saharan Africa, integrating solar energy into a drip irrigation system has enhanced food security by conserving water, enhancing reliability of power, and conserving land and space (30). As the development of renewable energy and the production of food are expected to grow, so will the need to understand and evaluate their interactions with the land supporting this expansion in other landscapes.

Conclusion

A growing body of studies underscores the vast potential of solar energy development in places that minimize adverse environmental impacts and confer environmental cobenefits (2, 10, 14, 15, 21). Our study of California reveals that USSE development is a source of land cover change and, based on its proximity to protected areas, may exacerbate habitat fragmentation resulting in direct and indirect ecological consequences. These impacts may include increased isolation and nonnative species invasions, and compromised movement potential of species tracking habitat shifts in response to environmental disturbances, such as climate change. Furthermore, we have shown that USSE development within California comprises siting decisions that lead to the alteration of natural ecosystems within and close to protected areas in lieu of land already impacted by humans (7, 21). Land use policies and electricity planning that emphasizes the use of human-impacted places, complies with existing environmental regulations at the federal, state, and municipal level, and considers environmental concerns over local resource constraints and opportunities, including those of communities, firms, and residents, may prove an effective approach for avoiding deleterious land cover change. Empirical analyses using decision support tools, like CEEC, can help guide development practices toward greater environmental compatibility through improved understanding of the impacts of policy and regulatory processes to date.

Methods

To achieve our objectives, we (*i*) created a multiinstitution dataset of 161 USSE installations in the state of California and compared these data to land cover data; (*ii*) developed a spatial Compatibility Index (i.e., Compatible, Potentially Compatible, and Incompatible) for California using the CEEC model that identifies environmentally low-conflict areas for development, integrating environmental and technical resource constraints and opportunities; (*iii*) compared USSE installation locations with the Compatibility Index to enumerate the number of installations sited within each area type; and (*iv*) compared USSE installation locations with their proximity to protected areas, including Inventoried Roadless Areas, Endangered and Threatened Species Habitat, and Federally Protected Areas (*Supporting Information*). All analyses were conducted using ArcGIS (10.x) and R (R: A Language and Environment for Statistical Computing).

To evaluate land cover change owing to USSE development, we collected data on PV and CSP USSE installations in California that vary in development stage (i.e., planned, under construction, operating) and range in nameplate capacity, selecting a subset of all USSE that range from 20 to 873 MW, 20 MW being a legislative capacity threshold for transmission connection affecting development action. Data for each installation included nameplate capacity under standard test conditions (in megawatts), land footprint (in square kilometers), technology type, and point location (latitude, longitude). Data were collected exclusively from official government documents and records (see *Supporting Information* for details). We define the land footprint as the area directly affected during the construction, operation, and decommissioning phases of the entire power plant facility, excluding existing transmission corridors, land needed for raw material acquisition, and land for generation of energy required for manufacturing. Installations that did not meet data quality criteria (e.g., lacking exact location) were excluded, resulting in a total of 161 USSE installations (see *Supporting Information* for details). Data were collected beginning in 2010 and updated until May 2014. Installations in our dataset vary in their development stage and therefore include installations that may change in attribute or may never reach full operation. Given that we are interested in decisions regarding siting, we included siting data for planned installations, despite their potential uncertainty, as these reflect the most current siting practices that may not be fully represented in decisions for installations that are already under construction or operating.

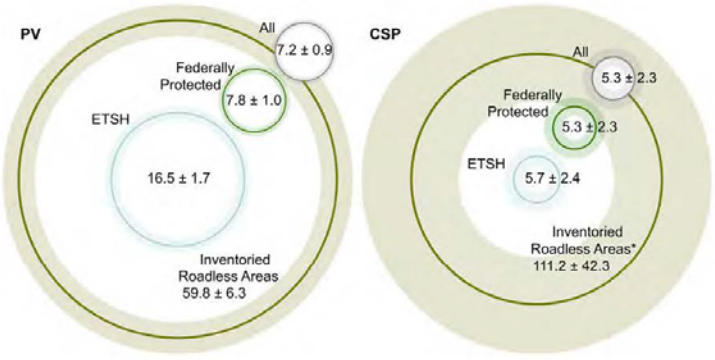

Fig. 5. Proximity of PV and CSP USSE installations to Endangered and Threatened Species Habitat, Federally Protected Areas, Inventoried Roadless Areas, and the closest for all protected area types. Circles are to scale, relatively (with the exception of Inventoried Roadless Areas for CSP), showing 95% confidence intervals (shaded area).

To evaluate land cover change by USSE development, we compared the point location of each USSE power plant from our dataset (by their latitude and longitude) to the land cover type according to the National Land Cover Dataset (NLCD) (30-m resolution) and allocated the reported total footprint of the installation as land cover change within this land cover type. All 16 land cover types, as described by the NLCD, are represented in California, including developed areas within the built environment (Table S3). Developed areas are further classified according to imperviousness of surfaces: open-space developed (<20% disturbed surface cover; e.g., large-lot single-family housing units, golf courses, parks), low-intensity developed (20–49% disturbed cover), medium-intensity developed (50–79% disturbed cover), and high-intensity developed (80–100% disturbed cover; e.g., apartment complexes, row houses, commercial and industrial facilities).

The CEEC model (10) is a decision support tool used to calculate the technical potential of solar electricity generation and characterize site suitability by incorporating user-specified resource opportunities and constraints (Fig. 3 and Tables S2–S5). The CEEC model uses the National Renewable Energy Laboratory's satellite-based diffuse/direct normal radiation and direct normal radiation models, which estimate average daily insolation (in kilowatt-hours per square meter per day) over 0.1° surface cells (~10 km in size), to identify areas with annual average solar resources adequate for PV (>4 $kW{\cdot}h{\cdot}m^{-2}{\cdot}d^{-1}$) and CSP (>6 $kW{\cdot}h{\cdot}m^{-2}{\cdot}d^{-1}$) technologies, respectively (Table S1).

Among these areas, bodies of open water and perennial ice and snow were excluded as potential sites. We indexed the resulting area for solar energy infrastructure—independently for PV and CSP—as follows: Compatible, Potentially Compatible, and Incompatible (*Supporting Information*). Because solar energy potential within California's developed areas can meet the state's current energy consumptive demand 2.7 times over, decrease or eliminate land cover change, and reduce environmental impacts (10), we defined all four developed land cover classes as Compatible, excepting CSP in high and medium intensity as, to date, CSP technologies have not been deployed there owing to the relatively lower modularity of CSP.

Potentially Compatible areas augment site selections beyond Compatible areas. As slopes of 3% and 5% or less are most suitable for CSP and PV installations, respectively—owing to reduced costs and impact associated with surface grading—we used the National Elevation Dataset (varies from 3- to 30-m resolution; US Geological Survey) to exclude areas without these criteria. To minimize costs and impacts linked to new construction activities and materials, Potentially Compatible areas were also restricted to areas within 10 and 5 km of transmission lines (California Energy Commission) and roads (TIGER), respectively (*Supporting Information*, Fig. 3, and Table S4). We excluded areas where road construction is prohibited ("Federal Roadless Areas"; US Department of Forest and Agriculture), critical habitat of threatened and endangered species (US Fish and Wildlife Service), and federally protected areas (i.e., GAP Statuses 1 and 2, Protected Areas Database of the United States, US Geological Survey; Table S1). We reported generation-based potential for PV and CSP at the utility-scale, i.e., within areas identified as Compatible and Potentially Compatible and within areas meeting a minimum parcel size as needed for a 1-MW installation. Incompatible areas are not classified as Compatible and Potentially Compatible areas. To quantify impacts of solar energy development decisions, we spatially characterized the number, capacity, technology type, and footprint of USSE power plants dataset within the Compatibility Index and analyzed the reasons for incompatibility.

To quantify impact of proximity to protected areas from USSE development, we calculated the distance between each USSE facility data point (by technology type) to the nearest protected area by type (i.e., inventoried roadless areas, critical habitat of threatened and endangered species, and federally protected areas) using the "Near (Analysis)" in ArcGIS, and subsequently calculated the average of all distances (by protected area type) and 95% confidence intervals. For "all" protected area types, we used the shortest distance between each USSE facility data point and the three protected area types, and subsequently calculated the average of these shortest distances and 95% confidence intervals.

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EXHIBIT 10

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Land-Sparing Opportunities for Solar Energy Development in Agricultural Landscapes: A Case Study of the Great Central Valley, CA, United States

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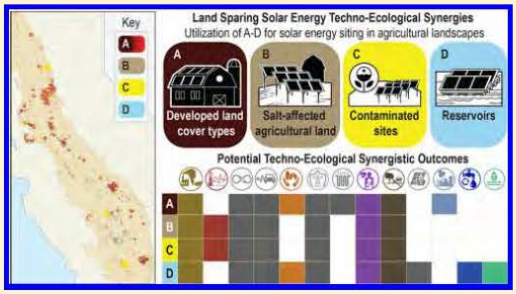
Supporting Information

ABSTRACT: Land-cover change from energy development, including solar energy, presents trade-offs for land used for the production of food and the conservation of ecosystems. Solar energy plays a critical role in contributing to the alternative energy mix to mitigate climate change and meet policy milestones; however, the extent that solar energy development on nonconventional surfaces can mitigate land scarcity is understudied. Here, we evaluate the land sparing potential of solar energy development across four nonconventional land-cover types: the built environment, salt-affected land, contaminated land, and water reservoirs (as floatovoltaics), within the Great Central Valley (CV, CA), a globally significant agricultural region where land for food production, urban development, and conservation collide. Furthermore, we calculate the technical potential (TWh year^{-1}) of these land sparing sites and test the degree to which projected electricity needs for the state of California can be met therein. In total, the CV encompasses 15% of CA, 8415 km^2 of which was identified as potentially land-sparing for solar energy development. These areas comprise a capacity-based energy potential of at least 17 348 TWh year^{-1} for photovoltaic (PV) and 2213 TWh year^{-1} for concentrating solar power (CSP). Accounting for technology efficiencies, this exceeds California's 2025 projected electricity demands up to 13 and 2 times for PV and CSP, respectively. Our study underscores the potential of strategic renewable energy siting to mitigate environmental trade-offs typically coupled with energy sprawl in agricultural landscapes.



INTRODUCTION

In the 21st century, agricultural landscapes are a complex nexus in which land, energy, and water are increasingly limited and interconnected.[1−4] Food production is intrinsically dependent on the diminishing supply of fresh water and viable land.[5,6] The pumping of water for irrigation, dependent on declining aquifers,[7] and other agricultural activities necessitates vast amounts of energy.[8] In the United States, the most agriculturally productive country globally, expenses related to energy (e.g., fertilizer production and equipment manufacture and use) are one of the primary limitations of food production, while U.S. dependency on foreign energy imports imposes additional limitations.[4] Additionally, organic emissions and those from carbon-intensive energy sources pose serious health and environmental risks to farming communities and geographically nested urban population centers.[9−12] In response to such limitations and risks,[4] solar energy is increasingly adopted by farmers and other agricultural stakeholders in ways that may spare land (e.g., building integrated photovoltaics [PVs]) for food and fiber production or, conversely, place additional pressure on arable land by displacing such land for energy production.[13,14]

Unlike conventional energy sources, solar energy can be integrated into pre-existing agricultural infrastructure and under-utilized spaces without adversely affecting commodity production or space required for such activities (e.g., edges of fields, corners of center pivot irrigation fields, and barn rooftops).[13,15,16] Farms require energy to support machinery, electric fencing, pumping and water filtration for irrigation,

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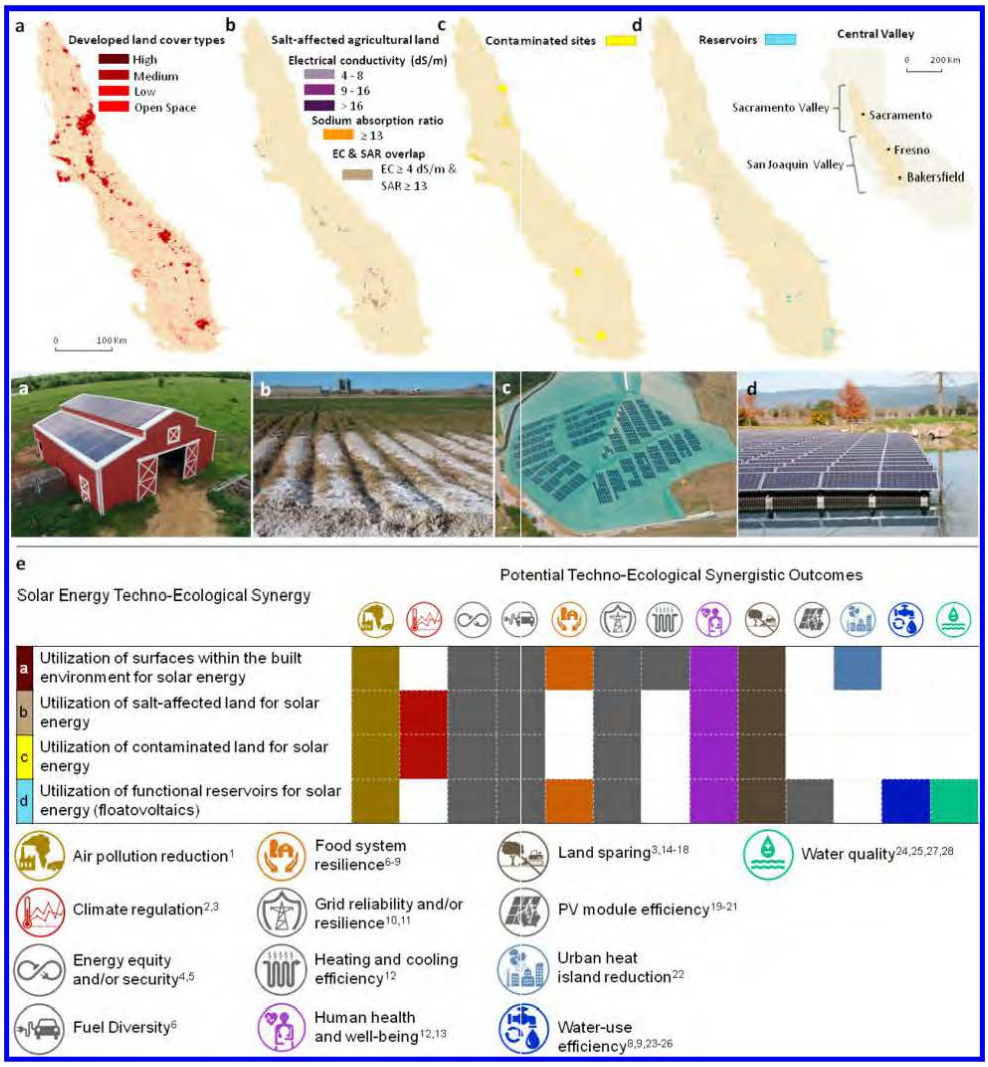

Figure 1. Land sparing solar energy siting opportunities within a 21st century agricultural landscape, i.e., California's Central Valley including within and over (a) the built environment, (b) salt-affected soils, (c) contaminated land, and (d) reservoirs. Contaminated sites are shown accurately according to their actual area but not shape. We posit that these land-sparing siting opportunities for solar energy development may also function individually (e) as a techno-ecological synergy (TES), a framework for engineering mutually beneficial relationships between technological and ecological systems that engender both techno-centric outcomes (gray icons) as well as support for sustainable flows of ecosystem goods and services (colored icons). Numbers refer to citations that provide justification for all potential techno-ecological synergistic outcomes. Larger versions of the map images are available in Figure S4. Photograph credit from left to right: (a) Cromwell Solar in Lawrence, Kansas by Aron Cromwell; (b) Donald Suarez, USDA Salinity Laboratory; (c) Carlisle Energy; (d) Far Niente Winery. All photographs are used with permission. Maps were made using ESRI ArcGIS Desktop (version 10.4) software.

drying and storing crops, lighting, powering heaters, and cooling livestock farmhouses. Previous studies have shown that on-farm solar schemes can provide farmers with reduced electricity pricing while requiring minimal water inputs (relative to other energy sources), thereby improving overall food availability and affordability.[2,13,14]

However, when large solar industrial complexes are developed on natural or prime agricultural lands, nontrivial land-use and land-cover change (LULCC) may result.[17−19] In California, Hernandez et al. (2015) found 110 km^2 of cultivated cropland and 37 km^2 of pasture was converted into use for ground-mounted utility-scale solar energy (USSE, ≥ 1 megawatt [MW]). In the municipality of Leece, Italy; De

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Marco et al. (2014) found that 51% of solar energy installations greater than 20 kW in capacity (n = 42) are sited in unsuitable areas, notably natural and agricultural areas, including century-old olive grooves.[19] Reversion of a site used for solar energy generation back to agriculture is typically unlikely, complicated by long-term application of herbicides, stabilizers, gravel, chemical suppressants, and soil compaction from power plant construction and maintenance activities. Further, land lease agreements and payback periods often exceed 15 years.[20]

The sustainability of energy, food, and water resources and the preservation of natural ecosystems are determined, in part, by how efficiently humans utilize land.[21] While most research has focused on the negative environmental impacts of ground-mounted USSE installations,[17,22] there is increasing attention on the design and enterprise of solar energy that produce both technological outcomes favorable for humans (e.g., energy security and fuel diversity) and benefits supporting ecosystem goods and services, including land sparing.[23] In this study, we define land sparing as siting decisions for solar energy infrastructure that obviate the need for LULCC that may have otherwise occurred within prime agricultural land and natural environments, respectively, including intermediates between these land-cover types. We posit that this framework, known techno-ecological synergy (TES), proposed by Bakshi et al. (2015),[24] and other studies suggest that several potential techno-ecological outcomes may be concomitantly achieved when nonconventional surfaces within agricultural landscapes are used for siting solar energy. Specifically, the utilization of geographically nested (1) urban population centers, i.e., the built environment (i.e., developed areas characterized by impermeable surfaces and human occupation), (2) land with salt-affected soils, (3) contaminated land, and (4) reservoirs may serve as recipient environments for solar energy infrastructure. These sites may also confer techno-ecological outcomes necessary for meeting sustainability goals in landscapes characterized by complex, coupled human and natural systems, such as those within agricultural landscapes. We explore these potential techno-ecological outcomes first, emphasizing the critical role these recipient environments may play in land sparing, which is the focus of our analysis (Figure 1).

Built Environments for Synergistic Solar Energy Development. Modern agricultural landscapes span 40% of Earth's surface[25] and are characterized by complex, heterogeneous mosaics in which natural, agricultural, and built-up elements, infrastructure, and policies intersect.[19,26,27] Areas characterized as the built environment within agricultural landscapes have considerable potential to accommodate solar energy development: a TES that may spare land for agricultural production and conservation locally,[17,21,28] reduce urban heat island effects,[29] and enhance human health and well-being, energy efficiency, and cost savings to consumers[30] (Figure 1). In the state of California (CA), installing small solar energy technology and USSE, including photovoltaic (PV) and concentrating solar power (CSP) technologies, throughout the built environment could meet the state's projected 2020 energy needs 3 to 5 times over.[17] Integrated PV (e.g., on rooftops, vertical walls, and over parking lots) has the lowest land footprint relative to all other energy sources (0 ha [ha]/TWh/year), incurring no LULCC, thus making developed areas environmentally optimal for PV systems. Additionally, solar panels within urban areas may lower local temperatures from increased surface albedo.[29] Integrating solar energy installations within such human-dominated environments generates cost savings directly from generation but also precludes energy losses from transmission and additional construction (e.g., grading, roads, and transmission) and raw material needs (e.g., grid connections, office facilities, and concrete) required for displacive ground-mounted USSE systems. For example, innovative ways of integrating PV technology, such as panels on or alongside transportation corridors (e.g., solar road panels[31] and photovoltaic noise barriers) and clear modules replacing windows will only increase its appeal within the built environment.[15,16,32,33]

Salt-Affected Lands for Synergistic Solar Energy Development. Naturally occurring high concentrations of salt (saline soils; Ca^{2+}, Mg^{2+}, Na^{+}, K^{+}, Cl^{-}, SO_4^{2-}, and HCO_3^{-}) or sodium (sodic soils; Na^{+}, Ca^{2+}, Mg^{2+}, Na^{+}, K^{+}, HCO_3^{-}, CO_3^{-}, Cl^{-}, and SO_4^{2-}) combined with poor irrigation and farming practices can lead to dramatic losses in crop yield and, in severe cases, the cessation of agricultural productivity. An excess quantity of dissolved salt or sodium minerals in soil and water inhibits food production, threatens water quality, and facilitates sedimentation problems and soil erosion. Plant growth is limited by salinity due to the osmotic effect in which excess salts (e.g., chloride [Cl^{-}] and sulfate [SO_4^{2-}]) tightly attach to water molecules, inhibiting plant roots from absorbing "available" water due to the high passage resistance of the electric current. Different salts can affect growth uniquely where plant success is dependent on both the salt compound makeup and the individual plant's tolerance. A high sodium ratio (proportion of sodium [Na^{+}] relative to calcium [Ca^{2+}] and magnesium [Mg^{2+}]) is related to soil dispersion influenced by an excess of cations (Na^{+}) attaching to clay particles causing soil swelling and expansion. Overtime, sodic soils begin to solidify and lose their structure as they fluctuate between dry and moist periods, reducing soil permeability. Salinization impacts about 19.5% (45 million ha) of irrigated land, 2.1% (32 million ha) of dryland agriculture globally,[34] and costs the United States approximately $12 billion a year.[35] Developing solar energy on salt-affected land may reduce air pollution (e.g., when substituted for carbon-intensive energy sources), while a concomitant restoration of biophysical capacity of salt-affected land (e.g., composted municipal solar waste amendments[36] and native halophytic vegetation out-planting) may support climate regulation. Techno-centric outcomes of solar energy on salt-affected land may include energy equity, fuel diversity, and grid reliability.[37−39] Heckler[40] estimates soil lost to salt degradation will continue to increase at a yearly rate of about 0.8−16%, underscoring the potential long-term opportunity of salt-affected land as a potential land-sparing TES of solar energy (Figure 1).

Contaminated Land for Synergistic Solar Energy Development. Reclaiming land to provide sustainable energy has numerous potential techno-ecological outcomes including addressing public health risks, supporting climate regulation (e.g., following reclamation activities), and mitigating air pollution when solar energy generation is substituted for carbon-intensive sources of energy (Figure 1). Contaminated lands include brownfields, federal or nonfederal superfunds, and lands identified by the Resource Conservation and Recovery Act (RCRA), the Abandoned Mine Lands Program, and the Landfill Methane Outreach Program. Brownfields are areas previously designated for industrial or commercial use in which there are remnants of hazardous substances, pollutants, or contaminants. Superfund sites involve the most severely

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Environ. Sci. Technol. 2017, 51, 14472−14482

hazardous wastes requiring federal or state government attention. The RCRA ensures toxic waste storage facility sites responsibly and properly treat, store, or dispose of hazardous waste where cleanup expectations and requirements are determined by individual state governments. Once responsibly reclaimed, a process typically facilitated by government efforts, the land can be repurposed for commercial or industrial development. Contaminated sites typically left idle for extended periods of time, have low economic value, and are challenging to cultivate,[41,42] none of which undermine their potential for solar energy development. Examples of toxic wastelands that have been repurposed for solar energy development projects include sites formerly involving chemical and explosive manufacturing, steel production, tar and chemical processing, geothermal heating and cooling, and garbage disposal.[43] In the United States, the RE-Powering Initiative encourages renewable energy development on contaminated lands, and since the inception of the program, 1124 MW of renewable energy capacity is produced on 171 contaminated land sites.[44]

Floatovoltaics for Synergistic Solar Energy Development. Irrigation is the largest source of water consumption globally.[45,46] Brauman et al. (2013) found extensive variability in crop water productivity within global climatic zones indicating that irrigated croplands have significant potential to be intensified (i.e., food produced [kcal] per unit of water [L]) through improved water management.[47] The siting of solar energy panels that float on the surface of water bodies, such as reservoirs and irrigation canals, may minimize evaporation, reduce algae growth, cool water temperatures, and improve energy efficiency by reducing PV temperatures through evaporative cooling (Figure 1). There are vast opportunities for floatovoltaic deployment; collectively, lakes, ponds, and impoundments (water bodies formed by dams) cover more than 3% of the earth's surface area.[48] Reservoirs allow for relatively seamless solar energy integration compared with natural bodies of water, such as rivers, because their surfaces are relatively placid. This reduces the likelihood that panels will collide with each other or drift and break apart, allowing for easy maintenance. Additionally, unlike rivers and lakes, reservoirs are often located where energy demands are relatively high. Floatovoltaics integrate well into agricultural systems by allaying competition with land resources and providing energy and water savings. Farmers increasingly rely on agricultural ponds as water storage for irrigation, livestock, and aquaculture.[48] On-farm reservoirs are often wide but shallow making them more susceptible to water loss through evaporation.[49] Algae growth, a nutrient pollutant, is another costly nuisance for irrigation ponds that can clog pumps, block filters, and produce odors,[50] conditions attributed to further water losses that can be expensive and challenging for farmers to address. Solar panels reduce light exposure and lower water temperatures, minimizing algae growth and the need to filter water.[51−53] Finally, when solar panels are placed over cool water instead of land, PV module efficiency may increase 8−10%[54] where increased thermal transfer limits resistance on the circuit allow the electrical current to move faster.[55,56]

The Central Valley: A Model System for Land-Energy Interactions. The Central Valley (CV) is an ideal region in which to study land sparing benefits of solar energy TESs and to inform on broader issues related to the intersection between energy and land.[57] Located in one of the world's five mediterranean climate regions, California is valued as the largest agricultural producer within the United States, responsible for over half of the country's fruits and nuts, and is productive year-round.[58,59] This region also includes, in part, the California Floristic Province, an area supporting high concentrations of native and endemic species.[60] Over the last 150 years, the CV has experienced expansive LULCC owing to agricultural and urban development, which has accelerated habitat loss and fragmentation in areas of native prairies, marshes, vernal pools, oak woodlands, and alkali sink scrublands.[61] Within the last 30 years, LULCC has also occurred within agricultural land owing to energy development and urbanization, a large percent of which were considered prime farmlands.[61]

To date, there are few studies assessing the potential of solar energy within agricultural landscapes in ways that may concomitantly facilitate synergistic outcomes on technological and ecological systems beyond avoided emissions.[62,63] In this study, we sought to (1) evaluate the land sparing potential of solar energy development across four nonconventional land-cover types: the built environment, salt-affected land, contaminated land, and water reservoirs, as floatovoltaics, within the Great Central Valley (CV, CA) and (2) quantify the theoretical and technical (i.e., generation-based) potential of PV and CSP technologies within the CV and across these potential solar energy TESs to determine where technical potential for development is greatest geographically. Further, we sought to (3) determine the spatial relationship of land sparing areas with natural areas, protected areas, and agricultural regions designated as important to determine the proximity of these opportunities to essential landscapes that may have otherwise be selected for energy siting and development. Next, we (4) analyze the spatial density of contaminated sites within 10 km of the most populated CV cities to elucidate relationships between attributes (number and size) of nearby contaminated sites potentially favorable for solar energy generation and urban development centers because urban density is an explicative factor determining electricity consumption for cities.[64] Lastly, we (5) test the degree to which current and projected (2025) electricity needs for the state of California can be met across all four potential land sparing opportunities.

METHODS

Theoretical and Technical Solar Energy Potential for PV and CSP Technologies. The theoretical, or capacity-based, solar energy potential is the radiation incident on Earth's surfaces that can be utilized for energy production, including solar energy.[65] We used two satellite-based radiation models developed by the National Renewable Energy Laboratory (NREL) and Perez et al.[66] to estimate the theoretical solar energy potential of PV and CSP technologies operating at their full, nominal capacity over 0.1° surface cells (~10 km in size).

Photovoltaic technologies use both direct and indirect radiation, while CSP uses only direct-beam radiation. Therefore, the radiation model we used for CSP capacity-based energy estimates is representative of direct normal irradiance (DNI) only, whereas the PV model incorporates both DNI and diffuse irradiance. Areas with DNI values of less than 6 kWh m^{-2} day^{-1} were not considered economically adequate for CSP deployment and therefore excluded from solar potential estimates (Figure S1).

To evaluate the technical, or generation-based, solar energy potential within identified areas for land-sparing PV development, we multiplied the theoretical potential by a capacity

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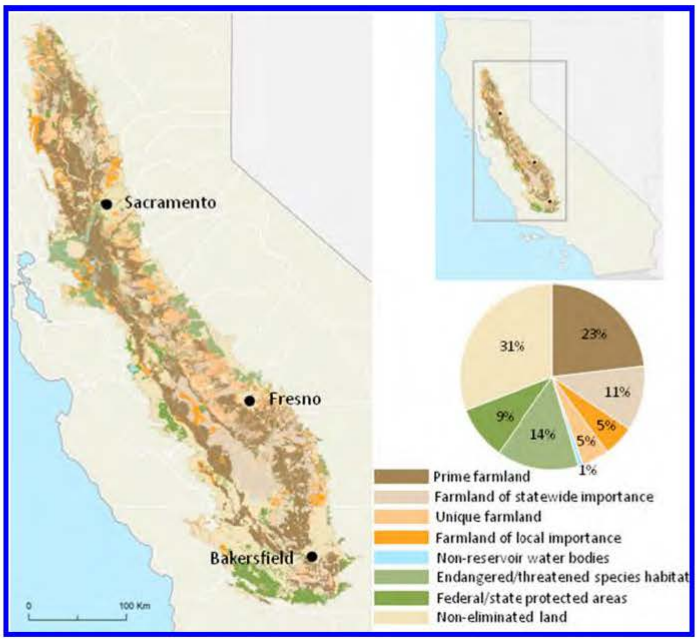

Figure 2. Map of California showing land-cover types eliminated when identifying solar energy potential over salt-affected soil. The pie graph depicts the relative proportion of area that each land cover type makes up within the Central Valley, which is not visible in the map due to overlap (e.g., areas identified as both endangered species habitat and state-protected). Land-cover types include: important farmlands (prime, unique, and of state-wide or local importance), nonreservoir bodies of water, endangered and threatened species habitat, federally and state-protected land, and non-eliminated land that was further evaluated for solar energy potential. The map was made using ESRI ArcGIS Desktop (version 10.4) software.

factor. The capacity factor values are derived from a satellite-based, spatially explicit capacity factor model[67] that has identical cells as the radiation models described above. The PV capacity factor model comprises estimates for three primary technology subtypes including fixed mount, south facing with a 25° tilt (TILT25); one-axis tracking, rotating east−west with a ± 45° maximum tracking angle (AX1FLAT); and two-axis tracking, rotating east−west and north−south of the sun across the horizon (AX2). For CSP generation-based calculations, we incorporated a five DNI class value scheme resembling estimates for a trough system.[68] Full details are provided in the Supplementary Methods.

Next, we calculated solar energy potential for both small and large-scale solar energy projects, where a minimum parcel size of 28 490 m^2 and 29 500 m^2 were required for PV and CSP facilities, respectively, producing 1 MW or more. These values are based on the average USSE land-use efficiency of 35.1 and 33.9 W m^{-2} for PV and CSP, respectively.[69] All CSP installations are utility-scale, and therefore, only these data are reported.

Solar Energy Potential of Land Sparing Opportunities in the Central Valley. We delineated the CV (58 815 km^2) based on the Great Central Valley Region[70] (Figure 1), composed of the geographic subdivisions of the Sacramento Valley, San Joaquin Valley, and all Outer South Coast Ranges encompassed within the San Joaquin Valley polygon. We overlaid the PV and CSP radiation models with the four land sparing land-cover types within the CV and calculated total area (km^2) and solar energy potentials (TWh $year^{-1}$). Across the salt-affected land solar energy TESs, we eliminated lands protected at the federal and state levels and threatened and endangered species habitats (Figure 2). Furthermore, all water bodies (e.g., wetlands and rivers), occurring in salt affected areas, with the exception of reservoirs, were removed as they may function as essential habitats for birds and other wildlife. Salt-affected soils within farmlands identified as primary, unique, or of state-wide or local importance[71] were also not included in the final estimates for solar energy potential. See the Supplementary Methods for explicit details on data and analysis for each land-cover type.

Spatial Relationships between Synergies and across Land-Cover Types. To ensure that energy potentials were not double-counted (e.g., salt-affected lands within the built environment), we calculated the spatial overlap across three solar energy TESs. Specifically, we observed overlap of land sparing potential among the built environment, salt-affected regions, and reservoirs. We did not include Environmental Protection Agency (EPA) contaminated sites because such data is not absolutely spatially explicit, but instead, each site is modeled circularly, in known total area, outward from a centroid based on known latitude and longitude coordinates, which may not represent each site's actual boundaries. Overlap between contaminated sites and land classified as salt-affected may be the most unlikely as most actions at these sites focus on preventing human contact.[41] Nonetheless, we did count 17 (189.5 km^2), 3 (2.5 km^2), and 740 (332.8 km^2) contaminated sites that may potentially overlap with salt-affected land, reservoirs, and the built environment, respectively, but we did

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Table 1. Contaminated Site Attributes across the Ten Most-Populated Cities Within the Central Valley, CA

city	city population	city area (km^2)	contaminated sites within city	contaminated sites within 10 km of city	contaminated site area within 10 km (km^2)
Fresno	494 665	112	38	58	21
Sacramento	466 488	98	83	140	47
Bakersfield	347 483	142	10	32	8
Stockton	291 707	62	53	95	35
Modesto	201 165	37	19	55	28
Elk Grove	153 015	42	27	71	52
Visalia	124 442	36	36	46	9
Concord	122 067	31	9	60	107
Roseville	118 788	5	8	60	75
Fairfield	105 321	37	10	26	34

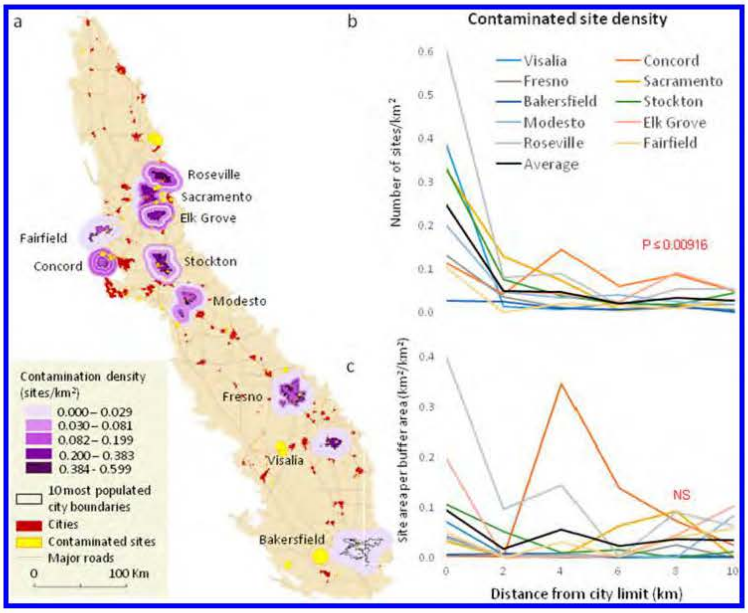

Figure 3. (a) Density of contaminated sites (circular points representing their total area but not shape; number of sites per square kilometer) within the Central Valley's (beige polygon) 10 most-populated cities: (1) within city limits (black line) and (2) across 0–2, 2–4, 4–6, 6–8, and 8–10 km buffers beyond city borders (purple buffers). Graphs show (b) the density of contaminated sites (sites per square kilometer) and (c) the total area of sites as a function of distance from city limits of the 10 most-populated cities in California's Central Valley. Land within each city boundary has a significantly greater number of contaminated sites based on total count (posthoc Tukey test, $P \leq 0.00916$) than buffer classes beyond the city perimeter (number of sites per square kilometer). No significant relationship exists between contamination site area and distance from urban cores. The map was made using ESRI ArcGIS Desktop (version 10.4) software.

not account for this overlap in the final values. We also enumerated spatial relationships between synergistic sites and other land-cover types throughout our analysis to determine the proximity of these opportunities to essential landscapes that may have otherwise been selected for energy siting and development.

Spatial Density and Proximity of Contaminated Lands to Human Populations. To elucidate relationships between attributes (number and size) of nearby contaminated sites potentially favorable for solar energy generation and urban development centers, we first identified the 10 most-populated cities within the Central Valley. We added 5 buffer distances around the perimeter of each city at 2 km increments up to 10 km (i.e., 2, 4, 6, 8, and 10 km). Within cities and each of these buffered rings (e.g., area between 4 and 6 km beyond city limits), we calculated the area and divided the number and area of contaminated sites that fall within each buffer by its associated area (site km^{-2} and site area [km^2] km^{-2}). We included any sites located outside of the CV within 10 km of the city analyzed. Contaminated sites that were in a 10 km radius of more than one of the 10 highly populated city were included in each density analysis. We used generalized linear models (GLMs) to test the effects of distance class on contaminated site metrics (i.e, count and area) and to observe if sites are generally located near, further away, or have no association with urban development centers, which serve as a proxy for electricity demand. Contaminated sites that were within a 10 km radius of multiple cities were observed

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Environ. Sci. Technol. 2017, 51, 14472–14482

Table 2. Number of Times over PV and CSP Solar Energy Technologies Can Meet California'S Projected Electricity Consumption Needs for 2025 (321 TWh) Based on Land-Sparing Opportunities within the Central Valley, CA: (1) Developed, (2) Salt-Affect Soil, (3) Reservoirs, and (4) Contaminated Sites[a]

		PV				CSP	
		distributed and USSE		USSE only		USSE	
land-cover type[b]		capacity-based (times over)	generation-based (times over)	capacity-based (times over)	generation-based (times over)	capacity-based (times over)	generation-based (times over)
Central Valley		378.6	68.1−83.4	378.6	68.1	398.2	129.7
DNI ≥ 6 kWh m^{-2} day^{-1}		–	–	–	–	135.4	46.9
developed	high intensity	2.8	0.5−0.60	1.5	0.3	–	–
	medium intensity	10.8	1.9−2.35	7.5	1.3−1.6	–	–
	low intensity	9.3	1.7−2.02	1.6	0.3−0.4	0.2	0.1
	open space	19.2	3.5−4.2	6.2	1.1−1.4	1.9	0.7
salt-affected soil	EC ≥ 4 and ≤8	0.6	0.1	0.6	0.1	0.2	0.1
	EC > 8 and ≤16	0.8	0.1−0.2	0.8	0.1−0.2	0.3	0.1
	EC > 16	0.1	0.0	0.1	0.0	0.0	0.0
	SAR ≥ 13	0.2	0.0	0.2	0.0	0.0	0.0
	overlap (EC ≥ 4 and SAR ≥ 13)	3.9	0.7−0.9	3.9	0.7−0.9	1.4	0.4
reservoirs		0.7	0.1−0.2	0.6	0.1	–	–
contaminated		7.1	1.3−1.6	7.0	1.3−1.6	3.0	1.0
total		55.4	9.9−12.1	30.1	5.4−6.6	7.0	2.4
overlapping areas		1.3	0.2−0.3	0.6	0.1	0.1	0.0
total (accounting for overlapping areas)		54.1	9.7−11.8	29.5	5.3−6.5	6.9	2.4

[a]Capacity-based potential is representative of the full energy potential offered from the sun, whereas the generation-based potential estimates the energy potential given current technology capabilities including three PV system types (tilt, one-axis tracking, and two-axis tracking panels) and a CSP trough technology. [b]Total energy potentials account for overlaps in land-cover types to avoid double-counting.

separately and therefore accounted for more than once. See the Supplementary Methods for further details.

■ RESULTS AND DISCUSSION

We found that 8415 km^2 (equivalent to over 1.5 million American football fields) and 979 km^2 (approximately 183 000 American football fields) of non-conventional surfaces may serve as land-sparing recipient environments for PV and CSP solar energy development, respectively, within the great CV and in places that do not conflict with important farmlands and protected areas for conservation (Figure 1 and Tables 1 and Supplementary Table 1). This could supply a generation-based solar energy potential of up to 4287 TWh $year^{-1}$ for PV and 762 TWh $year^{-1}$ for CSP, which represents 2.8 (CSP) − 14.4% (PV) of the CV area. We accounted for 203 km^2 of overlap across the built-environment, reservoirs, and salt-affected areas, the latter after eliminating land classified as protected areas (federal and state), critical and threatened habitats, and important farmlands from salt-affected soils.

In total, the CV encompasses 58 649 km^2 of CA, about 15% of the total land area in the state, and has a theoretical potential of 121 543 and 127 825 TWh annually for PV and CSP, respectively (Table S1). Considering areas with solar radiation high enough to economically sustain a CSP solar energy facility (locations with a DNI of 6 kWh m^{-2} $year^{-1}$), less than one-third (~19 000 km^2) of the CV is suitable for CSP deployment, and a capacity-based potential of about 44 000 TWh $year^{-1}$.

Among the potential solar energy TESs we studied, the built environment offers the largest land sparing potential in area with the highest solar energy potential for PV systems (Figure 1a), representing between 57% (USSE only) and 76% (small-scale to USSE) of the total energy potential for PV. If only USSE PV systems are considered for development, roughly half of the total built environment is suitable, a constraint owing to areas not meeting minimum parcel requirements for a one MW installation (28 490 m^2 or greater). Specifically, installing PV systems across the built environment could provide a generation-based potential of 2413 TWh $year^{-1}$ utilizing fixed-tilt modules and up to 3336 TWh $year^{-1}$ for dual-axis modules (Table S2). Using CSP technology, both the low-intensity developed and the open spaces within the built environment could yield 242 TWh $year^{-1}$ of generation-based solar energy potential (Table S1). For CSP, the built environment represents 30% of all energy opportunity for the land-sparing solar energy TESs we studied.

Land with salt-affected soils, another potential land sparing solar energy TES, comprises 850 km^2 of the CV, excluding areas identified as important for agriculture and conservation (Figure 2). This remaining salt-affected land makes up 1.5% of the CV region. Generally, regions with high concentrations of salt also have unsuitable levels of sodium. Indeed, we found that 70% of sodic and saline soils overlap; occurring in the same place (Table S2). Geographically, most salt-affected land sparing opportunities suitable for solar energy development are within the interior region of the CV, away from the built environment (Figure 1c).

We found that 2% (1098 km^2) of the CV is composed of contaminated lands with a generation-based potential of 407 and 335 TWh $year^{-1}$ for PV and CSP, respectively. A total of 60% of these sites are clustered within and near (<10 km) the 10 most-populated cities, a buffer area composed of 21% of the CV (inclusive of buffer areas of cities extending beyond the CV border; Figure 3a and Table 1). We found that across the top 10 most-populated cities, population was significantly positively related to the number of contamination sites (GLM, t value of 2.293, $P = 0.025916$). We also found that land within each city

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Environ. Sci. Technol. 2017, 51, 14472−14482

boundary has a significantly greater number of contaminated sites based on total count (post-hoc Tukey test, $P \leq 0.00916$; Figures 3b and S2) than buffer classes beyond the city perimeter (number of sites per square kilometer; Figure 3b). We found no statistical relationship between contamination site area and distance from urban cores (Figure 3c). Note that in addition to the 953 contaminated sites quantified for solar energy potential, 51 more sites are included in the density analysis that reside outside of the CV boundary but are within 10 km of cities and 46 of the contaminated sites (Table 1) are accounted for multiple times because they are within the 10 km radius of multiple cities. Lastly, contaminated lands are particularly attractive for USSE projects, and indeed, 412 and 411 of the 953 contaminated sites from the EPA data set pass the minimum area requirement for supporting utility-scale PV and CSP technologies, respectively (Figure 3). Although our emphasis here was relationships between contaminated sites and urban development cores, more-robust analyses exploring spatial relationships between contaminated sites and population at the regional scale may be useful.

Reservoirs comprise 100 km^2 of available surface area for solar energy, just 0.2% of the total land area in the CV. The integration of fixed-tilt PV panels across all reservoir surface area would provide a generation-based energy potential of 39 TWh $year^{-1}$ (Table S1). There are roughly 4300 reservoirs within the CV, 2427 (56%) and 986 (23%) of which are classified as water storage and reservoirs, respectively (Figure S3). These water body types are the greatest targets for floatovoltaic development, and together, they make up roughly 66% of the total surface area of all reservoirs in the CV. While 66% of reservoirs identified in the CV are highest priority, the remaining 38% are treatment, disposal, and evaporator facilities, aquaculture, and unspecified reservoirs (Figure S3). In CA, farmers and water pump stations consume 19 TWh of electricity annually;[72] based on estimated energy potential for floatovoltaics, reservoirs provide enough surface area to supply 2 times the electricity needs of farmers or water pump stations for CA (19 TWh).[72]

California's projected annual electricity consumption needs for 2025, based on moderate assumptions, is 321 TWh.[73] The land-sparing solar energy TESs we explore in this study could meet CA's projected 2025 needs for electricity consumption between 10−13 times over with PV technologies and over two times over with CSP technologies (Table 2). In fact, each land-sparing TES individually can be used to meet the state's energy needs with the exception of reservoirs, which would provide enough surface area to produce electricity to meet 10−20% of CA's 2025 demands. However, reservoirs do offer enough surface area and potential to meet electricity needs within California's agriculture sector (i.e., 19 TWh annually).[72] CSP systems are confined to limited areas within the CV and therefore offer relatively less energy potential than PV; yet still, contaminated lands alone offer adequate space for CSP technologies to meet projected electricity needs for 2025.

Our study found contaminated sites are clustered within or near highly populated cities, many with populations that are projected to rapidly expand owing to urban growth. Thus, contaminated sites may serve as increasingly desirable recipient environments for solar energy infrastructure within the CV of California and agricultural landscapes elsewhere. The mission of the Environmental Protection Agency's (EPA) RE-Powering initiative is to increase awareness of these contaminated sites by offering tools, guidance, and technical assistance to a diverse community of stakeholders. Already, this program has facilitated development from 8 renewable energy projects in 2006 to nearly 200 today.[44] Across the United States alone, there are over 80 000 contaminated sites across 175 000 km^2 of land identified as having renewable energy potential, emphasizing the opportunity to repurpose under-utilized space. Given the globally widespread policy-based adoption of managing hazards in place, allowing for the less than complete remediation of environmental hazards on contaminated sites; the benefits of this TES must be weighed against risks assessed from indefinite oversight and monitoring.[41]

There are few studies or cost−benefit analyses on solar energy over functional water bodies that empirically and quantitatively assess the potential for synergistic outcomes related to water (e.g., water quality), energy, and land. Farmers frequently build water reservoirs to cope with limits on water allotment during drought periods,[74] offering opportunities for dual-use space for solar panels. Although floatovolaics are increasing in popularity, particularly in Asia, where the largest floating solar installation exists,[75] more-comprehensive environmental impact assessments are needed to quantify beneficial outcomes (e.g., reductions in evaporative loss) and address risks. One concern is that avian species may perceive PV modules as water, known as the "lake effect," leading to unintended collisions and possibly injury or mortality.

In 2015, installed capacity of solar energy technologies globally reached 220 GW driven by relatively high average annual growth rates for PV (45.5%, 1990−2015) and CSP (11.4%) compared with other renewable energy systems.[76,77] At these rates, trade-offs between land for energy generation and food production in an era of looming land scarcity may be high[9] when developed without consideration of impacts to land, including food and natural systems. For example, in the United States alone, an area greater than the state of Texas is projected to be impacted by energy development and sprawl, making energy the greatest driver of LULCC at a pace double the historic rate of residential and agricultural development by 2040.[28] California aims to derive half of its electricity generation (160 TWh) from renewable energy sources by 2030, and we show that the CV region can supply 100% of electricity needs from solar energy without compromising critical farmlands and protected habitats.

The extent to which agricultural landscapes can sustain increasing demand for agricultural products and transition to becoming a major solution to global change type threats instead of contributing to them depends on several factors; however, the manner in which land, energy, and water resources are managed within such landscapes is arguably the decisive factor.[4,78] Our study reveals that the great CV of California could accommodate solar energy development on nonconventional surfaces in ways that may preclude loss of farmland and nearby natural habitats that also support agricultural activities by enhancing pollinator services (e.g., wild bees) and crop yields.[79,80] Given the diffuse nature of solar energy, advances in battery storage would likely only enhance the economic and environmental appeal of the four solar energy TES we evaluated.[81,82] The realization of this potential may also confer other techno-ecological synergistic outcomes (as characterized in Figure 1), and additional research could be conducted to improve the certainty and accuracy of these potential benefits. For example, the degree to which realization of solar energy potential in agricultural landscapes on nonconventional surfaces contributes to food system resilience[83] by alleviating competi-

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Environ. Sci. Technol. 2017, 51, 14472−14482

tion of valuable land among farmers, raising property values, generating clean energy for local communities, enhancing air quality, and providing new job opportunities[14,62] remains largely unexplored.

Other factors impacting the sustainability of agricultural landscapes include the level of funding to support research and development, collaboration across public and private sectors to advance technology and innovation, and policies that bolster decisions and action leading to appropriate renewable energy siting. Research efforts have increasingly focused on identifying where and how renewable energy systems can be sustainably integrated into complex landscapes with environmentally vulnerable ecosystems,[21,22,84−86] but less emphasis has been on decisions with agricultural landscapes[19,78,84,85] despite its importance to food security and nutrition. In the US, the National Science Foundation is prioritizing the understanding of food, energy, and water interactions, identifying it as the most pressing problem of the millennium, but land has remained underemphasized in these programs.[87] Policies that result in cash payments to growers and solar energy developers for land sparing energy development could facilitate, indirectly, the conservation of important farmlands and natural areas. Federal policy could provide the financial support to state and local governments to protect natural and agriculturally critical areas, and decisions can be tailored at these administrative levels to accommodate the land use and water rights unique to the region.

California's Great Central Valley is a vulnerable yet indispensable region for food production globally. Our analysis reveals model options for sustainable solar energy development via use of nonconventional surfaces, i.e., the built environment, salt-affected land, contaminated land, and water reservoirs, as floatovoltaics. These land sparing solar energy development pathways may be relevant to other agricultural landscapes threatened by trade-offs associated with renewable energy development and sprawl.

■ ASSOCIATED CONTENT

Supporting Information

The Supporting Information is available free of charge on the ACS Publications website at DOI: 10.1021/acs.est.7b05110.

Detailed information about methods and data used for analysis in this study. Figures showing the effect of distance from the 10 most-populated cities, water reservoirs in the Central Valley, theoretical solar radiation potential, and maps of land-sparing solar energy. Tables showing utility-scale solar energy potential and photovoltaic energy potential.(PDF)

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The authors declare no competing financial interest.

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Environ. Sci. Technol. 2017, 51, 14472−14482

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0.3 Mitigation Monitoring and Reporting Program

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 Laurel 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.

The mitigation measures are provided in Table 0.3-1. 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.

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Table 0.3-1. Mitigation Measures

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
Aesthetics and Visual Resources								
VQ-1	For areas where Fixed Tilt PV panels are proposed, as a component of submittal of final engineering and design for the site plan layouts, PV array position and configuration, PV panel type, the potential glint and glare shall be studied based on the more defined final engineering plans to determine whether fencing slats are required in specific locations of the perimeter fencing adjacent to project roadways. This measure is required for any proposed fixed-tilt trackers proposed to be installed in locations that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. This measure is not required for single-axis and double-axis tracker systems.	Prior to issuance of a building permit for each CUP site, if Fixed Tilt PV panels are proposed, the Department of Planning and Development Services shall verify that, if Fixed Tilt PV panels are proposed, neutral colored fence slats are incorporated into the final engineering and design layouts at those specific locations determined to be necessary based on the glint and glare studied prepared specifically as part of final engineering.	Department of Planning and Development Services	Prior to issuance of a building permit for each CUP site	Department of Planning and Development Services			
AG-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 projects: **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 Department of Conservation (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	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. 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	Department of Planning and Development Services	Prior to issuance of a grading permit for each CUP site	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	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 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 program	Development Agreement with the County, or submitted revised applicable CUP applications and associated site plans.						

Table 0.3-1. Mitigation Measures

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
	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 projects 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.							
AG-1b.	**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 Mitigation Measure AG-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	Prior to issuance of a grading permit for each CUP site, Planning and Development Services shall review and approve the Reclamation Plan. Planning and Development Services shall also verify that the	Department of Planning and Development Services	Prior to the issuance of a grading permit	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	agricultural condition/land evaluation site assessment (LESA) score of 58.48 for LSF1, 63.17 for LSF2, 65.37 for LSF3, and 66.15 for LSF4. 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.	Permittee has provided financial assurance/bonding.						
AG-2	Prior to the issuance of a grading permit or building permit (whichever occurs first), a Pest Management Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The project applicant shall maintain a Pest Management Plan until reclamation is complete. 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. The assistance of a licensed pest control advisor is recommended. All treatments must be performed by a qualified applicator or a licensed pest control business; • 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;	Prior to the issuance of a grading permit for each CUP site, 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			

Table 0.3-1. Mitigation Measures

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
	• Use of "permanent" soil sterilants to control weeds or other pests is prohibited because this would interfere with reclamation. • Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species as defined by the California Department of Food and Agriculture and the United States Department of Agriculture. Request a sample be taken by the Agricultural Commissioner's Office of a suspected invasive species. Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or California Department of Food and Agriculture; • Obey all pesticide use laws, regulations, and permit conditions; • Allow access by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties; • Ensure that all project employees that handle pest control issues are appropriately trained and certified, that all required records are maintained and made available for inspection, and that all required permits and other required legal documents are current; • Maintain records of pests found and treatments or pest management methods used. Records should include the date, location/block, project name (current and previous if changed), and methods used. For pesticides include the chemical(s) used, U.S. Environmental Protection Agency (EPA) Registration numbers, application rates, etc. A pesticide use report may be used for this; • Submit a report of monitoring, pest finds, and treatments, or other pest management methods to the Agricultural Commissioner quarterly within 15 days after the end of the previous quarter, and upon request. The							

Table 0.3-1. Mitigation Measures

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
	report is required even if no pests were found or treatment occurred. It may consist of a copy of all records for the previous quarter, or may be a summary letter/report as long as the original detailed records are available upon request. 3. A long-term strategy for weed and pest control and management during the operation of the proposed projects. Such strategies may include, but are not limited to: • 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 surrounding agricultural lands. The project shall reimburse the Agricultural Commissioner's office for the actual cost of investigations, inspections, or other required non-routine responses to the site that are not funded by other sources.							
Air Quality								
AQ-1	**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 Imperial County Planning and Development Services Department (ICPDS) and Imperial County Air Pollution Control District (ICAPCD) prior to the issuance of a grading permit. ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. ICPDS and ICAPCD shall verify implementation of this measure.	Prior to the issuance of a grading permit for each CUP site, 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			
AQ-2	**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	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			

Table 0.3-1. Mitigation Measures

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
	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 (PM_{10}) 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 percent 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 offsite unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering. • All unpaved traffic areas 1 acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering. • The transport of bulk materials shall be completely covered unless 6 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 is to be cleaned and/or washed at delivery site after removal of bulk material. • All track-out or carry-out will 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 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.							

Table 0.3-1. Mitigation Measures

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
	ICAPCD "Discretionary" Measures for Fugitive Dust (PM_{10}) Control • Water exposed soil with adequate frequency for continued moist soil. • Replace ground cover in disturbed areas as quickly as possible. • Automatic sprinkler system installed on all soil piles. • Vehicle speed for all construction vehicles shall not exceed 15 miles per hour on any unpaved surface at the construction site. • Develop a trip reduction plan to achieve a 1.5 average vehicle ridership 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). ***Enhanced Mitigation Measures for Construction Equipment*** To help provide a greater degree of reduction of PM emissions from construction combustion equipment, ICAPCD recommends the following enhanced measures. • 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).							

Table 0.3-1. Mitigation Measures

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
AQ-3	**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, and Fire Department access/emergency entry/exit points as approved by Fire/ Office of Emergency Services [OES] Department).	During construction, the Department of Planning and Development Services shall verify that the project applicant is employing a method of dust suppression approved by ICAPCD.	Department of Planning and Development Services	During construction	Department of Planning and Development Services			
AQ-4	**Dust Suppression Management Plan.** Prior to any earthmoving activity, the applicant shall submit and obtain approval from ICAPCD and ICPDS a construction Dust Control Plan.	Prior to any earthmoving activity, the ICAPCD and ICPDSD shall review and approve a construction Dust Control Plan.	ICAPCD and ICPDSD	Prior to construction, prior to issuance of a Certificate of Occupancy	Department of Planning and Development Services and ICAPCD			
AQ-5	**Operational Dust Control Plan.** Prior to issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from ICAPCD and ICPDS an Operations Dust Control Plan. ICAPCD Rule 301 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed project, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the project.	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.	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			
Biological Resources								
BIO-1	**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 on burrowing owl during construction activities: 1. A distance of 160 feet, during non-nesting season (September through January), or 250 feet, during nesting season (February through August), 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.	Prior to construction, the Planning and Development Services shall verify that pre-construction surveys were conducted for each CUP site. If active burrows are present, the measures as providing in Mitigation Measures 4.4-1a and 4.4-1b shall be implemented.	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services and CDFW			

Table 0.3-1. Mitigation Measures

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
	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. Pre-construction clearance surveys for this species shall be conducted no less than 14 days prior to the start of ground disturbance and 24 hours of construction and report submitted 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							

Table 0.3-1. Mitigation Measures

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
	Imperial Irrigation District (IID) 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 1 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 on 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 California Department of Fish and Wildlife (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.							
BIO-2	**Burrowing Owl Compensation.** The project applicant shall compensate for impacts on burrowing owl habitat through the following measures:	Prior to and during construction for each CUP site, the Department of Planning and	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services and CDFW			

Table 0.3-1. Mitigation Measures

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
	• CDFW's mitigation guidelines for burrowing owl (CDFW 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 because of 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. Because of 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.	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.						
BIO-3	**Worker Awareness Program.** Prior to project initiation, a 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 on the species, function of flagging designated authorized work areas	Prior to construction for each CUP site, Planning and Development Services shall verify that a WEAP has been developed by the project biologist. The qualified biologist implementing the WEAP shall provide an attendance log to the Planning and Development Services verifying that all construction, operation,	Department of Planning and Development Services	Prior to and during construction	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	• Reporting procedures to be used if a burrowing owl (dead, alive, injured) is encountered in the field	and maintenance personnel have attended the worker awareness class.						
BIO-4	**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.	During construction	Designated Biologist or Biological Monitor	During construction	Designated Biologist or Biological Monitor and Department of Planning and Development Services			
BIO-5	**Temporary Construction Suspension.** If a Designated Biological Monitor observes Mountain Plover, Long Billed Curlew, Short Billed Dowitcher and/or Loggerhead Shrike foraging within the project sites, or in adjacent agricultural fields, the Designated Biological Monitor shall have the discretion to cease construction in the area of the observed species (i.e., maintain an appropriate buffer between the species and construction activity) until they disperse. Additionally, in order to reduce impacts on the Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, and Loggerhead Shrike, an avian and 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 BIO-6.	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			
BIO-6	**Migratory Birds and Other Sensitive Non-Migratory Bird Species** **Construction and O&M Mitigation Measures.** In order to reduce the potential indirect impact on migratory birds, bats and raptors, an 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 on bird populations and shall be developed by the project applicant in conjunction with the County. 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	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			

Table 0.3-1. Mitigation Measures

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
	biologist shall conduct a preconstruction 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 on 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 the Avian Powerline Interaction Committee's guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (Avian Powerline Interaction Committee 2012). 2. Minimize noise. 3. Minimize use of outdoor lighting. 4. Implement 1 year of post-construction avian monitoring incorporating the Wildlife Mortality Reporting Program. Additional years of post-construction avian monitoring should only be required at the discretion of the Designated Biological Monitor should the Monitor determine that avian mortality is occurring and measures are necessary to be implemented in order to reduce observed avian mortality.							
BIO-7	**Raptor and Active Raptor Nest Avoidance.** Raptors and active raptor nests are protected under California Fish and Game Code (FGC) 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact on 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. 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	Prior to construction for each CUP site, 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 Measure 4.4-1g shall be implemented.	Department of Planning and Development Services	Prior to construction	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	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								
CR-1	Prior to issuance of grading permits, the project applicant shall retain a qualified archaeologist defined as one meeting the Secretary of the Interior's Professional Qualification Standards (U.S. Department of the Interior 2008) to oversee Phase I cultural resources surveys for the Laurel Cluster, to determine if previously unidentified cultural resources exist within the project sites and to relocate and evaluate the previously identified resources that have not yet been evaluated. The methods and results of the surveys, as well as the records search, shall be summarized in a Phase I cultural resources survey report that follows the guidelines in *Archaeological Resource Management Reports*: *Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. The report shall address the requirements of CEQA.	Prior to issuance of a grading permit for each CUP site, Department of Planning and Development Services shall verify that a Phase I cultural resources survey has been conducted and report prepared.	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			
CR-2	If previously documented but unevaluated and/or newly documented archaeological resources are identified within the project sites, they should be evaluated for inclusion in the California Register of Historic Resources (CRHR) and/or as unique archaeological resources. Should newly documented archaeological resources be found eligible for listing in the CRHR and/or constitute unique archaeological resources, avoidance and preservation in place is the preferred manner of mitigation. If avoidance is not feasible, a treatment plan should be developed by the qualified archaeologist in coordination with the project applicant and the lead agency that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resources.	Prior to issuance of a grading permit for each CUP site, Department of Planning and Development Services shall verify that any recommendations for cultural resources treatment as a result of the Phase I survey required by MM CR-2, be implemented prior to grading.	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			
CR-3	Should the historic architectural resource (Liebert Road and Mandrapa Road) located within 60 feet of the LSF4 project site be subject to indirect visual impacts as a result of project implementation, a qualified architectural historian defined as one meeting the Secretary of the Interior's Professional Qualification Standards (U.S. Department of the Interior 2008) should be retained to evaluate the	Prior to issuance of a grading permit for the LSF4 CUP site, Department of Planning and Development Services shall verify that an architectural historian has evaluated the Liebert	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	resource for inclusion in the CRHR. If the resource is not found eligible for listing, then no further work would be required. Should the resource be found eligible, the qualified architectural historian will make recommendations to reduce indirect impacts on the resource to less than significant.	Road and Mandrapa Road for historical significance and if determined to be significant, proper measures, as recommended by the historian, are implemented to reduce the potential indirect visual impact to less than significant.						
CR-4	Development within the project sites shall avoid impacts on the following resources: P-13-008334 (Westside Main Canal) and -013760 (Westside Drain) located within or immediately adjacent to the project sites that have been previously determined or recommended as eligible for listing in the CRHR.	Prior to issuance of a grading permit for each CUP site, Department of Planning and Development Services shall verify that site plans and construction plans avoid impacts to these resoruces.	Department of Planning and Development Services	Prior to issuance of a grading permit	Department of Planning and Development Services			
CR-5	Pursuant to CEQA Guidelines §15064.5(f), in the event that previously unidentified 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 significance and the appropriate mitigation measures are determined by a qualified archaeologist familiar with the resources of the region. Applicant shall notify the County within 24 hours. Applicant shall provide contingency funding sufficient to allow for implementation of avoidance measures or appropriate mitigation.	During grading and construction for each CUP site, the archaeological monitor shall have the authority to divert construction work, develop and implement appropriate mitigation, and notify the County within 24 hours.	Department of Planning and Development Services	During grading and construction	Department of Planning and Development Services			
CR-6	In the event of the discovery of previously unidentified archaeological materials, the contractor shall immediately cease all work activities within approximately 100 feet of the discovery. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, and scrapers) or tool making debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation, the contractor shall immediately contact the Imperial County	During grading and construction for each CUP site, the archaeological monitor shall have the authority to divert construction work, develop and implement appropriate mitigation (including a data recovery program, if necessary), and notify the County within 24 hours (per MM CR-5).	Department of Planning and Development Services	During grading and construction	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	Department of Planning and Development Services. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the discovery of any cultural resource within the project areas shall not be grounds for a “stop work” notice or otherwise interfere with the projects’ continuation except as set forth in this paragraph. In the event of an unanticipated discovery of archaeological materials during construction, the applicant shall retain the services of a qualified professional archaeologist, meeting the Secretary of the Interior’s Standards for a Qualified Archaeologist, to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the applicant shall implement an archaeological data recovery program.							

Table 0.3-1. Mitigation Measures

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
CR-7	A qualified paleontological monitor shall be present during excavation activities associated with project construction. The depth of excavation that requires paleontological monitoring shall be determined by the paleontological monitor and the construction contractor based on initial observations during construction earth moving. The paleontological monitor will be equipped to salvage fossils as they are unearthed (to help avoid construction delays). Monitors are empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and permanent preservation. Fossil specimens shall be curated by accessioning them into an established, accredited museum repository with permanent retrievable paleontological storage. A report of findings with an appended itemized inventory of specimens will be prepared. The report and inventory, when submitted to the Imperial County Department of Planning and Development Services, along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts on paleontological resources.	During grading of each CUP site, a qualified paleontological monitor shall be on-site in accordance with this measure to implement this measure. A monitoring report shall be prepared and submitted to the County Department of Planning and Development Services for review and approval.	Department of Planning and Development Services	During grading	Department of Planning and Development Services			
CR-8	In the event that evidence of human remains is discovered, construction activities within 200 feet of the discovery will be halted or diverted and the Imperial County Coroner will be notified (Section 7050.5 of the Health and Safety Code [HSC]). If the Coroner determines that the remains are Native American, the Coroner will notify the Native American Heritage Commission (NAHC), which will designate a most likely descendant (MLD) for the project (Section 5097.98 of the PRC). The designated MLD then has 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains (AB 2641). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (Section 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (Section 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a document with the county in which the property is located (Assembly Bill [AB] 2641)**.**	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			

Table 0.3-1. Mitigation Measures

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
Geology and Soils								
GEO-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 • 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 California Building Code (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.	Prior to the issuance of a grading permit for each CUP site, the Department of Planning and Development Services shall verify 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			
GEO-2	**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. Steel posts would need zinc coatings (galvanizing) or increased structural sections to compensate for metal loss because of 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			

Table 0.3-1. Mitigation Measures

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
GEO-3	**Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements.** The projects' 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 Health Department, Division of Environmental Health. 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.	Prior to construction and again prior to operation, the Imperial County Public Works Department shall verify that on-site wastewater system and disposal requirements adequately meets County requirements.	Imperial County Public Works Department	Prior to construction and again prior to operation	Department of Planning and Development Services			
Hazards and Hazardous Materials								
HAZ-1	**Phase II ESA:** A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the LSF1 project is to be constructed in the area of the septic system. This ESA will assist to determine if the previous septic system is still onsite and if soil contamination exists.	Prior to issuance of a grading permit for the LSF1 CUP only, 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			
HAZ-2	**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			
Hydrology/Water Quality								
HYD-1	**Prepare SWPPP and Implement Best Management Practices (BMP) Prior to Construction and Site Restoration.** The project applicant or its contractor shall prepare a SWPPP specific to the project and be responsible for securing coverage under SWRCB's National Pollution Discharge Elimination System (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	Prior to construction and site restoration for each CUP site, 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	Prior to issuance of a grading permit and site restoration	Department of Planning and Development Services			

Table 0.3-1. Mitigation Measures

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
	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 project. 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 (Mitigation Measure HYD-2) • 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 place 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 • 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. 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	Department of Planning and Development Services to confirm.						

Table 0.3-1. Mitigation Measures

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
	cases where verification of contaminant reduction or elimination, (inadvertent petroleum release) is required to determine adequacy of the measure.							
HYD-2	**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 for each CUP site, 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			
HYD-3	**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, access roads, electrical distribution, 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.	Post construction for each CUP site, 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			

Executive Summary

This Environmental Impact Report (EIR) has been prepared in compliance with the California Environmental Quality Act (CEQA) Public Resources Code [PRC] 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 (OPR). The purpose of this environmental document is to assess the potential environmental effects associated with the Big RockLaurel Cluster Solar Farms Project and to propose mitigation measures, where required, to reduce significant impacts.

Project Overview

The Big RockLaurel Cluster Solar Farms Project involves the construction of four utility-scale photovoltaic (PV) solar facilities (Big Rock 1 Solar Farm [BRSF1], Laurel 1 Solar Farm 1 [LSF1], Laurel 2 Solar Farm 2 [LSF2], and Laurel 3 Solar Farm 3 [LSF3], and Laurel Solar Farm 4 (LSF4), and collectively, the "Big RockLaurel Cluster" or "projects") on approximately 1,380 acres of privately-owned land. The four projects would generate a combined total of up to 325 megawatts (MW). Power generated by the projects will be delivered from the project sites via up to 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from an on-site substation(s)/switchyard(s) and terminating at the proposed Fern/Liebert Substation, which will be constructed immediately west of BRSF1LSF4. Alternatively, power may be delivered to the San Diego Gas & Electric (SDG&E) Imperial Valley Substation.

Each project would include a ground mounted photovoltaic solar power generating system, supporting structures, inverter modules, pad mounted transformers, energy storage system, access roads and perimeter fencing, an operations and maintenance (O&M) building, and an on-site substation. The projects may share O&Moperations and maintenance buildings, energy storage system, substation, and/or transmission facilities as necessary with one another and/or with nearby existing and planned solar projects, and/or may be remotely operated. For any areas that are not used for O&Moperations and maintenance, substation, and/or transmission facilities, these areas would instead be utilized for the placement of solar panels. 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 with Imperial County (County), which together define the project sites. The four CUP applications or individual site locations consist of the following:

- BRSF1
- LSF1
- LSF2
- LSF3
- LSF4

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.

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 of this EIR), 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 sites or the immediate vicinity is zoned or designated as forest lands, timberlands, or Timberland Production. As such, the proposed 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 applicant is not proposing any form of mineral extraction. According to the Conservation and Open Space Element of the 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 sites. No impact is identified.

Based on a review of the Department of Conservation's Division of Oil, Gas, and Geothermal Resources Well Finder, there is one plugged and abandoned geothermal well (Well Number [No.] 02590357) located immediately east of the ~~BRSF1~~ LSF4 site (California Department of Oil, Gas, and Geothermal Resources n.d.). This geothermal well is not located within the projects' construction limit, and, therefore would be avoided by the proposed projects. Implementation of the proposed projects would not impact geothermal wells.

Recreation

Combined, the four projects would be staffed with up to 20 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 are currently used for agricultural production. Development of housing is not proposed as part of the projects. Up to 20 full-time employees will operate the projects, split evenly between the four project sites. It is possible that the projects would share O&M, substation, and/or transmission facilities with one another and/or nearby projects. In such a scenario, the projects could share personnel, thereby potentially reducing the projects' on-site staff. The full-time employees will maintain the facility 7 days per week during normal daylight hours. Up to three staff will work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekends.

To ensure optimal PV output, the solar panels will be maintained 24 hours per day, 7 days per week. The proposed projects would not result in substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. Therefore, no impact is identified for population and housing.

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 the Imperial County's School District since it is anticipated that construction workers would commute in during construction operations.

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 would require a total of up to 20 on-site full-time employees and could include several O&Moperations and maintenance buildings. Wastewater generation would be minimal. The projects' wastewater will be treated via on-site septic systems, designed to meet operation and maintenance guidelines required by Imperial County laws, ordinances, regulations, and standards. The proposed projects would not exceed wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB). The proposed projects are not anticipated to generate a significant increase in the amount of runoff water from water use involving solar panel washing. Water will continue to percolate through the ground, as a majority of the surfaces on the project sites will remain pervious. The proposed projects would not substantially alter the existing drainage pattern of the site, substantially increase the rate of runoff, or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. A less than significant impact is identified for these issue areas.

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 California Department of Resources Recycling and Recovery (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 1.8 million cubic yards of remaining capacity 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 per 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 Imperial 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 CUP for each project will contain provisions for recycling and diversion of Imperial County construction waste policies.

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. 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. 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. A less than significant impact is identified for this issue.

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
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas (GHG) Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use and Planning
- Noise and Vibration
- Public Services
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities/Service Systems

Table ES-1 summarizes existing environmental impacts that were determined to be potentially significant, mitigation measures, and level of significance after mitigation associated with the projects.

Areas of Controversy and Issues to be Resolved

Areas of Concern

Section 15123(b)(2) of the CEQA Guidelines requires that an EIR identify areas of controversy as well as issues to be resolved known to the Lead Agency, including issues raised by other agencies and the public. A primary issue associated with solar farm projects, and other solar facility projects that are proposed in the County, is the conversion of agricultural lands to solar farm use and the corresponding land use compatibility and fiscal/economic impacts on 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, and water supply.

Detailed analyses of these topics are included within each corresponding section contained within this document.

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Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Aesthetics and Visual Resources			
Impact 4.1-4: New sources of nighttime glare lighting and glare	Potentially Significant	The following mitigation measure is required for the Big RockLaurel Cluster. **VQ-1** For areas where Fixed Tilt PV panels are proposed, as a component of submittal of final engineering and design for the site plan layouts, PV array position and configuration, PV panel type, the potential glint and glare shall be studied based on the more defined final engineering plans to determine whether fencing slats are required in specific locations of the perimeter fencing adjacent to project roadways. This measure is required for any proposed fixed-tilt trackers proposed to be installed in locations that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. This measure is not required for single-axis and double-axis tracker systems.	Less than Significant
Agricultural Resources			
Impact 4.2-1: Conversion of Important Farmlands to non-agricultural use	Potentially Significant	The following mitigation measures are required for the Big RockLaurel Cluster. **AG-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 projects: **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 Department of Conservation (DOC) regulations and shall be recorded prior to issuance of any grading or	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		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.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		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 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 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	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		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 projects 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. **AG-1b.** **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 Mitigation Measure AG-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/land evaluation site assessment (LESA) score of ~~66.15 for BRSF1,~~ 58.48 for LSF1, 63.17 for LSF2, ~~and~~ 65.37 for LSF3, and 66.15 for LSF4. 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.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Impact 4.2-3: Result in other effects that could contribute to the conversion of active farmlands to non-agricultural uses.	Potentially Significant	The following mitigation measure is required for the ~~Big Rock~~Laurel Cluster: • Implement Mitigation Measure AG-1b.	Less than Significant
Impact 4.2-4: Adversely affect agricultural productivity	Potentially Significant	The following mitigation measure is required for the ~~Big Rock~~Laurel Cluster: **AG-2** Prior to the issuance of a grading permit or building permit (whichever occurs first), a Pest Management Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The project applicant shall maintain a Pest Management Plan until reclamation is complete. 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. The assistance of a licensed pest control advisor is recommended. All treatments must be performed by a qualified applicator or a licensed pest control business; • 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	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		control methods after infestation. Effective control methods may include physical/mechanical removal, bio control, cultural control, or chemical treatments; • Use of "permanent" soil sterilants to control weeds or other pests is prohibited because this would interfere with reclamation. • Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species as defined by the California Department of Food and Agriculture and the United States Department of Agriculture. Request a sample be taken by the Agricultural Commissioner's Office of a suspected invasive species. Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or California Department of Food and Agriculture; • Obey all pesticide use laws, regulations, and permit conditions; • Allow access by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties; • Ensure that all project employees that handle pest control issues are appropriately trained and certified, that all required records are maintained and made available for inspection, and that all required permits and other required legal documents are current; • Maintain records of pests found and treatments or pest management methods used. Records should include the date, location/block, project name (current and previous if changed), and methods used. For pesticides include the	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		chemical(s) used, U.S. Environmental Protection Agency (EPA) Registration numbers, application rates, etc. A pesticide use report may be used for this; • Submit a report of monitoring, pest finds, and treatments, or other pest management methods to the Agricultural Commissioner quarterly within 15 days after the end of the previous quarter, and upon request. The report is required even if no pests were found or treatment occurred. It may consist of a copy of all records for the previous quarter, or may be a summary letter/report as long as the original detailed records are available upon request. 3. A long-term strategy for weed and pest control and management during the operation of the proposed projects. Such strategies may include, but are not limited to: • 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 surrounding agricultural lands. The project shall reimburse the Agricultural Commissioner's office for the actual cost of investigations, inspections, or other required non-routine responses to the site that are not funded by other sources.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Air Quality			
Impact 4.3-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	Potentially Significant	The following mitigation measures are required for the ~~Big Rock~~Laurel Cluster. **AQ-1** **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 Imperial County Planning and Development Services Department (ICPDS) and Imperial County Air Pollution Control District (ICAPCD) prior to the issuance of a grading permit. ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The ICPDS~~Planning and Development Services Department~~ and ICAPCD shall verify implementation of this measure. **AQ-2** **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 compliance with these measures as part of the grading permit review/approval process. ***ICAPCD Standard Measures for Fugitive Dust (PM_{10}) 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 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps, or other suitable material, such as vegetative ground cover.	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		• All on-site and offsite unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering. • All unpaved traffic areas 1 acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering. • The transport of bulk materials shall be completely covered unless 6 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 is to be cleaned and/or washed at delivery site after removal of bulk material. • All track-out or carry-out will 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 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering. ***ICAPCD "Discretionary" Measures for Fugitive Dust (PM_{10}) Control*** • Water exposed soil with adequate frequency for continued moist soil.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		• Replace ground cover in disturbed areas as quickly as possible. • Automatic sprinkler system installed on all soil piles. • Vehicle speed for all construction vehicles shall not exceed 15~~-~~ miles per hour ~~Mph~~ on any unpaved surface at the construction site. • Develop a trip reduction plan to achieve a 1.5 average vehicle ridership 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). ***Enhanced Mitigation Measures for Construction Equipment*** To help provide a greater degree of reduction of PM emissions from construction combustion equipment, ICAPCD recommends the following enhanced measures. • 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.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		• Implement activity management (e.g., rescheduling activities to reduce short-term impacts). **AQ-3** **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, and Fire Department access/emergency entry/exit points as approved by Fire/ Office of Emergency Services [OES] Department). **AQ-4** **Dust Suppression Management Plan.** Prior to any earthmoving activity, the applicant shall submit and obtain approval from ICAPCD and ICPDS ~~Imperial County Planning and Development Services Department~~ a construction Dust Control Plan. **AQ-5** **Operational Dust Control Plan.** Prior to issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from ICAPCD and ~~Imperial County~~ ICPDS~~Planning and Development Services Department~~ an Operations Dust Control Plan. ICAPCD Rule 301 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed project, the ICAPCD shall review the project to determine if Rule 310 fees are applicable to the project.	
Biological Resources			
Impact 4.4-1: Possible habitat modification	Potentially Significant	**Burrowing Owl** The following mitigation measures are required for the ~~Big Rock~~Laurel Cluster. **BIO-1** **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	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		impacts on burrowing owl during construction activities: 1. A distance of 160 feet, during non-nesting season (September through January), or 250 feet, during nesting season (February through August), 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. Pre-construction clearance surveys for this species shall be conducted no less than 14 days prior to the start of ground disturbance and 24 hours of construction and report submitted 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	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		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 (IID) 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 1 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 on 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 California Department of Fish and Wildlife (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. **BIO-2 Burrowing Owl Compensation.** The project applicant shall	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		compensate for impacts on burrowing owl habitat through the following measures: • CDFW's mitigation guidelines for burrowing owl (CDFW 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 because of 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. Because of 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.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		BIO-3 **Worker Awareness Program.** Prior to project initiation, a 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 on 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 **BIO-4** **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, and Loggerhead Shrike** **BIO-5** **Temporary Construction Suspension.** If a Designated Biological Monitor observes Mountain Plover, Long Billed Curlew, Short Billed Dowitcher and/or Loggerhead Shrike foraging within the project sites, or in adjacent agricultural fields, the Designated Biological Monitor shall have the discretion to cease construction in the area of the observed species (i.e., maintain an appropriate buffer between the species and construction activity) until they disperse. Additionally, in order to reduce impacts on the Mountain	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		Plover, Long Billed Curlew, Short Billed Dowitcher, and Loggerhead Shrike, an avian and 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 BIO-6. **Migratory Birds and Other Sensitive Non-Migratory Bird Species** **BIO-6** **Construction and O&M Mitigation Measures.** In order to reduce the potential indirect impact on migratory birds, bats and raptors, an 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 on bird populations and shall be developed by the project applicant in conjunction with the County. 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 preconstruction 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 on 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	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		include: 1. Incorporate the Avian Powerline Interaction Committee's guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (Avian Powerline Interaction Committee 2012). 2. Minimize noise. 3. Minimize use of outdoor lighting. 4. Implement 1 year of post-construction avian monitoring incorporating the Wildlife Mortality Reporting Program. Additional years of post-construction avian monitoring should only be required at the discretion of the Designated Biological Monitor should the Monitor determine that avian mortality is occurring and measures are necessary to be implemented in order to reduce observed avian mortality. **BIO-7** **Raptor and Active Raptor Nest Avoidance.** Raptors and active raptor nests are protected under California Fish and Game Code (FGC) 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact on 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.	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Cultural Resources			
Impact 4.5-1: Impact on historical resources	Potentially Significant	The following mitigation measures are required for the Laurel~~Big Rock~~ Cluster. **CR-1** Prior to issuance of grading permits, the project applicant shall retain a qualified archaeologist defined as one meeting the Secretary of the Interior's Professional Qualification Standards (U.S. Department of the Interior 2008) to oversee Phase I cultural resources surveys for the Laurel~~Big Rock~~ Cluster, to determine if previously unidentified cultural resources exist within the project sites and to relocate and evaluate the previously identified resources that have not yet been evaluated. The methods and results of the surveys, as well as the records search, shall be summarized in a Phase I cultural resources survey report that follows the guidelines in *Archaeological Resource Management Reports*: *Recommended Contents and Format*, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. The report shall address the requirements of CEQA. **CR-2** If previously documented but unevaluated and/or newly documented archaeological resources are identified within the project sites, they should be evaluated for inclusion in the California Register of Historic Resources (CRHR) and/or as unique archaeological resources. Should newly documented archaeological resources be found eligible for listing in the CRHR and/or constitute unique archaeological resources, avoidance and preservation in place is the preferred manner of mitigation. If avoidance is not feasible, a treatment plan should be developed by the qualified archaeologist in coordination with the project applicant and the lead agency that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resources. **CR-3** Should the historic architectural resource (Liebert Road and	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		Mandrapa Road) located within 60 feet of the ~~BRSF1~~ LSF4 project site be subject to indirect visual impacts as a result of project implementation, a qualified architectural historian defined as one meeting the Secretary of the Interior's Professional Qualification Standards (U.S. Department of the Interior 2008) should be retained to evaluate the resource for inclusion in the CRHR. If the resource is not found eligible for listing, then no further work would be required. Should the resource be found eligible, the qualified architectural historian will make recommendations to reduce indirect impacts on the resource to less than significant. **CR-4** Development within the project sites shall avoid impacts on the following resources: P-13-008334 (Westside Main Canal) and -013760 (Westside Drain) located within or immediately adjacent to the project sites that have been previously determined or recommended as eligible for listing in the CRHR.	
Impact 4.5-2: Impact on archaeological resources	Potentially Significant	**CR-5** Pursuant to CEQA Guidelines §15064.5(f), in the event that previously unidentified 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 significance and the appropriate mitigation measures are determined by a qualified archaeologist familiar with the resources of the region. Applicant shall notify the County within 24 hours. Applicant shall provide contingency funding sufficient to allow for implementation of avoidance measures or appropriate mitigation. **CR-6** In the event of the discovery of previously unidentified archaeological materials, the contractor shall immediately cease all work activities within approximately 100 feet of the discovery. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, and scrapers) or tool making debris; culturally darkened soil ("midden")	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures		Significance After Mitigation
			containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation, the contractor shall immediately contact the Imperial County Department of Planning and Development Services. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the discovery of any cultural resource within the project areas shall not be grounds for a "stop work" notice or otherwise interfere with the projects' continuation except as set forth in this paragraph. In the event of an unanticipated discovery of archaeological materials during construction, the applicant shall retain the services of a qualified professional archaeologist, meeting the Secretary of the Interior's Standards for a Qualified Archaeologist, to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the applicant shall implement an archaeological data recovery program.	
Impact 4.5-3: Impact on paleontological resources	Potentially Significant	**CR-7**	A qualified paleontological monitor shall be present during excavation activities associated with project construction. The depth of excavation that requires paleontological monitoring shall be determined by the paleontological monitor and the construction contractor based on initial observations during construction earth moving. The paleontological monitor will be equipped to salvage fossils as they are unearthed (to help avoid construction delays). Monitors are empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures		Significance After Mitigation
			permanent preservation. Fossil specimens shall be curated by accessioning them into an established, accredited museum repository with permanent retrievable paleontological storage. A report of findings with an appended itemized inventory of specimens will be prepared. The report and inventory, when submitted to the Imperial County Department of Planning and Development Services, along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts on paleontological resources.	
Impact 4.5-4: Impact on human remains	Potentially Significant	**CR-8**	In the event that evidence of human remains is discovered, construction activities within 200 feet of the discovery will be halted or diverted and the Imperial County Coroner will be notified (Section 7050.5 of the Health and Safety Code [HSC]). If the Coroner determines that the remains are Native American, the Coroner will notify the Native American Heritage Commission (NAHC), which will designate a most likely descendant (MLD) for the project (Section 5097.98 of the PRC). The designated MLD then has 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains (AB 2641). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (Section 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (Section 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a document with the county in which the property is located (Assembly Bill [AB] 2641)**.**	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Geology and Soils			
Impact 4.6-1: Possible risks to people and structures caused by strong seismic ground shaking	Potentially Significant	The following mitigation measure is required for the Laurel~~Big Rock~~ Cluster. **GEO-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 • 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 California Building Code (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.	Less than Significant
Impact 4.6-2: Unstable geologic conditions	Potentially Significant	Implement Mitigation Measure GEO-1.	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Impact 4.6-3: Construction-related erosion	Potentially Significant	Implement Mitigation Measure HYD-1.	Less than Significant
Impact 4.6-4: Exposure to potential hazards from problematic soils	Potentially Significant	The following mitigation measure is required for the LaurelBig Rock Cluster. **GEO-2** **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. Steel posts would need zinc coatings (galvanizing) or increased structural sections to compensate for metal loss because of corrosion.	Less than Significant
Impact 4.6-5: On-site wastewater treatment and disposal	Potentially Significant	The following mitigation measure is required for the LaurelBig Rock Cluster. **GEO-3** **Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements.** The projects' 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 Health Department, Division of Environmental Health. 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.	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Hazards and Hazardous Materials			
Impact 4.8-2: Possible risk to the public or environment through release of hazardous materials	Potentially Significant	The following mitigation measures are required for the LSF1: **HAZ-1** **Phase II ESA:** A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the LSF1 project is to be constructed in the area of the septic system. This ESA will assist to determine if the previous septic system is still onsite and if soil contamination exists. **HAZ-2** **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.	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
Hydrology/Water Quality			
Impact 4.9-1: Violation of water quality standards during construction	Potentially Significant	The following mitigation measures are required for the Laurel~~Big Rock~~ Cluster. **HYD-1** **Prepare SWPPP and Implement Best Management Practices (BMP) Prior to Construction and Site Restoration.** The project applicant or its contractor shall prepare a SWPPP specific to the project and be responsible for securing coverage under SWRCB's National Pollution Discharge Elimination System (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 project. 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 (Mitigation Measure HYD-2) • 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	Less than Significant

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		• Monitoring protocols for discharge(s) and receiving waters, with emphasis place 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 • 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. 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. **HYD-2** **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,	

Table ES-1. Summary of Project Impacts and Proposed Mitigation Measures

Environmental Impact	Significance Before Mitigation	Proposed Mitigation Measures	Significance After Mitigation
		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.	
Impact 4.9-2: Violation of water quality standards during operation	Potentially Significant	The following mitigation measures are required for the Laurel~~Big Rock~~ Cluster. **HYD-3** **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, access roads, electrical distribution, 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.	Less than Significant

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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: Increased Development Setback (LSF1 Site); and Alternative 4: Development within Renewable Energy Overlay Zone. A detailed discussion of the alternatives considered is included in Section 8. Table ES-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 (PRC 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~~ NOP 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 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) 32 (California Global Warming Solutions Act of 2006).

Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)

The purpose of this alternative is to avoid the Prime Farmlands located within the project sites. As discussed in Section 4.2, Agricultural Resources, the majority of the project sites are comprised of Prime Farmland and Farmland of Statewide Importance. This alternative would avoid approximately 359 acres of Prime Farmland. (NOTE: this alternative would not avoid several pockets of Prime Farmland 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).

Implementation of Alternative 2 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, and hydrology/water quality. This alternative would not result in any greater environmental impacts when compared to the proposed projects.

Alternative 3: Increased Development Setback (Laurel Solar Farm 1 Site)

The purpose of this alternative is to increase the development setback on the LSF1 site to reduce impacts on burrowing owl. While burrowing owls were observed throughout the project sites, the majority were observed on the northern parcel (assessor parcel number [APN] 051-310-023) of the LSF1 site. This alternative would eliminate the development of the northern portion, approximately 60 acres, of the LSF1 site.

Implementation of Alternative 3 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, and hydrology/water quality. This alternative would not result in any greater environmental impacts when compared to the proposed projects.

Alternative 4: Development within Renewable Energy Overlay Zone

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 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 within the County’s RE Overlay Zone. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established areas.

Implementation of Alternative 4 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, and hydrology/water quality. This alternative would result in greater impacts for the following environmental issue areas as compared to the proposed projects: aesthetics, biological resources, cultural resources, and noise.

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.” As shown in Table ES-2, Alternative 2 would reduce impacts for the following environmental issue areas as compared to the proposed projects: agriculture, air quality, biological resources, and hydrology/water quality. Although Alternative 3 would also reduce impacts on agriculture, air quality, biological resources, and hydrology/water quality, Alternative 2 would result in a greater reduction of the development footprint. Alternative 2 would realize slightly greater reductions in impacts.

Table ES-2. Comparison of Proposed Projects and Alternatives

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Aesthetics	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact
Agriculture	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Air Quality	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Biological Resources	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact

Table ES-2. Comparison of Proposed Projects and Alternatives

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Cultural Resources	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact
Geology and Soils	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact
GHG Emissions	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced

Table ES-2. Comparison of Proposed Projects and Alternatives

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Hazards and Hazardous Materials	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact
Hydrology/ Water Quality	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Land Use/Planning	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Noise	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact

Table ES-2. Comparison of Proposed Projects and Alternatives

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Public Services	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Transportation/ Traffic	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Utilities	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact

CEQA – California Environmental Quality Act; GHG – greenhouse gas; LSF1 – Laurel ~~1~~ Solar Farm 1

1 Introduction

This EIR has been prepared to meet the requirements of CEQA for purposes of evaluating the potential environmental impacts, mitigation measures, and alternatives associated with the proposed ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4, collectively known as the "Laurel~~Big Rock~~ Cluster Solar Farms 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 of this EIR.

1.1 Overview of the Proposed Project

The Laurel~~Big Rock~~ Cluster Solar Farms Project involves the construction of four utility-scale photovoltaic (PV) solar facilities on approximately 1,380 acres of privately-owned land. The four projects would generate a combined total of up to 325 ~~megawatts~~MW. Four separate CUP applications have been filed by the project applicant, one CUP for each of the four projects.

Each project would include a ground mounted PV solar power generating system, supporting structures, inverter modules, pad mounted transformers, energy storage system, access roads and perimeter fencing, an operations and maintenance building, and an on-site substation. The projects may share operations and maintenance buildings, energy storage system, substation, and/or transmission facilities as necessary with one another and/or with nearby existing and planned solar projects, and/or may be remotely operated. For any areas that are not used for operations and maintenance, substation, and/or transmission facilities, these areas would instead be utilized for the placement of solar panels. In addition, a major component of the projects would be restoration of the project sites to agricultural use in up to 40 years.

Gen-tie Facilities

Power generated by the projects will be delivered from the project sites via up to 230 ~~kilovolt (~~kv~~)~~ overhead and/or underground electrical transmission line(s). These lines would originate from an on-site substation(s)/switchyard(s) constructed within the project site and terminate at a substation currently proposed in the vicinity of the project site by IID. This off-site substation is a separate project and has already been environmentally cleared. The off-site substation may ultimately be controlled by IID in which case it would be referred to as the "Fern Substation." Alternatively, this substation may ultimately be controlled by California Independent System Operator (ISO), in which case it would be referred to as the "Liebert Substation." The development footprint would be the same whether it is controlled/operated by IID or California ISO. The substation would be located immediately west of ~~BRSF1~~LSF4.

Alternatively, power generated by the project may be delivered via a gen-tie line to the San Diego Gas & Electric (SDG&E) Imperial Valley Substation. This alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line transmission structures, and no new construction would be required in this area.

1.1.1 Agency Roles and Responsibilities

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the project.

1.1.1.1 County of Imperial

The County of Imperial will be required to approve each of the four CUPs to authorize the construction and operation of the proposed solar facilities and supporting infrastructure. A General Plan Amendment and Zone Change will also be required to implement the proposed projects. As shown on Figure 3-1 (Chapter 3), the project sites are located outside of the Renewable Energy (RE) Overlay Zone. CUP applications proposed for specific RE projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. Therefore, the applicant is requesting a General Plan Amendment and Zone Change to include/classify the project sites into the RE Overlay Zone.

The following approvals will be required for implementation of the projects:

1. **Approval of CUPs.** Implementation of the projects would require the approval of four CUPs by the County to allow for the construction and operation of the proposed ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4 projects. The project sites are located on a total of 18 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural), and A-3 (Heavy Agriculture). Pursuant to Title 9, Division 5, Chapter 8, the following uses are permitted in the A-2 and A-2-R zone subject to approval of a CUP from Imperial County: 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. Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" and "Transmission lines, including supporting towers, poles microwave towers, utility substations" are uses that are permitted in the A-3 Zone, subject to approval of a CUP.
2. **General Plan Amendment.** An amendment to the County's General Plan, Renewable Energy and Transmission Element is required to implement the proposed projects. CUP applications proposed for specific RE projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. The project sites are located outside of the RE Overlay Zone; therefore, the applicant is requesting a General Plan Amendment to include/classify the project sites into the RE Overlay Zone. No change in underlying general plan land use is proposed.
3. **Zone Change.** The project sites are not located in the RE Overlay Zone; therefore, the applicant is requesting a zone change to include/classify the project sites into the RE Overlay Zone.
4. **Variance.** Variances are required 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, implementation of the project may involve the construction of transmission towers of up to 200feet in height. Therefore, a variance for any structure exceeding the existing maximum height limit of 120 feet would be required.
5. **Lot Line Adjustment.** A lot line adjustment is proposed to add the project portion of APN 051-300-032 (Figure 3-2) to APN 051-300-036, leaving the northern portion of APN 051-300-032 as its own parcel.
6. **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 Board of Supervisors prior to making a decision on the projects.

Subsequent ministerial approvals may include, but are not limited to:

- Grading and clearing permits
- Building permits
- Reclamation plan
- Encroachment permits
- Transportation permit(s)

1.1.1.2 Other Agency Reviews and/or Consultations

Federal

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 . If applicable, Section 10 take permits would be required for the loss of such species and their habitat.

State

California Department of Fish and Wildlife Service (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. Additionally, if applicable, a Section 1602 Streambed Alteration Agreement would be required.

California Regional Water Quality Control Board

- ***NPDES ~~National Pollution Discharge Elimination System~~ Construction General Permit Order Number ~~(No.)~~ 2009-009-DWQ.*** Requires the applicant to file a public Notice of Intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP).
- ***NPDES ~~National Pollution Discharge Elimination System~~ 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, Clean Water Act (CWA) Section 401 Water Quality Certification, or permitting under California Porter-Cologne Act.

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 and water supply agreements.

Imperial County Air Pollution Control District

- Review as part of the EIR process regarding consistency with the Imperial County Air Pollution Control District CEQA Air Quality Handbook, the final "Modified" 2009 8-hour Ozone Air Quality Management Plan, the State Implementation Plan for particulate matter less than 10 microns in diameter (PM_{10}) in the Imperial Valley, the State Implementation Plan (SIP) for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and 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 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 RE resources by 2010. RE sources include wind, geothermal, and solar. 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 (EO) S-14-08 requiring that "...[a]ll retail sellers of electricity shall serve 33 percent of their load with RE by 2020." The following year, EO S-21-09 directed the California Air Resources Board (CARB), 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, SB 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 had to adopt the new RPS goals of 20 percent of retails 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.

Governor Brown signed into legislation SB 350 in October 2015, which requires retail sellers and POUs to procure 50 percent of their electricity from eligible RE resources by 2030.

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 CARB to enact standards that will reduce ~~greenhouse gas (~~GHG~~)~~ emissions to 1990 levels by 2020. Electricity production facilities are regulated by the CARB.

Title 17 California Code of Regulations, Subchapter 10, Article 2, Sections 95100 et seq.

These CARB 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. 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 CAAs 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 Section 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 Regional Water Quality Control Board (RWQCB), Region 7. The 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

The Federal Endangered Species Act (16 USC 1531-1544) provides protection for plants and animals whose populations are dwindling to levels that are no longer sustainable in the wild. The Federal Endangered Species 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.

National Historic Preservation Act

Federal regulations (36 Code of Federal Regulations [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

CESA is enacted through Government Code Section 2050. Section 2080 of the California ~~Fish and Game Code (~~FGC~~)~~ 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 FGC 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 FGC (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 Draft EIR and documents incorporated by reference are available for public review at the ICPDS~~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, 1140 North Imperial Avenue, El Centro, California. Documents at these locations may be reviewed during regular business hours.

David Black, 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 reviewed and responded to in the 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 ICPDS~~County of Imperial Planning and Development Services Department~~ at (442) 265-1736.

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 ~~Big Rock Cluster Solar Farms Project~~project on January 4, 2018. 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 December 31, 2017. 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 (January 5, 2018)
- Department of Toxic Substances Control (DTSC) (January 10, 2018)
- California Department of Transportation (Caltrans) (January 22, 2018)
- Department of Conservation – Division of Oil, Gas, and Geothermal Resources (January 26, 2018)
- Department of Conservation – Division of Land Resource Protection (January 29, 2018)

- ~~Imperial Irrigation District~~IID (January 29, 2018)
- Farms for Farming (February 5, 2018)

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 Laurel~~Big Rock~~ Cluster Solar Farms Project was discussed as an informational item at the County's Environmental Evaluation Committee meeting on January 25, 2018. Additionally, a scoping meeting for the general public as well public agencies was held on January 25, 2018 at 6 p.m. The meeting was held by the Imperial County Planning & Development Services Department in the Board of Supervisors Chambers located at the County Administration Center at 940 Main Street, El Centro, California.

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
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- GHG Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use and Planning
- Noise and Vibration
- Public Services
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities/Service Systems

1.4.3.1 Eliminated from Further Review in Notice of Preparation

The ~~Initial Study (~~IS~~)~~ and NOP completed by the County (Appendix A of this EIR) determined that environmental effects to Forestry Resources, Mineral Resources, Recreation, Population/Housing, Public Services (Schools, Parks, and Other Facilities), and Utilities (Wastewater, Stormwater, and Solid Waste) 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:

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 proposed 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 applicant is not proposing any form of mineral extraction. According to the Conservation and Open Space Element of the 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 sites. No impact is identified.

Based on a review of the Department of Conservation's Division of Oil, Gas, and Geothermal Resources Well Finder, there is one plugged and abandoned geothermal well (Well No. 02590357) located immediately east of the ~~BRSF1~~ LSF4 site. This geothermal well is not located within the projects' construction limit and, therefore, would be avoided by the proposed projects. Implementation of the proposed projects would not impact geothermal wells.

Recreation

Combined, the four projects would be staffed with up to 20 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 are currently used for agricultural production. Development of housing is not proposed as part of the projects. Up to 20 full-time employees will operate the projects, split evenly between the four project sites. It is possible that the projects would share O&M, substation, and/or transmission facilities with one another and/or nearby projects. In such a scenario, the projects could share personnel, thereby potentially reducing the projects' on-site staff. The full-time employees will maintain the facility 7 days per week during normal daylight hours. Up to three staff will work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekends.

To ensure optimal PV output, the solar panels will be maintained 24 hours per day, 7 days per week. The proposed projects would not result in substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. Therefore, no impact is identified for population and housing.

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 the Imperial County's School District since it is anticipated that construction workers would commute in during construction operations.

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 would require a total of up to 20 on-site full-time employees and could include several operations and maintenance buildings. Wastewater generation would be minimal. The projects' wastewater will be treated via on-site septic systems, designed to meet operation and maintenance guidelines required by Imperial County laws,

ordinances, regulations, and standards. The proposed projects would not exceed wastewater treatment requirements of the RWQCB. The proposed projects are not anticipated to generate a significant increase in the amount of runoff water from water use involving solar panel washing. Water will continue to percolate through the ground, as a majority of the surfaces on the project sites will remain pervious. The proposed projects would not substantially alter the existing drainage pattern of the site, substantially increase the rate of runoff, or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. A less than significant impact is identified for these issue areas.

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 1.8 million cubic yards of remaining capacity 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 Imperial 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 CUP for each project will contain provisions for recycling and diversion of Imperial County construction waste policies.

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. 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. 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. A less than significant impact is identified for this issue.

1.4.4 Areas of Controversy and Issues to be Resolved

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 as well as issues to be resolved. 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 to 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, and water supply.

1.4.5 Document Organization

The structure of the Draft EIR is identified below. The Draft EIR was organized into 11 chapters, including the Executive Summary.

- 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 projects.
- **Chapter 3.0 Project Description** provides a description of the Laurel~~Big Rock~~ Cluster Solar Farms 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 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; GHG emissions; hazards and hazardous materials; hydrology/water quality; land use and planning; noise and vibration; public services; transportation/traffic; tribal cultural resources, 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.

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2 Environmental Setting

2.1 Location of Project

The project sites encompass approximately 1,380 acres of land located approximately 8 miles southwest of the City of El Centro and 3 miles south of Seeley, a census-designated place, in the unincorporated area of Imperial County. The project sites are located on private land currently utilized for agricultural operations. The projects are generally located south of I-8, west of Drew Road and Vogel Road, north of Mandrapa Road, and east of the Westside Main Canal and Westmorland Road. The project includes gen-tie lines that would connect with an off-site substation located immediately west of ~~BRSF1~~LSF4. An alternative gen-tie connection would involve connection to the Imperial Valley Substation. This connection would involve adding an additional line to existing transmission structures that extend south from the Westside Main Canal to the existing Imperial Valley Substation. No new construction is proposed in this area.

Four separate CUP 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:

- ~~BRSF1~~
- LSF1
- LSF2
- LSF3
- LSF4

The project sites are located immediately adjacent to the Campo Verde Solar Project (operational) and the proposed VEGA SES Solar Project (Figure 6-1 in Chapter 6).

2.2 Physical Characteristics

2.2.1 Aesthetics and Visual Resources

The surrounding area is predominantly flat as most of the land has been leveled to facilitate irrigation. Numerous canals, ditches, and drains owned by the ~~Imperial Irrigation District~~IID are located throughout the project sites and surrounding area providing irrigation water and drainage to the individual fields.

Agricultural fields, earthen berms, and overhead utility lines dominate the scenery in the project area. The project sites are located immediately adjacent to the Campo Verde solar facility, undeveloped agricultural lands generally to the north and further east, and desert lands on the south and further west. Similar to the southwestern portion of Imperial County near the U.S./Mexico border, undeveloped agricultural lands in the project vicinity are currently transitioning to renewable energy developments (Campo Verde solar facility, Imperial Solar Energy Center West).

The existing Imperial Valley Substation is located approximately 1 mile south of the LSF4~~BRSF1~~ site. The Imperial Valley Substation and the numerous transmission lines are readily visible throughout this area and are located in Utility Corridor N (Figure 3-15 in Chapter 3). The purpose of

Utility Corridor N is to allow a designated area within the Bureau of Land Management (BLM) lands for utility structures, such as transmission lines and to group them together in one area rather than allow them to be scattered throughout BLM lands.

2.2.2 Agricultural Resources

The proposed projects would be developed within and adjacent to productive agricultural and developed lands. Much of the land base in the vicinity of and within the project area 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.

According to the Important Farmland maps prepared by the California Department of Conservation (DOC) (California DOC 2016) and as shown on Figure 4.2-1 (Section 4.2), the project sites contain Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Other Land. The project sites are located immediately adjacent to the Campo Verde solar facility and undeveloped agricultural lands generally to the north and further east. Similar to the southwestern portion of Imperial County near the U.S./Mexico border, undeveloped agricultural lands in the project vicinity are currently transitioning to renewable energy developments (Campo Verde solar facility, Imperial Solar Energy Center West).

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 (~~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 U.S. 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, PM_{10}, and $PM_{2.5}$. Imperial County is classified as a "serious" nonattainment area for PM_{10} for the National Ambient Air Quality Standards (NAAQS). On November 13, 2009, EPA published Air Quality Designations for the 2006 24-Hour Fine Particle ($PM_{2.5}$) NAAQS wherein Imperial County was listed as designated nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS. However, the nonattainment designation for Imperial County is only for the urban area within the County and it has been determined that the proposed projects are located within the nonattainment boundaries for $PM_{2.5}$. On April 10, 2014, the California Air Resources Board (CARB) gave final approval to the 2013 Amendments to Area Designations for California Ambient Air Quality Standards (CAAQS). For the state $PM_{2.5}$ standard, effective July 1, 2014, the City of Calexico will be designated nonattainment, while the rest of the SSAB will be designated attainment.

2.2.4 Biological Resources

The projects are located entirely on active agricultural fields. The project sites are currently subject to agricultural operational activities, with crops including alfalfa and Bermuda or disked. No rare or special species plants were observed or expected in the agricultural areas. No federally listed species were observed in the project sites. Although agricultural fields are too heavily disturbed to provide nesting sites, the project sites provide 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 IID right-of-way. Additionally, the project sites provide suitable habitat for mountain plover, long billed curlew, short billed dowitcher, swainson's hawk, and loggerhead shrike 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. The alternative gen-tie would extend into desert lands; however, no new construction is required in this area should this alternative route be utilized as the projects' point of connection.

2.2.5 Cultural Resources

The project area is located in the Imperial Valley Area of the Colorado Desert. The elevation of the project sites range from approximately 35 to 40 feet below mean sea level. The region is characterized by an arid climate with dry, hot summers and mild winters. The project sites occupy the former western shoreline of prehistoric Lake Cahuilla, and at a depth the lake would have exhibited salinity levels suitable to sustain a variety of fish used by prehistoric human population. Lake Cahuilla is now partially occupied by the artificially created Salton Sea. Lake Cahuilla was formed by periodic prehistoric natural diversion of the Colorado River. Many lakes (now dry) in the Colorado Desert are thought to have supported small human populations during the terminal Pleistocene (22,000 to 11,000 years before present) and early Holocene (11,000 to 8,000 years before present). Since the desiccation of California's deserts during the later Holocene, local lakes have dried and significant sand dunes have formed.

The records search conducted for the projects indicates that 77 cultural resources have been previously recorded within 1 mile of the project sites. Of these 77 previously recorded resources, 19 are prehistoric archaeological sites, three are historic-period archaeological sites, one is a multicomponent archaeological site, 10 are historic-period built environment resources, two are historic-period linear resources, one is a landscape resource, eight are historic architectural resources, and 33 are isolates. Of the 33 isolates, 25 are prehistoric isolates, and 8 are historic-period isolates. The vast majority of the previously recorded resources consist of prehistoric archaeological sites and isolates. These resources are primarily located within the relatively undeveloped desert lands located south and southwest of the agriculture fields that encompass the project sites. The alternative gen-tie would extend into desert lands; however, no new construction is required in this area should this alternative route be utilized as the projects' point of connection.

2.2.6 Geology and Soils

The project sites are located in the Imperial Valley portion of the Salton Trough physiographic province. The Salton Trough is a topographic and 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 deposited 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.

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. The primary seismic hazard at the project sites is the potential for strong groundshaking because of potential fault movements along the Brawley, Superstition Hills, and Imperial Faults. Secondary geologic hazards that have a potential to occur include differential ground settlement, soil liquefaction, rock and mudslides, ground lurching, or ground displacement along the fault.

2.2.7 Greenhouse Gases

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes as well as human activities. Human-caused sources of carbon dioxide (CO_2) include combustion of fossil fuels (coal, oil, natural gas, gasoline, and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution. Methane (CH_4) 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 nitrous oxide (N_2O) 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 sites primarily include CO_2 and N_2O from farm equipment and local traffic.

2.2.8 Hazards and Hazardous Materials

The project sites are located in a historical agricultural area of Imperial County. Agricultural operations include the use of aboveground storage tanks (AST 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.

According to the Phase I Environmental Site Assessments (ESA) prepared for the projects, no evidence of operations that use, treat, store, dispose of, or generate hazardous materials or petroleum products were observed on the project sites. There was no visual evidence of current underground storage tanks or historical presence of ASTs observed on the project sites. The project sites have been used for and are currently in agricultural production. Consequently, there is a potential for the project sites to contain hazards related to pesticide and herbicide use from aerial and/or ground application.

2.2.9 Hydrology/Water Quality

The project sites are located within the Imperial Valley Planning Area of the Colorado River Basin, between the Westside Main Channel and New River just south of I-8, and approximately 23 miles south of the Salton Sea. The Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California. It includes all of Imperial County and

portions of San Bernardino, Riverside, and San Diego Counties. The Colorado River Basin Region is divided into seven major planning areas on the basis of different economic and hydrologic characteristics. The Imperial Valley Planning Area consists of the following hydrological units ~~(HU)~~: Imperial (723.00) comprised of 2,500 square miles in the southern portion of the Colorado River Basin Region, with the majority located in Imperial County; Davies (724.00), located to the west of the project sites, and Amos-Ogilby (726.00), located to the east of the project sites. The project sites are located within the Imperial hydrological units ~~HU~~ (California RWQCB 2017).

Surface waters in the Imperial Valley Planning Area mostly drain toward the Salton Sea. The New and Alamo Rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial waste waters from the Imperial Valley. The flow in the New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali, Mexico.

2.2.10 Land Use/Planning

The project sites are designated as Agriculture under the County's General Plan. The project sites are located on 18 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural), and A-3 (Heavy Agriculture).

The project sites are located on the western and southern fringe of agricultural lands in Imperial County. Land uses surrounding the project sites include agricultural lands, the Campo Verde Solar Project (operational), proposed VEGA SES Solar Project, and IID infrastructure (Westside Main Canal and concrete lined ditches).

There are no established residential neighborhoods immediately adjacent to the project sites; however, the following six off-site rural residences are located within 500 feet of the project sites:

- One residence located near the northwestern LSF3 boundary (north of West Vaughn Road)
- One residence located at the northern extent of LSF3 along Westside Road
- ~~One~~ Two residences north of the intersection of Westside Road and West Vaughn Road
- Two residences located along Liebert Road, one is located immediately west of LSF4~~BRSF1~~, and the second is located south of the intersection of West Diehl Road and Jessup Road
- One residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road

The project includes gen-tie lines that would connect with an off-site substation located immediately west of LSF4~~BRSF1~~. An alternative gen-tie connection would involve connection to the Imperial Valley Substation, which is located within Utility Corridor "N" on BLM land.

2.2.11 Noise

The predominant sources of noise in the project area include vehicular traffic on local roads and highways and agricultural operations. Activities involving the use of heavy-duty equipment, such as frontend 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. 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 study areas, the existing noise environment is generally influenced by the noise produced from the following sources:

- Vehicle traffic along roadways including Drew Road, Westside Road, and I-8
- Agricultural operations throughout the project area including the operation of heavy equipment and vehicles

2.2.12 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 (ICFD) and Office of Emergency Services area of service. There are no parks or libraries in the vicinity of the project area.

2.2.13 Transportation/Traffic

The following street segments are located within the vicinity of the project sites: I-8, State Route (SR) 98, and Drew 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).

2.2.14 Utilities/Service Systems

The Imperial Valley depends solely on the Colorado River for surface water supply. IID delivers its annual entitlement of 3.1 million acre-feet (AF) to nearly 500,000 acres for agricultural, municipal, and industrial use. The project sites are currently undeveloped agricultural land and have been historically used for agriculture. The IID has historically delivered untreated water to the project sites for agricultural uses. Existing agricultural water services at the project sites is currently provided via numerous IID canals. The existing agricultural water uses of the project sites are estimated at 8,675.91 acre-feet per year (AFY).

The IID supplies electricity to Imperial County. The project sites are primarily undeveloped and utilized for agricultural production. Therefore, the sites' current energy demands are minimal.

3 Project Description

Chapter 3 provides a description of the Laurel~~Big Rock~~ Cluster Solar Farms Project (~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4, and collectively, the "Laurel~~Big Rock~~ Cluster" or "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 Project Location

The project sites encompass approximately 1,380 acres of land located approximately 8 miles southwest of the City of El Centro and 3 miles south of Seeley, a census-designated place, in the unincorporated area of Imperial County (Figure 3-1). The project sites are located on privately-owned land, currently utilized for agricultural operations, and immediately adjacent to the Campo Verde Solar Project. As shown on Figure 3-2, the projects are generally located south of I-8, west of Drew Road and Vogel Road, north of Mandrapa Road, and east of the Westside Main Canal and Westmorland Road.

Four separate CUP 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:

- ~~BRSF1~~
- LSF1
- LSF2
- LSF3
- LSF4

Table 3-1 identifies the individual APNs associated with the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4 with their respective acreages, and zoning. Each individual site location comprising the project area is shown on Figure 3-2.

~~3.1.1 Big Rock 1 Solar Farm~~

~~The BRSF1 project site consists of five parcels totaling 342 acres within the southeastern portion of the larger Big Rock Cluster Solar Farms project area. As shown on Figure 3-2, the BRSF1 project site is generally located north of Mandrapa Road, west of Vogel Road, east of Liebert Road, and south of West Diehl Road. Primary access to the BRSF1 occurs via West Wixom Road. Secondary access could be obtained via Vogel Road, Mandrapa Road, and/or Liebert Road.~~

~~3.1.2~~3.1.1 Laurel ~~1~~ Solar Farm 1

The LSF1 project site consists of two parcels totaling 171 acres within the eastern portion of the larger Laurel~~Big Rock~~ Cluster Solar Farms project area. As shown on Figure 3-2, the LSF1 project site is generally located north of West Wixom Road, east of Derrick Road, and transected by West Diehl Road. Primary access to the LSF1 occurs via West Diehl Road. Secondary access could be obtained via Derrick Road.

Figure 3-1. Regional Location

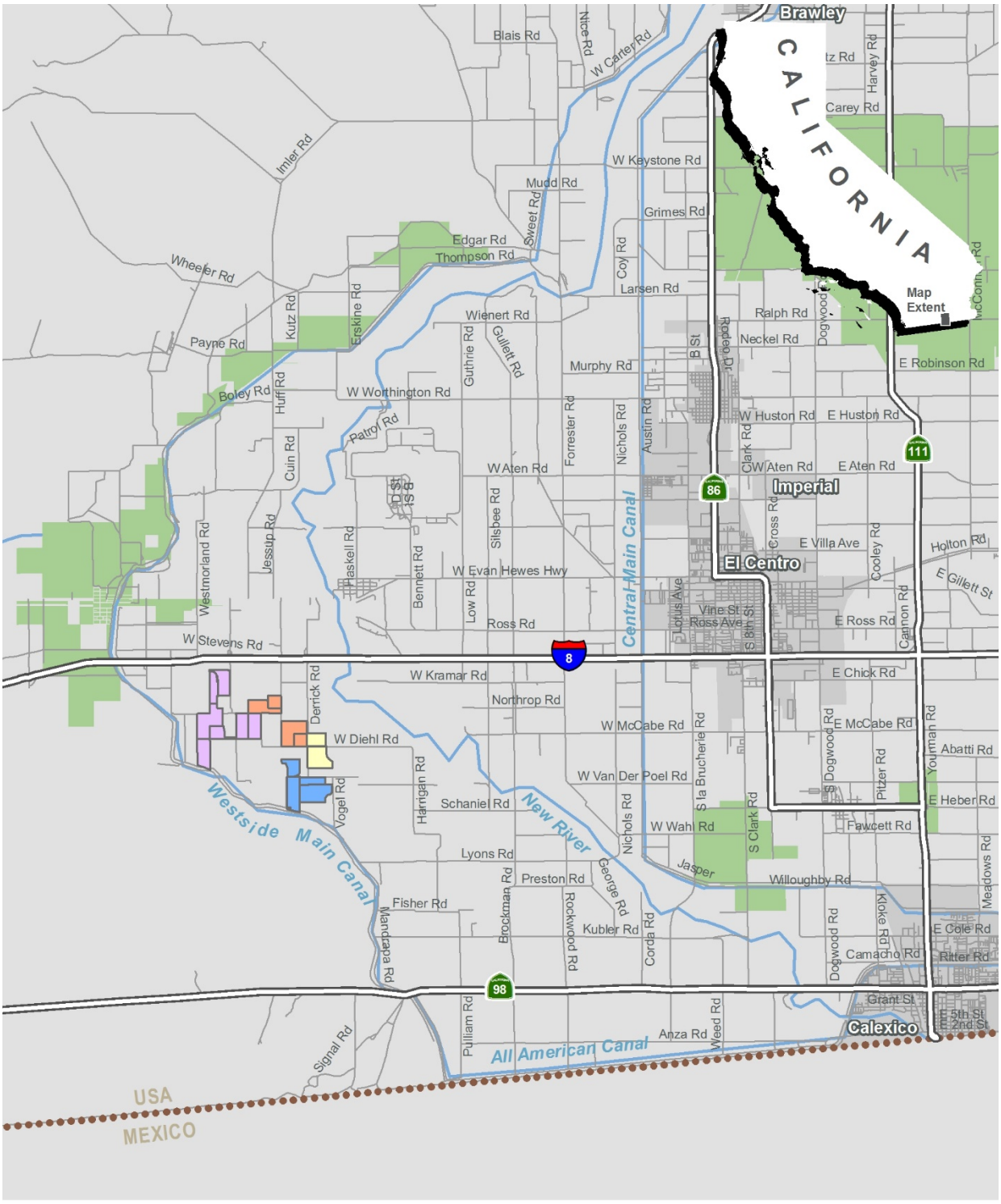


Figure 3-2. Project Sites

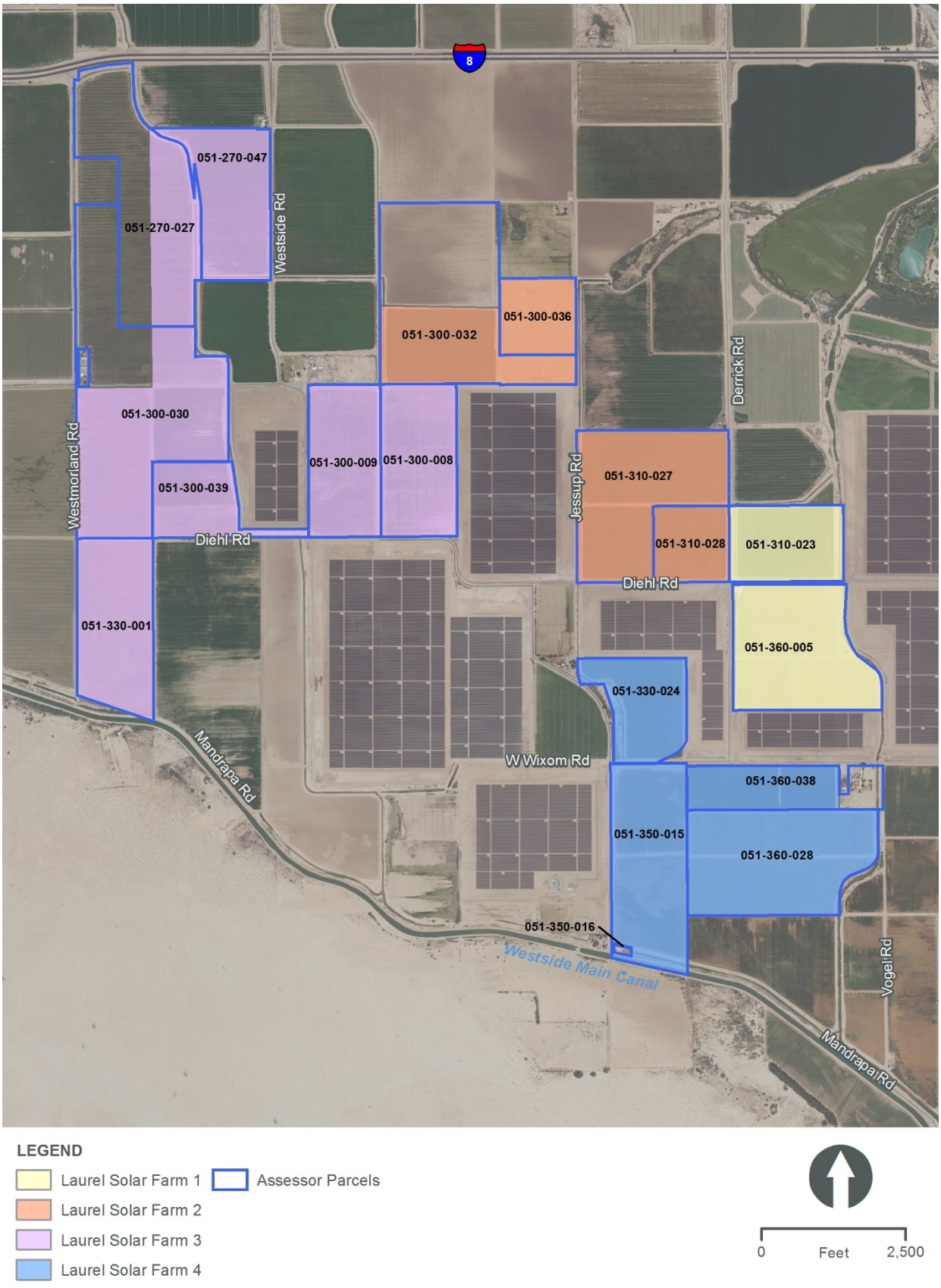


Table 3-1. Project Sites Assessor Parcel Numbers, Acreages, and Zoning

	APN	Zoning	Acreage
~~**BRSF1**~~	~~051-350-015 and 051-350-016~~	~~A-3~~	~~107~~
	~~051-360-038 (portion)~~	~~A-3~~	~~45~~
	~~051-360-028~~	~~A-3~~	~~130~~
	~~051-330-024~~	~~A-2-R~~	~~60~~
~~***Subtotal***~~			~~***342***~~
LSF1	051-310-023	A-2-R	60
	051-360-005	A-2-R	111
Subtotal			***171***
LSF2	051-300-032 (portion)	A-2-R	80
	051-300-036	A-3	40
	051-310-027	A-2-R	120
	051-310-028	A-2-R	40
Subtotal			***280***
LSF3	051-270-027 (portion)	A-2 and A-2-R	58
	051-270-047	A-2-R	81
	051-300-008	A-2-R	80
	051-300-009	A-2 and A-2-R	80
	051-300-030 (portion)	A-2-R	145
	051-300-039	A-2-R	48
	051-330-001	A-3	95
Subtotal			***587***
LSF4	051-350-015 and 051-350-016	A-3	107
	051-360-038 (portion)	A-3	45
	051-360-028	A-3	130
	051-330-024	A-2-R	60
Subtotal			***342~~587~~***
Total Project Sites			**1,380**

Note: A-2 (General Agriculture), A-2R (General Agricultural Rural), and A-3 (Heavy Agriculture)

APN - assessor parcel number; ~~BRSF1 – Big Rock 1 Solar Farm;~~ LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

~~3.1.3~~3.1.2 Laurel ~~2~~ Solar Farm 2

The LSF2 project site consists of four parcels totaling 280 acres within the central portion of the larger Laurel~~Big Rock~~ Cluster Solar Farms project area. As shown on Figure 3-2, the LSF2 project

site is generally located north of West Diehl Road, west of Derrick Road, and is transected by Jessup Road. Primary access to the LSF2 occurs via Jessup Road. Secondary access could be obtained via Derrick Road, West Vaughn Road, and West Diehl Road.

~~3.1.4~~3.1.3 Laurel ~~3~~ Solar Farm 3

The LSF3 project site consists of seven parcels totaling 587 acres within the central and western portions of the larger Laurel~~Big Rock~~ Cluster Solar Farms project area. As shown on Figure 3-2, the LSF3 project site is generally located north of Mandrapa Road, west of Westside Road, east of Hyde Road, and south of I-8. Primary access to the LSF3 occurs via West Diehl Road. Secondary access could be obtained via Westmorland Road, West Vaughn Road, and Mandrapa Road.

3.1.4 Laurel Solar Farm 4

The LSF4 project site consists of five parcels totaling 342 acres within the southeastern portion of the larger Laurel Cluster Solar Farms project area. As shown on Figure 3-2, the LSF4 project site is generally located north of Mandrapa Road, west of Vogel Road, east of Liebert Road, and south of West Diehl Road. Primary access to the LSF4 occurs via West Wixom Road. Secondary access could be obtained via Vogel Road, Mandrapa Road, and/or Liebert Road.

3.1.5 Renewable Energy Overlay Zone

In 2016, the County adopted the Imperial County Renewable Energy and Transmission Element, which includes a RE Zone (RE Overlay Map). This General Plan element was created as part of the California Energy Commission Renewable Energy Grant Program to amend and update the County's General Plan to facilitate future development of renewable energy projects.

The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of renewable energy projects with an approved CUP. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established uses. CUP applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone.

The County's General Plan and Land Use Ordinance allows that for renewable energy projects proposed on land classified in a non-RE Overlay zone, that the land on which the project is located may be included/classified in the RE Overlay Zone if the renewable energy project: 1) would be located adjacent to an existing RE Overlay Zone; 2) is not located in a sensitive area; 3) is located in proximity to renewable energy infrastructure; and, 4) and would not result in any significant environmental impacts.

As shown on Figure 3-1, the project sites are located outside of the RE Overlay Zone. Therefore, the applicant is requesting a General Plan Amendment and Zone Change to add the project area to the County's RE Overlay Zone. No land use amendment is requested, and the underlying "Agriculture" General Plan designation would remain.

3.2 Project Objectives

The primary 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 County identified the following objectives for the projects:

- Construct and operate a solar energy facility capable of producing up to 325 ~~megawatts (~~MW~~)~~ of electricity to help meet the state-mandated RPS of providing 50 percent renewable energy by 2030
- Operate a facility at a location that ranks amongst the highest in solar resource potential in the nation
- Interconnect directly to the IID or San Diego Gas and Electric's (SDG&E) electrical transmission system
- Operate a renewable energy facility that does not produce significant noise nor emit any ~~greenhouse gases~~GHGs
- 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~~GHG reduction goals of AB 32 (California Global Warming Solutions Act of 2006)
- Provide an investment in California and Imperial County that would create jobs and other economic benefits

3.3 Project Characteristics

The Laurel~~Big Rock~~ Cluster Solar Farms Project involves the construction of four utility-scale photovoltaic (PV) solar facilities on approximately 1,380 acres of privately-owned land. As shown in Table 3-2~~Table 3-2~~, the four projects would generate up to a combined 325 MW of alternating current (AC) on a daily basis. Power generated by the projects will be delivered from the project sites via up to 230 ~~kilovolts (~~kV~~)~~ overhead and/or underground electrical transmission line(s) originating from an on-site substation(s)/switchyard(s) and terminating at the proposed Fern/Liebert Substation, which will be constructed immediately west of LSF4~~BRSF1~~. Alternatively, power may be delivered to the SDG&E Imperial Valley Substation.

Each project would include a ground mounted photovoltaic solar power generating system, supporting structures, inverter modules, pad mounted transformers, energy storage system, access roads and fencing, an ~~operations and maintenance~~O&M building, and an on-site substation. The projects may share O&M~~operations and maintenance~~ buildings, energy storage system, substation, and/or transmission facilities as necessary with one another and/or with nearby solar projects, and/or may be remotely operated. Any unused O&M~~operations and maintenance~~, substation, and/or transmission facility areas on site could be covered by solar panels under such scenarios.

A description of each individual solar facility that comprises the Laurel~~Big Rock~~ Cluster is provided in Sections 3.1.1~~3.3.1~~ through 3.3.3~~3.3.4~~.

Table 3-2. Laurel~~Big Rock~~ Cluster Solar Project Proposed Megawatt Output

Project	Proposed MW
~~BRSF1~~	~~75~~
LSF1	40
LSF2	70
LSF3	140
LSF4	75
Total	**325**

~~BRSF1 - Big Rock 1 Solar Farm;~~ LSF1 - Laurel ~~1~~ Solar Farm 1; LSF2 - Laurel ~~2~~ Solar Farm 2; LSF3 - Laurel ~~3~~ Solar Farm 3; LSF4 - Laurel Solar Farm 4
MW - megawatt

3.3.1 Laurel ~~1~~ Solar Farm 1

The LSF1 encompasses a total of 171 acres and includes two parcels of land as identified in Table 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 LSF1 is illustrated on Figure 3-3~~Figure 3-5~~. The LSF1 would be capable of generating up to 40 MW AC.

If required, an on-site substation, O&M building, and energy storage container would be located at the southwestern corner of the project site (Figure 3-4~~Figure 3-6~~). If the substation, O&M building, and/or energy storage container are shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.2 Laurel ~~2~~ Solar Farm 2

The LSF2 encompasses a total of 280 acres and includes four parcels of land as identified in Table 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 LSF2 is illustrated on Figure 3-5~~Figure 3-7~~. The LSF2 would be capable of generating up to 70 MW AC.

If required, an on-site substation, O&M building, and energy storage container would be located at the southwestern corner of the intersection of West Diehl Road and Jessup Road (Figure 3-6~~Figure 3-8~~). If the substation, O&M building, and/or energy storage container are shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.3 Laurel ~~3~~ Solar Farm 3

The LSF3 encompasses a total of 587 acres and includes seven parcels of land as identified in Table 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 LSF3 is illustrated on Figure 3-7~~Figure 3-9~~. The LSF3 would be capable of generating up to 140 MW AC.

If required, an on-site substation, O&M building, and energy storage container would be located at the southeastern corner of the project site (along West Diehl Road) (Figure 3-8~~Figure 3-10~~). If the

substation, O&M building, and/or energy storage container are shared with an adjacent solar project, then this area would instead be covered with solar panels.

3.3.4 Laurel Solar Farm 4

The LSF4 encompasses a total of 342 acres and includes five parcels of land as identified in Table 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 LSF4 is illustrated on Figure 3-9. The LSF4 would be capable of generating up to 75 MW AC.

If required, an on-site substation, O&M building, and energy storage container would be located at the southwestern corner of the intersection of Mandrapa Road and Liebert Road (Figure 3-10). If the substation, O&M building, and/or energy storage container are shared with an adjacent solar project, then this area would instead be covered with solar panels.

~~3.3.4~~3.3.5 Photovoltaic Panels/Solar Arrays

PV solar cells convert sunlight directly into (direct current) DC electricity. The process of converting light (photons) to electricity (voltage) in a solid state process is called the photovoltaic effect. A number of individual PV cells are electrically arranged and connected into solar PV modules, sometimes referred to as solar panels.

The PV cells will be made from thin film or crystalline silicon materials, which will be dark in color, have low reflectivity, and be highly absorptive of the sunlight that strikes their glass surfaces. PV modules will be wired together in a mixture of series and parallel configurations and connected to DC to AC inverters and transformers located within the project sites.

The PV modules will comply with all industry quality standards and will be stringently tested and robustly constructed to guarantee a useful life of at least 25 to 30 years in all weather conditions.

Figure 3-3. Laurel ~~1~~ Solar Farm 1 – Site Layout

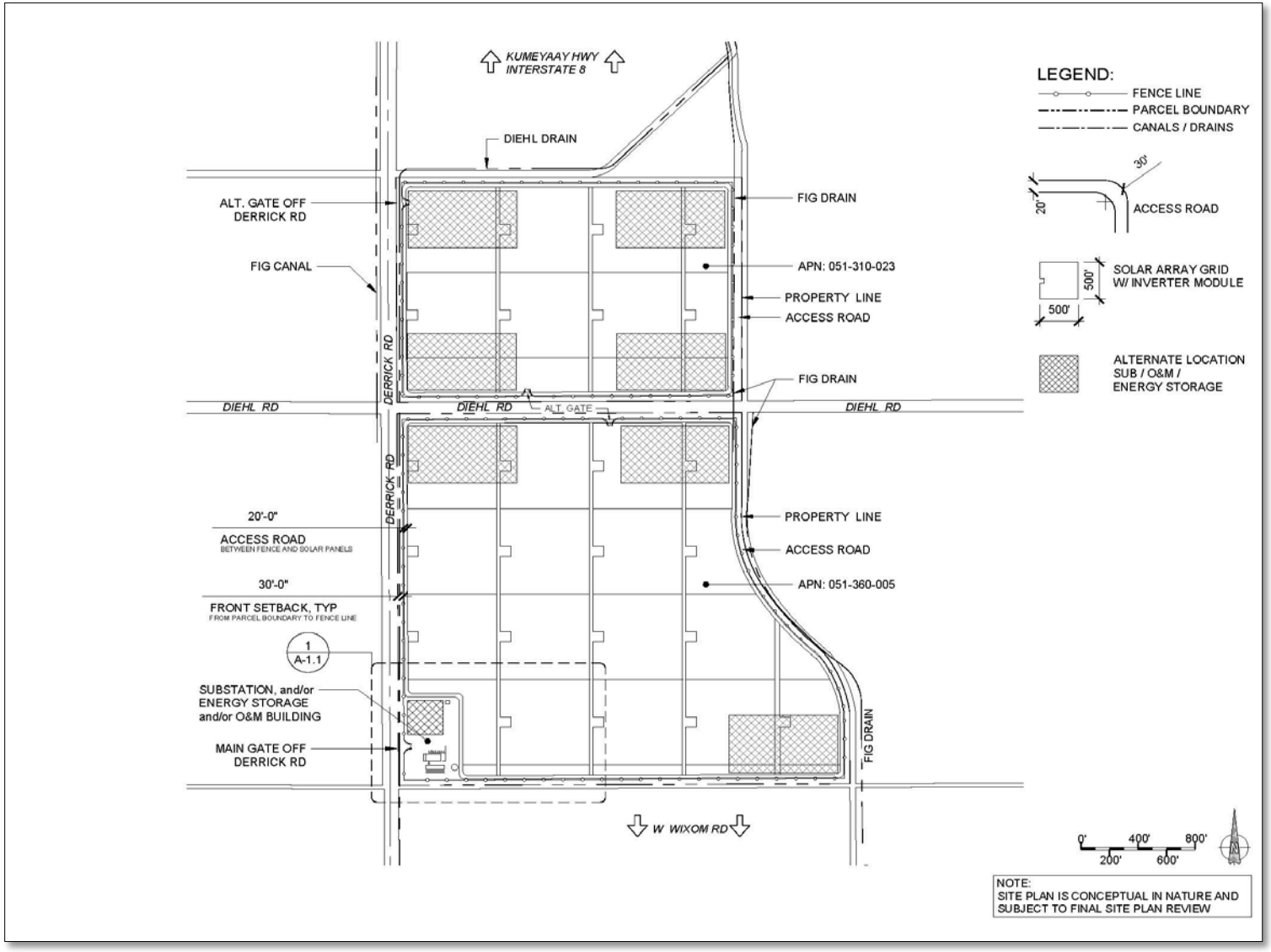


Figure 3-4. Laurel ~~1~~ Solar Farm 1 – Operations and Maintenance and Substation Facility Detail

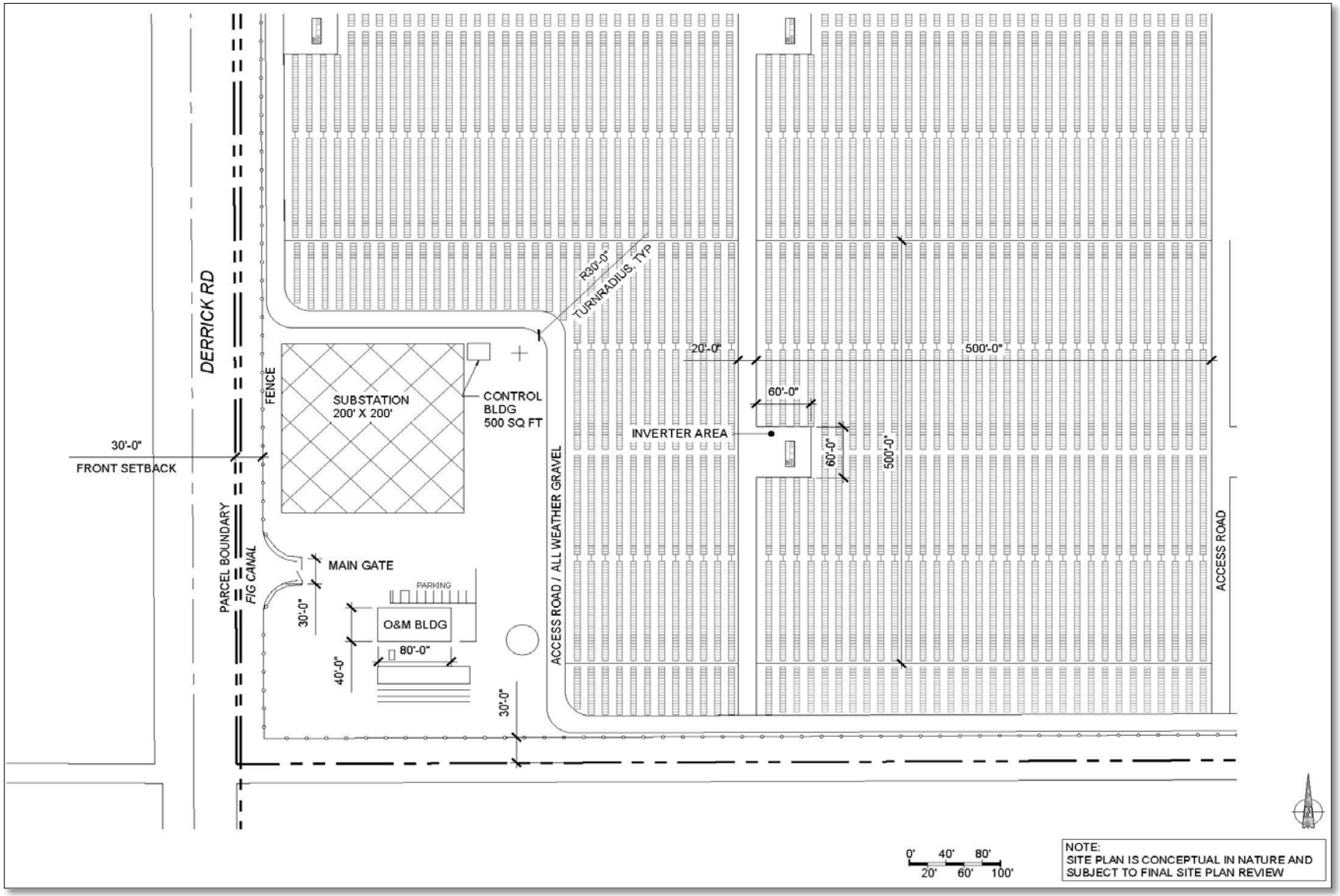


Figure 3-5. Laurel ~~2~~ Solar Farm 2 – Site Layout

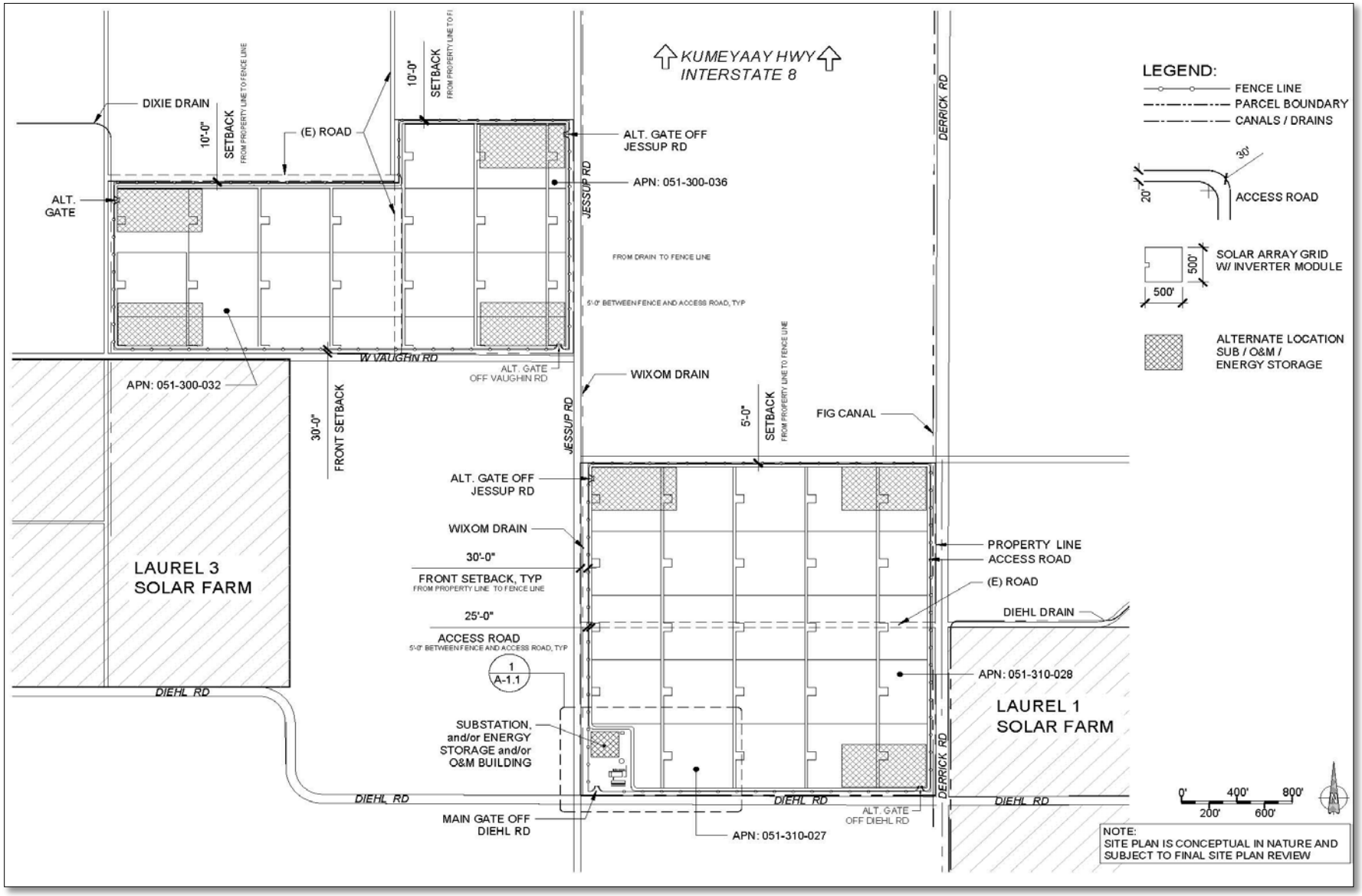


Figure 3-6. Laurel ~~2~~ Solar Farm 2 – Operations and Maintenance and Substation Facility Detail

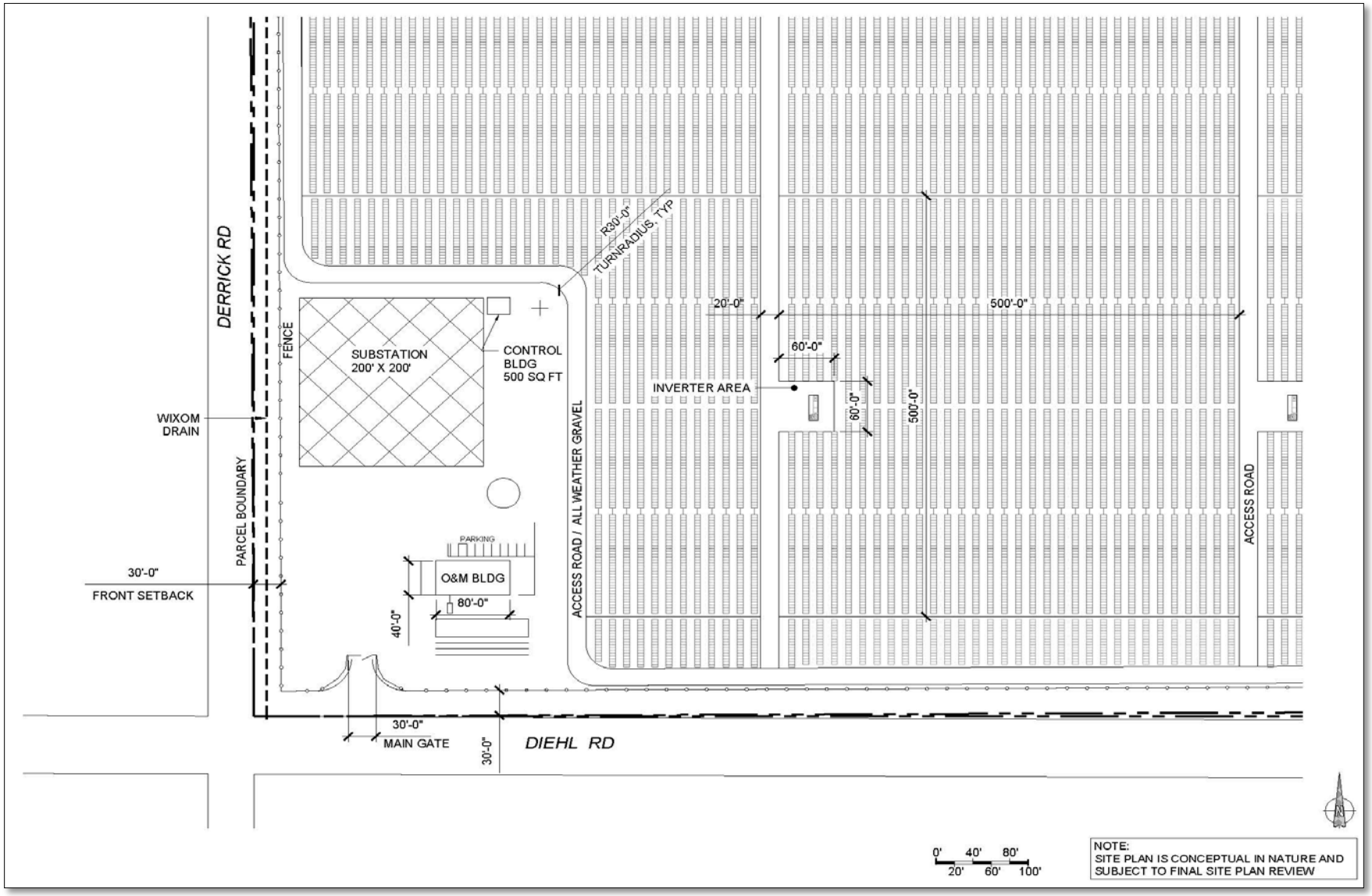


Figure 3-7. Laurel ~~3~~ Solar Farm 3 – Site Layout

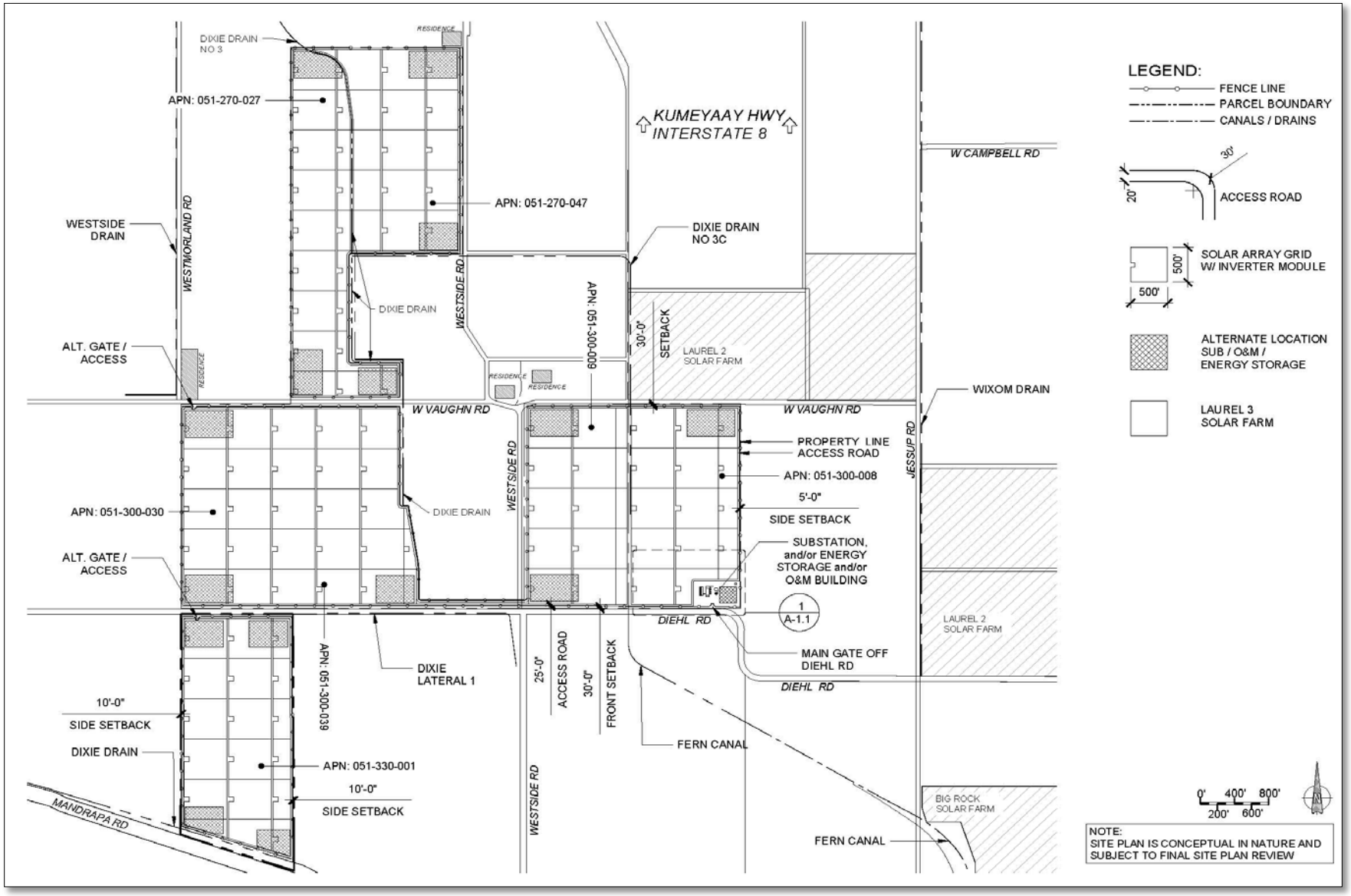


Figure 3-8. Laurel ~~3~~ Solar Farm 3 – Operations and Maintenance and Substation Facility Detail

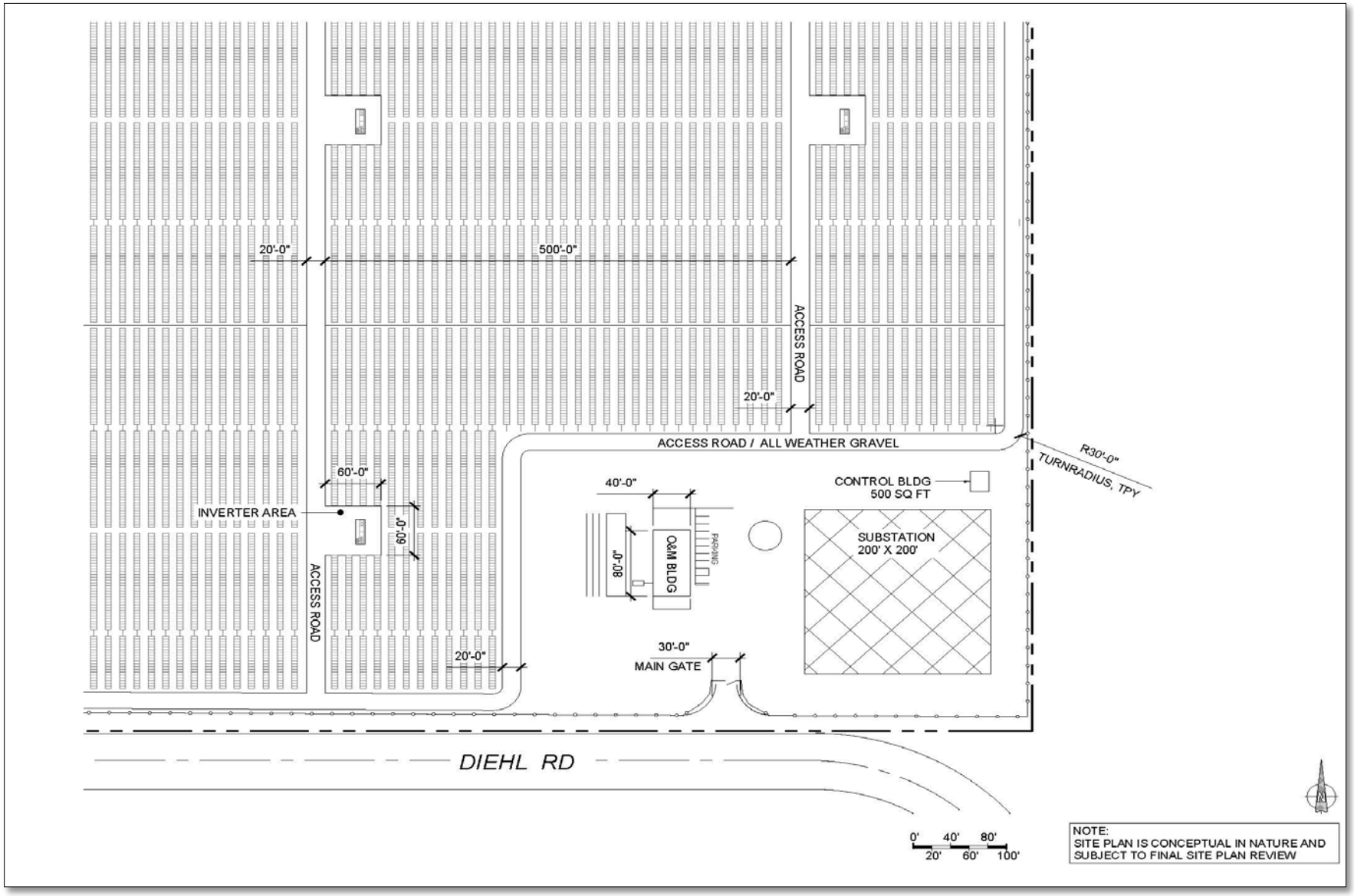


Figure 3-9. Laurel Solar Farm 4 – Site Layout

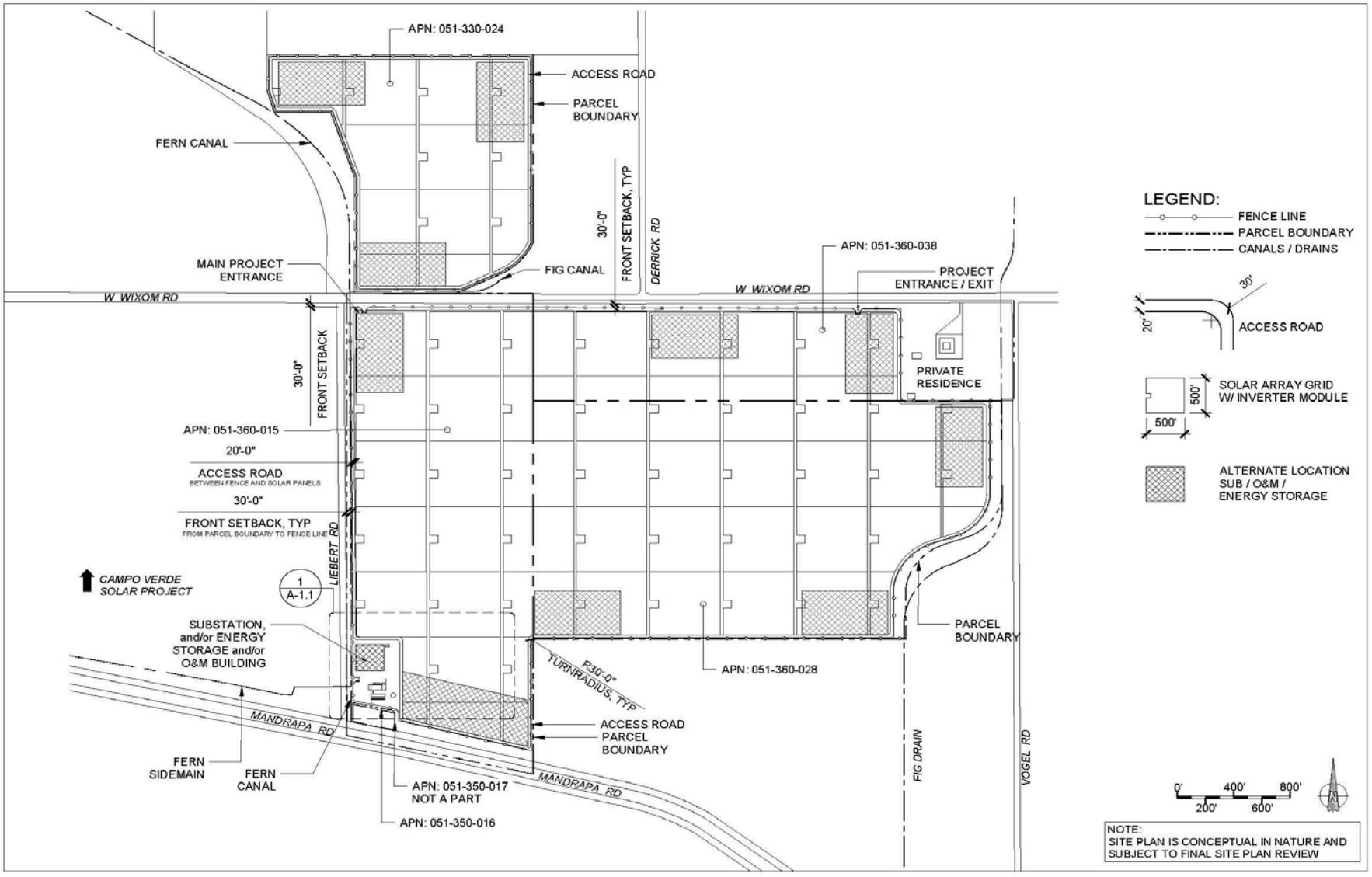
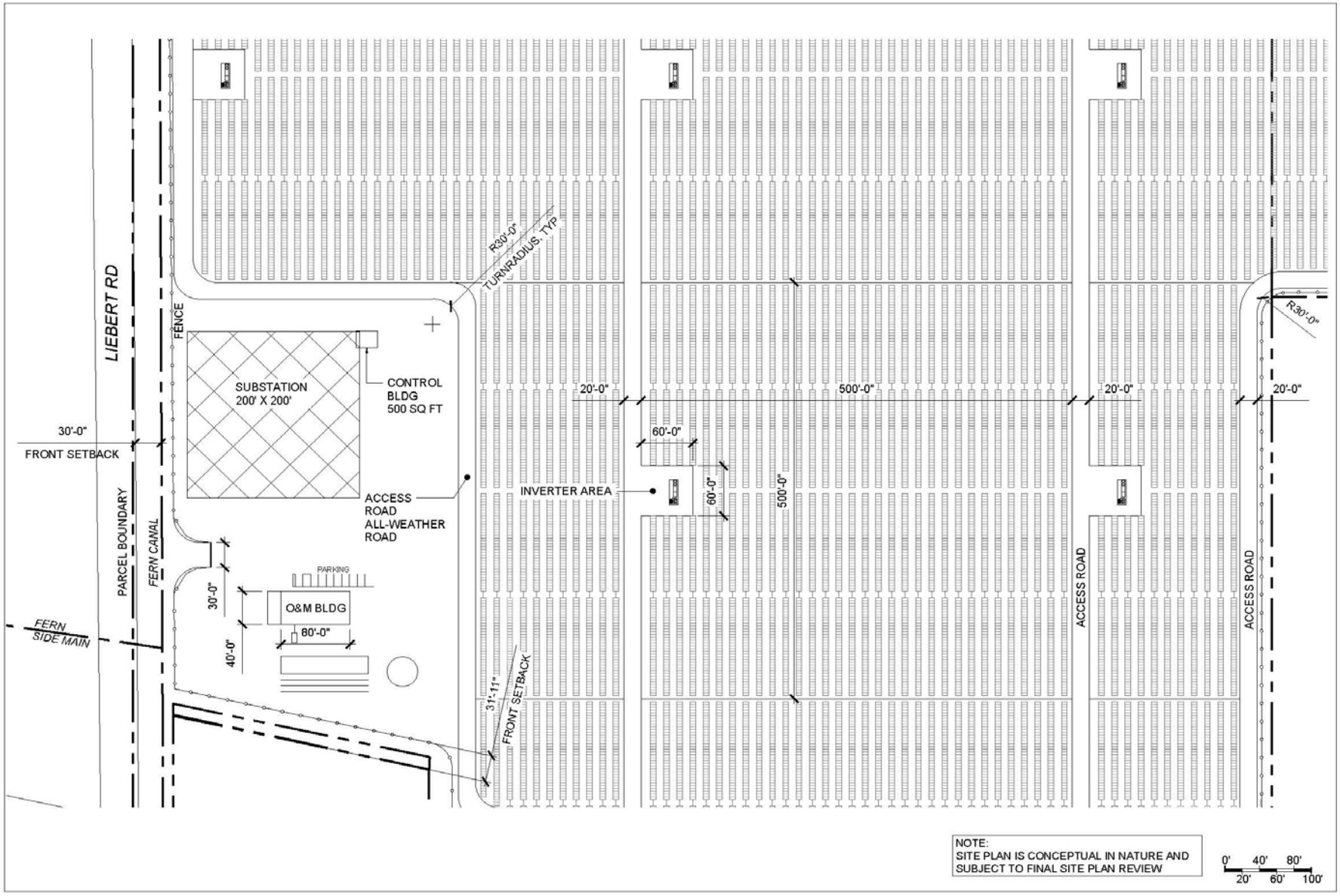


Figure 3-10. Laurel Solar Farm 4 – Operations and Maintenance and Substation Facility Detail



PV Panel/Mounting Configuration. The projects would utilize PV panels or modules on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). Figure 3-11~~Figure 3-11~~ provides a representative example of these types of systems. If the panels are configured for fixed tilt, the panels would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. The panels would stand up to 20 feet high, depending on the mounting system used.

The PV panels would be arranged in continuous rows of up to approximately 500 feet in length, with 10 feet between each row (per fire department requirements) and arrays would be grouped together to form up to 500-foot by 500-foot grids or solar array grids. This grid pattern would be arranged to form "blocks" with the center of each block containing an inverter module and a pad mounted transformer. Blocks will produce DC, which is converted to AC at the inverter stations. The inverter module and transformer for each grid area would be housed within a 160-square-foot container or similar structure.

Each PV module will be placed on a fixed-tilt or tracker mounting structure. The foundations for the mounting structures can extend up to 8 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings. If bifacial modules are used, light-colored, permeable gravel or crushed rock may be used as ground cover under the panels. Final solar panel layout and spacing will be optimized for site characteristics and the desired energy production profile.

~~3.3.5~~3.3.6 Inverter Stations

PV energy would be 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 module(s) 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. Figure 3-12~~12~~ provides representative examples of a typical inverter station.

Figure 3-11. Representative Examples of Photovoltaic Panel/Mounting Configuration

Typical Fixed-Tilt Solar Panel Rows

Typical Single-Axis Tracking Solar Panels

Typical Dual-Axis Tracking Solar Panels

Typical Fixed-Tilt Mounting Structure

Typical Dual-Axis Mounting Structure

Figure 3-12. Representative Examples of Typical Inverter Stations

~~3.3.6~~3.3.7 Energy Storage System

As identified on each of the site plans, the projects may include an energy storage system. These are proposed to be located at or near one or more substations, depending on whether they are constructed on the specific project site or shared with an adjacent project (e.g., LSF1 and LSF2 share a substation and/or energy storage system. The energy storage system could also be located at the inverter stations. While co-located the energy storage system with either a substation or inverter station, there is a possibility that the energy storage system would be located in a different portion of the site.

The energy storage modules, which may include commercially available flow batteries, typically consist of ~~independent system operator (~~ISO~~)~~ standard containers (approximately 40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures but may also be housed in a dedicated building in compliance with applicable regulations. The maximum height of a dedicated structure or the energy storage system itself is not expected to exceed 25 feet. Figure 3-13~~Figure 3-13~~ provides representative examples of a typical energy storage system. The actual dimensions and number of energy storage modules and structures vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement (PPA) requirements and local building standards. The projects may share an energy storage system with one another and/or nearby solar projects.

~~3.3.7~~3.3.8 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to on-site substation(s). The substation(s) may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, microwave transmission tower, and voltage switch gear. The substation(s) would occupy an area of approximately 200 by 200 feet, secured separately by an additional chain-link fence (within the project site perimeter fencing). The substations would be located along the perimeter of the project. The proposed location(s) are shown on Figure 3-3 through Figure 3-10. The final locations will be determined before issuance of building permits.

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 and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. A representative example of a substation is presented on Figure 3-14~~Figure 3-14~~.

Figure 3-13. Representative Examples of Typical Energy Storage Systems

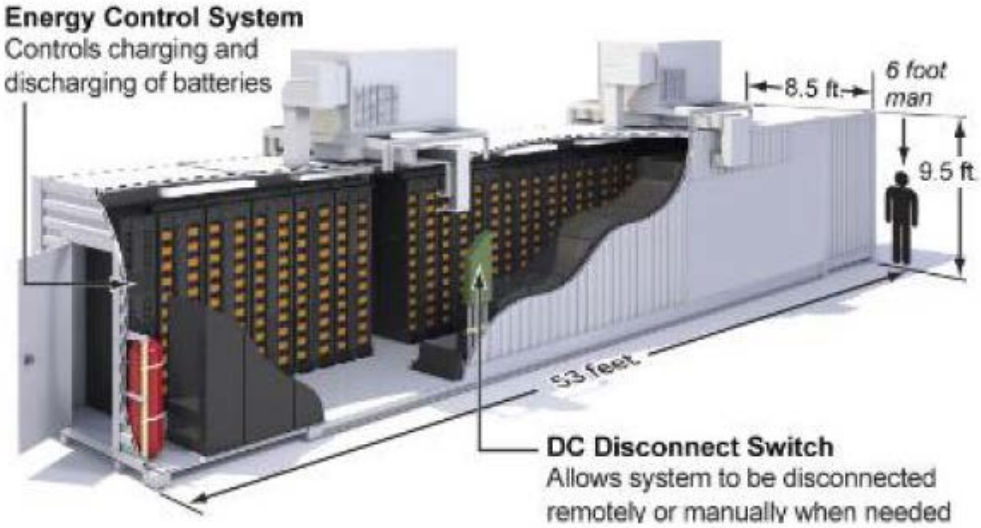


Figure 3-14. Representative Example of Typical Substation Design

~~3.3.8~~3.3.9 Transmission Line and Interconnection Facilities

~~3.3.8.1~~3.3.9.1 Proposed Point of Interconnection

Power generated by the projects will be delivered from the project site via up to 230 kV overhead and/or underground electrical transmission line(s). These lines would originate from an on-site substation(s)/switchyard(s) constructed within the project sites and terminate at a substation currently proposed immediately west of the LSF4~~BRSF1~~ site by IID. This off-site substation is a separate project and has already been environmentally cleared. The off-site substation may ultimately be controlled by IID in which case it would be referred to as the "Fern Substation." Alternatively, this substation may ultimately be controlled by the Califonia ISO, in which case it would be referred to as the "Liebert Substation." The development footprint would be the same whether it is controlled/operated by IID or California ISO. The location of the Fern/Liebert Substation is shown on Figure 3-15~~Figure 3-15~~. The gen-tie may involve installation of an appropriate number of 230 kV transmission tower structures (Figure 4.1-10 provides a representative example of a transmission tower structure), associated insulator/hardware assemblies, appropriate number of spans of conductor and optical ground wiring, among other appurtenances, between the last project structure and the dead-end substation structure at Fern/Liebert Substation. The final number and location of the transmission tower structures and spans of conductor and optical ground wire will be determined by IID following completion of final engineering of the Interconnection Facilities.

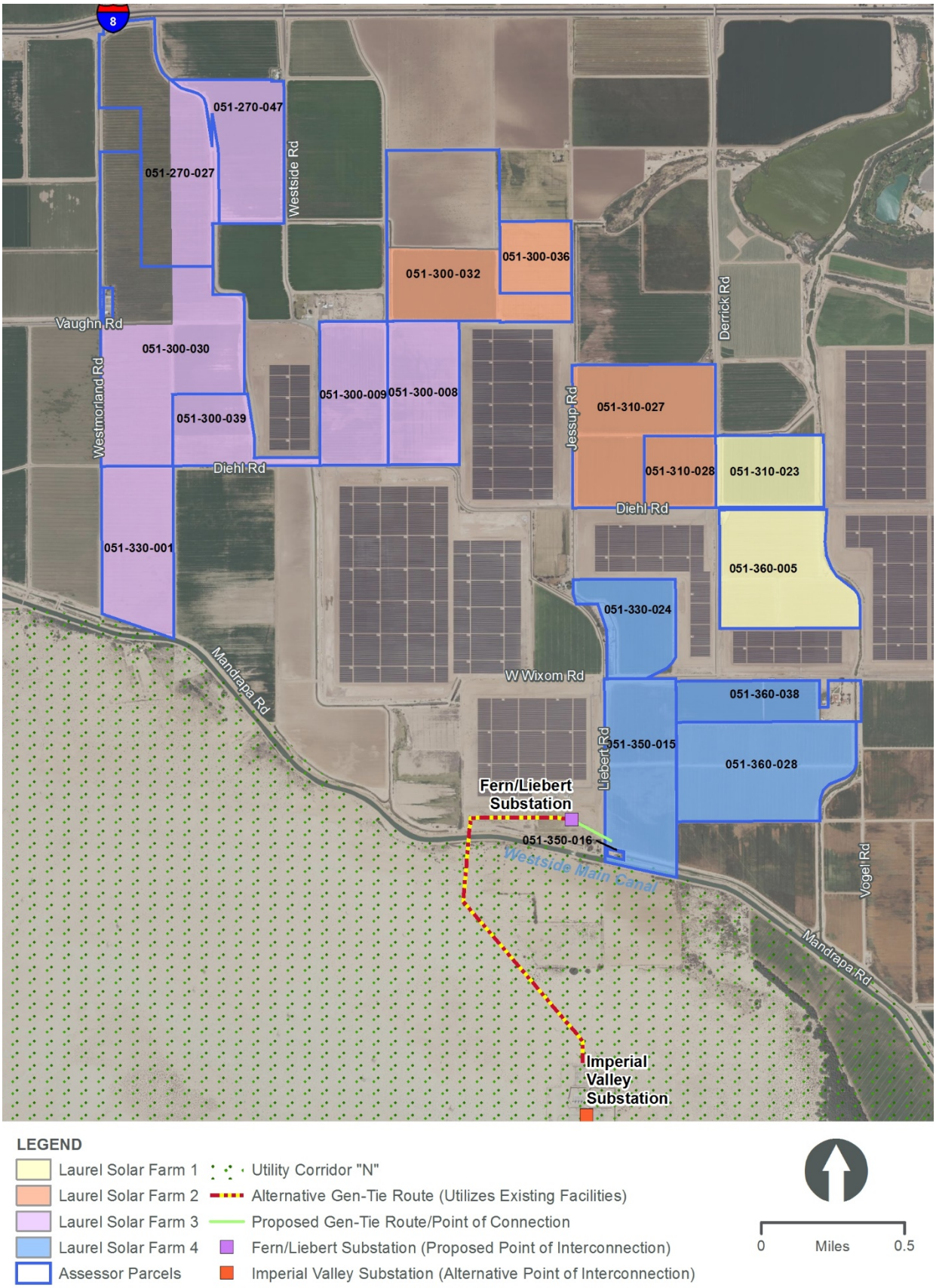
IID or one or both project applicants on behalf of IID would construct the Fern/Liebert Substation and associated facilities to interconnect the projects. Only planning level assumptions for the Fern/Liebert Substation are available at this time, and further details will be made available upon completion of preliminary and final engineering, using the most current IID design and construction practices, identification of field conditions, verification of availability of materials and equipment, and compliance with applicable environmental and permitting requirements.

The Fern/Liebert Substation will involve the construction of a 230 kV switchyard, including all relevant switchyard design features and appurtenances, on up to 25 acres of land. The switchyard will loop in the Imperial Valley Substation – Campo Verde 230 kV transmission line, which would necessarily include the construction of various transmission line structures and appurtenances. Maximum height of the various structures is not expected to exceed approximately 200 feet. The Fern/Liebert Substation may also include telecommunications facilities, fiber optic communication cables, equipment, and associated structures for diverse path routing of communications. IID anticipates working typical construction schedules during construction; however, the actual construction hours may vary based on workforce resources and activities.

~~3.3.8.2~~3.3.9.2 Alternative Point of Interconnection

Alternatively, power from the projects may be transmitted via the existing Campo Verde's 230 kV gen-tie line to SDG&E's Imperial Valley Substation located on BLM land (Figure 3-15~~Figure 3-15~~). This alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line, and no new construction would be required in this area. The environmental impacts associated with the construction, operation, maintenance, and decommissioning of the Campo Verde's 230 kV gen-tie line was addressed in an environmental assessment (Case File Number CACA 053151), prepared by BLM.

Figure 3-15. Points of Interconnection



~~3.3.9~~3.3.10 Operations and Maintenance Building

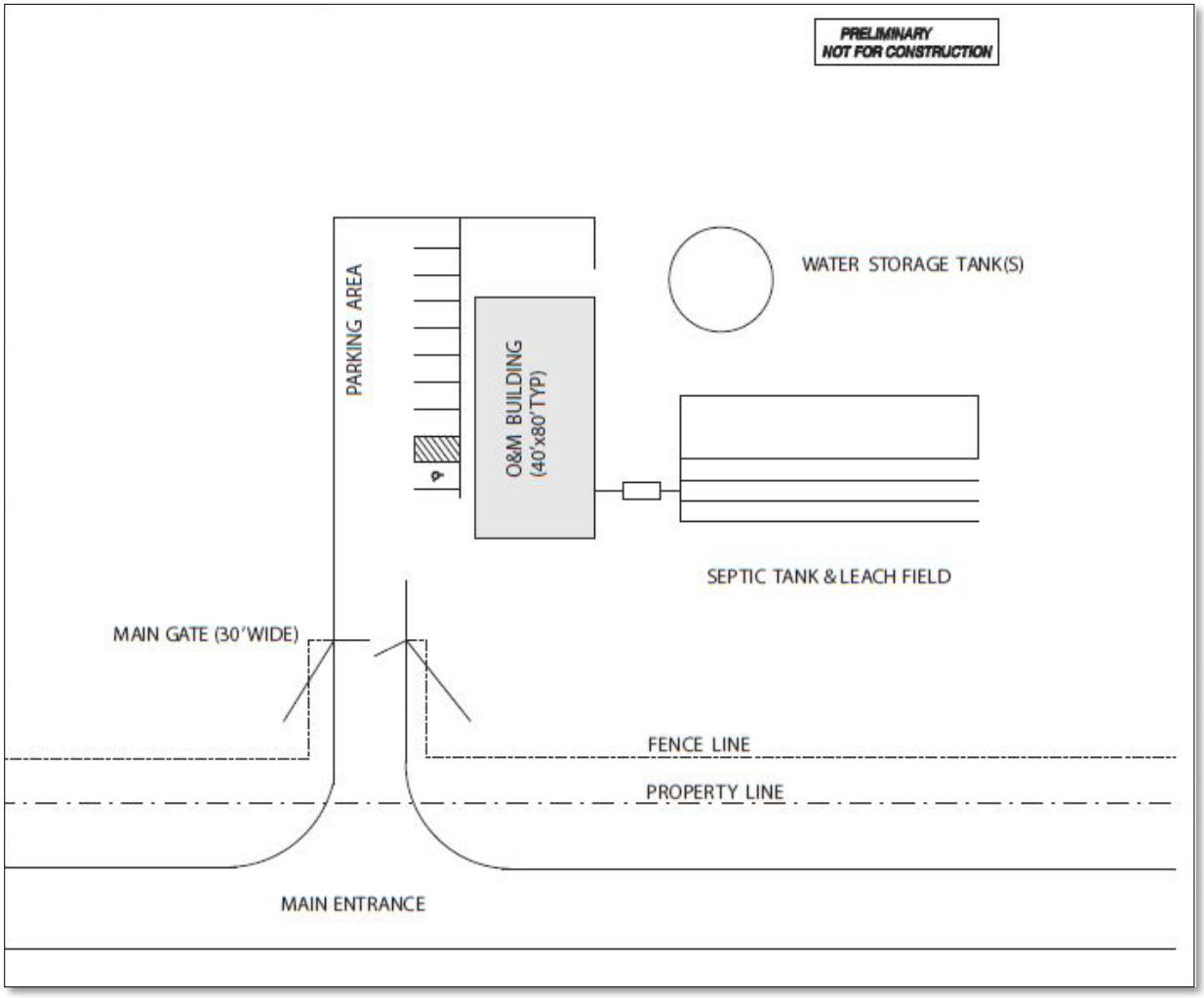
The projects are intended to feature one or more O&M buildings of approximately 40 by 80 feet in size, with associated on-site parking (Figure 3-16). The O&M building(s) will be steel framed, with metal siding and roof panels. The O&M building(s) may include the following:

1. Office
2. Repair building/parts storage
3. Control room
4. Restroom
5. Septic tank and leach field

Roads, driveways, and parking lot entrances will be constructed in accordance with Imperial County improvement standards. Parking spaces and walkways will be constructed in conformance with all California Accessibility Regulations.

As noted earlier, the projects may share O&M facilities and/or staff with one another and/or nearby solar projects, and/or may be remotely operated. Any unused O&M areas on-site could be covered by solar panels.

Figure 3-16. Conceptual Operations and Maintenance Building Area Plan



~~3.3.10~~3.3.11 Auxiliary Facilities

This section describes the auxiliary facilities that would be constructed and operated in conjunction with the project solar array facilities.

~~3.3.10.1~~3.3.11.1 Site Security and Fencing

The project sites will be enclosed with a chain link fence with barbed wire measuring up to 8 feet in height (from finished grade). As described in Section 4.1, Aesthetics and Visual Resources, the installation of fix tilt structures adjacent to roadways have the potential to create glare to the roadways adjacent to the project sites, with the exception of I-8. The *Reflectivity Analysis* (Appendix B of this EIR) recommends the installation of fence slats for all portions of the project sites with fixed-tilt trackers installed that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. The installation of fence slats would reduce potential glare or glint impacts on roadway travelers. For areas where fixed tilt PV panels are proposed, as a component of submittal of final engineering and design for the site plan layouts, PV array position and configuration, PV panel type, the potential glint and glare shall be studied based on the more detailed final engineering plans. This will determine whether fencing slats are required in specific locations of the perimeter fencing adjacent to project roadways. Fence slats would not be required for any of the projects that would construct single-axis or double-axis tracking systems.

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(s) or at the O&M Building(s), or similar technology, would be installed. Additionally, the projects may include additional security measures including, but not limited to, barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the projects.

Controlled access gates will be maintained at the main entrance to the project sites. Site access would be provided to offsite emergency response teams that respond in the event of an “after-hours” emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

~~3.3.10.2~~3.3.11.2 Lighting System

Minimal lighting would be required for operations and would be limited to safety and security functions. Motion sensitive, directional security lights would be installed to provide adequate illumination at points of ingress/egress pursuant to County of Imperial Building Code Requirements ~~(see Title 9, Division 3, Chapter 1: Special Development Standards, of the County’s Zoning Ordinance). All lighting will be directed downward and shielded to focus illumination of the desired areas only and to minimize light trespass in accordance with applicable County requirements.~~ All lighting would be directed downward and shielded to confine direct rays to the project site and muted to the maximum extent consistent with safety and operational necessity (Title 9, Division 17, Chapter 2: Specific Standards for all Renewable Energy Projects, of the County’s Zoning Ordinance).

~~3.3.10.3~~3.3.11.3 Access Roads

To accommodate emergency access, PV panels would be spaced to maintain proper clearance. A 20-foot wide access road would be constructed along the perimeter fence and solar panels to facilitate vehicle access and maneuverability for emergency unit vehicles. The internal access road would be graded and compacted (native soils) as required for construction, operations, maintenance, and emergency vehicle access.

~~3.3.10.4~~3.3.11.4 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). As shown on Figure 3-16, 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).

~~3.3.11~~3.3.12 Dust Suppression and Erosion Control

To minimize wind driven dust from the project site, all clearing, grading, and significant ground disturbing activities would be stopped during periods where the wind speed exceeds 25 miles per hour (averaged over 1 hour). Water would be the primary means of dust control and suppression but dust palliatives may also be utilized as needed.

~~3.3.12~~3.3.13 Water Supply, Treatment, and Storage

According to the *Water Supply Assessment (*WSA) prepared by Development Design & Engineering (Appendix L of this EIR), the anticipated water demand for construction, operation, and decommissioning of the projects is approximately 133.3 AFY. The proposed projects would require approximately 100 AFY of water for fire protection, sanitary water, panel washing, dust control, and potable water. It is estimated that during the 30-year project life, the operational water demand would be approximately 3,000 AF (100 AFY x 30 years). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 500 AF. Decommissioning may require approximately an additional 500 AF. Water will be obtained from the landowners' water supply or delivered via truck from off-site source(s). A small water treatment system may be installed to provide deionized water for panel washing.

~~3.3.13~~3.3.14 Operations and Maintenance

Once the projects are constructed, maintenance will generally be limited to the following: cleaning of PV panels, monitoring electricity generation, providing site security, and facility maintenance (replacing or repairing inverters, wiring, and PV modules).

It is expected that each of the projects will require an operational staff of up to five full-time employees, for a total of up to 20. Typically, up to three staff will work during the day shift for each project (sunrise to sunset), and the remainder during the night shifts and weekend. As noted earlier,

it is possible that the projects would share O&M, substation, and/or transmission facilities with one another and/or nearby projects. In such a scenario, the projects could share personnel, thereby potentially reducing the projects' on-site staff.

The projects would operate 7 days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur 7 days a week, 24 hours a day to ensure PV panel output when solar energy is available.

3.4 Construction

The construction period for the projects, from site preparation through construction, testing, and commercial operation, is expected to commence as early as quarter 3 of 2018 and will extend for approximately 15 months. The construction period may be extended if the projects are phased, with one or more projects beginning in quarter 3 of 2018, and the others being built at a later time to be determined by market conditions.

Construction of the facility will include the following activities:

- Site preparation
- Grading and earthwork
- Concrete foundations
- Structural steel work
- Electrical/instrumentation work
- Collector line installation
- Architecture and landscaping

The main pieces of equipment that may be used at any one time during construction may include:

- Crawler tractors/dozers
- Graders/scrapers
- Plate compactor
- Rubber-tired loaders
- Forklift
- Generator/compressor
- Vibratory post driver
- Flatbed truck
- Water truck

No roadways will be affected by the projects, except during the projects' construction period. Construction traffic will access the project sites from Derrick or Liebert Road. It is estimated that up to 350 workers per day (during peak construction periods) will be required.

Heavy construction is expected to occur between 6 a.m. and 5 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical

construction activities. Some activities may continue 24 hours per day, 7 days per week. Low level noise activities may potentially occur between the hours of 10 p.m. and 7 a.m. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies will be delivered to the project sites by truck. Truck deliveries will normally occur during daylight hours. However, there will be offloading and/or transporting to the project sites on weekends and during evening hours.

Earthmoving activities are expected to be limited to the construction of the access roads, O&M building, substation, and any storm water protection or storage (detention) facilities. Final grading may include revegetation with low lying grass or applying earth-binding materials to disturbed areas.

3.5 Project Features and Best Management Practices

The following describes standard project features and best management practices (BMP) that will be applied during construction and long-term operation of the projects.

3.5.1 Waste and Hazardous Materials Management

The projects will have minimal levels of materials on-site that have been defined as hazardous under 40 CFR, Part 261. The following materials are expected to be used during the construction, operation, and long term maintenance of the projects:

- Insulating oil – used for electrical equipment
- Lubricating oil – used for maintenance vehicles
- Various solvents/detergents – equipment cleaning
- Gasoline – used for maintenance vehicles

Hazardous materials and wastes will be managed, used, handled, stored, and transported in accordance with applicable local and state regulations. All hazardous wastes will be maintained at quantities below the threshold requiring a hazardous material management program (HMMP) (one 55 gallon drum). Though not expected, should any on-site storage of hazardous materials exceed one 55-gallon drum, an HMMP would be prepared and implemented.

3.5.2 Spill Prevention and Containment

Hazardous materials stored on-site will be in quantities of less than 55 gallons. Spill prevention and containment for construction and operation of the projects will adhere to EPA guidance on Spill Prevention Control and Countermeasures.

3.5.3 Wastewater/Septic System

A standard on-site septic tank and leach field may be used at the O&M building to dispose sanitary wastewater, designed to meet operation and maintenance guidelines required by Imperial County laws, ordinances, regulations, and standards. Figure 3-16 shows the general layout of the proposed septic tank and leach field at the O&M building.

3.5.4 Inert Solids

Inert solid wastes resulting from construction activities may include recyclable items, such as paper, cardboard, solid concrete and block, metals, wire, glass, type 1-4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. A Construction Waste Management Plan will be prepared for review by the County. Consistent with local regulations and the California Green Building Code, the Plan would provide for diversion of a minimum of 50 percent of construction waste from landfill.

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous, such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers, will be stored (in an approved storage facility/shed/structure) and disposed of as required by local and state regulations.

3.5.5 Health and Safety

Safety precautions and emergency systems will be implemented as part of the design and construction of the projects to ensure safe and reliable operation. Administrative controls will include classroom and hands-on training in operating and maintenance procedures, general safety items, and a planned maintenance program. These will work with the system design and monitoring features to enhance safety and reliability.

The projects will have an emergency response plan. The emergency response plan will address potential emergencies including chemical releases, fires, and injuries. All employees will be provided with communication devices, cell phones, or walkie-talkies, to provide aid in the event of an emergency.

3.6 Restoration of the Project Sites

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 plan for each site.

Project decommissioning would include the following activities:

- The facility would be disconnected from the utility power grid.
- Individual PV 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 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 panel support steel and support posts would be removed and recycled off-site by an approved metals recycler.
- All compacted surfaces within the project sites 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 offsite 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 2 years after seeding with a performance standard of 80 percent or better. The performance standards and requirements for site reclamation will be identified in the site reclamation plans. All permits related to decommissioning would be obtained, where required.

3.7 Required Project Approvals

3.7.1 Imperial County

The County would be required to approve the following pursuant to CEQA:

1. **Approval of CUPs.** Implementation of the projects would require the approval of four CUPs by the County to allow for the construction and operation of the proposed ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4 projects. The project sites are located on a total of 18 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural) and A-3 (Heavy Agriculture). Pursuant to Title 9, Division 5, Chapter 8, the following uses are permitted in the A-2 and A-2-R zone subject to approval of a CUP from

Imperial County: 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. Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" and "Transmission lines, including supporting towers, poles microwave towers, utility substations" are uses that are permitted in the A-3 Zone, subject to approval of a CUP.

2. **General Plan Amendment.** An amendment to the County's General Plan, Renewable Energy and Transmission Element is required to implement the proposed projects. CUP applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. The project sites are located outside of the RE Overlay Zone; therefore, the applicant is requesting a General Plan Amendment to include/classify the project sites into the RE Overlay Zone. No change in the underlying general plan land use is proposed.
3. **Zone Change.** The project sites are not located in the RE Overlay Zone; therefore, the applicant is requesting a zone change to include/classify the project sites into the RE Overlay Zone.
4. **Variance.** Variances are required 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 implementation of the project may involve the construction of transmission towers of up to 200 feet in height. Therefore, a variance for any structure exceeding the existing maximum height limit of 120 feet would be required.
5. **Lot Line Adjustment.** A lot line adjustment is proposed to add the project portion of APN 051-300-032 (Figure 3-2) to APN 051-300-036, leaving the northern portion of APN 051-300-032 as its own parcel.
6. **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 Board of Supervisors prior to making a decision on the projects.

Subsequent ministerial approvals may include, but are not limited to:

- Grading and clearing permits
- Building permits
- Reclamation plan
- Encroachment permits
- Transportation permit(s)

3.7.2 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:

- IID – Encroachment Permit
- IID – Water Supply Agreement

- ~~Imperial County Fire Department~~ICFD – Approval of Final Design of the Proposed Fire System
- Imperial County Public Works Department – Encroachment Permit
- California Regional Water Quality Control Board – ~~Notice of Intent~~NOI for General Construction Permit
- California Department of Fish and Wildlife (CDFW) Service (Trustee Agency) – Endangered Species Act Compliance
- U.S. Fish and Wildlife Service – Endangered Species Act Compliance
- Imperial County Air Pollution Control District – Rule 801 Compliance

4 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.

4.1 Organization of Issue Areas

This chapter provides an analysis of impacts for those environmental topics that the County determined could result in "significant impacts," based on preparation of an ~~Initial Study~~IS and review by the County's Environmental Evaluation Committee. Sections 4.1 through 4.14 discuss the environmental impacts that may result with approval and implementation of the projects, and where impacts are identified, recommends mitigation measures that, when implemented, would reduce significant impacts to a level less than significant. 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 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
- The identification of any residual significant impacts following mitigation

4.2 Format of the Impact Analysis

This analysis presents the potential impacts that could occur under the projects along with any supporting mitigation requirements. 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.

Changes that would result from the projects were evaluated relative to existing environmental conditions within the project sites as defined in Chapter 3 and illustrated on Figure 3-2 (Chapter 3). Existing environmental conditions are based on the time at which the ~~Notice of Preparation~~NOP was issued on January 4, 2018. In evaluating the significance of these changes, this 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 projects 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 project 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 CEQA Guidelines California Code of Regulations (CCR) Section 15093, explaining why the lead agency would proceed with the project in spite of the potential for significant impacts.

4.1 Aesthetics and Visual Resources

This section provides a description of the existing visual and aesthetic resources within the project area and relevant state and local plans and policies regarding the protection of scenic resources. This section incorporates several technical studies prepared for the projects including the *Reflectivity Analysis*, prepared by Aztec Engineering, to address potential glint and glare impacts relative to roadway traffic. In addition, the *Aesthetics Study* was prepared by Aztec Engineering to address potential aesthetics/visual resources impacts. Both reports are included in Appendix B and C, respectively, of this EIR. 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

Regional

Imperial County encompasses 4,597 square miles in the southeastern portion of California. The County is bordered by Riverside County on the north, the international border of Mexico on the south, San Diego County on the west and Arizona on the east. The length and breadth of the County provide for a variety of visual resources ranging from desert, sand hills, mountain ranges, and the Salton Sea.

The desert includes several distinct areas that add beauty and contrast to the natural landscape. The barren desert landscape of the Yuha Desert, lower Borrego Valley, East Mesa, and Pilot Knob Mesa provide a dramatic contrast against the backdrop of the surrounding mountain ranges. The West Mesa area is a scenic desert bordered on the east by the Imperial Sand Dunes, the lower Borrego Valley, the East Mesa, and Pilot Knob Mesa.

The eastern foothills of the Peninsular Range are located on the west side of the County. The Chocolate Mountains, named to reflect their dark color, are located in the northeastern portion of the County, extending from the southeast to the northwest between Riverside County and the Colorado River. These mountains reach an elevation of 2,700 feet making them highly visible throughout the County.

Project Vicinity

The surrounding area is predominantly flat as most of the land has been leveled to facilitate irrigation. Numerous canals, ditches, and drains owned by the ~~Imperial Irrigation District~~IID are located throughout the project sites and surrounding area providing irrigation water and drainage to the individual fields.

Agricultural fields, earthen berms, and overhead utility lines dominate the scenery in the project area. The project sites are located immediately adjacent to the Campo Verde solar facility, undeveloped agricultural lands generally to the north and further east, and desert lands on the south and further west. Similar to the southwestern portion of Imperial County near the U.S./Mexico border, undeveloped agricultural lands in the project vicinity are currently transitioning to renewable energy developments (Campo Verde solar facility, Imperial Solar Energy Center West).

The existing Imperial Valley Substation is located approximately 1 mile south of the ~~BRSF1~~ LSF4 site. The Imperial Valley Substation and the numerous transmission lines are readily visible

throughout this area and are located in Utility Corridor N (Figure 3-15 in Chapter 3). The purpose of Utility Corridor N is to allow a designated area within the BLM lands for utility structures, such as transmission lines and to group them together in one area rather than allow them to be scattered throughout BLM lands.

Project Sites

The proposed projects are located on undeveloped agricultural land encompassing approximately 1,380 acres. The project site is generally located east of the Westmorland Road, south of Interstate 8, west of Westside Main Canal, and north of Mandrapa Road.

The project sites consist of agricultural fields, earthen berms associated with the irrigation and drainage systems, and overhead utility lines. Drew Road is the major north-south arterial road in the area and borders the eastern limits of the solar energy facility site. Local roads (West Wixom Road, West Diehl Road, Jessup Road, Derrick Road, West Vaughn Road, Vogel Road, Westside Road, Liebert Road, and Mandrapa Road) provide access to the existing agricultural fields that comprise the solar energy facility sites. No residences are located within the project sites. However, there are six off-site rural residences within 500 feet of the solar energy facility sites boundaries:

- One residence located near the northwestern LSF3 boundary (north of West Vaughn Road)
- One residence located at the northern extent of LSF3 along Westside Road
- Two ~~One~~ residences north of the intersection of Westside Road and West Vaughn Road
- Two residences located along Liebert Road, one is located immediately west of ~~BRSF1~~LSF4, and the second is located due south of the intersection of West Diehl Road and Jessup Road
- One residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road

The project includes gen-tie lines that would connect with an off-site substation located immediately west of ~~BRSF1~~LSF4. An alternative gen-tie connection would involve connection to the Imperial Valley Substation, which is located within Utility Corridor “N” on BLM land.

4.1.1.1 Regulatory Setting

This section identifies and summarizes state and local laws, policies, and regulations that are applicable to the project.

State

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.

Local

Imperial County General Plan

The Imperial County General Plan (County of Imperial 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	The projects would result in changes to the visual character of the project site, which is currently characterized as an agricultural landscape. However, the general project area is transitioning to utility-scale solar facilities, such as Campo Verde and Imperial Solar Energy Center West. 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.
Objective 7.1: Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.	Consistent	The project sites are located within private lands in a generally agricultural portion of the County, with operating and developing utility-scale solar facilities in the area. The development of the project avoids both desert and mountain landscapes.

Source: County of Imperial 2008

4.1.1.2 Existing Conditions

A site reconnaissance was conducted to identify visual resources in the general project area, including the project sites. Viewpoints within the general 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 4.1-1 illustrates the photo-documented key observation points (KOP) 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. Descriptions of the KOPs by project site are as follows:

- LSF1
  - KOP 1: Corner of Derrick Road and West Diehl Road facing northeast

  - KOP 2: Corner of Derrick Road and West Diehl Road facing southeast
- LSF2
  - KOP 3: Corner of Derrick Road and West Diehl Road facing northwest
  - KOP 4: Northeast corner looking southwest from Jessup Road
- LSF3
  - KOP 5: Northwest corner at Westside Road and West Vaughn Road looking south
  - KOP 6: Center on West Vaughn Road looking northeast
  - KOP 7: Northwest corner looking southeast from field road
- ~~BRSF1~~LSF4
  - KOP 8: Corner of Liebert Road and West Wixom Road facing southeast
  - KOP 9: Vogel Road facing west
  - KOP 10: Southwest corner on West Wixom Road looking northeast

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.

Federal Highway Administration Assessment Model

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 4.1-2 illustrates this FHWA methodology. The FHWA terminology definitions are listed below.

Figure 4.1-1. Key Observation Points

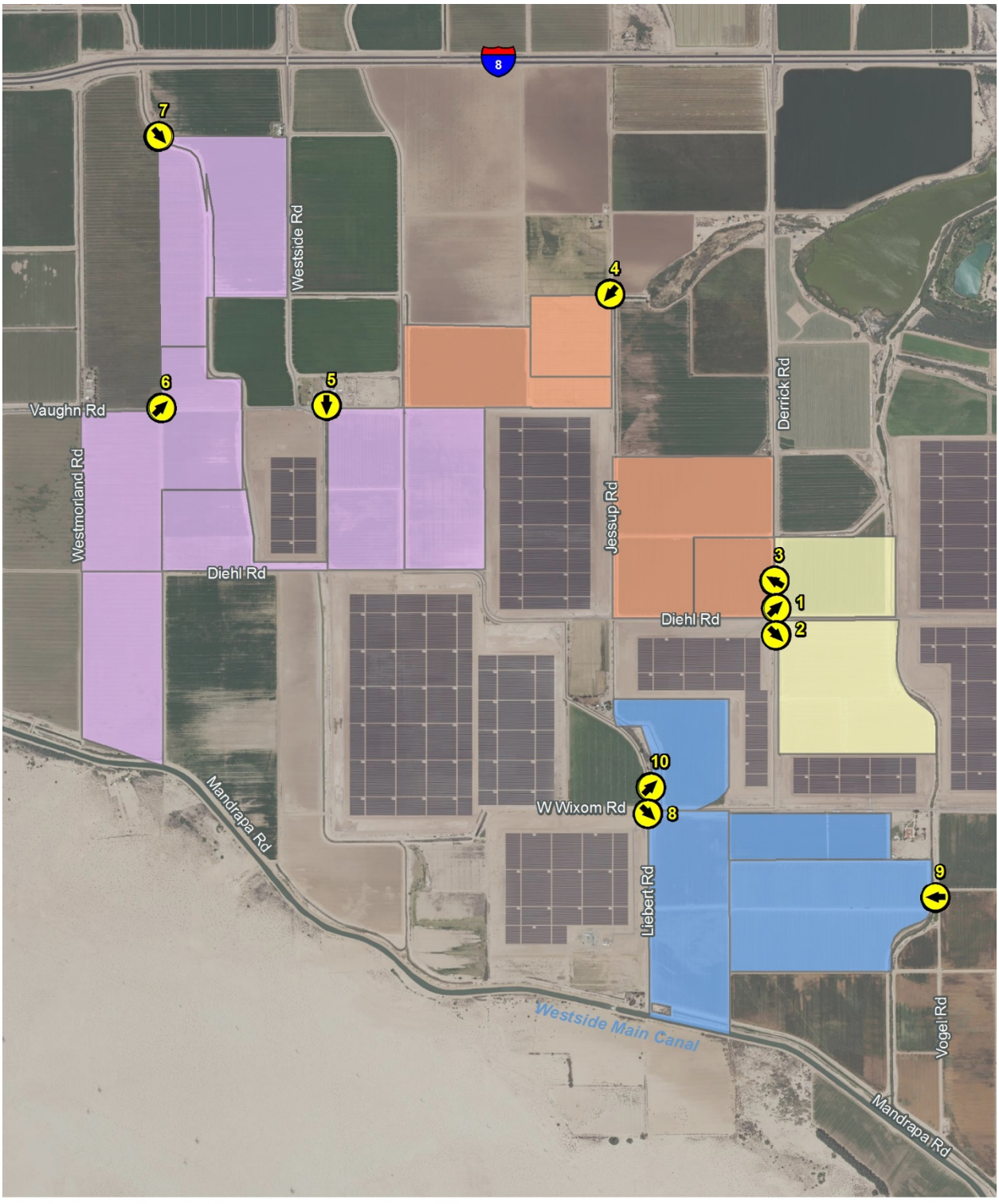
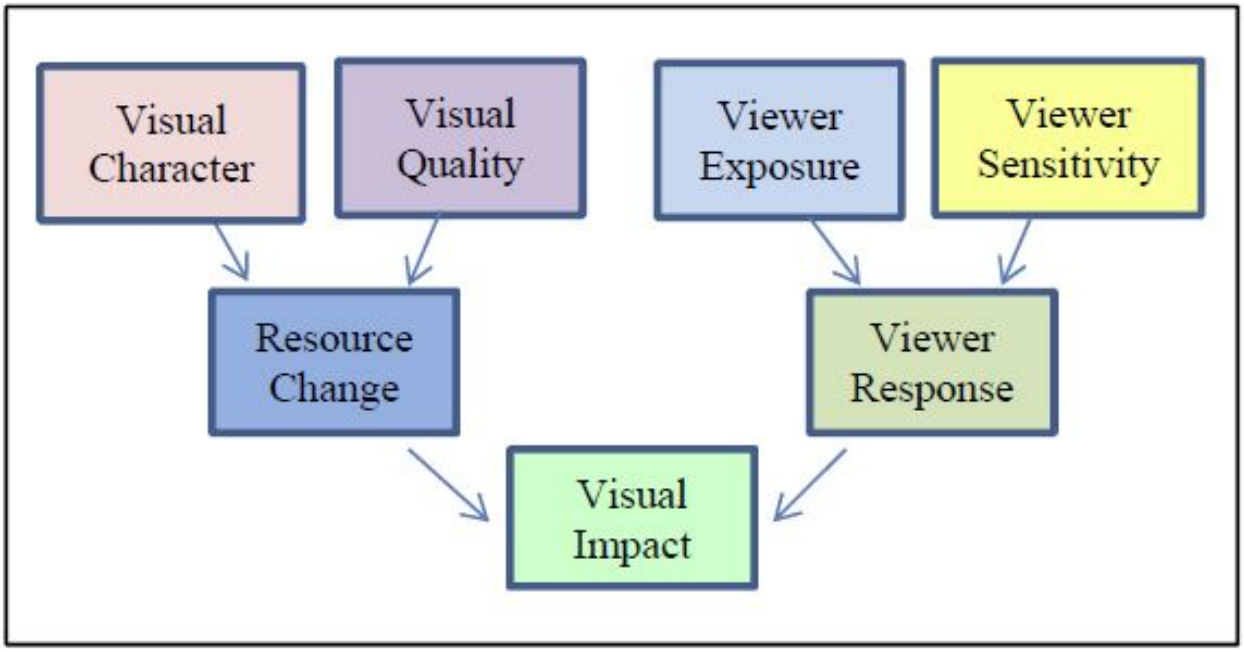


Figure 4.1-2. Federal Highway Administration Visual Environment Concept Diagram



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 5 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 5 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.

~~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 to 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 to 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 project as discussed further in Section 4.1.2.3, Impact Analysis.

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 is 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
- Line – edges or linear definition
- Color – reflective brightness (light, dark) and hue (red, green)
- Texture – surface coarseness
- 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

The existing visual character of the project sites is dominated by agricultural uses. Existing features within the project sites and surrounding area contributing to the existing visual form are existing solar farms, local roads, and overhead utilities. These features created a repetitive pattern throughout the area creating a limited variety of textures and colors throughout the area. The line features are primarily created by the roads and utility lines adjacent to the project sites. Continuity within the project area is accomplished by the green, gray, and brown colors throughout the project sites and surrounding lands. Because of the level terrain, common for the project sites and surrounding area, there are no dominant features in the fore- and middle-ground. The Jacumba Mountains to the west and the El Centinela (across the Mexico border) to the south create two visual forms within the background. There are no dominant features within the project sites or surrounding areas.

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.

Laurel ~~1~~ Solar Farm 1

The landscape in the vicinity of the LSF1 site is generally characterized as agricultural lands, adjacent solar farms, and the Fig Channel along the eastern boundary of the project site. Two KOPs are associated with LSF1, KOP 1, and KOP 2 (Figure 4.1-3 and Figure 4.1-4). Foreground views consist of local roads, irrigation canal, and a utility pole. The middleground is dominated by agricultural fields. The background consists of a few trees and more agricultural fields. Although not visible in the existing condition photographs prepared for LSF1, the mountains are visible to the west and the south. The existing visual quality of the LSF1 site is assessed below.

- Vividness: The fore- and middle-ground is comprised of cultivated and fallow agricultural fields, dirt roads, and utility poles. These features are consistent with the agricultural uses of the project site. The background, although not visible from KOP 1 or 2, does provide a view of the mountains, especially the El Centinela Mountain to the south. Although the mountains are visible to the west and south, the view is not a distinctive one to the project site. Therefore the vividness is low.
- Intactness: Surrounding land uses to the project site is a mix of solar farm and agricultural farms. The existing dirt roads, utility poles, and neighboring solar fields are considered typical visual intrusions in the area. The features do not degrade the natural landscape of the project site and surrounding area beyond what is considered typical for the area. Therefore, the intactness for LSF1 is moderate.
- Unity: The project site and surrounding area is predominately agricultural. This results in a harmonious visual pattern, and therefore, LSF1 has a high level of unity.

As described above, LSF1 project site has a moderately low vividness, moderately high intactness, and high unity, resulting in a moderate visual quality.

Laurel ~~2~~ Solar Farm 2

The landscape in the vicinity of the LSF2 site is generally characterized as agricultural lands, adjacent solar farms, and irrigation canal. Two KOPs are associated with LSF2, KOP 3 and KOP 4 (Figure 4.1-5 and Figure 4.1-6). Foreground views consist of local roads, agricultural irrigation canal, and agricultural farmland. The middleground is dominated by cultivated and fallow agricultural fields. The background consists of a few trees and more agriculture fields. Although not visible in the existing condition photographs prepared for LSF2, mountains are visible to the west and the south. The existing visual quality of the LSF2 site is assessed below.

- Vividness: The foreground is dominated by dirt roads, fallow agricultural fields and cultivated fields. Similar to the vividness for LSF1, the background, although not visible from the associated KOPs, does consist of the Jacumba and El Centinela Mountains. However, as seen in KOP 3 and KOP4, the low air quality creates a visual intrusion to the background views obscuring the view. There is no distinctive view of the surrounding mountains in the background or memorable landscapes. The vividness for LSF2 is low.
- Intactness: Similar to LSF1, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, irrigation canals, local and dirt roads, in the fore- and middle- ground are considered typical visual intrusions to the area.

Although not visible from KOP 3 or 4, the mountains are visible from the west to the south in the background. Therefore, LSF2 has a moderate level of intactness.

- Unity: The project site and surrounding area is predominately agricultural. This results in a harmonious visual pattern, and therefore, LSF2 has a high level of unity.

As described above, the LSF2 project site has a low vividness, moderately high intactness, and high unity, resulting in a moderate visual quality.

Laurel ~~3~~ Solar Farm 3

The landscape in the vicinity of the LSF3 site is generally characterized as agricultural lands, adjacent solar farms, and adjacent school. Three KOPs are associated with LSF3: KOP 5, KOP 6, and KOP 7 (Figure 4.1-7, Figure 4.1-8, and Figure 4.1-9). Foreground views consist of local roads, dirt roads, and fallow and cultivated agricultural fields. The middleground is dominated by cultivated and fallow agricultural fields, as well as local and dirt roads extending from the foreground. The background consists of a few trees and more agricultural lands as well as neighboring solar farms. The El Centinela Mountain is visible from LSF3, as seen in KOP 5 and 7. Although not visible in the existing condition photographs prepared for LSF3, mountains are also visible to the west. The existing visual quality of the LSF3 site is assessed below.

- Vividness: The foreground is dominated by dirt roads, local roads, fallow and cultivated agricultural fields, and agricultural structures. The background provides a view of the El Centinela Mountain, as seen in KOP 5 and 7 (Figure 4.1-7 and Figure 4.1-9). However, this view is common in the area, not distinctive to the site, and does not create a memorable landscape. The vividness for LSF3 is low.
- Intactness: Similar to LSF1, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, irrigation canals, local and dirt roads, in the fore- and middle- ground are considered typical visual intrusions to the area. The mountains are visible from the west to the south in the background. Therefore, LSF2 has a moderate level of intactness.
- Unity: The project site and surrounding area is predominately agricultural. This results in a harmonious visual pattern, and therefore, LSF3 has a high level of unity.

As described above, the LSF3 project site has a low vividness, moderately high intactness, and high unity, resulting in a moderate visual quality.

~~Big Rock 1 Solar Farm~~Laurel Solar Farm 4

The landscape in the vicinity of the LSF4~~BRSF1~~ site is generally characterized as agricultural lands, adjacent solar farms, and an adjacent residence. Three KOPs are associated with LSF4~~BRSF1~~: KOP 8, KOP 9, and KOP 10 (Figure 4.1-10, Figure 4.1-11, and Figure 4.1-12). Foreground views consist of local roads, dirt roads, fallow and cultivated agricultural fields, and utility poles and lines. The middleground is dominated by cultivated and fallow agricultural fields, as well as local and dirt roads extending from the foreground. The background consists of agricultural lands and neighboring solar farms. The El Centinela Mountain is visible from LSF4~~BRSF1~~, although not visible in the KOPs. The existing visual quality of the LSF4~~BRSF1~~ site is assessed below.

- Vividness: The foreground is dominated by dirt roads, local roads, fallow and cultivated agricultural fields, and agricultural structures. The background provides a view of the

mountains from the west to south. These views are not distinctive and common for the area. The vividness for LSF4~~BRSF1~~ is low.

- Intactness: Similar to LSF1, the landscape can be characterized as an agricultural landscape. The existing agricultural structures, utility poles, canals, local and dirt roads, in the fore- and middle- ground are considered typical visual intrusions to the area. The mountains are visible from the west to the south in the background. Therefore, LSF2 has a moderate level of intactness.
- Unity: The project site and surrounding area is predominately agricultural. This results in a harmonious visual pattern, and therefore, LSF4~~BRSF1~~ has a high level of unity.

As described above, the LSF4~~BRSF1~~ project site has a low vividness, moderately high intactness, and high unity, resulting in a moderate visual quality.

As described in Chapter 3, the project includes gen-tie lines that would connect with an off-site substation located immediately west of LSF4~~BRSF1~~. An alternative gen-tie connection would involve connection to the Imperial Valley Substation, which is located within Utility Corridor "N" on BLM land (Figure 3-15 in Chapter 3). The alternative gen-tie route would be located within desert lands. This particular area is characterized by a series of existing transmission structures and associated lines that connect from the private lands where existing solar facilities are located to the Imperial Valley Substation.

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.

The project sites can be seen by two types of sensitive viewer groups: roadway travelers and people residing and working within or near the project area.

- Roadway Travelers
  - Exposure: Drew Road is situated in a north/south direction and is not a heavily traveled roadway. These roadway travelers are anticipated to be residents who live in the area or farm workers that work in the area. Roadway speeds in the area are anticipated to be between 45 to 65 miles per hour. Interstate 8 is a well-traveled east/west highway. These roadway travelers are anticipated to be through travelers heading west towards San Diego or east towards El Centro. Roadway speeds in the area are anticipated to be 65 miles per hour. Because of the speed of travel of these travelers, the duration of exposure is quick and not directly adjacent to the project site. The terrain within the project area is relatively flat, which provides open space viewing opportunities. Roadway traveler's (traveling north) awareness would be visually drawn toward the background views of the mountains to the west. Roadway traveler's (traveling south) awareness would be visually drawn toward the background views of the El Centinela Mountain to the south. Roadway traveler exposure is considered to be low.
  - Sensitivity: The surrounding area has a limited population because of the agricultural nature and does not contain a diverse visual environment. Given the limited population in the area, the roadway traveler sensitivity is considered to be moderately 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. As shown on Figure 4.1-1, there are off-site rural residences located 500 feet of the solar energy facility site boundaries. Given the limited number of residences in the area, the residential viewer exposure is considered moderately low.
  - Sensitivity: Residents are generally considered a sensitive viewer group because of 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 proximity of the limited number of residences in the area, the residential viewer's sensitivity is considered moderately low.

The viewer response within the project area is considered to be moderate. Table 4.1-2 provides a summary of the FHWA viewer response ratings for the project site.

Table 4.1-2. Federal Highway Administration Viewer Response Ratings

Viewer Type	Visual Exposure	+	Visual Sensitivity	=	Viewer Response
Roadway Travelers	L		ML		ML
Residential Viewers	ML		ML		ML

L – low; ML – moderately low

Scenic Highways

According to the Caltrans California Scenic Highway Mapping System (Caltrans 2011), the projects are not located within a state scenic highway corridor, nor are there any state scenic highways located in proximity to the project sites.

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 PV 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.

Because of 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 site 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. 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

4.1.2.1 Thresholds of Significance

Based on CEQA Guidelines Appendix G, project impacts related to aesthetics are considered significant if any of the following occur:

- 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
- 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 (Appendix B and C), 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

- 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

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 4.1-1 Substantial Adverse Effect on a Scenic Vista.

Implementation of the projects would not degrade of the visual quality of a scenic vista.

The project sites are located in a rural portion of Imperial County with no topographic relief. The project sites are not located within an area containing a scenic vista designated by the State or the County's General Plan (Imperial County 2008). The northern boundary of the LSF3 site (the northern most project site) is located approximately 0.25 mile south of I-8. However, I-8 is not designated as a state scenic highway nor are any of the roadways abutting or surrounding the project sites designated or proposed scenic roadways. None of the KOPs ~~key observation points~~ 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 approximately 20 feet) would not create a permanent visual obstruction for the background views of the mountains to motorists driving south along Westside Road, and the view would generally remain visible to motorists. Furthermore, the existing agricultural ground disturbing activities (plowing) increase the amount of particulate matter in the air, 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.

The power lines that would connect with the proposed substation would be similar to the existing area conditions. The alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line, and no new construction would be required in this area.

Based on these factors, implementation of the projects would not have a substantial direct or indirect effect on a scenic vista or distinct view and no impact is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.1-2 Substantial Adverse Effect on a Scenic Highway.

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.

The northern boundary of the LSF3 site is located approximately 0.25 mile south of I-8. According to the Caltrans California Scenic Highway Mapping System (Caltrans 2011), the projects and supporting gen-tie alignments are not located within a state scenic highway corridor, nor are there

any state scenic highways located in proximity to the project sites. Therefore, implementation of the proposed projects would not result in damage to scenic resources, including, but not limited to, trees, rock outcroppings, and ridgelines within a state scenic highway. Implementation of the proposed projects would not result in a substantial adverse effect on a scenic highway. No impact is identified for this issue area.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.1-3 Changes to Visual Character.

Implementation of the projects would not substantially degrade the existing visual character or quality of the project site and its surroundings.

The projects consist of the construction of solar arrays in some areas of the project sites' energy storage systems, substations, and gen-tie. The project components would result in a change in the existing land use at the project sites from an agricultural land use to a solar facility. This would alter the visual character of the project sites, both in terms of the on-site features proposed under the projects and in the context of the study areas' relationship within the context of the currently surrounding agricultural landscape, as well as existing and developing solar facilities.

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 area and its surroundings as a result of converting existing agricultural lands to a large-scale solar energy facility. A portion of the facilities may be used for energy storage systems, which would comprise a series of containers (approximately 40 feet long by 8 feet wide by 8 feet high), housed in pad- or post-mounted, stackable metal structures but may also be housed in a dedicated building in compliance with applicable regulations. The general area is essentially flat; therefore, no substantial site grading and landform change would occur.

Although the project sites would be visually disrupted in the short-term during construction because of 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 site during construction would not be substantially degraded in the short-term and related impacts would be considered less than significant.

As discussed in Chapter 3, the major generation equipment that would be installed in conjunction with the project includes solar arrays, energy storage system, inverter modules and transformers, electrical substation, and an electrical distribution system. As described in Chapter 3, the solar energy facility site would be enclosed by an 8-foot security fence comprised of cyclone fencing with barbed-wire. In a few locations, slats would be required to prevent glint to motorists traveling on adjacent roadways. Fence slating would only be required in certain locations and under certain conditions (refer to Impact 4.1-4 below for a detailed discussion related to this issue). The fence slating would only be required if fixed-mounted PV panels are installed at specific locations.

Visual simulations were created for two key viewpoints to represent "typical views" that are associated with the project components. Figure 4.1-3 through Figure 4.1-12 present the existing conditions and visual simulations to illustrate the visual representation of the proposed condition to illustrate 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 because of 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 photo-simulations are simulations based on a photographic montage and three-dimensional 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 mountains to the west. No scenic resources have been identified on the project sites.

Figure 4.1-3 through Figure 4.1-12 illustrates the visual changes from two perspective viewpoints. The visual simulations show the solar arrays mounted on dual axis tracker blocks, which are the largest of the three types of PV structures that could be installed within the projects (fixed-mounted, single-axis, and double-axis tracker systems). The changes from the existing condition to the proposed condition would have a significant visual change from agricultural fields to a solar farm facility. As stated in the Existing Conditions, Section 4.1.1.2, the sites have low vividness, moderate intactness, and high visual unity, resulting in a moderate visual quality.

Roadway travelers would have a low viewer exposure and moderately low sensitivity resulting in a moderately low viewer response. Given the limited views of the project area, residential viewers having a moderately low exposure, combined with a moderately low sensitivity results in a moderately low viewer response.

The project sites are located in proximity to existing and planned renewable energy infrastructure including other developed or proposed solar PV projects, including the existing Campo Verde Solar Facility immediately adjacent to the south and east of the project sites. Considering the surrounding area is currently transitioning from agriculture to utility scale 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 moderate existing visual quality, and no resources were identified in the area with the exception of the background views of the mountains. Because of dust disturbing activities, common with existing agricultural uses the background views to the mountains are visually obstructed because of the degraded air quality. The proposed heights of project components would temporarily obscure the background views of the mountains during the sun’s lowest and highest point because of the tracking nature of the proposed solar panel bases proposed. In addition, the power lines that will connect with the proposed substation would be similar to the existing conditions in the area. The alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line, and no new construction would be required in this area.

The viewer response ratings as identified in Table 4.1-3, Summary of Key View Ratings by project site, are considered to be moderately low, combined with a moderately low resource change that would result in a moderately low visual impact because of the construction of the project, these changes would have a less than significant impact on the existing onsite visual character.

Table 4.1-3. Summary of Key View Ratings

Project Site	Existing Visual Quality	Viewer Response	+	Resource Change	+	Visual Impact
~~BRSF1~~	~~M~~	~~ML~~		~~ML~~		~~ML~~
LSF1	M	ML		ML		ML
LSF2	M	ML		ML		ML
LSF3	M	ML		ML		ML
LSF4	M	ML		ML		ML

~~BRSF1 – Big Rock 1 Solar Farm;~~ LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4
M – moderate; ML – moderately low

Figure 4.1-3. Existing and Proposed Views at Key Observation Point 1 (Laurel ~~1~~ Solar Farm 1 Project Site)

Laurel ~~1~~ Solar Farm 1 Existing Condition: Corner of Derrick Road and West Diehl Road facing northeast

Laurel ~~1~~ Solar Farm 1 Proposed Condition: View of solar arrays from the corner of Derrick Road and West Diehl Road facing northeast

Figure 4.1-4. Existing and Proposed Views at Key Observation Point 2 (Laurel ~~1~~ Solar Farm 1 Project Site)

Laurel ~~1~~ Solar Farm 1 Existing Condition: Corner of Derrick Road and West Diehl Road facing southeast

Laurel ~~1~~ Solar Farm 1 Proposed Condition: View of solar arrays from the corner of Derrick Road and West Diehl Road facing southeast

Figure 4.1-5. Existing and Proposed Views at Key Observation Point 3 (Laurel ~~2~~ Solar Farm 2 Project Site)

Laurel ~~2~~ Solar Farm 2 Existing Condition: Corner of Derrick Road and West Diehl Road facing northwest

Laurel ~~2~~ Solar Farm 2 Proposed Condition: View of solar arrays, energy storage system, and O&M building from the corner of Derrick Road and West Diehl Road facing northwest

Figure 4.1-6. Existing and Proposed Views at Key Observation Point 4 (Laurel ~~2~~ Solar Farm 2 Project Site)

Laurel ~~2~~ Solar Farm 2 Existing Condition: Northeast corner looking southwest from Jessup Road

Laurel ~~2~~ Solar Farm 2 Proposed Condition: View of solar arrays from the northeast corner looking southwest from Jessup Road

Figure 4.1-7. Existing and Proposed Views at Key Observation Point 5 (Laurel ~~3~~ Solar Farm 3 Project Site)

Laurel ~~3~~ Solar Farm 3 Existing Condition: Northwest corner at Westside Road and West Vaughn Road looking south

Laurel ~~3~~ Solar Farm 3 Proposed Condition: View of solar arrays from the northwest corner at Westside Road and West Vaughn Road looking south

Figure 4.1-8. Existing and Proposed Views at Key Observation Point 6 (Laurel ~~3~~ Solar Farm 3 Project Site)

Laurel ~~3~~ Solar Farm 3 Existing Condition: Center on West Vaughn Road looking northeast

Laurel ~~3~~ Solar Farm 3 Proposed Condition: View of solar arrays from the center on West Vaughn Road looking northeast

Figure 4.1-9. Existing and Proposed Views at Key Observation Point 7 (Laurel ~~3~~ Solar Farm 3 Project Site)

Laurel ~~3~~ Solar Farm 3 Existing Condition: Northwest corner looking southeast from field road

Laurel ~~3~~ Solar Farm 3 Proposed Condition: View of solar arrays from the northwest corner looking southeast from field road

Figure 4.1-10. Existing and Proposed Views at Key Observation Point 8 (~~Big Rock 1~~Laurel Solar Farm 4 Project Site)

~~Big Rock 1~~Laurel Solar Farm 4 Existing Condition: Corner of Liebert Road and West Wixom Road facing southeast

~~Big Rock 1~~ Laurel Solar Farm 4 Proposed Condition: View of solar arrays and transmission line from the corner of Liebert Road and West Wixom Road facing southeast

Figure 4.1-11. Existing and Proposed Views at Key Observation Point 9 (~~Big Rock 1~~Laurel Solar Farm 4 Project Site)

~~Big Rock 1~~Laurel Solar Farm 4 Existing Condition: Vogel Road facing west

~~Big Rock 1~~Laurel Solar Farm 4 Proposed Condition: View of solar arrays from Vogel Road facing west

Figure 4.1-12. Existing and Proposed Views at Key Observation Point 10 (~~Big Rock 1~~Laurel Solar Farm 4 Project Site)

~~Big Rock 1~~Laurel Solar Farm 4 Existing Condition: Southwest corner on West Wixom Road looking northeast

~~Big Rock 1~~Laurel Solar Farm Proposed Condition: View of substation, energy storage system, and O&M building from the southwest corner on West Wixom Road looking northeast

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.1-4 New Sources of Nighttime Lighting and Glare.

The projects would not create new source of light and glare, which could adversely affect day or nighttime views in the project area.

As described in Chapter 3, the project would include new sources of nighttime lighting. In addition, given the nature of the project (e.g., solar facility), 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. Motion sensitive, directional security lights would be installed to provide adequate illumination at points of ingress/egress pursuant to County of Imperial Building Code Requirements. ~~(see Title 9, Division 3, Chapter 1: Special Development Standards, of the County's Zoning Ordinance). All lighting will be directed downward and shielded to focus illumination on the desired areas only and to minimize light trespass in accordance with applicable County requirements.~~ All lighting would be directed downward and shielded to confine direct rays to the project site and muted to the maximum extent consistent with safety and operational necessity (Title 9, Division 17, Chapter 2: Specific Standards for all Renewable Energy Projects, of the County's Zoning Ordinance). If additional lighting should be required for nighttime maintenance, portable lighting equipment would be used. 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 solar systems, which convert sunlight directly into electricity, and by their shear nature, are non-reflective. By nature, PV 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 modules.

Reflected light from standard PV 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 (Appendix B of this EIR). 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.

To evaluate the glare hazard from the proposed projects, a geometric analysis was conducted to evaluate the occurrences of geometric alignment of the PV plant reflected image with potential observers, located at existing public roadways in the proximity of the project sites. The Reflectivity Analysis for the projects was completed using fix tilt, single axis trackers, and double axis trackers. The analysis was based on flat PV modules with low reflectivity characteristics. As shown in Table 4.1-4, the analysis determined that the double axis trackers had no risk of glare to roadway

traffic. Single axis trackers would result in a geometric glare risk, but only if the observer is directly facing the sun's disk.

The analysis determined that installation of fix tilt structures adjacent to roadways have the potential to create glare to the roadways adjacent to the project sites, with the exception of I-8. The Reflectivity Analysis recommends the installation of fence slats for all portions of the project sites with fixed-tilt trackers installed that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road. The installation of fence slats would reduce potential glare or glint impacts on roadway travelers. It should be noted that the Reflectivity Analysis is based on preliminary design of the project, including the conceptual layout of the solar arrays and conceptual specifications of the actual PV panels that will be installed. The potential glare impact associated with fix tilt structures only, is considered significant. Implementation of Mitigation Measure VQ-1 would reduce this impact to a level less than significant.

Table 4.1-4. Potential Glare Impacts on Adjacent Roadways Based on Conceptual Site Plans

Roadways	PV Supporting Structure		
	Fix Tilt	Single Axis Tracker	Double Axis Tracker
Westside Road	Everyday	Geometric glare risk	No glare potential
West Vaughn Road	Between March 26 and October 7	Geometric glare risk	No glare potential
West Diehl Road	Between March 26 and October 7	Geometric glare risk	No glare potential
Derrick Road	Everyday	Geometric glare risk	No glare potential
West Wixom Road	Between March 26 and October 7	Geometric glare risk	No glare potential
I-8	No glare potential	Geometric glare risk	No glare potential
Drew Road	Between March 26 and October 7	Geometric glare risk	No glare potential

Source: Appendix B of this EIR

PV – photovoltaic

Given the projects' distance from the Naval Air Facility El Centro of 5 miles to the northeast, the projects would not use materials that would reflect significant levels of glare or glint upwards in a manner that could affect flight operations. The power lines that would connect with the proposed substation would be similar to the existing conditions in the area. The alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line. Based on these considerations, implementation of the proposed project would result in a less than significant impact related to glare or glint to aircraft.

Mitigation Measure(s)

VQ-1 For areas where Fixed Tilt PV panels are proposed, as a component of submittal of final engineering and design for the site plan layouts, PV array position and configuration, PV panel type, the potential glint and glare shall be studied based on the more detailed final engineering plans to determine whether fencing slats are required in specific locations of the perimeter fencing adjacent to project roadways. This measure is required for any proposed fixed-tilt trackers proposed to be installed in locations that face the following roadways: Westside Road, West Vaughn Road, West Diehl Road, Derrick Road, West Wixom Road, and Drew Road.

This measure is not required for single-axis and double-axis tracker systems.

4.1.3 Decommissioning/Restoration and Residual Impacts

4.1.3.1 Decommissioning/Restoration

The project sites are relatively flat and primarily characterized by a level elevation. 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.

4.1.3.2 Residual

Implementation of the mitigation measure contained in this section would reduce potential glare and glint impacts on 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 on the visual character of the project area or add substantial amounts of light and glare.

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4.2 Agricultural Resources

This section provides an overview of existing agricultural resources within the project sites and identifies applicable federal, state, and local policies related to the conservation of agricultural lands (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 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~~s~~~~)~~ for the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3~~,~~ and LSF4 sites in May 2017, and these are included in Appendix D of this EIR.

No forestry resources are present within the project sites and, therefore, this section focuses on issues related to agricultural resources.

4.2.1 Environmental Setting

Agriculture has been the single most important economic activity of Imperial County throughout the 1900s, and is expected to play a major economic role in the foreseeable future. The gross annual value of agricultural production in the County has hovered around $1 billion for the last several years, making it the County's largest source of income and employment.

Imperial County agriculture is a major producer and supplier of high quality plant and animal foods and non-food products. In 2016, agriculture contributed a total of $4.50 billion to the county economy. Vegetable and melon crops were the single largest production category by dollar value ($1.01 billion), comprising 48.8 percent of the county total. At 22.7 percent, livestock represented the second largest category ($468.2 million) and consisted mostly of feedlot cattle ($400.6 million). Field crops ranked third with $381.2 million and 18.5 percent. Together, these three categories accounted for 89.9 percent of the county's direct farm production values (Imperial County Agricultural Commissioner 2017).

4.2.1.1 Regulatory Setting

This section identifies and summarizes 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 land 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 10-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 10 years.

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 that local agencies make both the Consistency with the Williamson Act and Public Interest findings.

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 because of 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.

California Farmland Mapping and Monitoring Program

The California 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, as defined below, and uses a minimum mapping unit size of 10 acres.

- Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.
- Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.
- Urban and Built-up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Common examples include

residential, industrial, commercial, institutional facilities, prisons, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, and water control structures.

- Water is defined as perennial water bodies with an extent of at least 40 acres.
- Other Land is land not included in any other mapping category. Common examples include low density rural developments, vegetative and riparian areas not suitable for livestock grazing, confined animal agriculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. More detailed data on these uses is available in counties containing the Rural Land Use Mapping categories.

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 2 years. Table 4.2-1 provides a summary of agricultural land within Imperial County converted to non-agricultural uses during the time frame from 2010 to 2012.

Table 4.2-1. Imperial County Change in Agricultural Land Use Summary (2010 to 2012)

Land Use Category	Total Acreage Inventoried		2010 to 2012 Acreage Changes			
	2010	2012	Acres Lost (-)	Gained (+)	Total Acreage Changed	Net Acreage Changed
Prime Farmland	194,136	192,951	1,597	412	2,009	-1,185
Farmland of Statewide Importance	307,221	305,614	2,441	834	3,275	-1,607
Unique Farmland	2,141	2,074	82	15	97	-67
Farmland of Local Importance	35,773	37,687	1,273	3,187	4,460	1,914
Important Farmland Subtotal	***539,271***	***538,326***	***5,393***	***4,448***	***9,841***	***-945***
Grazing Land	0	0	0	0	0	0
Agricultural Land Subtotal	***539,271***	***538,326***	***5,393***	***4,448***	***9,841***	***-945***
Urban and Built-Up Land	28,487	28,790	15	318	333	303
Other Land	460,001	460,643	319	961	1,280	642
Water Area	749	749	0	0	0	0
Total Area Inventoried	**1,028,508**	**1,028,508**	**5,727**	**5,727**	**11,454**	**0**

Source: California DOC 2015

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.

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 because of 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 2015).

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 [of the Agricultural Element] 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 [Agricultural] element) before granting final approval of any proposal, which removes land from the Agriculture category.

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 ICPDS ~~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 these criteria should not be approved.

Table 4.2-2 provides a General Plan goal and policy consistency evaluation for the projects.

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, Farmland of Statewide Importance, and Unique Farmland to non-agricultural uses, but mitigation is provided to prevent 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, the project sites are located immediately adjacent to existing (Campo Verde Solar Project) or proposed (VEGA SES Solar Project) utility-scale solar energy projects. 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 IID to fallow irrigated lands elsewhere in the County to meet IID water conservation goals.

Table 4.2-2. Project Consistency with Applicable General Plan Agricultural Policies

General Plan Policies	Consistency with General Plan	Analysis
Objective 1.3.Conserve Important Farmland for continued farm related (non-urban) use and development while ensuring its proper management and use.	Consistent	The projects would result in the temporary conversion of Important Farmland to non-agricultural uses. This would be considered an adverse impact requiring mitigation. Reclamation plans will be 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 in some locations. As shown on Figure 4.2-1, the project sites are located immediately adjacent to existing (Campo Verde Solar Project) or proposed (VEGA SES Solar Project) utility-scale solar energy projects. Additionally, the proposed projects do not include a residential component. Upon approval of a CUP and zone change into the RE Overlay Zone designation, the proposed projects would be an allowable use within applicable agricultural zones, and the existing zoning of the project sites would be consistent with the existing General Plan land use designation. In areas where solar development would be located in proximity to existing agricultural lands, there would be no nuisance issues that would be normally associated with residential and agricultural uses being located in proximity to one another.
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 the approval of a CUP, the projects would be consistent with the County's Land Use Ordinance and thus also consistent with the land use designation of the site. In addition, mitigation is required to prevent permanent conversion of valuable farmland. Reclamation plans will be prepared for each of the project sites, which, when implemented, would return the sites to agricultural uses after the solar uses are discontinued.
Objective 1.6. Recognize and preserve unincorporated areas of the County, outside of 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 the approval of a CUP, the projects would be considered an allowable use in an agricultural zone as a special use.

Table 4.2-2. Project Consistency with Applicable General Plan Agricultural Policies

General Plan Policies	Consistency with General Plan	Analysis
Objective 1.8. Allow conversion of agricultural land to non-agricultural uses including renewable energy only where a clear and immediate need can be demonstrated, based on economic benefits, 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 a lack of alternative sites.	Consistent	The projects are designated as agricultural land uses; however, with the approval of a CUP, the projects would be consistent with the County's Land Use Ordinance. Therefore, the projects would also be consistent with the County's General Plan land use designation.
Objective 1.9. Preserve major areas of Class II and III soils which are currently nonirrigated but which offer significant potential when water is made available.	Consistent	The projects would temporarily convert Class II and III soils to non-agricultural uses, but mitigation is provided to prevent permanent conversion.
Objective 1.11. Control and prevent soil erosion when possible.	Consistent	The projects would implement BMPs within the sites during construction and long-term operation of the projects.
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 projects are designated for agriculture land use in the County General Plan. The projects would include development of solar facilities adjacent to productive agricultural lands in some locations; however, the project sites are located immediately adjacent to existing (Campo Verde Solar Project) or proposed (VEGA SES Solar Project) utility-scale solar energy projects. Additionally, this development would not include a residential component that would induce urbanization adjacent to the projects. Furthermore, with the approval of a General Plan Amendment, Zone Change, and CUP, 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	The projects would include development of solar facilities adjacent to productive agricultural lands in some locations; however, the project sites are located immediately adjacent to existing (Campo Verde Solar Project) or proposed (VEGA SES Solar Project) utility-scale solar energy projects. Neither construction nor operation of the solar facility would not make it difficult to economically or conveniently farm.

Table 4.2-2. Project Consistency with Applicable General Plan Agricultural Policies

General Plan Policies	Consistency with General Plan	Analysis
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 solar facilities in an area where utility-scale facilities already exist. While these facilities will introduce development in the area, they do not include residential uses that would, in turn, create a demand for other uses such as commercial, employments centers, and supporting services. The project would be located adjacent to the existing Campo Verde solar facility.
Objective 2.3. Maintain agricultural lands in parcel size configurations that help assure that viable farming units are retained.	Consistent	The projects consist of the construction and operation of a solar facility. The projects are a temporary industrial use and would not induce growth in the area nor result in the expansion of urban boundaries. The projects would temporarily convert agricultural land to non-agricultural uses. Reclamation ~~Restoration~~ plans will be prepared for each of the project sites, which, 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	The projects consist of the construction and operation of a solar facility. The projects are an industrial use and would not induce population growth in the area nor result in the expansion of urban boundaries. 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 plans will be prepared for each of the project sites, which, when implemented, would return the sites to agricultural uses after the solar uses are discontinued.
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	Upon approval of a CUP and zone change into the RE Overlay Zone designation, the proposed projects would be an allowable use within applicable agricultural zones, and the existing zoning of the project sites would be consistent with the existing General Plan land use designation.
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	Upon approval of a CUP and zone change into the RE Overlay Zone designation, the proposed projects would be an allowable use within applicable agricultural zones. Additionally, the projects do not include the development of housing.

Table 4.2-2. Project Consistency with Applicable General Plan Agricultural Policies

General Plan Policies	Consistency with General Plan	Analysis
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. 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.
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. As discussed below, 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. Mitigation Measure AG-2 requires the project applicant to develop a Pest Management Plan prior to the issuance of a grading permit or building permit (whichever occurs first).

Source: County of Imperial General Plan 2015

BMP – best management practice; CUP – conditional use permit; IID – Imperial Irrigation District

4.2.1.2 Existing Conditions

Important Farmland

According to the Important Farmland maps prepared by the California DOC (California DOC 2016) and as shown in Figure 4.2-1, the project sites contain Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Other Land. Table 4.2-3 provides an acreage breakdown for the project sites.

Table 4.2-3. Farmland Mapping and Monitoring Program Designations within the Project Sites

Important Farmland	Project Site					Totals
	~~**BRSF1**~~	LSF1	LSF2	LSF3	LSF4	
Prime Farmland	~~194.12~~	1.84	40.17	271.40	194.12	**507.53**
Farmland of Statewide Importance	~~126.92~~	159.04	237.15	304.18	126.92	**827.29**
Unique Farmland	~~--~~	9.27	--	--	--	**9.27**
Other Land	~~17.50~~	0.37	1.06	2.45	17.50	**34.88**
Urban and Built-Up Land	~~0.78~~	0.63	1.54	1.83	0.78	**4.78**

~~BRSF1 – Big Rock 1 Solar Farm;~~ LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

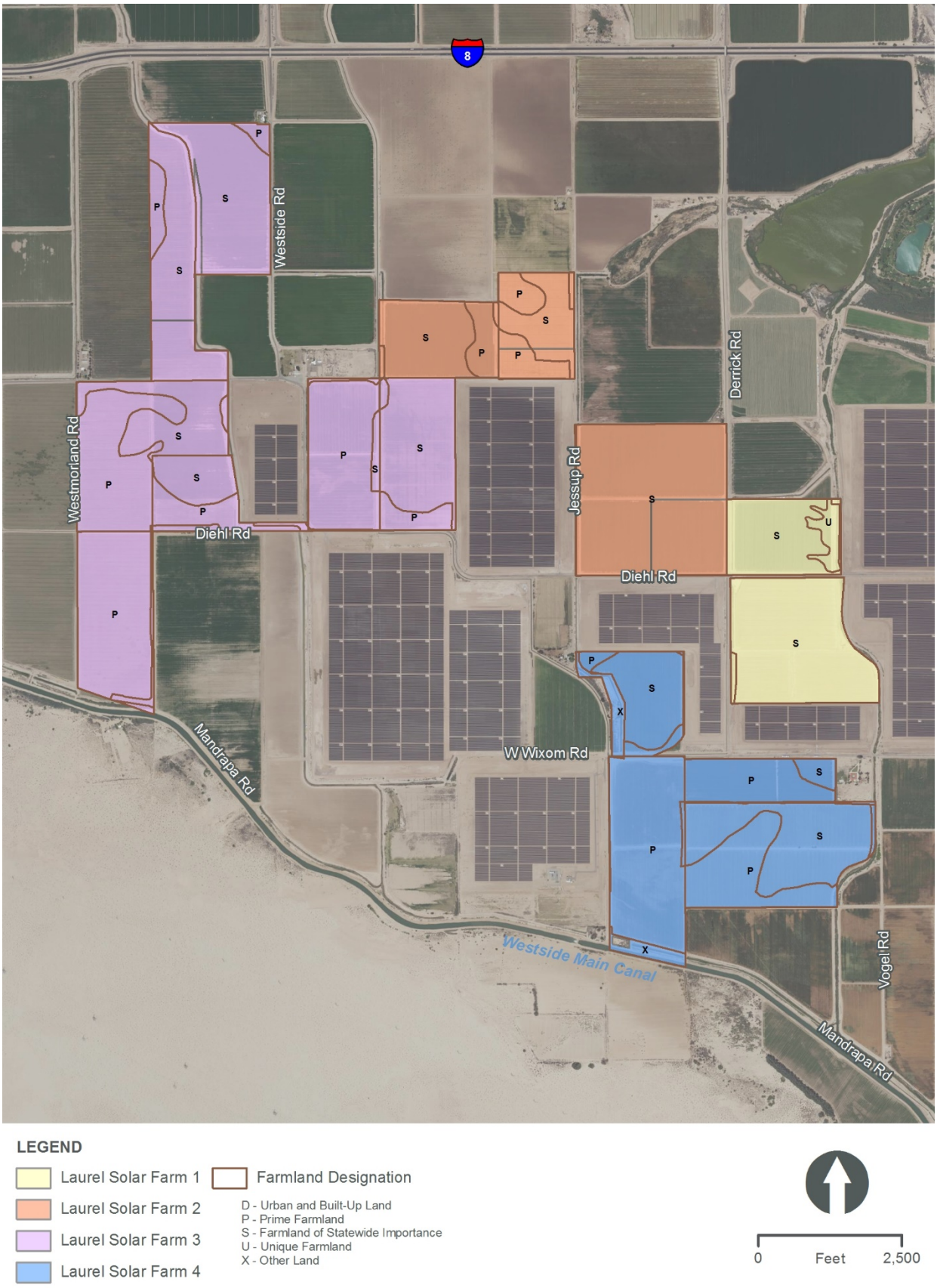
Williamson Act Contract Land

The project sites are not located on Williamson Act contracted land.

Agricultural Cropping Patterns

The proposed projects would be developed adjacent to productive agricultural and developed lands. Much of the land base in the vicinity of and within the project area 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.

Figure 4.2-1. Farmland Mapping and Monitoring Program Designations



Farmland Quality

To assess the quality of the project site for agricultural cultivation, the LESA model developed by DOC was utilized for the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4. 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.

Results obtained from the LESA model closely correlate with Important Farmland Maps produced by the DOC's FMMP. The maps for Imperial County indicate that a majority of the project sites are comprised of Prime Farmland (approximately 508 acres) and Farmland of Statewide Importance (approximately 827 acres). These farmland designations are illustrated in Figure 4.2-1.

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 U.S. Department of Agriculture (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 LESA prepared for the projects, the majority of the projects are rated as Class III (approximately 1085.9 acres), and the remainder of the projects are rated as Class I-II (approximately 282.7 acres).

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 sites are generally classified as Grade 2 (Good) and Grade 4 (Poor).

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 FMMP 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, because of their location or nature, could individually or cumulatively result in loss of economically viable Farmland, to non-agricultural uses
- 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 site 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 ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4 site locations). These reports are included as Appendix D of this EIR. The analysis prepared for this EIR also relied on Important Farmland and Williamson Act maps for Imperial County produced by the California DOC's Division of Land Resource Protection. A combination of these sources was used to determine the agricultural significance of the lands in the project sites.

Additionally, potential conflicts with existing agricultural zoning or other changes resulting from the implementation of the project, 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 2015, and zoning ordinance. Additional background information on land uses was obtained through field review and consultation with appropriate agencies. The conceptual site plan for the projects (Figures 3-3 through 3-10) was also used to evaluate potential impacts.

4.2.2.3 Impact Analysis

Impact 4.2-1 Conversion of Important Farmlands to Non-Agricultural Use.

Implementation of the project would result in the conversion of economically viable Important Farmland, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland to non-agricultural uses.

~~Big Rock~~Laurel Cluster

Implementation of the projects would result in the temporary conversion of approximately 1,344 acres of land currently under or available for agricultural production to non-agricultural uses. Approximately 507.53 acres of the project sites are classified as Prime Farmland and 827.29 acres are classified as Farmland of Statewide Importance (Table 4.2-3). Approximately 9.27 acres are classified as Unique Farmland. The remaining 40 acres are classified as Urban and Built Up Land and Other Land (Table 4.2-3). The loss of agricultural land designated as 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 D of this EIR. Based on the LESA's scoring methodology, a site scoring of 60 points or higher is typically considered "significant." A score of 40 to 59 points can be considered "significant" if the land evaluation (LE) and site assessment (SA) subscores are each greater than or equal to 20 points. 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 AG-1a would reduce the impact associated with the conversion of important farmlands to non-agricultural uses to a level of less than significant.

Table 4.2-4. Land Evaluation Site Assessment Scoring for the Study Areas

Site Components	LESA Score	LE Factors[1]	SA Factors[2]	Significant
~~BRSF1~~	~~66.15~~	~~33.15~~	~~33.00~~	~~Yes~~
LSF1	58.48	23.98	34.5	Yes
LSF2	63.17	27.17	36.00	Yes
LSF3	65.37	32.37	33.00	Yes
LSF4	66.15	33.15	33.00	Yes

Source: Environmental Management Associates 2017

[1] LE includes soil land capability classification~~LCC~~ and Storie Index.
[2] SA factors include water availability, project size, and surrounding agricultural land and surrounding projected resource land.

~~BRSF1 – Big Rock 1 Solar Farm; LE~~ – land evaluation; LESA – land evaluation site assessment; LSF1 - Laurel ~~1~~ Solar Farm 1; LSF2 - Laurel ~~2~~ Solar Farm 2; LSF3 - Laurel ~~3~~ Solar Farm 3; LSF4 - Laurel Solar Farm 4; SA – site assessment

As provided in Section 4.2.1.1, the project applicant would be required to restore the project sites to preexisting conditions 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 sites to facilitate future cultivated agriculture would generally be feasible. However, with the projects, there would be a 30- to 40-year period where existing agricultural uses within the project sites 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, Farmland of Statewide Importance, or Unique Farmland within the project sites. These acreage reductions could occur through alterations in soil productivity or the retention of project-related structures. As a condition of project approval (CUP condition) reclamation plans will be prepared for each of the project sites. The reclamation plans will provide guidance and performance criteria to ensure that no net reduction in Important Farmland occurs. A short-term and potentially long-term net reduction in Prime Farmland, Farmland of Statewide Importance, and Unique Farmland within the project sites would be considered a significant impact. Implementation of Mitigation Measure AG-1b would reduce this impact to a level less than significant. This mitigation measure will ensure that the project applicant adheres to the terms of the agricultural reclamation ~~restoration~~ plans that will be prepared for each of the project sites as a condition of approval for each of the CUPs.

~~Big Rock 1 Solar Farm~~

~~The impacts described for the combined projects would be similar to impacts that could occur for the BRSF1 site component; however, these impacts would occur at both a reduced severity and intensity. Development of the BRSF1 would be limited to 342 acres. As shown in Table 4.2-3, the build-out of the BRSF1 would include the conversion of approximately 194.12 acres of Prime Farmland, 126.92 acres of Farmland of Statewide Importance, and 31 acres of Other Land. Similar to the discussion for the Big Rock 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 BRSF1 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.~~

Laurel ~~1~~ Solar Farm 1

The impacts described for the combined projects would be similar to impacts that could occur for the LSF1 site component; however, these impacts would occur at both a reduced severity and intensity. Development of the LSF1 would be limited to 171 acres. As shown in Table 4.2-3, the build-out of the LSF1 would include the conversion of approximately 1.84 acres of Prime Farmland, 159.04 acres of Farmland of Statewide Importance, 9.27 acres of Unique Farmland, and 0.37 acres of Other Land. Similar to the discussion for the ~~Big Rock~~Laurel 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 LSF1 site would result in a short-term and potentially long-term net reduction in Prime Farmland, Farmland of Statewide Importance, or Unique Farmland acreages, this impact is considered significant. Implementation of Mitigation Measures AG-1a and AG-1b would reduce this impact to a level less than significant.

Laurel ~~2~~ Solar Farm 2

The impacts described for the combined projects would be similar to impacts that could occur for the LSF2 site component; however, these impacts would occur at both a reduced severity and intensity. Development of the LSF2 would be limited to 280 acres. As shown in Table 4.2-3, the build-out of the LSF2 would include the conversion of approximately 40.17 acres of Prime Farmland, 237.15 acres of Farmland of Statewide Importance, and 1.06 acres of Other Land. Similar to the discussion for the ~~Big Rock~~Laurel 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 LSF2 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 AG-1a and AG-1b would reduce this impact to a level less than significant.

Laurel ~~3~~ Solar Farm 3

The impacts described for the combined projects would be similar to impacts that could occur for the LSF3 site component; however, these impacts would occur at both a reduced severity and intensity. Development of the LSF3 would be limited to 587 acres. As shown in Table 4.2-3, the build-out of the LSF3 would include the conversion of approximately 271.40 acres of Prime Farmland, 304.18 acres of Farmland of Statewide Importance, and 2.45 acres of Other Land. Similar to the discussion for the ~~Big Rock~~Laurel 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 LSF3 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 AG-1a and AG-1b would reduce this impact to a level less than significant.

Laurel Solar Farm 4

The impacts described for the combined projects would be similar to impacts that could occur for the LSF4 site component; however, these impacts would occur at both a reduced severity and intensity. Development of the LSF4 would be limited to 342 acres. As shown in Table 4.2-3, the build-out of the LSF4 would include the conversion of approximately 194.12 acres of Prime Farmland, 126.92 acres of Farmland of Statewide Importance, and 31 acres of Other Land. Similar to the discussion for the Laurel 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 LSF4 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 AG-1a and AG-1b would reduce this impact to a level less than significant.

Mitigation Measure(s)

The following mitigation measures are required for the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4.

AG-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 projects:

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 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 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 projects 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.

AG-1b. 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 Mitigation Measure AG-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 ~~66.15 for BRSF1,~~ 58.48 for LSF1, 63.17 for LSF2, ~~and~~ 65.37 for LSF3, and 66.15 for LSF4. 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 AG-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 AG-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 sites or with the provisions of an existing Williamson Act contract.

~~Big Rock~~Laurel Cluster

Williamson Act. The project sites are not located on Williamson Act contracted land. Therefore, the projects would not conflict with a Williamson Act contract and no impact would occur.

Agricultural Zoning. Pursuant to the County General Plan, the project sites are located on land designated for agricultural uses. The projects would be constructed on lands currently zoned A-2, A-2-R (General Agricultural Rural Zone), and 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 and zone change into the RE Overlay Zone designation, the project 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.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.2-3 Result in Other Effects that could Contribute to the Conversion of Active Farmlands to Non-Agricultural Use.

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.

~~Big Rock~~Laurel Cluster

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 exempt 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 is required to prepare a site-specific Reclamation Plan for each CUP project area, to minimize impacts related to short- and long-term conversion of farmland to non-agricultural use. Additionally, the County is requiring Mitigation Measure AG-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 AG-1b, this impact would be reduced to a level less than significant.

The projects would include development of solar facilities adjacent to productive agricultural lands; however, as shown on Figure 4.2-1, the project sites are located immediately adjacent to existing (Campo Verde Solar Project) or proposed (VEGA SES Solar Project) utility-scale solar energy projects. 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 sites 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 project area 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. 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.

Mitigation Measure(s)

The following mitigation measure is required for the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4:

- Implement Mitigation Measure AG-1b.

Significance after Mitigation

With the implementation of Mitigation Measure AG-1b, the project applicant would be required to adhere to the terms of the agricultural reclamation plans that are required to be prepared for each

project site. Implementation of Mitigation Measure AG-1b would reduce this impact to a less than significant level.

Impact 4.2-4 Adversely Affect Agricultural Productivity.

The project could impair the agricultural productivity of the project site or use of neighboring areas for agricultural use.

~~Big Rock~~Laurel Cluster

Agricultural productivity of the project sites 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.

The project applicant will be required to prepare site reclamation 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 project sites have a land capability classification~~LCC~~ rating ranging from I 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 sites in the future. This is considered a significant impact attributable to the projects. Implementation of Mitigation Measure AG-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 AG-2 would reduce this impact to a level less than significant.

Mitigation Measure(s)

The following mitigation measures are required for the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4.

AG-2 Prior to the issuance of a grading permit or building permit (whichever occurs first), a Pest Management Plan shall be developed by the project applicant and approved by the County of Imperial Agricultural Commissioner. The project applicant shall maintain a Pest Management Plan until reclamation is complete. 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. The assistance of a licensed pest control advisor is recommended. All treatments must be performed by a qualified applicator or a licensed pest control business;
- 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;
- Use of "permanent" soil sterilants to control weeds or other pests is prohibited because this would interfere with reclamation;
- Notify the Agricultural Commissioner's office immediately regarding any suspected exotic/invasive pest species as defined by the California Department of Food Agriculture and the USDA. Request a sample be taken by the Agricultural Commissioner's Office of a suspected invasive species. Eradication of exotic pests shall be done under the direction of the Agricultural Commissioner's Office and/or California Department of Food and Agriculture;
- Obey all pesticide use laws, regulations, and permit conditions;
- Allow access by Agricultural Commissioner staff for routine visual and trap pest surveys, compliance inspections, eradication of exotic pests, and other official duties;
- Ensure all project employees that handle pest control issues are appropriately trained and certified, all required records are maintained and made available for inspection, and all required permits and other required legal documents are current;
- Maintain records of pests found and treatments or pest management methods used. Records should include the date, location/block, project name (current and previous if changed), and methods used. For pesticides include the chemical(s) used, EPA Registration numbers, application rates, etc. A pesticide use report may be used for this;
- Submit a report of monitoring, pest finds, and treatments, or other pest management methods to the Agricultural Commissioner quarterly within 15 days after the end of the previous quarter, and upon request. The report is required even if no pests were found or treatment occurred. It may consist of a copy of all records for the previous quarter, or may be a summary letter/report as long as the original detailed records are available upon request.

3. A long-term strategy for weed and pest control and management during the operation of the proposed projects. Such strategies may include, but are not limited to:
    - 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 surrounding agricultural lands.

The project shall reimburse the Agricultural Commissioner's office for the actual cost of investigations, inspections, or other required non-routine responses to the site that are not funded by other sources.

Significance after Mitigation

With the implementation of Mitigation Measures AG-1b and AG-2, the project applicant would be required to adhere to the terms of the comprehensive reclamation plan that would restore the project sites 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 pest management plan. Compliance with these measures would reduce this impact to a level less than significant.

4.2.3 Decommissioning/Restoration and Residual Impacts

4.2.3.1 Decommissioning/Restoration

As required by Mitigation Measure AG-1b, the project applicant shall adhere to the terms of the site reclamation ~~restoration~~ plans that are required to be 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 sites have a land capability classification~~LCC~~ rating ranging from I to III. Based on these classifications, one may conclude that onsite 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 sites in the future. This is considered a significant impact attributable to the projects. However, implementation of Mitigation Measure AG-1b would reduce this impact to a level less than significant.

4.2.3.2 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. Following the proposed use (e.g., solar facilities), the projects would be decommissioned and project sites restored to facilitate agricultural cultivation. Based on these circumstances, the projects would not result in any residual significant and unmitigable impacts to agricultural resources.

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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 CEQA Guidelines and the ~~Imperial County Air Pollution Control District's (~~ICAPCD~~)~~'s Air Quality Handbook in conjunction with actions proposed in Chapter 3, Project Description. OB-1 Air Analyses prepared an *Air Quality/Greenhouse Gas Report* for the ~~Big Rock~~Laurel Cluster Solar Farms Project, which includes the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4. This report is included in Appendix E 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 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 U.S. 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 down to a winter morning minimum of 38° Fahrenheit. 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 (less than 0.10 inches in 24 hours). The local area usually has 3 days of rain in winter and one thunderstorm day in August. The annual rainfall in this region is less than 3 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 because of 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. Imperial County experiences unhealthful air quality from photochemical smog and from dust because of 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 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 (SO_2), nitrogen dioxide (NO_2), ozone (O_3), PM_{10}, $PM_{2.5}$, 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
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.
SO_2	Breathing problems; may cause permanent damage to lungs.
NO_2	Lung damage, illnesses of breathing passages and lungs (respiratory system).
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.
PM_{10} and $PM_{2.5}$	Nose and throat irritation, lung damage, bronchitis, early death.
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: https://www.epa.gov/criteria-air-pollutants

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 10 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.

4.3.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the project.

Federal

Clean Air Act

The Federal 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 EPA for approval or disapproval. The EPA must provide an opportunity for public comment before taking action on each SIP submittal. If the SIP is not acceptable to the EPA, the EPA can take over enforcing the CAA in that state.

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 O_3 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 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.

State

California Clean Air Act

The California Clean Air Act was enacted on September 30, 1988, and became effective January 1, 1989. The purpose of the California Clean Air Act 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 CCA, the California Clean Air Act also classifies areas according to pollution levels. CARB establishes the CAAQS. The California Clean Air Act requires attainment of the standards at the earliest practicable date. Table 4.3-2 identifies the CAAQS.

Table 4.3-2. Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
O_3	1 hour 8 hour	0.09 ppm 0.070 ppm	-- 0.070 ppm
PM_{10}	24 hour Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 --
$PM_{2.5}$	24 hour Mean	-- 12 µg/m^3	35 µg/m^3 12.0 µg/m^3
CO	1 hour 8 hour	20 ppm 9.0 ppm	35 ppm 9 ppm
NO_2	1 hour Mean	0.18 ppm 0.030 ppm	100 ppb 0.053 ppm
SO_2	1 hour 24 hour	0.25 ppm 0.04 ppm	75 ppb --
Pb	30-day Rolling 3-month	1.5 µg/m^3 --	-- 0.15 µg/m^3
Sulfates	24 hour	25 µg/m^3	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 10 miles or more because of particles when relative humidity is less than 70 percent	

Source: CARB Ambient Air Quality Standards (5/4/16). https://www.arb.ca.gov/research/aaqs/aaqs2.pdf

mean – annual arithmetic mean, ppm - parts per million; ppb – parts per billion; µg/m^3 – micrograms per cubic meter

Regional

Imperial County Air Pollution Control District

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 ICAPCD. Monitoring of ambient air quality in Imperial County began in 1976. Since that time, monitoring has been performed by ICAPCD, CARB, and by private industry. There are six monitoring sites in Imperial County from Niland to Calexico.

Ozone Air Quality Management Plan. Because of Imperial County's "moderate" nonattainment status for 1997 federal 8-hour ozone standards, ICAPCD was required to develop an 8-hour Attainment Plan for Ozone. On December 3, 2009, the 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" non-attainment for the 1997 8-hour ozone standard. However, ICAPCD is required to submit a modified air quality

management plan (AQMP) to the 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 SIP. Imperial Valley is classified as nonattainment for federal and state PM_{10} standards. As a result, ICAPCD was required to develop a PM_{10} Attainment Plan. The final plan was adopted by ICAPCD on August 11, 2009.

Imperial County Air Pollution Control District Rules and Regulations

ICAPCD has the authority to adopt and enforce regulations dealing with controls for specific types of sources, emissions or 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 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 ICAPCD in attaining the state and federal ambient air quality standards for PM_{10} and O_3.

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.

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 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 project:

- **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 project complies 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, PM_{10}, and $PM_{2.5}$ (Table 4.3-3). Imperial County is classified as a "serious" nonattainment area for PM_{10} for the NAAQS. On November 13, 2009, EPA published Air Quality Designations for the 2006 24-Hour Fine Particle ($PM_{2.5}$) NAAQS wherein Imperial County was listed as designated nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS. However, the nonattainment designation for Imperial County is only for the urban area within the County and it has been determined that the proposed projects are located within the nonattainment boundaries for $PM_{2.5}$. On April 10, 2014, the CARB Board gave final approval to the 2013 Amendments to Area Designations for CAAQS. For the state $PM_{2.5}$ standard, effective July 1, 2014, the City of Calexico will be designated nonattainment, while the rest of the SSAB will be designated attainment.

Table 4.3-3. Designations/Classifications for the Salton Sea Air Basin

Pollutant	State Designation	Federal Designation (Classification)
O_3	Nonattainment	Attainment
PM_{10}	Nonattainment	Nonattainment (Serious)*
$PM_{2.5}$	Attainment***	Nonattainment**
CO	Attainment	Unclassifiable/Attainment
NO_2	Attainment	Unclassifiable/Attainment
SO_2	Attainment	Attainment
Sulfates	Attainment	No Federal Standard
Pb	Attainment	
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

Source: Appendix E of this EIR

*Notes: * Designation for Imperial Valley Planning Area only.*
*** Designation is only for the urban areas within Imperial County.*
**** Designation is for the whole of Imperial County except the City of Calexico.*

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 sites is the El Centro-9th station within the City of El Centro (150 9th Street, El Centro, CA 92243). This station monitors ozone, $PM_{2.5}$, PM_{10}, CO, and NO_2. Table 4.3-4 provides a summary of background air quality data representative of the area from 2011 through 2016. The monitoring data shows that the El Centro station demonstrated the general air quality problems of the SSAB; it exceeded the state and federal ozone standards and the state PM_{10} standard in all 6 years. The National 8-hour ozone standard was changed in October of 2015 so only the 2016 monitoring year was evaluated to the 2016 Standard and the other 5 years evaluated to the 2008 Standard. The federal PM_{10} standard was exceeded in the years 2015 and 2016. The station only exceeded the federal $PM_{2.5}$ standard in 2011. The state or federal CO standards were not exceeded and the CO monitor was removed after the 2012 year. This station exceeded the NO_2 federal standard in 2011 only.

Table 4.3-4. Ambient Air Quality Monitoring Summary for Project Vicinity

Air Pollutant	Monitoring Year					
	2011	2012	2013	2014	2015	2016
O_3						
Max 1 Hour (ppm)	**0.103**	**0.111**	**0.110**	**0.101**	**0.099**	**0.108**
Days > CAAQS (0.09 ppm)	5	9	7	2	2	4
Max 8 Hour (ppm)	**0.084**	**0.091**	**0.088**	**0.080**	**0.079**	**0.082**

Table 4.3-4. Ambient Air Quality Monitoring Summary for Project Vicinity

Air Pollutant	Monitoring Year					
	2011	2012	2013	2014	2015	2016
Days > NAAQS (0.075 ppm)	12	14	11	5	6	N/A
Days > NAAQS (0.070 ppm)	N/A	N/A	N/A	N/A	N/A	11
Days > CAAQS (0.070 ppm)	21	26	23	13	12	11
PM_{10}						
Max Daily National Measurement	**81.9**	**75.6**	**147.9**	**120.4**	**165.9**	**185.1**
Days > NAAQS (150 µg/m^3)	0	0	0	0	1	2
Days > CAAQS (50 µg/m^3)	9	6	10	15	7	N/A
$PM_{2.5}$						
Max Daily National Measurement	**54.4**	26.4	30.0	27.5	31.2	31.3
Days > NAAQS (35 µg/m^3)	2	0	0	0	0	0
CO						
Max 8 Hour (ppm)	9.01	3.64	N/A	N/A	N/A	N/A
Days > NAAQS (9 ppm)	0	0				
Days > CAAQS (9.0 ppm)	0	0				
NO_2						
Max 8 Hour (ppb)	**117.4**	72.0	53.0	59.3	59.1	50.9
Days > NAAQS (100 ppb)	1	0	0	0	0	0
Days > CAAQS (0.17 ppm)	0	0	0	0	0	0

Source: Appendix E of this EIR

*Notes: > exceed; **Bold** – exceedance; N/A – not available; ppm – parts per million; ppb – parts per billion; µg/m^3 – micrograms per cubic meter; CAAQS – California Ambient Air Quality Standard; NAAQS – National Ambient Air Quality Standard*

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.

There are no established residential neighborhoods immediately adjacent to the project sites, as the area is characterized as large-tracts of agricultural lands and recently developed solar facilities with rural residences sparsely located among these uses. However, there are seven ~~six~~ off-site rural residences located within 500 feet of the project sites: one residence located near the northwestern LSF3 boundary (north of West Vaughn Road); one residence located at the northern extent of LSF3 along Westside Road; two ~~one~~ residences north of the intersection of Westside Road and West Vaughn Road; two residences located along Liebert Road, one is located immediately west of ~~BRSF1~~LSF4, and the second is located due south of the intersection of West Diehl Road and

Jessup Road; and one residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road.

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

ICAPCD amended the *Air Quality Handbook: Guidelines for the Implementation of CEQA* on December 12, 2017. ICAPCD established significance thresholds based on the state CEQA thresholds. The handbook was used to determine the proper level of analysis for the project. 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 ICAPCD.

Table 4.3-5. Imperial County Air Pollution Control District Significance Thresholds for Operation

Criteria Pollutant	Tier 1	Tier 2
NO_x and ROG	Less than 137 pounds per day	137 pounds per day and greater
PM_{10} and SO_x	Less than 150 pounds per day	150 pounds per day and greater
CO and $PM_{2.5}$	Less than 550 pounds per day	550 pounds per day and greater
Level of Significance	**Less than Significant**	**Significant Impact**

Source: ICAPCD 2017

ROG – reactive organic gases

Projects with emissions below Tier 1 would not have a significant impact on 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 nitrogen oxide (NO_x) is 100 pounds per day and for reactive organic gases (ROG) is 75 pounds per 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 PM_{10} 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 that are 5 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 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 ($\mu g/m^3$) 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 project results in an exceedance of an air quality standard.

The criteria used to evaluate air emissions associated with the project 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 March 2018 (Appendix E of this EIR). 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 project, including any erosion control measures deemed necessary; stabilization of construction entrances and exits to reduce tracking internal access roads; construction of PV modules; and testing/certification. 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.

~~Big Rock~~Laurel Cluster

The air quality attainment plan (AQAP) for the SSAB, through the implementation of the AQMP (previously AQAP) and SIP for PM_{10}, 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 sites 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 (PRC). 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 PM_{10} would be below a level of significance. The projects would therefore not interfere with the SIP for PM_{10}. A less than significant impact is identified.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction; therefore, implementation of the alternative gen-tie route would not conflict with or obstruct implementation of an air quality plan, and no impact would occur.

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, PM_{10} 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 2018. Construction for the ~~Big Rock~~Laurel Cluster is expected to conservatively last 15 months and each separate site would be divided into four potentially overlapping broad phase activities: (1) Site Preparation, Fencing, and Ingress/Egress; (2) Civil Improvements – Grading/Roads/Earthwork; (3) PV Panel Construction, and (4) Testing and Commissioning. Each individual solar site is not projected to take the entire 15 months. To distribute potential impacts, the start dates of the individual solar projects will be staggered, or phased. Refer to Chapter 3, Project Description, for a discussion of construction equipment and construction workforce.

Criteria pollutant emissions from off-road construction equipment use were estimated using the underlying emission and load factors of URBEMIS and CalEEMod computer models. Emissions were estimated from the exhaust off-road equipment by using emission factors from Table 3.4 of Appendix D in the CalEEMod User's Guide for year calendar year 2018.

Emissions from vehicular activity related to construction employees and vendors were estimated using CARB's EMFAC2011 Web Based Data Access with emission rate data for Imperial County for the 2018 calendar year. This air quality report used EMFAC2011's aggregate model years, which is an average age of vehicles specific for Imperial County. To generate expected exhaust emissions from employee vehicles, this air quality report also used CARB's EMFAC2011 Web Based Data Access and to more accurately represent the type of vehicles used by the potential employee work pool, an activity-weighted average emission factor was generated using light-duty automobiles and light-duty trucks. The averages were derived from the distributions of vehicle miles travelled from EMFAC2011.

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. Entrained road dust emissions were assigned to both employee and vendor activity. Per ICAPCD, 50 percent of vehicular travel in Imperial County is assumed to be on unpaved roads.

Emissions are presented below for each of the four individual solar projects and the combined ~~Big Rock~~Laurel 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 activity phases 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 ~~Big Rock~~Laurel Cluster. Emissions presented below are considered unmitigated, 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.

~~*Big Rock 1 Solar Farm*~~

~~The BRSF1 project is estimated to be completed within 6 months from project start. Table 4.3-6 presents the daily maximum hypothetical unmitigated and mitigated emissions for each month of construction for the BRSF1 project. As shown in Table 4.3-6, the BRSF1 project would exceed the PM_{10} ICAPCD significance threshold if unmitigated. Since construction is temporary in nature, the impact would be short-term 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 AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.~~

~~Table 4.3-6. Estimated Construction Emissions for Big Rock 1 Solar Farm~~

~~Month/Activity~~	~~Criteria Emissions (pounds/day)~~				
	~~ROG~~	~~CO~~	~~NO_x~~	~~PM_{10}~~	~~$PM_{2.5}$~~
~~**Unmitigated Construction Emissions**~~					
~~1st Month – Phase 1~~	~~1.2~~	~~10.7~~	~~13.6~~	~~31.9~~	~~3.9~~
~~2nd Month – Phases 1 and 2~~	~~3.2~~	~~28.1~~	~~34.5~~	~~82.9~~	~~10.1~~
~~3rd Month – Phases 2 and 3~~	~~5.2~~	~~62.3~~	~~48.9~~	~~203.1~~	~~24.0~~
~~4th Month – Phase 3~~	~~3.3~~	~~44.9~~	~~28.0~~	~~152.1~~	~~17.8~~
~~5th Month – Phase 3~~	~~3.3~~	~~44.9~~	~~28.0~~	~~152.1~~	~~17.8~~
~~6th Month – Phase 4~~	~~0.1~~	~~1.7~~	~~0.3~~	~~12.6~~	~~1.4~~
~~***BRSF1 Maximum Daily***~~	~~***5.2***~~	~~***62.3***~~	~~***48.9***~~	~~***203.1***~~	~~***24.0***~~
~~ICAPCD Threshold~~	~~75~~	~~550~~	~~100~~	~~150~~	~~N/A~~
~~Exceed Thresholds?~~	~~No~~	~~No~~	~~No~~	~~Yes~~	
~~**Mitigated Construction Emissions**~~					
~~1st Month – Phase 1~~	~~1.2~~	~~10.7~~	~~13.6~~	~~14.0~~	~~1.9~~
~~2nd Month – Phases 1 and 2~~	~~3.2~~	~~28.1~~	~~34.5~~	~~36.5~~	~~5.1~~
~~3rd Month – Phases 2 and 3~~	~~5.2~~	~~62.3~~	~~48.9~~	~~88.9~~	~~11.7~~
~~4th Month – Phase 3~~	~~3.3~~	~~44.9~~	~~28.0~~	~~66.5~~	~~8.5~~
~~5th Month – Phase 3~~	~~3.3~~	~~44.9~~	~~28.0~~	~~66.5~~	~~8.5~~
~~6th Month – Phase 4~~	~~0.1~~	~~1.7~~	~~0.3~~	~~5.4~~	~~0.6~~
~~***BRSF1 Maximum Daily***~~	~~***5.2***~~	~~***62.3***~~	~~***48.9***~~	~~***88.9***~~	~~***11.7***~~
~~ICAPCD Threshold~~	~~75~~	~~550~~	~~100~~	~~150~~	~~N/A~~
~~Exceed Thresholds?~~	~~No~~	~~No~~	~~No~~	~~No~~	

~~*Source: Appendix E of this EIR*~~

~~*BRSF1 – Big Rock 1 Solar Farm; ICAPCD - Imperial County Air Pollution Control District; N/A – not available*~~

Laurel ~~1~~ Solar Farm 1

The LSF1 project is estimated to be completed within 5 months from project start. Table 4.3-6 presents the daily maximum hypothetical unmitigated and mitigated emissions for each month of construction for the ~~BRSF1~~ LSF1 project. As shown in Table 4.3-6, the LSF1 project would exceed the PM_{10} ICAPCD significance threshold if unmitigated. Since construction is temporary in nature, the impact would be short-term 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 AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.

Table 4.3-6. Estimated Construction Emissions for Laurel ~~1~~ Solar Farm 1

Month/Activity	Criteria Emissions (pounds/day)				
	ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
Unmitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	31.9	3.9
2nd Month – Phase 2	2.0	17.4	20.9	51.0	6.2
3rd Month – Phases 2 and 3	5.2	62.3	48.9	203.1	24.0
4th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
5th Month – Phases 3 and 4	3.3	46.6	28.3	164.6	19.2
LSF1 Maximum Daily	***5.2***	***62.3***	***48.9***	***203.1***	***24.0***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Mitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	14.0	1.9
2nd Month – Phase 2	2.0	17.4	20.9	22.5	3.1
3rd Month – Phases 2 and 3	5.2	62.3	48.9	88.9	11.7
4th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
5th Month – Phases 3 and 4	3.3	46.6	28.3	71.9	9.1
LSF1 Maximum Daily	***5.2***	***62.3***	***48.9***	***88.9***	***11.7***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: Appendix E of this EIR

ICAPCD – Imperial County Air Pollution Control District; LSF1 – Laurel ~~1~~ Solar Farm 1; N/A – not available

Laurel ~~2~~ Solar Farm 2

The LSF2 project is estimated to be completed within 8 months from project start. Table 4.3-7 presents the daily maximum hypothetical unmitigated and mitigated emissions for each month of construction for the ~~BRSF1~~ LSF2 project. As shown in Table 4.3-7, the LSF2 project would exceed the PM_{10} ICAPCD significance threshold if unmitigated. Since construction is temporary in nature, the impact would be short-term 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

AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.

Table 4.3-7. Estimated Construction Emissions for Laurel ~~2~~ Solar Farm 2

Month/Activity	Criteria Emissions (pounds/day)				
	ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
Unmitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	31.9	3.9
2nd Month – Phase 1	1.2	10.7	13.6	31.9	3.9
3rd Month – Phase 2	2.0	17.4	20.9	51.0	6.2
4th Month – Phase 2	2.0	17.4	20.9	51.0	6.2
5th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
6th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
7th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
8th Month – Phases 3 and 4	3.3	46.6	28.3	164.6	19.2
LSF2 Maximum Daily	***3.3***	***46.6***	***28.3***	***164.6***	***19.2***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Mitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	14.0	1.9
2nd Month – Phase 1	1.2	10.7	13.6	14.0	1.9
3rd Month – Phase 2	2.0	17.4	20.9	22.5	3.1
4th Month – Phase 2	2.0	17.4	20.9	22.5	3.1
5th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
6th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
7th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
8th Month – Phases 3 and 4	3.3	46.6	28.3	71.9	9.1
LSF2 Maximum Daily	***3.3***	***46.6***	***28.3***	***71.9***	***9.1***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: Appendix E of this EIR

ICAPCD – Imperial County Air Pollution Control District; LSF2 – Laurel ~~2~~ Solar Farm 2; N/A – not available

Laurel ~~3~~ Solar Farm 3

The LSF3 project is estimated to be completed within 9 months from project start. Table 4.3-8 presents the daily maximum hypothetical unmitigated and mitigated emissions for each month of construction for the ~~BRSF1~~ LSF3 project. As shown in Table 4.3-8, the LSF3 project would exceed the PM_{10} ICAPCD significance threshold if unmitigated. Since construction is temporary in

nature, the impact would be short-term 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 AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.

Table 4.3-8. Estimated Construction Emissions for Laurel ~~3~~ Solar Farm 3

Month/Activity	Criteria Emissions (pounds/day)				
	ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
Unmitigated Construction Emissions					
1st Month – Phases 1 and 2	3.2	28.1	34.5	82.9	10.1
2nd Month – Phases 1 and 2	3.2	28.1	34.5	82.9	10.1
3rd Month – Phase 2	2.0	17.4	20.9	51.0	6.2
4th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
5th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
6th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
7th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
8th Month – Phases 3 and 4	3.3	46.6	28.3	164.6	19.2
9th Month – Phases 3 and 4	3.3	46.6	28.3	164.6	19.2
LSF3 Maximum Daily	***3.3***	***46.6***	***34.5***	***164.6***	***19.2***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Mitigated Construction Emissions					
1st Month – Phases 1 and 2	3.2	28.1	34.5	36.5	5.1
2nd Month – Phases 1 and 2	3.2	28.1	34.5	36.5	5.1
3rd Month – Phase 2	2.0	17.4	20.9	22.5	3.1
4th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
5th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
6th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
7th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
8th Month – Phases 3 and 4	3.3	46.6	28.3	71.9	9.1
9th Month – Phases 3 and 4	3.3	46.6	28.3	71.9	9.1
LSF3 Maximum Daily	***3.3***	***46.6***	***34.5***	***71.9***	***9.1***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No		

Source: Appendix E of this EIR

ICAPCD – Imperial County Air Pollution Control District; LSF3 – Laurel ~~3~~ Solar Farm 3; N/A – not available

Laurel Solar Farm 4

The LSF4 project is estimated to be completed within 6 months from project start. presents the daily maximum hypothetical unmitigated and mitigated emissions for each month of construction for the LSF4 project. As shown in Table 4.3-9, the LSF4 project would exceed the PM_{10} ICAPCD significance threshold if unmitigated. Since construction is temporary in nature, the impact would be short-term 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 AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.

Table 4.3-9. Estimated Construction Emissions for Laurel Solar Farm 4

Month/Activity	Criteria Emissions (pounds/day)				
	ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
Unmitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	31.9	3.9
2nd Month – Phases 1 and 2	3.2	28.1	34.5	82.9	10.1
3rd Month – Phases 2 and 3	5.2	62.3	48.9	203.1	24.0
4th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
5th Month – Phase 3	3.3	44.9	28.0	152.1	17.8
6th Month – Phase 4	0.1	1.7	0.3	12.6	1.4
LSF4 Maximum Daily	***5.2***	***62.3***	***48.9***	***203.1***	***24.0***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	Yes	
Mitigated Construction Emissions					
1st Month – Phase 1	1.2	10.7	13.6	14.0	1.9
2nd Month – Phases 1 and 2	3.2	28.1	34.5	36.5	5.1
3rd Month – Phases 2 and 3	5.2	62.3	48.9	88.9	11.7
4th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
5th Month – Phase 3	3.3	44.9	28.0	66.5	8.5
6th Month – Phase 4	0.1	1.7	0.3	5.4	0.6
LSF4 Maximum Daily	***5.2***	***62.3***	***48.9***	***88.9***	***11.7***
ICAPCD Threshold	75	550	100	150	N/A
Exceed Thresholds?	No	No	No	No	

Source: Appendix E of this EIR

LSF4 – Laurel Solar Farm 4; ICAPCD - Imperial County Air Pollution Control District; N/A – not available

~~Big Rock~~Laurel Cluster

Table 4.3-10 shows the hypothetical unmitigated combined emissions from the construction of all four solar projects within a 15-month period using the Phase Activity Distributions. A staggering of phase activity can distribute the air quality emissions from the entire ~~Big Rock~~Laurel Cluster, reducing potential impacts locally and regionally. As shown in Table 4.3-10, the unmitigated emissions from the construction of the entire ~~Big Rock~~Laurel Cluster within a 15-month period would exceed the ICAPCD significance threshold for PM_{10}. Since construction is temporary in nature, the impact would be short-term 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, PM_{10} emissions would not exceed ICAPCD's significance thresholds.

Implementation of Mitigation Measures AQ-1 and AQ-2 listed below and compliance with ICAPCD Regulation VIII would reduce the impact to a level less than significant.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction; therefore, implementation of the alternative gen-tie route would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and no impact would occur.

Table 4.3-10. Unmitigated Criteria Temporary Summary for the ~~Big Rock~~Laurel Cluster

Month	Solar Farm	Criteria Emissions (pounds/day)				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
1	~~BRSF1~~LSF4	1.17	10.71	13.57	31.88	3.86
	Month 1 Totals	**1.2**	**10.7**	**13.6**	**31.9**	**3.9**
2	LSF4~~BRSF1~~	6.42	72.98	62.44	234.98	27.86
	Month 2 Totals	**6.4**	**73.0**	**62.4**	**235.0**	**27.9**
3	LSF4~~BRSF1~~	5.25	62.26	48.87	203.10	24.00
	Month 3 Totals	**5.2**	**62.3**	**48.9**	**203.1**	**24.0**
4	LSF4~~BRSF1~~	3.25	44.85	27.97	152.09	17.79
	LSF1	3.16	28.12	37.47	82.89	10.07
	Month 4 Totals	**6.4**	**73.0**	**62.4**	**235.0**	**27.9**
5	LSF4~~BRSF1~~	3.25	44.85	27.97	152.06	17.79
	LSF1	1.99	17.41	20.90	51.01	6.20
	LSF2	1.17	10.71	13.57	31.88	3.86
	Month 5 Totals	**6.4**	**73.0**	**62.4**	**235.0**	**27.9**
6	LSF4~~BRSF1~~	0.06	1.73	0.33	12.56	1.37
	LSF1	3.25	44.85	27.97	152.06	17.79
	LSF2	1.17	10.71	13.57	31.88	3.86

Table 4.3-10. Unmitigated Criteria Temporary Summary for the ~~Big Rock~~Laurel Cluster

Month	Solar Farm	Criteria Emissions (pounds/day)				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
	Month 6 Totals	**4.5**	**57.3**	**41.9**	**196.5**	**23.0**
7	LSF1	3.25	44.85	27.97	152.06	17.79
	LSF2	1.99	17.41	20.90	51.01	6.20
	LSF3	3.16	28.12	34.47	32.89	10.07
	Month 7 Totals	**8.4**	**90.4**	**83.3**	**286.0**	**34.1**
8	LSF1	3.25	44.85	27.97	152.06	17.79
	LSF2	1.99	17.41	20.90	51.01	6.20
	LSF3	3.16	28.12	34.47	32.89	10.07
	Month 8 Totals	**8.4**	**90.4**	**83.3**	**286.0**	**34.1**
9	LSF1	0.06	1.73	0.33	12.56	1.37
	LSF2	3.25	44.85	27.97	152.06	17.79
	LSF3	1.99	17.41	20.90	51.01	6.20
	Month 9 Totals	**5.3**	**64.0**	**49.2**	**215.7**	**25.4**
10	LSF2	3.25	44.85	27.97	152.06	17.79
	LSF3	3.25	44.85	27.97	152.06	17.79
	Month 10 Totals	**6.5**	**89.7**	**55.9**	**304.2**	**35.6**
11	LSF2	3.25	44.85	27.97	152.06	17.79
	LSF3	3.25	44.85	27.97	152.06	17.79
	Month 11 Totals	**6.5**	**89.7**	**55.9**	**304.2**	**35.6**
12	LSF2	3.31	46.58	28.30	164.65	19.16
	LSF3	3.25	44.85	27.97	152.06	17.79
	Month 12 Totals	**6.6**	**91.4**	**56.3**	**316.7**	**37.0**
13	LSF3	3.25	44.85	27.97	152.06	17.79
	Month 13 Totals	**3.3**	**44.9**	**28.0**	**152.1**	**17.8**
14	LSF3	3.31	46.58	28.30	164.65	19.16
	Month 14 Totals	**3.3**	**46.6**	**28.3**	**164.6**	**19.2**
15	LSF3	3.31	46.58	28.30	164.65	19.16
	Month 15 Totals	**3.3**	**46.6**	**28.3**	**164.6**	**19.2**
~~Big Rock~~Laurel Cluster Maximum Daily		***8.4***	***91.4***	***83.3***	***316.7***	***37.0***
ICAPCD Threshold		75	550	100	150	N/A
Exceed Thresholds?		No	No	No	Yes	

Source: Appendix E of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ ICAPCD – Imperial County Air Pollution Control District; LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4; N/A – not available

Table 4.3-11. Mitigated Criteria Temporary Summary for the ~~Big Rock~~Laurel Cluster

Month	Solar Farm	Criteria Emissions (pounds/day)				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
1	~~BRSF1~~LSF4	1.17	10.71	13.57	14.04	1.94
	Month 1 Totals	**1.2**	**10.7**	**13.6**	**14.0**	**1.9**
2	~~BRSF1~~LSF4	6.42	72.98	62.44	102.97	13.61
	Month 2 Totals	**6.4**	**73.0**	**62.4**	**103.0**	**13.6**
3	LSF4~~BRSF1~~	5.25	62.26	48.87	88.93	11.67
	Month 3 Totals	**5.2**	**62.3**	**48.9**	**88.9**	**11.7**
4	LSF4~~BRSF1~~	3.25	44.85	27.97	66.47	8.55
	LSF1	3.16	28.12	37.47	36.51	5.06
	Month 4 Totals	**6.4**	**73.0**	**62.4**	**103.0**	**13.6**
5	LSF4~~BRSF1~~	3.25	44.85	27.97	66.47	8.55
	LSF1	1.99	17.41	20.90	22.47	3.12
	LSF2	1.17	10.71	13.57	14.04	1.94
	Month 5 Totals	**6.4**	**73.0**	**62.4**	**103.0**	**13.6**
6	LSF4~~BRSF1~~	0.06	1.73	0.33	5.42	0.60
	LSF1	3.25	44.85	27.97	66.47	8.55
	LSF2	1.17	10.71	13.57	14.04	1.94
	Month 6 Totals	**4.5**	**57.3**	**41.9**	**85.9**	**11.1**
7	LSF1	3.25	44.85	27.97	66.47	8.55
	LSF2	1.99	17.41	20.90	22.47	3.12
	LSF3	3.16	28.12	34.47	36.51	5.06
	Month 7 Totals	**8.4**	**90.4**	**83.3**	**125.4**	**16.7**
8	LSF1	3.25	44.85	27.97	66.47	8.55
	LSF2	1.99	17.41	20.90	22.47	3.12
	LSF3	3.16	28.12	34.47	36.51	5.06
	Month 8 Totals	**8.4**	**90.4**	**83.3**	**125.4**	**16.7**
9	LSF1	0.06	1.73	0.33	5.42	0.60
	LSF2	3.25	44.85	27.97	66.47	8.55
	LSF3	1.99	17.41	20.90	22.47	3.12
	Month 9 Totals	**5.3**	**64.0**	**49.2**	**94.4**	**12.3**
10	LSF2	3.25	44.85	27.97	66.47	8.55
	LSF3	3.25	44.85	27.97	66.47	8.55

Table 4.3-11. Mitigated Criteria Temporary Summary for the ~~Big Rock~~Laurel Cluster

Month	Solar Farm	Criteria Emissions (pounds/day)				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
	Month 10 Totals	**6.5**	**89.7**	**55.9**	**132.9**	**17.1**
11	LSF2	3.25	44.85	27.97	66.47	8.55
	LSF3	3.25	44.85	27.97	66.47	8.55
	Month 11 Totals	**6.5**	**89.7**	**55.9**	**132.9**	**17.1**
12	LSF2	3.31	46.58	28.30	71.89	9.15
	LSF3	3.25	44.85	27.97	66.47	8.55
	Month 12 Totals	**6.6**	**91.4**	**56.3**	**138.4**	**17.7**
13	LSF3	3.25	44.85	27.97	66.47	8.55
	Month 13 Totals	**3.3**	**44.9**	**28.0**	**66.5**	**8.5**
14	LSF3	3.31	46.58	28.30	71.89	9.15
	Month 14 Totals	**3.3**	**46.6**	**28.3**	**71.9**	**9.1**
15	LSF3	3.31	46.58	28.30	71.89	9.15
	Month 15 Totals	**3.3**	**46.6**	**28.3**	**71.9**	**9.1**
~~Big Rock~~Laurel Cluster Maximum Daily		***8.4***	***91.4***	***83.3***	***138.4***	***17.7***
ICAPCD Threshold		75	550	100	150	N/A
Exceed Thresholds?		No	No	No	No	

Source: Appendix E of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ ICAPCD – Imperial County Air Pollution Control District; LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4; N/A – not available

Operation

~~*Big Rock*~~*Laurel Cluster*

Operational emissions would include inspection and maintenance activities. The projects would be staffed with 20 full-time employees (5 for each project site) to maintain the project facilities 7 days per week during normal daylight hours. To ensure optimal PV output, the solar panels would be maintained 24 hours a day, 7 days a week. The surface of the PV panels would be washed seasonally to increase the average optical transmittance of the flat panel surface. Since the traffic impact analysis (TIA) estimates that the entire ~~Big Rock~~Laurel Cluster would require 40 vehicle trips per day during operations, the total trips were distributed between the four sites. These vehicle trips would be off-site trips consisting mostly worker commute, with the occasional general service, electrical service, and equipment/delivery vehicles. In addition, there would be some activity from vehicles onsite including pickup trucks, water trucks, and utility/service vehicles. Table 4.3-12 summarizes each site's total project-related annual operational air emissions. As shown in Table 4.3-12, operational emissions would be well 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 (Mitigation Measures AQ-3, AQ-4, and AQ-5). The impact is considered less than significant.

Table 4.3-12. Estimated Operational Criteria Emissions

Solar Farm	Activity Type	Criteria Emissions (pounds/day)				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
~~BRSF1~~	~~Onsite Activity~~	~~0.001~~	~~0.038~~	~~0.004~~	~~0.001~~	~~0.000~~
	~~Offsite Activity~~	~~0.014~~	~~0.687~~	~~0.066~~	~~0.017~~	~~0.007~~
	~~**BRSF1 Total**~~	~~**0.02**~~	~~**0.73**~~	~~**0.07**~~	~~**0.02**~~	~~**0.01**~~
L~~R~~SF1	Onsite Activity	0.001	0.038	0.004	0.001	0.000
	Offsite Activity	0.014	0.687	0.066	0.017	0.007
	L~~R~~SF1 Total	**0.02**	**0.73**	**0.07**	**0.02**	**0.01**
L~~R~~SF2	Onsite Activity	0.001	0.038	0.004	0.001	0.000
	Offsite Activity	0.014	0.687	0.066	0.017	0.007
	L~~R~~SF2 Total	**0.02**	**0.73**	**0.07**	**0.02**	**0.01**
L~~R~~SF3	Onsite Activity	0.001	0.038	0.004	0.001	0.000
	Offsite Activity	0.014	0.687	0.066	0.017	0.007
	L~~R~~SF3 Total	**0.02**	**0.73**	**0.07**	**0.02**	**0.01**
LSF4	Onsite Activity	0.001	0.038	0.004	0.001	0.000
	Offsite Activity	0.014	0.687	0.066	0.017	0.007
	LSF4 Total	**0.02**	**0.73**	**0.07**	**0.02**	**0.01**
~~Big Rock~~Laurel Cluster Maximum Daily		***0.1***	***2.9***	***0.3***	***0.1***	***0.0***
ICAPCD Regional Thresholds		137	550	137	150	550
Exceed Thresholds?		No	No	No	No	No

Source: Appendix E of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ ICAPCD – Imperial County Air Pollution Control District; LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

Mitigation Measure(s)

AQ-1 **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 ICPDS~~County Planning and Development Services Department~~ and ICAPCD prior to the issuance of a grading permit. ICAPCD shall utilize this list to calculate air emissions to verify that equipment use does not exceed significance thresholds. The ICPDS~~Planning and Development Services Department~~ and ICAPCD shall verify implementation of this measure.

AQ-2 **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 compliance with these measures as part of the grading permit review/approval process.

ICAPCD Standard Measures for Fugitive Dust (PM_{10}) 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 percent 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 offsite unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- All unpaved traffic areas 1 acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants, and/or watering.
- The transport of bulk materials shall be completely covered unless 6 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 is to be cleaned and/or washed at delivery site after removal of bulk material.
- All track-out or carry-out will 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 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants, and/or watering.

ICAPCD "Discretionary" Measures for Fugitive Dust (PM_{10}) Control

- Water exposed soil with adequate frequency for continued moist soil.
- Replace ground cover in disturbed areas as quickly as possible.
- Automatic sprinkler system installed on all soil piles.
- Vehicle speed for all construction vehicles shall not exceed 15 ~~mph~~miles per hour on any unpaved surface at the construction site.

- Develop a trip reduction plan to achieve a 1.5 average vehicle ridership 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).

Enhanced Mitigation Measures for Construction Equipment

To help provide a greater degree of reduction of PM emissions from construction combustion equipment, ICAPCD recommends the following enhanced measures.

- 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).

AQ-3 **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, and Fire Department access/emergency entry/exit points as approved by Fire/ Office of Emergency Services [OES] Department).

AQ-4 **Dust Suppression Management Plan.** Prior to any earthmoving activity, the applicant shall submit and obtain approval from ICAPCD and ICPDS~~Imperial County Planning and Development Services Department~~ a construction Dust Control Plan.

AQ-5 **Operational Dust Control Plan.** Prior to issuance of a Certificate of Occupancy, the applicant shall submit and obtain approval from ICAPCD and ICPDS~~Imperial County Planning and Development Services Department~~ an Operations Dust Control Plan.

ICAPCD Rule 301 Operational Fees apply to any project applying for a building permit. At the time that building permits are submitted for the proposed project, ICAPCD shall review the project to determine if Rule 310 fees are applicable to the project.

Significance after Mitigation

Although the proposed projects would not exceed ICAPCD's significance thresholds for ROG, NO_x, and CO, Mitigation Measure AQ-1 would provide additional reduction strategies to further improve air quality and reductions in criteria pollutants. With implementation of fugitive dust control measures (Mitigation Measure AQ-2), emissions of PM_{10} would be below the ICAPCD's significance threshold during all construction phases for each individual project and for the ~~Big Rock~~Laurel Cluster. Implementation of Mitigation Measures AQ-3, AQ-4, and AQ-5 would ensure that fugitive dust emissions would be reduced during construction and operations. Therefore, with the implementation of proposed mitigation measures AQ-1 through AQ-5, the air quality impacts would be reduced to a level less than significant.

Impact 4.2-3 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 $PM_{10,}$ 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 project followed by a discussion of potential impacts during operation of the project.

Construction

~~Big Rock~~Laurel Cluster

Imperial County is classified as a "serious" non-attainment area for PM_{10} and a "moderate" nonattainment 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 4.3-2, the project would result in emissions of the air pollutants ROG, NO_x, CO, and PM_{10}. However, construction activities would not result in a significant increase in CO, ROG, and NO_X that would exceed ICAPCD thresholds. The projects' emissions of ozone precursors and particulate matter are mainly attributable to temporary construction activities. These activities would cease after approximately 15 months. Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce the emissions to a level less than significant.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction; therefore, implementation of the alternative gen-tie route would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment and no impact would occur.

Operation

~~Big Rock~~Laurel Cluster

As identified above in Impact 4.3-2, the operational impacts associated with the projects would be less than significant. However, the proposed projects, in conjunction with cumulative projects, could result in a cumulatively considerable impact related to PM_{10} 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 4.2-4 Expose Sensitive Receptors to Substantial Pollutant Concentrations?

The projects would not expose sensitive receptors to substantial pollutant concentrations.

~~Big Rock~~Laurel Cluster

As previously indicated above, there are off-site rural residences adjacent to the project sites. 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. Because of 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. The projects' compliance with ICAPCD's Regulation VIII will prevent the exposure of the residences to substantial pollutant concentrations. The hours of construction will occur during the day when most people are at work. Implementation of the proposed projects would result in a less than significant impact related to exposure of sensitive receptors to substantial pollutant concentrations.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) is located within Utility Corridor "N" on BLM land. There are no sensitive receptors located within the existing corridor developed with transmission related facilities. The alternative gen-tie point of connection would not involve any additional construction; therefore, implementation of the alternative gen-tie route would not expose sensitive receptors to substantial pollutant concentrations, and no impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.2-5 Create Objectionable Odors Affecting a Substantial Number of People.

The project would not result in objectionable odors during construction and operation.

~~Big Rock~~Laurel Cluster

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 possible physical harms is 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 µg/m_3) of substances, such as ammonia, CO_2, hydrogen sulfide, CH_4, 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. Implementation of the proposed project would result in a less than significant impact associated with the creation of objectionable odors during construction and operation.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) is located within Utility Corridor "N" on BLM land. There are no sensitive receptors located within the existing corridor developed with transmission related facilities. The alternative gen-tie point of connection would not involve any additional construction; therefore, implementation of the alternative gen-tie route would not create objectionable odors, and no impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

4.3.3 Decommissioning/Restoration and Residual Impacts

4.3.3.1 Decommissioning/Restoration

Similar to construction activities, decommissioning and restoration of the project sites would generate air emissions. A summary of the daily construction emissions for the projects is provided in Table 4.3-6~~Table 4.3-6~~ through ~~–~~ Table 4.3-9~~Table 4.3-9~~. A similar scenario would be expected to occur during the decommissioning and site restoration stage of the projects. Air quality emissions would be similar to or less than the emissions presented for construction. No significant air quality impacts are anticipated during decommissioning and restoration of the project sites. However, 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. Mitigation Measures AQ-1 through AQ-5 would provide additional reduction strategies to further improve air quality. Therefore, a less than significant impact is identified during decommissioning and site restoration of the project sites.

4.3.3.2 Residual

Although the proposed projects would not exceed ICAPCD's significance thresholds for ROG, NO_x, and CO, Mitigation Measure AQ-1 would provide additional reduction strategies to further improve air quality and reductions in criteria pollutants. With implementation of fugitive dust control measures (Mitigation Measure AQ-2), emissions of PM_{10} would be below the ICAPCD's significance threshold during all construction phases for each individual project and for the ~~Big Rock~~Laurel Cluster. 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 AQ-3, AQ-4, and AQ-5 would ensure that fugitive dust emissions would be reduced during construction and operations. The projects would not result in any residual operational significant and unavoidable impacts with regards to air quality.

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 areas, analyzes potential impacts because of 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 *~~Big Rock~~Laurel Cluster Solar Farms Biological Resources Technical Report* prepared by Barrett's Biological Surveys. This report is included in Appendix F 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 were conducted to determine the possibility of the existence of endangered, threatened, sensitive or species of concern within the project sites.

Focused burrowing owl surveys were conducted in May through July 2017 at LSF1 (APNs 051-310-023, 051-360-005) and portions of ~~BRSF1~~ LSF4 (APNs 051-350-015, 051-350-016, 051-360-038 (portion), 051-360-028). The initial habitat surveys for the reminder of the ~~Big Rock~~Laurel Cluster lands were performed from September through October 2017. The remaining protocol surveys for the rest of ~~BRSF1,~~ LSF2, ~~and~~ LSF3, and LSF4 will be performed during the height of breeding season.

4.4.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the projects.

Federal

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act 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 2016).

Federal Endangered Species Act

Enacted in 1973, the 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 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 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 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 CCR 15380 requires that endangered, rare, or threatened species or subspecies of animals or plants be identified within the influence of the projects. If any such species are found, appropriate measures should be identified to avoid, minimize, or mitigate to the extent possible the effects of the projects.

California Department of Fish and Wildlife Code 1600 (as amended)

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 Fish and Wildlife 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.

California Department of Fish and Wildlife 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 Native Plant Protection Act ~~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 (ROW)."

Porter-Cologne Water Quality Control Act (as amended)

Administered by the State Water Resources Control Board (SWRCB), the Porter-Cologne Water Quality Control Act 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 Conservation 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. Table 4.4-1 analyzes the consistency of the projects with specific policies contained in the Imperial County General Plan associated with biological resources.

Table 4.4-1. Project Consistency with General Plan Biological Resource Policies

General Plan Policies	Consistency with General Plan	Analysis
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. **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.	Consistent	Biological assessments and reports have been conducted at the project sites in regard to the proposed projects. 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.

Table 4.4-1. Project Consistency with General Plan Biological Resource Policies

General Plan Policies	Consistency with General Plan	Analysis
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. **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 USFWS and CDFW regulations, or as amended.	Consistent	See response to the Open Space Conservation Policy above. Additionally, Burrowing Owl Focused Surveys have been conducted or are planned in accordance with the wildlife agency protocols. The results and mitigation are provided in this section of this EIR.

Source: County of Imperial Conservation and Open Space Element 2016; County of Imperial Land Use Element 2015

CDFW – California Department of Fish and Wildlife; EIR – environmental impact report; USFWS – U.S. Fish and Wildlife Service

4.4.1.2 Existing Conditions

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 F of this EIR). The plant community would be considered agricultural communities within the project areas.

Agriculture

The project sites are located entirely on active agricultural fields. The project sites are currently subject to agricultural operational activities, with crops including alfalfa and Bermuda or disked. No rare or special species plants were observed or expected in the agricultural areas.

Ruderal vegetation refers to the type of vegetation which grows in response to human disturbance. This type of vegetation is found within the IID canal and drains. Plants found within the IID ROW were weedy plants, such as saltcedar and quail bush.

The proposed projects would include development of solar facilities adjacent to productive agricultural lands or land occupied by other solar facilities. 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.

Vegetation communities within the proposed transmission gen-tie line are limited to agriculture and disturbed/developed land. The alternative gen-tie route traverses desert lands; however, no new construction would be required in this area for this alternative point of connection.

Wildlife Species

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 total of 41 species of animals were observed or heard using the sites or in the immediate vicinity. A complete list of all wildlife species observed on the ~~Big Rock~~Laurel Cluster lands is included in the BTR (Appendix F of this EIR). The observed species are summarized below.

Special Status Wildlife Species

Special-status species are defined as plants and animals that are legally protected under the Endangered Species Act (ESA), 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 areas. Special-status species with potential to occur in the vicinity of the project sites are detailed in the BTR (Appendix F of this EIR).

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 exgtimus*), Yuma clapper rail (*Rllus longirostris yumanensis*), least tern (*Sterna antillarum*), or desert pupfish (*Cyprinidon macularis*).

Sensitive Species

Burrowing Owl (*Athene cunicularia*)

In California, burrowing owls (*Athene cunicularia*) are yearlong residents of flat, open, dry grassland and desert habitats at lower elevations. 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; 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. Suitable habitat within the project areas were searched with a pedestrian survey for burrowing owls and their sign (burrows, pellets, feathers, scat, litter, and animal dung). The pedestrian surveys were conducted May 2017 through September 2017.

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 and listed on the MBTA. The survey was done using *The CDFW Staff Report* (CDFW 2012), which addresses survey and mitigation guidelines for the owl and communications with CDFW Wildlife Biologists, Ontario, California office.

Burrowing owls were observed within the boundaries of the project sites and were also found off-site within the IID right of way. The project sites support active burrowing owl foraging habitat. During the survey, approximately 5 to 9 occupied burrows, 6 to 12 burrowing owls, and 7 to 9 burrows were found onsite and within the IID ROW.

Mountain Plover (*Charadrius montanus*)

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 areas; however, suitable habitat is present for this species to occur.

Long Billed Curlew (*Numenius americanus*)

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. Because of suitable habitat found within the project areas, there is a high propensity for this species to be found on-site.

Short Billed Dowitcher (*Limnodromus griseus*)

These species are CDFW species of special concern. They typically breed in muskegs of taiga to timberline, and barely into subartic 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. Because of suitable habitat found within the project areas, there is a high propensity for this species to be found on-site.

Swainson's Hawk (*Buteo swainsoni*)

These species are CDFW species of special concern. They typically breed in open country, such as grassland, shrubland, and agricultural areas. They usually migrate in large flocks often with broad-winged hawks. Because of suitable habitat found within the project areas, there is a medium propensity for this species to be found on-site.

Loggerhead Shrike (*Lanius ludovicianus*)

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. Because of suitable habitat found within the project areas, there is a medium propensity for this species to be found on-site.

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.

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* [USACE 1987]) 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 3 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 CFR. § 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 areas. No IID drains or canals will be removed or relocated. Therefore, no USACE, CDFW, or RWQCB resources would be affected.

Wildlife Corridors and Habitat Connectivity

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 project sites are comprised of active agricultural fields, which are surrounded by agricultural uses and developed solar facilities. All species are able to freely move throughout the survey 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, filing, 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
- Conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan (NCCP)~~Natural Community Conservation Plan~~, or other approved local, regional, or state ~~habitat conservation plan~~HCP

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 areas. 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 ~~Big Rock~~Laurel Cluster site locations. The BTR is included as Appendix F of this EIR. The information obtained from the 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.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection.

4.4.2.3 Impact Analysis

Impact 4.4-1 Possible Habitat Modification.

The construction and operation of the proposed projects 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.

~~Big Rock~~Laurel Cluster

Impact on Vegetation Communities

The vegetation community type identified for the ~~Big Rock~~Laurel Cluster Solar Farms is agricultural. The project sites have been in active agricultural cultivation and therefore do not support habitat for sensitive vegetation communities. The alternative gen-tie route connection to the existing Imperial

Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection.

Implementation of the proposed projects would not result in an impact on sensitive vegetation communities.

Impact on Special Status Species

Special Status and Priority Plants

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. The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection.

Implementation of the proposed projects would not result in an impact on special status plant species.

Impact on Sensitive Wildlife

Burrowing Owl

Construction Impacts

The *CDFW Staff Report* on Burrowing Owl (CDFW 2012) lists impacts on 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

Approximately two to three burrowing owls were observed using two to three occupied burrows and three to four active burrows within the project sites. Approximately four to nine burrowing owls were observed using three to six occupied burrows and four to five 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 (CDFW 2012), impacts on 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 on burrowing owl foraging habitat is considered a significant impact. Therefore, implementation of the proposed projects will result in a potentially significant impact on the burrowing owl. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce the impact to a level less than significant.

As a requirement of Mitigation Measure BIO-1, a pre-construction survey will 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 on 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 is required (Mitigation Measure BIO-1) to reduce the impact to a level less than significant. Similar measures will be required for any future decommissioning, restoration activities that may occur at the end of the currently anticipated 40-year life of the projects.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact on burrowing owl would be associated with implementation of this alternative gen-tie route.

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 Mitigation Measures BIO-1 and BIO-3 would reduce the impact to a level less than significant, ensuring that construction is at least 250 feet away from an active burrow during breeding season, which would be confirmed through construction monitoring by the Designated Biological Monitor. 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 on 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 BIO-3 requires preparation of a Worker Environmental Awareness Program (WEAP) and Mitigation Measure BIO-4 requires that construction vehicles maintain a speed limit of 15 miles while driving on access roads. Implementation of these mitigation measures would reduce impacts on burrowing owls from O&M activities to a level 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 to 15 meters. 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 1 meter above the ground when foraging for rodents. 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 on burrowing owl are anticipated because of 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 because of 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 because of noise are expected to occur to this species, and no mitigation is required.

Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, Loggerhead Shrike

Construction Impacts

Although these species were not observed during site visits because of 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, 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, the potential impact is considered significant because of the possibility that these species could find suitable foraging habitat within the project areas. Implementation of Mitigation Measure BIO-5 would reduce construction impacts 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.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact onmountain plover, long billed curlew, short billed dowitcher, and loggerhead shrike would occur with implementation of this alternative gen-tie route.

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.

Mitigation Measure(s)

Burrowing Owl

The following mitigation measures are required for the ~~Big Rock~~Laurel Cluster (~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4).

BIO-1 **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 on burrowing owl during construction activities:

1. A distance of 160 feet, during non-nesting season (September through January), or 250 feet, during nesting season (February through August), 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. Pre-construction clearance surveys for this species shall be conducted no less than 14 days prior to the start of ground disturbance and 24 hours of construction and report submitted 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~~ IID 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 1 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 on 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.

BIO-2 **Burrowing Owl Compensation.** The project applicant shall compensate for impacts on burrowing owl habitat through the following measures:

- CDFW's mitigation guidelines for burrowing owl (CDFW 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 because of 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. Because of 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.

BIO-3 **Worker Awareness Program.** Prior to project initiation, a 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 on 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.

BIO-4 **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, and Loggerhead Shrike

The following mitigation measures are required for the ~~Big Rock~~Laurel Cluster (~~BRSF1, LSF1~~, LSF2, ~~and~~ LSF3, and LSF4).

BIO-5 **Temporary Construction Suspension.** If a Designated Biological Monitor observes Mountain Plover, Long Billed Curlew, Short Billed Dowitcher and/or Loggerhead Shrike foraging within the project sites, or in adjacent agricultural fields, the Designated Biological Monitor shall have the discretion to cease construction in the area of the observed species (i.e., maintain an appropriate buffer between the species and construction activity) until they disperse. Additionally, in order to reduce impacts on the Mountain Plover, Long Billed Curlew, Short Billed Dowitcher, and Loggerhead Shrike, an avian and 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 BIO-6.

Migratory Birds and Other Sensitive Non-Migratory Bird Species

BIO-6 **Construction and O&M Mitigation Measures.** In order to reduce the potential indirect impact on migratory birds, bats and raptors, an 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 on bird populations and shall be developed by the project applicant in conjunction with the County.

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 preconstruction 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 on 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 the Avian Powerline Interaction Committee's guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (Avian Powerline Interaction Committee 2012).
2. Minimize noise.
3. Minimize use of outdoor lighting.

4. Implement 1 year of post-construction avian monitoring incorporating the Wildlife Mortality Reporting Program. Additional years of post-construction avian monitoring should only be required at the discretion of the Designated Biological Monitor should they determine that avian mortality is occurring and measures are necessary to be implemented to reduce observed avian mortality.

BIO-7 **Raptor and Active Raptor Nest Avoidance.** Raptors and active raptor nests are protected under California FGC 3503.5, 3503, 3513. In order to prevent direct and indirect noise impact on 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 BIO-1 through BIO-4 would reduce impacts on burrowing owls to a level less than significant. Implementation of Mitigation Measure BIO-5 would reduce the potential impact on mountain plover, long billed curlew, short billed dowitcher, and loggerhead shrike to levels less than significant. Mitigation Measures BIO-6 and BIO-7 would reduce impacts on migratory and non-migratory birds and nesting raptors to levels less than significant.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. No biological impacts are anticipated associated with implementation of the alternative gen-tie route.

Impact 4.4-2 Possible Impact on Riparian Habitats or Other Sensitive Natural Communities.

Construction and operation of the proposed projects would not impact riparian or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFW and USFWS.

~~Big Rock~~Laurel Cluster

The project sites contain active agricultural and ruderal vegetative communities and therefore do not have riparian or other sensitive natural communities. Implementation of the proposed projects would not result in an impact on riparian habitats or other sensitive natural communities.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection.No impacts on riparian habitats or other sensitive natural communities are anticipated associated with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.4-3 Possible Impact on Wetlands.

Construction and operation of the proposed projects 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.

~~Big Rock~~Laurel Cluster

No IID canal or drain structures would be removed; therefore, there would be no impact on 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, implementation of the proposed projects would not result in an impact on USACE, CDFW, or RWQCB jurisdictional resources.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. No impacts on USACE, CDFW, or RWQCB jurisdictional resources are anticipated associated with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.4-4 Possible Impact on Wildlife Movement and Nursery Sites.

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.

~~Big Rock~~Laurel Cluster

The project sites 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 BIO-6). Thus, there are no anticipated impacts on wildlife movement or nursery sites, and no additional mitigation would be required. Therefore, implementation of the proposed projects would result in a less tan significant impact on wildlife movement and nursery sites.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. No impacts on wildlife movement and nursery sites are anticipated associated with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No additional mitigation measures are required than those previously identified in this section for raptors (Mitigation Measure BIO-6).

Impact 4.4-5 Possible Conflict with Policies Protecting Biological Resources.

The projects do not conflict with local policies, such as a tree preservation policy, or ordinances.

~~Big Rock~~Laurel Cluster

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 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-2-R, and A-3 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, implementation of the proposed projects would not result in a significant impact associated the project's potential to conflict with local policies protecting biological resources.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. No impacts related to conflict with local policies protecting biological resources are anticipated with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.4-6 Possible Conflict with Local Conservation Plan(s).

Construction and operation of the proposed projects do not conflict with an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

~~Big Rock~~Laurel Cluster

The project sites are not located in an ~~Habitat Conservation Plan~~HCP, ~~natural community conservation plan~~NCCP), or other approved local, regional, or state ~~habitat conservation plan~~HCP. Implementation of the proposed projects would not result in an impact associated with the potential to conflict with local conservation plans.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of

connection. No impacts related to conflict with local conservation plans are anticipated with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

4.4.3 Decommissioning/Restoration and Residual Impacts

4.4.3.1 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 on sensitive wildlife species (e.g., burrowing owl, mountain plover, long billed curlew, short billed dowitcher, loggerhead shrike, wildlife) would be applicable during the decommissioning phase of the projects as well including the following Mitigation Measures: BIO-1 through BIO-7, and would reduce this impact on a level less than significant.

4.4.3.2 Residual

The implementation of Mitigation Measures BIO-1 through BIO-4 would reduce impacts on burrowing owls to a level less than significant. Implementation of Mitigation Measure BIO-5 would reduce the potential impact on mountain plover, long billed curlew, short billed dowitcher, and loggerhead shrike to levels less than significant. Mitigation Measures BIO-6 and BIO-7 would reduce impacts on 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.

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 sites, analyzes potential impacts because of 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 ~~*Big Rock 1 and Laurel 1, 2, and 3 Solar Projects* ~~*Cultural Resources Literature Review* prepared by Environmental Science Associates. This report includes a records search at the California Historic Resource Information System South Coastal Information Center (SCIC), a Sacred Lands File (SLF) search conducted by the California ~~Native American Heritage Commission (~~NAHC~~)~~, and a review of historic maps and aerial photographs, which have been completed for the project sites pursuant to CEQA. This report is included in Appendix G of this EIR.

4.5.1 Environmental Setting

The project area is located in the Imperial Valley Area of the Colorado Desert. The elevation of the project sites range from approximately 35 to 40 feet below mean sea level. The region is characterized by an arid climate with dry, hot summers and mild winters.

The project sites, including the alternative off-site gen-tie route, occupy the former western shoreline of prehistoric Lake Cahuilla, and at a depth the lake would have exhibited salinity levels suitable to sustain a variety of fish used by prehistoric human population. Lake Cahuilla is now partially occupied by the artificially created Salton Sea. Lake Cahuilla was formed by periodic prehistoric natural diversion of the Colorado River. Many lakes (now dry) in the Colorado Desert are thought to have supported small human populations during the terminal Pleistocene (22,000 to 11,000 years before present) and early Holocene (11,000 to 8,000 years before present). Since the desiccation of California's deserts during the later Holocene, local lakes have dried and significant sand dunes have formed.

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

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." Section 106 of the National Historic Preservation Act ~~(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 NRHP, and to afford the Advisory Council on Historic Preservation 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 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 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 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 52

AB 52 amends PRC 5097.94, and adds eight new sections to the PRC relating to Native Americans. AB 52 was passed in 2014 and took effect on July 1, 2015. It establishes a new category of environmental resource that must be considered under CEQA called tribal cultural resources (PRC 21074) and establishes a process for consulting with Native American tribes and groups regarding those resources. Under AB 52, a project that may substantially change the significance of a tribal cultural resource is a project that may have a significant impact on the environment. If a project may cause a significant impact on a tribal cultural resource, the lead agency shall implement measures to avoid the impacts when feasible. Environmental documents must incorporate a discussion of the impacts, mitigation measures, and notification and consultation conducted with tribes affiliated with the geographic area.

Senate Bill 18

Senate Bill (SB) 18 requires local governments to consult with tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process. These consultation and notice requirements apply to approvals and amendments of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

Prior to the approval or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the NAHC) of the opportunity to conduct consultations for the purpose of preserving, or mitigating impacts on, cultural places on land within the local government’s jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request

consultation, unless a shorter timeframe has been agreed to by the tribe (Government Code §65352.3).

Public Resources Code Section 21074

This code defines a tribal cultural resource as a site, feature, place, cultural landscape, sacred place, and any object with cultural value to a California Native American Tribe. A tribal cultural resource must be on or eligible for the California Register of Historical Resources (CRHR) or must be included in a local register of historical resources. The lead agency can determine if a tribal cultural resource is significant even if it has not been evaluated for the CRHR or is not included on a local register.

Assembly Bill 4239

AB 4239 established 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 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 U.S. 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)

PRC 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 Conservation and 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 projects' consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the Imperial County Board of

Supervisors and Planning Commission ultimately make a determination as to the projects' 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 Policies	Consistency with General Plan	Analysis
Objective 1.4: Ensure the conservation and management of the County's natural and cultural resources.	Consistent	A cultural literature review was conducted for the project sites. As discussed under Impact 4.5-1, given that the project sites have not been completely surveyed and there are previously recorded resources that have not yet been evaluated for eligibility in the CRHR, implementation of the proposed projects could potentially cause a substantial adverse change in the significance of a historical resource. Mitigation Measures CR-1 through CR-4 have been identified to reduce potential impacts associated with historical resources to a level less than significant. The projects have the potential to disturb previously undocumented cultural resources that could qualify as unique archaeological resources pursuant to CEQA. This potential impact is considered significant. Implementation of Mitigation Measures CR-5 and CR-6 would reduce the potential impact to a level less than significant. Implementation of Mitigation Measure CR-7 would ensure that the impact on paleontological resources during construction would be mitigated to a level less than significant. Implementation of Mitigation Measure CR-8 would reduce potential impacts on human remains to a level less than significant.
Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.	Consistent	

Source: County of Imperial Conservation and Open Space Element 2016

CEQA – California Environmental Quality Act; CRHR - California Register of Historical Resources

4.5.1.2 Existing Conditions

Cultural Setting

The project area is located in the Salton Basin in the Colorado Desert. Historically, as the Colorado River flowed to the California Gulf, through the Salton Trough during the Holocene, it created a periodic formation of an extensive freshwater lake known as Lake Cahuilla. The Lake Cahuilla shoreline has been associated with extensive prehistoric use and occupation.

Prehistoric Resources

The Cahuilla, Tipai, and Quechan inhabited the Imperial County area since before Spanish contact. The Cahuilla people occupied a territory in south-central California, between the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, east to the Colorado Desert, and west into the San Jacinto Plain near Riverside and the Palomar Mountains. The Tipai, previously called Diegueño or Kamia, occupied an area that roughly extended from the

Pacific Coast at San Diego eastward to the Sand Hills of Imperial County, as well as south into modern-day Mexico. The Quechan, also known as the Yuma, continue to occupy their traditional territory at the confluence of the Gila and Colorado rivers at the edge of the California, Arizona, and Mexican borders. From here their territory stretched north along the Colorado River and to the east of the Gila River (County of Imperial Planning and Development Service Department [ICPDS] 2016).

The most important feature in the study of the prehistory and history of Imperial County is Lake Cahuilla, the modern iteration of which is the Salton Sea. This enormous lake periodically formed when flooding in the Colorado River broke through low-lying areas and flooded the Salton Trough, inundating up to an average elevation of about 40 feet above mean sea level. Because Lake Cahuilla was a rare source of fresh water in the desert, human populations would have been attracted to live and gather plant and animal resources near the lake. Human occupation sites mark the ancient shorelines both above the high stand mark and along the lower, retreating shorelines (ICPDS 2016).

To date, 14,860 prehistoric and historic period resources have been recorded in Imperial County. Of those, 12,398 are archaeological sites and the rest are either isolates or historic structures. As the entire County has not been surveyed, additional sensitive prehistoric and historic period cultural resource are likely to exist throughout Imperial County (ICPDS 2016).

Historic Period

The historic period is described as including the Spanish Period (1769 to 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 (1821 to 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 to 1848). The American Period (1848 to present) began and in 1850 California was accepted into the Union of the U.S. primarily because of the population increase created by the Gold Rush of 1849. The cattle industry reached its greatest prosperity during the first years of the American Period.

Mexican Period land grants had created large pastoral estates in California, and demand for beef during the Gold Rush led to a cattle boom that lasted from 1849–1855. However, beginning about 1855, the demand for beef began to decline because of imports of sheep from New Mexico and cattle from the Mississippi and Missouri Valleys. When the beef market collapsed, many California ranchers lost their ranchos through foreclosure. A series of disastrous floods in 1861 to 1862, followed by a significant drought further diminished the economic impact of local ranching. This decline combined with ubiquitous agricultural and real estate developments of the late 19th century, set the stage for diversified economic pursuits that have continued to proliferate to this day.

Identified historic period built-environment and archaeological resources represent a range of activities including, but not limited to, mining, transportation, and ranching/homesteading and are represented throughout the County (ICPDS 2016).

Paleontological Resources

Paleontological resources (fossils) are the remains of prehistoric plant and animal life. Fossil remains, such as bones teeth, shell, and wood, are found in geologic deposits (rock formations) within which they were originally buried.

The project area is located in the Imperial Valley which 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 areas are considered to be high.

Records Search

Previous Studies

On May 16 and September 7, 2017, record searches of the California Historic Resource Information System were conducted at the SCIC. The records searches included a review of all recorded cultural resources within a 1-mile radius of the project areas, the proposed Fern/Liebert Substation, and the alternative gen-tie area, as well as a review of cultural resource reports on file.

The records search results indicate that 39 cultural resources studies have been conducted within a 1-mile radius of the project sites. Approximately 60 percent of the 1-mile records search radius has been included in previous cultural resources surveys. The ~~BRSF1 and~~ LSF2 and LSF4 project sites do not appear to have been previously surveyed.

Previously Recorded Resources

The records search indicates that 77 cultural resources have been previously recorded within 1 mile of the project sites. Of these 77 previously recorded resources, 19 are prehistoric archaeological sites, 3 are historic-period archaeological sites, 1 is a multicomponent archaeological site, 10 are historic-period built environment resources, 2 are historic-period linear resources, 1 is a landscape resource, 8 are historic architectural resources, and 33 are isolates. Of the 33 isolates, 25 are prehistoric isolates, and 8 are historic-period isolates. The vast majority of the previously recorded resources consist of prehistoric archaeological sites and isolates. These resources are primarily located within the relatively undeveloped desert lands located south and southwest of the agriculture fields that encompass the project sites. The records search in its entirety can be found in the letter report (Appendix G of this EIR).

Table 4.5-2 summarizes the previously recorded cultural resources located within or immediately adjacent to (within 100 feet of) the project sites. A detailed description of each resource is provided below. Because isolates are not typically considered significant resources, detailed descriptions of the isolates are not provided.

Table 4.5-2. Resources Within or Adjacent to Project Components

Project Area	Previously Recorded Resources Within or Adjacent to Project Components
~~BRSF1~~	~~P-13-008334 (Westside Main Canal), -012689 (Fern Canal), -012693 (Fig Canal), -013748 (Fig Drain), -013761 (Wixom Drain), and Liebert Road and Mandrapa Road~~
LSF1	P-13-012693 (Fig Canal), -013747 (Diehl Drain), and -013748 (Fig Drain)
LSF2	P-13-012689 (Fern Canal), -012693 (Fig Canal), -013747 (Diehl Drain), and -013761 (Wixom Drain)
LSF3	P-13-003404 (wagon road), -003405 (south shore of Lake Cahuilla), -008334 (Westside Main Canal), -012688 (Dixie drains and laterals), -012689 (Fern Canal), -013749 (historic-period isolate), and -013760 (Westside Drain)
LSF4	P-13-008334 (Westside Main Canal), -012689 (Fern Canal), -012693 (Fig Canal), -013748 (Fig Drain), -013761 (Wixom Drain), and Liebert Road and Mandrapa Road

Source: Appendix G of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

P-13-003404 (Wagon Road)

Resource P-13-003404 is a historic-period linear resource consisting of a segment of the wagon road that ran from Yuma, Arizona to Warner's Ranch in San Diego County during the mid to late 19th century. The road segment was not documented as part of a field reconnaissance; rather, it was documented based on a visual inspection of a U.S. Geological Survey (USGS) survey map dating to 1856. The resource has not been previously evaluated for inclusion in the NRHP or the CRHR. Resource P-13-003404 is mapped as being located within the LSF3 project site.

P-13-003405 (South Shore of Lake Cahuilla)

Resource P-13-003405 is a landscape resource consisting of the relict shoreline of Lake Cahuilla. The resource was not documented as part of a field reconnaissance or consultation with Native American groups; rather, it was documented based on visual inspection of a USGS survey map dating to 1856, which identifies the resource as "south shore of big laguna." The resource has not been previously evaluated for inclusion in the NRHP or CRHR. Resource P-13-003405 is mapped as being located within the LSF3 project site; however, it is likely that physical evidence of the resource does not exist within the project site given that its location is based solely on USGS survey map features dating to the 1850s.

P-13-008334 (Westside Main Canal)

Resource P-13-008334 is a historic-period built resource consisting of the Westside Main Canal. The approximately 11-mile-long irrigation canal is concrete-lined and was constructed in 1906. The Westside Main Canal was integrated into the All American Canal's irrigation system when it was constructed between 1936 and 1940. The Bureau of Reclamation and California Office of Historic Preservation determined that resource P-13-008334 is eligible for listing in the NRHP and the CRHR. The canal bounds the southern margins of the ~~BRSF1 and~~ LSF3 and LSF4 project sites.

P-13-012688 (Dixie Drains and Laterals)

Resource P-13-012688 is a historic-period built resource consisting of the three drains (Dixie Drains 2, 3, and 4) and one lateral (Dixie Lateral 1) associated with the Dixie Drain. The earthen drainage

system was constructed between 1909 and 1949, and extends from the Westside Main Canal in the south to the New River in the north. Resource P-13-012688 has been previously recommended ineligible for the NRHP and CRHR because of a lack of integrity resulting from routine dredging and widening of the drains and laterals associated with the system. A segment of Dixie Drain 3 is located within the LSF3 project site, and Dixie Lateral 1 bounds the southern portion of LSF3.

P-13-012689 (Fern Canal)

Resource P-13-012689 is a historic-period built resource consisting of the Fern Canal. The approximately 10-mile-long irrigation canal is concrete-lined and was constructed in 1909. In the 1960s the canal underwent modifications that included dredging and widening. Resource P-13-012689 has been previously recommended ineligible for the NRHP and CRHR because of a lack of integrity resulting from the modification undertaken in the 1960s. The Fern Canal bounds the western margins of the ~~BRSF1, and~~ LSF2 and LSF4 project sites, and is located within the LSF3 project site.

P-13-012693 (Fig Canal)

Resource P-13-012693 is a historic-period built resource consisting of the Fig Canal. The irrigation canal was constructed sometime around 1912 and has concrete-lined and earthen segments. The canal underwent modification including widening and dredging in the 1940s and 1950s. Resource P-13-012693 has been previously recommended ineligible for listing in the NRHP and CRHR because of a lack of integrity resulting from the modifications to the canal carried out in the 1940s and 1950s. The Fig Canal bounds the northwestern margin of the ~~BRSF1~~ LSF4 project site, the western margin of the LSF1 project site, and the eastern margin of the LSF2 project site. The canal is also located within the southeastern quadrant of the northern portion of the LSF4~~BRSF1~~ project site.

P-13-013747 (Diehl Drain)

Resource P-13-013747 is a historic-period built resource consisting of the Diehl Drain. The earthen drainage ditch was constructed sometime between 1922 and 1949, and extends approximately 1 mile from West Wixom Road in the south to the Fig Drain in the north. Resource P-13-013747 has been previously recommended ineligible for listing in the NRHP and CRHR because of its inability to convey the theme of early agricultural development in Imperial County, as well as other resources, such as the All American Canal and the Westside Main Canal. The drainage ditch overlaps the western margins of the LSF1 and LSF2 project sites.

P-13-013748 (Fig Drain)

Resource P-13-013748 is a historic-period built resource consisting of the Fig Drain. The earthen drainage ditch was constructed sometime prior to 1945, and extends approximately 2.5 miles from the Westside Main Canal in the south to the New River in the north. Resource P-13-013748 has been previously recommended ineligible for listing in the NRHP and CRHR because of its inability to convey the theme of early agricultural development in Imperial County, as well as other resources, such as the All American Canal and the Westside Main Canal. The drainage ditch overlaps the eastern margins of the ~~BRSF1 and~~ LSF1 and LSF4 project sites.

P-13-013760 (Westside Drain)

Resource P-13-013760 is a historic-period built resource consisting of the Westside Drain. The earthen drainage ditch was constructed in the early 1900s, and extends approximately 1.65 miles from the intersection of Hyde Road and West Vaughn Road in the south to I-8 in the north where it empties into Dixie Drain 3. Resource P-13-013760 has been previously recommended eligible for listing in the NRHP and CRHR under Criterion A/1 for its association with the Westside Main Canal and its significance in the agricultural development of Imperial County. The drainage ditch bounds the western margins of the ~~BRSF1 and~~ LSF2 and LSF4 project sites.

P-13-013761 (Wixom Drain)

Resource P-13-013761 is a historic-period built resource consisting of the Wixom Drain. The earthen drainage ditch was constructed in 1941, and extends approximately 2.2 miles from West Wixom Road in the south to Campbell road where it intersects with the New River in the north. Resource P-13-013761 has been previously recommended ineligible for listing in the NRHP and CRHR because of its inability to convey the theme of early agricultural development in Imperial County, as well as other resources, such as the All American Canal and the Westside Main Canal. The drainage ditch is located within 90 feet of the northwest corner of the LSF3 project site.

Liebert Road and Mandrapa Road

This resource is a historic-period architectural resource consisting of a barn constructed between 1940 and 1950. The resource has not been previously evaluated and is located within 60 feet of the southwestern corner of the LSF4~~BRSF1~~ project site.

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;
- Disturb any human remains, including those interred outside of formal cemeteries; or
- Cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in PRC §21074.

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 areas. 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 project sites. This analysis is included as Appendix G 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.

4.5.2.3 Impact Analysis

Impact 4.5-1 Impact on Historical Resources.

The proposed projects would not cause a substantial adverse change in the significance of a historical resource.

~~Big Rock~~Laurel Cluster

To be considered historically significant, a resource must meet one of four criteria for listing outlined in the CRHR (CEQA Guidelines 15064.3 (a)(3)). In addition to meeting one of the criteria outlined 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 1.5 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.

As previously indicated above, there are previously recorded cultural resources located within or immediately adjacent to (within 100 feet of) the project sites (Table 4.5-2). Table 4.5-3 provides a summary of the identified resources within and immediately adjacent to the project sites that have been recommended or determined eligible for listing, or still need to be evaluated for eligibility in the CRHR. As shown in Table 4.5-3, one resource has been determined eligible for listing in the CRHR, one resource has been recommended eligible for listing in the CRHR, and three resources have not been previously evaluated.

The project sites have been subject to varying degrees of analysis. Much of the LSF3 project site has been previously surveyed; however, only small portions of the LSF1 project site has been previously surveyed, and the ~~BRSF1 and the~~ LSF2 and LSF4 project sites have not been previously surveyed. Given that the project sites have not been completely surveyed and there are previously recorded resources that have not yet been evaluated for eligibility in the CRHR, implementation of the proposed projects could potentially cause a substantial adverse change in the significance of a historical resource. The potential impact is considered significant. Implementation of Mitigation Measures CR-1 through CR-4 would reduce the potential impact associated with historical resources to a level less than significant.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact on historical resources would be associated with implementation of this alternative gen-tie route.

Table 4.5-3. Summary of Resources Recommended or Determined Eligible for Listing or Needs Evaluation

Primary # (P-13-)	Description	CRHR Status	Location
003404	Historic-period archaeological site: crossed wagon road	Not Evaluated	Within LSF3
003405	Prehistoric archaeological site: “south shore of big laguna”	Not Evaluated	Within LSF3
008334	Historic-period build resource: Westside Main Canal	Determined Eligible	Bounds ~~BRSF1~~ LSF4 and LSF3
013760	Historic-period built resource: Westside Drain	Recommended Eligible	90 feet from LSF3
--	Historic-period architectural resource (Liebert Road and Mandrapa Road): barn constructed between 1940-1950	Not Evaluated	50 feet from ~~BRSF1~~LSF4

Source: Appendix G of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ CRHR – California Register of Historical Resources; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

Mitigation Measure(s)

CR-1 Prior to issuance of grading permits, the project applicant shall retain a qualified archaeologist defined as one meeting the Secretary of the Interior’s Professional Qualification Standards (U.S. Department of the Interior 2008) to oversee Phase I cultural resources surveys for the ~~Big Rock~~Laurel Cluster, to determine if previously unidentified cultural resources exist within the project sites and to relocate and evaluate the previously identified resources that have not yet been evaluated. The methods and results of the surveys, as well as the records search, shall be summarized in a Phase I cultural resources survey report that follows the guidelines in *Archaeological Resource Management Reports*:

Recommended Contents and Format, Department of Parks and Recreation, Office of Historic Preservation, State of California, 1990. The report shall address the requirements of CEQA.

CR-2 If previously documented but unevaluated and/or newly documented archaeological resources are identified within the project sites, they should be evaluated for inclusion in the CRHR and/or as unique archaeological resources. Should newly documented archaeological resources be found eligible for listing in the CRHR and/or constitute unique archaeological resources, avoidance and preservation in place is the preferred manner of mitigation. If avoidance is not feasible, a treatment plan should be developed by the qualified archaeologist in coordination with the project applicant and the lead agency that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resources.

CR-3 Should the historic architectural resource (Liebert Road and Mandrapa Road) located within 60 feet of the LSF4~~BRSF1~~ project site be subject to indirect visual impacts as a result of project implementation, a qualified architectural historian defined as one meeting the Secretary of the Interior's Professional Qualification Standards (U.S. Department of the Interior 2008) should be retained to evaluate the resource for inclusion in the CRHR. If the resource is not found eligible for listing, then no further work would be required. Should the resource be found eligible, the qualified architectural historian will make recommendations to reduce indirect impacts on the resource to less than significant.

CR-4 Development within the project sites shall avoid impacts on the following resources: P-13-008334 (Westside Main Canal) and -013760 (Westside Drain) located within or immediately adjacent to the project sites that have been previously determined or recommended as eligible for listing in the CRHR.

Impact 4.5-2 Impact on Archaeological Resources.

The proposed projects could cause a substantial adverse change in the significance of an archaeological resource.

~~Big Rock~~Laurel Cluster

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.

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 potential impact is considered significant. Implementation of Mitigation Measures CR-5 and CR-6 would reduce the potential impact on archaeological resources to a level less than significant.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact on archaeological resources would be associated with implementation of this alternative gen-tie route.

Mitigation Measure(s)

CR-5 Pursuant to CEQA Guidelines §15064.5(f), in the event that previously unidentified 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 significance and the appropriate mitigation measures are determined by a qualified archaeologist familiar with the resources of the region.

Applicant shall notify the County within 24 hours. Applicant shall provide contingency funding sufficient to allow for implementation of avoidance measures or appropriate mitigation.

CR-6 In the event of the discovery of previously unidentified archaeological materials, the contractor shall immediately cease all work activities within approximately 100 feet of the discovery. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, and scrapers) or tool making debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. After cessation of excavation, the contractor shall immediately contact the Imperial County Department of Planning and Development Services. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the discovery of any cultural resource within the project areas shall not be grounds for a “stop work” notice or otherwise interfere with the projects’ continuation except as set forth in this paragraph.

In the event of an unanticipated discovery of archaeological materials during construction, the applicant shall retain the services of a qualified professional archaeologist, meeting the Secretary of the Interior’s Standards for a Qualified Archaeologist, to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it

cannot be avoided, the applicant shall implement an archaeological data recovery program.

Impact 4.5-3 Impact on Paleontological Resources.

The proposed projects would directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

~~Big Rock~~Laurel Cluster

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.

Impacts on any surface or near-surface level paleontological resources may occur because of grading and disturbance of the area. Even relatively shallow excavations in the Lake Cahuilla beds exposed in the project sites may encounter significant vertebrate fossil remains. Therefore this is considered potentially significant impact. Mitigation Measure CR-7 would ensure that the potential projects impacts on paleontological resources do not rise to the level of significance pursuant to CEQA. Implementation of Mitigation Measure CR-7 would reduce the impact on paleontological resources to a level less than significant.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact on paleontological resources would be associated with implementation of this alternative gen-tie route.

Mitigation Measure(s)

CR-7 A qualified paleontological monitor shall be present during excavation activities associated with project construction. The depth of excavation that requires paleontological monitoring shall be determined by the paleontological monitor and the construction contractor based on initial observations during construction earth moving. The paleontological monitor will be equipped to salvage fossils as they are unearthed (to help avoid construction delays). Monitors are empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and permanent preservation. Fossil specimens shall be curated by accessioning them into an established, accredited museum repository with permanent retrievable paleontological storage. A report of findings with an appended itemized inventory of specimens will be prepared. The report and inventory, when submitted to the Imperial County Department of Planning and Development Services, along with confirmation of the curation of recovered specimens into an established, accredited

museum repository, will signify completion of the program to mitigate impacts on paleontological resources.

Impact 4.5-4 Impact on Human Remains.

The proposed projects could disturb and human remains, including those interred outside of formal cemeteries.

~~Big Rock~~Laurel Cluster

During the construction and operational phases of the proposed projects, grading, excavation and trenching will be required. Although the potential for encountering subsurface human remains within the project sites is low, there remains a possibility that human remains are present beneath the ground surface, and that such remains could be exposed during project construction. The potential to encounter human remains is considered a significant impact. Mitigation Measure CR-8 would ensure that the potential impact on previously unknown human remains does not rise to the level of significance pursuant to CEQA. Implementation of Mitigation Measure CR-8 will reduce the potential impact associated with inadvertent discovery of human remains to a level less than significant.

The alternative gen-tie route connection to the existing Imperial Valley Substation traverses desert lands; however, no new construction would be required in this area for this alternative point of connection. Therefore, no impact on human remains would be associated with implementation of this alternative gen-tie route.

Mitigation Measure(s)

CR-8 In the event that evidence of human remains is discovered, construction activities within 200 feet of the discovery will be halted or diverted and the Imperial County Coroner will be notified (Section 7050.5 of the ~~Health and Safety Code~~HSC). If the Coroner determines that the remains are Native American, the Coroner will notify the ~~Native American Heritage Commission~~NAHC, which will designate a ~~(~~MLD for the project (Section 5097.98 of the PRC). The designated MLD then has 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains (AB 2641). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (Section 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (Section 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a document with the county in which the property is located (AB 2641).

Impact 4.5-5 Impact on Tribal Cultural Resources.

The proposed projects would not cause a substantial adverse change in the significance of a tribal cultural resource.

~~Big Rock~~Laurel Cluster

The NAHC maintains the confidential SLF which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on May 19 and September 12, 2017 to request searches of the SLF. The NAHC responded to the requests in letters dated

May 22, and September 14, 2017. The results of the SLF search indicate that Native American cultural resources are not known to be located within or in the vicinity of the project sites.

AB 52 was passed in 2014 and took effect on July 1, 2015. It establishes a new category of environmental resources that must be considered under CEQA called tribal cultural resources (PRC 21074) and establishes a process for consulting with Native American tribes and groups regarding those resources. AB 52 requires a lead agency to begin consultation with a California Native American Tribe that is traditionally and culturally affiliated with the geographic areas of the proposed project. In accordance with AB 52, the County provided notification of the proposed projects to Native American tribes that the County understands to be traditionally and culturally affiliated with the geographic areas of the proposed projects. The County has requested for tribes to provide any information regarding any Traditional Cultural Properties, Sacred Sites, resource collecting areas, or any other areas of concern known to occur in the project area.

The County began the SB 18 consultation process by contacting the NAHC and local tribal representatives. On February 27, 2018, the County sent a letter to each of these tribes, inviting them to enter into consultation regarding the General Plan Amendment. As of publication of this Draft EIR, no responses have been received.

Mitigation Measure(s)

No mitigation measures required.

4.5.3 Decommissioning/Restoration and Residual Impacts

4.5.3.1 Decommissioning/Restoration

No impact is anticipated from restoration activities as the ground disturbance and associated impacts on cultural resources will have occurred during the construction phase of the projects.

4.5.3.2 Residual

Implementation of Mitigation Measures CR-1 through CR-6 would reduce potentially significant impacts on unknown historic or unique archaeological materials during construction of the project sites. Implementation of Mitigation Measure CR-7 would ensure that the impact on paleontological resources during construction would be mitigated to a level less than significant. Implementation of Mitigation Measure CR-8 would reduce potential impacts on human remains to a level less than significant. No unmitigable impacts on cultural 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 sites. Information contained in this section is summarized from publications made available by the California Geological Survey and site-specific geotechnical studies prepared by Landmark Consultants, Inc. ~~(LCI)~~. The geotechnical reports prepared for the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4 are included in Appendix H of this EIR.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, this section focuses on the geology and soils conditions of the project sites and potential impacts of the proposed projects.

4.6.1 Environmental Setting

The project sites, including alternative gen-tie route, are located in the Imperial Valley portion of the Salton Trough physiographic province. The Salton Trough is a topographic and 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 deposited 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.

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. The primary seismic hazard at the project sites is the potential for strong groundshaking due to potential fault movements along the Brawley, Superstition Hills, and Imperial Faults. Secondary geologic hazards that have a potential to occur include 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 state and local laws, policies, and regulations that are applicable to the projects.

State

Alquist-Priolo Special Studies Zone Act

The Alquist-Priolo (AP) Special Studies Zone Act was passed into law following the destructive February 9, 1971 San Fernando earthquake. The AP Special Studies Zone Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the AP Special Studies Zone 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 projects. Based on a review of the current AP Earthquake Fault Zone Maps

produced by the California Geologic Survey, the project sites are not located in an AP earthquake fault zone.

California Building Code

The California Building Standards Commission is responsible for coordinating, managing, adopting, and approving building codes in California. 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 Building Code (CBC) 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 California ~~Health and Safety Code~~HSC Section 18980 ~~Health and Safety Code~~HSC Section 18902 give CCR Title 24 the name of California Building Standards Code.

Local

County Land Use Ordinance

Title 9 Division 15 (Geological Hazards) 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 are prohibited across the trace of an active fault. 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. The proposed projects do not include any residential structures nor are any active faults located across the project sites.

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~~IID Lifelines, the 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 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. While this EIR analyzes the projects' consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

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 heath and safety considerations in land use planning.	Consistent	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. Since the project sites are located in a seismically active area, the projects are required to be designed in accordance with the CBC for near source factors derived from a design basis earthquake based on a PGA of 0.50 gravity (g) (Appendix H of this EIR). It should be noted that the projects would be remotely operated and would not require any habitable structures on site. In considering these factors in conjunction with mitigation requirements outlined in the impact analysis, the risks associated with seismic hazards would be minimized. Preliminary geotechnical reports have been prepared 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.
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

CBC – California Building Code; PGA – peak ground acceleration

4.6.1.2 Existing Conditions

Geology

The Imperial Valley is directly underlain by lacustrine deposits, which consist of interbedded lenticular and tabular silt, sand, and clay. Based on the Unified Soil Classification System, the permeability of these soils is expected to be low to moderate. The Late Pleistocene to Holocene lake deposits are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed a fresh water lake (Lake Cahuilla).

Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 to 20,000 feet.

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.

Ground Shaking

Ground shaking is the byproduct of an earthquake and is the energy created as rocks break and slip along a fault. 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.

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 AP Special Studies Zone Act traverse the project sites. Therefore, the potential for surface fault rupture is considered to be low at the project sites.

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.

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 relative flat topography with a low range in elevation.

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. Transitions between compacted and non-compacted surfaces could present implications for utility infrastructure on the project sites and is discussed further in the impact analysis.

Soil Resources

There are 7 predominant soil types within the boundaries of the project study sites, which are described in Table 4.6-2.

Table 4.6-2. Soil Resources for Each Project Site

Soil Symbol	Soil Name	Description
102	Badland	This steep to very steep miscellaneous area consists of barren land on unconsolidated, stratified alluvium, and is dissected by drainage ways.
110	Holtville silty clay	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.
114	Imperial silty clay	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.
115	Imperial-Glenbar	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.
122, 123	Meloland and Holtville loams	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.

Table 4.6-2. Soil Resources for Each Project Site

Soil Symbol	Soil Name	Description
135	Rositas	The Rositas series consists of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets. Slope ranges from 0 to 30 percent with hummocky or dune micro relief. Mean annual precipitation is about 4 inches and the mean annual air temperature is about 72 ° Fahrenheit
142, 144	Vint loamy very fine sand	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.

Source: U.S. Department of Agriculture Soil Conservation Service 1981

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. The project sites predominately consist of silts and silty sands that have a moderate infiltration rate, but clayey and silty clay soils occur throughout the LSF1 site that has a severe shrink-swell potential for small buildings and roadways.

These clayey materials are generally comprised within one or more soil horizons within the upper 5 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 areas are classified as moderately corrosive to concrete and steel. 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 geology and soils 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 AP 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 on 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.

4.6.2.3 Impact Analysis

Impact 4.6-1 Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking.

The project sites are 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.

~~Big Rock~~Laurel Cluster

The project sites are located in the seismically active Imperial Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. The closest mapped Earthquake Fault Zone is an unnamed fault located approximately 2.1 miles west of the project sites. Geologic mapping by the USGS of the Imperial Valley after the April 4, 2010 magnitude 7.2MW El Mayor-Cucapah Earthquake indicates movement along several known and unknown faults west of the project sites. Surface rupture on these faults is possible from future seismic events in the area. The nearest mapped major Earthquake Fault Zones to the project sites are the Laguna Salada fault (approximately 9.4 miles) and the Superstition Hills fault (approximately 8.5 miles).

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 sites. 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. The primary seismic hazard at the project sites are the potential for strong groundshaking during earthquakes along the Brawley Seismic Zone, Laguna Salada, Superstition Hills, and Imperial faults. The projects are considered likely to be subjected to moderate to strong ground motion from earthquakes in the region.

Even with the integration of building standards, ground shaking within the project sites 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.

As stated above, liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations. Liquefaction may pose a risk to people or structures around the project sites. Four conditions are generally required for liquefaction to occur, including: 1) saturated soil, 2) loosely packed soil, 3) relatively cohesionless soil, and 4) groundshaking of sufficient intensity must occur to trigger the mechanism. All four conditions may exist to some degree at the project sites. Instances of liquefaction can be found in the surrounding area, especially noted along the Westside Main Canal along the southern margin of the project sites. Additional geotechnical investigation would be required in order to assess the risk of liquefaction in the project areas. The potential impact to liquefaction is considered a significant impact**.** Implementation of Mitigation Measure GEO-1 would reduce the potential liquefaction impact to a level less than significant.

No portion of the project sites are 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 MW El Mayor-Cucapah earthquake. However, surface rupture due to faulting within the project sites are not expected to occur and hazards related to rupture along a known earthquake fault are considered unlikely. Similarly, in the context of the flat topography within the project sites, 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.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with exposure of people or structures to potential substantive adverse geological effects (i.e., ground shaking, liquefaction, landslides) would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

The following mitigation measure is required for the ~~Big Rock~~ Laurel Cluster.

GEO-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
- 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 associated with strong seismic groundshaking and liquefaction would be reduced to a less than significant level with the implementation of recommendations made by a licensed geotechnical engineer in compliance with the CBC prepared as part of a formal geotechnical investigation.

Impact 4.6-2 Unstable Geologic Conditions.

The projects would not be located on a geologic unit or soil that is unstable, or that could become unstable as a result of the project.

~~Big Rock~~Laurel Cluster

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. 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. Therefore, these direct and indirect impacts are considered significant impacts and require mitigation. Regional subsidence due to geothermal resource activities has not been documented in the area west of the New River; therefore, the risk of regional subsidence is considered low. Implementation of Mitigation Measure GEO-1 would reduce the potential geologic hazards associated with total and differential settlement to a level less than significant. This mitigation measure requires a licensed geotechnical or soils engineer investigate the site-specific soil conditions and recommendations for the design of the facilities to withstand settlement, in accordance with the CBC be implemented.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with unstable geologic conditions would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No additional mitigation measures beyond Mitigation Measure GEO-1 are required.

Impact 4.6-3 Construction-related Erosion.

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.

~~Big Rock~~Laurel Cluster

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. Ground cover will be planted between the arrays for the life-span of the solar facility is operations. The ground cover would reduce the amount of soil surface exposed to erosion. A vegetation cover reduces erosion potential by: 1) shielding the soil surface from the direct erosive impact of raindrops; 2) improving the soil's water storage porosity and capacity so more water can infiltrate into the ground; 3) slowing the runoff and allowing the sediment to drop out or deposit; and 4) physically holding the soil in place with plant roots.

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 erosion potential, the projects' long-term impact in terms of soil erosion and loss of topsoil would be less than significant. In addition, with implementation of Mitigation Measure HYD-1, the potential impact associated with erosion from construction activities would be reduced to a less than significant level with the preparation and implementation of a SWPPP, including best BMPs to reduce erosion from the construction site.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with construction-related erosion would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No additional mitigation measures beyond Mitigation Measure HYD-1 are required.

Significance after Mitigation

With implementation of Mitigation Measure HYD-1 in Section 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 4.6-4 Exposure to Potential Hazards from Problematic Soils.

The projects could encounter expansive or corrosive soils thereby subjecting related structures to potential risk of failure.

~~Big Rock~~Laurel Cluster

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. The project sites are also found on lacustrine site soils (lake bed deposits), known to be corrosive. These impacts would be a significant impact as structures could be damage by these types of soils. A site specific geotechnical investigation will be required at the sites to determine the extent and effect of problematic soils. Implementation of Mitigation Measure GEO-2 would reduce the impact associated with exposure of potential hazards from problematic soils to a level less than significant.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with exposure of potential hazards from problematic soils would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

The following mitigation measure is required for the ~~Big Rock~~Laurel Cluster.

GEO-2 **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. Steel posts would need zinc coatings (galvanizing) or increased structural sections to compensate for metal loss due to 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 4.6-5 On-site Wastewater Treatment and Disposal.

The projects would have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems.

~~Big Rock~~Laurel Cluster

The project sites contain near surface soils composed of silts and silty sands, suitable for onsite septic systems and leach fields for wastewater disposal. The LSF1 project site is reported to consist of silty clays and clays, considered poor in supporting onsite septic systems and leach fields for wastewater disposal. Site specific studies will be required to determine that County Environmental

Health standards are met in regard to soil percolation rates and separation of leach fields from groundwater. 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 CUP applications for each of the projects, each project site will have its own onsite 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.

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 areas, which could render infiltration of wastewater into the soil column temporarily infeasible at certain times of the year. This potential impact is considered significant. Implementation of Mitigation Measure GEO-3 would reduce the impact associated with on-site water treatment and disposal to a level less than significant.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve the use of septic tanks or alternative waste water disposal systems. Therefore, no impact associated with on-site water treatment and disposal would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

The following mitigation measure is required for the ~~Big Rock~~ Laurel Cluster.

GEO-3 **Demonstrate Compliance with On-site Wastewater Treatment and Disposal Requirements.** The projects' 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 Health Department, Division of Environmental Health. 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

4.6.3.1 Decommissioning/Restoration

Decommissioning and restoration of the project sites at the end of its use as a solar facility would involve the removal of structures and restoration to prior (pre-solar project) conditions. No geologic or soil impacts associated with the restoration activities would be anticipated, and therefore, no impact is identified.

4.6.3.2 Residual

With implementation of Mitigation Measures GEO-1, GEO-2, and HYD-1, 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 GEO-3, impacts resulting from new on-site wastewater treatment and disposal systems would be reduced to a less than significant level. The projects would not result in residual significant and unmitigable impacts related to geology and soil resources.

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4.7 Greenhouse Gas Emissions

This section provides an overview of existing 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 CEQA Guidelines in conjunction with actions proposed in Chapter 3, Project Description. OB-1 Air Analyses prepared an *Air Quality/Greenhouse Gas Report* for the ~~Big Rock~~Laurel Cluster Solar Farms Project, which includes the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4. This report is included in Appendix E of this EIR.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, this section focuses on the GHG emissions associated with the construction and operation of the project sites.

4.7.1 Environmental Setting

Constituent gases that trap heat in the Earth's atmosphere are GHGs, analogous to the way a greenhouse retains heat. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which would otherwise have escaped into space. Prominent GHGs contributing to this process include CO_2, CH_4, ~~nitrous oxide (N_2O)~~, and chlorofluorocarbons (CFC). Without the natural heat-trapping effect of GHG, the earth's surface would be about 34° cooler. This is a natural phenomenon known as the "Greenhouse Effect," which is responsible for maintaining a habitable climate. However, anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the "Greenhouse Effect," and have led to a trend of unnatural warming of the Earth's natural climate known as global warming or climate change, or more accurately Global Climate Disruption. Emissions of these gases that induce global climate disruption are attributable to human activities associated with industrial/manufacturing/commercial, utilities, transportation, residential and agricultural sectors.

The global warming potential (GWP) is the potential of gas or aerosol to trap heat in the atmosphere. Individual GHG compounds have varying GWP and atmospheric lifetimes. The reference gas for the GWP is CO_2; CO_2 has a GWP of one. The calculation of the CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. CH_4's warming potential of 25 indicates that CH_4 has a 25 times greater warming effect than CO_2 on a molecular basis. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that period. The period usually used for GWPs is 100 years. A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. GHGs are often presented in units called metric tons of CO_2e ($MTCO_2e$).

State law defines GHGs as any of the following compounds CO_2, CH_4, N_2O, hydrofluorocarbons (HFC~~s~~), perfluorocarbons (PFC~~s~~) and sulfur hexafluoride (SF_6) (California HSC Section 38505(g)).

Carbon Dioxide (CO_2) is a colorless, odorless gas consisting of molecules made up of two oxygen atoms and one carbon atom. CO_2 is produced when an organic carbon compound (such as wood) or fossilized organic matter, (such as coal, oil, or natural gas) is burned in the presence of oxygen. CO_2 is removed from the atmosphere by CO_2 "sinks", such as absorption by seawater and photosynthesis by ocean dwelling plankton and land plants, including forests and grasslands. However, seawater is also a source of CO_2 to the atmosphere, along with land plants, animals, and

soils, when CO_2 is released during respiration. Whereas the natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Prior to the industrial revolution, concentrations CO_2 were stable at a range of 275 to 285 ppm. The National Oceanic and Atmospheric Administration ~~(NOAA)~~ Earth System Research Laboratory ~~(ESRL)~~ indicates that global concentration of CO_2 were 396.72 ppm in April 2013. In addition, the CO_2 levels at Mauna Loa averaged over 400 ppm for the first time during the week of May 26, 2013. These concentrations of CO_2 exceed by far the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores.

Methane (CH_4) is a colorless, odorless non-toxic gas consisting of molecules made up of four hydrogen atoms and one carbon atom. CH_4 is combustible, and it is the main constituent of natural gas-a fossil fuel. CH_4 is released when organic matter decomposes in low oxygen environments. Natural sources include wetlands, swamps and marshes, termites, and oceans. Human sources include the mining of fossil fuels and transportation of natural gas, digestive processes in ruminant animals such as cattle, rice paddies and the buried waste in landfills. Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O) is a colorless, non-flammable gas with a sweetish odor, commonly known as "laughing gas", and sometimes used as an anesthetic. N_2O is naturally produced in the oceans and in rainforests. Man-made sources of N_2O include the use of fertilizers in agriculture, nylon and nitric acid production, cars with catalytic converters and the burning of organic matter. Concentrations of N_2O also began to rise at the beginning of the industrial revolution.

Chlorofluorocarbons (CFC) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically un-reactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Because of the discovery that they are able to destroy stratospheric ozone, an ongoing global effort to halt their production was undertaken and has been extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFC~~s~~) are synthesized chemicals that are used as a substitute for CFCs. Out of all of the GHGs; HFCs are one of three groups with the highest GWP. HFCs are synthesized for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFC~~s~~) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride (SF_6) is an extremely potent GHG. SF_6 is very persistent, with an atmospheric lifetime of more than 1,000 years. Thus, a relatively small amount of SF_6 can have a significant long-term impact on global climate change. SF_6 is human-made, and the primary user of SF_6 is the electric power industry. Because of its inertness and dielectric properties, it is the industry's preferred

gas for electrical insulation, current interruption, and arc quenching (to prevent fires) in the transmission and distribution of electricity. SF_6 is used extensively in high voltage circuit breakers and switchgear, and in the magnesium metal casting industry.

The State of California GHG Inventory performed by the CARB, compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 2000 to 2015, 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 Intergovernmental Panel on Climate Change ~~(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 GWP gases.

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO_2e and are typically quantified in metric tons ~~(MT)~~ or million metric tons ~~(MMT)~~.

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 CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310.

Table 4.7-1. California Greenhouse Gas Emissions Inventory 2000 to 2015

Sector	Total 2000 Emissions ($MMTCO_2e$)	Total 2015 Emissions ($MMTCO_2e$)
Agriculture	31.95	34.65
Commercial and Residential	43.18	37.92
Electric Power	104.84	83.67
Industrial	96.24	91.71
Transportation	176.49	164.63
Recycling and Waste	7.35	8.73
High GWP Gases	7.14	19.05

Source: CARB 2017

GMP – global warming potential; $MMTCO_2e$ – million metric tons of CO_2 equivalent

4.7.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the project.

Federal

In June of 2013, the President enacted a national Climate Action Plan that consisted of a wide variety of executive actions and had three pillars: 1) cut carbon in America, 2) prepare the U.S. for impacts of climate change, and 3) lead international efforts to combat global climate change and prepare for its impacts. The Climate Action Plan outlines 75 goals within the three main pillars.

Cut Carbon in America. The Climate Action Plan consists of actions to help cut carbon by deploying clean energy such as cutting carbon from power plants, promoting renewable energy, and unlocking long-term investment in clean energy innovation. In addition, the Plan includes actions designed to help build a 21st century transportation sector; cut energy waste in homes, businesses, and factories; and reducing other GHG emissions, such as HFCs and CH_4. The Plan commits to lead in clean energy and energy efficiency at a federal level.

Prepare the U.S. for Impacts of Climate Change. The Climate Action Plan consists of actions to help prepare for the impacts through building stronger and safer communities and infrastructure by supporting climate resilient investments, supporting communities and tribal areas as they prepare for impacts, and boosting resilience of building and infrastructure; protecting the economy and natural resources by identifying vulnerabilities, promoting insurance leadership, conserving land and water resources, managing drought, reducing wildfire risks, and preparing for future floods; and using sound science to manage climate impacts.

Lead International Efforts. The Climate Action Plan consists of actions to help the U.S. lead international efforts through working with other countries to take action by enhancing multilateral engagements with major economies, expanding bilateral cooperation with major emerging economies, combating short-lived climate pollutants, reducing deforestation and degradation, expanding clean energy use and cutting energy waste, global free trade in environmental goods and services, and phasing out subsidies that encourage wasteful use of fossil fuels and by leading efforts to address climate change through international negotiations.

In June of 2014, the Center for Climate and Energy Solutions published a 1-year review of progress in implementation of the Plan. The Center for Climate and Energy Solutions found that the administration had made marked progress in its initial implementation. The administration made at least some progress on most of the Plan's 75 goals; many of the specific tasks outlined had been completed. Notable areas of progress included steps to limit carbon pollution from power plants; improve energy efficiency; reduce CH_4 and HFC emissions; help communities and industry become more resilient to climate change impacts; and end U.S. lending for coal-fired power plants overseas.

State

Executive Order S-3-05 – Statewide GHG Emissions Targets

On June 1, 2005, the Governor issued EO S-3-05 which set the following GHG mission reduction targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80 percent below 1990 levels

This EO also directed the secretary of the California Environmental Protection Agency to oversee the efforts made to reach these targets, and to prepare biannual biennial reports on the progress made toward meeting the targets and on the impacts to California related to global warming. The first such Climate Action Team Assessment Report was produced in March 2006 and has been updated every 2 years thereafter.

California Global Warming Solutions Act (Assembly Bill 32)

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006, also known as AB 32. AB 32 focuses on reducing GHG emissions in California. GHGs, as defined under AB 32, include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. CARB is the state agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of GHGs. AB 32 also requires that by January 1, 2008, the CARB must determine what the statewide GHG emissions level was in 1990, and it must approve a statewide GHG emissions limit so it may be applied to the 2020 benchmark. CARB approved a 1990 GHG emissions level of 427 $MTCO_2e$, on December 6, 2007 in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 $MTCO_2e$.

Under the "business as usual or (BAU)" scenario established in 2008, statewide emissions were increasing at a rate of approximately 1 percent per year as noted below. It was estimated that the 2020 estimated BAU of 596 $MTCO_2e$ would have required a 28 percent reduction to reach the 1990 level of 427 $MTCO_2e$.

Executive Order B-30-15

On April 20, 2015 Governor Edmund G. Brown Jr. signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. California is on track to meet or exceed its legislated target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, summarized above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2°C, the warming threshold at which there will likely be major climate disruptions such as super droughts and rising sea levels. The targets stated in EO B-30-15 have not been adopted by the state legislature.

Climate Change Scoping Plan

The Scoping Plan released by CARB in 2008 outlined the state's strategy to achieve the AB32 goals. This Scoping Plan, developed by CARB in coordination with the Climate Action Team, 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 at its meeting in December 2008. According to the Scoping Plan, the 2020 target of 427 $MTCO_2e$ requires the reduction of 169 $MTCO_2e$, or approximately 28.3 percent, from the state's projected 2020 BAU emissions level of 596 $MTCO_2e$.

However, in August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 $MTCO_2e$, only a 16 percent reduction below the estimated new BAU levels would be necessary to return to 1990 levels by 2020. The 2011 Scoping Plan expands the list of nine Early Action Measures into a list of 39 Recommended Actions.

In May 2014, CARB developed; in collaboration with the Climate Action Team, the First Update to California's Climate Change Scoping Plan (Update), which shows that California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB32. In accordance with the United Nations Framework Convention on Climate Change (UNFCCC), CARB is beginning to transition to the use of the AR4's 100-year GWPs in its climate change programs. CARB has recalculated the 1990 GHG emissions level with the AR4 GWPs to be 431 $MTCO_2e$, therefore the 2020 GHG emissions limit established in response to AB32 is now slightly higher than the 427 $MTCO_2e$ in the initial Scoping Plan.

GHG Reduction Strategies. The majority of the Scoping Plan's GHG reduction strategies are directed at the two sectors with the largest GHG emissions contributions: transportation and electricity generation. The GHG reduction strategies for these sectors involve statutory mandates affecting vehicle or fuel manufacture, public transit, and public utilities. The reduction strategies employed by CARB are designed to reduce emissions from existing sources as well as future sources. The most relevant are outlined in the following sections.

Executive Order S-01-07. This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a low carbon fuel standard (LCFS) for transportation fuels be established for California and directs the CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. The CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. On December 29, 2011, District Judge Lawrence O'Neill in the Eastern District of California issued a preliminary injunction blocking the CARB from implementing LCFS for the remainder of the Rocky Mountain Farmers Union litigation. The injunction was lifted in April 2012 so that CARB can continue enforcing the LCFS pending CARB's appeal of the federal district court ruling.

Renewable Portfolio Standard. The RPS promotes diversification of the state's electricity supply and decreased reliance on fossil fuel energy sources. Originally adopted in 2002 with a goal to achieve a 20 percent renewable energy mix by 2020 (referred to as the "initial RPS"), the goals have been accelerated and increased by EOs S-14-08 and S-21-09 to a goal of 33 percent by 2020. In April 2011, the Governor signed SB 2 (1X) codifying California's 33 percent RPS goal; Section 399.19 requires the California Public Utilities Commission, in consultation with the California Energy Commission, to report to the Legislature on the progress and status of RPS procurement and other benchmarks. The purpose of the RPS upon full implementation is to provide 33 percent of the state's electricity needs through renewable energy sources. Renewable energy includes (but is not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.

The RPS is included in CARB's Scoping Plan list of GHG reduction measures to reduce energy sector emissions. It is designed to accelerate the transformation of the electricity sector through such means as investment in the energy transmission infrastructure and systems to allow integration of large quantities of intermittent wind and solar generation. Increased use of renewables would decrease California's reliance on fossil fuels, thus reducing emissions of GHGs from the electricity sector. In 2008, as part of the Scoping Plan original estimates, CARB estimated that full achievement of the RPS would decrease statewide GHG emissions by 21.3 million metric tons of CO_2e ($MMTCO_2e$). In 2010, CARB revised this number upwards to 24.0 $MMTCO_2e$.

Senate Bill 97

SB 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 CCR. 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.
- EIRs must specifically consider a project's energy use and energy efficiency potential, pursuant to Appendix F of the CEQA Guidelines.

Senate Bill 375 – Regional Emissions Targets

SB 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."

California Code of Regulations Title 24

Although not originally intended to reduce GHG emissions, CCR 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.

County of Imperial

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the 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. Worldwide, average temperatures are likely to increase by 3 ° to 7 °Fahrenheit by the end of the 21st century. However, a global temperature increase does not directly translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependent on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought, and similar warming effects, whereas another region may experience a relative cooling. According to the Intergovernmental Panel on Climate Change~~IPCC~~'s Working Group II Report, climate change impacts to North America may include diminishing snowpack, increasing evaporation, exacerbated shoreline erosion, exacerbated inundation from sea level rising, increased risk and frequency of wildfire, increased risk of insect outbreaks, increased experiences of heat waves, and rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations (OB-1 Air Analyses 2018).

Even though climate change is a global problem and GHGs are global pollutants, the specific potential effects of climate change on California have been studied. The third assessment produced by the California Natural Resources Agency explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts. Projected changes for the remainder of this century in California include:

- **Temperatures:** By 2050, California is projected to warm by approximately 2.7 ° Fahrenheit above 2000 averages, a threefold increase in the rate of warming over the last century and springtime warming — a critical influence on snowmelt — will be particularly pronounced.

- **Rainfall**: Even though model projections continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability, improved climate models shift towards drier conditions by the mid-to-late 21st century in Central, and most notably, Southern California.
- **Wildfire**: Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning, with human activities continuing to be the biggest factor in ignition risk. Models are showing that estimated that property damage from wildfire risk could be as much as 35 percent lower if smart growth policies were adopted and followed than if there is no change in growth policies and patterns.

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 GHG emissions 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
- 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.

The *Air Quality/Greenhouse Gas Report* (Appendix E 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 ~~metric tons of~~ $MTCO_2e$, 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 BAU conditions. BAU 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 E 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 GHG 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.

~~Big Rock~~Laurel Cluster

Construction and operation of the projects would result in a relatively small amount of GHG emissions. The projects would generate GHG emissions during construction and routine operational activities at the sites. During construction, GHG emissions would be generated from operation of both on-road and off-road equipment. Once operational, GHG emissions would be limited to vehicle trips associated with routine maintenance and monitoring activities at each of the sites.

Solar projects are an integral part of CARB's emission reduction strategy presented in the 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 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 massive quantities of intermittent wind and solar generation. Therefore, the projects comply with an approved GHG emission reduction plan and are presumed to have a less than significant GHG impact.

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 ~~Big Rock~~Laurel Cluster would be 51 $MTCO_2e$. As shown in Table 4.7-2, operational emissions for the ~~Big Rock~~Laurel Cluster would be 73 $MTCO_2e$ per year. The amortized construction plus annual operation for the ~~Big Rock~~Laurel Cluster would be 124 $MTCO_2e$ per year. The proposed projects' CO_2 emissions would not exceed SCAQMD's threshold of 3,000 $MTCO_2e$. Therefore, implementation of the proposed project would result in a less than significant impact associated with the generation of GHG emissions. 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.

In addition, the 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/GHG 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 project has a capacity factor of 26 percent. Approximately 325 MW generated by the ~~Big Rock~~Laurel Cluster would displace 212,913 $MTCO_2e$ per year.

Table 4.7-2. Summary of Construction and Operational Carbon Dioxide Emissions

Phase	Source	MTCO2e per year
Construction	~~BRSF1~~	~~370~~
	LSF1	213
	LSF2	372
	LSF3	590
	LSF4	370
	~~Big Rock~~Laurel Cluster Construction Total	**1,545**
	Amortized over 30 years	***51***
Operation	~~BRSF1~~	~~18.2~~
	LSF1	18.2
	LSF2	18.2
	LSF3	18.2
	LSF4	18.2
	~~Big Rock~~Laurel Cluster Operation Total	**73**
	Total Annual Emissions	124
	Annually Displaced Emissions	**(212,913)**
	Net Project GHG Emissions	***(213,788)***

Source: Appendix E of this EIR

~~BRSF1 – Big Rock 1 Solar Farm;~~ GHG – greenhouse gas; LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel 3 Solar Farm; LSF4 – Laurel Solar Farm 4; $MMTCO_2e$ – million metric tons of CO_2 equivalent

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.7-2 Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHG.

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.

~~Big Rock~~Laurel Cluster

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 massive quantities of intermittent wind and solar generation. The projects would help the state meet this goal by

generating up to 325 MW of power to California's current renewable portfolio. Therefore, in this regard, the projects would help the state meet its goals under AB 32. Neither the County of Imperial or ICAPCD have any specific plans, policies, nor regulations adopted for reducing the emissions of GHGs. However, since the long-term, operational GHG emissions are minimal and the construction emissions are short-term, the projects would not conflict with any applicable plan, policy, or regulation adopted for reducing the emissions of GHGs. Implementation of the proposed project would result in a less than significant impact associated with the potential to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHG.

Mitigation Measure(s)

No mitigation measures are required.

4.7.3 Decommissioning/Restoration and Residual Impacts

4.7.3.1 Decommissioning/Restoration

Similar to construction activities, decommissioning and restoration at each of the project sites would result in CO_2e emissions below allowable thresholds. Construction activities during decommissioning and restoration would adhere to Mitigation Measures AQ-1 and AQ-2 outlined in Chapter 4.3, Air Quality of this EIR, further reducing GHG emissions. Therefore, the impact is considered less than significant.

4.7.3.2 Residual

As described in this section, the projects would result in a less than significant GHG emissions impact. Operation of the projects, subject to the provision of a 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) prepared for each of the project sites (~~BRSF1, ~~LSF1, LSF2,~~ and~~ LSF3, and LSF4) by GS Lyon Consultants, Inc. The Phase I ESA prepared for the project sites were used to assess the potential hazards and hazardous materials found on-site or adjacent to the project sites. This report is included in Appendix I of this EIR. This section addresses potential hazards and hazardous materials for construction and operational impacts.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, this section focuses on the hazards and hazardous materials conditions on the project sites and potential impacts of the proposed projects.

4.8.1 Environmental Setting

The project sites are located in a historical agricultural area of Imperial County. Agricultural operations include the use of 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

GS Lyon Consultants, Inc. contracted Environmental Data Resources, Inc. of Shelton, Connecticut which queries and maintains comprehensive environmental databases and historical information, including proprietary databases, aerial photography, topographic maps, Sanborn Maps, and city directories to generate a compilation of Federal, State and Tribal regulatory lists containing information regarding hazardous materials occurrences on or within the prescribed radii of American Society of Testing and Materials Practice E 1527-13. The search of each database was conducted using the approximate minimum search distances from the subject property defined by the Standard. The purpose of the records review is to obtain and review reasonably ascertainable records that will help identify recognized environmental conditions or historical recognized environmental conditions in connection with the project sites. The results of the background review are presented in the Phase I ESAs (Appendix I of this EIR).

Aerial photography dating back to 1937 was obtained. The 1937 and 1949 aerial photograph shows that the areas were developed as agricultural fields. A rural residence/farm shop was located on the north side of the LSF4~~BRSF1~~ site. Three rural residences/farm shops were located within the LSF1 site. Photographs from 1949 and 1953 are similar to the 1937 photograph with more desert areas surrounding the sites were converted to agricultural uses. The 1976 photograph depicts that the rural residences/farm shops were removed and the land leveled for agricultural uses. The remaining photographs (2002, 2005, 2006, 2009, 2010, 2012, and 2014) show the sites comprised of agricultural fields. The 2014 photograph also depicts the addition of solar farms constructed on adjacent properties.

Because of the rural undeveloped nature of the project sites and vicinity, no Sanborn Fire Insurance Maps were available for the project sites. Historical telephone and street directories were reviewed

and no service stations, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted at or in the immediate vicinity of the project sites.

Site Reconnaissance

A site reconnaissance of each of the project sites was performed on May 12, 2017, and September 1, 2017. The site visit consisted of a driving the perimeter of the site and randomly crossing the site. The reconnaissance included visual observations of surficial conditions at the site and observation of adjoining properties to the extent that they were visible from public areas. The site reconnaissance was limited to visual and/or physical observation of the exterior and interior of the subject property and its improvements, the current uses of the property and adjoining properties, and the current condition of the property. The site visit evaluated the subject property and adjoining properties for potential hazardous materials/waste and petroleum product use, storage, disposal, or accidental release, including the following: presence of tank and drum storage; mechanical or electrical equipment likely to contain liquids; evidence of soil or pavement staining or stressed vegetation; ponds, pits, lagoons, or sumps; suspicious odors; fill and depressions; or any other condition indicative of potential contamination. The site visit did not evaluate the presence of asbestos-containing materials, radon, lead-based paint, mold, indoor air quality, or structural defects, or other non-scope items.

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.

Federal

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, 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. The Comprehensive Environmental Response, Compensation, and Liability Act 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 United States Code 11001 et seq.)

The Emergency Planning Community Right-to-Know Act was included under the Superfund Amendments and Reauthorization Act (SARA) law and is commonly referred to as SARA Title III. Emergency Planning Community Right-to-Know 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.

Emergency Planning Community Right-to-Know 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 Emergency Planning 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.

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 U.S. 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 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 U.S. or adjoining shorelines. Further, farms are subject to the SPCC rule if they:

- Store, transfer, use, or consume oil or oil products
- Could reasonably be expected to discharge oil to waters of the U.S. 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
    - 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”.

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 OHSA 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 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.

State

California Department of Conservation, Division of Oil, Gas, and Geothermal Resources

The Division of Oil, Gas, and Geothermal Resources 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 2 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 program joined DTSC. The 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 ESAs, risk assessment, and more.

California Division of Occupational Safety and Health

The California Division of Occupational Safety and Health protects workers and the public from safety hazards through its programs and provides consultative assistance to employers. California Division of Occupational Safety and Health 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

California Environmental Protection Agency and the 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, CDFW, RWQCB, Imperial County Sheriff's Department, ~~Imperial County Fire Department (~~ICFD~~)~~, and the City of Imperial Police Department.

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 projects, as they address human occupancy development. The proposed projects are solar projects and do 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 CUPA. 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 California Accidental Release Prevention 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

~~Big Rock 1 Solar Farm~~

~~The BRSF1 site consists of seven agricultural fields that are currently under cultivation. Dirt field roads and concrete lined irrigation ditches cross and border the BRSF1 site. West Wixom Road, a paved rural road, bisects the BRSF1 site. Liebert Road, a paved rural road, and the Fern Canal form the western boundary of the BRSF1 site. The Westside Main Canal is located to the south and the Fig Drain (earthen agricultural drainage channel) is located to the east. Adjacent properties consist of agricultural fields with solar development existing to the north and west of the BRSF1 site.~~

Laurel Solar Farm 1

The LSF1 site currently consists of four agricultural fields; the north field is currently under cultivation while the 3 fields to the south are fallowed. Field roads and concrete irrigation ditches cross and border the LSF1site. Derrick Road, a paved rural road, along with the Diehl Drain forms the western boundary of the LSF1 site. The Diehl Drain makes a turn at the northwest corner of the property to also form the northern boundary of the LSF1 site. The Fig Drain forms the eastern property boundary. The southern boundary of the LSF1 site is bound by solar development.

Laurel Solar Farm 2

The LSF2 site consists of four agricultural fields that are currently under cultivation. Field roads and concrete irrigation ditches cross and border the LSF2 site. The northwest portion of the LSF2 site is bound by West Vaughn Road, a paved rural road, to the south and Jessup Road to the east of the

subject site. The west side of the northwest portion of the LSF2 site is bound by the concrete lined Fern Canal. The southeast portion of the LSF2 site is bound by Jessup Road on the west, Derrick Road on the east and West Diehl Road on the south.

Laurel Solar Farm 3

The LSF3 site consists of nine agricultural fields that are currently under cultivation. Dirt field roads, earthen irrigation drainage channels and concrete lined irrigation ditches cross and border the LSF3 site. Adjacent properties consist of agricultural fields with a few scattered rural residences and farm shops. Solar development exists to the south and east of the LSF3 site.

Laurel Solar Farm 4

The LSF4 site consists of seven agricultural fields that are currently under cultivation. Dirt field roads and concrete lined irrigation ditches cross and border the LSF4 site. West Wixom Road, a paved rural road, bisects the LSF4 site. Liebert Road, a paved rural road, and the Fern Canal form the western boundary of the LSF4 site. The Westside Main Canal is located to the south and the Fig Drain (earthen agricultural drainage channel) is located to the east. Adjacent properties consist of agricultural fields with solar development existing to the north and west of the LSF4 site.

Existing Environmental Hazards

Hazardous Substances and Petroleum Products

No evidence of operations that use, treat, store, dispose of, or generate hazardous materials or petroleum products were observed on the project sites.

Storage Tanks, Drums, and Containers

There was no visual evidence of current underground storage tanks or historical presence of ASTs observed on the project sites.

There was no evidence of drums or storage containers on the project sites other than tanks containing anhydrous ammonia, commonly used for fertilizer for the fields.

Surface Staining

No hydrocarbon stains, drums, or oil containers were noted during the site reconnaissance. The project sites have the potential for hydrocarbon because of 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

No septic systems were visibly present on the project sites. The Imperial County Environmental Health Department has a record of a septic system at LSF1 at the southeast corner of Derrick and West Diehl Road from 1975. There are no records of removal or abandonment.

Suspect Polychlorinated Biphenyl Containing Equipment

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. Although no longer used in the U.S., there is the potential for PCBs to be found electrical transformers manufactured before 1979.

No potential PCB containing equipment, such as electrical transformers, capacitors, and hydraulic equipment, were observed during the site reconnaissance on the project sites or immediate vicinity.

Hazardous Building Materials and Pesticides

Hazardous building materials and pesticides are associated with any older buildings because of their age and the agricultural land uses. Because of the lack of site structures and site development on each project site, asbestos-containing materials and lead based paint residues existing is very low. Based on the review of environmental records, historical documents, and site conditions, the property has been in agricultural use since the late 1940s. Residues of currently available pesticides and currently banned pesticides, such as Dichlorodiphenyltrichloroethane/ Dichlorodiphenyldichloroethylene (DDT/DDE) may be present in near surface soils in limited concentrations.

The project sites have been used for and are currently in agricultural production. Consequently, there is a potential for the project sites to contain hazards related to pesticide and herbicide use from aerial and/or ground application. 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. The concentrations of these pesticides found on other Imperial Valley agricultural sites are typically less than 25 percent of the current regulatory threshold limits and are not considered a significant environmental hazard. The presence and concentration of near surface pesticides at this site can be accurately characterized only by site-specific sampling and testing.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) is located on desert lands and no hazardous materials are known to be present within this existing corridor developed with transmission related facilities.

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

Based on CEQA Guidelines Appendix G, project impacts related to hazards and hazardous materials are considered significant if any of the following occur:

- 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 0.25 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 2 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
- 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

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 1-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, a Phase I ESA has been prepared for the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4 project sites. 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 project were also used to evaluate potential impacts.

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.

~~Big Rock~~ Laurel Cluster

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 because of 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 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 associated with the possible risk to the public or environment through routine transport, use, or disposal of hazardous materials to a level of less than significant.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with posing a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials would occur with implementation of this alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-2 Possible Risk to the Public or Environment through Release of Hazardous Materials.

The projects may result in an accidental release of hazardous materials into the environment from project-related activities.

~~Big Rock~~Laurel Cluster

Pesticides/Fertilizers

The project sites 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 Consultants, Inc., although 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. The Federal Insecticide, Fungicide and Rodenticide Act~~FIFRA~~ provides federal control of pesticide distribution, sale, and use. All pesticides used in the U.S. 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, the potential impact associated with the possible risk to the public or environment through release of hazardous materials is considered less than significant.

Hazardous Materials

The Phase I ESA's did not identify any structures on the project sites that would contain lead and asbestos. Evidence of ASTs and historic USTs were also not observed during the site reconnaissance.

Historical records have noted that in 1975, a septic system was present at the southeast corner of Derrick and West Diehl Road on the LSF1 project site. There are no records of removal or abandonment. Considering the age of the system (if present), there is potential for onsite soil contamination during ground disturbance and construction of the LSF1 project; therefore, a potential impact has been identified for this issue area. The potential impact is considered significant. Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce the potential impact associated with an accidental release of hazardous materials into the environment from project-related activities to a level less than significant. The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with the potential impact associated with an accidental release of hazardous materials into the environment from project-related activities would occur with implementation of this alternative gen-tie route.

Mitigation Measure(s)

The following mitigation measures are required for LSF1:

HAZ-1 **Phase II ESA:** A Phase II ESA (drilling, sampling, and analytical program) shall be completed if the LSF1 project is to be constructed in the area of the septic system.

This ESA will assist to determine if the previous septic system is still onsite and if soil contamination exists.

HAZ-2 **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.

Significance after Mitigation

With the implementation of Mitigation Measures HAZ-1 and HAZ-2, the potential impact associated with LSF1 related to the release of hazardous materials would be reduced to a level of less than significant.

Impact 4.8-3 Hazardous Emissions or Hazardous Materials Substances, or Waste within 0.25 mile of an Existing or Proposed School.

The projects would not pose a risk to nearby (within 0.25 mile) schools or proposed school facilities.

~~Big Rock~~Laurel Cluster

The project sites are located within 0.25 mile of the former Westside Elementary School (2295 West Vaughn Road), located approximately 250 feet from the closest boundary of the LSF3. According to the California Department of Education's California School Directory, Westside Elementary School closed on June 30, 2012 (California Department of Education 2017). Therefore, the proposed projects would not pose a risk to nearby schools and no impact would occur.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) is located within Utility Corridor "N" on BLM land. There are no schools located within the existing corridor developed with transmission related facilities. Therefore, no impact associated with the potential impact associated with emitting hazardous emissions or handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school would occur with implementation of this alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-4 Projects Located on a Site Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5.

The projects are not located on a site included on a list of hazardous materials sites pursuant to Government Code Section 65962.5.

~~Big Rock~~Laurel Cluster

The project sites are not identified in the Environmental Data Resources, Inc. report as being located on a hazardous materials site pursuant to Government Code Section 65962.5. Implementation of the proposed projects would not result in a significant impact related to the project sites being located on a listed hazardous materials site.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line, and no new construction would be required in this area. No impact related to the alternative gen-tie line being located on a listed hazardous materials would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-5 Possible Safety Hazard to the Public Residing or Working Within an Airport Land Use Plan or Within 2 Miles of a Public Airport or Public Use Airport.

The projects are not located within an airport land use plan or within 2 miles of a public airport.

~~Big Rock~~Laurel Cluster

There are no public airports or public use airports located within 2 miles of the project sites. The nearest airport to the projects would be the Naval Air Facility in El Centro, approximately 5 miles northeast. In addition, the projects do not reside within an airport land use plan. Therefore, no impact associated with airport hazards would occur with implementation of the proposed projects.

There are no public airports or public use airports located within 2 miles of the alternative gen-tie line. Therefore, no impact associated with airport hazards would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-6 Possible Safety Hazard to the Public Residing or Working Within Proximity to a Private Airstrip.

The projects are not within proximity to a private airstrip and would not create safety hazards.

~~Big Rock~~Laurel Cluster

There are no private airstrips located in close proximity to the projects. Therefore, no impact associated with potential safety hazards to the public residing or working within proximity to a private airstrip would occur with implementation of the proposed projects.

There are no private airstrips located in proximity to the alternative gen-tie line. Therefore, no impact associated with potential safety hazards to the public residing or working within proximity to a private airstrip would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-7 Possible Impediment to Emergency Plans.

The projects would not interfere with an adopted emergency response plan or

emergency evacuation plan.

~~Big Rock~~Laurel Cluster

The 2007 Imperial County Draft Operational Area Emergency Operations Plan does not identify specific emergency roadway routes as part of its emergency operations plan. The City of Calexico General Plan, Section 8.0 Safety Element, identifies the major evacuation routes as SR 11, SR 98, and I-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, the proposed project would result in a less than significant impact associated with the possible impediment to emergency plans.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact associated with the possible impediment to emergency plans would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.8-8 Possible Risk to People or Structures Caused by Wildland Fires.

The project sites are not located in an area susceptible to wildland fires.

~~Big Rock~~Laurel Cluster

According to the Draft Cal Fire Hazard Severity Zones in Imperial County Land Responsibility Area Map (2007), the project sites are located within a local responsibility area, which is identified as a "moderate" risk area for wildland fires. 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, implementation of the proposed projects would result in a less than significant impact related to the possible risk to people or structures caused by wildland fires.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no impact related to the possible risk to people or structures caused by wildland fires would occur with implementation of the alternative gen-tie route.

Mitigation Measure(s)

No mitigation measures are required.

4.8.3 Decommissioning/Restoration and Residual Impacts

4.8.3.1 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 in compliance with local and state regulations, including DTSC regulations prior to 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 wildfires (the project sites are not susceptible to wildfires) or impediment to an emergency plan (agricultural uses do not conflict with emergency plans).

4.8.3.2 Residual

With implementation of applicable mitigation measures, the potential for onsite soil contamination during ground disturbance and construction of the LSF1 project would be reduced to a level less than significant. Therefore, the proposed projects would not result in residual significant and unmitigable impacts related to hazards and hazardous materials.

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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. Each subsection includes descriptions of existing hydrology/drainage, existing flooding hazards, and the environmental impacts on hydrology and water quality resulting from implementation of the proposed projects, and mitigation measures where appropriate. Section 4.14, Utilities/Service Systems, of this EIR evaluates impacts related to water supply, wastewater, and other utilities. The impact assessment provides an evaluation of potential adverse effects to water quality based on criteria derived from CEQA Guidelines in conjunction with actions proposed in Chapter 3, Project Description. Development Design & Engineering prepared ~~a~~ the *Preliminary Drainage Study* for the ~~Big Rock~~Laurel Cluster Solar Farms Project. This report is included in Appendix J of this EIR.

4.9.1 Environmental Setting

The project sites are located within the Imperial Valley Planning Area of the Colorado River Basin, between the Westside Main Channel and New River just south of I-8, and approximately 23 miles south of the Salton Sea. The Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California. It includes all of Imperial County and portions of San Bernardino, Riverside, and San Diego Counties. The Colorado River Basin Region is divided into seven major planning areas on the basis of different economic and hydrologic characteristics. The Imperial Valley Planning Area consists of the following hydrological units ~~(HU)~~: Imperial (723.00) comprised of 2,500 square miles in the southern portion of the Colorado River Basin Region, with the majority located in Imperial County; Davies (724.00), located to the west of the project sites, and Amos-Ogilby (726.00), located to the east of the project sites. The project sites are located within the Imperial hydrological units~~HU~~ (California RWQCB 2017).

Imperial Valley has a subtropical desert climate characterized by hot, dry summers and mild winters. Summer temperatures typically exceed 100° Fahrenheit, while winter low temperatures rarely drop below 32° Fahrenheit. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-1970s. For the 30 years from 1995 to 2014, average annual air temperature was 72.9° Fahrenheit, and average annual rainfall period was 2.67 inches. The majority of rainfall occurs from November through March, along with periodic summer thunderstorms (Appendix J of this EIR).

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

Clean Water Act

The EPA is the lead federal agency responsible for managing water quality. The CWA of 1972 is the primary federal law that governs and authorizes the 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

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 Section 4.4, Biological Resources.

Under federal law, the EPA has published water quality regulations under Volume 40 of the CFR. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the U.S. 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 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 EPA is the federal agency with primary authority for implementing regulations adopted under the CWA. The 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.

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 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 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.

Clean Water Act 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.

Surface waters in the Imperial Valley Planning Area mostly drain toward the Salton Sea. The New and Alamo Rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial waste waters from the Imperial Valley. The flow in the New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali, Mexico. The impaired water bodies listed on the 303(d) list for the New River Basin include the Imperial Valley Drains (managed by the IID), New

River, and the Salton Sea. Further discussion of specific pollutant listings is provided in Section 4.9.1.2.

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 (FIRM~~s~~) 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) (i.e., the 100-year flood event). The project sites are located on the FEMA FIRM Panel 2050 of 2300 Map Number 06025C2050C and on the FEMA FIRM Panel 1700 of 2300 Map Number 06025C1700C effective September 26, 2008 in Zone X. The FEMA un-shaded Zone X designation is an area determined to be outside the 0.2 percent annual chance floodplain.

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 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. According to the Basin Plan the beneficial uses established for the Imperial Valley Drains, which include the Westside Main Canal, 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 , the 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 California Toxics Rule satisfies CWA requirements and protects public health and the environment. The 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 BMPs in the projects' 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 1 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 postconstruction 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

Because of 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 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 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, 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.

4. Where the transition between the grading plane and adjacent ground has a slope less than the ratio of 1.5 feet on the horizontal plane to 1 foot on the vertical plane, the plans and specifications will provide for adequate safety precautions.

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 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
- *Integrated Water Resources Management Plan*

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 the 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 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 10-year, 6-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 ROW, 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 3-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 runoff from the project sites. 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 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 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 because of a 5-inch storm track. Environmental Health Services 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. Environmental Health Services 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 ROW 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, onsite hydrology, hydraulic calculations and a hydrology map.

Table 4.9-1. Project Consistency with Applicable General Plan ~~Seismic~~ Conservation and Open Space Element, and ~~Public Safety~~Water Element Policies

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Objective 6.2: Ensure proper drainage and provide accommodation for storm runoff from urban and other developed areas in manners compatible with requirements to provide necessary agricultural drainage.	Consistent	To ensure proper drainage and accommodate stormwater runoff, the proposed projects would rely on existing drainage patterns for each project site. Although private irrigation delivery ditches within the project sites may be removed for the installation of the solar arrays, the farm fields will generally remain at their existing grades and flow patterns will remain unchanged. The existing IID drain connections and existing 12-inch-diameter concrete discharge pipes will be utilized to drain out the fields. Additionally, retention will be provided in ponding areas within the projects under the proposed solar panel arrays, next to the existing IID drain connection for each field. The design of the projects will maintain the existing drainage patterns for each field and the raised roads and berms will retain the runoff volume resulting from 100-year storm. Therefore, the proposed projects are consistent with this objective.
Objective 6.3: Protect and improve water quality and quantity for all water bodies in Imperial County.	Consistent	The proposed projects would protect water quality during construction through compliance with NPDES General Construction Permit, SWPPP, and BMPs. Design features and BMPs have also been identified to address water quality for the projects. Water quantity would be maintained for the proposed projects by retaining the majority of the project sites with pervious surfaces. Although the proposed project may not improve water quality and quantity, it would protect existing conditions and satisfy County requirements. Therefore, the proposed projects are consistent with this objective.
Program: 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.

Table 4.9-1. Project Consistency with Applicable General Plan ~~Seismic~~ Conservation and Open Space Element, and ~~Public Safety~~Water Element Policies

General Plan Policies	Consistency with General Plan	Analysis
Water Element		
Program: 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 applicant of the projects prepare a site-specific drainage plan and water quality management plan to minimize adverse effects to local water resources.
Program: 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.

Source: County of Imperial General Plan, Seismic & Public Safety Element as amended through 2008

BMP – best management practice; IID – Imperial Irrigation District; NPDES – National Pollution Discharge Elimination System; SWPPP – stormwater pollution prevention plan

4.9.1.2 Existing Conditions

The project area consists of 18 agricultural parcels, encompassing approximately 1,380 gross acres. The topography of the project sites is relatively flat. The project sites have been historically used as farmland. On the high side of each farm field are concrete lined or earthen irrigation canals used to flood irrigate the farm fields. Tailwater ditches generally flow north or south to convey the excess irrigation water and storm water runoff to existing concrete drain boxes and 12-inch concrete discharge pipes that drain into IID drains. Elevated dirt field access roads run along the perimeter of the farm fields. There are existing houses/buildings in the vicinity of the project area, and one existing abandoned farm homestead is located just outside the southwesterly corner of the ~~Big Rock~~ Laurel Cluster Solar Farms project boundary that is not part of the project.

Localized Drainage Conditions

According to the *Preliminary Drainage Study* (Appendix J of this EIR), there are three IID delivery canals in the vicinity of the project sites. The Westside Main Canal runs east/west along the south side of ~~BRSF1~~ LSF4 and along the south side of LSF3. The Fern Canal runs north/south along the west side of the LSF4~~BRSF1~~ and LSF2 ~~Site~~ sites and along the eastside of LSF3 site. The Fig Canal runs west/east along the north side of LSF4~~BRSF1~~ and then turning north along the west side of LSF1.

There are six IID drains along/near the limits of the project sites that collect excess irrigation and storm water. The Fig Drain runs north along the east side of the ~~BRSF1 and~~ LSF1 and LSF4 sites. The Diehl Drain runs north along the west side of the LSF1 and along the east side of the LSF2 site, then turns east along the north side of the LSF1 site. The Wixom Drain that runs north along the west side of the easterly portion of LSF2 site and along the east side of the westerly portion of the LSF2 site, and along the west side of the LSF4~~BRSF1~~ site. The Dixie Drain that bisects the LSF3

site. The Dixie Drain No. 3C that service the easterly portion of LSF3 site and runs north along the west side of the westerly portion of LSF2 site. The Dixie Drain three-dimensional runs west/east along the south side of LSF3 site.

Each field will act as its own retention basin and supported by the hydrology and hydraulic calculation it is determined that each field has the capacity to retain the volume resulting from a laminar flow of 3 inches of rain over the entire tributary area to each agricultural field.

The existing farm fields are graded to compounded planar slopes. Generally, the fields slope from east to west at slope percentage rates between 0.10 percent to 0.20 percent and north or south at slope percentage rates between 0.10 and 0.20 percent. The very flat topography allows for the irrigation water to move slowly over the field and promote absorption in the existing clay soils. Irrigation tailwater outlet boxes and 12-inch diameter concrete pipes drain the excess irrigation tailwater and storm event runoff water to the IID drains at all low areas for each farm field. Elevated field roads or drain bank maintenance roads that are graded to about 1 foot above the adjacent farm field, are located at the low ends of each field.

Based upon review of the existing topography, it is determined that off-site run off does not enter the projects' development areas because of the presence of physical features presenting barriers to the off-site flow (County Roads, IID Canal and Drains and private field roads). Off-site storm water may pond up against these facilities and since the off-site flow patterns will be maintained it has been determined (based on existing topography) that the off-site drainage has no impacts on the project sites, therefore analysis of off-site drainage run off is not part of this study. On-site retention will be provided to maintain the existing drainage conditions to handle the 100-year storm water flows to exit the site by means of the existing IID outlet discharge structures.

In most of the farm fields there is an existing subsurface tile drain system used to remove salts accumulating from agricultural irrigation and crop production. The existing tile drain pipes are located approximately 5 feet to 8 feet below existing grade. The tile drain system is not used in the agricultural fields of the projects. The existing site tile drain systems will remained in place and will only be removed from the site if they are in conflict with permanent structures (such as transmission power poles, collection systems, substation equipment etc.).

Flooding

According to the FEMA ~~Flood Insurance Rate Map~~FIRM (Panel 2050 of 2300 Map Number 06025C2050C and on the FEMA FIRM Panel 1700 of 2300 Map Number 06025C1700C), the project sites are located in Zone X and outside the limits of the 100-year flood zone. Zone X delineates areas of 2 percent annual chance flood; areas of 1 percent chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

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 agriculture. 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 is limited.

Common non-point source contaminants within the project sites 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. Nutrient loading in a result from excessive fertilizing of agricultural areas; however, pesticides and herbicides are widely used on roadway shoulders to keep 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 terminate into the Salton Sea.

Based on the *Final 2010 Integrated Report* (CWA Section 303(d) List/305(b) Report), prepared by the Colorado River Basin RWQCB, the following water features within the Brawley HA includes the Imperial Valley Drains, New River, and the Salton Sea. Specific impairments listed for each of these water bodies (or Category 5) is identified below (RWQCB 2011):

- Imperial Valley Drains: Impaired for chlordane, DDT, dieldrin, endosulfan, polychlorinated biphenyls (PCBs), sediment/siltation, selenium, and toxaphene
- New River: Impaired for, chlordane, chlorpyrifos, copper, DDT, diazinon, dieldrin, hexachlorobenzene~~ (HCB)~~, mercury, nutrients, organic enrichment/low dissolved oxygen, PCBs, pathogens, sediment, selenium, toxaphene, toxicity, trash; and zinc
- Salton Sea: Impaired for arsenic, chlorpyrifos, DDT, enterococcus, nutrients, salinity, and selenium

Groundwater Hydrology

The project sites overlay the western portion of the Imperial Valley Groundwater Basin (Basin Number: 7-30), which covers approximately 1,870 surface square miles. The physical groundwater basin extends in the southeastern portion of California at the border with Mexico. The basin lies within the southern part of the Colorado Desert Hydrologic Region, south of the Salton Sea. The basin has two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet thick and reaches a maximum thickness of 280 feet. The average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. The data regarding faults controlling groundwater movement is uncertain; however, 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.

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 which traverse the valley. 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.

Groundwater quality varies extensively throughout the base; however, is generally unusable for domestic and irrigation purposes without treatment (California Department of Water Resources 2004).

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 annual exceedance probability) 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
- Result in inundation by seiche, tsunami, or mudflow

4.9.2.2 Methodology

The drainage design will be conducted in accordance with the County of Imperial's design criteria, which establishes that 100 percent of the 100-year storm (3 inches of rain) will be stored on-site and released into the IID drainage system using existing drainage connections.

Calculations were performed according to the methodology and procedures outlined in the County of Imperial Department of Public Works Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans with Imperial County, 2008.

4.9.2.3 Impact Analysis

Impact 4.9-1 Violation of Water Quality Standards During Construction.

Construction of the projects could generate discharges to surface water resources that could potentially violate water quality standards or waste discharge requirements.

~~Big Rock~~Laurel Cluster

The project sites are relatively flat. Minimal grading would be required to accommodate construction of the project sites (the PV fields and foundations for equipment and buildings). Although no groundwater would be utilized during construction or operation of the projects because of the poor groundwater quality in the region, groundwater in the area of the project sites is brackish and typically encountered at depths between 5 to 10 feet below ground surface. Final grading may include revegetation with low lying grass or applying earth-binding materials to disturbed areas. The Applicant has also identified BMPs as described in Chapter 3, Project Description. 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, and dewatering. 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 on water quality further downstream. This is considered a significant impact. Implementation of Mitigation Measure HYD-1 would reduce this impact 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 on water quality. This is considered a significant impact. Implementation of Mitigation Measures HYD-1 and HYD-2 would reduce the potential impact 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. As stated in the Section 4.9.1.2, Existing Conditions, Groundwater Hydrology, the groundwater in the Imperial Valley Groundwater Basin is unusable for domestic and irrigation purposes without treatment because of poor water quality. Groundwater withdrawn from the construction areas could 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 on receiving waters. This is considered a significant impact. Implementation of Mitigation Measures HYD-1 and HYD-2 would reduce the impact to a level less than significant.

Prior to construction and grading activities, the applicant of the projects 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 construction or the projects 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 projects' SWPPP and Grading Plan include measures necessary to minimize water quality impacts as a result of construction and post-construction runoff from the projects. Implementation of Mitigation Measures HYD-1 and HYD2 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.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, implementation of the alternative gen-tie route would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade groundwater water quality, and no impact would occur.

Mitigation Measure(s)

HYD-1 **Prepare SWPPP and Implement BMPs Prior to Construction and Site Restoration.** The project applicant or its contractor shall prepare a SWPPP specific to the project 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 project. 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 (Mitigation Measure HYD-2)
- 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 place 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
- 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. 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.

HYD-2 **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.

Significant after Mitigation

With the implementation of Mitigation Measures HYD-1 and HYD-2, impacts on surface water quality as attributable to the project 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 4.9-2 Violation of Water Quality Standards During Operation.

Operation of the projects could involve the use of materials or substances that could be entrained in surface runoff and discharged to surface waterways or groundwater.

~~Big Rock~~Laurel Cluster

Post-construction runoff from the constructed facilities would carry two main water quality impacts that could impact surface water drainages and drains. 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 solar facility poses a limited threat to surface water quality after the completion of construction. 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 HYD-3 would reduce the impact to a level less than significant.

Long-term point discharges from the projects would be minimal; however, reductions in water quality could occur 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, referred to as Hydromodification. Increased impervious surfaces from surfaces, such as asphalt, concrete, and other compacted surfaces, can interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, large volumes of water runoff collects and is routed to drainage systems where it is discharged to the nearest receiving water. This process can contribute to stream bank scouring and downstream flooding, resulting in impacts on aquatic life and damage property. 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 HYD-3 would reduce the impact to a level less than significant.

Mitigation Measure(s)

HYD-3 **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, access roads, electrical distribution, 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.

Significant after Mitigation

With the implementation of Mitigation Measure HYD-3, potential water quality impacts resulting from post-construction discharges during operation for the projects would be reduced to a less than significant level. With the proposed mitigation, any stormwater runoff generated from the project site 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 4.9-3 Impacts on Groundwater Recharge, Supply, and Adjacent Wells.

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.

~~Big Rock~~Laurel Cluster

As described in Chapter 3, Project Description the project would be obtained from the landowners' water supply or delivered via truck from off-site source(s) 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 on groundwater levels are expected.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction and would not require the use of groundwater. Therefore, implementation of the alternative gen-tie route would not deplete groundwater, and no impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.9-4 Alternation of Drainage Patterns and Off-site Flooding.

The projects would not 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.

~~Big Rock~~Laurel Cluster

To ensure proper drainage and accommodate stormwater runoff, the proposed project would rely on existing drainage patterns for each project site. According to the *Preliminary Drainage Study* (Appendix J of this EIR), although private irrigation delivery ditches within the project sites may be removed for the installation of the solar arrays, the farm fields will generally remain at their existing grades and flow patterns will remain unchanged. The ground below the solar panels will not be an impermeable surface; rainwater will run off of the panels and fall to the earthen surface. Within and around the arrays 20-foot wide fire access roads will be constructed. The drainage analysis is based on on-site volumes and will include the amount of storm water generated by the 100-year storm (3 inches of rain) and it is assumed that 100 percent of the 100-year storm will be retained on-site.

The existing IID drain connections and existing 12-inch diameter concrete discharge pipes will be utilized to drain out the fields. Additionally, retention will be provided in ponding areas within the project under the proposed solar panel arrays, next to the existing IID drain connection for each field. Based on the calculated retention volumes calculations, the existing perimeter roads and berms will be maintained (some berms will need to be raised during the grading activities to provide sufficient detention in the sub-sites where the existing perimeter roads and berms are not high enough). This design maintains the existing drainage patterns for each field and the raised roads and berms will retain the runoff volume resulting from 100-year storm (3 inches of rain).

All on-site storm water contributions will be handled individually by every parcel that comprises the project sites. No storm water contributions will be disposed on to any County Public ROW.

The field after a 100-year storm event should empty within 72 hours to provide mosquito abatement. If this is not possible then the owner should provide a mosquito abatement plan to the satisfaction of the Environmental Health Services. All existing outlet discharge pipes will be upgraded (if required) in accordance with IID Standards to satisfy the requirements of the Hydrology/Hydraulic analysis performed by IID for the agricultural base flow conditions and the modeling scenario for the 100-year/24-hour rainfall event contributions to the existing drain systems within the project area. Therefore, a less than significant impact is identified.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, implementation of the alternative gen-tie route would not alter the existing drainage pattern of the site or area, resulting in substantial erosion, siltation, or flooding on or off site, and no impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.9-5 Placement of Housing within a 100-Year Floodplain.

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.

~~Big Rock~~Laurel Cluster

The projects, including the alternative gen-tie point of connection, 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 FIRM 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 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 4.9-6 Impede or Redirect Flood Flows.

The projects would not require the placement of structures within a 100-year flood hazard area, which would impede or redirect flood flows.

~~Big Rock~~Laurel Cluster

The project sites are contained within Zone X and outside the limits of the 100-year flood zone. The project's 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. Therefore, no impact is identified for this issue area.

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, implementation of the alternative gen-tie route would not impede or redirect flood flows, and no impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.9-7 Inundation from Flooding or Mudflows.

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.

~~Big Rock~~Laurel Cluster

In recognition of the inland location of the project sites and the alternative gen-tie point of connection, the threat of tsunamis or seiche originating from the Salton Sea is considered negligible.

As described in Section 4.6, Geology and Soils, the topography within the vicinity of project site is generally level and, therefore, the hazard of mudflows adversely affecting the projects' 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

4.9.3.1 Decommissioning/Restoration

Decommissioning and restoration activities would result in similar impacts on 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 on 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 HYD-1 and HYD-2, impacts on 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 on other water resource issues, including alteration of drainage patterns, contributing to off-site flooding, impacts on 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.

4.9.3.2 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 residential significant and unmitigable adverse impacts on 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 CEQA Guidelines states that "[t]he EIR shall discuss any inconsistencies between the project 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 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

The project sites encompass approximately 1,380 acres of land located approximately 8 miles southwest of the City of El Centro and 3 miles south of Seeley, a census-designated place, in the unincorporated area of Imperial County (Figure 3-1). The project sites are located on private land, currently utilized for agricultural operations, and immediately surrounded by the Campo Verde Solar Project. The projects are generally located south of I-8, west of Drew Road and Vogel Road, north of Mandrapa Road, and east of the Westside Main Canal and Westmorland Road.

As shown on Figure 4.10-1, the project sites are designated as Agriculture under the County's General Plan. As depicted on Figure 4.10-2, the project sites are located on a total of 18 privately-owned legal parcels zoned A-2 (General Agriculture), A-2-R (General Agricultural Rural), and A-3 (Heavy Agriculture).

As discussed in Chapter 3, the County adopted the RE and Transmission Element, which includes a RE Zone (RE Overlay Map). The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of RE facilities while minimizing the impact to other established uses. As shown on Figure 3-1, the projects are located outside of the RE Energy Zone. The RE and Transmission Element is discussed in detail under Section 4.10.1.1.

4.10.1.1 Regulatory Setting

This section identifies and summarizes 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.

Figure 4.10-1. General Plan Land Use Designations

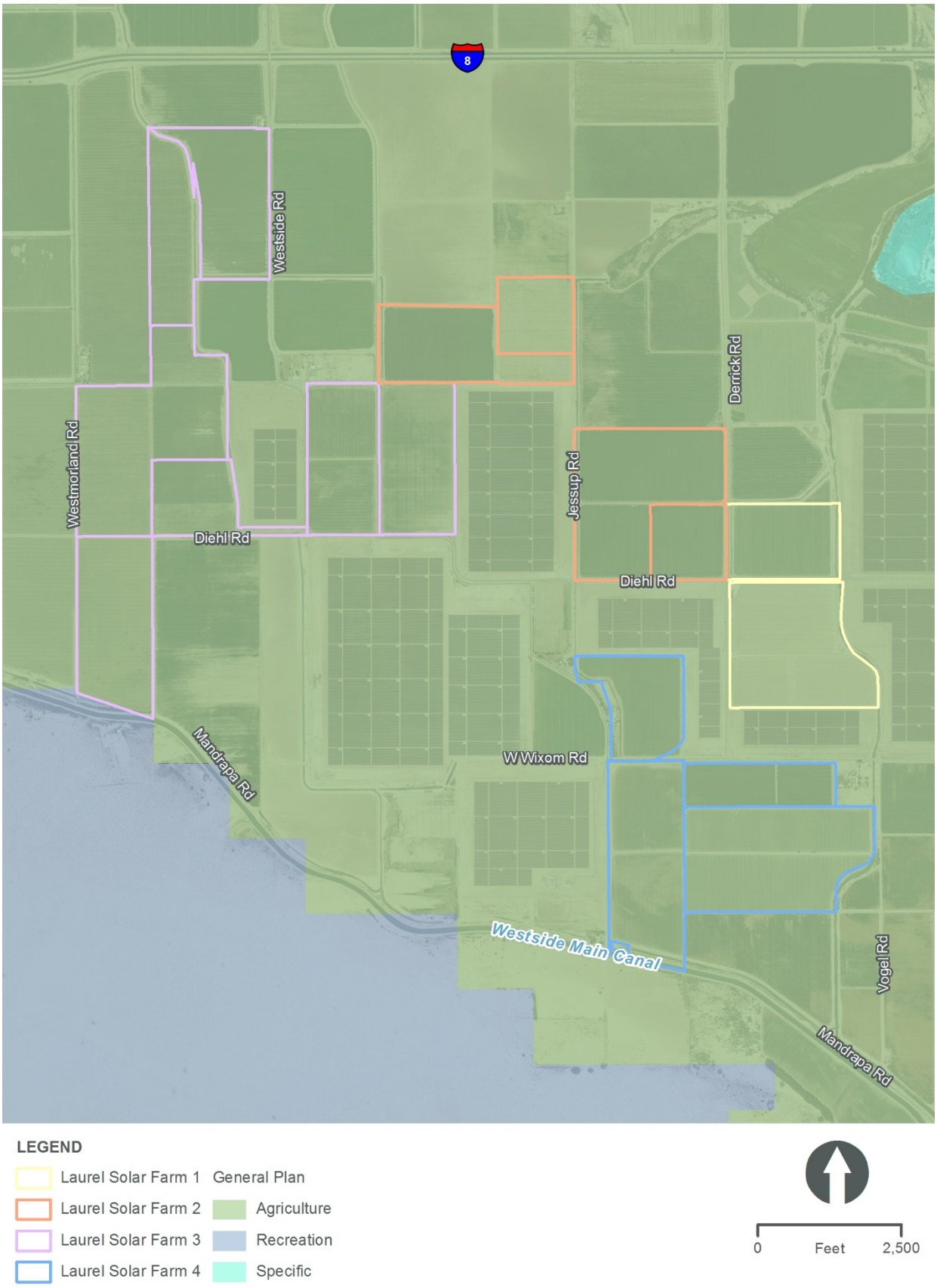
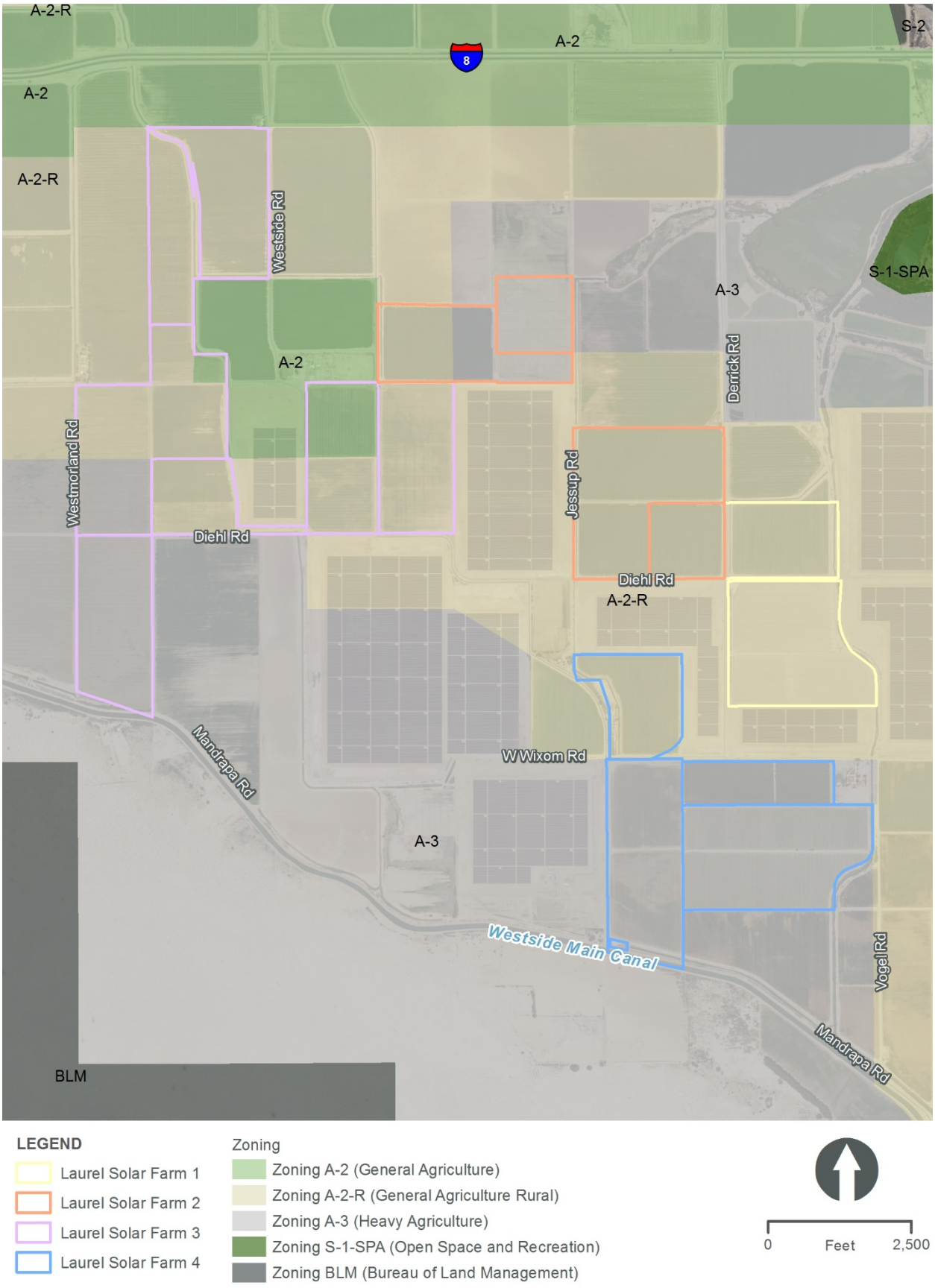


Figure 4.10-2. Zoning Designations



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.

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.

Local

Regional Comprehensive Plan and Regional Transportation Plan

SCAG's 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 RTP. The criteria for projects of regional significance are outlined in CEQA Guidelines Sections 15125 and 15206. According to the SCAG ~~Intergovernmental Review~~IGR 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 10 elements comprise the County's General Plan: Land Use; Housing; Circulation and Scenic Highways; Noise; Seismic and Public Safety; Conservation and Open Space; Agricultural; RE and Transmission Element; 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 received funding from the California Energy Commission RE and Conservation Planning Grant to amend and update the County's General Plan in order to facilitate future development of RE 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~~ GHG emissions, develop alternative fuel sources and implement its Renewable Portfolio Standard. The County has recently prepared an update to the Geothermal/Alternative Energy and Transmission Element of its General Plan, called the RE and Transmission Element. This Element is designed to provide guidance and approaches with respect to the future siting of RE projects and electrical transmission lines in the County. The County adopted this element in 2016.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Imperial County General Plan, Land Use Element		
Public Facilities, Objective 8.7. 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 Section 4.6 Geology and Soils, and Section 4.9 Hydrology/Water Quality of the EIR. Once the projects are operational, water would be required for domestic use (within the O&M buildings only), solar panel washing and fire protection. The project sites are within the IID's boundary and therefore would receive water service from the IID. Water demand for the combined projects is expected to be less than current water demands to support irrigated agriculture.
Public Facilities, Objective 8.8. Ensure that the siting of future facilities for the transmission of electricity, gas, and telecommunications is compatible with the environment and County regulation.	Consistent	The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of RE projects with an approved CUP. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of RE facilities while minimizing the impact to other established uses. CUP applications proposed for specific RE projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. The County's General Plan and Land Use Ordinance allows that for RE projects proposed on land classified in a non-RE Overlay zone, that the land on which the project is located may be included/classified in the RE Overlay Zone if the RE project: 1) would be located adjacent to an existing RE Overlay Zone; 2) is not located in a sensitive area; 3) is located in proximity to RE infrastructure; and, 4) and would not result in any significant environmental impacts. As shown on Figure 3-1, the project sites are located outside of the RE Overlay Zone. Therefore, the applicant is requesting a General Plan Amendment and Zone Change to include/classify the project sites into the RE Overlay Zone. As shown on Figure 4.10-3, the projects are located immediately adjacent to existing renewable energy infrastructure (e.g., transmission lines and other utility-scale solar projects). With the approval of the General Plan Amendment, Zone Change, and CUPs, the proposed projects can be implemented.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Public Facilities, Objective 8.9. Require necessary public utility rights-of-way when appropriate.	Consistent	The projects would include the dedication of necessary ROW to facilitate the placement of electrical distribution and transmission infrastructure.
Protection of Environmental Resources, Objective 9.6. Incorporate the strategies of the Imperial County AQAP in land use planning decisions and as amended.	Consistent	Due to the minimal grading of the sites during construction and limited travel over the sites 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		
Safe, Convenient, and Efficient Transportation System, Objective 1.1. 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 and would not be expected to reduce the current LOS at affected intersections, roadway segments, and highways. The project does not propose any forms for residential or commercial development and therefore would not require new forms of alternative transportation to minimize impacts to existing roadways.
Safe, Convenient, and Efficient Transportation System, Objective 1.2. Require a traffic analysis for any new development which may have a significant impact on County roads.	Consistent	The projects at build out would entail up to 40 vehicle trips on local roadways on an average day. 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 described in Section 4.13, Transportation and Traffic, a traffic study was prepared for the projects and demonstrated that project operations would have a less than significant impact on the circulation network.
Imperial County General Plan, Noise Element		
Noise Environment. Objective 1.3. Control noise levels at the source where feasible.	Consistent	Where construction-related and operational noise would occur in close 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.
Project/Land Use Planning. 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.
Long Range Planning. 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.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Imperial County General Plan, Conservation and Open Space Element		
Conservation of Environmental Resources for Future Generations Objective 1.5: Provide for the most beneficial use of land based upon recognition of natural constraints.	Consistent	The project sites would be converted from undeveloped agricultural land to a solar energy facility. 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 RE 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 that do not threaten the economic viability of other industries; 5) Improvements in technology to reduce costs of electrical generation; 6) Reduction in potential ~~greenhouse gases~~GHGs by displacing fossil-fuel-generated electricity with RE power which does not add to the greenhouse effect; 7) Contribution towards meeting the State of California's RPS; and, 8) Minimization of impacts to local communities, agriculture and sensitive environmental resources. In addition, the generation of 325 MW of renewable electrical energy is a benefit that would otherwise be generated by nonrenewable fossil fuels. Therefore, the proposed projects are consistent with this objective.
Preservation of Biological Resources. 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 sites. As discussed in Section 4.4, Biological Resources, there are potentially significant biological resources located within the project site. However, with the implementation of mitigation identified in Section 4.4, Biological Resources, these impacts would be reduced to a level less than significant.
Preservation of Cultural Resources. Objective 3.1 Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.	Consistent	A cultural literature review was conducted for the project sites. As discussed in Section 4.5, Cultural Resources, given that the project sites have not been completely surveyed and there are previously recorded resources that have not yet been evaluated for eligibility in the CRHR, implementation of the proposed projects could potentially cause a substantial adverse change in the significance of a historical resource. Mitigation Measures CR-1 through CR-4 have been identified to reduce potential impacts associated with historical resources to a level less than significant.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Preservation of Agricultural Lands. 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 would temporarily convert land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland to non-agricultural uses. Although the projects would convert lands currently under agricultural production, the project applicant is proposing agriculture as the end use and is required to prepare a site-specific Reclamation Plan to minimize impacts related to short- and long-term conversion of farmland to non-agricultural use. The reclamation plan contents will include addressing the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on the sites, as well as restoration of each site to its pre-project condition. Therefore, the proposed projects would not permanently convert Prime Farmland, Farmland of Statewide Importance, and Unique Farmland 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.
Conservation of Energy Sources. 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.
Conservation of Energy Sources. Objective 6.2*:* Encourage the utilization of alternative passive and RE resources.	Consistent	The projects entail 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.
Conservation of Energy Sources. 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 procure 50 percent of their electricity from eligible RE resources by 2030. The projects would contribute toward this goal.
Imperial County General Plan, RE and Transmission Element		
Objective 1.5: Require appropriate mitigation and monitoring for environmental issues associated with developing RE facilities.	Consistent	Please refer to Section 4.2, Agricultural Resources, for a description of existing agricultural resources within the project sites and a discussion of potential impacts attributable to the projects. A biological resources report has been prepared for the 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.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Objective 1.7: Assure that development of RE facilities and transmission lines comply with ICAPCD~~Imperial County Air Pollution Control District~~'s regulations and mitigation measures.	Consistent	Due to the minimal grading of the sites during construction and limited travel over the sites 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. Section 4.3, Air Quality, discusses the projects' consistency with the ICAPCD in more detail.
Objective 2.1: To the extent practicable, maximize utilization of IID's transmission capacity in existing easements or rights-of-way. Encourage the location of all major transmission lines within designated corridors easements, and rights-of-way.	Consistent	The project involves the construction and operation of new RE infrastructure that would interconnect with existing and approved IID transmission infrastructure thereby maximizing the use of existing facilities. As discussed in Chapter 3, Project Description, power would be transmitted to the proposed IID Fern Substation, adjacent to the LSF4~~BRSF1~~, via up to 230 kV overhead and/or underground line(s).
Imperial County Land Use Compatibility Plan		
Safety Objective 2.1*:* 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 sites are not located within a designated ALUCP area.
Southern California Area of Governments Regional Comprehensive Plan and Regional Transportation Plan		
Objective 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 RE infrastructure that would interconnect with existing and approved IID transmission infrastructure thereby maximizing the use of existing facilities. The projects would not involve new forms of urban development that could increase demands for existing infrastructure.
Objective 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.
Objective 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.
Objective 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 RE infrastructure and not residential or commercial development.

Table 4.10-1. Project Consistency with Applicable Plan Policies

Applicable Policies	Consistency Determination	Analysis
Objective 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 land uses and takes 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.
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.	Consistent	See discussion under Policy 3.16 above.

Source: Imperial County General Plan, as amended; SCAG 2008a and 2008b

ALUCP – Airport Land Use Compatibility Plan; AQAP – air quality attainment plan; ~~BRSF1 – Big Rock 1 Solar Farm;~~
CRHR – California Register of Historic Resources; CUP – conditional use permit; EIR – environmental impact report;
ICAPCD - Imperial County Air Pollution Control District; IID – Imperial Control District; LOS – level of service; MW – megawatt; LSF4 – Laurel Solar Farm 4
RE – renewable energy; RPS – Renewables Portfolio Standard; ROW – right-of-way

The RE and Transmission Element includes a RE Zone (RE Overlay Map). The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of RE projects, with an approved CUP. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of RE facilities while minimizing the impact to other established uses. As shown in Chapter 3, Figure 3-1, the project sites are located outside of the RE Overlay Zone.

As previously indicated, the County's General Plan designates the project sites 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 projects' consistency with the General Plan goals, objectives and policies regarding Agriculture is provided in Section 4.2 Agriculture Resources of this EIR. While this EIR analyzes the projects' consistency with the General Plan pursuant to 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.

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 4.10-2, the project sites are zoned A-2, A-2-R, and A-3. The purpose of the A-2 and A-2-R zoning designation is to "designate areas that are suitable and intended primarily for agricultural uses (limited) and agricultural related compatible uses" (County of Imperial 2017). 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 2017). 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 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 electrical generators; solar energy plants; energy storage, transmission lines, including supporting towers, poles microwave towers, utility substations. 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 120 feet in height, and shall meet Airport Land Use Compatibility Plan (ALUCP) 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 Imperial County ALUCP provides the criteria and policies used by the Imperial County Airport Land Use Commission to assess compatibility between the principal airports in Imperial County and proposed land use development in the areas surrounding the airports. The ALUCP emphasizes review of local general and specific plans, zoning ordinances, and other land use documents covering broad geographic areas.

The project sites are located approximately 5 miles southwest of the Naval Air Facility El Centro. According to Figure 3G (Compatibility Map – Naval Air Facility El Centro) of the ALUCP, no portion

of the project sites are located within the Naval Air Facility El Centro land use compatibility zones (County of Imperial 1996).

4.10.1.2 Existing Conditions

The project sites are located on the western and southern fringe of agricultural lands in Imperial County. Land uses surrounding the project sites include agricultural lands, the Campo Verde Solar Project, and IID infrastructure (Westside Main Canal and concrete lined ditches).

The project sites encompass approximately 1,380 acres of land located approximately 8 miles southwest of the City of El Centro. The project sites are located on private land, currently utilized for agricultural operations, and immediately surrounded by the Campo Verde Solar Project. As shown on Figure 4.10-1, the project sites are designated as Agriculture under the County's General Plan. As depicted on Figure 4.10-2, the project sites are zoned A-2, A-2-R and A-3.

There are no established residential neighborhoods immediately adjacent to the project sites. However, there are six off-site rural residences located within 500 feet of the project sites:

- One residence located near the northwestern LSF3 boundary (north of West Vaughn Road)
- One residence located at the northern extent of LSF3 along Westside Road
- One residence north of the intersection of Westside Road and West Vaughn Road
- Two residences located along Liebert Road, one is located immediately west of LSF4~~BRSF1~~, and the second is located south of the intersection of West Diehl Road and Jessup Road
- One residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road

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/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
- Conflict with any applicable ~~habitat conservation plan~~HCP or ~~natural community conservation plan~~NCCP

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
- 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 projects 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. The conceptual site plan for the projects (Figures 3-3 through 3-10) was also used to evaluate potential impacts.

4.10.2.3 Impact Analysis

Impact 4.10-1 Physically Divide an Established Community.

The projects would not physically divide an established community.

~~Big Rock~~Laurel Cluster

The project sites are located in a sparsely populated, agriculturally zoned portion of southern Imperial County. The project sites are immediately surrounded by agricultural lands and the Campo Verde Solar Project. Although there are six off-site rural residences located within 500 feet of the project sites, there are no established residential communities located within or in the vicinity of the project sites. Therefore, implementation of the proposed projects would not divide an established community and no significant impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.10-2 Conflict with Applicable Land Use Plan, Policies, or Regulations.

The projects could conflict with an applicable land-use plan, policy, or regulation of an agency with jurisdiction over the project (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.

~~Big Rock~~Laurel Cluster

The projects' consistency with applicable land use plans, policies, and regulations is evaluated below.

Regional Comprehensive Plan and Regional Transportation Plan

According to the SCAG ~~Intergovernmental Review~~IGR Procedures Handbook, "new or expanded electrical generating facilities and transmission lines" qualify as regionally significant projects.

Therefore, Table 4.10-1 provides a consistency evaluation for the projects with applicable SCAG IGR policies. As shown in Table 4.10-1, the proposed projects are consistent with the SCAG IGR policies.

County of Imperial General Plan

The County's General Plan applies to the solar energy facility and supporting infrastructure portions associated with the projects. An analysis of the projects' consistency with the General Plan goals and objectives relevant to the projects is provided in Table 4.10-1. As shown in Table 4.10-1, the proposed projects would be generally consistent with the goals and objectives of the General Plan, with the exception of the RE and Transmission Element.

The County adopted the RE and Transmission Element, which includes a RE Energy Zone. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of RE facilities while minimizing the impact to other established uses. As stated in the RE and Transmission Element:

> CUP applications proposed for specific RE projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone. An amendment to the overlay zone would only be approved by the County Board of Supervisors if a future RE project met one of the following two conditions:
>
> - Adjacent to the Existing RE Overlay Zone: An amendment may be made to allow for development of a future RE project located adjacent to the existing RE Overlay Zone if the project:
>   - Is not located in a sensitive area
>   - Would not result in any significant impacts
> - "Island Overlay": An amendment may be made to allow for development of a future RE project that is not located adjacent to the existing RE Overlay Zone if the project:
>   - Is located adjacent (sharing a common boundary) to an existing transmission source
>   - Consists of the expansion of an existing RE operation
>   - Would not result in any significant environmental impacts.

The project sites are located outside of the RE Overlay Zone. Therefore, the applicant is requesting an amendment to the County's General Plan, RE and Transmission Element to include/classify the project sites into the RE Overlay Zone. The project sites are not located adjacent to an existing RE Overlay Zone; therefore, the projects will need to meet the criteria identified for the "Island Overlay" to obtain approval of an amendment to the RE Overlay Zone. Table 4.10-2 provides an analysis of the projects' consistency with the "Island Overlay" criteria.

With approval of the General Plan Amendment and Zone Change, the project applicant will be able to request for approval of four individual CUPs to allow the construction and operation of the proposed solar facilities.

Table 4.10-2. Project Consistency with "Island Overlay" Criteria

Criteria	Criteria Met?
Is located adjacent (sharing a common boundary) to an existing transmission source?	As shown on Figure 4.10-3, there are numerous transmission lines in the project vicinity. Each of the project sites are located immediately adjacent to an existing transmission line. As described in Chapter 3, the projects include gen-tie lines that would connect to the Fern/Liebert Substation located immediately west of LSF4~~BRSF1~~. Alternatively, power from the projects may be transmitted via the existing Campo Verde's 230 kV gen-tie line to SDG&E's Imperial Valley Substation located on BLM land (Figure 4.10-3). This alternative gen-tie line would be added to the existing, fully-constructed double-circuit Campo Verde gen-tie line, and no new construction would be required in this area.
Consists of the expansion of an existing RE operation?	As shown on Figure 4.10-3, the project sites are located immediately adjacent to the Campo Verde Solar Project, which is an existing RE facility. The Campo Verde solar facility began commercial operation in November 2013 and is capable of generating up to 139 MW of solar energy. The proposed projects involve the construction of four utility-scale solar facilities immediately adjacent to the existing Campo Verde solar facility. The proposed projects would be capable of generating up to 325 MW of solar energy, thereby expanding solar energy generation in the area.
Would not result in any significant environmental impacts?	As detailed in Sections 4.1 through 4.14 of this EIR, no unavoidable or unmitigable 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. Therefore, the proposed projects would not result in a residual significant impact.

~~BRSF1 – Big Rock 1 Solar Farm;~~ EIR – environmental impact report; LSF4 – Laurel Solar Farm 4; MW – megawatts; RE – renewable energy

County of Imperial Land Use Ordinance

Development of the solar energy facility and supporting infrastructure is subject to the County's zoning ordinance. The project sites are located on 18 privately-owned legal parcels zoned A-2, A-2-R, and A-3. Pursuant to Title 9, Division 5, Chapter 8, the following uses are permitted in the A-2 and A-2-R zones subject to approval of a CUP from Imperial County: 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. Pursuant to Title 9, Division 5, Chapter 9, "Solar Energy Plants" and "Transmission lines, including supporting towers, poles microwave towers, utility substations" are uses that are permitted in the A-3 Zone, subject to approval of a CUP. Therefore, with approval of a CUP for each project, the proposed projects would not conflict with the County's zoning ordinance.

Imperial County Airport Land Use Compatibility Plan

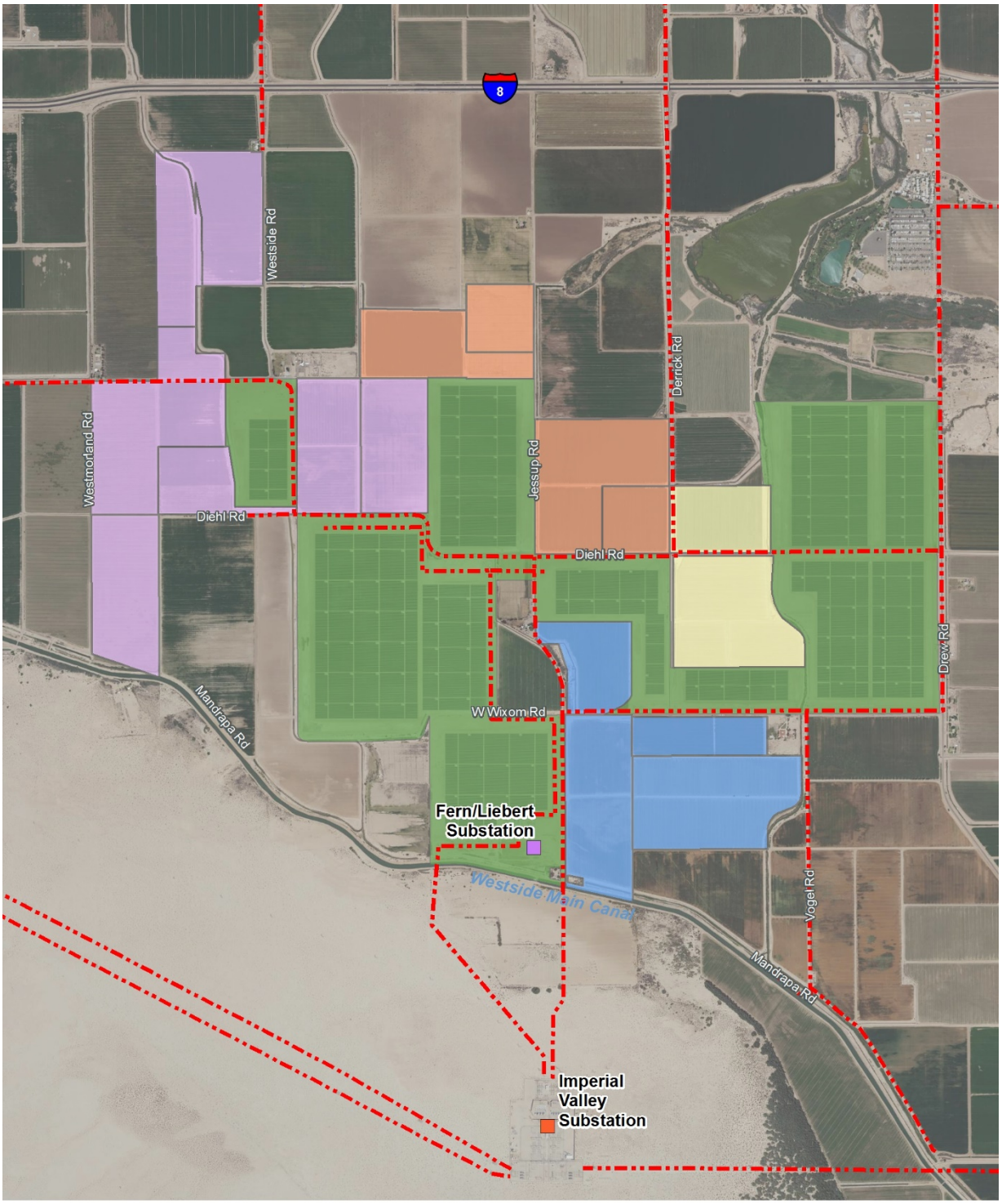
As previously discussed above, the project sites are located approximately 5 miles southwest of the Naval Air Facility El Centro. According to Figure 3G (Compatibility Map – Naval Air Facility El

Centro) of the ALUCP, no portion of the project sites are located within the Naval Air Facility El Centro land use compatibility zones (County of Imperial, 1996). Therefore, the proposed projects would not conflict with the Imperial County ALUCP, and no significant impact would occur.

Mitigation Measure(s)

No mitigation measures are required.

Figure 4.10-3. Proximity to Existing Renewable Energy Operation and Transmission Source



Impact 4.10-3 Conflict with an Adopted Habitat Conservation Plan or Natural Communities Conservation Plan.

The projects would not conflict with any applicable habitat conservation plan or natural community conservation plan.

~~Big Rock~~Laurel Cluster

The project sites are not located within the boundaries of any adopted ~~habitat conservation plan (~~HCP~~)~~ (16 USC §1539) or ~~natural community conservation plan (~~NCCP~~)~~ (California FGC §2800 et seq.). The County is not within the boundary of any adopted HCP or NCCP. Based on these considerations, the projects would not conflict with any HCP or NCCP and would result in no significant impact.

Mitigation Measure(s)

No mitigation measures are required.

4.10.3 Decommissioning/Restoration and Residual Impacts

4.10.3.1 Decommissioning/Restoration

No impacts to land use and planning are anticipated to occur during decommissioning and restoration of the project sites. Decommissioning and restoration would not physically divide an established community or conflict with any applicable land use or ~~habitat conservation plan~~HCP. Through each project's decommissioning and subsequent restoration to pre-project conditions, 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.

4.10.3.2 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 plan to address post-project decommissioning, 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.

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, 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. The noise and vibration impact assessment in Section 4.11.2 provides an evaluation of potential adverse effects based on criteria derived from the CEQA Guidelines.

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 hertz~~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 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 because of 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 (L_{eq}) is used to describe noise over a specified period of time, typically 1 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 ($L_{max)}$ for a specified period of time.
- L_{dn}: 24-hour day and night (L_{dn}) A-weighed 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 p.m. and 7 a.m. 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 p.m. and 10 p.m. in addition to a 10 dBA penalty between the hours of 10 p.m. and 7 a.m.

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
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
- 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 dB system. The human ear perceives sound in a nonlinear fashion hence the dB scale was developed. Because the dB 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 project.

Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 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 (CCR, 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 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 EIR analyzes the projects' consistency with the General Plan pursuant to 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							
Transient Lodging – Motel, Hotel							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditorium, Concert Hall, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							

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
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business, Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

	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.
	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.
	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.
	Clearly Unacceptable	New construction or development generally should not be undertaken.

Source: OPR 1998; Imperial County General Plan 2008

CNEL - community noise equivalent level; dBA – a-weighted decibel; L_{dn} – day-night average sound level

Table 4.11-2. Project Consistency with Applicable General Plan Noise Policies

General Plan Policies	Consistency with General Plan	Analysis
1. Acoustical Analysis of proposed projects. 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.	Consistent	Under existing conditions, the ambient noise environment is characterized as relatively quiet with peak noise levels influenced by vehicular traffic and off-site 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. This EIR provides an analysis of the potential short- and long-term noise impacts of the project. As discussed, short-term and long-term noise levels were found to be less than significant.
2. Noise/Land Use Compatibility. 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.	Consistent	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.
4. Interior Noise Environment. 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.	Consistent	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.
5. New Noise Generating projects. 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.	Consistent	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.

Table 4.11-2. Project Consistency with Applicable General Plan Noise Policies

General Plan Policies	Consistency with General Plan	Analysis
6. Projects Which Generate Off-site Traffic Noise. 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 on sensitive receptors along those roadways, the acoustical analysis report shall consider noise reduction measures to reduce the impact to a level less than significant.	Consistent	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.

Source: Imperial County General Plan Noise Element

dBA – a-weighted decibel; EIR – environmental impact report

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.
- 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 1-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 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 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No 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 (Table 4.11-3).

Table 4.11-3. Imperial County Exterior Noise Standards

Land Use Zone	Time Period	Noise Level, L_{eq} 1-hour
R-1 Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	45 dBA 50 dBA
R-2 Residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	50 dBA 55 dBA

Table 4.11-3. Imperial County Exterior Noise Standards

Land Use Zone	Time Period	Noise Level, L_{eq} 1-hour
R-3, R-4, and all other residential	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	50 dBA 55 dBA
Commercial	Night (10 p.m. to 7 a.m.) Day (7 a.m. to 10 p.m.)	55 dBA 60 dBA
Manufacturing, other industrial, agricultural, and extraction industry	Anytime	70 dBA
Industrial	Anytime	75 dBA

Source: Imperial County Municipal Code Section 90702.00.

dBA – a-weighted decibel; L_{dn} – day-night average sound level; L_{eq} – equivalent sound level

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 project sites are designated as Agriculture under the County's General Plan. As depicted on Figure 4.10-2, the project sites are located on a total of 18 privately-owned legal parcels zoned A-2 (General Agriculture), A-2R (General Agricultural Rural) and A-3 (Heavy Agriculture).

The project sites are located immediately adjacent to the Campo Verde Solar Project. The projects are generally located south of I-8, west of Drew Road and north and east of the Westside Main Canal. The existing Imperial Valley Substation is located approximately 1 mile south of the project site.

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 frontend 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 sites, the existing noise environment is generally influenced by the noise produced from the following sources:

- Vehicle traffic along roadways including Drew Road, Westside Road, and I-8
- 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 the approved Campo Verde Solar Project (SCH No. 2011111049), the proximity of the measurements, and timing in which the data was collected (2011), 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 measurements were used to characterize ambient noise conditions for the project sites.

Noise measurements were taken at two monitoring locations at the Campo Verde Solar Project site. Monitoring location 1 was located roughly 30 feet from Westside Road near the intersection of West Vaughn Road. Monitoring location 2 was taken in the eastern portion of the site approximately 30 feet from Drew Road at the intersection of West Diehl Road. The noise measurements were monitored for a time period of 15 minutes each. According to the Campo Verde Solar Project Final EIR (SCH No. 2011111049), the ambient L_{eq} noise levels measured in the area of the project during the late morning and mid-day were found to be between 50-55 dBA L_{eq} on the western portion of the site and 90 percent (L90) the noise levels were 36-38 dBA. The existing noise levels in the project area consisted primarily of low traffic volumes along Drew Road and Westside Road and background noise from existing agricultural operations in the distances both on and adjacent to the site. The existing noise levels were found to be below County thresholds for all sensitive land uses.

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. There are no established residential neighborhoods immediately adjacent to the project sites. However, there are six off-site rural residences located within 500 feet of the project sites:

- One residence located near the northwestern LSF3 boundary (north of West Vaughn Road)
- One residence located at the northern extent of LSF3 along Westside Road
- One residence north of the intersection of Westside Road and West Vaughn Road
- Two residences located along Liebert Road, one is located immediately west of LSF4~~BRSF1~~, and the second is located due south of the intersection of West Diehl Road and Jessup Road
- One residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road

Groundborne Vibration

Groundborne vibration consists of rapidly fluctuating motions or waves, which are also measured in dB. 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 hertz~~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, the Caltrans 2013 vibration impact assessment, entitled the "*Transportation and Construction-Induced Vibration Guidance Manual*," was utilized. The guidance manual uses peak particle velocity (PPV) to quantify vibration amplitude. PPV is defined as the maximum instantaneous peak of the vibratory motion (Caltrans 2013). As a point of reference, a strongly perceived transient source is 0.90 PPV at 25 feet, and 0.10 PPV at 25 feet for an intermittent source. Table 4.11-4 identifies acceptable vibration limits for transportation and construction projects based on guidelines prepared by Caltrans.

Table 4.11-4. California Department of Transportation Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inch/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Caltrans 2013

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV – peak particle velocity

Proximity to Airports

The project sites are not located within 2 miles of a public airport or a private airstrip. The nearest airport is the Naval Air Facility El Centro located approximately 5 miles northeast of the project sites.

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 are considered significant if any of the following occur:

- 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 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels
- 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

Noise generated by the proposed project will consist of: (1) short duration noise resulting from construction activities and (2) noise during normal facility operations. Vibration from the proposed project would only result during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration and compared to regulatory requirements.

4.11.2.3 Impact Analysis

The alternative gen-tie would not require additional construction activities. Therefore, no further analysis of this alternative gen-tie with respect to noise is necessary.

Impact 4.11-1 Temporary, Short-Term Exposure of Sensitive Receptors to Increased Equipment Noise from Project Construction.

The projects would not expose persons to or generate noise levels in excess of applicable County standards.

~~Big Rock~~Laurel Cluster

Construction noise, although temporary, can potentially affect nearby sensitive receptors, such as residences. Construction of the proposed projects will require the use of heavy equipment that may be periodically audible at offsite locations. Received noise levels will fluctuate, depending on the construction activity, equipment type, and distance between noise source and receiver. Additionally,

noise from construction equipment will vary dependent on the construction phase and the number and type of equipment at a location at any given time. Construction for the projects is expected to conservatively last 15 months, scheduled to begin early 2018. Each project site would be divided into four potentially overlapping broad phase activities:

- **Phase 1 - Site Preparation, Fencing, and Ingress/Egress**: Includes erosion control (if necessary); stabilized construction entrances and exits; fencing and gates; and communication/security systems.
- **Phase 2 - Civil Improvements - Grading/Roads/ Earthwork:** Includes surface smoothing and grading; preparation of solar foundations; and internal access roads.
- **Phase 3 - PV Panel Construction**: Includes placement of underground electrical and communication lines; concrete for foundations and equipment pads; support structures (posts); cross-members and other hardware; electrical connections and equipment; and PV modules.
- **Phase 4 - Testing and Commissioning**: Includes final inspections testing, start-up, and certification; and facility brought on-line in stages and tested at every stage.

The variation in power and usage of the various equipment types creates complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 4.11-5 and were used to screen for potential construction noise impacts. Each phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, for a given hour (i.e., front end loaders are assumed to be used for up to 40 percent of 1 hour, or 24 minutes), to calculate the composite average daytime hourly L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from dB addition of the L_{eq} of each individual unit. Although it is not possible for all the construction equipment to operate at one point simultaneously, the screening level analysis represented in Table 4.11-5 conservatively assumes concurrent operation of equipment.

The nearest sensitive receptors to the project sites include the following:

- One residence located near the northwestern LSF3 boundary (north of West Vaughn Road)
- One residence located at the northern extent of LSF3 along Westside Road
- One residence north of the intersection of Westside Road and West Vaughn Road
- Two residences located along Liebert Road, one is located immediately west of LSF4~~BRSF1~~, and the second is located due south of the intersection of West Diehl Road and Jessup Road
- One residence located at the southwest corner of the intersection of West Wixom Road and Vogel Road.

The average distance from the construction activities to these sensitive land uses is approximately 250 feet. Construction noise will attenuate with increased distance from the noise sources. Composite L_{eq} noise levels at 250 feet given in Table 4.11-5 were evaluated assuming spherical free-field spreading. As a general construction practice, functional mufflers will be maintained on all equipment to attenuate noise levels as low as reasonably achievable. As shown, the noise levels would not exceed the County's 75 dBA L_{eq} construction noise threshold. Furthermore, the projects

must comply with County standards regarding construction hours (i.e. construction limited to normal weekday working hours, 7 a.m. to 7 p.m., Monday through Friday). Therefore, impacts from construction noise are considered less than significant.

Table 4.11-5. Project Construction Noise Levels by Phase

Phase	Equipment[1]			Composite Sound Level (L_{eq})[3]	
	Type	Quantity	L_{max} at 50'[2]	50 feet	250 feet
Site Preparation, Fencing, Ingress/Egress	Tractor	1	84.0	86.1	72.1
	Grader	1	85.0		
	Front End Loader	1	79.1		
	Scraper	1	83.6		
	Generator	1	80.6		
Grading, Roads, Earthwork	Tractor	1	84.0	85.8	71.8
	Grader	1	85.0		
	Front End Loader	1	79.1		
	Roller	1	80.0		
	Generator	1	80.6		
	Compactor	1	83.2		
PV Panel Construction	Crane	1	80.6	85.6	71.6
	Flatbed Truck	1	74.3		
	Front End Loader	1	79.1		
	Post Driver	1	90.3		
	Generator	1	80.6		
	Compressor	1	77.7		
	Forklift	1	74.7		
Testing and Commissioning	Pickup Truck	1	75.0	80.4	66.4
	Flatbed Truck	1	74.3		
	Forklift	1	74.7		
	Generator	1	80.6		
	Compressor	1	77.7		

[1] Equipment mix based on Air Quality and Greenhouse Gas Report ([Appendix E of this EIR).
[2] Measured L_{max} at given reference distance obtained from the FHWA Roadway Construction Noise Model, FHWA 2006.
[3] Distance factor determined by the inverse square law defined as 6 dBA per doubling of distance as sound travels away from an idealized point.

dBA – a-weighted decibel; L_{eq} – equivalent sound level; L_{max} – maximum noise level; PV – photovoltaic

Traffic noise associated with construction of the proposed projects is not anticipated to be a significant source of noise. Traffic noise is not greatly influenced by lower levels of traffic, such as those associated with the proposed project's construction effort. For example, traffic levels would have to double in order for traffic noise on area roadways to increase by 3 dBA. The proposed project's construction traffic on area roadways would increase hourly traffic volumes by much less than double; therefore, the increase in construction related traffic noise would be less than 3 dBA and is not significant.

Mitigation Measure(s)

No mitigation measures are required.

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.

~~Big Rock~~Laurel Cluster

Vibration associated with construction of the proposed project has the potential to be an annoyance to nearby land uses.

The County does not have adopted limits for determining significance of vibration impacts on structures or persons. Caltrans and the Federal Transit Administration ~~uthority~~ ~~(FTA)~~ have developed two of the decisive works in the assessment of vibrations from transportation and construction sources (Caltrans 2013; Federal Transit Administration~~FTA~~ 2006). The Caltrans vibration limits are reflective of standard practice for analyzing vibration impacts on structures from continuous and intermittent sources.

The Caltrans *Transportation and Construction Vibration Guidance Manual* identifies two impact criteria for buildings and humans. Table 4.11-4 describes impact criteria for buildings, and Table 4.11-6 describes impact criteria for humans.

Table 4.11-6. Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (inch/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: Caltrans 2013

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV – peak particle velocity

Construction of the proposed projects may require post driving and vibratory rollers and has the potential to result in temporary vibration impacts on structures and humans. Based on the potential site locations, post driving activities would not occur closer than 250 feet from the nearest off-site structures. As impact pile drivers have higher vibration levels than vibratory pile drivers, the potential vibration impact calculations assume that impact pile drivers will be used. Other construction activities are less intensive than pile driving and would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for the project construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors:

$$PPV\ Impact\ Pile\ Driver = PPV_{Ref}\ (25/D)^{n} \times (E_{equip}/E_{Ref})^{0.5}\ (in/sec)$$

Where:

PPV_{Ref} = 0.65 in/sec for a reference pile driver at 25 feet

D = distance from pile driver to the receiver in feet

n = 1.1 is a value related to the vibration attenuation rate through ground

E_{equip} is rated energy of impact pile driver in ft-lbs

E_{Ref} is 36,000 ft-lb (rated energy of reference pile driver)

Using the referenced formula and an assumed 2,400 ft-lb rated energy for the post driver, the calculated PPV at the nearest structure (250 feet) would be 0.013 PPV, which according to the Caltrans guidance would not damage buildings and would be barely perceptible. Therefore, vibration impacts associated with construction of the proposed projects would be less than significant.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.11-3 Permanent Increase in Ambient Noise Levels.

The projects would not create a substantial permanent increase in ambient noise levels in the vicinity of new O&M and substation facilities.

~~Big Rock~~Laurel Cluster

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., heating, ventilation, and air-conditioning~~HVAC~~ for the O&M buildings or energy storage units). The on-site water storage tanks located at each of the O&M buildings would require associated pumping and would operate intermittently. The energy storage component facilities are not considered noise generators but would be equipped with air conditioning systems. 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 20 staff personnel would be on site at any one time for typical operation and maintenance of

these facilities, most during typical working hours, 7 a.m. to 5 p.m. The ~~Big Rock~~Laurel Cluster would require 40 vehicle trips per day during operations. These trips would be distributed through the roadway network. Because of 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 sites. 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 (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 or energy storage area do 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.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.11-4 Airport Noise.

The projects would not result in the exposure of people residing or working in the project area to excessive noise levels from public and private airport operations.

~~Big Rock~~Laurel Cluster

The projects would not involve the construction of sensitive land uses. The project sites are not located within 2 miles of a public airport or a private airstrip. Therefore, the projects would not expose people to excessive airport noise levels and no impact is identified for these issue areas.

Mitigation Measure(s)

No mitigation measures are required.

4.11.3 Decommissioning/Restoration and Residual Impacts

4.11.3.1 Decommissioning/Restoration

Decommissioning or restoration of the solar farms would use similar equipment to what was evaluated in the construction noise and vibration analysis. Adhering to the County's construction hours would reduce the noise and vibration impacts to below a level of significance.

4.11.3.2 Residual

Adhering to the County's construction hours would reduce the noise and vibration impacts to below a level of significance.

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, and 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 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 CEQA Guidelines in conjunction with actions proposed in Chapter 3, Project Description.

The ~~*Initial Study* (IS)/*Notice of Preparation*~~IS/NOP prepared for this EIR determined that the projects would not result in impacts on schools, parks and other public facilities (libraries and post offices). Therefore, these issue areas will not be discussed further. The IS/NOP is included in Appendix A of this EIR.

4.12.1 Environmental Setting

The proposed projects are located approximately 8 miles southwest of the City of El Centro and 3 miles south of Seeley, a census-designated place, in the unincorporated area of Imperial County. The project sites are located within the ICFD/OES and the Imperial County Sheriff Department's areas of service.

4.12.1.1 Regulatory Setting

This section identifies and summarizes federal, state, and local laws, policies, and regulations that are applicable to the project.

State

Fire Codes and Guidelines

The California Fire Code (Title 24, Part 9 of the CCR) 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 California. 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 project. An analysis of the project's consistency with the applicable goals and objectives of the Seismic and Public Safety Element is provided in Table 4.12-1~~Table 4.12-1~~.

Table 4.12-1. Project Consistency with Applicable General Plan Noise Policies

Applicable General Plan Goals/Policies	Consistency Determination	Analysis
Goal 1: Include public health and safety considerations in land use planning.	Consistent	The project CUP applications and site plans will be reviewed by the ~~Imperial County Fire Department~~ICFD 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 to reduce the potential for fire hazards including 10,000 gallon on-site fire water tanks for ~~operations and maintenance~~O&M (one tank would be provided for each of the 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).
Objective 1.8: Reduce fire hazards by the design of new developments		
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.	Consistent	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. With regards to public safety and security, the projects would include 8-foot-tall (6-foot chain-link topped with 2-foot barbed wire) perimeter security fencing with cameras. 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(s) or at the O&M Building(s), or similar technology, would be installed. Additionally, the projects may include additional security measures including, but not limited to, barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the projects.
Objective 2.5: Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.		

Source: Imperial County General Plan Noise Element 2015

CUP – conditional use permit; ICFD –Imperial County Fire Department; O&M – operations and maintenance

Imperial County Office of Emergency Services – Multi-Hazard Mitigation Plan

The ICFD is the local Office of Emergency services in Imperial County. Imperial County has developed the Multi-Hazard Mitigation Plan (MHMP) to create a safer community. The purpose of the MHMP is to significantly reduce deaths, injuries, and other disaster losses caused by natural and human-caused hazards in Imperial County. The MHMP describes past and current hazard mitigation activities and outlines goals, strategies, and actions for reducing future disaster losses. The Imperial County MHMP is the representation of the County's commitment to reduce risks from natural and other hazards and serves as a guide for decision-makers as they commit resources to reducing the effects of natural and other hazards. The jurisdictions included in the MHMP include the cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmoreland, the IID and the Imperial County Office of Education. The MHMP complies with all federal, state, and local laws guiding disaster management.

County Evacuation Plans

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 eight fire stations serving the entire 4,500 square miles of unincorporated Imperial County. The eight ICFD stations are located in the communities of Heber, Seeley, Ocotillo, Palo Verde, Niland, Winterhaven, and the City of Imperial. Each of the county fire stations is staffed with a Captain, Firefighter, and Reserve Firefighter with the only exception being the Palo Verde station that is staffed with a Firefighter and Reserve Firefighter. Every fire station has a Type I engine as its primary apparatus. The City of Imperial and Heber stations also house a Ladder Truck along with the Type I engine. The Seeley and Heber stations also house Type III engines. 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 is site is the Seeley station located at 1828 Park Street in Seeley, California. This station is located approximately less than 3 miles northeast of the project sites.

Police Protection Services

Imperial County's 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, East County Operations, and City of Holtville. 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. The California Highway

Patrol 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 project 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, to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- Fire protection
- Police protection
- Schools
- Parks
- Other public facilities

As mentioned previously, it was determined through the preparation of an IS that the projects would not result in impacts on 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 were based on consultation with the ICFD, Sheriff's Department and review of other development projects in the area.

4.12.2.3 Impact Analysis

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no further analysis of this alternative gen-tie with respect to public services is necessary.

Impact 4.12-1 Increased Demand on the Imperial County Fire Department~~ICFD~~.

Implementation of the projects would not result in the need for additional fire protection services during construction and operational activities.

~~Big Rock~~Laurel Cluster

The projects would result in a minor increase in demand for fire protection services over existing levels. The projects are intended to feature one or more O&M buildings of approximately 40 by

80 feet in size and would include their own emergency power, fire suppression, and potable water systems. Additional auxiliary facilities would include lighting, grounding, backup uninterruptable power supply (UPS) systems and diesel power generators, fire and hazardous materials safety systems, security systems, chemical safety systems, and emergency response facilities. The projects also intend to feature one or more energy storage systems, located at or near one or more substations (onsite or shared) and/or at the inverter stations. The energy storage modules, which may include commercially available flow batteries, typically consist of standard containers (approximately 40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building in compliance with applicable regulations.

Fire protection measures are incorporated as part of project design features including portable CO_2 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 firefighting, based on the number and sizes of structures located on the sites. As discussed in Chapter 3 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 4.12-2 Increased Demand on the Imperial County Sheriff Department.

Implementation of the projects would not result in the need for additional police protection services during construction and operational activities.

~~Big Rock~~Laurel Cluster

The projects would result in a minor increase in demand for law enforcement protection services over existing levels. Emergency response times can vary because of the large patrol area of the County. Depending on the location of the deputy, response times can range from approximately 5 minutes to 1 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 20 full-time employees (up to 5 for each site) to maintain the facilities 7 days a week during normal daylight hours. The project sites will be enclosed with a chain link fence with barbed wire measuring up to 8 feet in height (from finished grade). No slats are proposed within the perimeter fencing (unless required for certain segments if fixed-tilt PV panels are installed in certain locations), which would allow for visibility onto the site by law enforcement patrols and security patrols.

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(s) or at the O&M Building(s), or similar technology, would be installed. Additionally, the projects may include additional security measures including, but not limited to, barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the projects. Controlled access gates would be maintained at entrances into the each of the project sites. Site access would be provided to offsite emergency response teams that respond in the event of an "after-hours" emergency. Enclosure gates would be manually operated with a key provided in an identified key box location. 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 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

4.12.3.1 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 site 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.

4.12.3.2 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,* completed by Linscott Law & Greenspan ~~(LLG)~~, was used for this assessment and is included in Appendix K of this EIR.

4.13.1 Environmental Setting

The project areas are located within the County of Imperial, approximately 9 miles southwest of the City of El Centro, California on approximately 1,380 gross acres of privately owned, undeveloped agricultural land.

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

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 areas, Caltrans is responsible for maintaining and managing I-8. Specific thresholds for assessing project-related impacts on state highways are further discussed in the California Department of Transportation section of this chapter.

Regional Plans

2016-2040 Regional Transportation Plan/Sustainable Communities Strategy

On April 7, 2016, SCAG adopted the 2016-2040 *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) (SCAG 2016). The RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. Input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The RTP/SCS demonstrates how the region will reduce emissions from transportation sources to comply with SB 375 and meet the NAAQS set forth by the CCA. Consistency with the RTP/SCS is addressed in Section 4.10, Land Use and Planning.

The updated RTP/SCS contains thousands of individual transportation projects that aim to improve the region's mobility and air quality and revitalize our economy. Since the RTP/SCS's adoption, the county transportation commissions have identified new project priorities and have experienced technical changes that are time-sensitive. Additionally, the new amendments for the plan have outlined minor modifications to project scopes, costs and/or funding and updates to completion

years. The amendments to the RTP/SCS do not change any other policies, programs, or projects in the plan.

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.

Coordination across jurisdictional standards for road classification and design standards was identified as a crucial component to the 2008 update of the Circulation and Scenic Highways Element. The intent of this element is to provide a system of roads and streets that operate at ~~a level of service (~~an LOS~~)~~ "C" or better (Imperial County Planning and Development 2008).

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.

County of Imperial Bicycle Master Plan Update: Final Plan

In 2012, 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 lands, including but not limited to, bus lanes, train lanes, or other mass transit type means; and no parking. Minimum 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 IID facilities as these vary. The minimum intersection spacing is 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 intracounty 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 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 sites.

I-8 is the primary east-west route through Imperial County between San Diego, California and Yuma, Arizona. I-8 provides two travel lanes in each direction with complete grade separations at all intersections. The roadway serves as an interregional route for people and goods movement, provide connection to other states, and provide access to desert recreational activities.

SR-98 is an east-west route entirely within Imperial County. The roadway is a two-lane conventional highway, serving interregional, intra-regional, and international travel, as well as providing an alternate route to I-8.

Drew Road is a north-south two-lane undivided roadway with a 24-foot paved width and "soft" shoulders from Evan Hewes Highway south to SR-98. The roadway provides access to I-8. Bike lanes or bus stops are not provided and the speed limit is posted at 55 ~~mph~~miles per hour. A portion of Drew Road from the Townsite of Seely to West Diehl Road is designated as a Class II bike route.

Key Study Intersections

The following five key study area intersections were analyzed in the Traffic Impact Study:

1. Drew Road/I-8 Westbound Ramps
2. Drew Road/I-8 Eastbound Ramps
3. Drew Road/Kramar Road
4. Drew Road/West Diehl Road
5. Drew Road/West Wixom Road

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 compliant. Existing ridership averages approximately 23,000 passengers a month.

Service is provided from 6 a.m. until 11 p.m. weekdays, and 6 a.m. to 6 p.m. 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 a.m. until 6:45 p.m. 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 1 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. 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

The Highway Design Manual classifies bikeways into three types:

- Class I Bike Path – Provides for bicycle travel on a ROW 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

Although none of the roadway segments within proximity of the project sites are designated a bikeway classification, 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. One Class II bicycle lane is proposed to traverse adjacent to the project areas along Drew Road.

Daily Street Segment Levels of Service

As previously described, the project sites are located in a rural setting with many of these being compacted dirt roads with no congestion. As prescribed in the Circulation and Scenic Highway Element, the intent of the County is to provide a system of roads and streets that operate at a LOS C or better (ICPDS ~~Imperial County Planning and Development Services Department~~ 2008).

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 LOS 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 because of 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.

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 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 County of Imperial in numerous traffic studies.

California Department of Transportation

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. If the project exceeds the thresholds addressed in Table 4.13-1~~Table 4.13-1~~, 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. Within the project area, Caltrans is responsible for maintaining and managing I-8, which is located approximately 1.3 miles south.

Table 4.13-1. Level of Service Thresholds for Unsignalized Intersections

LOS	Average Control Delay Per Vehicle (Seconds/Vehicle)	Expected Delay to Minor Street Traffic
A	0.0 ≤ 10.0	Little or no delay
B	10.1 to 15.0	Short traffic delays
C	15.1 to 25.0	Average traffic delays
D	25.1 to 35.0	Long traffic delays
E	35.1 to 50.0	Very long traffic delays
F	≥ 50.0	Severe congestion

Source: Appendix K of this EIR

LOS – level of service

4.13.2.2 Methodology

The assessment evaluates the potential for the projects, as described in Chapter 3, Project Description, to assess the project trip generation created during and after construction. The projects will generate the most traffic during construction, anticipated for the year 2018. For the purpose of being conservative, the concurrent construction of all 18 parcels is assumed in the quantitative analyses completed for key off-site intersections and roadway segments in the study area affected by construction project traffic. The Traffic Impact Analysis analyzed the LOS at this near-term base to better project the traffic conditions to include annual growth. Utilizing a combination of average daily traffic and peak hour V/C, the assessment analyzes existing LOS of each roadway segment, key intersection points, and freeway segments before and during the construction phase of the projects.

Analyses have been prepared for the following scenarios:

- Existing (Year 2017)
- Baseline Without Construction Project (Year 2018)
- Baseline With Total Construction Project (Year 2018)

Construction Year Analysis

Project construction is anticipated to start as early as 2018. Therefore, a baseline condition representing ambient traffic growth in the area was established. To account for potential cumulative project traffic increases that may occur between 2017 (date of counts) and the construction timeframe, a 5 percent growth factor was applied to all existing 2017 traffic volumes throughout the study area. This 5 percent growth would conservatively represent the amount of traffic that may utilize the street system in the project vicinity proposed from future development projects planned in Imperial County.

Project Trip Generation

The proposed projects consist of two phases: construction phase and operations & maintenance phase. The construction phase will have the highest traffic intensity followed by an O&M phase with significantly less vehicular trips. The construction phase is expected to commence in 2018 and extend for approximately 12 to 15 months. The projects anticipates construction activities within the overall ~~Big Rock~~Laurel Cluster to be phased with one or more project sites beginning in Quarter 3 of 2018 and the others being built at a later time to be determined by market conditions. In the course of phased construction there may be overlap between site preparation, grading, construction, and testing and commissioning phases of each project site. During periods of peak construction activity, a maximum of 350 workers are anticipated to be on-site.

Based on information from the project applicant, there would be a total of 207 daily vehicle trips, 196 from construction worker traffic, and 11 from haul truck traffic incoming during the AM peak hour and the same amount leaving during the PM peak hour.

Once construction is completed the projects would require up to 20 full-time employees for ~~Operations and Maintenance~~O&M. These 20 employees (5 per project) would be split between daytime and night-time shifts. Typically, up to 12 staff (3 per project) would be required during the day shift during normal business hours. It is possible the projects would share O&M, substation and/or transmission facilities with one another and/or with nearby solar projects. In such scenarios the project's on-site staff could be reduced. It is expected that there would be a total of 20 daily

vehicle trips, 12 incoming and 8 outgoing during the AM peak hour and 8 incoming and 12 outgoing during the PM peak hour.

Summary of Level of Service Analyses

Table 4.13-2 summarizes the LOS analyses of roadway segments with implementation of the projects. LOS for all segments would operate with an acceptable LOS A.

Table 4.13-2. Summary of Roadway Segment Level of Service Analysis

Roadway	Segment	Existing	Baseline Without Construction Project	Baseline With Total Construction Project
Drew Road	I-8 to Kramar Road	A	A	A
	Kramar Road to West Diehl Road	A	A	A

Source: Appendix K of this EIR

Table 4.13-3~~Table 4.13-3~~ summarizes the LOS analyses of key intersections with implementation of the projects. LOS for all segments would operate with an acceptable LOS B or better under annual growth and project conditions.

Table 4.13-3. Summary of Key Intersection Level of Service Analysis

Intersection	Existing	Baseline Without Construction Project	Baseline With Total Construction Project
Drew Road and I-8 WB Ramps	A	A	B/A[1]
Drew Road and I-8 EB Ramps	B	B	B
Drew Road and Kramar Road	A	A	A
Drew Road and West Diehl Road	A	A	A
Drew Road and West Wixom Road	A	A	A
[1] LOS for AM and PM peak hours different under project conditions			

Source: Appendix K of this EIR

EB – east bound; LOS – level of service; WB – west bound

4.13.2.3 Impact Analysis

The alternative gen-tie would not require additional construction activities and would be limited to one or two vehicles fire cable stringing if necessary. Therefore, no further analysis of this alternative gen-tie with respect to traffic is necessary.

Impact 4.13-1 Possible Conflict with Applicable Plan, Ordinance, or Policy.

The development of the project sites 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.

~~Big Rock~~Laurel Cluster

There is no regular bus service to the general area and project related construction and O&M~~operations and maintenance~~ phases would not impact mass transit. During the construction phase of the projects, a total of 207 daily vehicle trips (196 employee vehicle and 11 construction trucks) made to the site are forecasted. Analysis of the LOS of the segments and intersections in the project areas, construction would have a minimal effect on traffic as exhibited by Table 4.13-2 and Table 4.13-3~~Table 4.13-3~~ with all segments and intersections retaining a LOS of B or better. Impacts on traffic would be less than significant and would only occur upon duration of construction. Future O&M~~operations and maintenance~~ would be conducted remotely, with minimal trips to the project sites for cleaning and maintaining of the solar panels. The proposed projects would not interfere with potential future designated bike routes. Implementation of the proposed project would not require any road widening to accommodate vehicular trips associated with the project (construction phase and operational phase), while maintaining adequate ~~level of service~~LOS. Impacts on this issue area are considered 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 would not exceed a level of service standard established by the County Congestion Management Agency for designated roads or highways.

~~Big Rock~~Laurel Cluster

The County of Imperial General Plan set goals for roadways to retain a LOS of C or better. The *Traffic Impact Analysis* analyzed the LOS of roadway and freeway segments and key intersections adjacent to the project areas. As explained in the above existing conditions, all segments and intersections currently have a LOS of B or better, adhering to the goals set in the County of Imperial General Plan. The Traffic Impact Analysis also analyzed the LOS of these areas with the addition of predicted annual growth and peak construction traffic. As shown in Table 4.13-2 and Table 4.13-3~~Table 4.13-3~~, all segments and intersections would retain a LOS of B or better during the projects construction phase. Based on this evidence, and adherence to goals set by the County of Imperial General Plan, impacts on this issue area are considered less than significant.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.13-3 Possible Modification in Air Traffic Patterns.

Development of the proposed projects would not result in changes to air traffic patterns resulting in safety issues.

~~Big Rock~~Laurel Cluster

The projects would utilize PV panels or modules on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis). If the panels are configured for fixed tilt, the panels would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. The panels would stand up to 20 feet high, depending on the mounting system used. Therefore they would not be at a height that would interfere with air traffic patterns. This is considered a less than significant impact.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.13-4 Possible Safety Hazard from Design Features.

Design features related to the project sites would not result in hazards or incompatible land uses.

~~Big Rock~~Laurel Cluster

To accommodate emergency access, PV panels would be spaced to maintain proper clearance. A 20-foot wide access road would be constructed along the perimeter fence and solar panels to facilitate vehicle access and maneuverability for emergency unit vehicles. The internal access road would be graded and compacted (native soils) as required for construction, operations, maintenance, and emergency vehicle access. These access roads would not increase hazards because of design features or incompatible uses and no significant impact is identified.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.13-5 Possible Safety Hazard from Inadequate Emergency Access.

Development of the project sites would not result in inadequate emergency access.

~~Big Rock~~Laurel Cluster

To accommodate emergency access, PV panels would be spaced to maintain proper clearance. A 20-foot wide access road would be constructed along the perimeter fence and solar panels to facilitate vehicle access and maneuverability for emergency unit vehicles. The internal access road would be graded and compacted (native soils) as required for construction, operations, maintenance, and emergency vehicle access. The access and service roads would also have turnaround areas at any dead-end to allow clearance for fire trucks per fire department standards (70 feet by 70 feet, and 20-foot-wide access road). Based on this context, impacts on this issue area are considered less than significant.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.13-6 Possible Conflict with Adopted Policies, Plans, or Programs.

Development of the project sites would not result in a decrease in performance or safety of adopted policies, plans programs for public transit, bicycle, or pedestrian facilities.

~~Big Rock~~Laurel Cluster

There is no regular bus service or bicycle infrastructure in the general area and project related construction and O&M~~operations and maintenance~~ phases would not impact alternative modes of transportation. The projects do not propose modifications to be made to existing roadways serving future designated bikeway routes. Based on this context, impacts on this issue area are considered less than significant.

Mitigation Measure(s)

No mitigation measures are required.

4.13.3 Decommissioning/Restoration and Residual Impacts

4.13.3.1 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 on any of the project area intersections. A similar scenario would occur during the decommissioning and site restoration stage for the projects. Average daily traffic would be similar to or less than the average daily traffic 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 on the circulation network. No impact is identified and no mitigation is required.

4.13.3.2 Residual

The construction and operation of the proposed projects would not result in direct impacts on 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 CEQA Guidelines in conjunction with actions proposed in Chapter 3, Project Description. Development Design & Engineering prepared the *Water Supply Assessment* (WSA) for the ~~Big Rock~~Laurel Cluster Solar Farms Project, which includes the ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4. This report is included in Appendix L of this EIR.

The 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 projects. 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 (13-AA-0004) located in Calexico or the CR&R Material Recovery Transfer Station (13-AA-0109) located in El Centro. The Calexico Solid Waste Site has approximately 1.8 million cubic yards of remaining capacity and is estimated to remain in operation through 2077 (CalRecycle n.d.). The CR&R Material Recovery and Transfer station has a maximum permitted throughput of 99 tons per day. No closure date has been reported for this facility (CalRecycle n.d.). Therefore, there is ample landfill capacity throughout the County to receive the minor amount of solid waste generated by construction and operation of the projects.

The projects do not require expanded or new storm drainage facilities (other than on-site retention areas) because the proposed solar facility 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.

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. The valley is an irrigated agricultural area. Agriculture is the most highly water consumptive use in Imperial County.

The Imperial Valley depends solely on the Colorado River for surface water supply. IID delivers its annual entitlement of 3.1 million AF to nearly 500,000 acres for agricultural, municipal, and industrial use. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona, and Mexico. Water diverted at Imperial Dam for use in the Imperial Valley first passes through one of three desilting basins, used to remove silt and clarify the water. From the desilting basins, water is then delivered to the Imperial Valley through the All-American Canal. Three main canals, East Highline, Central Main, and Westside Main, receive water from the 80-mile-long All-American Canal and distribute water to smaller lateral canals throughout the Imperial Valley (IID n.d.)

Approximately 98 percent of the water diverted to Imperial County from the IID is used for agricultural purposes. The area served by IID is located in Imperial Valley, which is generally contiguous with IID's Imperial Unit, lying south of the Salton Sea, north of the U.S./Mexico international border and generally within the 658,942 acre area between IID's Westside Main and East Highline canals. In 2015, IID delivered untreated water to ~~426,530~~432,797 net irrigated acres, predominantly in the Imperial Valley along with small areas of East and West Mesa land. The developed area consists of seven incorporated cities (Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial and Westmorland), three unincorporated communities (Heber, Niland, Seeley), and three institutions Naval Air Facility El Centro, Calipatria California Department of Corrections and Rehabilitation, and Centinela. California Department of Corrections and Rehabilitation and supporting facilities.

Energy

The IID supplies electricity to Imperial County. IID's 2014 Integrated Resource Plan ~~(IRP)~~ addresses the current challenges to meet retail load requirements, adapt to new renewable energy portfolio standards and reduce ~~greenhouse gas~~GHG emissions. The Integrated Resource Plan ~~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 (IID 2014). In addition, the Plan calls for generating 25 percent of annual energy requirements for its service area from renewable sources by 2016, and at least 33 percent by 2020; and continuing to reduce ~~greenhouse gas~~GHG emissions to 1990 levels by 2020 (IID 2014). The IID is also implementing an energy efficiency program with the goal of reducing load demand by at least 5 percent by 2015 with a 10 percent load reduction goal by 2020 (IID 2014).

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

Senate Bill 610

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 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 AF of water annually." (California Water Code [Water Code] §10912 (a)(5)(B). However, collectively, the proposed projects would create an annual water demand greater than 75 AF; therefore, a WSA has been prepared for the projects. The WSA includes a collective assessment for the ~~BRSF1,~~ LSF1, LSF2, ~~and~~ LSF3, and LSF4.

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 AB 797 (AB 707) on September 21, 1983. Passage of this law was recognition by state legislators that water is a limited resources 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 AFY of water, to prepare and adopt a specific plan every 5 years, which defines their current and future water use, sources of supply and its reliability, and existing conservation measures.

Local

Imperial Irrigation District Interim Water Supply Policy for Non-Agricultural Projects

The Interim Water Supply Policy (IWSP) was adopted by the IID Board on September 29, 2009, to ensure sufficient water will be available for new development, in particular anticipated renewable energy projects until the Board selects and implements capital development projects, such as those explored in the *Imperial Integrated Regional Water Management Plan* (IID 2009).

County of Imperial General Plan

The Imperial County General Plan provides goals, objectives, policies, and programs regarding the preservation and use of water. Table 4.14-1 provides a consistency analysis of the applicable Imperial County General Plan goals and objectives from the Conservation and Open Space Element, and Renewable Energy and Transmission Element, as they relate to the proposed projects. While the EIR analyzes the projects' consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.14-1.County of Imperial General Plan Consistency Analysis – Water Service

Applicable General Plan Goals and Policies	Consistency Determination	Analysis
Conservation and Open Space Element		
Preservation of Water Resources, Goal 6: The County will conserve, protect, and enhance water resources in the County.	Consistent	Since the projects would temporarily convert farmland into a non-agricultural use, the projects would reduce the need for IID to fallow irrigation; thereby, reducing agricultural water demand. On average, each agricultural acre converted would reduce agricultural demand by 2.13 AFY, which result in an at-river yield (reduction in net consumptive use).
Preservation of Water Resources, Objective 6.4: Eliminate potential surface and groundwater pollution through regulations, as well as educational programs.	Consistent	Currently groundwater quality in the region is poor. However, since the projects would temporarily convert farmland into a non-agricultural use, the projects would reduce the amount of water used on-site; thereby, reducing potential surface and groundwater pollution from agricultural uses. A small water treatment system may be installed to provide deionized water for panel washing.
Renewable Energy and Transmission Element		
Objective 1.6: Encourage the efficient use of water resources required in the operation of renewable energy generation facilities.	Consistent	Water for the project sites will be used on-site during construction, operation, and decommissioning/restoration for potable, non-drinking non-potable water needs. Untreated Colorado River water will be supplied to the project via an IID canal and potable water will be supplied to the project sites via a state-approved provider. For other water usage in the O&M building(s), canal water will be treated through a point of entry (POE) water purification system to a level necessary to meet any applicable health department standards. No groundwater will be utilized because of the poor groundwater quality in the region.

Source: County of Imperial 2016; County of Imperial 2015

IID – Imperial Irrigation District; POE – point of entry

4.14.1.2 Existing Conditions

The project sites are currently undeveloped agricultural land and have been historically used for agriculture. The topography of the sites is relatively flat.

Water

The IID has historically delivered untreated water to the project sites for agricultural uses through numerous canal delivery gates. As shown in Table 4.14-2, the average annual delivery over for the years 2003 to 2012 is 8,675.91 AFY.

Table 4.14-2. Annual Average Deliveries and Fallowing Program Yield, 2003 to 2012

	Total for Canal Gate 10 years	Average AFY of all Canal Gates
All Canal Gates for LSF1	8,438.1	843.81
All Canal Gates for LSF2	22,507.8	2,250.78
All Canal Gates for LSF3	35,033.2	3,503.32
All Canal Gates for ~~BRSF1~~LSF4	21,679.6	2,168.0
Total for ~~Big Rock~~Laurel Solar Cluster	**87,658.7**	**8,767~~5~~.91**

Source: Appendix L of this EIR

AFY – acre-feet per year; ~~BRSF1 – Big Rock 1 Solar Farm;~~ LSF1 – Laurel ~~1~~ Solar Farm 1; LSF2 – Laurel ~~2~~ Solar Farm 2; LSF3 – Laurel ~~3~~ Solar Farm 3; LSF4 – Laurel Solar Farm 4

Energy

The project sites are primarily undeveloped and utilized for agricultural production. Therefore, the sites' 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
- 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").

4.14.2.3 Impact Analysis

The alternative gen-tie point of connection (i.e., connection to the Imperial Valley Substation) would not involve any additional construction. Therefore, no further analysis of this alternative gen-tie with respect to utilities is necessary.

Impact 4.14-1 Construction of New or Expansion of Existing Water Facilities.

The projects would utilize water supply from an on-site water systems and water supplies sourced from metered water services from nearby providers.

~~Big Rock~~Laurel Cluster

As discussed in Chapter 3 Project Description, one or more O&M buildings will be constructed on the project sites. A 10,000-gallon water storage tank would be provided for each of the O&M buildings constructed. These water storage tanks will be kept filled during operations for on-site protection. Each O&M building will also have access to a wet-fire connection to provide sufficient fire protection. The proposed facilities would not require large parcels of land. Therefore, the 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 4.14-2 Increase in Water Demand.

The projects would utilize water supply from an on-site water system with water supplies sourced from metered water services from nearby providers.

~~Big Rock~~Laurel Cluster

According to the WSA prepared by Development Design & Engineering (Appendix L of this EIR), the anticipated water demand for construction, operation, and decommissioning of the projects is approximately 133.3 AFY (Table 4.14-3). As shown in Table 4.14-4, the proposed projects would require approximately 100 AFY of water for fire protection, sanitary water, panel washing, dust control, and potable water. It is estimated that during the 30-year life of the projects, the operational water demand would be approximately 3,000 AF (100 AFY x 30 years) (Table 4.14-3).

Table 4.14-3. Total Life-of Project Water Usage, Anticipated Historical Yearly Average

~~Big Rock~~Laurel Cluster Solar Farm	Water Demand
Construction Water Usage	500 AF
Operational Water Usage (100 AFY x 30 years)	3,000 AF
Decommissioning/Reclamation Water Usage	500 AF
Total	4,000 AF
Accumulative Water Consumption for 30 Years	133.3 AFY

Source: Appendix L of this EIR

AF – acre-feet; AFY – acre-feet per year

Table 4.14-4. Project Water Delivery Demand at Buildout of ~~Big Rock~~Laurel Solar Cluster

Water Demand Usage	Amount Required (AFY)
Fire Protection	10
Sanitary Water	5
Panel Washing	30
Dust Suppression	40
Potable water (non-drinking water)	15
Total	100

Source: Appendix L of this EIR

AFY – acre-feet per year

Note: Water delivery demand projections are approximate and may vary slightly by water demand usage; however, 100 AFY still applies, pending IID Review.

The project applicant is proposing to use Schedule 7 General Industrial Water or enter into an ~~Interim Water Supply Policy (~~IWSP~~)~~ Water Supply Agreement with IID to meet the projects' water demands. IID has adopted an IWSP for non-agricultural projects from which water supplies can be contracted to serve new non-agricultural developments within IID's water service area. The IWSP sets aside 25,000 AFY of IID's Colorado River water supply to serve new non-agricultural projects. The proposed projects would obtain potable drinking water from a certified California system or provider.

Based on the WSA prepared for the projects (Appendix L of this EIR), there is adequate water supply from IID to support the projects. IID's IWSP for non-agricultural projects dedicates 25,000 AFY of IID's annual water supply to serve new projects. To date 23,800 AFY remain available for new projects ensuring reasonably sufficient supplies for new non-agricultural water users. Total water usage for the life of the projects represents 0.56 percent, of the unallocated supply set aside in the IWSP for non-agricultural projects, and approximately 0.56 percent of forecasted future non-agricultural water demands planned in the *Imperial Integrated Regional Water Management Plan* ~~(IRWMP)~~ through 2055. Furthermore, the proposed projects' water delivery demand of 133.3 AFY is a reduction from the historical sum of ~~8,765.91~~ 8,632.6 AFY, which equates to a 98.4 percent reduction from the historic average annual water delivery for agricultural uses at the project sites. For all the reasons described herein, the amount of water available and the stability of the IID water supply along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers ensure that the projects' water needs will be met for the next 20 years as requested by SB 610 and even for the 30-year life of the projects. Therefore, this is considered a less than significant impact.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.14-3 Result in the Need for New Systems or Supplies, or a Substantial Expansion or Alteration to Electricity, Natural Gas, or Telephone.

The projects include the construction of a renewable energy facility and would not require a substantial expansion of new utility service.

~~Big Rock~~Laurel Cluster

The projects will help California meet its Renewable Portfolio Standard of 50 percent of retail electricity sales from renewable sources by the end of 2030.The electricity generation process associated with the projects would utilize solar technology to convert sunlight directly into electricity. Solar PV 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 PRC. 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 include both construction and operational activities. Construction activities typically include site grading, clearing, and transmission line construction. 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 project would not use natural gas during the construction or operation of the project. 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 4.14-4 Result in Inefficient Energy Uses of Fuel Type.

The projects will require the consumption of fossil fuels during construction activities.

~~Big Rock~~Laurel Cluster

Construction-Related Energy Consumption

Construction activities consume energy through the use of heavy construction equipment and truck and worker traffic. The main pieces of equipment that may be used at any one time during construction may include:

- Vibratory post driver
- Crawler tractors/dozer
- Dump, concrete, and tender truck
- Forklift/aerial life/boom
- Generator/compressor
- Grader/scraper

- Roller/compactor
- Tractor/loader/backhoe
- Vibratory plate (handheld)
- Flatbed truck
- Water truck

The projects will use energy-conserving construction equipment (Mitigation Measure AQ-1), including standard mitigation measures for construction combustion equipment recommended in the ICAPCD 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 5 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 electricity driven equivalents (provided they are not run on a portable generator set)

Implementation of ICAPCD's standard mitigation measures listed above and the use of energy-conserving construction equipment will ensure that the projects' energy consumption during construction is less than significant.

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~~MW-hours ~~(MW-h)~~. The electricity generation process associated with the project would use solar PV technology to convert sunlight directly into electricity. Solar PV 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 PRC. The projects would generate renewable energy resources and is considered a beneficial effect rather than an impact. Therefore, a less than significant impact is identified for the operational-related energy consumption.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.14-5 Result in Negative Effects on Local and Regional Energy Supplies Requiring Additional Capacity.

The projects are the construction of a small scale renewable energy facility and would therefore provide additional capacity to the regional supply.

~~Big Rock~~Laurel Cluster

The project applicant is anticipated to enter into a PPA (with IID or other public utility provider). At the end of the PPA term, the owner of the facility may choose to enter into a subsequent PPA, update technology and re-commission, or decommission and remove the generating facility and its components. The project will help California meet its RPS of 50 percent of retail electricity sales from renewable sources by the end of 2020. Please see discussion under Impact 4.14-1. 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 4.14-6 Result in Increased Effects to Peak and Base Period Demands for Electricity and Other Forms of Energy.

The projects would not result in increased effects to peak and base period demands for electricity and other forms of energy.

~~Big Rock~~Laurel Cluster

The expected energy usage during operation, and generating and non-generating hours for the proposed projects will be minimal. Furthermore, the electricity generation process associated with the projects would use solar PV technology to convert sunlight directly into electricity. Solar PV 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 PRC. The projects would generate renewable energy resources and therefore, this is considered a beneficial effect rather than an impact.

Additionally, implementation of ICAPCD’s standard mitigation measures listed above will ensure that project energy consumption during construction is less than significant.

Mitigation Measure(s)

No mitigation measures are required.

Impact 4.14-7 Result in Noncompliance with Existing Energy Standards.

The projects would assist IID in meeting California’s mandate to procure 50 percent of its power from renewable resources.

~~Big Rock~~Laurel Cluster

The electricity generation process associated with the projects would utilize solar technology to convert sunlight directly into electricity. Solar PV 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 PRC.

The use of energy associated with the projects includes both construction and operational activities. Implementation of ICAPCD's Standard mitigation measures listed above will ensure that 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.

4.14.3 Decommissioning/Restoration and Residual Impacts

4.14.3.1 Decommissioning/Restoration

It is anticipated that a small quantity of water would be required during decommissioning of the project and site restoration at the end of the project's 30-year life. This water need would be less than what is required for construction and operation of the project sites. 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.

4.14.3.2 Residual

The projects would not result in significant impacts to the water supply or energy resources of Imperial County; therefore, no mitigation is required. The projects would not result in residual impacts.

5 Analysis of Long-Term Effects

5.1 Growth-Inducing Impacts

In accordance with Section 15126.2(d) of CEQA Guidelines, an 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, projects involving the expansion, modifications, or additions to infrastructure, such as sewer, water, and roads, 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 they do not involve the development of permanent residences that would directly result in population growth in the area. The construction workforce is expected to reach a peak of approximately 350 temporary workers for construction of the project. The unemployment rate in Imperial County, as of December 2017 (not seasonally adjusted), was 17.9 percent (State of California Employment Development Department 2018). The applicant expects to utilize construction workers from the local and regional area, a workforce similar to that involved in the development of other utility-scale solar facilities. 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 employ 20 full-time personnel to maintain the project facilities 7 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, and while it will increase the availability of renewable energy, it will also replace existing sources of non-renewable energy. 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 SB 2 that a benefit of the Renewable Portfolio Standard is displacing fossil fuel consumption within the state. The projects are being proposed in response to state policy and legislation promoting development of renewable energy.

The proposed projects would supply energy to accommodate and support existing demand and projected growth, but the energy provided by the projects 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 (CEQA Guidelines Appendix F(II); PRC Section 21100(b)(3)). However, the relationship between the proposed projects' 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 CCR §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,* 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 projects' 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 projects' 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 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. The proposed projects involve the expansion of the Renewable Energy Overlay Zone to the project sites. The expansion is possible as the project sites are located adjacent to, and in proximity to existing transmission facilities. As shown on Figure 4.10-3, Proximity to Existing Renewable Energy Operation and Transmission Source (Chapter 4.10, Land Use and Planning), additional solar farms could be developed in the proximity to the project sites (regardless of whether the proposed projects are constructed) due to the existence of existing transmission infrastructure, such as the facilities located along Westside Road, Derrick Road, Diehl Road, and Drew Road. 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 the project. Thus, the projects would irretrievably commit resources over the anticipated 30- to 40-year life of the projects. However, after 30 to 40 years, the 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 site has been decommissioned. The applicant anticipates using the best available recycling measures at the time of decommissioning. Additionally, the project applicant will implement a reclamation 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 sites 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 PRC.

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 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 Cumulative Impacts

The CEQA Guidelines (Section 15355) define a cumulative impact as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." The CEQA Guidelines [Section 15130(a)(1)] further states that "an EIR should not discuss impacts which do not result in part from the project."

Section 15130(a) of the CEQA Guidelines provides that "[A]n EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable..." Cumulatively considerable, as defined in Section 15065(a)(3), "means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."

An adequate discussion of significant cumulative impacts requires either: (1) "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or (2) "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact."

The CEQA Guidelines recognize that cumulative impacts may require mitigation, such as new rules and regulations that go beyond project-by-project measures. An EIR may also determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The Lead Agency must identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable (CEQA Guidelines Section 15130(a)(3)).

This EIR evaluates the cumulative impacts of the project 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 project in combination with past and present (existing) and reasonably foreseeable future projects and, in the larger context of the Imperial Valley.

(3) Evaluate the project's incremental contribution to the cumulative effects on each resource considered in Chapter 4, Environmental Analysis. When the project's incremental contribution to a significant cumulative impact is considerable, mitigation measures to reduce the project's "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 on 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. Because of uncertain development patterns that are 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 project 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 sites.

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 project in Chapter 4 of this EIR. Table 6-1 includes projects known at the time of release of the 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.

Figure 6-1. Cumulative Projects

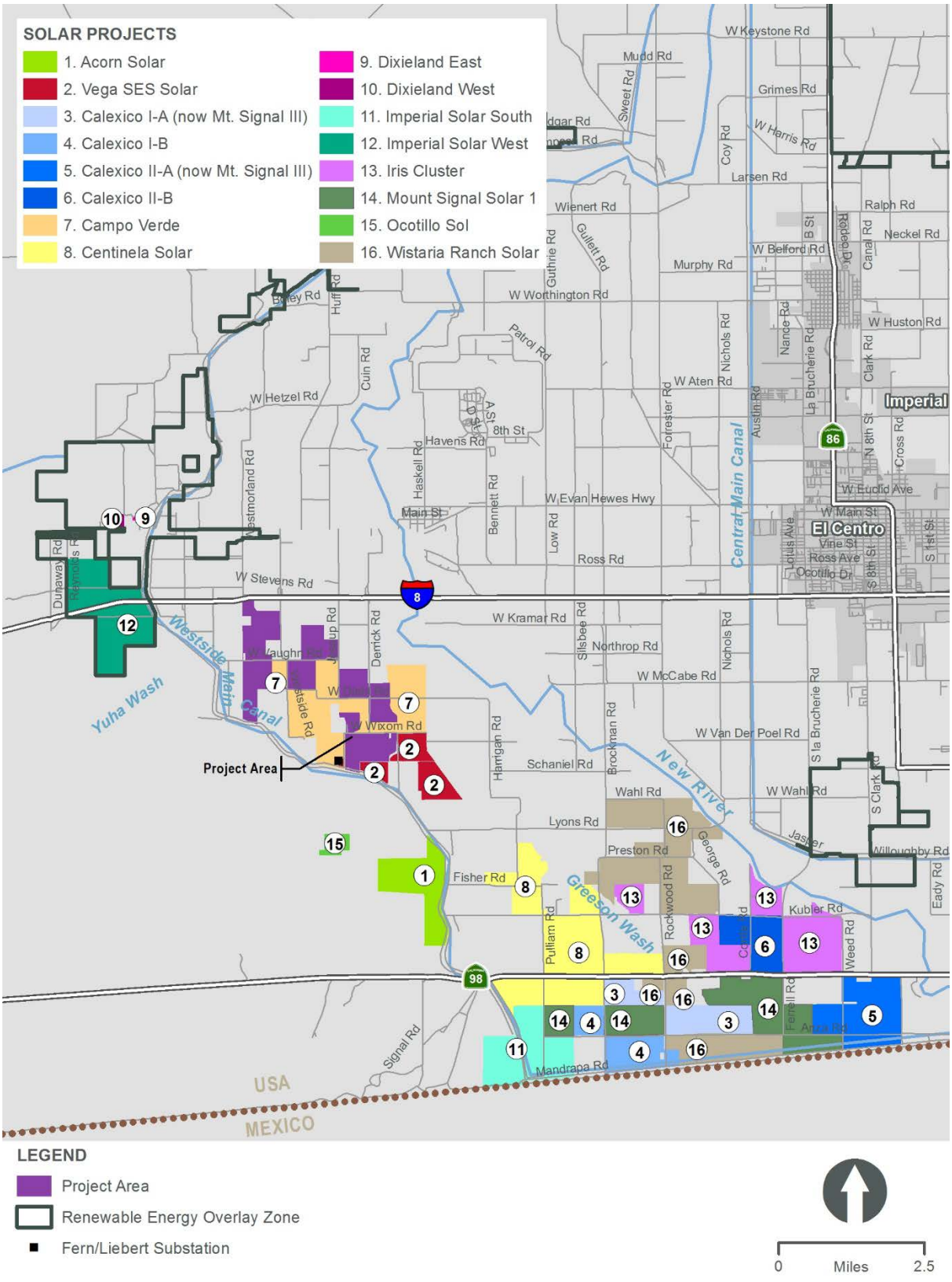

Table 6-1. Projects Considered in the Cumulative Impact Analysis

Map Label[1]	Project Name	Description of Project	Location	Status[2]
1	Acorn Solar	A PV solar facility capable of producing approximately 150 MW of electricity on 693 acres.	Approximately 10 miles southwest of the City of El Centro.	Pending Entitlement
2	VEGA SES Solar Energy Project	The Vega SES Solar Energy Project involves the construction of a 100- MW PV solar energy facility with an integrated 100 MW battery storage system on approximately 574 acres of land. The project would include a ground mounted PV solar power generating system, supporting structures, electronic/electrical equipment, on-site substation, retention basins, access roads, and fencing. The energy produced by the project would be conducted through a proposed 230 kV generator intertie line and delivered to the IID through a short interconnection with the proposed IID 230 kV Fern Substation.	Approximately 9 miles southwest of the City of El Centro.	Pending Entitlement
3	Calexico I-A (now Mt. Signal III)	A PV solar facility capable of producing approximately 100 MW of electricity on approximately 666 acres.	Approximately 6 miles west of the City of Calexico.	Under construction
4	Calexico I-B	A PV solar facility capable of producing approximately 100 MW of electricity on approximately 666 acres.	Approximately 6 miles west of the City of Calexico.	Approved – not built
5	Calexico II-A (now Mt. Signal III)	A PV solar facility capable of producing approximately 100 MW of electricity on approximately 733 acres.	Approximately 6 miles west of the City of Calexico.	Under construction
6	Calexico II-B	A PV solar facility capable of producing approximately 100 MW of electricity on approximately 732 acres.	Approximately 6 miles west of the City of Calexico.	Operational

Table 6-1. Projects Considered in the Cumulative Impact Analysis

Map Label[1]	Project Name	Description of Project	Location	Status[2]
7	Campo Verde	The Campo Verde Solar Project consists of three primary components: 1) solar generation equipment and associated facilities on privately owned land (the "solar generation facility"); 2) 230 kV aboveground, electric transmission line(s) and associated facilities (gen-tie) located on both private land and public land managed by the BLM; and 3) battery storage system. The gen-tie will connect the solar generation facility with the Imperial Valley Substation.	Approximately 7 miles southwest of the City of El Centro. Generally located south of I-8, west of Drew Road, and north and east of the Westside Main Canal.	Operational
8	Centinela Solar	A PV solar facility capable of producing approximately 275 MW of electricity.	Approximately 10 to 12 miles southwest of the City of El Centro.	Operational
9	Dixieland East	The Dixieland East Solar Farm Project encompasses a total of 24 acres and includes three parcels. These parcels would be leased to the project applicant for the 20-year term of the Power Purchase Agreement with IID. This project is capable of generating up to 2 MW AC. This project is located within a Renewable Energy Overlay Zone.	Approximately 11.5 miles west of the City of El Centro. Generally located between the Westside Main Canal to the east and the Dixieland Substation to the west.	Operational
10	Dixieland West	The Dixieland West Solar Farm Project encompasses a total of 29 acres and includes one parcel of land. This parcel would be leased to the project applicant for the 20-year term of the Power Purchase Agreement with IID. This project is capable of generating up to 3 MW AC. This project is located within a Renewable Energy Overlay Zone.	Approximately 11.5 miles west of the City of El Centro. Generally bounded by W. Evan Hewes Highway to the south, vacant land to the west and north, and the Dixieland Substation on the east.	Operational

Table 6-1. Projects Considered in the Cumulative Impact Analysis

Map Label[1]	Project Name	Description of Project	Location	Status[2]
11	Imperial Solar South	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.	South of SR 98 and immediately east and west of Westside Main Canal.	Operational
12	Imperial Solar West	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.	Operational
13	Iris Cluster	The Iris Cluster Solar Farm Project involves the construction of four utility-scale PV solar facilities on four non-contiguous independent sites encompassing approximately 1,422 acres.	Easternmost boundary of the project is located approximately 2 miles west of Calexico, California.	Approved – not built
14	Mount Signal Solar I	This project consists of two primary components: (1) the construction and operation of solar facility sites; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnections. A portion of the transmission corridor traverses BLM lands.	Approximately 3 miles west of Calexico, California.	Operational

Table 6-1. Projects Considered in the Cumulative Impact Analysis

Map Label[1]	Project Name	Description of Project	Location	Status[2]
15	Ocotillo Sol	San Diego Gas & Electric filed a right-of-way application with the BLM for a right-of-way grant to construct, operate, maintain, and decommission a 100-acre solar photovoltaic facility on BLM-managed lands. The Ocotillo Sol Project would interconnect with the existing Imperial Valley Substation and generate up to 20 megawatts of electricity. In connection with its consideration of the Applicant's right-of-way application, the BLM will also be considering whether or not to amend the California Desert Conservation Area Plan of 1980, as amended.	Located on BLM-administered public lands, approximately 9 miles southwest of the City of El Centro.	Approved – not built
16	Wistaria Ranch Solar	The Wistaria Ranch Solar Energy Center Project is a renewable energy project employing PV or concentrated PV technology. The Applicant has filed 17 CUP applications to develop up to 17 individual solar projects or clusters of multiple solar projects on 32 parcels totaling approximately 2,793 acres. Alternatively, the Project could be built out in its entirety (i.e. all 17 CUPs, Full Build-out Scenario) at one time. Each CUP is approximately 20 MW while the entire project (if built-out at once) is anticipated to generate 250 MW.	Approximately 6 miles southwest of the City of El Centro and 5.5 miles directly west of Calexico, California.	Under construction

1 – See Figure 6-1 for cumulative project location.

2 – Project status based on information provided by County staff and on Imperial County Planning & Development Service's RE Geographic Information System Mapping Application (http://icpds.maps.arcgis.com/apps/Viewer/index.html?appid=c6fd31272e3d42e1b736ce8542b994ae). Accessed on February 9, 2018.

AC – alternating current; BLM – Bureau of Land Management; CUP – conditional use permit; IID – Imperial Irrigation District; MW – megawatts; PV – photovoltaic ;SR – State Route

6.3.1 Aesthetics

The cumulative study area for projects considered in the visual resources cumulative impact analysis considers a 5-mile radius from the project site. Views beyond 5 miles are obstructed by a combination of the flat topography coupled with the Earth's curvature. The short-term visual impacts of the project 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 project would be in the form of the presence of solar array grids, an electrical distribution and transmission system, energy storage system, and substation.

As provided in Section 4.1, Aesthetics, the project sites are comprised of an agricultural landscape. Undeveloped agricultural lands in the project vicinity are currently transitioning to renewable energy developments (Campo Verde solar facility, Imperial Solar Energy Center West). Although the

projects would entail a substantial change in the existing visual character of the project area to solar generating uses, 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 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 5 miles of these cumulative projects.

6.3.2 Agriculture and Forestry Resources

Cumulative impacts on agricultural resources take into account the proposed projects' temporary impacts as well as those likely to occur as a result of other existing, proposed and reasonably foreseeable projects. To determine cumulative impacts on agricultural resources, an assessment is made of the temporal nature of the impacts on individual resources (e.g., temporary such as in solar projects versus permanent as in industrial or residential developments) as well as the inventory of agricultural resources within the cumulative setting.

As discussed in Section 4.2, Agricultural Resources, the projects would result in the temporary conversion of 1,344 acres of Important Farmland, which would correspond with the duration of the lease of the properties for solar farm use. Thus, the proposed projects would incrementally add to the temporary conversion of agricultural land in Imperial County. According to the *California Farmland Conversion Report*, approximately half of the County (538,326 acres out of a total of 1,028,508 acres) is Important Farmland (California DOC 2015). Table 6-2 summarizes the percentage of each type of farmland in the County that would be converted by the proposed projects.

Table 6-2. Percentage Conversion of Farmland by the Proposed Projects

Agriculture Classification	Total Acreage in Imperial County (2012)	Approximate Acreage Converted on Project Site	Project Percent of County Acreages
Prime Farmland	192,951	507.53	0.26
Farmland of Statewide Importance	305,614	827.29	0.27
Farmland of Local Importance	37,687	0.0	0
Unique Farmland	2,074	9.27	0.45
Total	**538,326**	**1,344**	**0.25**

As shown in Table 6-2, the Prime Farmland and Farmland of Statewide Importance within the project sites comprises approximately 0.53 percent (0.26 + 0.27) of the total Important Farmland in the County. Thus, the proposed projects would temporarily convert a very small fraction of the total Important Farmlands in the County and have a minimal effect on agricultural land on a cumulative scale. Furthermore, the conversion would be temporary and last for the duration of the projects' useful life which is expected to be up to 30 to 40 years.

During the 2010 to 2012 time frame, 5,393 acres of Important Farmland was converted to non-agricultural uses (California DOC 2015). Farmland conversions occurred for a variety of reasons, including fallowing of lands resulting in a conversion to a non-irrigated classification, and conversion to urban and other non-energy related uses because of development of farmsteads, rural commercial facilities, low-density housing, mining facilities, and dairy expansions. The trend in the conversion of agricultural land is expected to continue because of development pressure, and other factors. Table 6-1 identifies 16 projects for consideration in the cumulative analysis. All of these projects are renewable energy projects. The solar facilities located in close proximity to the proposed projects include the Campo Verde Solar Project and Imperial Solar Energy Center West. The majority of the cumulative projects are located on private lands, which are predominately agricultural, and would have agricultural impacts similar to the proposed projects. The impacts of these individual projects include conversion of Important Farmland. Table 6-3 provides a summary of the cumulative projects that contain Important Farmland.

Table 6-3. Summary of Farmlands by Type for Cumulative Projects

Cumulative Project	Prime Farmland	Farmland of Statewide Importance
VEGA SES Solar Energy Project	388.4	185.6
Calexico I-A	130.0	588.7
Calexico I-B	184.0	406.0
Calexico II-A	0	937.8
Calexico II-B	6.5	548.2
Campo Verde	660	1,110.0
Centinela Solar	138	1,927
Imperial Solar South	478.9	341.8

Table 6-3. Summary of Farmlands by Type for Cumulative Projects

Cumulative Project	Prime Farmland	Farmland of Statewide Importance
Iris Cluster	160.4	1,229.05
Mount Signal Solar	88.7	1,339.4
~~Big Rock~~Laurel Cluster	507.53	827.29
Total	**2,742.43**	**9,440.84**

As discussed in Section 4.2, Agricultural Resources, the projects would result in the temporary conversion of 1,344 acres of Important Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland), which would correspond with the duration of the lease of the properties for solar farm use. With the implementation of Mitigation Measure AG-1a, this impact would be reduced to a level less than significant. As with the projects, cumulative projects have been, and are expected to continue to provide mitigation for any impacts on agricultural resources.

When the proposed projects are combined with the cumulative projects identified in Table 6-3, the total agricultural land conversion (Prime Farmland and Farmland of Statewide Importance) is estimated to be 12,183 acres. The proposed projects would contribute approximately 10.9 percent (1,334.82 acres ÷ 12,183 acres) of the total temporary agricultural land conversion by the cumulative projects. The cumulative projects combined would contribute to conversion of approximately 2.26 percent (12,183 acres ÷ 538,326 acres) of the farmland in Imperial County. With implementation of Mitigation Measures AG-1a and AG-1b, the projects' contribution to this impact would be less than cumulatively considerable. Likewise, each individual cumulative project would be required to provide mitigation for any impacts on agricultural resources in accordance with the County's policies directed at mitigating the impact associated with the conversion of important farmlands.

Given that the incremental impact of the loss of approximately 1,344 acres would be mitigated via AG-1a and AG-1b, in addition to full restoration of the project sites per the requirement that each project prepare and implementation of a Reclamation Plan to comparable agricultural production under post-project conditions, following the conclusion of the lease, project-related agricultural conversion impacts would be reduced to a less than significant level.

6.3.3 Air Quality

The SSAB is used as the geographic scope for the analysis of cumulative air quality impacts because of the geographic factors which are the basis for designating the SSAB, the existence of an AQMP, SIP, and requirements set forth by the 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 O&M ~~operations and maintenance~~ activities for these facilities. Additionally, several of the projects listed in Table 6-1 are already constructed. Cumulative projects listed in Table 6-1 in closer proximity to the proposed project are not anticipated to involve overlapping construction activities with the proposed project, therefore the

potential for a cumulative, short-term air quality impact as a result of construction activities is anticipated to be less than significant.

Currently, the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of 8-Hour ozone, PM_{10}, and $PM_{2.5}$. Imperial County is classified as a "serious" nonattainment area for PM_{10} for the NAAQS. On November 13, 2009, EPA published Air Quality Designations for the 2006 24-Hour Fine Particle ($PM_{2.5}$) NAAQS wherein Imperial County was listed as designated nonattainment for the 2006 24-hour $PM_{2.5}$ NAAQS. However, the nonattainment designation for Imperial County is only for the urban area within the County and it has been determined that the proposed projects are located within the nonattainment boundaries for $PM_{2.5}$.

The AQAP for the SSAB, through the implementation of the AQMP and SIP for PM_{10}, sets forth a comprehensive program that will lead the SSAB into compliance with all federal and state air quality standards. With respect to PM_{10}, 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 ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4 projects would result because of 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 ~~BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4 projects, during the construction and decommissioning phases, the projects would generate PM_{10}, $PM_{2.5}$, ROG, CO, and NO_X emissions during each active day of construction.

The applied thresholds for PM_{10} 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}; 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. Furthermore, it is not anticipated that the construction of the other cumulative projects would coincide with the construction phases of the proposed projects, which would otherwise be associated with a cumulatively considerable short-term air quality impact. 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~~ BRSF1,~~ LSF1, LSF2,~~ and~~ LSF3, and LSF4 projects would result in minor emissions associated with operation and maintenance activities. Table 4.3-12 (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. 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 EO S-3-05.

However, from a cumulative air quality standpoint, the potential cumulative impact associated with the generation of PM_{10} and $PM_{2.5}$ emissions during operation of the cumulative projects is a concern because of the fact that 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. As previously indicated, the projects are located within the nonattainment boundaries for $PM_{2.5}$. As shown in Table 4.3-11, the projects' operational contribution to PM_{10} is below a level of significance. However, when combined with other cumulative projects, the operational PM_{10} 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 operational dust control plans (Mitigation Measure AQ-5) 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, CDFW and USFWS have promulgated a regulatory scheme that limits impacts on 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 would also be required to avoid impacts on 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 on biological resources. These impacts are generally focused on potential construction-related effects to burrowing owl, raptor species, migratory birds, mountain plover, long billed curlew, short billed dowitcher, and loggerhead shrike.

Burrowing Owls are protected by the CDFW mitigation guidelines for burrowing owl (CDFW 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 BIO-1 and BIO-2 contain these requirements thereby minimizing potential impacts on 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, 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 BIO-5 through BIO-7 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 on 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 on 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 on biological resources.

Birds listed at 50 CFR 10.3 are protected by the MBTA (16 USC 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 USC 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 Game Codes~~FGCs 3503.5, 3503, 3513.

The 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 that could otherwise be directly impacted by construction of the proposed projects. Likewise, Mitigation Measures HYD-1 through HYD-3 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.

6.3.5 Cultural Resources

As discussed in Section 4.5, Cultural Resources, there are previously recorded cultural resources located within or immediately adjacent to (within 100 feet of) the project sites. Table 4.5-3 provides a summary of the identified resources within and immediately adjacent to the project sites that have been recommended or determined eligible for listing, or still need to be evaluated for eligibility in the CRHR. As shown in Table 4.5-3, one resource has been determined eligible for listing in the CRHR, one resource has been recommended eligible for listing in the CRHR, and three resources have not been previously evaluated. Given that the project sites have not been completely surveyed and there are previously recorded resources that have not yet been evaluated for eligibility in the CRHR, implementation of the proposed projects could potentially cause a substantial adverse change in the significance of a historical resource. Implementation of Mitigation Measures CR-1 through CR-4 would reduce the potential impact associated with historical resources to a level less than significant. Mitigation includes the following: preparation of a Phase I cultural resources survey to determine if previously unidentified cultural resources exist within the project sites and to relocate and evaluate the previously identified resources that have not yet been evaluated (Mitigation Measure CR-1); evaluation of newly documented archaeological resources for inclusion in the CRHR (Mitigation Measure CR-2); evaluation of potential historic architectural resource for inclusion in the CRHR (Mitigation Measure CR-3); and, avoidance of resources previously determined or recommended as eligible for listing in the CRHR (Mitigation Measure CR-4). Implementation of Mitigation Measures CR-5 and CR-6 would reduce potential impacts associated with the unanticipated discovery of unknown buried archaeological resources. Implementation of Mitigation Measure CR-7 would ensure that the impact on paleontological resources during construction would be mitigated to a level less than significant. Implementation of Mitigation Measure CR-8 would reduce potential impacts on human remains to a level less than significant.

Future projects with potentially significant impacts on cultural resources would be required to comply with federal, state, and local regulations and ordinances protecting cultural resources through implementation of similar project-specific mitigation measures during construction. Therefore, through compliance with regulatory requirements, standard conditions of approval, and Mitigation Measures CR-1 through CR-8, the proposed projects would have a less than cumulatively considerable contribution to impacts on cultural resources.

During operations and decommissioning of the projects, no additional impacts on archeological or historical resources would be anticipated because the soil disturbance would have already occurred and been mitigated during construction.

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 on geologic resources would be considered significant if the project 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 project's 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 sites. Therefore, the projects would not result in a cumulative geology/soils impact for mineral resources.

6.3.7 Greenhouse Gas Emissions

Emissions of 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. 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.

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 1 mile of the boundary of the project sites. One mile is the American Society of Testing and Materials standard search distance for hazardous materials.

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.

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 RWQCB Basin Plan. The construction of the projects are expected to result in short-term water quality impacts. 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, the construction phasing of these projects is currently not anticipated to overlap. Furthermore, in compliance with the SWRCB's 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 CWA and addresses the cumulative impacts of numerous construction activities throughout the state. This determination in conjunction with the implementation of Mitigation Measures HYD-1 and HYD-2 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 CWA, Section 402(p)(1) and 40 CFR 122.26, and implemented Order No. 90-42 of the RWQCB. 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 on water quality would be minimized to a less than significant level.

Based on a review of the FEMA ~~Flood Insurance Rate Map~~ FIRM, the project sites and the majority of the cumulative projects listed in Table 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 on floodplains by constructing new facilities within an identified flood hazard zone.

As discussed in Section 4.9, Hydrology/Water Quality, the proposed projects would not 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. The proposed on-site retention basins would provide the required runoff storage volume. Based on these considerations, the projects would not contribute to or result in a significant cumulatively considerable adverse hydrology 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 sites plus a 1-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 in 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. Where General Plan Amendments and/or Rezones are required to extend the RE Overlay Zone (such as the case of the VEGA Solar project), these projects would be required to demonstrate consistency with the overall goals and policies of the General Plan, and would be required to demonstrate meeting the criteria for extending the RE Overlay onto the project site. 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 sites 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. As discussed in Section 4.11, Noise and Vibration, the projects' noise levels would not exceed the County's 75 dBA L_{eq} construction noise threshold. Therefore, impacts from construction noise are considered less than significant. Similar to the proposed projects, other cumulative projects would be required to comply with the County's construction noise standards. Construction activity is limited to the hours of 7 a.m. to 7 p.m. Monday through Friday, and 9 a.m. to 5 p.m. on Saturdays. Adhering to the County's construction hours would reduce the noise and vibration impacts to below a level of significance. Thus, the incremental contribution of the projects to a cumulative noise impact would not be 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 the proposed project, no noise impacts have been identified. Operation of the other cumulative projects listed in Table 6-1 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. However, given that the project facilities would be constructed within the A2-R and A-3

zones, and components of the projects associated with noise during operation would be located at appropriate distances from the residential uses scattered in this portion of the County, 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) (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, energy storage systems), 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 TIA (Appendix K of this EIR), may be impacted by traffic generated by the projects and cumulative projects. As provided in the Traffic Impact Analysis, which is provided in Appendix K of this EIR, vehicle trips generated during construction-related (up to 350 employees) would be substantially higher as those compared to project operations (up to 5 employees per solar facility) (Section 4.13, Transportation/Traffic). Based on these trip generation rates, construction-related traffic was used in the assessment of the projects' cumulative impacts on local roadway operations.

To account for potential cumulative project traffic increases that may occur between 2017 (date of counts) and the construction timeframe, a 5 percent growth factor was applied to all existing 2017 traffic volumes throughout the study area. This 5 percent growth would conservatively represent the amount of traffic that may utilize the street system in the project vicinity proposed from future development projects planned in Imperial County, including those projects identified in Table 6-1.

As provided in Section 4.13, Transportation/Traffic, the intersection analysis revealed that all study intersections would continue to operate at LOS B or better with the addition of project-related construction traffic (Appendix K of this EIR). Although an increase in delay would occur, the delay would be minimal and would vary between 0.1 and 1.5 seconds at these intersections (Appendix K of this EIR). This increase in delay is considered less than significant and, therefore, is not cumulatively considerable. See Appendix K for additional details. Similarly, roadway segments analyzed under the cumulative condition are calculated to operate at LOS A with the addition of the construction project traffic (Appendix K of this EIR). Although an increase in V/C because of the construction traffic would occur, V/C would vary between 0.091 and 0.107 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 Section 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. Furthermore, the proposed projects' water delivery demand is 99.9 percent reduction from the historic average annual water delivery for agricultural uses at 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 on existing utility providers and, therefore, would not result in cumulatively considerable impacts.

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7 Effects Found Not to be Significant

In accordance with Section 15128 of the CEQA Guidelines, an 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 IS and NOP prepared for the projects (Appendix A of this EIR), Imperial County has determined that the 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 proposed 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 applicant is not proposing any form of mineral extraction. According to the Conservation and Open Space Element of the 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 sites. No impact is identified.

Based on a review of the DOC's Division of Oil, Gas, and Geothermal Resources Well Finder, there is one plugged and abandoned geothermal well (Well No. 02590357) located immediately east of the LSF4~~BRSF1~~ site. This geothermal well is not located within the projects' construction limit, and therefore would be avoided by the proposed projects. Implementation of the proposed projects would not impact geothermal wells.

7.3 Recreation

Combined, the four projects would be staffed with up to 20 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 project sites are currently used for agricultural production. Development of housing is not proposed as part of the projects. Up to 20 full-time employees will operate the projects, split evenly between the four project sites. It is possible that the projects would share O&M, substation, energy storage, and/or transmission facilities with one another and/or nearby projects. In such a scenario, the projects could share personnel, thereby potentially reducing the projects' on-site staff. The full-time employees will maintain the facility 7 days per week during normal daylight hours. Up to

three staff will work during the day shift (sunrise to sunset), and the remainder during the night shifts and weekends.

To ensure optimal PV output, the solar panels will be maintained 24 hours per day, 7 days per week. The proposed projects would not result in substantial population growth, as the number of employees required to operate and maintain the facilities is minimal. Therefore, no impact is identified for population and housing.

7.5 Public Services

7.5.1 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 the Imperial County's School District since it is anticipated that construction workers would commute in during construction operations.

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

7.6.1 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 would require a total of up to 20 on-site full-time employees and could include several O&M ~~operations and maintenance~~ buildings. Wastewater generation would be minimal. The projects' wastewater will be treated via on-site septic systems, designed to meet operation and maintenance guidelines required by Imperial County laws, ordinances, regulations, and standards. The proposed projects would not exceed wastewater treatment requirements of the RWQCB.

The proposed projects are not anticipated to generate a significant increase in the amount of runoff water from water use involving solar panel washing. Water will continue to percolate through the ground, as a majority of the surfaces on the project sites will remain pervious. The proposed projects would not substantially alter the existing drainage pattern of the site, substantially increase the rate of runoff, or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. A less than significant impact is identified for these issue areas.

7.6.2 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 1.8 million cubic yards of remaining capacity 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 per 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 Imperial 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 CUP for each project will contain provisions for recycling and diversion of Imperial County construction waste policies.

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. 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. 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. A less than significant impact is identified for this issue.

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8 Alternatives

8.1 Introduction

The identification and analysis of alternatives is a fundamental concept under CEQA. This is evident in that the role of alternatives in an 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:

- Construct and operate a solar energy facility capable of producing up to 325 MW of electricity to help meet the state-mandated RPS of providing 50 percent renewable energy by 2030
- Operate a facility at a location that ranks amongst the highest in solar resource potential in the nation

- Interconnect directly to the IID or SDG&E electrical transmission system
- Operate a renewable energy facility that does not produce significant noise nor emit any GHG
- 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~~GHG reduction goals of AB 32 (California Global Warming Solutions Act of 2006)
- Provide an investment in California and Imperial County that would create jobs and other economic benefits

8.3 Alternative 1: No Project/No Development Alternative

The CEQA Guidelines require analysis of the No Project Alternative (PRC 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~~ NOP 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 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

Under the No Project/No Development Alternative, the project sites would not be developed and would continue to be utilized as agricultural land. 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 change to the existing condition of the sites. Under this alternative, there would be no new source of light or glare associated with fixed tilt arrays, which could adversely affect day views on certain roadway segments adjacent to the portions of the project sites where fixed tilt panels are proposed. Fence slats would be required in these locations. Otherwise, if single- or double-axis mounted tracker systems are utilized there would be no potential impact associated with this issue. Compared to the proposed projects, this alternative would have less of an impact related to aesthetics/visual resources.

Agriculture

Under the No Project/No Development Alternative, the project sites would not be developed and would continue to be utilized as agricultural land. Compared to the proposed projects, implementation of this alternative would avoid the conversion of land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland per the FMMP. Therefore, this alternative would not contribute to the conversion of agricultural lands or otherwise adversely affect agricultural operations and mitigation would not be required. Compared to the proposed projects, this alternative

would avoid the need for future restoration of the project sites to pre-project conditions. The impact on agriculture would be less than the proposed projects.

Air Quality

Under the No Project/No Development Alternative, there would be no air emissions because of project construction or operation, and no project- or cumulative-level air quality impact would occur. Therefore, no significant impacts on air quality or violation of air quality standards would occur under this alternative. Similar to the proposed projects, this alternative would be consistent with existing AQAPs and would not result in the creation of objectionable odors.

During construction, the projects would be required to incorporate mitigation to reduce 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. The short-term air quality construction impact would be less than the proposed projects.

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 on 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. Unlike the proposed projects which require mitigation for potential impacts on raptor species, such as burrowing owl, this alternative would not result in construction of solar facilities that could otherwise result in significant impacts on these biological resources. Similar to 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 of biological species or any provisions of an applicable ~~habitat conservation plan~~HCP. Compared to the proposed projects, this alternative would avoid potential direct and indirect impacts on biological resources. The impact on biological resources would be less than the proposed projects.

Cultural 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 historical resources or unique archaeological resources pursuant to CEQA. The proposed projects also have the potential to impact paleontological resources. Under the No Project/No Development Alternative, the project sites would not be developed and no construction-related ground disturbance would occur. Therefore, compared to the proposed projects, this alternative would avoid impacts on cultural resources and paleontological resources. The impact on cultural resources would be less than the proposed projects.

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 would occur. Therefore, there would be no impacts on 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. Compared to the proposed projects, this alternative would avoid significant impacts related to local geological and soil conditions. The impact on geology and soils would be less than the proposed projects.

Greenhouse Gas Emissions

Under the No Project/No Development Alternative, there would be no GHG emissions resulting from project construction or operation. Therefore, no impact on 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 on 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 on 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 project. Because no significant GHG impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar 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. 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. 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, no changes with regard to water quality would occur under this alternative. However, in the context of existing sediment total 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. Similar to the

proposed projects, this alternative would not result in the placement of structures within a 100-year flood zone. This alternative would have less of an impact associated with hydrology/water quality as compared to the proposed projects.

Land Use and Planning

The No Project/No Development Alternative would not result in the modification of the existing land use on the project sites. A General Plan Amendment and Zone Change would not be required under this alternative. Under the No Project/No Development Alternative, the project site would not be developed and continue to be undeveloped agricultural land. Similar to the proposed projects, the No Project/No Development Alternative would not divide an established community. As with the proposed projects, this alternative would not conflict with any applicable ~~habitat conservation plan~~HCP or ~~natural community conservation plan~~NCCP. Because no significant Land Use and Planning impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Noise

This alternative would not require construction or operation of the project facilities; therefore, this alternative does not have the potential to temporarily increase ambient noise levels within the vicinity of the project sites and affect sensitive receptors. As discussed in Section 4.11, Noise and Vibration, the proposed projects would not result in significant noise impacts on sensitive receptors during construction and operation. Because no significant Noise impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

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 on public services is identified for this alternative. The proposed projects will result in a less than significant impact on law enforcement and fire protection services; subject to payment of law enforcement and fire service fees. Compared to the proposed projects, this alternative would overall, result in less of an impact related to public services as there would be no change in demand for these 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 under 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 because of a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities. Because no significant Transportation/Traffic impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

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 on existing utilities. Compared to the proposed projects, this alternative would have less of an impact related to utilities.

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, 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 AB 32 (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. As discussed in Section 4.2, Agricultural Resources, the majority of the project sites are comprised of Prime Farmland and Farmland of Statewide Importance.

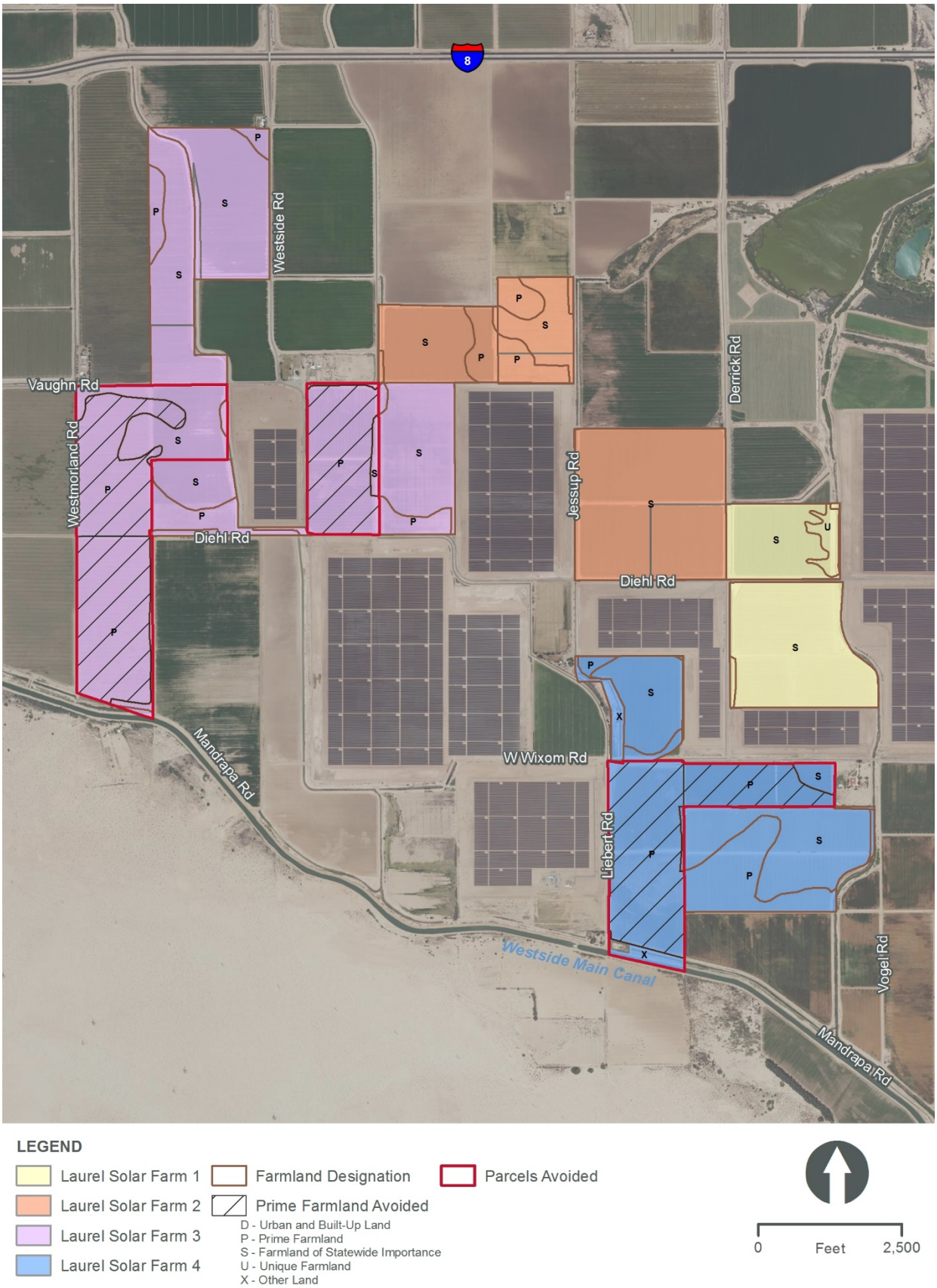
This alternative is illustrated on Figure 8-1, which shows the location of the Prime Farmland that would be avoided (approximately 360 acres) with the exclusion of Prime Farmland. This alternative would avoid developing parcels that contain large areas of Prime Farmland. (NOTE: this alternative would not avoid several pockets of Prime Farmland as shown on Figure 8-1, 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, the overall size of the solar energy facilities would be reduced. 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 substantial degradation of the existing visual character of the project sites. However, a significant ground level glare impact has been identified associated with fixed tilt PV arrays (no impact is identified for single- or double-tracker systems). Therefore, 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 projects.

Figure 8-1. Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)



Agriculture

Under Alternative 2, 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, mitigation for Farmland of Statewide Importance 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, but would be less than would occur under the proposed project. Compared to the proposed projects, this alternative would result in less of an impact on agricultural resources as compared to the proposed projects.

Air Quality

Under Alternative 2, air emissions during construction would be less than the proposed projects because of 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. Similar to the proposed projects, this alternative would be consistent with existing AQAPs 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~~ MW 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 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

As discussed in Section 4.4, Biological Resources, burrowing owls were observed within the boundaries of the project sites (majority observed on northern parcel of LSF1 project site) and were also found off-site within the IID ROW. Although Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland) would reduce the overall development footprint, it would not avoid the development of the LSF1 project site because it contains Farmland of Statewide Importance and Unique Farmland. Therefore, this alternative still has the potential to impact burrowing owl. Mitigation would still be required for impacts on burrowing owl; however, the overall number of burrowing owl locations potentially impacted would be less. Impacts onwetlands, 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 on biological resources, but would still require mitigation. Overall, the impact on biological resources would be less as compared to the proposed projects.

Cultural Resources

Based on the results of the records searches, the project sites are considered moderately sensitive for the presence of archaeological resources. Under Alternative 2, 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 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 on 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, while the overall project footprint would be reduced, grading and construction of new facilities, such as O&M buildings, transmission facilities, energy storage, 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, 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 tCO2e. 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. Because no significant GHG impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Hazards and Hazardous Materials

As discussed in Section 4.8, Hazards and Hazardous Materials, historical records noted that a septic system was present at the southeast corner or Derrick Road and West Diehl Road on the LSF1 project site. There are no records of removal or abandonment of the septic system. Considering the age of the system (if present), there is potential to encounter onsite soil contamination during ground disturbance and construction of the LSF1 project. As shown on Figure 8-1, this alternative would not avoid the development of the LSF1 project site. 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 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 on 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 less of an impact related to hydrology/water quality as compared to the proposed projects.

Land Use and Planning

Similar to the proposed projects, Alternative 2 would not divide an established community or result in incompatibilities with adjacent agricultural uses. Similar to the proposed projects, Alternative 2 would require the approval of CUPs, General Plan Amendment, and Zone Change 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~~HCP or ~~natural community conservation plan~~NCCP. Land use and planning impacts resulting from this alternative would be similar to those identified for the proposed projects. Because no significant Land Use and Planning impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Noise

As with the proposed projects, Alternative 2 would not result in significant noise impacts associated with construction activities. 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. Because no significant Noise impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Public Services

Alternative 2 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. Therefore, this alternative would result in a similar impact related to public services as the proposed projects.

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 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 because of 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

Similar to the proposed projects, Alternative 2 would require water service and energy for the operation of the solar facilities. 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 slightly 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 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, , 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 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 325 ~~megawatts~~ MW of renewable solar energy, as there would be less area available for the placement of PV structures.

8.5 Alternative 3: Increased Development Setback (Laurel 1 Solar Farm Site)

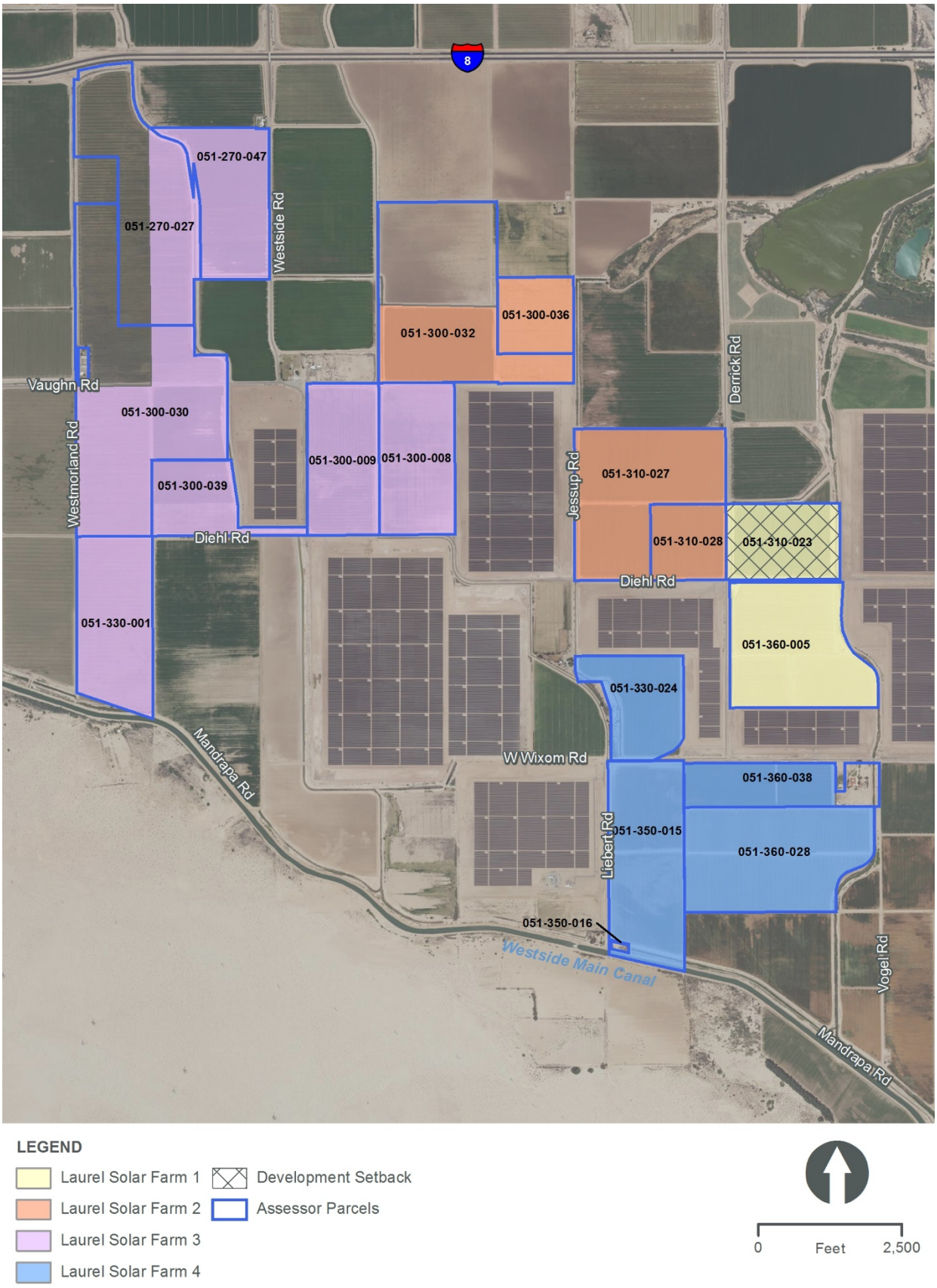
The purpose of this alternative is to increase the development setback on the LSF1 site to reduce impacts on burrowing owl. While burrowing owls were observed throughout the project sites, the majority were observed on the northern parcel (APN 051-310-023) of the LSF1 site. As shown on Figure 8-2, this alternative would eliminate the development of the northern portion, approximately 60 acres, of the LSF1 site.

Environmental Impact of Alternative 3: Increased Development Setback (Laurel 1 Solar Farm Site)

Aesthetics

Under Alternative 3, the overall size of the solar energy facilities would be reduced by 60 acres by eliminating the development of the northern portion of the LSF1 site. 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 substantial degradation of the existing visual character of the project sites. However, a significant ground level glare impact has been identified associated with fixed tilt PV arrays (no impact is identified for single- or double-tracker systems. Therefore, 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.

Figure 8-2. Alternative 3: Increased Development Setback (Laurel 1 Solar Farm Site)



Agriculture

Under Alternative 3, the overall size of the solar energy facilities would be reduced by 60 acres by eliminating the development of the northern portion of the LSF1 site. As shown on Figure 8-1, the northern portion of the LSF1 site contains Farmland of Statewide Importance and Unique Farmlands. This alternative would avoid the conversion of Important Farmlands on the northern portion of the LSF1 site. However, the project sites containing Prime Farmland and Farmland of Statewide of Importance would still be converted to solar energy facilities. Therefore, 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, but would be slightly less as compared to the proposed project. Compared to the proposed projects, this alternative would reduce the significant impacts associated with these agricultural issues.

Air Quality

Under Alternative 3, air emissions during construction would be less than the proposed projects because of 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 AQAPs 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~~ MW 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 3 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

As discussed in Section 4.4, Biological Resources, burrowing owls were observed within the boundaries of the project sites (majority observed on northern parcel of LSF1 project site) and were also found off-site within the IID ROW. As shown on Figure 8-2, this alternative would eliminate the development of the northern portion, approximately 60 acres, of the LSF1 site. Although this alternative would reduce the number of burrowing owls that could potentially be directly and indirectly impacted with implementation of the projects, this alternative still has the potential to impact burrowing owl on the other project sites (~~BRSF1,~~ LSF2, ~~and~~ LSF3, and LSF4). Mitigation would still be required for impacts on burrowing owl; however, the overall number of burrowing owl locations potentially impacted would be less. Impacts on 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 on biological resources but would still require mitigation.

Cultural Resources

Based on the results of the records searches, the project sites are considered moderately sensitive for the presence of archaeological resources. Under Alternative 3, 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 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 on 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 3, while the overall project footprint would be reduced, grading and construction of new facilities, such as O&M buildings, transmission facilities, energy storage, 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 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 3, the overall project footprint would be reduced by approximately 60 acres 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 tCO2e. 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. Because no significant GHG impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and, therefore, it is considered similar to the proposed projects.

Hazards and Hazardous Materials

As discussed in Section 4.8, Hazards and Hazardous Materials, historical records noted that a septic system was present at the southeast corner of Derrick Road and West Diehl Road on the LSF1 project site. There are no records of removal or abandonment of the septic system. Considering the age of the system (if present), there is potential to encounter onsite soil contamination during ground disturbance and construction of the LSF1 project. As shown in Figure 8-2, this alternative would only eliminate the development of the northern parcel of the LSF1 site. This alternative would not avoid the septic system located on the southern portion of the LSF1 site. 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 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 on 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 less of an impact on hydrology/water quality.

Land Use and Planning

Similar to the proposed projects, Alternative 3 would not divide an established community or result in incompatibilities with adjacent agricultural uses. Similar to the proposed projects, Alternative 3 would require the approval of CUPs, General Plan Amendment, and Zone Change 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~~HCP or ~~natural community conservation plan~~NCCP. Because no significant Land Use and Planning impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Noise

As with the proposed projects, Alternative 3 would not result in significant noise impacts associated with construction activities. 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. Because no significant Noise impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed projects.

Public Services

Alternative 3 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. Therefore, this alternative would result in a similar impact related to public services as the proposed projects.

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 3 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 because of 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

Similar to the proposed projects, Alternative 3 would require water service and energy for the operation of the solar facilities. 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 slightly 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 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, biological resources, 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 Prime Farmland) to Project Objectives

Alternative 3 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 325 MW~~megawatts~~ of renewable solar energy, as there would be less area available for the placement of PV structures.

8.6 Alternative 4: Development within Renewable Energy Overlay Zone

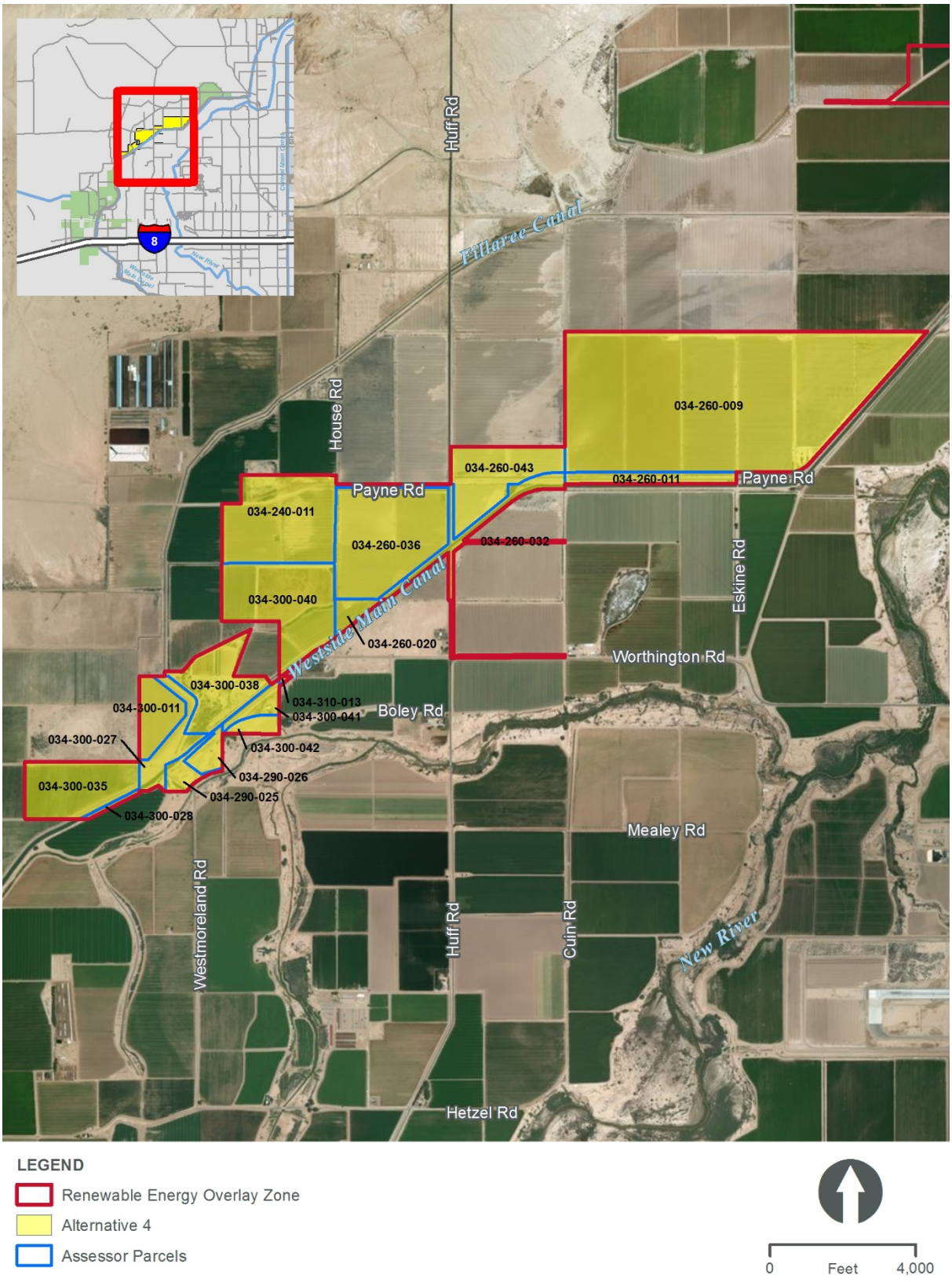
In certain cases, an evaluation of an alternative location in an EIR is necessary. Section 15126(f)(A) of the CEQA Guidelines states, “Key question. The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting 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 within the County’s RE Overlay Zone. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established areas.

As shown in Figure 8-3, the Alternative 4 project site is located entirely within the RE Overlay Zone. Alternative 4 would encompass approximately 1,250 acres of land located approximately 4 miles northeast of the Dixieland area in unincorporated Imperial County. The Alternative 4 project site is designated as Agriculture under the County’s General Plan and zoned A-3 (Heavy Agriculture).

Similar to the proposed projects, Alternative 4 will require approval of CUPs to allow for the construction and operation of a solar project. Compared to the proposed projects, the Alternative 4 project site is located within the RE Overlay Zone and would not require a General Plan Amendment or Zone Change to include/classify the project site into the RE Overlay Zone.

Figure 8-3. Alternative 4: Development with Renewable Energy Overlay Zone



Environmental Impact of Alternative 4: Development within Renewable Energy Overlay Zone

Aesthetics

Similar to the proposed project sites, the Alternative 4 project site is surrounded by agricultural lands. This alternative would result in a change in the existing land use at the project site from an agricultural land use to a solar facility. Similar to the proposed projects, this would alter the visual character of the project site, both in terms of the on-site features proposed and in the context of the site's relationship within the currently surrounding agricultural landscape. The Alternative 4 project site is located approximately 3.5 miles northwest of the Naval Air Facility El Centro. Because of the proximity of the Naval Air Facility El Centro, there is a potential that this alternative could reflect significant levels of glare or glint upwards in a manner that could affect flight operations. Also, this alternative would likely require construction of transmission towers in excess of 120 feet in height, which could present an incompatibility with the airport operations. Compared to the proposed projects, this alternative could result in greater glare or glint impacts.

Agriculture

As shown in Table 8-1, the Alternative 4 project site contains 213.95 acres of Prime Farmland, 805.94 acres of Farmland of Statewide Importance, 81.0 acres of Farmland of Local Importance, 7.68 acres of Unique Farmland, and 145.32 acres of Other Land. Compared to the proposed projects, Alternative 4 would reduce the acreages of Important Farmland that would be temporarily converted from agricultural uses to solar farms. However, since this alternative would still convert Prime Farmland, Farmland of Statewide Importance, and Unique Farmland 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, but would be less than would occur under the proposed projects. Compared to the proposed projects, this alternative would reduce the significant impacts associated with these agricultural issues.

Table 8-1. Comparison of Important Farmlands within the Project Sites and Alternative 4 Project Site

Important Farmland	Proposed Projects	Alternative 4
Prime Farmland	507.53	213.95
Farmland of Statewide Importance	827.29	805.94
Farmland of Local Importance	--	81.00
Unique Farmland	9.27	7.68
Other Land	34.88	145.32
Urban and Built-Up Land	4.78	--

Air Quality

Under Alternative 4, air emissions during construction would be less than the proposed projects because the overall area of disturbance would be reduced by approximately 130 acres. 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 AQAPs 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~~ MW 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 4 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 this alternative, potential impacts on 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, the Alternative 4 site is located on agricultural fields, which provide habitat for burrowing owl. Irrigation canals and drains are commonly used as burrowing nesting sites in the Imperial Valley. 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 jurisdictional areas as the site is located in proximity of drains and the New River. While these areas are highly altered by agricultural operations, 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 on waters of the U.S.

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 gen-tie line, this alternative could result in greater impacts on cultural resources.

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

Under Alternative 4, the overall project footprint would be reduced by approximately 130 acres thereby contributing to reductions in GHG emissions during project construction. However, as a consequence of the reduced size of the project, 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 tCO2e. 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.

Because no significant GHG impact has been identified associated with the proposed projects, this alternative would not avoid or reduce a significant impact related to this issue and therefore, it is considered similar to the proposed project.

Hazards and Hazardous Materials

Depending on the specific locations and conditions of the Alternative 4 project site that would need to be developed, certain hazards and hazardous materials may be encountered. The Alternative 4 project site 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 projects.

Hydrology/Water Quality

Alternative 4 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 on 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 4 will require approval of CUPs to allow for the construction and operation of a solar project. Compared to the proposed projects, the Alternative 4 project site is located within the RE Overlay Zone and would not require a General Plan Amendment or Zone Change to include/classify the project site into the RE Overlay Zone. Nonetheless, with approval of all discretionary requests, both the proposed projects and this alternative would be consistent with the land use and zoning designations at the project sites, and neither project would conflict with any applicable land use plans, policies or regulations. Accordingly, because both the proposed projects and this alternative would require approval of discretionary requests in order to maintain consistency with all applicable land use plans, impacts from Alternative 4 would be similar to those resulting from the proposed projects.

Noise

Based on a review of Google Earth imagery, there are no residences or schools located within or immediately adjacent to the Alternative 4 project site. Therefore, as with the proposed projects, Alternative 4 would not result in significant noise impacts associated with construction activities. 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.

Compared to the proposed projects, the Alternative 4 project site is located in closer proximity to the Naval Air Facility El Centro. Because of the proximity of the Naval Air Facility El Centro, there is a potential that this alternative could exposure workers in the project area to excessive noise levels. Based on a review of Figure 3G (Compatibility Map – Naval Air Facility El Centro) of the ALUCP, a portion of the Alternative 4 project site is located within Compatibility Zone D. According to the

Imperial County ALUCP, Zone D has a potential for annoyance from overflights. Compared to the proposed projects, this alternative could result in greater impacts related to aircraft noise.

Public Services

Alternative 4 would require increased public services, specifically law enforcement and fire protection services. While the overall project footprint would be slightly smaller (reduced by approximately 130 acres), 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. Therefore, this alternative would result in a similar impact related to public services as the proposed projects.

Transportation/Traffic

This alternative would result in a similar level of vehicle and truck trips 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 4 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, substantially increase hazards because of 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

Similar to the proposed projects, Alternative 4 would require water service and energy for the operation of the solar facilities. This alternative would allow agricultural operations to continue on the project site, which utilizes more water than solar facilities. As a consequence, this alternative would result in slightly 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 4 would result in reduced impacts for the following environmental issues areas as compared to the proposed projects: agriculture, air quality, and hydrology/water quality. As shown in Table 8-2, this alternative would result in greater impacts for the following environmental issue areas as compared to the proposed projects: aesthetics, biological resources, cultural resources, and noise.

Comparison of Alternative 4: Development within Renewable Energy Overlay Zone to Project Objectives

Alternative 4 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 325 ~~megawatts~~ MW of renewable solar energy, as there would be less area available for the placement of PV structures.

8.7 Environmentally-Superior Alternative

Table 8-2 provides a qualitative comparison of the impacts for each alternative compared to the proposed projects. As noted in Table 8-2, 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." As shown in Table 8-2, Alternative 2 would reduce impacts for the following environmental issue areas as compared to the proposed projects: agriculture, air quality, biological resources, GHG (construction phase only), and hydrology/water quality. Although Alternative 3 would also reduce impacts on agriculture, air quality, biological resources, GHG (construction phase only), and hydrology/water quality, Alternative 2 would result in a greater reduction of the development footprint. Alternative 2 would realize slightly greater reductions in impacts.

Table 8-2. Comparison of Alternative Impacts on Proposed Project

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Aesthetics	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact
Agriculture	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Air Quality	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Biological Resources	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact

Table 8-2. Comparison of Alternative Impacts on Proposed Project

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Cultural Resources	Less than Significant with Mitigation	*CEQA Significance:* No Impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact
Geology and Soils	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact (Avoid)	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact
GHG Emissions	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact. Would not achieve GHG emission reductions to the extent of the proposed projects as less renewable energy would be produced

Table 8-2. Comparison of Alternative Impacts on Proposed Project

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Hazards and Hazardous Materials	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Similar Impact
Hydrology/ Water Quality	Less than Significant with Mitigation	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant with Mitigation *Comparison to Proposed Project:* Less Impact
Land Use/Planning	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Noise	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Potentially Significant *Comparison to Proposed Project:* Greater Impact

Table 8-2. Comparison of Alternative Impacts on Proposed Project

Environmental Issue Area	Proposed Project	Alternative 1: No Project/No Development	Alternative 2: Reduced Acreage Alternative (Avoid Prime Farmland)	Alternative 3: Increased Development Setback (LSF1 Site)	Alternative 4: Development within Renewable Energy Overlay Zone
Public Services	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Transportation/ Traffic	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact
Utilities	Less than Significant	*CEQA Significance:* No impact *Comparison to Proposed Project:* Less Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact	*CEQA Significance:* Less than Significant *Comparison to Proposed Project:* Similar Impact

CEQA – California Environmental Quality Act; GHG – greenhouse gas; LSF1 – Laurel 1 Solar Farm

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