Air Quality / Greenhouse Gas Technical Report

Citizens Imperial Solar, LLC Project

Imperial County

June 6, 2018

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Abbreviations and Acronyms

AB	Assembly Bill
AC	alternating current
ARB	Air Resources Board
BAU	business as usual
CAAQS	California Ambient Air Quality Standards
CCCA	California Clean Air Act
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_{2e}	carbon dioxide equivalent
DC	direct current
EO	Executive Order
EPA	Environmental Protection Agency
FCAA	Federal Clean Air Act
GHG	greenhouse gas
GWP	global warming potential
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
kV	kilovolt
LCFS	low carbon fuel standard
$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NO_x/NO_2	nitrogen oxides/nitrogen dioxide
O_3	ozone
Pb	lead
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter
ppb	parts per billion
ppm	parts per million
project	Citizens Imperial Solar, LLC Project
PV	photovoltaic
RE	renewable energy
ROG	reactive organic gas
RPS	Renewable Portfolio Standard
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SLCP	Short-Lived Climate Pollutant
SO_x/SO_2	sulfur oxides/sulfur dioxide
SSAB	Salton Sea Air Basin
TAC	toxic air contaminant
U.S.	United States
VOC	volatile organic compounds

1 Introduction

This document presents an air quality and greenhouse gas (GHG) assessment for the proposed Citizens Imperial Solar Project (project), conducted by HDR Engineering, Inc. This assessment is necessary to comply with the California Environmental Quality Act (CEQA).

1.1 Purpose of the Report

The purpose of this report is to provide information to the County of Imperial to aide in evaluation of the potential air quality impacts associated with construction and operation of the project.

1.2 Project Description

1.2.1 Project Location

The proposed project is located approximately 6 miles northeast of the City of Calipatria and 5 miles southeast of Niland, a census-designated place, in the unincorporated area of Imperial County (Figure 1). The East Highline Canal is located on the project site's eastern boundary, with desert lands immediately beyond. The project site is surrounded to the north, west, and south by privately-owned agricultural lands. Adjacent roadways, which are currently developed for agricultural uses, include Merkley Road and Simpson Road.

The project site encompasses approximately 223 acres, comprised of two parcels of land identified as assessor parcel numbers 025-260-024 (northern parcel) and 025-280-003 (southern parcel). Table 1 identifies the assessor parcel numbers, zoning, and acreage of the project parcels. The location of the project site is shown on Figure 2.

Table 1. Project Assessor Parcel Numbers, Zoning, and Acreages

Assessor Parcel Numbers	Zoning	Acres
025-260-024	A-3	106
025-280-003	A-3	117
	Total	**223**

1.2.2 Renewable Energy Overlay Zone

In 2016, the County adopted the Imperial County Renewable Energy (RE) 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 RE projects.

Figure 1. Regional Location

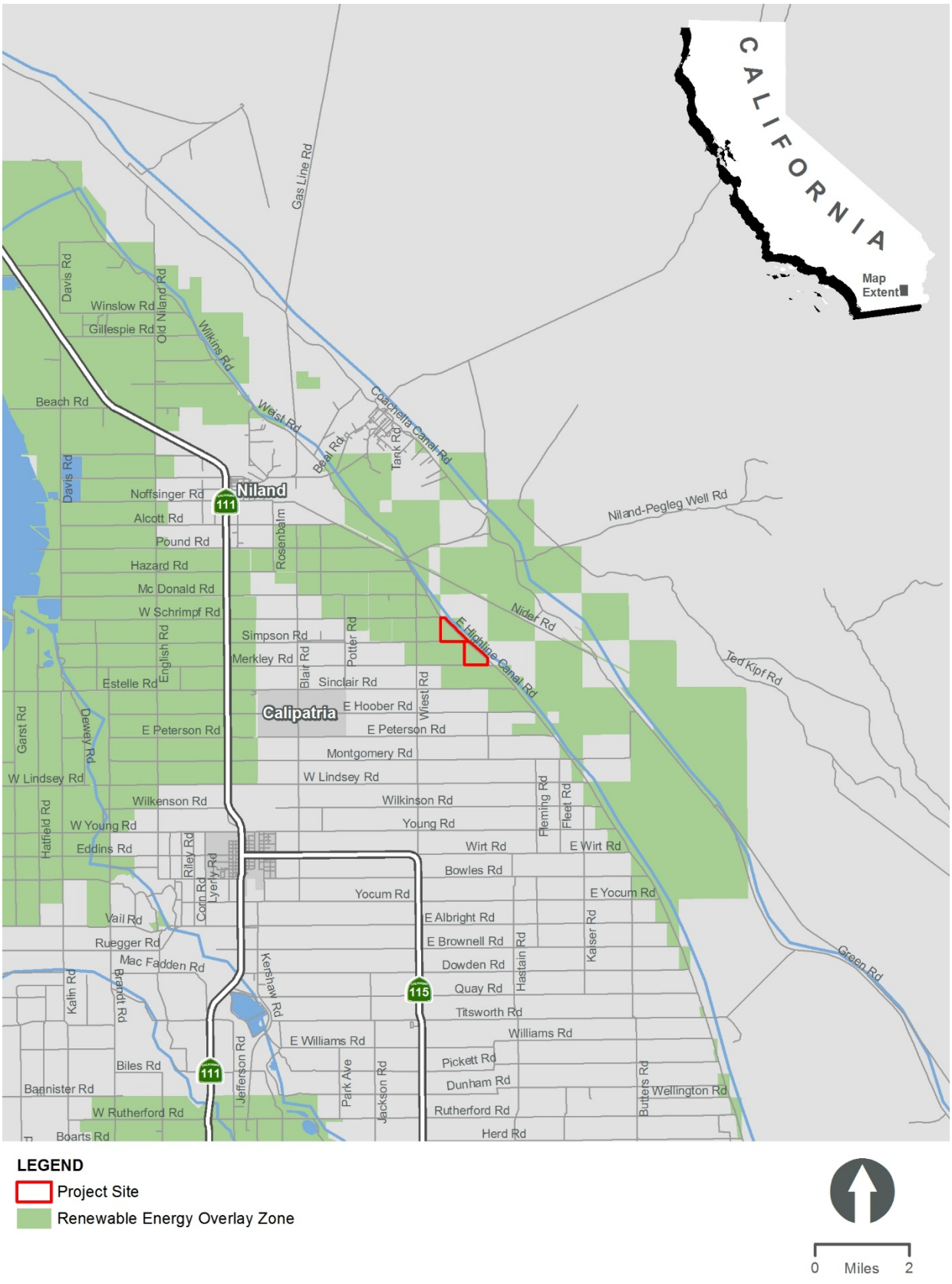
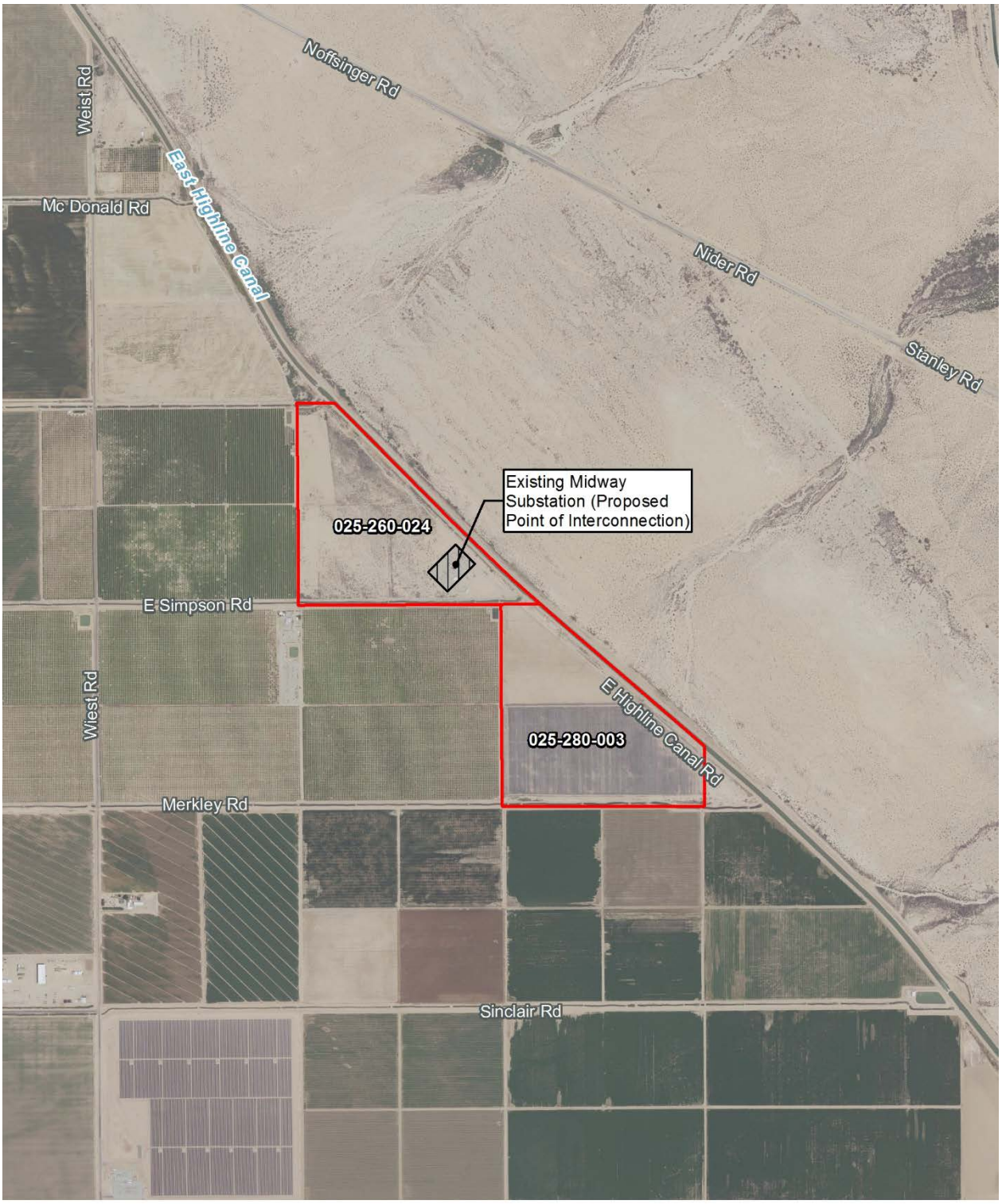


Figure 2. Project Site



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 on other established uses. As shown on Figure 1, the project site is located within the RE Overlay Zone.

1.3 Project Objectives

The primary objective of the project is to deliver cost-effective, RE that maximizes the use of existing transmission infrastructure and relies on highly-efficient, proven technology to realize federal and state energy goals.

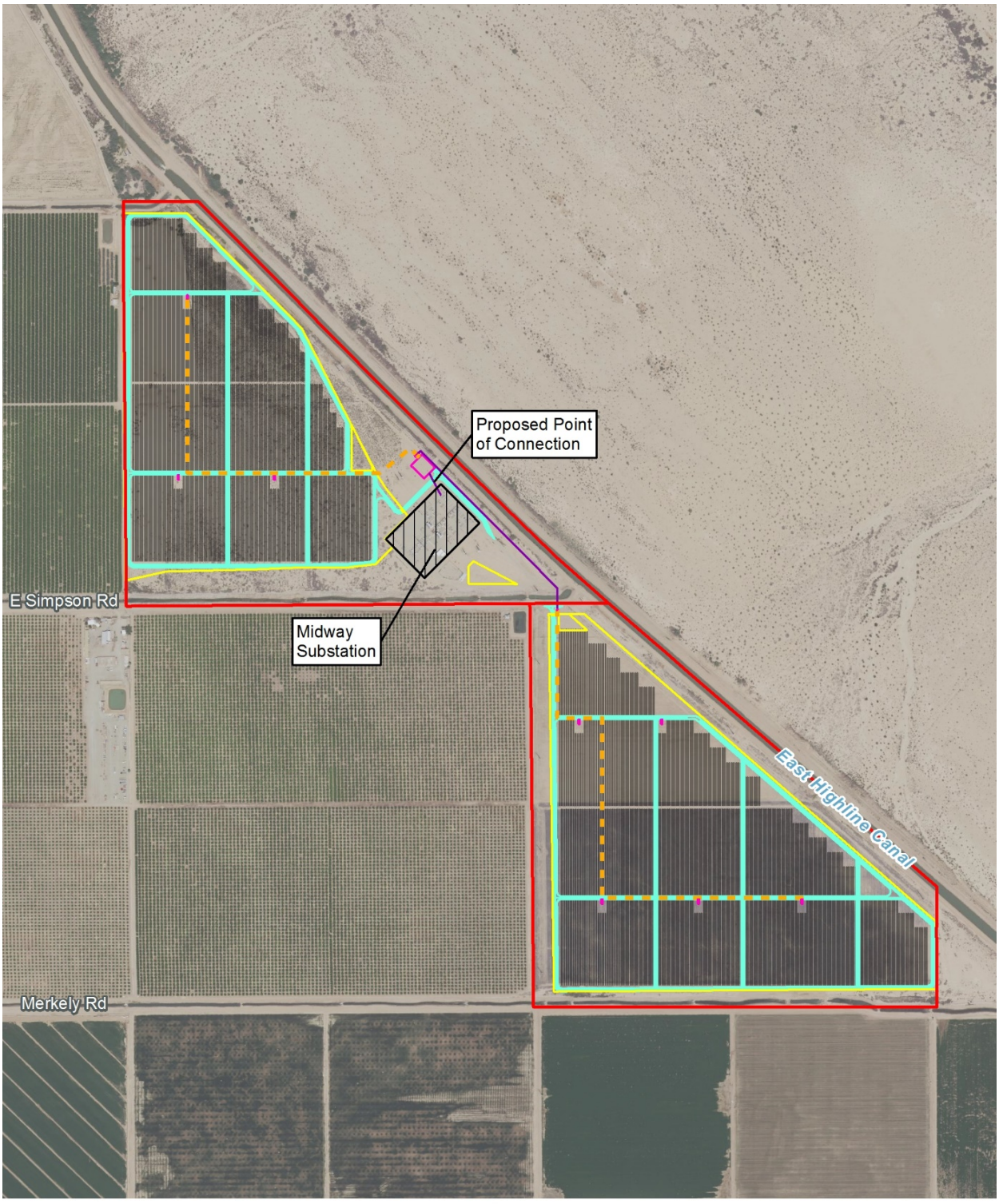
- To provide solar energy for the Imperial Irrigation District's (IID) eGreen low-income community solar program. This project would lower the electricity bills for the District's 15,000 qualified low-income customers from a local source of clean energy.
- To construct and operate a 30 megawatt solar photovoltaic (PV) energy facility using high-efficiency PV technology to provide a renewable and reliable source of electrical power to California utilities.
- To locate the project on private lands with high-solar insolation and relatively flat terrain and to minimize construction of new transmission infrastructure.
- To minimize environmental impacts and land disturbance by locating the project on fallowed agricultural lands.
- To assist California and its investor-owned utilities in meeting the state's RPS and GHG emission reduction requirements.
- To provide economic benefits to Imperial County, through new jobs, spending in local business, and additional sales tax revenue.

1.4 Project Characteristics

The Citizens Imperial Solar, LLC Project involves the construction of a 30 megawatt alternating current (AC) PV energy generating facility on approximately 223 acres of land owned by IID. Of the 223 acres, approximately 159 acres (area within the fence line) would be developed with a ground mounted PV solar power generating system, supporting structures, on-site substation, access driveways, and transmission structures. Figure 3 depicts the proposed site plan.

The project would connect to the electric grid at the IID Midway Substation, located on the northern parcel of the project site (Figure 2). The project has a Power Purchase Agreement with IID for the sale of power from the project. The lifespan of the project is expected to be 25 years. The project would provide lower-cost energy to low-income customers through the eGreen program administered by IID.

Figure 3. Preliminary Site Plan



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

PV Panel/Mounting Configuration. The project would include approximately 126 acres of tracking solar PV panels. The project would utilize single-axis tracking systems in rows running north-south, typical for projects in the region. The panels would be tracking and would be no more than 15 feet high at the high end (at maximum rotation angle). Fixed-tilt racking could also be utilized in areas not suited for tracking equipment. The maximum height would still not exceed 15 feet if fixed-tilt racking is utilized. Figure 4 provides a representative example of these types of systems.

As shown on Figure 3, the project would consist of 8 arrays, or grouping of trackers that are electrically optimized and located around a central inverter station.

1.4.2 Inverter Station

PV energy would be delivered via cable to inverter stations, generally located near the center of each block. Central inverters would be enclosed within outdoor rated electrical equipment enclosures. The project would include 8 inverter stations that would be approximately 10 feet tall and 10 feet by 35 feet wide per station. Figure 5 provides representative examples of a typical inverter station. Central inverter stations would be 3.75 megawatt AC on average. Each inverter station includes an inverter step-up transformer for connection to the 34.5 kilovolt (kV) collection system. The inverters convert the DC electricity to AC electricity, which then flows to the transformer where it is stepped up to the appropriate voltage (34.5 kV).

1.4.3 Collection System

The project would include 34.5 kV underground cables and overhead, pole mounted conductors to connect each of the 8 inverter stations to the project substation. Overhead sections are typically on wood-poles with heights up to 40 feet and are used most commonly for crossing over roads, canals, and gas lines.

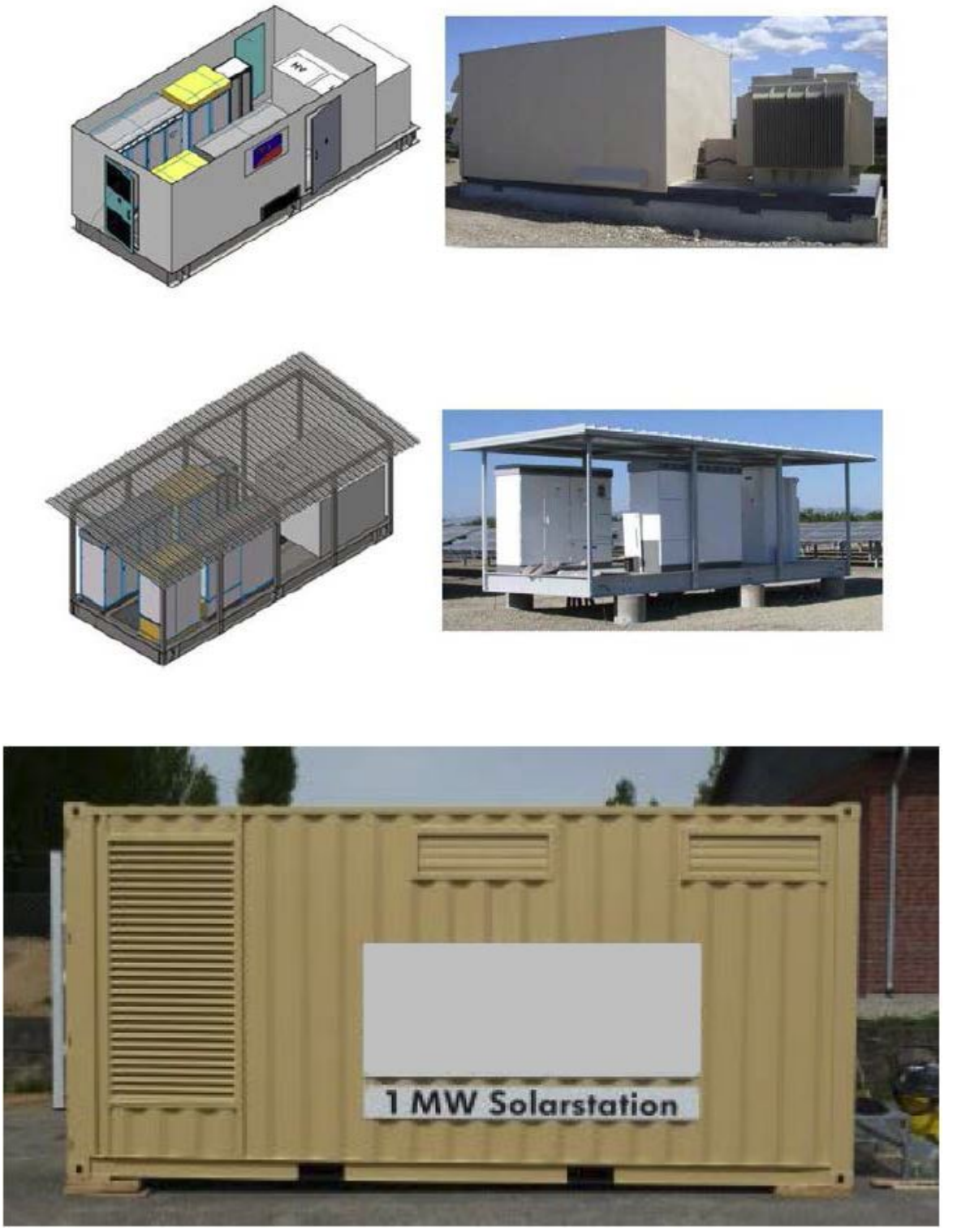
Figure 4. Representative Examples of Photovoltaic Panel/Mounting Configuration

Typical Single-Axis Tracking Solar Panels

Typical Fixed-Tilt Mounting Structure

Typical Fixed-Tilt Solar Panel Rows

Figure 5. Representative Examples of Typical Inverter Stations



1.4.4 Substation

A project substation, developed and located in close coordination with IID, would be constructed to transform the collected 34.5 kV power generation to IID transmission system voltages. The substation would include a main power transformer, facility protection equipment, and a control enclosure. Substation structure maximum heights would be equal to or less than existing IID facility structures. A representative example of a substation is presented on Figure 6.

The purpose of the project substation is to convert the collection-level electricity (34.5 kV) to the voltage (230 kV) of the IID Midway Substation. All interconnection equipment would be installed aboveground and within the footprint of the project substation. The overall footprint of the project substation is anticipated to be approximately 130 by 180 feet and poles up to 50 feet in height.

The project substation would include a 45-kW emergency generator for use if the regional transmission system fails; this emergency generator would provide emergency power until the regional transmission system restores operations. The substation would be surrounded by a barbed wire chain-link fence to comply with electrical codes.

The project substation must have access to communication systems in the area to comply with utility monitoring and remote-control requirements. Compliance may be accomplished by underground lines, aboveground lines, or wireless solutions such as microwave or satellite.

Figure 6. Representative Example of Typical Substation Design

1.4.5 Transmission Line and Interconnection Facilities

The proposed project may require 2 to 3 transmission structures to connect the project substation to IID's existing Midway Substation. Such structures would be designed in cooperation with and per IIDs requirements, and crossing of exiting 230 kV transmission lines may be required. Final structure heights would be determined by IID, but typically would not exceed 120 feet.

1.4.6 Telecommunications

The project requires telecommunications connections for remote operations and utility telemetry. The region in which the project is proposed is known to be without significant fiber infrastructure or high-speed copper based telecommunication options. As is typical for facilities of this nature in the project region, microwave point to point service would likely be required. Satellite based solutions may also be considered, if such solutions can meet the project requirements. Microwave solutions do require the installation of a radio antenna pole or tower, typical ranging in height from 20 to 100 feet. Any such structure would be located immediately adjacent to the substation control enclosure.

1.4.7 Auxiliary Facilities

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

Site Security and Fencing

The boundary of the project site would be secured by a 6-foot tall chain-link perimeter fence, topped by 1- foot-tall three-strands of barbed wire. Points of ingress/egress would be accessed via locked gates.

Lighting System

Minimal lighting would be required for operations and would be limited to safety and security functions. 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).

Access

The nearest paved road, Wiest Road, is approximately 0.5 miles from the western edge of the project site. The primary means of access (all public) is from Wiest Road, turning east onto Simpson Road. The southern project parcel would be accessed directly from Simpson Road. The northern parcel would be accessed from East Highline Canal Road. Secondary means of accessing the northern parcel could be achieved with surrounding property owner's permission, by utilizing private roads running east from Wiest Road, along existing canals. For all access to the site, active dust control mitigation measures would be utilized for all un-paved portions during construction of the facility.

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.

Fire Protection

The project is located within the jurisdiction of Imperial County Fire Department. A 10,000-gallon aboveground water storage tank(s) would be installed on the project site as required by the Imperial County Fire Department. The water tank(s) would be sized to meet the requirements of the County of Imperial to supply sufficient fire suppression water during operations.

Project facilities would be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health, and safety requirements. The following steps would be taken to identify and control fires and similar emergencies:

- Electrical equipment that is part of the project would only be energized after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff would monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks.
- Transformers located on site would be equipped with coolant that is non-flammable, biodegradable, and contains no polychlorinated biphenyls or other toxic compounds.

Landscaping

The project applicant would address landscaping in the final project design. Given the size of the project and its location near agricultural properties, the project applicant would work with the County to identify appropriate landscaping, if any, for this project that meets the intent of County landscaping ordinance requirements.

1.4.8 Dust Suppression and Erosion Control

The project would comply with all applicable air pollution control regulations. During the construction phase of the project, standard dust control measures would be used to mitigate emissions of fugitive dust. These may include watering or applying other dust palliatives to roadways and parking areas. Site entrances and parking areas would be graveled and/or have dust palliative applied.

1.5 Project Construction

The proposed project is anticipated to take approximately 23 weeks from the commencement of the construction process to complete. The following sections provide details regarding the project timeline and construction process.

1.5.1 Solar Construction Process

Construction activities would include the installation of civil infrastructure (e.g., driveways, grading, fencing), mechanical infrastructure (e.g., piles, panel and inverter

foundations), and electrical infrastructure (e.g., PV panels, cables). The following steps would be implemented.

Installation of Civil Infrastructure

- Pre-construction biological resources surveys and resource-related BMPs, as required
- Survey and project layout, including road, array, substation, and fence lines
- Driveway construction
- Temporary facilities, water storage (fire and dust control), parking, and staging areas
- Installation of temporary and permanent chain-link fence and gate
- Grading as required for arrays and SWPPP BMPs
- Substation pad

Installation of Mechanical and Electrical Infrastructure

- Excavation and installation of power conversion station pads
- Installation of steel piles and placement of racking system
- Setting of combiner boxes
- Trenching for buried wiring
- Installation of buried wiring (i.e., AC, DC, ground and fiber)
- Setting of power conversion station
- Installation of PV modules
- Installation of above ground DC wiring
- Terminations of required wiring
- Construction of the project substation
- Construction of the interconnection to the Midway Substation
- Telecommunications installation
- Installation of meteorological equipment

1.5.2 Site Preparation, Surveying, and Staking

Preconstruction survey work would consist of staking and flagging the following: 1) construction area boundaries, 2) work areas (permanent and short term), 3) cut and fill, 4) access and roads, 5) transmission structure centers, 6) foundation structures. Staking and flagging would be maintained until final cleanup.

Site Preparation

Site preparation activities include installation of fencing and completion of any required pre-construction surveys, preparing and constructing site access roads, establishing

temporary construction trailers and sanitary facilities, and preparing a construction staging area.

Vegetation Removal/Clearing

Within the solar field and plant roadways, vegetation would be disced under, mulched or composted, and retained on site to assist in erosion control and limit waste disposal. Vegetation would be cleared for construction of any required drainage controls, including berms.

Grading

The project site is flat, nearly level, and requires minimal grading to allow for installation of the PV panels. Typical grading would consist of array grading as required by the PV racking system tolerance requirements, SWPPP compliance, substation, driveways, and other improvements. Access driveways would be constructed by placing 2 to 4 inches of decomposed granite or comparable material directly on the existing soil. Soil compaction, soil strengthening agents, or geo fabric may be used for access and circulation driveways. Compaction may also be required for grading, underground electrical trenches, inverter pads, substation, and driveways. Typical dust mitigation measures would be performed during construction.

1.5.3 Temporary Construction Facilities

A temporary construction staging area and an area for construction worker parking would be included within the project site. These areas would be utilized throughout the approximately 23-week project construction period and then decommissioned and/or replaced by solar arrays. Graded roads would be required in selected locations on or around the project site during construction to bring equipment and materials from the staging areas to the construction work areas, and for long-term project operation and maintenance.

The staging areas would include material laydown and storage areas and an equipment assembly area. During construction, the staging area would contain a guard shack, construction trailers, construction worker parking, and portable toilet facilities that would serve the project's sanitation needs during construction. Temporary construction fencing would surround this area and the guard shack would be manned to provide security during construction.

1.5.4 Construction Schedule and Workforce

Heavy construction work is expected to be from 6:00 a.m. to 5:00 p.m., Monday through Friday. However, to meet schedule demands, it may be necessary to work early morning, evening, or nights and on weekends during certain construction phases. Some activities may continue 24 hours, 7 days per week. These activities include but are not limited to refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning. The work schedule may be modified throughout the construction period to account for changing weather conditions. If construction work takes place outside these typical hours, activities would comply with Imperial County standards for construction noise levels.

For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The project would use restricted nighttime task lighting during construction. No more lighting would be used than is needed to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During project construction, the workforce is expected to average approximately 80 employees over the 23-week construction period, with a peak workforce of approximately 200 employees. The project construction workforce would be recruited from within Imperial County and elsewhere in the surrounding region to the extent practicable.

1.5.5 Construction Equipment

Most construction equipment would be brought to the project site at the beginning of the construction process during construction mobilization and would remain on-site throughout the duration of the construction activities for which they were needed. Generally, the equipment would not be driven on public roads while in use for the project. In addition to construction worker commuting vehicles, construction traffic would include periodic truck deliveries of materials and supplies, recyclables, trash, and other truck shipments. Truck shipments would normally occur during daylight hours. However, offloading and transporting to the site may occur during evening hours. Table 2 presents the anticipated equipment by construction phase for the project.

Table 2. Construction Equipment and Trip Assumptions

Phase 1 – Site Preparation (~2 months; 55 working days)			
Off-Road Equipment Type	***Number***	***Horsepower***	***Hours/Day***
Rollers/Mowers	2	87	4
Rough Terrain Forklift	2	93	6
Dozers	2	357	6
Tractors/Loaders/Backhoes	3	108	5
Skid Steer Loader	4	61	6
Utility Vehicles	4	49	4
On-Road Trips	***Trips***	***Miles/Trip***	***Unpaved/Trip***
Employee Commute	1,100	30	1
Work Trucks	110	30	1
Heavy Haul Trucks (including off-road equipment delivery)	20	30	1
Water Truck	8	30	1
Fuel Truck	25	30	1

Table 2. Construction Equipment and Trip Assumptions

Phase 2 – Facility Installation (~3 months; 102 working days)			
Off-Road Equipment Type	***Number***	***Horsepower***	***Hours/Day***
Pile Driver Rigs	4	50	8
Crane	1	399	4
Rough Terrain Forklift	3	93	6
Trencher/Loaders/Backhoes	3	108	6
Skid Steer Loader	2	61	6
Utility Vehicles	3	49	4
On-Road Trips	***Trips***	***Miles/Trip***	***Unpaved/Trip***
Employee Commute	5,225	30	1
Work Trucks	306	30	1
Heavy Haul Trucks (off-road equipment delivery/removal)	60	30	1
Heavy Haul Trucks (concrete)	36	30	1
Heavy Haul Trucks (other bulk materials)	70	30	1
Heavy Haul Trucks (panels and arrays)	430	60	1
Heavy Haul Trucks (balance of facility)	100	60	1
Miscellaneous Delivery Trips	130	30	1
Water Truck	4	30	1
Fuel Truck	60	30	1
Phase 3 – Commissioning/Finishing (~1 month; 20 working days)			
Off-Road Equipment Type	***Number***	***Horsepower***	***Hours/Day***
Utility Vehicles	2	49	4
Skid Steer Loader	2	61	6
Trencher/Loader/Backhoe	4	108	6
Rough Terrain Forklift	2	93	6
On-Road Trips	***Trips***	***Miles/Trip***	***Unpaved/Trip***
Employee Commute	200	30	1
Work Trucks	60	30	1
Heavy Haul Trucks (off-road equipment delivery/removal)	30	30	1
Heavy Haul Trucks (other/miscellaneous)	7	30	1
Water Truck	2	30	1
Fuel Truck	10	30	1

1.5.6 Construction Water Requirements

Construction water usage rates and total requirements would vary depending on the length and intensity of each construction activity. The overall construction timeframe is estimated to be 23 weeks. During construction, water would be needed for dust control and soil compaction, with small amounts used for sanitary and other purposes. Total water demand during construction is estimated to be 80 acre-feet (or gallons).

Water for construction-related dust control and operations would be obtained from IID. The project applicant would work with IID on obtaining a permit for this water use and the water use associated with facility operation. During construction, restroom facilities would be provided by portable units to be serviced by licensed providers.

1.5.7 Electrical Construction Activities

The design and work would be performed in accordance with the National Electrical Code requirements. Once all the solar panels are installed in a block, they can be electrically connected. Workers would walk behind each row and plug the wires from each module into a wiring harness that collects all power from each cable. Workers then terminate all harnesses to a combiner box. The combiner boxes then route underground or above ground DC cables to the inverters. The inverters convert the DC power to three-phase AC power which is fed into a step-up transformer. The AC cables from the transformers are routed underground or aboveground to the on-site substation. The on-site substation would step the power up for transmission via the interconnection line to the IID Midway Substation. Dust mitigation would be performed during the installation of underground cables.

If required, a cathodic protection system would be installed to protect steel structures from potentially corrosive soils on site.

1.5.8 Other Construction Activities

Health and Safety Program

A comprehensive health and safety program would be implemented consistent with all applicable state and federal laws and industry best practices to ensure that the project is built and operated in a safe, responsible manner and presents a safe working environment for all employees. A Health and Safety Plan would be used during construction. Familiarity and adherence to safety policies and procedures would be required of all employees, throughout the installation period and during site operations. In addition, participation in safety briefings and protocol review would be mandatory for all construction personnel.

Waste and Hazardous Materials Management

Construction of the project would involve the limited use of hazardous materials, such as fuels and greases to fuel and service construction equipment. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, state, and county regulations. No extremely hazardous substances are anticipated to be produced, used, stored, transported, or

disposed of as a result of project construction. Material Safety Data Sheets for all applicable materials present on-site would be made readily available to on-site personnel.

Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility.

1.5.9 Spill Prevention and Containment

Spill response plans would be developed prior to project construction and operation or prior to the storage on-site of an excess of 55 gallons of hazardous materials, and personnel would be made aware of the procedures for spill cleanup and the procedures to report a spill. Spill cleanup materials and equipment appropriate to the type and quantity of chemicals and petroleum products expected would be located onsite and personnel shall be made aware of their location.

The small quantities of chemicals to be stored at the project site during construction include equipment and facilities maintenance chemicals. These materials would be stored in their appropriate containers in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable chemical storage cabinets may be moved to different locations around the site as construction activity locations shift. The chemical storage area would not be located immediately adjacent to any drainage. Disposal of excess materials and wastes would be performed in accordance with local, state, and federal regulations. Excess materials/waste would be recycled or reused to the maximum extent practicable.

1.6 Operations and Maintenance

The following describes the operational security and maintenance requirements of the proposed project.

1.6.1 Operational Security

The project facility would be monitored remotely by the project applicant or an affiliated company. Once constructed, the project would operate during daylight, 7 days per week, 365 days per year. Security would be maintained through installation of a 6-foot-tall wire fence topped by 1-foot-tall three-strands of barbed wire.

A security company would be contracted for security purposes during construction and operation. Should the security system detect the presence of unauthorized personnel, a security representative would be dispatched to the facility, and appropriate local authorities would be notified. A box containing keys for the project facility would be installed to permit emergency access to the project site.

1.6.2 Operations Workforce and Equipment

It is anticipated that maintenance of the facilities would require minimal site presence to perform periodic visual inspections and minor repairs. On intermittent occasions, the

presence of additional workers may be required for repairs or replacement of equipment and panel cleaning; however, because of the nature of the facilities, such actions would likely occur infrequently. Overall, minimal maintenance requirements are anticipated. Maintenance and other operational staff would use standard size pickup trucks and vehicles.

During operations, potable water would be trucked onto the site. The operation and maintenance workforce would generate small amounts of sanitary wastewater that would be handled by temporary facilities. Only limited deliveries would be necessary for replacement PV modules and equipment during project operation.

1.6.3 Maintenance Activities

Project maintenance activities generally include road maintenance; vegetation restoration and management; scheduled maintenance of inverters, transformers, and other electrical equipment; and occasional replacement of faulty modules or other site electrical equipment. The project's access roads would be regularly inspected, and any degradation because of weather or wear and tear would be repaired. A dust palliative may be applied on dirt access roads, if needed.

Panel Washing and Operational Water Needs

Water required for operations and maintenance of the project would be provided by IID. One water storage tank would be installed as required by the Imperial County Fire Department.

Water would be used for periodic cleaning of the solar PV panels. It is anticipated that the solar PV panels would be washed up to four times per year to ensure optimum solar absorption by removing dust particles and other buildup. Total water demand during operation, including panel washing and other domestic water needs, is estimated to be approximately 10 acre-feet per year.

One or two small above ground portable sanitary waste facilities may be installed to retain wastewater for employee use. If installed, these facilities would remain onsite for the duration of the project. These facilities would be installed in accordance with state requirements and emptied as needed by a contracted wastewater service vehicle. No wastewater would be generated during panel washing as water would continue to percolate through the ground, as a majority of the surfaces within the project site would remain pervious.

Operational Dust Control

The project would comply with all applicable air pollution control regulations during facility operation. The site region has minimal traffic, and no dust control measures are expected to be required. However, the project applicant would monitor traffic on dirt roads and would implement dust control include watering, bio-degradable chemical stabilization, and speed restrictions as needed. No air pollution control measures are proposed for operation of the facility, as native vegetation would be retained, and there would not be any emissions once construction has ceased.

Spill Prevention and Containment

If required by the County, a Spill Prevention Control and Countermeasure Plan would be implemented during operation. BMPs would be employed in the use and storage of all hazardous materials within the project, including the use of containment systems in appropriate locations. Appropriately sized and supplied spill containment kits would be maintained on-site, and employees would be trained on spill prevention, response, and containment procedures. The chemical storage area would not be located immediately adjacent to any drainage. In addition, in accordance with the Emergency Planning & Community Right to Know Act, the project applicant would supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory, if required.

1.7 Facility Decommissioning

The expected lifetime of the project is 25 years. The generating facility and access roads would be used year-round. If at the end of the Power Purchase Agreement term, no contract extension is available for a power purchaser, no other buyer of the energy emerges, or there is no further funding of the project, the project would be decommissioned and dismantled. When the project concludes operations, much of the wire, steel, and modules of which the system is comprised would be recycled to the extent feasible. The project components would be deconstructed and recycled or disposed of safely, and the site could be converted to other uses in accordance with applicable land use regulations in effect at the time of closure.

Consistent with County of Imperial and CEQA requirements, a Reclamation Plan would be developed in a manner that both protects public health and safety and is environmentally acceptable. The project applicant would employ a collection and recycling program to dispose of site materials. After closure, measures would be taken to stabilize disturbed areas once equipment and structures are decommissioned and removed from the project site. These measures would be outlined in the Reclamation Plan.

1.8 Required Project Approvals

1.8.1 Imperial County

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

1. **Approval of CUP.** Implementation of the project would require the approval of a CUP by the County to allow for the construction and operation of the proposed solar facility and gentie line. The project site is located on two privately-owned legal parcels of land zoned A-3 (Heavy Agriculture). 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. **Certification of the EIR.** After the required public review for the Draft EIR, the County would 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

1.8.2 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 – Water Supply Agreement, Permit for Water Use Lease Agreement
- Imperial County Fire Department – 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 for General Construction Permit
- California Department of Fish and Wildlife Service (Trustee Agency) – Endangered Species Act Compliance
- United States (U.S.) Fish and Wildlife Service – Endangered Species Act Compliance
- Imperial County Air Pollution Control District (ICAPCD) – Fugitive Dust Control Plan, Authority to Construct

2 Regulatory Setting

2.1 Federal Clean Air Act

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality. These laws, and related regulations by the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) which is broken down for regulatory purposes into particles of 10 micrometers and smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national standards exist for lead (Pb). The NAAQS standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Toxic air contaminants (air toxics) are covered as well.

The FCAA requires U.S. EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in Table 3. The U.S. EPA has classified the project section of the Salton Sea Air Basin (SSAB) as nonattainment for PM_{10}.

2.2 California Clean Air Act

In California, the California Clean Air Act (CCAA) is administered by the ARB at the state level and by the air quality management districts and air pollution control districts at the regional and local levels. The ARB, which became part of the California EPA in 1991, is responsible for meeting the state requirements of the FCAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

ARB regulates mobile air pollution sources, such as motor vehicles. ARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. ARB established passenger vehicle fuel specifications, which became effective in March 1996. ARB oversees the functions of local air pollution control districts and air quality management districts, which, in turn, administer air quality activities at the regional and county levels.

The state standards are summarized in Table 3. The CCAA requires ARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous 3 calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as

nonattainment. Under the CCAA, the project section of the SSAB is designated as a nonattainment area for O_3 and PM_{10}.

2.3 California State Implementation Plan

The 1990 amendments to the FCAA 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 national 8-hour ozone standard and the $PM_{2.5}$ standards in 1997 resulted in additional statewide air quality planning efforts. In response to new federal regulations, state implementation plans (SIP) also began to address ways to improve visibility in national parks and wilderness areas. SIPs are not single documents, but rather a compilation of new and previously submitted plans, programs, district rules, state regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products.

State law makes ARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to ARB for review and approval. ARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all of the items which are included in the California SIP.

Table 3. Federal and State Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[9]	Principal Health and Atmospheric Effects	Typical Sources	SSAB Attainment Status
Ozone (O_3)[2]	1 hour 8 hours	0.09 ppm 0.070 ppm	--- 0.070 ppm[4] (4th highest in 3 years)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants (TAC). Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from ROG or VOC and nitrogen oxides (NO_X) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes.	Federal: Attainment State: Nonattainment (1-hour and 8-hour)
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[1] 6 ppm	35 ppm 9 ppm ---	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Federal: Attainment/ Unclassified State: Attainment
Respirable Particulate Matter (PM_{10})[2]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---[2] (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some TACs. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Federal: Serious Nonattainment State: Nonattainment

Table 3. Federal and State Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[9]	Principal Health and Atmospheric Effects	Typical Sources	SSAB Attainment Status
Fine Particulate Matter ($PM_{2.5}$)[2]	24 hours Annual Secondary Standard (annual)	--- 12 µg/m^3 ---	35 µg/m^3 12.0 µg/m^3 15 µg/m^3 (98th percentile over3 years)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a TAC – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	Federal: Attainment/ Unclassified State: Attainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	100 ppb[6] (98th percentile over 3 years) 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain. Part of the "NO_X" group of ozone precursors.	Motor vehicles and other mobile sources; refineries; industrial operations.	Federal: Attainment/ Unclassified State: Attainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	75 ppb[7] (99th percentile over 3 years) 0.5 ppm[9] 0.14 ppm 0.03 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Federal: Attainment/ Unclassified State: Attainment/ Unclassified
Lead (Pb)[3]	Monthly Calendar Quarter Rolling 3-month average	1.5 µg/m^3 --- ---	--- 1.5 µg/m^3 0.15 µg/m^3[10]	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also, a TAC and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from gasoline may exist in soils along major roads.	Federal: Attainment/ Unclassified State: Attainment

Table 3. Federal and State Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[9]	Principal Health and Atmospheric Effects	Typical Sources	SSAB Attainment Status
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some TACs attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Federal: N/A State: Attainment/ Unclassified
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Federal: N/A State: Attainment/ Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 percent	---	Reduces visibility. Produces haze. NOTE: not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above.	Federal: N/A State: Attainment/ Unclassified
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a TAC.	Industrial processes	Federal: N/A State: Attainment/ Unclassified

Source 1: California ARB. Website: www.arb.ca.gov/research/aaqs/aaqs2.pdf (May 4, 2016).

Source 2: ARB, Area Designations. Website: http://www.arb.ca.gov/desig/desig.htm (accessed May 2018).

N/A – not applicable; ppb – parts per billion; ppm – parts per million; ROG – reactive organic gases; SSAB – Salton Sea Air Basin; TAC – toxic air containments; VOC – volatile organic compounds

1 Rounding to an integer value is not allowed for the State 8-hour CO standard. Violation occurs at or above 9.05 ppm.

2 Annual PM_{10} NAAQS revoked October 2006; was 50 µg/m^3. 24-hour. $PM_{2.5}$ NAAQS tightened October 2006; was 65 µg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 micrograms per cubic meter (µg/m^3) to 12 µg/m^3 December 2012, and secondary standard set at 15 µg/m^3.

3 The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as TACs. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and the EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as TACs.

Table 3. Federal and State Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[8]	Federal Standard[9]	Principal Health and Atmospheric Effects	Typical Sources	SSAB Attainment Status

There are no exposure criteria for substantial health effects because of TACs, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

4 Prior to June 2005, the 1-hour NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

5 The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with an emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the “Interim” period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

6 Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

7 The EPA finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas have not yet been designated as of September 2012.

8 California standards for ozone, CO (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

9 National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

10 Lead NAAQS are not considered in Transportation Conformity analysis.

2.4 Imperial County Air Pollution Control District

The 1977 Lewis Air Quality Management Act created the ICAPCD to coordinate air quality planning efforts in the Imperial County portion of the SSAB. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the ICAPCD is the agency principally responsible for comprehensive air pollution control in the region.

Specifically, the ICAPCD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The ICAPCD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

2.4.1 Air Quality Management Plans

An air quality management plan is a regional blueprint for achieving air quality standards and healthful air. The ICAPCD has published the following SIPs:

- *2009 Imperial County State Implementation Plan for Particulate Matter Less than 10 Microns in Aerodynamic Diameter*
- *Imperial County 2013 State Implementation Plan for the 2006 24-hour $PM_{2.5}$ Moderate Nonattainment Area*
- *Imperial County 2017 State Implementation Plan for the 2008 8-hour Ozone Standard*

2.5 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: “Greenhouse Gas Mitigation” and “Adaptation.” "Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. “Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively.

GHGs vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of carbon dioxide equivalent (CO_2e). Table 4 shows the GWPs for each type of GHG. For example, SF_6 is 23,900 times more potent at contributing to global warming than CO_2.

Table 4. Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	GWP (100-year Time Horizon)
Carbon Dioxide (CO2)	50–200	1
Methane (CH4)	12	21
Nitrous Oxide (N2O)	114	310
HFC-23	270	11,700
HFC-134a	14	1,300
HFC-152a	1.4	140
PFC: Tetrafluoromethane (CF4)	50,000	6,500
PFC: Hexafluoromethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900

Source: Intergovernmental Panel on Climate Change 2007

GWP – global warming potential

2.5.1 State Regulations

Executive Order S-3-05 – Statewide GHG Emission Targets

On June 1, 2005, the Governor issued Executive Order (EO) S-3-05 which set the following GHG emission 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 EPA to oversee the efforts made to reach these targets, and to prepare biannual 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 Assembly Bill (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. ARB 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 ARB 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. ARB approved a 1990 GHG emissions level of 427 million MT of CO_2e, on December 6, 2007 in its Staff Report. Therefore, in 2020, emissions in California are required to be at or below 427 million MT of CO_2e.

Under the “business as usual” (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 million MT of CO_2e would have required a 28 percent reduction to reach the 1990 level of 427 million MT of CO_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 executive order 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.

Senate Bill 32

Senate Bill 32 (SB 32) was signed into law on September 8, 2016 and expands upon AB-32 to reduce GHG emissions. SB 32 sets into law the mandated GHG emissions target of 40 percent below 1990 levels by 2030 written into EO B-30-15.

Climate Change Scoping Plan

The Scoping Plan released by ARB in 2008 outlined the state's strategy to achieve the AB32 goals. This Scoping Plan, developed by ARB 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 ARB at its meeting in December 2008. According to the Scoping Plan, the 2020 target of 427 million MT of CO_2e requires the reduction of 169 million MT of CO_2e, or approximately 28.3 percent, from the state's projected 2020 BAU emissions level of 596 million MT of CO_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 million MT of CO_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 9 early action measures into a list of 39 recommended actions.

However, in May 2014, ARB 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, ARB is beginning to transition to the use of the AR4's 100-year GWPs in its climate change programs. ARB has recalculated the 1990 GHG emissions level with the AR4 GWPs to be 431 million MT of CO_2e, therefore the 2020 GHG emissions limit established in response to AB32 is now slightly higher than the 427 million MT of CO_2e in the initial Scoping Plan.

In 2016, the Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the Legislature passed companion legislation AB 197, which provides additional direction for developing the Scoping Plan. ARB is moving forward with a second update to the Scoping Plan to reflect the 2030 target set by EO B-30-15 and codified by SB 32. According to the 2017 Scoping Plan, the 2030 target of 260 million MT of CO_2e requires the reduction of 129 million MT of CO_2e, or approximately 33.2 percent, from the state's projected 2030 BAU emissions level of 389 million MT of CO_2e.

AB 1493 – Light-duty Vehicle GHG Emissions Standards

AB 1493 (Pavley) requires the ARB to develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the State."

On September 24, 2009, ARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles.

In January 2012, ARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars.

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 ARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. The ARB 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 ARB from implementing LCFS for the remainder of the *Rocky Mountain Farmers Union* litigation. The injunction was lifted in April 2012 so that ARB can continue enforcing the LCFS pending ARB's appeal of the federal district court ruling.

Renewable Portfolio Standard

The Renewable Portfolio Standard (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 RE 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 RE sources. RE includes (but is not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.

The RPS is included in ARB'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, ARB estimated that full achievement of the RPS would decrease statewide GHG emissions by 21.3 million MT of CO_2e. In 2010, ARB revised this number upwards to 24.0 million MT of CO_2e.

SB 375 – Regional Emissions Targets

SB 375 was signed into law in September 2008 and requires ARB to set regional targets for reducing passenger vehicle GHG emissions in accordance with the Scoping Plan. The purpose of SB 375 is to align regional transportation planning efforts, regional GHG reduction targets, and fair-share housing allocations under state housing law. SB 375 requires Metropolitan Planning Organizations to adopt a Sustainable Communities Strategy or Alternative Planning Strategy to address GHG reduction targets from cars and light-duty trucks in the context of that Metropolitan Planning Organization's RTP.

Senate Bill 97 – California Environmental Quality Act Greenhouse Gas Amendments

SB 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. The California Natural Resources Agency adopted amendments to the CEQA Guidelines to address GHG emissions, consistent with the Legislature's directive in Public Resources Code section 21083.05.

State of California Building Energy Efficiency Standards (Title 24, Part 6)

California's Energy Efficiency Standards for Residential and Nonresidential Buildings (24 California Code of Regulations Part 6) 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. The premise for the standards is that energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results in GHG emissions.

The California Energy Commission adopted new 2013 Building Energy Efficiency Standards effective July 1, 2014. The 2013 Standards improve upon the 2008 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2008 standards were updated for a number of reasons, including:

- To respond to AB 32, the Global Warming Solutions Act of 2006;
- To pursue California energy policy that will establish energy efficiency as the resource of first choice for meeting California's energy needs;
- To act on the findings of California's Integrated Energy Policy Report that indicates standards in general (as opposed to incentives or other mechanisms) are the most cost- effective means to achieve energy efficiency;

- To meet California's commitment to include aggressive energy efficiency measures in updates of state building codes; and
- To meet California's commitment to improve the energy efficiency of nonresidential buildings through aggressive standards.

Senate Bill 350

SB 350 was signed into law in September 2015. SB 350 establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Short-Lived Climate Pollutant Reduction Strategy

This final proposed Short-Lived Climate Pollutant (SLCP) Reduction Strategy (SLCP Strategy) was developed pursuant to SB 605 and SB 1383 and lays out a range of options to accelerate SLCP emission reductions in California, including regulations, incentives, and other market-supporting activities. The SLCP Strategy will inform and be integrated into the upcoming 2017 Climate Change Scoping Plan Update, which will incorporate input from a wide range of stakeholders to develop a comprehensive plan for achieving the SB 32 statewide 2030 GHG limit of 40 percent below 1990 levels. The process for updating the Scoping Plan began in fall 2015 and is scheduled for completion in 2017.

Achievable Goals through implementation of the SLCP Strategy:

- The following reductions by 2030 (from 2013 levels):
  - 50 percent for anthropogenic Black Carbon;
  - 40 percent for methane; and
  - 40 percent for hydrofluorocarbons, or HFCs.
- Convert manure and organic wastes into valuable energy and soil amendment products;
- Reduce disposal of edible foods by diverting them to food banks and other outlets;
- Reduce harmful emissions from residential wood stoves; and
- Accelerate the reduction of the fastest growing source of GHG emissions by building on global HFC phasedown agreements.

California Green Building Code

The California Green Building Standards Code (2016), referred to as CalGreen, took effect on January 1, 2017, and instituted mandatory minimum environmental performance standards for all ground-up new construction of commercial and low-rise residential buildings, state-owned buildings, schools, and hospitals.

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3 Affected Environment

3.1 Climate

The proposed project is located in Imperial County, an area within the SSAB. Imperial County extends over 4,597 square miles in the southeastern portion of California, bordering Mexico to the south, Riverside County to the north, San Diego County to the west, and the State of Arizona to the east. The Imperial Valley runs approximately north-to-south through the center of the county and extends into Mexico. The terrain elevation varies from as low as 230 feet below sea level at the Salton Sea to the north to more than 2,800 feet above sea level at the mountain summits to the east. Imperial County is a desert community with a warm, dry climate. Summers are extremely hot and dry while winters are temperate. The high temperatures, combined with low humidity, produce hot, dry summers that contribute to the buildup of ozone.

The annual average maximum temperature recorded at the Brawley Station, the closest climatological station to the project study area, is 88.5°F and the annual average minimum is 56.1°F. January is typically the coldest month in this area of the SSAB.

Average rainfall measured at the Brawley Station varies from 0.46 inches in December to 0.11 inches or less between April and July, with an average annual total of 2.65 inches.

During the summer, the Pacific High Pressure Zone is well-developed to the west of California and a thermal trough overlies California's southeast desert region. The intensity and orientation of the trough varies from day to day. Although the rugged mountainous country surrounding the Imperial Valley inhibits circulation, the influence of the trough does permit some inter-basin exchange of air with more westerly coastal locations through the mountain passes.

3.2 Monitored Air Quality Pollutants

ICAPCD monitors air quality conditions at multiple locations throughout the SSAB. The air quality monitoring station closest to the site with the most complete air quality data is the El Centro Station, and its air quality trends are representative of the ambient air quality in the project area. As the El Centro Station does not monitor CO or SO_2 concentrations, the data from the Calexico Station was used for this analysis. Table 5 shows pollutant levels, the state and federal standards, and the number of exceedances recorded at these stations from 2014 to 2016.

3.2.1 Carbon Monoxide

CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. As identified in

Table 5, the CO concentrations in the project area have not exceeded the federal or state standards in the past 3 years.

3.2.2 Ozone

O_3 is a colorless gas that is formed in the atmosphere when ROG, which includes VOC, and NO_X react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of ROG and NO_X, the components of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. As identified in Table 5, the 1-hour and 8-hour O_3 standards were exceeded in each year.

Table 5. Ambient Air Quality Monitoring Concentrations

Pollutant	Pollutant Concentration and Standard	Maximum Concentration		
		2014	2015	2016
CO	Maximum 1-hour concentration (ppm)	5.2	5.7	4.9
	Days> 20 ppm (state 1-hour standard)	0	0	0
	Days> 35 ppm (federal 1-hour standard)	0	0	0
	Maximum 8-hour concentration (ppm)	3.8	4.0	3.9
	Days> 9 ppm (state 8-hour standard)	0	0	0
	Days> 9 ppm (federal 8-hour standard)	0	0	0
O_3	Maximum 1-hour concentration (ppm)	0.101	0.099	0.108
	Days> 0.09 ppm (state 1-hour standard)	2	2	4
	Maximum 8-hour concentration (ppm)	0.080	0.079	0.082
	Days> 0.070 ppm (state 8-hour standard)	12	11	11
	Days> 0.070 ppm (federal 8-hour standard)	12	11	11
NO_2	Maximum 1-hour concentration (ppm)	0.059	0.059	0.051
	Days> 0.18 ppm (state 1-hour standard)	0	0	0
	Days> 0.10 ppm (federal 1-hour standard)	0	0	0
	Annual arithmetic mean (ppm)	0.007	0.007	0.005
	Exceed 0.030 ppm? (state annual standard)	No	No	No
	Exceed 0.053 ppm? (federal annual standard)	No	No	No
SO_2	Maximum 1-hour concentration (ppb)	11.4	16.1	11.7
	Days> 250 ppb (state 1-hour standard)	0	0	0
	Days> 75 ppb (federal 1-hour standard)	0	0	0
	Maximum 24-hour concentration (ppb)	NA	NA	NA
	Days> 40 ppb (state 24-hour standard)	NA	NA	NA
PM_{10}	Maximum 24-hour concentration (µg/m^3)	120.4	165.9	284.9
	Days> 50 µg/m^3 (state 24-hour standard)	15	7	10
	Days> 150 µg/m^3 (federal 24-hour standard)	0	1	NA
	Annual arithmetic mean (µg/m^3)	40.8	35.6	45.0
	Exceed 20 µg/m^3? (state annual standard)	Yes	Yes	Yes

Table 5. Ambient Air Quality Monitoring Concentrations

Pollutant	Pollutant Concentration and Standard	Maximum Concentration		
		2014	2015	2016
$PM_{2.5}$	Maximum 24-hour concentration (µg/m^3)	27.5	31.2	31.3
	Days> 35 µg/m^3 (federal 24-hour standard)	0	0	0
	Annual arithmetic mean (µg/m^3)	7.1	6.6	7.4
	Exceed 12 µg/m^3? (state annual standard)	No	No	No
	Exceed 12 µg/m^3? (federal annual standard)	No	No	No

Notes: > exceed; N/A – not available; ppm – parts per million; ppb – parts per billion; µg/m^3 – micrograms per cubic meter

3.2.3 Nitrogen Dioxide

NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. High concentrations of NO_2 can result in a brownish-red cast to the atmosphere with reduced visibility and can cause breathing difficulties. As identified in Table 5, the NO_2 (nitrogen dioxide) standards were not exceeded in the past 3 years.

3.2.4 Oxides of Sulfur

SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. As identified in Table 5, the SO_2 standards were not exceeded in the past 3 years.

3.2.5 Coarse Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Inhalable particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair.

Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. When inhaled, PM_{10} particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight

infections. As identified in Table 5, the state and federal PM_{10} standards were exceeded in each of the past 3 years.

3.2.6 Fine Particulate Matter

Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility. As identified in Table 5, the state and federal $PM_{2.5}$ standards were not exceeded in the past 3 years.

3.2.7 Volatile Organic Compounds or Reactive Organic Gases

VOCs are carbon-containing compounds that evaporate into the air. VOCs contribute to the formation of smog and/or may be toxic. VOCs often have an odor, and examples include gasoline, alcohol, and the solvents used in paints. The South Coast Air Quality Management District (SCAQMD) does not directly monitor VOCs. There are no specific state or federal VOC thresholds, as they are regulated by individual air districts as O_3 precursors.

3.3 Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics, particulate matter, and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The project is located in a rural area surrounded by agricultural fields.

4 Methods and Significance Thresholds

The air quality analysis contained herein evaluates the proposed project's short-term construction and long-term operation emissions using the following methodologies and significance thresholds.

4.1 Methods

4.1.1 Criteria Air Pollutants

Emissions of criteria air pollutants were estimated using existing conditions information, project construction details, and project operations information, as well as a combination of emission factors from the following sources.

- ARB modeling software EMFAC2017 for estimating exhaust emissions from on-road motor vehicles
- USEPA re-entrained paved road dust methodology
- USEPA off-road emission factors

4.1.2 Quantification of GHGs

The ICAPCD has not established thresholds or methodologies for evaluating a project's GHG impact; therefore, this analysis follows the approach used by projects located within the jurisdiction of SCAQMD.

For the purposes of determining whether or not GHG emissions from affected projects are adverse, SCAQMD specifies that project emissions must include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Based on this direction, construction emissions were amortized over the life of the project (defined as 30 years) added to the operational emissions, and compared to the applicable GHG significance thresholds.

4.2 California Environmental Quality Act Significance Criteria

For the purposes of this air quality analysis, the project would have an adverse effect on air quality or global climate change if it would:

- 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
- Expose sensitive receptors to substantial pollutant concentrations
- Generate GHG emissions, either directly or indirectly, that may have an adverse effect on the environment

- Conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs
- Create objectionable odors affecting a substantial number of people
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors)

4.3 Imperial County Air Pollution Control District Guidelines

4.3.1 Project Operation Emissions

ICAPCD has determined in its CEQA Air Quality Handbook (ICAPCD 2017) that, because the operational phase of a proposed project has the potential of creating lasting or long-term impacts on air quality, it is important that a proposed development evaluate the potential impacts carefully. Therefore, air quality analyses should compare all operational emissions of a project, including motor vehicle, area source, and stationary or point sources to the thresholds in Table 6. Table 6 provides general guidelines for determining the significance of impacts and the recommended type of environmental analysis required based on the total emissions that are expected from the operational phase of a project.

Table 6. Imperial County Air Pollution Control District Air Quality Thresholds of Significance

Pollutant	Tier I	Tier II
NOX and ROG	Less than 137 lbs/day	137 lbs/day and greater
PM10 and SOX	Less than 150 lbs/day	150 lbs/day and greater
CO and PM2.5	Less than 550 lbs/day	550 lbs/day and greater
Level of Significance	**Less than Significant**	**Significant Impact**
Level of Analysis	**Initial Study**	**Comprehensive Air Quality Analysis Report**
Environmental Document	**Negative Declaration**	**Mitigated ND or EIR**

Source: ICAPCD 2017

Tier I

Any proposed residential, commercial, or industrial development with a potential to emit less than 137 lbs/day of NO_X or ROG; less than 150 lbs/day of PM_{10} or SO_X; or less than 550 lbs/day of CO or $PM_{2.5}$ would not be required to develop a Comprehensive Air Quality Analysis Report or an EIR. However, an Initial Study would be required to help the Lead Agency determine whether the project would have a less than significant impact. It must be mentioned that the determination of a “less than significant” impact is distinguished from a “no impact” determination in that the air quality analysis conducted during the Initial Study would reveal that the operational phase of a proposed project

would in fact have a potential air quality impact which would not meet the established thresholds for the operational phase. A “no impact” determination would arise when the air quality analysis conducted during the Initial Study would reveal no potential air quality impacts. Further, in keeping with the requirements of CEQA and as a point of clarification, a “No Impact” determination must be “adequately supported by the information sources a Lead Agency cites.”

To achieve a level of insignificance the lead agency should require the implementation of all feasible standard mitigation measures listed in Section 7.2 of the ICAPCD CEQA Handbook. It is important to note that the measures identified in Section 7.2 do not represent a comprehensive list of all mitigation measures. Alternative mitigation measures may be proposed by the project proponent, the Lead Agency or the ICAPCD. The ICAPCD requires that alternative mitigation measures be fully documented with a copy of the documentation attached to the Initial Study. In addition, for some residential and commercial development projects, the developer may be required to implement off-site mitigation measures in order to further reduce the air quality impacts. All residential and commercial projects are required to abide by off-site mitigation requirements under section 7.4 of the ICAPCD CEQA Handbook.

Tier II

Any proposed residential, commercial, or industrial development with a potential to meet or exceed Tier II Levels is considered to have a significant impact on regional and local air quality and, therefore required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. These measures must be listed and incorporated into the environmental document, which is prepared by the Lead Agency. Typically, Tier II projects are required, by the Lead Agency, to prepare an EIR however, should a Lead Agency exempt a project from the preparation of an EIR the ICAPCD requires, at a minimum, a Comprehensive Air Quality Analysis Report. A properly developed Comprehensive Air Quality Analysis Report would identify the significant air quality impacts and the required mitigation measures associated with the project.

A menu of standard and discretionary mitigation measures is listed in Sections 7.2 and 7.3 of the ICAPCD CEQA Handbook. These mitigation measures serve to provide the project proponent with feasible measures to help reduce the air quality impacts identified in the Comprehensive Air Quality Analysis Report. In addition, residential, commercial, and industrial development projects may be required to implement off-site mitigation measures to further reduce the air quality impacts. All residential, commercial, and industrial projects are required to abide by off-site mitigation requirements under Section 7.4 of the ICAPCD CEQA Handbook.

4.3.2 Construction Emissions for Tier I Projects

It is not uncommon for construction related emissions, which are generally temporary in nature, to have a temporary adverse impact on air quality. Construction, by its very nature may produce a variety of emissions; however, PM_{10} is the pollutant of greatest concern.

Past experience has shown that the emissions from construction can cause substantial increases in localized concentrations of PM_{10}. The most common activities associated

with construction involve site preparation, earthmoving activities and general construction. These activities include, but are not limited to, demolition, grading, excavation, cut and fill operations, trenching, soil compaction, land clearing, grubbing, and the addition of improvements such as roadway surfaces, structures and facilities. These common construction activities generate emissions from:

1. Fuel combustion from mobile heavy-duty diesel and gasoline powered equipment
2. Portable auxiliary equipment
3. Worker commuter trips
4. Fugitive dust from soil disturbance

While construction PM_{10} emissions can vary greatly depending on the phase of the construction, level of activity and other factors, there are feasible mitigation or control measures which can be reasonably implemented to significantly reduce PM_{10} emissions. Because particulate emissions from construction activities have the potential of leading to adverse health effects as well as nuisance concerns, such as reduced visibility, all projects are required to mitigate construction impacts by regulation.

Section 7.1 of the ICAPCD CEQA Handbook represents a summary of standard mitigation measures for the control of PM_{10} as adopted by the ICAPCD in a set of rules, collectively known as Regulation VIII. Another source of construction related emissions comes from the use of diesel powered construction equipment which has been known to produce ozone precursor emissions and combustion related particulate emissions. To help projects address these emissions Section 7.1 also includes standard mitigation measures for construction equipment.

The approach of the CEQA analyses for construction particulate matter impacts should be qualitative as opposed to quantitative. While a Lead Agency may elect to quantify construction emissions, the ICAPCD recommends the implementation of effective and comprehensive mitigation measures as found in Section 7.1 of the ICAPCD CEQA Handbook. 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, apply to those construction sites which are 5 acres or more for non-residential developments or 10 acres or more in size for residential developments.

The thresholds listed in Table 7 are intended to serve as a guide for project developers and interested parties in determining the recommended type of mitigation measures.

Table 7. Imperial County Air Pollution Control District Significance Thresholds for Construction Activities

Pollutant	Threshold
PM_{10}	150 pounds/day
ROG	75 pounds /day
NO_X	100 pounds/day
CO	550 pounds/day

Source: ICAPCD 2017

4.4 Greenhouse Gas Emission Threshold

The SCAQMD's Interim Thresholds for commercial, residential, mixed use and industrial development projects are as follows:

- Industrial Projects – 10,000 MT of carbon monoxide equivalent (CO_2e) per year
- Residential, Commercial, and Mixed Use Projects (including parks, warehouses, etc.) 3,000 MT CO_2e per year

The proposed solar farm is a commercial development. Thus, for purposes of this analysis, both direct and indirect GHG emissions from the proposed project are discussed in the context of the 3,000 MT threshold level.

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5 Project Impacts

5.1 Generates Total Emissions (Direct and Indirect) in Excess of the Imperial County Air Pollution Control District Thresholds

Construction activities associated with implementation of the project have the potential to create air quality impacts through the use of heavy-duty construction equipment, construction worker vehicle trips, material delivery trips, and heavy-duty haul truck trips generated from construction activities. In addition, earthwork activities would result in fugitive dust emissions. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources.

Construction activities produce combustion emissions from various sources such as utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust emissions from these sources would vary daily as construction progresses. The use of construction equipment on site would result in localized exhaust emissions.

5.1.1 Construction Impacts

Equipment Exhaust and Related Construction Activities

Construction of the proposed project is expected to occur in multiple phases. The construction emissions associated with each of these phases was based on the construction schedule included in Table 2. The construction emissions for each phase were calculated using the equipment list, the construction schedule, and EPA emission rates. The total exhaust emissions generated within each of the construction phases are listed in Table 8 and detailed in Appendix A. As identified in Table 8, the daily construction emissions would not exceed the ICAPCD thresholds.

Table 8. Construction Emissions by Phase

(Pounds/Day)

Construction Phase	CO	ROGs	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2e
Phase 1. Site Preparation	154.0	9.5	35.4	0.1	129.5	29.1	4,615.9
Phase 2. Facility Installation	122.0	7.5	37.5	0.1	129.8	29.4	5,372.6
Phase 3. Commissioning/ Finishing	76.8	4.4	14.7	0.0	1.1	1.1	1,953.3
Peak Day	**154.0**	**9.5**	**37.5**	**0.1**	**129.8**	**29.4**	**5,372.6**
ICAPCD Thresholds	**550**	**75**	**100**	**NA**	**150**	**NA**	**NA**
Exceedance	**No**	**No**	**No**	**NA**	**No**	**NA**	**NA**

Fugitive Dust

Fugitive dust emissions are generally associated with land clearing, exposure, and cut-and-fill operations. Dust generated daily during construction would vary substantially, depending on the level of activity, the specific operations, and weather conditions. Nearby sensitive receptors and on-site workers may be exposed to blowing dust, depending upon prevailing wind conditions. Fugitive dust also would be generated as construction equipment or trucks travel on unpaved areas of the construction site.

$PM_{2.5}$ and PM_{10} emissions from construction operations were calculated using the total acreage that would be disturbed during each construction phase and are included in the emissions listed in Table 8.

5.1.2 Operational Impacts

As the proposed project would have no major stationary emission sources, operation of the proposed solar farm would result in substantially lower emissions than project construction. The proposed facility is designed to have essentially no moving parts and require little water for maintenance. Therefore, the project's operational emissions would not exceed the Tier I thresholds listed in Table 6. No mitigation measures are required.

5.2 Generate a Violation of any Ambient Air Quality Standards when Added to the Local Background

The proposed project would be constructed within an area of non-attainment for multiple pollutants. Therefore, the emissions from the proposed project's construction would contribute incrementally to existing exceedances of the air quality standards. As discussed above, the proposed project's short-term construction and long-term operational emissions would not exceed the ICAPCD's significance thresholds. Therefore, the proposed project would not contribute to an exceedance of the ambient air quality standards.

5.3 Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

As discussed in Section 5.1, the proposed project's short-term construction and long-term operational emissions would not exceed the ICAPCD's significance thresholds. In addition, the project would have to comply with the Regulation VIII standard mitigation measures for the control of $PM_{10.}$ Therefore, the proposed project would not conflict with the County's air quality plans.

5.4 Exposes Sensitive Receptors to Substantial Pollutant Concentrations

5.4.1 Construction Impacts

Project construction would result in emissions of diesel particulate matter from heavy-duty construction equipment and trucks operating in the project study area (e.g., water trucks and haul trucks). Diesel particulate matter is characterized as a TAC by ARB. The Office of Environmental Health Hazard Assessment has identified carcinogenic and chronic noncarcinogenic effects from long-term (chronic) exposure, but it has not identified health effects because of short-term (acute) exposure to diesel particulate matter. There are several farms and rural residences located within close proximity to the proposed construction areas. However, because of the size of the project, the construction duration adjacent to any one sensitive land use would be minimal. Therefore, the project construction would not expose sensitive receptors to substantial pollutant concentrations.

5.4.2 Operational Impacts

The emissions generated by the daily maintenance activities would be below the ICAPCD Tier I thresholds. Therefore, the project operations would not expose sensitive receptors to substantial pollutant concentrations.

5.5 Odors

Construction of the project could result in emission of odors from construction equipment and vehicles (e.g., diesel exhaust). It is anticipated that these odors would be short-term, limited in extent at any given time, and distributed throughout the project area during the duration of construction, and, therefore, would not affect a substantial number of individuals. This impact is considered less than significant.

5.6 Climate Change

The analysis of GHG emissions, unlike air quality analysis which is a 'per day' threshold, is an aggregate quantity requiring summation over the total estimated number of work days (i.e., the total number of days that any construction grading vehicle would have an engine running).

5.6.1 Construction Emissions

Construction of the proposed project is expected to occur in multiple phases. The construction emissions associated with each of these phases was based on the construction schedule include in Table 2. The construction emissions for each phase were calculated using the equipment list, the construction schedule, and EPA emission rates.

The total GHG emissions generated within each of the construction phases are listed in Table 9 and detailed in Appendix A. As shown, construction of the proposed project would generate 382 metric tons of CO2e. Amortized over a 30-year period, the approximate life of the project, the yearly contribution to GHG from the construction of the project would be 12.7 MT of CO_2e. Therefore, the construction emissions are less than the SCAQMD's screening threshold of 3,000 MT of CO_2e per year.

Table 9. Construction GHG Emissions by Phase

(Metric Tons)

Construction Phase	CO2	CH4	N2O	CO2e
Phase 1. Site Preparation	115.1	0.002	0.0	115.2
Phase 2. Facility Installation	248.5	0.005	0.0	248.6
Phase 3. Commissioning/Finishing	17.7	0.000	0.0	17.7
Total	381.3	0.007	0.0	381.5

5.6.2 Operational Impacts

As discussed in Section 5.1.2, operation of the proposed solar farm would result in substantially lower emissions than project construction. The proposed facility is designed to have essentially no moving parts and require little water for maintenance. In addition, once operational, the proposed solar farm would offset GHG emissions generated by electricity produced through the burning of fossil fuels. Therefore, the proposed project would not conflict with the GHG reduction goals of AB 32.

6 Mitigation Measures

6.1 Construction

The following measures would be implemented during construction activities:

Air-1 – Regulation VIII – Fugitive Dust Control Measures. All construction sites, regardless of size, must comply with the requirements contained within Regulation VIII.

Standard Mitigation Measures for Fugitive PM_{10} Control

a. 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.

b. All on site and off site unpaved roads would 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.

c. All unpaved traffic areas 1 acre or more with 75 or more average vehicle trips per day would be effectively stabilized and visible emission shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.

d. 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.

e. All Track-Out or Carry-Out would 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.

f. 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.

g. The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20 opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

"Discretionary" Measures for Fugitive Dust (PM_{10}) Control

In order to provide a greater degree of PM_{10} reductions, above those required by Regulation VIII, the ICAPCD recommends the following:

a. Water exposed soil with adequate frequency for continued moist soil.
b. Replace ground cover in disturbed areas as quickly as possible.
c. Automatic sprinkler system installed on all soil piles.
d. Vehicle speed for all construction vehicles shall not exceed 15 miles per hour on any unpaved surface at the construction site.
e. Develop a trip reduction plan to achieve a 1.5 AVR for construction employees.
f. Implement a shuttle service to and from retail services and food establishments during lunch hours.

Air-2 – Construction Equipment Control Measures

Standard Mitigation Measures for Construction Combustion Equipment

a. Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
b. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
c. Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.
d. 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.

a. 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
b. Implement activity management (e.g., rescheduling activities to reduce short-term impacts).

6.2 Operation

No significant or adverse impacts have been identified and no mitigation measures are required.

Appendix A. Detailed Construction Emissions by Phase (Pounds/Day)

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Construction Emissions

Phase	Equipment	# of Units	Hours/day or miles/trip	# of Days	Adjusted Emission Factors (lb/hr) [g/mile for on-road] ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	Emission (lb) ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
1. Site Preparation	Roller	2	4	55	0.024049	0.087623	0.278204	0.000364	0.014632	0.014193	28.75987	0.000575	10.6	38.6	122.4	0.2	6.4	6.2	12,654.3	0.3	12,660.4
	Forklift	2	6	55	0.01607	0.156198	0.183913	0.000205	0.014968	0.014519	16.18069	0.000324	10.6	103.1	121.4	0.1	9.9	9.6	10,679.3	0.2	10,684.4
	Bulldozer	2	6	55	0.103878	0.378481	1.20168	0.001573	0.063202	0.061306	124.2259	0.002485	68.6	249.8	793.1	1.0	41.7	40.5	81,989.1	1.6	82,028.5
	Front End Loader	3	5	55	0.029068	0.105911	0.336268	0.00044	0.017686	0.017155	34.76238	0.000695	24.0	87.4	277.4	0.4	14.6	14.2	28,679.0	0.6	28,692.7
	Skid Steer	4	6	55	0.042529	0.318373	0.258404	0.000249	0.029089	0.028216	19.63431	0.000393	56.1	420.3	341.1	0.3	38.4	37.2	25,917.3	0.5	25,929.7
	Utility Vehicles	4	4	55	0.3675	8.380556	0.161713	0.000162	8.75E-05	8.49E-05	12.78796	0.000256	323.4	7,374.9	142.3	0.1	0.1	0.1	11,253.4	0.2	11,258.8
	Water Truck	8	4	55	0.013395	0.044963	0.047209	0.000223	0.005103	0.00495	23.41222	0.000547	23.6	79.1	83.1	0.4	9.0	8.7	41,205.5	1.0	41,228.6
	Pickup Truck (on-road)	2	30	55	0.159795	0.878417	1.113111	0.003395	0.256814	0.249109	355.6734	0.007422	1.2	6.4	8.1	0.0	1.9	1.8	2,587.6	0.1	2,588.9
	Haul truck (on-road)	2	30	55	0.178697	0.71876	5.439809	0.01656	0.307408	0.298186	1735.735	0.0083	1.3	5.2	39.6	0.1	2.2	2.2	12,627.7	0.1	12,629.1
	Employee Commute (on-road)	25	30	55	0.031925	1.183478	0.176759	0.002881	0.144739	0.140396	287.6149	0.009042	2.9	107.6	16.1	0.3	13.2	12.8	26,155.5	0.8	26,175.2

	Daily Acres	lb/acre PM	Daily Emissions (lbs) PM10	PM2.5
Fugitive Dust	10	12.7	127.0	26.7

	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
Total	522.2	8,472.3	1,944.6	3.0	137.3	133.2	253,748.6	5.3	253,876.3
Avg Day	9.5	154.0	35.4	0.1	129.5	29.1	4,613.6	0.1	4,615.9
Threshold	75	550	100	N/A	150	N/A			N/A
Exceed?	FALSE	FALSE	FALSE	N/A	FALSE	N/A			N/A

Phase	Equipment	# of Units	Hours/day or miles/trip	# of Days	Adjusted Emission Factors (lb/hr) [g/mile for on-road] ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	Emission (lb) ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
2. Facility Installation	Pile Driver	4	8	102	0.014895	0.037245	0.190448	0.000237	0.007736	0.007504	18.70348	0.000374	48.6	121.6	621.6	0.8	25.3	24.5	61,048.2	1.2	61,077.5
	Crane	1	4	102	0.239668	1.598701	3.03159	0.003209	0.190558	0.184842	253.3844	0.005068	97.8	652.3	1,236.9	1.3	77.7	75.4	103,380.8	2.1	103,430.4
	Forklift	3	6	102	0.01607	0.156198	0.183913	0.000205	0.014968	0.014519	16.18069	0.000324	29.5	286.8	337.7	0.4	27.5	26.7	29,707.7	0.6	29,722.0
	Front End Loader	3	6	102	0.029068	0.105911	0.336268	0.00044	0.017686	0.017155	34.76238	0.000695	53.4	194.5	617.4	0.8	32.5	31.5	63,823.7	1.3	63,854.4
	Skid Steer	2	6	102	0.042529	0.318373	0.258404	0.000249	0.029089	0.028216	19.63431	0.000393	52.1	389.7	316.3	0.3	35.6	34.5	24,032.4	0.5	24,043.9
	Utility Vehicles	3	4	102	0.3675	8.380556	0.161713	0.000162	8.75E-05	8.49E-05	12.78796	0.000256	449.8	10,257.8	197.9	0.2	0.1	0.1	15,652.5	0.3	15,660.0
	Water Truck	2	4	102	0.013395	0.044963	0.047209	0.000223	0.005103	0.00495	23.41222	0.000547	10.9	36.7	38.5	0.2	4.2	4.0	19,104.4	0.4	19,115.1
	Haul truck (on-road)	10	30	102	0.178697	0.71876	5.439809	0.01656	0.307408	0.298186	1735.735	0.0083	12.1	48.5	367.0	1.1	20.7	20.1	117,093.2	0.6	117,106.6
	Pickup Truck (on-road)	3	30	102	0.159795	0.878417	1.113111	0.003395	0.256814	0.249109	355.6734	0.007422	3.2	17.8	22.5	0.1	5.2	5.0	7,198.2	0.2	7,201.8
	Employee Commute (on-road)	55	30	102	0.031925	1.183478	0.176759	0.002881	0.144739	0.140396	287.6149	0.009042	11.8	439.1	65.6	1.1	53.7	52.1	106,714.3	3.4	106,794.8

	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
Total	769.2	12,444.6	3,821.4	6.2	282.5	274.0	547,755.3	10.5	548,006.4
Avg Day	7.5	122.0	37.5	0.1	129.8	29.4	5,370.2	0.1	5,372.6
Threshold	75	550	100	N/A	150	N/A			N/A
Exceed?	FALSE	FALSE	FALSE	N/A	FALSE	N/A			N/A

Phase	Equipment	# of Units	Hours/day or miles/trip	# of Days	Adjusted Emission Factors (lb/hr) [g/mile for on-road] ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	Emission (lb) ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
3. Commissioning/Finishing	Utility Vehicles	2	4	20	0.3675	8.380556	0.161713	0.000162	8.75E-05	8.49E-05	12.78796	0.000256	58.8	1,340.9	25.9	0.0	0.0	0.0	2,046.1	0.0	2,047.1
	Skid Steer	2	7	20	0.042529	0.318373	0.258404	0.000249	0.029089	0.028216	19.63431	0.000393	11.9	89.1	72.4	0.1	8.1	7.9	5,497.6	0.1	5,500.2
	Front End Loader	4	4	20	0.029068	0.105911	0.336268	0.00044	0.017686	0.017155	34.76238	0.000695	9.3	33.9	107.6	0.1	5.7	5.5	11,124.0	0.2	11,129.3
	Forklift	2	7	20	0.01607	0.156198	0.183913	0.000205	0.014968	0.014519	16.18069	0.000324	4.5	43.7	51.5	0.1	4.2	4.1	4,530.6	0.1	4,532.8
	Water Truck	2	4	20	0.013395	0.044963	0.047209	0.000223	0.005103	0.00495	23.41222	0.000547	2.1	7.2	7.6	0.0	0.8	0.8	3,746.0	0.1	3,748.1
	Haul truck (on-road)	3	30	20	0.178697	0.71876	5.439809	0.01656	0.307408	0.298186	1735.735	0.0083	0.7	2.9	21.6	0.1	1.2	1.2	6,887.8	0.0	6,888.6
	Pickup Truck (on-road)	3	30	20	0.159795	0.878417	1.113111	0.003395	0.256814	0.249109	355.6734	0.007422	0.6	3.5	4.4	0.0	1.0	1.0	1,411.4	0.0	1,412.1
	Employee Commute (on-road)	10	30	20	0.031925	1.183478	0.176759	0.002881	0.144739	0.140396	287.6149	0.009042	0.4	15.7	2.3	0.0	1.9	1.9	3,804.4	0.1	3,807.3

	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	CH4	CO2e
Total	88.4	1,536.8	293.2	0.4	23.0	22.3	39,047.9	0.7	39,065.5
Avg Day	4.4	76.8	14.7	0.0	1.1	1.1	1,952.4	0.0	1,953.3
Threshold	137	548	137	N/A	82	N/A			N/A
Exceed?	FALSE	FALSE	FALSE	N/A	FALSE	N/A			N/A

Tier 2 Emission Rates

Adjusted EF = Steady State EF x TAF x DF

Where:

EF = Emission Factor
TAF = Transient Adjustment Factor
DF = Deterioration Factor

Deterioration "A"

ROG	0.034
CO	0.101
NOx	0.009
PM10	0.473

DF

ROG	1.017
CO	1.0505
NOx	1.0045
PM10	1.2365

			TAF							Steady State Emission Factors (g/bhphr)						Adjusted Emission Factors (g/bhphr)						Adjusted Emission Factors (lb/hr) [g/mile for on-road]						
Equipment	**HP Rating**	**Load Factor**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
AC Paver	173	0.41	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.34	0.87	4.10	0.0050	0.18	394.60	0.36	1.39	3.91	0.0050	0.27	394.60	0.06	0.22	0.61	0.001	0.04	61.70	0.001234
Aerial Lift	49	0.31	2.29	2.57	1.10	1.00	1.97	1.00	1.00	0.28	1.53	4.73	0.0050	0.34	394.60	0.65	4.13	5.23	0.0050	0.83	394.60	0.02	0.14	0.18	0.000	0.03	13.21	0.000264
Utility Vehicles	49	0.30	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.34	258.60	4.99	0.0050	0.00	394.60	11.34	258.60	4.99	0.00	0.00	394.60	0.37	8.38	0.16	0.000	0.00	12.79	0.000256
Backhoe	127	0.37	2.29	2.57	1.10	1.00	1.97	1.00	1.00	0.34	0.87	4.10	0.0050	0.18	394.60	0.79	2.34	4.53	0.0050	0.44	394.60	0.08	0.24	0.47	0.001	0.05	40.88	0.000818
Bulldozer	357	0.40	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.31	0.75	4.00	0.0050	0.13	394.60	0.33	1.20	3.82	0.0050	0.20	394.60	0.10	0.38	1.20	0.002	0.06	124.23	0.002485
Crane	399	0.73	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.37	2.49	4.72	0.0050	0.30	394.60	0.24	1.60	3.03	0.003	0.19	253.38	0.005068
Excavator	161	0.38	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.34	0.87	4.10	0.0050	0.18	394.60	0.36	1.39	3.91	0.0050	0.27	394.60	0.05	0.19	0.53	0.001	0.04	53.22	0.001064
Forklift	93	0.20	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.39	3.81	4.49	0.0050	0.37	394.60	0.02	0.16	0.18	0.000	0.01	16.18	0.000324
Front End Loader	108	0.37	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.31	0.75	4.00	0.0050	0.13	394.60	0.33	1.20	3.82	0.0050	0.20	394.60	0.03	0.11	0.34	0.000	0.02	34.76	0.000695
Generator set	84	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.37	2.49	4.72	0.0050	0.30	394.60	0.05	0.34	0.65	0.001	0.04	54.07	0.001081
Grader	179	0.41	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.31	0.75	4.00	0.0050	0.13	394.60	0.33	1.20	3.82	0.0050	0.20	394.60	0.05	0.19	0.62	0.001	0.03	63.84	0.001277
Kubota Tractors	33	0.37	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.28	1.53	4.73	0.0050	0.34	394.60	0.30	2.46	4.51	0.0050	0.52	394.60	0.01	0.07	0.12	0.000	0.01	10.62	0.000212
Pile Driver	50	0.43	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.31	0.75	4.00	0.0050	0.13	394.60	0.31	0.79	4.02	0.0050	0.16	394.60	0.01	0.04	0.19	0.000	0.01	18.70	0.000374
Portable Generators	49	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.28	1.53	4.73	0.0050	0.34	394.60	0.28	1.61	4.75	0.0050	0.42	394.60	0.02	0.13	0.38	0.000	0.03	31.54	0.000631
Portable Water Trailers with pump	84	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.37	2.49	4.72	0.0050	0.30	394.60	0.05	0.34	0.65	0.001	0.04	54.07	0.001081
Roller	87	0.38	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.31	0.75	4.00	0.0050	0.13	394.60	0.33	1.20	3.82	0.0050	0.20	394.60	0.02	0.09	0.28	0.000	0.01	28.76	0.000575
Roller Compactor	131	0.38	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.34	0.87	4.10	0.0050	0.18	394.60	0.36	1.39	3.91	0.0050	0.27	394.60	0.04	0.15	0.43	0.001	0.03	43.31	0.000866
Scraper	407	0.48	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.17	0.84	4.10	0.0050	0.13	394.60	0.18	1.35	3.91	0.0050	0.20	394.60	0.08	0.58	1.69	0.002	0.09	169.95	0.003399
Skid Steer	61	0.37	2.29	2.57	1.10	1.00	1.97	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.85	6.40	5.19	0.0050	0.58	394.60	0.04	0.32	0.26	0.000	0.03	19.63	0.000393
Trencher	78	0.50	1.05	1.53	0.95	1.00	1.23	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.39	3.81	4.49	0.0050	0.37	394.60	0.03	0.33	0.39	0.000	0.03	33.93	0.000679
Water Buffalo	84	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.37	2.49	4.72	0.0050	0.30	394.60	0.05	0.34	0.65	0.001	0.04	54.07	0.001081
Welder	78	0.48	2.29	2.57	1.10	1.00	1.97	1.00	1.00	0.37	2.37	4.70	0.0050	0.24	394.60	0.85	6.40	5.19	0.0050	0.58	394.60	0.07	0.53	0.43	0.000	0.05	32.57	0.000651
Water Truck																						0.01	0.04	0.05	0.000	0.01	23.41	0.000547
Haul truck (on-road)																						0.18	0.72	5.44	0.017	0.31	1735.73	0.0083
Pickup Truck (on-road)																						0.16	0.88	1.11	0.003	0.26	355.67	0.007422
Employee Commute (on-road)																						0.032	1.183	0.177	0.003	0.145	287.615	0.009