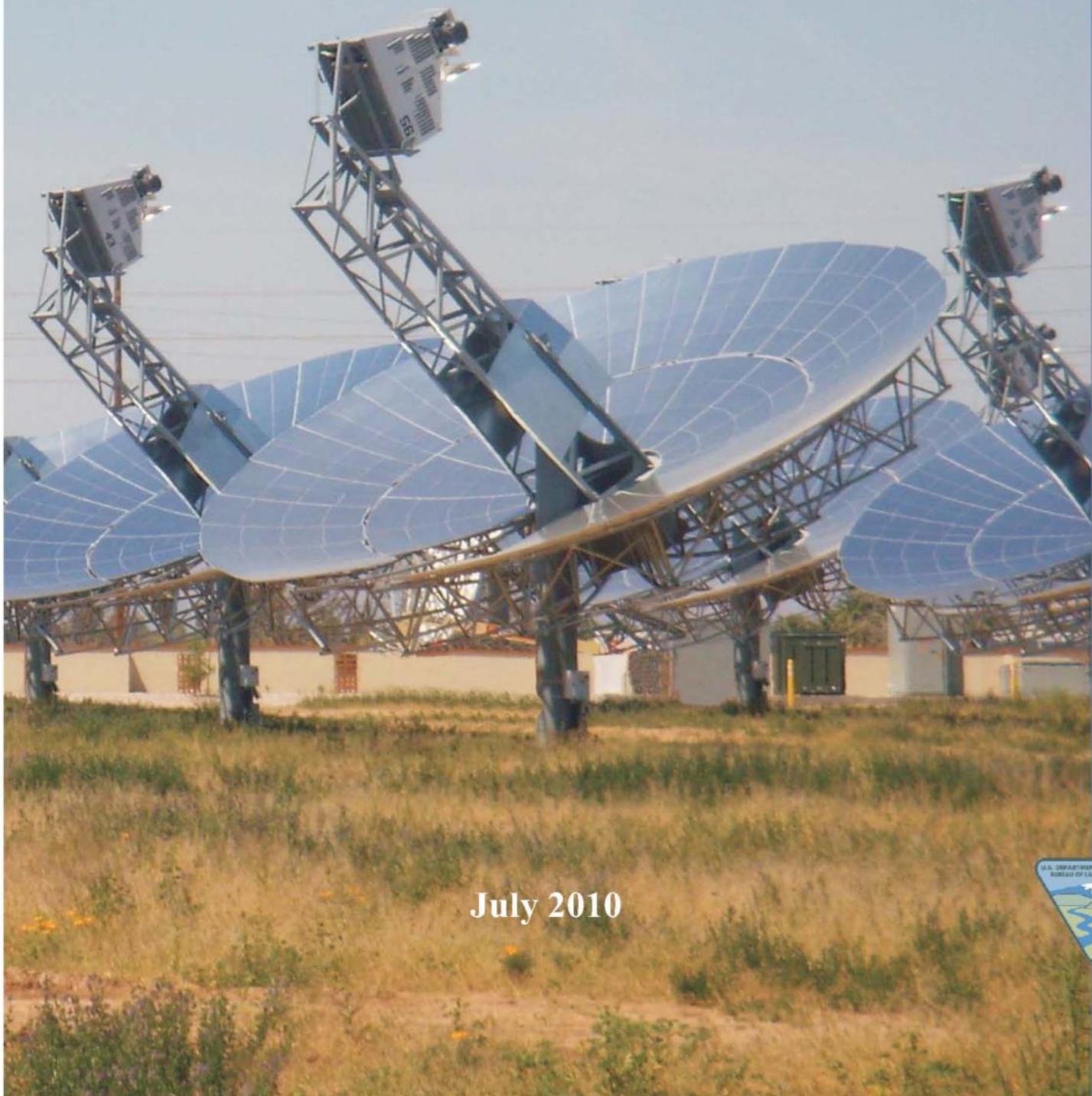


# Final Environmental Impact Statement Imperial Valley Solar Project

VOLUME 1 OF 2



July 2010



United States Department of the Interior  
Bureau of Land Management

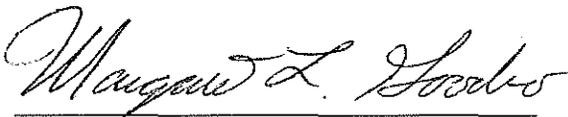
# Final Environmental Impact Statement

## Imperial Valley Solar Project

For the

El Centro Field Office  
El Centro, California

**July 2010**



Margaret L. Goodro  
Field Manager



Date

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# United States Department of the Interior



## BUREAU OF LAND MANAGEMENT

El Centro Field Office  
1661 South 4<sup>th</sup> Street  
El Centro, CA 92243-4561

In reply refer to: 1610-5.G.1.4

July 28, 2010

Dear Reader:

Enclosed is the Proposed Resource Management Plan-Amendment/Final Environmental Impact Statement (PRMP-A/FEIS) for the California Desert Conservation Area Plan and Imperial Valley Solar Project. The Bureau of Land Management (BLM) prepared this PRMP-A/FEIS in consultation with cooperating agencies, taking into account public comments received during the National Environmental Policy Act (NEPA) process. The proposed decision on the plan amendment adds the Imperial Valley Solar Project site to those sites identified in the California Desert Conservation Area Plan, as amended, for solar energy production. The decision on the Imperial Valley Solar Project will be to approve, approve with modification, or deny issuance of the right-of-way grant applied for by Imperial Valley Solar, LLC.

This PRMP-A/FEIS for the Imperial Valley Solar Project has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The PRMP-A is largely based on the Proposed Action Alternative, the preferred alternative, in the Draft Resource Management Plan-Amendment/Draft Environmental Impact Statement (DRMP-A/DEIS), which was released by the Environmental Protection Agency (EPA) on February 22, 2010 in the Notice of Availability (NOA) published in the *Federal Register* (see 75 FR 7624). The PRMP-A/FEIS for the Imperial Valley Solar Project contains the proposed plan and project decisions, a summary of changes made between the DRMP-A/DEIS and PRMP-A/FEIS, an analysis of the impacts of the decisions, a summary of the written and oral comments received during the public review period for the DRMP-A/DEIS and responses to comments.

The BLM will be accepting additional public comment on the PRMP-A/FEIS within 30 days after the EPA publishes the NOA in the *Federal Register*. Comments can be sent to Jim Stobaugh, National Project Manager, by mail: Bureau of Land Management, P.O. Box 12000, Reno, NV 89520-0006; or 1340 Financial Blvd, Reno, NV 89502; or email: [caivssp@blm.gov](mailto:caivssp@blm.gov). All substantive comments will be reviewed and responded to in the Record of Decision.

Pursuant to the BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the planning process for the PRMP-A and has an interest that is or may be adversely affected by the planning decision may protest the planning decision within 30 days from the date the EPA publishes the Notice of Availability in the *Federal Register*. Unlike the planning decision, issuance of the proposed right-of-way grant is an implementation decision that is not subject to protest under the BLM planning regulations.

For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as Attachment #1). The regulations specify the required elements in a protest. Protesting parties should take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.). To aid in ensuring the completeness of the protest, a protest checklist is attached to this letter (labeled as Attachment #2).

Protests must be in writing and mailed to the following address:

Regular Mail:

Director (210)  
Attention: Brenda Williams  
P.O. Box 66538  
Washington, D.C. 20035

Overnight Mail:

Director (210)  
Attention: Brenda Williams  
1620 L Street, N.W., Suite 1075  
Washington, D.C. 20036

Before including your address, phone number, e-mail address, or other personal identifying information in your protest, be advised that your entire protest – including your personal identifying information – may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

Emailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams - BLM Protest Expeditor at 202-912-7129, and emailed protests to Brenda\_Hudgens-Williams@blm.gov.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all protests, a Record of Decision (ROD) may be issued adopting the Approved RMP-A and making a decision regarding issuance of the right-of-way grant. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the "Planning" page of the BLM national website (<http://www.blm.gov/planning>), or by mail upon request.

Sincerely,



Margaret Goodro  
Manager, El Centro Field Office

## Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR  
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR  
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents  
Subpart 1610--Resource Management Planning  
Sec. 1610.5-2 Protest procedures.

- (a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.
- (1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.
- (2) The protest shall contain:
- (i) The name, mailing address, telephone number and interest of the person filing the protest;
  - (ii) A statement of the issue or issues being protested;
  - (iii) A statement of the part or parts of the plan or amendment being protested;
  - (iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
  - (v) A concise statement explaining why the State Director's decision is believed to be wrong.
- (3) The Director shall promptly render a decision on the protest.
- (b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

**Resource Management Plan Protest  
Critical Item Checklist**

**The following items *must* be included to constitute a valid protest  
whether using this optional format, or a narrative letter.  
(43 CFR 1610.5-2)**

BLM's practice is to make comments, including names and home addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment--including your personal identifying information--may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

**Resource Management Plan (RMP) or Amendment (RMPA) being protested:**

**Name:**

**Address:**

**Phone Number: ( )**

**Your interest in filing this protest (how will you be adversely affected by the approval or amendment of this plan?):**

**Issue or issues being protested:**

**Statement of the part or parts of the plan being protested:**

**Attach copies of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, OR an indication of the date the issue(s) were discussed for the record.**

**Date(s):**

**A concise statement explaining why the State Director's decision is believed to be wrong:**

**El Centro Field Office  
Imperial Valley Solar Project  
Final Environmental Impact Statement**

Lead Agency: Bureau of Land Management (BLM)  
El Centro Field Office  
El Centro, California

For further information, contact: Jim Stobaugh  
National Project Manager  
BLM Nevada State Office

**Abstract**

This Final Environmental Impact Statement (FEIS) addresses the possible United States Bureau of Land Management (BLM) approval of an amendment to the *California Desert Conservation Area Plan* (CDCA Plan) to allow for solar energy and of a right-of-way (ROW) grant to lease land managed by the BLM for construction and operation of a solar electricity generation facility. The Agency Preferred Alternative covers approximately 6,144 acres (ac), managed by the BLM, and would generate 709 megawatts (MW) of electricity annually. The FEIS identifies impacts of the Agency Preferred Alternative, including impacts related to biological resources, cultural resources, land use, visual resources, and hydrology, water quality, and water use. Many of these adverse impacts can be avoided or substantially reduced based on compliance with applicable laws, ordinances, regulations and standards, and compliance with measures provided in this FEIS.

Chapter 2.0 discusses the IVS project (750 MW on approximately 6,500 ac), the 709 MW Alternative (the Agency Preferred Alternative), the 300 MW Alternative (300 MW on approximately 2,600 ac), the Drainage Avoidance Alternative #1 (632 MW on approximately 4,690 ac), the Drainage Avoidance Alternative #2 (423 MW on approximately 3,153 ac), the No Action Alternative (No ROW Grant and No CDCA Plan Amendment), the No Action Alternative (No ROW Grant and Amend the CDCA Plan for No Solar), and the No Action Alternative (No ROW Grant and Amend the CDCA Plan for Other Solar). Chapter 3.0 describes the existing conditions on and in the vicinity of the project site. Chapter 4.0 describes the potential adverse environmental impacts expected under each of the Build and No Action Alternatives, including the Agency Preferred Alternative.

The Field Manager of the El Centro Field Office has the authority for site management of future activities related to the ROW grant and is the BLM Authorized Officer for this FEIS.

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## LIST OF ABBREVIATIONS AND ACRONYMS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
°F	degrees Fahrenheit
A	ampere (amp)
AAQS	ambient air quality standards
AB	Assembly Bill
ac	acres
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AERMOD	AMS/EPA Regulatory Model
af	acre-feet
AFC	Application for Certification
afy	acre-feet per year
AIChE	American Institute of Chemical Engineers
AML	appropriate management level
AMPs	Allotment Management Plans
AMS	American Meteorological Society
amsl	above mean sea level
AMT	alternative minimum tax
ANSI	American National Standards Institute

Anza Trail	Juan Bautista de Anza National Historic Trail
AO	Authorized Officer
APCDs	Air Pollution Control Districts
APCO	Air Pollution Control Officer
APE	Area of Potential Effects
API	American Petroleum Institute
APLIC	Avian Power Line Interaction Committee
APN	Assessor's Parcel Number
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ARB	California Air Resources Board
ASME	American Society for Material Engineering
AST	aboveground storage tank
ASTM	American Society for Testing Materials Standards
ATC	Authority to Construct
ATCC	Area of Traditional Cultural Concern
ATCM	Airborne Toxic Control Measure
AWEA	American Wind Energy Association
BA	Biological Assessment

BAAQMD	Bay Area Air Quality Management District
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BCC	birds or conservation concern
bgs	below ground surface
bhp	brake-horsepower
BIL	basic impulse level
BIS	Department of Business Innovation & Skills
BLM	United States Bureau of Land Management
BMPs	best management practices
BOR	Bureau of Reclamation
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
CAA	Clean Air Act
CAL FIRE	California Department of Forestry and Fire Protection
Cal-ARP	California Accidental Release Program
CalEPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Cal-OSHA	California - Occupational Safety and Health Administration
CalPIF	California Partners in Flight
CAPCOA	California Air Pollution Control Officers Association
CBC	California Building Code
CBEA	California Biomass Energy Alliance

CBO	Conference of Building Officials
CBOC	California Burrowing Owl Consortium
CBSC	California Building Standards Code
CC	City Council
CCAA	California Clean Air Act
CCR	California Code of Regulations
CCTV	closed circuit television
CDCA	California Desert Conservation Area
CDCA Plan	California Desert Conservation Area Plan
CDD	California Desert District
CDE	California Department of Education
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFATS	Chemical Facility Anti-Terrorism Standard
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey

CH <sub>4</sub>	methane
CHP	California Highway Patrol
City Council	City of El Centro City Council
CIWMB	California Integrated Waste Management Board
CMUP	Comprehensive Management and Use Plan
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNF	Cleveland National Forest
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
Corps	United States Army Corps of Engineers
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRAM	California Rapid Assessment Method
CRS	Congressional Research Service
CSC	California Species of Special Concern
CSP	California State Parks
CTG	Combustion Turbine Generator
CTTM	Comprehensive Travel and Transportation Management
CUPA	Certified Unified Program Authority

CURE	California Unions for Reliable Energy
CWA	Clean Water Act
cy	cubic yards
D	dynamic volt amp reactive
D	Delisted
dBA	A-weighted decibels
DDT	Dichloro-diphenyl-trichloroethane
DESCP	Drainage, Erosion, and Sedimentation Control Plan
DHS	Department of Homeland Security
DMG	Division of Mines and Geology (now called California Geological Survey)
DNA	Determination of NEPA Adequacy
DOC	California Department of Conservation
DOE	United States Department of Energy
DOI	United States Department of Interior
DOJ	United States Department of Justice
DOT	Department of Transportation
DPM	diesel particulate matter
DPS	Distinct Population Segment
DTC	Desert Training Center
E3	Energy and Environmental Economics, Inc.
EA/FONSI	Environmental Assessment/Finding of No Significant Impact
EB	eastbound

EEC	Eastshore Energy Center
EEMP	Equipment Emissions Mitigation Plan
EERE	Energy Efficiency and Renewable Energy
EFD	El Centro Fire Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
EO	Executive Order
EPA	United States Environmental Protection Agency
EPRI	Electric Power Research Institute
EPS	Emission Performance Standard
ERC	Emission Reduction Credit
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDOC	Final Determination of Compliance
FE	Federally listed as endangered
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration

FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
fps	feet per second
FR	Federal Register
ft	feet
FT	Federally listed as threatened
FTA	Federal Transit Administration
FTHL	flat-tailed horned lizard
g	estimated peak site acceleration
gal	gallon
gal/min	gallons per minute
GCC	Global Climate Change
GEA	Geothermal Energy Association
GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
GSU	generator set-up unit
GWh	gigawatt-hour
GWR	groundwater recharge
H <sub>2</sub> S	hydrogen sulfide
HABS	Historic American Building Survey

HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HAP	Hazardous Air Pollutant
HARP	Hotspots Analysis Reporting Program
HAs	Herd Areas
HCM	Highway Capacity Manual
HEC-RAS	Hydrologic Engineering Center River Analysis System
HFCs	hydrofluorocarbons
HI	Hazards Index or Chronic Hazards Index
HMA	Herd Management Areas
HMBP	Hazardous Materials Business Plan
hp	horsepower
HPTP	Historic Properties Treatment Plan
HRA	Health Risk Assessment
HRP	Habitat Restoration Plan
HSC	Health and Safety Code
HUC	hydrologic unit code
Hwy 80	United States Highway 80
Hz	Hertz
I-8	Interstate 8
ICAPCD	Imperial County Air Pollution Control District
ICC	Interagency Coordinating Committee

ICDTSC	Imperial County Department of Toxic Substances Control
IEPR	Integrated Energy Policy Report
IID	Imperial Irrigation District
in	inches
in/sec	inches per second
IND	Industrial Service Supply
INT	international
ISCST	Industrial Source Complex Short Term
ISO	Independent System Operator
ITC	investment tax credit
IUSD	Imperial Unified School District
IVEDC	Imperial Valley Economic Development Corporation
IVRM	Interim Visual Resource Management
IVS	Imperial Valley Solar
K	erosion factor
kA	kilo-amps
KOPs	key observation points
kV	kilovolt
kVA	kilovolt-amperes
kVAR	kilovolt-ampere reactive
kW	kilowatt
kWe	kilowatt-electric

LADWP	Los Angeles Department of Water and Power
lbs	pounds
L <sub>dn</sub>	day-night average noise level
LE	Land Evaluation
LEDPA	Least Environmentally Damaging Practicable Alternative
L <sub>eq</sub>	equivalent continuous sound level
LESA	Land Evaluation and Site Assessment
LESA Model	Land Evaluation and Site Assessment Model
LID	Low Impact Development
LLC	Limited Liability Corporation
LORS	laws, ordinances, regulations, and standards
LOS	level of service
LRAs	Local Reliability Areas
LUP	Land Use Plan
MA	management area
MBTA	Migratory Bird Treaty Act
MCR	Monthly Compliance Report
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
mg/L	milligrams per liter
mg/m <sup>3</sup>	milligrams per cubic meter
mi	miles

ml	milliliters
ML	Measuring Location
mm	millimeters
MND	Mitigated Negative Declaration
MOU	Memorandum of Understanding
mph	miles per hour
MPP	Mirror Positioning Plan
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
msl	mean sea level
MT	metric ton
MTBF	mean time between failure
MTCO <sub>2</sub> e	metric tons of carbon dioxide equivalent
MTS	Metropolitan Transit System
MUC L	Multiple-Use Class Limited
MUN	Municipal and Domestic Water Supply
MVA	megavolt-amperes
MVAR	megavolt-ampere reactive
MW	megawatts
Mw	Maximum Earthquake Magnitude
MWh	megawatt-hour
N/A	Not Applicable

N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFP	National Fire Plan
NFPA	National Fire Protection Association
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO <sub>2</sub>	nitrogen dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	United States National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council

NSPS	New Source Performance Standard
NSR	New Source Review
NTP	Notice to Proceed
O&M	operations and maintenance
O <sub>2</sub>	oxygen
O <sub>3</sub>	ozone
OCA	Off-site Consequence Analysis
OCWGB	Ocotillo/Coyote Wells Groundwater Basin
OEHHA	Office of Environmental Health Hazard Assessment
OHV	off-highway vehicle
OII	Order Initiating an Informational
OLM	Ozone Limiting Method
OSHA	United States Occupational Safety and Health Administration
OTC	once-through cooling
PA	Programmatic Agreement
PA	Planning Area
PALS	pre-acquisition liability survey
PBS	Peninsular bighorn sheep
PCA	Pest Control Advisor
PCU	power conversion unit
PDF	Portable Document Format
PDOC	Preliminary Determination of Compliance

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PEIS	Programmatic Environmental Impact Statement
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PL	Public Law
PM	particulate matter
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PMI	Point of Maximum Impact
POD	Plan of Development
PPA	Power Purchase Agreement
ppm	parts per million
ppmv	parts per million by volume
ppmvd	parts per million by volume, dry
PRC	Public Resources Code
PRIA	Public Rangelands Improvement Act of 1978
PRM	Paleontological Resource Monitors
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PRPA	Paleontologic Resources Preservation Act
PRS	Paleontological Resources Supervisor
PSA	Preliminary Staff Assessment
PSD	Prevention of Significant Deterioration
psi	pounds per square inch

PTO	Permit to Operate
PTZ	pan, tilt, and zoom
PV	photovoltaic
PVC	polyvinyl chloride
QFER	Quarterly Fuel and Energy Report
R	Rare
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RCRA	Resource Conservation and Recovery Act
REC I	Water Contact Recreation
REC II	Non-contact Water Recreation
RECs	Recognized Environmental Conditions
REF	Renewable Electricity Future
RELS	Reference Exposure Levels
RETI	Renewable Energy Transmission Initiative
RMP	Resource Management Plan
RO	reverse osmosis
ROD	Record of Decision
ROG	reactive organic gases
Route S80	Imperial County Route S80
ROW	right-of-way
ROWD	Report of Waste Discharge

RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
RUSLE2	Revised Universal Soil Loss Equation
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
S	Sensitive
SA/DEIS	Staff Assessment/Draft Environmental Impact Statement
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SC	sediment control
SCADA	supervisory control and data acquisition
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SCE	Southern California Edison
SCEC	Southern California Earthquake Center
scf	standard cubic feet
scfh	standard cubic feet of hydrogen per hour
SCPBRG	Santa Cruz Predatory Bird Research Group
SCWD	Seeley County Water District
SDAR	San Diego and Arizona Railroad
SDG&E	San Diego Gas and Electric Company
SE	State listed as endangered

SES	Stirling Energy Systems
sf	square feet
SF <sub>6</sub>	sulfur hexafluoride
SFP	State fully protected
SHPO	State Historic Preservation Officer
SIC	Southeastern Information Center
SIP	State Implementation Plan
SLF	Sacred Lands File
SO <sub>2</sub>	sulfur dioxide
SO <sub>4</sub>	sulfate
SO <sub>x</sub>	sulfur oxides
SPCC	Spill Prevention Control and Countermeasures
SPRR	Southern Pacific Railroad
sq mi	square miles
SQRUs	Scenic Quality Rating Units
SR-111	State Route 111
SR-98	State Route 98
SRA	State Responsibility Area
SRP	Scientific Review Panel
SS	soil stabilization
SSAB	Salton Sea Air Basin
SSAB	Salton Sea Air Basin

ST	State listed as threatened
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWWTP	Seeley Wastewater Treatment Plant
TAC	Toxic Air Contaminants
T-BACT	Best Available Control Technology for Toxics
TC	tracking control
TDS	Total Dissolved Solids
TGA	Taylor Grazing Act
TMDLs	Total Maximum Daily Loads
TNW	traditional navigable water
tpy	tons per year
UBC	Uniform Building Code
URS	URS Corporation
US	United States
USBR	United States Bureau of Reclamation
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
UV	ultraviolet
V	volts
VAC	volts alternating current
VAR	volt-ampere reactive
VdB	velocity decibel
VDE	Visible Dust Emission
VMT	vehicle miles traveled
VOCs	volatile organic compounds
VRM	Visual Resource Management
W	watts
WAs	Wilderness Areas
WB	westbound
WDR	Waste Discharge Requirement
WE	wind erosion
WEAP	Worker Environmental Awareness Program
WEC	World Energy Council
WECC	Western Electricity Coordinating Council
WECO	Western Colorado Desert Routes of Travel Designations
WILD	Wildlife Habitat
WL	Watch List
WRCC	Western Regional Climate Center

WSS	Web Soil Survey
WTE	Wave & Tidal Energy
ybp	years before present
YDMP	Yuha Desert Management Plan
yr	year
ZOI	zone of influence

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# Executive Summary

## Background and Organization of the Final Environmental Impact Statement

### ***Background on the Environmental Process***

In August 2007, the California Energy Commission (CEC) and the United States Bureau of Land Management (BLM) California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. Consistent with that MOU, the CEC and the BLM prepared a joint environmental compliance document to address the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for the Imperial Valley Solar (IVS) project. Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for agency and public review and comment between February 12, 2010 and May 28, 2010. The SA/DEIS is incorporated by reference in this Final Environmental Impact Statement (FEIS). The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the SA/DEIS.

The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively. Specifically, the BLM prepared this FEIS for the 750 MW Alternative (IVS project). The SA/DEIS was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS. The comments received on the DEIS are addressed in this FEIS. After the publication of this FEIS, the BLM will prepare a Record of Decision (ROD) regarding the 709 MW Alternative (Agency Preferred Alternative). The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the IVS project.

### ***Project Description***

The IVS project is a privately proposed solar power farm that would be located on approximately 6,500 acres (ac) of vacant land in southwestern Imperial County, California, south of Evan Hewes Highway and north of Interstate 8 (I-8). The IVS project site includes about 6,140 ac of Federal land managed by the BLM and approximately 360 ac of privately owned land. The site is about 100 miles (mi) east of San Diego, 14 mi west of El Centro, approximately 4 mi east of Ocotillo Wells, and south of a gypsum processing site known as Plaster City.

The IVS project would be a primary power generating facility constructed in two phases. Phase I would include the construction and operation of a 300-megawatt (MW) facility and Phase II would include the construction and operation of facilities to generate an additional 450 MW. Power would be generated by up to 30,000 SunCatcher solar dish collectors

### **Organization of the Final Environmental Impact Statement**

This FEIS provides detailed descriptions of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the three No Action Alternatives evaluated in detail in the SA/DEIS and the FEIS. The FEIS describes the existing environmental setting and the potential impacts of the evaluated Alternatives. Mitigation measures for adverse impacts are provided. Section 1.5, Guide to the Final EIS, provides a detailed description of the organization and content of this FEIS.

### **Lead Agencies' Roles and Responsibilities**

The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants in California which generate 50 or more MW. The CEC certification is in lieu of any permit required by State, regional, or local agencies. The CEC must review power plant Applications for Certification (AFCs) to assess potential environmental impacts and compliance with applicable laws, ordinances, regulations, and standards (LORS). The CEC analyses regarding the IVS project in the SA/DEIS were prepared in accordance with the requirements of CEQA.

The BLM's authority for the proposed action includes the Federal Land Policy and Management Act (FLPMA) of 1976, Section 211 of the Energy Policy Act, and BLM's Solar Energy Development Policy. The FLPMA authorizes the BLM to issue right-of-way (ROW) grants for renewable energy projects. BLM's authority also extends to the BLM lands in the California Desert District, which are governed by the *California Desert Conservation Area Plan* (CDCA Plan, 1980, as amended). Because the CDCA Plan would need to be amended to allow the IVS project on the project site, BLM would also oversee that CDCA Plan amendment process for the project.

Section 404 of the Federal Clean Water Act (CWA) authorizes the Secretary of the Army, acting through the United States Army Corps of Engineers (Corps), to issue permits regulating the discharge of dredged or fill material into the waters of the United States (waters of the U.S.). The Corps has the authority to regulate such discharges on the project site.

## **Purpose and Need**

### ***Bureau of Land Management Purpose of and Need for the Proposed Action***

The BLM's purpose and need for the IVS project is to respond to Imperial Valley Solar, LLC's (now Tessera Solar, LLC) application under Title V of FLPMA for a ROW grant to construct, operate, maintain, and decommission a solar energy generation facility on public lands in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant for the IVS project. BLM's actions will also include consideration of amending the CDCA Plan to allow for solar power generation on the project site. If the BLM decides to approve the issuance of a ROW grant for the IVS project, it must first amend the CDCA Plan to allow for that solar use on the site. Section 1.2.1, Bureau of Land Management Purpose of and Need for the Proposed Action, provides additional discussion regarding the BLM purpose and need for the proposed action.

### ***United States Army Corps of Engineers Purpose of and Need for the Proposed Action***

The CWA Section 404(b)(1) Guidelines (Guidelines) promulgated by the United States Environmental Protection Agency (EPA) explain that, when an action is subject to NEPA and the Corps is the permitting agency, the analysis of alternatives prepared for NEPA will in most cases provide the information needed for analysis under the Guidelines. The Guidelines also state that, in some cases, the NEPA document may have addressed "...a broader range of alternatives than required to be considered under [the Guidelines] or may not have considered alternatives in sufficient detail to respond to the details of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information." (40 CFR 230.10(a)(4)). In light of this statement in the Guidelines, and because the project purpose statements under NEPA and the Guidelines are not necessarily identical, the Corps has reviewed and refined the project purpose to ensure it meets the standards of the Guidelines.

For CWA Section 404 purposes, the Corps' *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (Ecosphere Environmental Consulting, July 13, 2010) provided in Appendix H provides the following statement of basis and overall project purpose:

"The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action, and is used by the Corps to determine whether

an applicant's project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site).

“The basic project purpose for the proposed action is “Energy Production.” Although the basic project purpose is not water dependent, the project will not affect any special aquatic sites. Therefore, the rebuttal presumptions that there are less damaging alternatives for the proposed activity that would not affect special aquatic sites does not apply (40 CFR 230.10(a)(3)).

“The overall project purpose serves as the basis for the Corps Section 404B-1 Alternatives Analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals for the project, and which allows a reasonable range of alternatives.

“The Corps' overall project purpose is ‘To provide a solar energy facility ranging in size from 300 MW to 650 MW in Imperial County, California.’”

The Corps is a cooperating agency with the BLM on the FEIS.

## **Department of Energy Purpose and Need**

The Energy Policy Act of 2005 established a Federal loan guarantee program for eligible energy projects that employs innovative technologies. Title XVII of the Energy Policy Act authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that “...avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and employ new or significantly improved technologies as compared to commercial technologies in service in the U.S. at the time the guarantee is issued.” The two purposes of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by the Department of Energy (DOE) is to comply with its mandate under the Energy Policy Act by selecting eligible projects that meet the goals of that Act.

The DOE is a cooperating agency with the BLM on the FEIS.

## Proposed Action and Alternatives to the Proposed Action

Table ES-1 summarizes the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives evaluated in this FEIS. The IVS project is the originally proposed action. All these Alternatives are described in detail in Chapter 2, Alternatives Including the Proposed Action. Table ES-1 also indicates which of these Alternatives would meet the BLM purpose and need for the project.

**Table ES-1 Summary of Alternatives Evaluated in Detail in the FEIS**

Alternative	Comments
<p><b>IVS Project: 750 MW Alternative</b>            750 MW            6,500 ac (6,144 ac BLM and 332 ac privately owned)            30,000 SunCatchers</p>	<p>This is the IVS project and was the original proposed action.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>709 MW Alternative: Agency Preferred Alternative</b>            709 MW            6,500 ac (6,144 ac BLM and 332 ac privately owned)            28,360 SunCatchers</p>	<p>This is the BLM Agency Preferred Alternative; it is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as described by the Corps in the <i>Draft 404B-1 Alternatives Analysis</i>, which is provided in Appendix H.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>300 MW Alternative</b>            300 MW (40% of the MW of the IVS project)            2,600 ac (40% of the acreage of the IVS project)            12,000 SunCatchers (40% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>Drainage Avoidance #1 Alternative</b>            632 MW (83% of the MW of the IVS project)            4,690 ac (72% of the acreage of the Proposed Action)            25,000 SunCatchers (83% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative was developed in consultation with the Corps to avoid drainages on the project site.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>Drainage Avoidance #2 Alternative</b>            423 MW (56% of the MW of the IVS project)            3,153 ac (49% of the acreage of the Proposed Action)            10,240 SunCatchers (42% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project. This Alternative was developed in consultation with the Corps to avoid drainages on the project site.</p> <p>This Alternative meets the BLM project purpose and need.</p>

Alternative	Comments
<p><b>No Action Alternative: No ROW Grant and No CDCA Plan Amendment</b> BLM does not approve the ROW Grant for the IVS project BLM does not amend the CDCA Plan</p>	<p>This No Action Alternative was evaluated in the SA/DEIS under both CEQA and NEPA.</p>
<p><b>Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar</b> BLM does not approve the ROW grant for the IVS project BLM amends the CDCA Plan to make the project site unavailable for future solar development</p>	<p>This No Action Alternative was evaluated in the SA/DEIS under NEPA only.</p> <p>This is not a typical No Action Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development.</p>
<p><b>Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar</b> BLM does not approve the ROW grant for the IVS project BLM amends the CDCA Plan to make the project site available for future solar development</p>	<p>This No Action Alternative was evaluated in the SA/DEIS under NEPA only.</p> <p>This is not a typical No Action Alternative because the BLM would take action to amend the CDCA Plan under this Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development.</p>

Table Source: LSA Associates, Inc. (2010).

Table Key: ac = acres; Corps = United States Army Corps of Engineers; BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; CEQA = California Environmental Quality Act; IVS = Imperial Valley Solar; MW = megawatts; NEPA = National Environmental Policy Act; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement.

The following modifications are proposed to the IVS project and the other Build Alternatives:

- Transmission Line Alignment Modifications:** The applicant proposed modifications to the original transmission line alignment that were minor shifts in two segments of the line.
- Waterline Alignment Modifications:** The waterline alignment was realigned slightly by the applicant to follow the Evan Hewes Highway ROW where feasible.

- **Hydrogen Storage Modifications:** The hydrogen gas supply, storage, and distribution system was modified by the applicant to increase the amount of hydrogen stored on site for each SunCatcher.
- **Alternative Water Supply Modifications:** An alternative water supply for construction and initial operations using water provided through the Dan Boyer Water Company in Ocotillo was identified by the applicant.

Additional details on these modifications are provided in Chapter 2.

After the release of the SA/DEIS for public review in February 2010, the BLM and Corps continued to coordinate and consult regarding possible refinements to avoid specific drainages on the IVS project site. The following modifications to the IVS project, to reduce effects to aquatic resources, the flat tailed horned lizard (FTHL), and cultural resources, were identified in that continued consultation:

- Relocating the Main Services Complex out of some of the primary wash segments of Drainage E
- Removing all SunCatchers within 100 ft of the centerline of Drainage E to provide a 200-ft wide corridor along this drainage through the site

As a result of these modifications to the IVS project, the following specific changes were made to that Alternative, which resulted in a 709 MW Alternative, which has been identified by the BLM as the Agency Preferred Alternative:

- Reduction in the total number of SunCatchers from 30,000 to 28,360 SunCatchers
- Reduction in the amount of energy generated from 750 MW to 709 MW

The 709 MW Alternative would be on the same approximately 6,500 ac as the IVS project, except that specific areas within the site, particularly along Drainage E, would be avoided and no project construction or structures would occur in those areas.

The Agency Preferred Alternative would require the following BLM actions:

- Compliance with the requirements of NEPA
- Amendment of the CDCA Plan to reflect the use of the site for solar energy generation

- Approval of a ROW grant for the approximately 6,144 ac of land under BLM jurisdiction

The Agency Preferred Alternative is also the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as described by the Corps in the *Draft 404B-1 Alternatives Analysis*, which is provided in Appendix H. The Corps participated in the development of this alternative and is currently in the process of a detailed evaluation of the analysis along with the EPA. A Final 404(b)(1) Alternatives Analysis and LEDPA determination will be included as part of the Corps' Record of Decision (ROD).

### **Connected and Cumulative Actions**

There are no other actions that are connected to the IVS project that would require any action from the BLM.

There are a large number of renewable energy and other projects proposed throughout the California desert that were identified as potentially contributing to cumulative environmental impacts. Those cumulative projects are discussed in detail in Section 2.10, Overview of the Cumulative Impacts Analysis.

### **Summary of the Affected Environment**

The site proposed for the IVS project is approximately 6,140 ac of public land administered by the BLM, and approximately 360 ac of private land under the jurisdiction of Imperial County. The northern boundary of the IVS project site is adjacent to Imperial County Route S80 (Route S80) and Plaster City, and the southern boundary is adjacent to I 8. The part of the site within the jurisdiction of the BLM is subject to the applicable land use management requirements in the CDCA Plan.

The IVS project site is in the south central part of the Imperial Valley region of the Salton Trough, a topographic and structural depression in the Colorado Desert physiographic province in southern California. Tectonically, the Salton Trough appears to lie on the boundary between the western edge of the North American Plate and the eastern edge of the Pacific Plate, with relative plate motion being transferred to the regional San Andreas Fault system via at least three more localized fault zones. The Colorado Desert province is characterized by broad alluvium-filled valleys and plains and is bounded to the west by the northwest trending granitic mountains of the Peninsular Ranges physiographic province and on the east by the south part of the Mojave Desert physiographic province.

The project site contains a variety of vegetation types including Sonoran creosote bush scrub, desert saltbush scrub, arrowweed scrub, tamarisk scrub, agricultural areas, disturbed areas, developed areas, ornamental areas, and open channel areas. Several ephemeral desert washes traverse the project site and convey flows during and following a substantial rainfall. The vegetation community in the washes is classified as Sonoran creosote bush scrub and also contains sparse stands of mesquite and tamarisk. The ephemeral washes generally contain a greater vegetative diversity and density than the creosote bush scrub habitat outside the washes. A variety of wildlife occupies the habitats on and in the vicinity of the project site.

### ***Environmental Consequences of the Proposed Action Including Cumulative***

Tables ES-2 through ES-17 summarize the environmental impacts that would occur as a result of the IVS project, the Agency Preferred Alternative, the other Build Alternatives, and the No Action Alternatives by environmental parameter. (Tables ES-2 through ES-17 are provided following the last page of text in this Executive Summary.) The tables also identify the mitigation measures, project features, and other measures included in the Alternatives to avoid or substantially reduce the adverse impacts of those Alternatives. The unavoidable adverse impacts that would remain after mitigation are also summarized briefly in these tables.

### ***Areas of Controversy***

Based on input received from agencies, organizations, Native Americans and Tribal Governments, and members of the general public during the scoping for the SA/DEIS and in comments on the SA/DEIS, several areas of controversy related to the IVS project are:

- Opposition to the placement of a large solar project on essentially undisturbed desert land
- Opposition to the overall number of renewable energy projects in the western United States
- Support for locating renewable energy projects in developed areas
- Concern regarding the impacts of this large project on biological and cultural resources
- Concern regarding the range of alternatives considered

### ***Issues to be Resolved***

Extensive verbal and written comments were received during the scoping process for the IVS project. The scoping process and public input received during that process are provided in detail in Appendix C, Scoping Report. The issues raised during scoping are summarized in Table ES-18, which appears at the end of this Executive Summary.

### **Comparison of Alternatives/Impact Summary Table**

Tables ES-2 through ES-17, which were described earlier, also allow for comparison of the impacts among all the Alternatives.

### **Public Participation**

Scoping activities were conducted by the BLM in compliance with the requirements of NEPA for the IVS project. Many of these scoping activities were conducted jointly with the CEC. The BLM's scoping activities are described in detail in the *Final Scoping Report Stirling Energy Systems Solar Two Project* (LSA Associates, Inc. September 2009), which is provided in Appendix C, Scoping Report. The scoping report documents the Notice of Intent, the scoping meetings, workshops, and the comments received during scoping.

### **Summary of Comments Received on the Staff Assessment/Draft Environmental Impact Statement**

The SA/DEIS was circulated for public review between February 12, 2010 and May 27, 2010. The Notice of Availability (NOA) of the SA/DEIS was published in the Federal Register on February 22, 2010. Appendix D, Public Comments on the Draft Environmental Impact Statement, includes all the written comment letters and emails received by the BLM in response to NOA. Appendix D also provides responses to the individual comments and copies of all the written comment letters and emails.

### **Organizations and Persons Consulted**

In addition to the scoping and SA/DEIS public review processes, the BLM has been consulting and coordinating with public agencies who may be requested to take action on the IVS project. That ongoing consultation and coordination is discussed in the following sections.

### ***United States Fish and Wildlife Service***

The BLM permit, consultation, and conferencing with the United States Fish and Wildlife Service (USFWS) required for the IVS is to comply with the Federal Endangered Species Act (ESA) for potential take of the Peninsular bighorn sheep and the FTHL. Because Federal agency action has been identified for the IVS project, Section 7 consultation/conferencing between the BLM and USFWS is required prior to any take authorization for the IVS project under the ESA from the USFWS. The BLM has submitted a Biological Assessment (BA) for take of Peninsular bighorn sheep and FTHL to the USFWS for the IVS project. Although the FTHL is not Federally listed under the ESA at this time, it is anticipated this species may be listed during the construction or operation of the IVS project. To avoid or reduce possible time constraints, the FTHL was included in the BA, should this species become Federally listed. The process of consultation with USFWS for the IVS project is ongoing.

### ***United States Army Corps of Engineers***

Project-related fill of waters of the U.S. would require authorization by the Corps pursuant to Section 404 of the Federal CWA under a Standard Individual Permit. The CWA Section 404(b)(1) Guidelines govern the issuance of permits authorizing the discharge of fill material into waters of the United States, and state that:

. . . no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. (40 CFR Section 230.10, Subdivision a).

Under the Section 404 (b)(1) Guidelines, the applicant must demonstrate avoidance or minimization of impacts to waters of the U.S. to the maximum extent practicable. Under those requirements, the Corps can only issue a CWA Section 404 permit for the LEDPA. In addition, the Corps is prohibited from issuing a permit that is contrary to the public interest. (33 CFR Section 320.4).

The Corps' assessment of the proposed project and alternatives emphasizes avoidance and minimization of impacts to waters of the U.S. The assessment method for evaluating temporary and permanent impacts to the physical and biological attributes of the aquatic environment was used by the Corps in preparing the *Draft Section 404B-1 Alternatives Analysis* in accordance with the Section 404(b)(1) Guidelines. The Corps' *Draft Section 404B-1 Alternatives Analysis* is provided in Appendix H. A Final Section 404(b)(1) Alternatives Analysis will be provided with the Corps' ROD. The evaluation of impacts and the development of appropriate mitigation

measures will also be used to demonstrate compliance with requirements for the applicant to provide compensatory mitigation for impacts to waters of the U.S. On April 28, 2008, effective June 10, 2008, the Corps issued new requirements for mitigation (the Mitigation Rule). (73 Federal Register 19594-19705 [April 10, 2008].) As discussed in the Mitigation Rule, the Corps will consider a variety of methods to ensure that any required compensatory mitigation for impacts to jurisdictional waters of the U.S. provides adequate compensation for the loss of physical and biological functions and services in the project area.

The process of consultation with Corps for the IVS project is ongoing. As noted earlier, the Corps is a cooperating agency with the BLM on the FEIS.

### ***National Park Service***

The Anza Trail is a cultural resource of national significance for its association with important events in our history and its associations with important persons in our early history, as well as for its information potential. The United States Department of the Interior National Park Service (NPS) is the administrator of the Anza Trail. BLM is consulting with the NPS regarding the Anza Trail corridor in the project area. The consultation with the NPS for the IVS project is ongoing. The NPS is a cooperating agency with the BLM on the FEIS.

### ***Native American Consultation and Coordination***

A key part of a cultural resources analysis under CEQA, NEPA, and Section 106 of the National Historic Preservation Act of 1966 (NHPA) is to determine which of the cultural resources that a proposed or alternative action may affect are important or historically significant. In accordance with 36 Code of Federal Register (CFR) Part 800.14(b), Programmatic Agreements (Pas) are used for the resolution of adverse effects for complex project situations and when effects on historic properties (resources eligible for or listed in the National Register of Historic Places (National Register) cannot be fully determined prior to approval of an undertaking. The BLM is preparing a PA in consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), the CEC, interested tribes (including tribal governments as part of government-to-government consultation), and other interested parties. The PA will govern the continued identification and evaluation of historic properties (eligible for the National Register) and historical resources (eligible for the California Register of Historic Places), as well as the resolution of any effects that may result from the IVS project. The consultation with the ACHP, SHPO and Native American Tribal Governments for the IVS project is ongoing.

### **California Department of Fish and Game**

Consultation with the California Department of Fish and Game (CDFG) is anticipated for the impacts to FTHL habitat and possible impacts to waters of the State. It is possible CDFG will determine that a Lake and Streambed Alteration Agreement may be required for the IVS project for the impacts to jurisdictional state waters. The process of consultation with CDFG for the IVS project is ongoing.

**Table ES-2 Summary of Air Quality Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p>Short-term dust and vehicle emissions during construction.</p> <p>Long-term dust, and mobile and stationary fuel/combustion emissions.</p> <p>Beneficial long-term effect associated with the reduction in greenhouse emissions and would not contribute to cumulative adverse impacts.</p>	<p><b>Project Design Features</b>                      Exhaust emissions control and fugitive dust control.</p> <p>Use of an NSPS-compliant emergency generator, certified tank filling and vehicle refueling vapor recover systems for the 5,000 gal fuel tank, and detailed measures for the operation and maintenance vehicles.</p> <p><b>Construction Measures</b>                      AQ-SC1: Air Quality Construction Mitigation Manager                      AQ-SC2: Air Quality Construction Mitigation Plan                      AQ-SC3: Construction fugitive dust control                      AQ-SC4: Dust plume response requirement                      AQ-SC5: Diesel-fueled engine control</p> <p><b>Operations Measures</b>                      AQ-SC6: Vehicles must meet applicable vehicle emissions standards.                      AQ-SC7: Operations Dust Control Plan.                      AQ-SC8: ICAPCD Authority-to-Construct and Permit-to-Operate documents.                      AQ-SC9: Emergency generator to meet or</p>	<p>None.</p>

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		<p>exceed applicable emissions standards.</p> <p><i>AQ-SC10</i>: Gasoline tank to meet or exceed all vapor recovery and standing loss requirements.</p> <p><b>ICAPCD Regulations</b></p> <p><i>Rule 201</i>: Authority-to-Construct and Permit-to-Operate documents.</p> <p><i>Regulation IV</i>: Prohibitions (Rule 207: new and modified stationary source requirements, Rule 400: on fuel burning equipment, Rule 401: opacity of emissions, Rule 403: general limitation on the discharge of air contaminants, Rule 405: sulfur compounds emissions standards, limitations, and prohibitions, and Rule 407: nuisance).</p> <p><i>Regulation VIII</i>: Fugitive Dust Rules (Rule 800: general requirements for control of fine particulate matter, Rule 801: construction and earthmoving activities, Rule 802: bulk materials, Rule 803: carry-out and track-out, Rule 804: open areas, Rule 805: paved and unpaved roads, and Rule 806: conservation management practices).</p> <p><i>Regulation XI</i>: NSPS (Rule 1101: NSPS).</p>	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No short- or long-term dust or vehicle emissions. No long-term beneficial effect.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potential for short- and long-term dust and vehicle emissions and beneficial effects similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; gal = gallon; ICAPCD = Imperial County Air Pollution Control District; IVS = Imperial Valley Solar; MW = megawatts; NSPS = New Source Performance Standards; ROW = right-of-way.

**Table ES-3 Summary of Biological Resources Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<ul style="list-style-type: none"> <li>• Permanent loss of vegetation communities</li> <li>• Permanent loss of waters of the U.S. and CDFG jurisdictional streambeds</li> <li>• Potential loss of some special-status plant species</li> <li>• Affects on raptors, migratory, and special-status bird species</li> <li>• Take of burrowing mammals</li> <li>• Potential effects on Peninsular bighorn sheep</li> <li>• Take of FTHL</li> <li>• Potential harm to birds from total dissolved solids in evaporation ponds</li> <li>• Attraction to ponds will increase risk of avian collisions with transmission towers</li> <li>• Introduction of noxious weed seed to the project site</li> </ul>	<ul style="list-style-type: none"> <li>• Minimization of vegetation community removal</li> <li>• Funding to BLM for acquisition of 6,619.9 acres of equivalent lands to offset impacts to vegetation communities and suitable for FTHL</li> <li>• Acquisition and preservation of lands with nonwetland waters of the U.S. to be preserved at 1:1 (preservation: impacts) and enhancement, restoration, creation of nonwetland Waters of the U.S. at 2:1 (enhancement/restoration/creation: impacts). CDFG will require acquisition and preservation at 1:1 for impacts to CDFG jurisdictional streambeds.</li> <li>• If special-status plant species can not be avoided during construction, required mitigation will be replacement at 2:1</li> <li>• Avoidance of impacts to vegetation communities to the greatest extent feasible, measures to protect nesting birds, measures to reduce/eliminate risk of bird electrocution, and passive relocation for western burrowing owls.</li> <li>• Passive relocation of American badger and desert kit fox.</li> <li>• Fencing of project site to exclude</li> </ul>	Unavoidable adverse impacts to the FTHL individually and on a cumulative basis. No other unavoidable adverse impacts.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		<p>Peninsular bighorn sheep</p> <ul style="list-style-type: none"> <li>• Exclusionary netting/mesh on evaporation ponds will eliminate risk of bird mortality from ingesting toxic/hypersaline waters</li> <li>• Evaporation ponds located away from transmission towers</li> <li>• Noxious weed management measures during construction</li> </ul> <p><b>Construction Measures</b>  <i>BIO-1:</i> Designated biologist  <i>BIO-2:</i> Construction monitoring  <i>BIO-3:</i> FTHL special biologist  <i>BIO-4:</i> Construction monitors  <i>BIO-5:</i> Construction measure compliance  <i>BIO-6:</i> Biological monitoring, construction crew training and compliance  <i>BIO-8:</i> Biological Mitigation Plan implementation and monitoring  <i>BIO-9:</i> FTHL Management Strategy  <i>BIO-14:</i> Bird nesting period avoidance and surveys  <i>BIO-15:</i> American badgers and desert kit fox, pre-construction surveys and avoidance  <i>BIO-16:</i> Burrowing owl pre-construction surveys and avoidance  <i>BIO-19:</i> State and Federally listed species pre-</p>	

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		construction surveys and mitigation strategy  <b>Operations Measures</b> <i>BIO-7:</i> Biological Resources Mitigation Plan <i>BIO-8:</i> Biological Mitigation Plan implementation and monitoring <i>BIO-10:</i> FTHL habitat loss compensation <i>BIO-11:</i> Regulatory agency personnel site access for compliance monitoring <i>BIO-12:</i> Raven Monitoring and Control Plan <i>BIO-13:</i> Evaporation pond wildlife exclusionary measures <i>BIO-17:</i> Jurisdictional wetlands compensation <i>BIO-18:</i> Noxious Weed Management Plan <i>BIO-20:</i> Decommissioning and Reclamation Plan	
709 MW Alternative: Agency Preferred Alternative	Slightly fewer impacts than the IVS project because slightly fewer acres on the site would be affected.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same or similar impacts as the IVS project and the Agency Preferred Alternative because the site could be developed in a solar use.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; CDFG = California Department of Fish and Game; FTHL = flat-tailed horned lizard; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; U.S. = United States;

**Table ES-4 Summary of Climate Change Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>Generation of GHG emissions during construction and operation of the SunCatchers.</p> <p>Beneficial effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.</p>	None. Possible need to comply with any future GHG regulations.	None.
709 MW Alternative: Agency Preferred Alternative	<p>Generation of slightly lower GHG emissions during construction and operations than the IVS project.</p> <p>Beneficial cumulative effect in replacing high GHG emitting electricity generation with a lower greenhouse emission renewable energy source.</p>	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under	Same as the IVS project and the Agency Preferred Alternative.	None.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	this Alternative.		
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No GHG emissions or beneficial effects on the project site.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Could potentially result in GHG emissions and GHG reduction benefits similar to the IVS project and the Agency Preferred Alternative.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; GHG = greenhouse gas; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-5 Summary of Cultural and Paleontological Resources Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p><b>Cultural Resources</b> Adverse effect on historic properties.</p> <p><b>Paleontological Resources</b> Adverse impacts during construction to formations with moderate to high sensitivity.</p>	<p><b>Cultural Resources</b></p> <ul style="list-style-type: none"> <li>• Identify and evaluate cultural resources in the final APE.</li> <li>• Avoid and protect potentially significant resources.</li> <li>• Develop and implement HPTPs.</li> <li>• Conduct data recovery or other actions to resolve adverse effects.</li> <li>• Monitor construction at known ESAs.</li> <li>• Train construction personnel.</li> <li>• Properly treat human remains.</li> <li>• Monitor construction in areas of high sensitivity for buried resources.</li> <li>• Continue consultation with Native American and other traditional groups.</li> <li>• Protect and monitor National Register-eligible and/or California Register-eligible properties.</li> <li>• Complete identification efforts for the Anza Trail and coordinate mitigation efforts.</li> </ul> <p><b>Paleontological Resources</b>  <i>PAL-1</i>: PRS for mitigation monitoring  <i>PAL-2</i>: Project maps and construction scheduling information to the PRS.  <i>PAL-3</i>: PRMMP.</p>	<p>Unavoidable adverse impacts after mitigation to cultural resources as a result of the loss of resources.</p> <p>No unavoidable adverse impacts after mitigation to paleontological resources.</p>

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		<p><i>PAL-4</i>: Worker training.</p> <p><i>PAL-5</i>: Construction monitoring.</p> <p><i>PAL-6</i>: Implementation of all components of the PRMMP.</p> <p><i>PAL-7</i>: Paleontological Resources Report.</p>	
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No effect on historic properties and paleontological resources.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No effect on historic properties and paleontological resources.	None.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same impacts on historic resources and paleontological resources as the IVS project covering the entire site.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: APE = Area of Potential Effects; California Register = California Register of Historical Resources; CDCA Plan = California Desert Conservation Area Plan; ESA = Environmentally Sensitive Area; HPTP = Historic Properties Treatment Plan; IVS = Imperial Valley Solar; MW = megawatts; National Register = National Register of Historic Places; PRMMP = Paleontological Resources Monitoring and Mitigation Plan; PRS = Paleontological Resource Specialist; ROW = right-of-way.

**Table ES-6 Summary of Fire and Fuels Management Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	Potential for increases in fuel from vegetation; and fires during construction and operation.	WORKER-1: Project Construction Safety and Health Program WORKER-2: Project Operations Safety and Health Program	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Reduced risk compared to the IVS project and the Agency Preferred Alternative due to the reduced size of the project.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Possibly similar to the Agency Preferred Alternative and the IVS project.	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-7 Summary of Geology, Soils, Topography, Mineral Resources, and Seismic Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>Potential effects to project structures associated with seismic ground motion, liquefaction, local subsidence, and expansive soil.</p> <p>No impacts related to mineral resources and Mineral Resources Zones.</p> <p>No contribution to regional subsidence,</p>	<p><i>GEO-1</i>: compliance with building codes and regulations.</p> <p><i>GEO-2</i>: design of drainage structures, grading plan, erosion and sedimentation plan; and soils, geotechnical, or foundation plans.</p>	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Similar to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources. and Mineral Resources Zones.	None.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts related associated with seismic ground motion, liquefaction, local subsidence, expansive soil, mineral resources, and Mineral Resources Zones.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project	None specified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-8 Summary of Grazing, and Wild Horses and Burros Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	No impacts to grazing or rangelands, designated Herd Areas or Herd Management Areas, wild horses and burros, or conflicts with the CDCA Plan Wild Horse and Burro Element.  No contribution to cumulative impacts related to wild horses and burros.	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-9 Summary of Land Use Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p>The IVS project would impact planned land uses as designated in the CDCA Plan (1980 as amended) and the WECO Off-Road Vehicle Access and Trail System designated Open Routes.</p> <p>The conversion of 6,500 ac of land would constrain the existing recreational uses on site and would result in adverse effects on recreational users of these lands.</p> <p>Approximately 1 million acres of land are proposed for solar and wind energy development in the Southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, result in an adverse cumulative impact.</p>	<p><i>LAND-1</i>: Legal parcel creation through Subdivision Map Act</p> <p>Amendment of the CDCA Plan to allow this solar project on the site.</p> <p>Amendment of the WECO Off-Road Vehicle Access and Trail System designated Open Routes on the project site.</p>	<p>The IVS project would result in unavoidable adverse impacts related to the conversion of 6,500 ac of land and recreational users of these lands; reduced OHV access routes and recreational opportunities on the site as envisioned in the CDCA Plan and the WECO amendment.</p> <p>The IVS project, with other solar and wind energy development in the Southern California desert, would contribute to a cumulative adverse impacts related to the conversion of those lands.</p>
<p>709 MW Alternative: Agency Preferred Alternative</p>	<p>Same as the IVS project.</p>	<p>Same as the IVS project.</p>	<p>Same as the IVS project.</p>

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the Agency Preferred Alternative and the IVS project.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

**Table ES-10 Summary of Noise Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>Potential short-term adverse impacts during construction.</p> <p>Potential long-term increases in noise levels during operations.</p>	<p><i>NOISE-1:</i> Notice of the initiation of construction and telephone contact information for complaints during construction and the first year of operation.</p> <p><i>NOISE-2:</i> Implementation and documentation of the noise complaint process and the Noise Complaint Resolution Form during construction and operation.</p> <p><i>NOISE-3:</i> Development and implementation of a noise control program during construction.</p> <p><i>NOISE-4:</i> Community noise survey and implementation of measures to meet specific noise restrictions during operations.</p> <p><i>NOISE-5:</i> Occupational noise survey and appropriate mitigation during operations.</p> <p><i>NOISE-6:</i> Construction time restrictions.</p>	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the Agency Preferred Alternative and IVS project.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-11 Summary of Public Health and Safety, and Hazardous Materials Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p>During construction, operations, and decommissioning, the IVS project may result in potential risks to public health related to airborne dust; equipment and vehicle emissions; use, handling, storage, and disposal of hazardous materials; and disturbance of contaminated soils.</p> <p>During operations, the IVS project may result in risks associated with the use and storage of quantities of hydrogen on the site, potential spills of hazardous materials, transportation of hazardous materials, seismic ground shaking, and site security.</p>	<p><i>HAZ-1:</i> Use of specified hazardous materials only</p> <p><i>HAZ-2:</i> Hazardous Materials Business Plan</p> <p><i>HAZ-3:</i> Safety Management Plan for delivery of liquid hazardous materials</p> <p><i>HAZ-4:</i> Construction Site Security Plan</p> <p><i>HAZ-5:</i> Operation Security Plan</p> <p><i>HAZ-6:</i> Compliance with all applicable Federal laws and regulations related to hazardous and toxic materials</p> <p><i>WASTE-1:</i> Experienced and qualified professional engineer or geologist for site characterization during (if needed), demolition, excavation, and grading activities</p> <p><i>WASTE-2:</i> Inspection, sampling, and written report when potentially contaminated soil is identified</p> <p><i>WASTE-3:</i> Construction Waste Management Plan</p> <p><i>WASTE-4:</i> Obtain a hazardous waste generator identification number from the United States Environmental Protection Agency</p> <p><i>WASTE-5:</i> Proper notification and documentation of any waste management-</p>	<p>None.</p>

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
		related enforcement action by any local, state, or Federal authority <i>WASTE-6:</i> Reuse/recycling plan for at least 50% of construction and demolition materials <i>WASTE-7:</i> Operation Waste Management Plan <i>WASTE-8:</i> All spills or releases of hazardous substances, hazardous materials, or hazardous waste are properly documented, cleaned up and wastes from the release/spill are properly managed and disposed of	
709 MW Alternative: Agency Preferred Alternative	Impacts similar to but reduced compared to the IVS project because of the reduction in the disturbed area and the number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Impacts similar to the IVS project and the Agency Preferred Alternative, but substantially reduced in magnitude due to the reduced area and number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Drainage Avoidance #1 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Impacts would be similar to the IVS project and the Preferred Agency Alternative, but reduced in magnitude due to the reduced disturbed area and number of SunCatchers in this Alternative.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-12 Summary of Recreation Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<ul style="list-style-type: none"> <li>• Impacts to OHV Open Routes.</li> <li>• Vicinity impacts to the Anza Trail Corridor historic context.</li> <li>• Cumulative impacts to recreational opportunities in the California desert.</li> </ul>	<p><i>REC-1</i>: Comprehensive Interpretive Plan for the Anza Trail</p>	<p>The IVS project would result in unavoidable adverse impacts after mitigation related to:</p> <p>The conversion of over 6,000 ac of land would disrupt current recreational activities in established Federal, State, and local recreation areas which would result in adverse effects on recreational users of these lands.</p> <p>Adverse land use and planning impacts to recreation opportunities on the site as envisioned in the CDCA Plan and the WECO amendment.</p> <p>A cumulative change to the visual and historic context of the Anza Trail to the overall recreational experience of the Anza Trail.</p>
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
300 MW Alternative	Impacts would be the same as for Phase I of the IVS project on approximately 2,600 ac. Therefore, the impacts would only occur on the west half of the project site and would be reduced accordingly, including reduced adverse impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The conversion of 4,690 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative.  The impacts to the Anza Trail would be the same as or similar to the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	The conversion of 3,153 ac of land to support the components and activities associated with this Alternative would disrupt less land than under the IVS project and the Agency Preferred Alternative. This Alternative would be on the central part of the project site and would likely result in reduced adverse	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
	impacts on the Anza Trail corridor compared to the IVS project and the Agency Preferred Alternative.		
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	The site would be available for other solar projects, which could result recreation impacts similar to those under the IVS project and the Agency Preferred Alternative.	Potentially the same as the IVS project and the Agency Preferred Alternative.	Not determined, but potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ac = acres; Anza Trail = Juan Bautista de Anza National Historic Trail; CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; OHV = off-highway vehicle; ROW = right-of-way; WECO = Western Colorado Desert Routes of Travel Designations.

**Table ES-13 Summary of Socioeconomics and Environmental Justice Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>No impacts related to growth, need for new housing, displacement of existing housing and residents, and government facilities and services (emergency medical services, law enforcement, education, recreation facilities).</p> <p>Beneficial effects related to the creation of jobs, and economic effects based on expenditures for the project.</p> <p>Contribution to beneficial cumulative effects but no adverse cumulative effects.</p>	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Drainage Avoidance #2 Alternative	Less than under the IVS project and the Agency Preferred Alternative because of the smaller project under this Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts to growth and no beneficial effects.	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-14 Summary of Special Designations Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas.</p> <p>Conversion of designated agricultural land to nonagricultural uses; not considered an adverse impact.</p>	None required.	None.
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	None required.	None.
300 MW Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #1 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
Drainage Avoidance #2 Alternative	Same as the IVS project and the Agency Preferred Alternative.	None required.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	<p>No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas.</p> <p>Would not result in the conversion of less designated agricultural land to nonagricultural uses.</p>	Same as the IVS project and the Agency Preferred Alternative.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	<p>No impacts related to Wilderness Areas, Areas of Environmental Concern or Special Areas.</p> <p>Would not result in the conversion of designated agricultural land to nonagricultural uses.</p>	None required.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	<p>Not expected to impact Wilderness Areas, Areas of Environmental Concern or Special Areas.</p> <p>May result in the conversion of less designated agricultural land to nonagricultural uses; not considered an adverse impact.</p>	None required.	None.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-15 Summary of Traffic Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
IVS Project: 750 MW Alternative	<p>Short-term traffic impacts on area roads during construction.</p> <p>Construction of a crossing of existing railroad tracks.</p> <p>Damage to area roads during construction.</p> <p>Potential glare on vehicles on area roads.</p> <p>No impacts related to parking, emergency services vehicle access, water traffic, and air traffic.</p> <p>Will not contribute to cumulative impacts sufficient to result in adverse impacts on study area roads or intersections.</p>	<p>TRANS-1: traffic control plan.</p> <p>TRANS-2: required agreement with railroad owner.</p> <p>TRANS-3: repair or compensation for damaged road surfaces.</p> <p>TRANS-4: SunCatcher Mirror Positioning Plan</p>	None.
709 MW Alternative: Agency Preferred Alternative	Fewer impacts than the IVS project due to the smaller number of SunCatchers.	Same as the IVS project.	None.
300 MW Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	No impacts at the project site; potential impacts at sites of other renewable energy projects.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Impacts potentially similar to the Agency Preferred Alternative and the IVS project.	None identified.	Not determined.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; ROW = right-of-way.

**Table ES-16 Summary of Visual Resources Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p>The IVS project would result in permanent visual changes to the desert landscape and would introduce development in an area that is visually open and predominantly free of development.</p> <p>The visual impacts of project grading and construction would be considerable and would include a highly industrial scene of assembly and installation of the SunCatcher units.</p> <p>The project will introduce new sources of glare from the SunCatchers and nighttime lighting.</p> <p>Visual recovery from land disturbance after decommissioning could occur, although only over a long period of time, with implementation of a comprehensive revegetation program.</p>	<p><b>Construction Measures</b>  <i>VIS-7:</i> Setback and revegetation of staging area</p> <p><b>Operations Measures</b>  <i>VIS-1:</i> Surface treatment of project structures and buildings  <i>VIS-2:</i> Temporary and permanent exterior lighting  <i>VIS-3:</i> Realignment of proposed transmission interconnection  <i>VIS-4:</i> Setback of SunCatchers from I-8  <i>VIS-5:</i> Beneficial assessment compensation to NPS/BLM for impacts to Anza Trail  <i>VIS-6:</i> SunCatcher MPP</p>	<p>Given the high level of viewer sensitivity of the area and the fact that the site is undeveloped the visual impacts of the IVS project after mitigation are considered unavoidable and adverse after mitigation for construction and operations.</p> <p>The visual impacts of the IVS project in combination with other cumulative projects in the West Mesa/Yuha Desert region, and the southern California desert are considered cumulatively unavoidable and adverse after mitigation.</p> <p>There may be cumulative adverse visual impacts as a result of the decommissioning of the IVS project in combination with effects of decommissioning of nearby cumulative projects and the time span involved for recovery of the landscape.</p>

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
709 MW Alternative: Agency Preferred Alternative	Same as the IVS project.	Same as the IVS project.	Same as the IVS project.
300 MW Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be substantially less than under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #1 Alternative	The visual impacts of this Alternative would be similar to the impacts under the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
Drainage Avoidance #2 Alternative	Similar to the Agency Preferred Alternative, but because of the smaller development area, the degree and extent of those impacts would be less extensive than under the IVS project and the Agency Preferred Alternative	Same as the IVS project and the Agency Preferred Alternative.	Same as the IVS project and the Agency Preferred Alternative.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially the same as or similar to the IVS project and the Agency Preferred Alternative.	Potentially the same as or similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CDCA Plan = California Desert Conservation Area Plan; I-8 = Interstate 8; IVS = Imperial Valley Solar; MPP = Mirror Positioning Plan; MW = megawatts; NPS = United States National Park Service; ROW = right-of-way.

**Table ES-17 Summary of Water Resources Impacts by Alternative**

<b>Alternative</b>	<b>Direct, Indirect, Short- and Long-Term, and Cumulative impacts</b>	<b>Mitigation Measures, Project Design Features, and Other Measures</b>	<b>Unavoidable Adverse Impacts After Mitigation</b>
<p>IVS Project: 750 MW Alternative</p>	<p>The construction, operation, and decommissioning of the IVS project could potentially adversely impact soils, surface water, flooding, surface water quality, groundwater quality, and water supply.</p> <p>The IVS project will result in the short-term use of a local well in the Ocotillo/Coyote Wells Groundwater Basin which is part of the sole source aquifer.</p> <p>The IVS project would result in increased erosion potential on the site during construction and increased potential for pollutant runoff.</p>	<p><b>Construction Measures</b>  <i>SOIL&amp;WATER-1:</i> Drainage Erosion and Sedimentation Control Plan  <i>SOIL&amp;WATER-3:</i> Industrial Facility SWPPP  <i>SOIL&amp;WATER-5:</i> NPDES General Permit for Construction Activity</p> <p><b>Operations Measures</b>  <i>SOIL&amp;WATER-2:</i> Monitoring and verification of water use  <i>SOIL&amp;WATER-4:</i> Potable water requirements  <i>SOIL&amp;WATER-6:</i> Waste Discharge Requirements  <i>SOIL&amp;WATER-7:</i> Storm Water Damage Monitoring and Response Plan  <i>SOIL&amp;WATER-8:</i> Septic System and Leach Field Requirements  <i>SOIL&amp;WATER-9:</i> Assured water supply  <i>SOIL&amp;WATER-10:</i> Decommissioning Plan</p>	<p>None.</p>
<p>709 MW Alternative: Agency Preferred Alternative</p>	<p>Fewer impacts than the IVS project due to the construction of a smaller number of SunCatchers.</p>	<p>Same as the IVS project.</p>	<p>None.</p>
<p>300 MW Alternative</p>	<p>Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.</p>	<p>Same as the IVS project and the Agency Preferred Alternative.</p>	<p>None.</p>

Alternative	Direct, Indirect, Short- and Long-Term, and Cumulative impacts	Mitigation Measures, Project Design Features, and Other Measures	Unavoidable Adverse Impacts After Mitigation
Drainage Avoidance #1 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
Drainage Avoidance #2 Alternative	Fewer impacts than the IVS project and the Agency Preferred Alternative due to the smaller number of SunCatchers.	Same as the IVS project and the Agency Preferred Alternative.	None.
No Action Alternative: No ROW Grant and No CDCA Plan Amendment	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar	None.	None.	None.
Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar	Not determined, but could be potentially similar to the impacts under the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.	Not determined, but could be potentially similar to the IVS project and the Agency Preferred Alternative.

Table Source: LSA Associates, Inc. (2010).

Table Key: CDCA Plan = California Desert Conservation Area Plan; IVS = Imperial Valley Solar; MW = megawatts; NPDES = National Pollutant Discharge Elimination System NPDES; ROW = right-of-way; SWPPP = Storm Water Pollution Prevention Program.

**Table ES-18 Issues Raised During Scoping**

<b>Subject</b>	<b>Scoping Issue</b>
<b>Purpose and Need</b>	Provide a clear and objective statement of the project’s purpose and need.
<b>Project Description</b>	<p>Consider granting ROW for Phase I only, with Phase II dependent on approval and finalization of the Sunrise Power Link project; consider establishing requirements for a demonstration of technological and economic viability within 3 to 5 years of approval of ROW before extending the length of the ROW approval; analysis of the energy return on investment to assess the net energy production value of the project; cash bonds to cover future decommissioning costs phased consistent with the project phasing; why is the electricity generated not going to be available to IID for use in Imperial County; how will high winds and fine-grained dust affect the moveable parts of the SunCatcher assembly, the MTBF, and the need to clean the mirrors; how will the assembly be protected from the effects of high winds, sand, and dust; concern regarding viability of technology and going from small prototype to large-scale commercial facility without an intermediate level of facility or experience; project phasing; what factors will contribute to MTBF and ongoing facility maintenance; how will materials for the project be brought to the site; how much hydrogen will be stored on site; where will it be located on site; will components have any resale or recycling value; how much material might end up in landfills; who will be responsible for the bond costs; how will higher summer temperatures in Imperial County affect the system; how much water will need to be used for mirror cleaning; how much will run off into the ground versus evaporation; what effect will gypsum dust from the US Gypsum Plaster City factory have on the facilities; what was the MTBF at the New Mexico site; what is the estimated MTBF at the proposed site; how will TDS in the wastewater impoundment areas be handled to avoid runoff outside the impoundment areas or becoming airborne as dust; how will TDS be disposed of; how will the impoundment areas be managed and maintained; how will the waste impoundment areas be addressed when the facility is decommissioned, including restoration of the land; what strategies will minimize attracting birds to the wastewater impoundment areas; will the technology work; will it hold up to desert weather; not cost competitive; concerned other technologies will quickly make this technology obsolete; taxpayer liability; relationship to the Southwest Power Link and role of Sempra; SunCatcher reliability is not proven in actual operations; issues related to metal creep, metal fatigue, and seal integrity; construction of SunCatchers on site: where will that facility be, how big will it be, what are the impacts of that facility; need data on current wind conditions to understand the effects of wind resulting in downtime; does Sunrise Power Link have sufficient transmission capacity available for the project; if not, are there other sources of capacity available; need better description of evaporation ponds and the waste materials generated in those ponds; costs to produce electricity too high; refer to the San Diego Smart Energy 2020 report; concerned about availability of funding for the project; do not want transmission lines through open desert or through Anza Borrego Desert State Park; concern regarding life expectancy of dishes and what</p>

<b>Subject</b>	<b>Scoping Issue</b>
	<p>happens when they are abandoned; is there available capacity in the Southwest Power Link project: concern about the BLM land use amendment and its relationship to the updated resource management plan; will project need tax breaks or incentives; why not build the fabrication factory in the project area; what will the cost of the project be to ratepayers; concern regarding the differences between Sandia, New Mexico and the Imperial Valley; prototype was a smaller scale and in a different type of area; question regarding the value and disposal of scrap metal when the project is decommissioned; questions regarding parcels that are not part of the project or are immediately adjacent to the project site and how access and other considerations regarding those parcels will be addressed; will project roads will be paved, issue of dust generation: frequency of mirror washing; concerns regarding the reliability of the process and the ability to provide the number of solar dishes proposed for this and other projects; concerns about where the engines will be on the site; concerned that project is in early phases without details on funding and manufacturing of the project component; how does the IVS project energy generation process work; when would construction start; when will the draft land use amendment be released.</p>
<b>Alternatives</b>	<p>Provide a robust range of alternatives; explain why some alternatives were eliminated; look at alternative sites like Mesquite Lake, sites already disturbed by agriculture, or multiple sites, capacities, technologies; prioritize use if already disturbed lands and in proximity to existing transmission lines; suggest the No Action Alternative include other energy-generating options; suggest installing units in San Diego County closer to the users of the electricity or in Imperial County at dispersed locations; use the SunCatcher dish at existing natural gas or coal-fired power plants; need a project between small amount of units tested at Sandia and total proposed number of units for the project; suggest 1 MW; other technologies are less destructive, expensive, and time consuming for approvals/litigation; site closer to water sources to take advantage of gravity flow and avoid the need for pumps; alternative sources for San Diego in San Diego: rooftop solar, photovoltaics, distributed electricity; concerned that industry thinks public lands are a less expensive way of getting land than using fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots, rooftops; in-base and solar rooftop alternatives; disperse units to provide electricity to the prison, schools, hospitals, etc. or to IID or to meet high daytime demand in the county; concern regarding use of public lands for so many projects, including renewable energy when there are alternative areas where those projects could be located; shift from large mega stations to decentralized, localized, and alternative sources.</p>
<b>Air Quality</b>	<p>Ambient air quality; quantify project emissions; identify emissions sources (mobile, stationary, ground disturbance); identify the need for an EEMP and Fugitive Dust Control Plan during construction; particulate matter less than 10 microns in size; prevention of air quality impacts during project construction and operation; concerned regarding dust and potential health (asthma) effects on children; effects of sand storms and white</p>

<b>Subject</b>	<b>Scoping Issue</b>
	clouds from Plaster City; concerned regarding bringing dirty fossil fuels from Mexico to support the SDG&E/Sempra projects; effect of dust on the mirrors and other moving parts of the project; concerns regarding carbon sequestration on the affected land; air quality permit and dust mitigation; airborne soil fungi and potential effects on prisoners at the State Prison and as a general public health issue; potential impacts related to dust, hydrogen gas, and diesel emissions, and cumulative impacts with other area land uses.
<b>Biological Resources</b>	Threatened and endangered species; baseline conditions; how avoidance, minimization, and mitigation measures will protect species; long-term management and monitoring efforts; impacts to sensitive plants and animals; conduct species surveys at appropriate times of the year; invasive species during construction and operation and how they will be controlled, invasive species management plan and restoration of native species; prioritize protection of species in the project area; jurisdictional delineation; wastewater ponds should not be attractive to wildlife; effects on the burrowing owl and the flat-tailed horned lizard; need for a Streambed Alteration Agreement from the California Department of Fish and Game; impacts to big horn sheep and sheep migration route to Mexico.
<b>Climate Change</b>	Address climate change and potential effects on demographics in San Diego; how climate change could potentially affect the project; identify any climate change benefits of the project.
<b>Aviation Impacts</b>	Air space impacts; glare to pilots.
<b>Cultural Resources</b>	Complete surveys of cultural artifacts, sites, and areas in the project area; local archaeologists should be considered; ongoing consultation with Native American tribes is needed; need to address cumulative impacts; describe process for and outcome of government-to-government consultation; discuss any National Register of Historic Places properties and any Indian Sacred Sites; development of a Cultural Resources Management Plan; prioritize protection of area’s cultural resources; develop strategies to minimize and mitigate effects on cultural resources; address issues related to site potentially being designated as an ATCC; seek input from Native American groups and the State Historic Preservation Officer; potential for project and cumulative impacts on cultural resources; Concerned regarding impacts on cultural resources, National Register of Historic Places resources, Lake Cahuilla, District for the Yuha Intaglios, and cremation sites; concern regarding survival of Native American culture; include a Native American monitor in site surveys; cumulative impacts of solar and geothermal projects on BLM lands; potential sacrificial burial areas; concern regarding impacts outside immediate disturbance areas; concern regarding cultural resources, archaeological sites, historic trails in the area; concern that cultural studies be conducted by persons familiar with the desert and desert cultures; concern that Native American issues be handled appropriately and sensitively; engage Native American leaders to provide input on the cultural integrity of the area.

<b>Subject</b>	<b>Scoping Issue</b>
<b>Cumulative Impacts</b>	Identify resources that may be cumulatively impacted and the geographic area that will be impacted by the project; look at past impacts on resources; identify opportunities to avoid and minimize cumulative impacts; consider potential for cumulative impacts of this project and other nonrenewable and renewable energy, and land development projects; cumulative impacts on biological resources, cultural resources, environmental justice, air quality, visual resources, and recreation uses/users; concerned about cumulative impacts of various renewable energy projects on 2.5 million acres of BLM lands.
<b>Environmental Justice</b>	Identify environmental justice populations in the project area and potential impacts on those populations; are the impacts disproportionate on those populations; discuss any coordination with environmental justice populations.
<b>Hazardous Materials and Wastes, Hazards, and Public Health and Safety</b>	Potential for direct, indirect, and cumulative impacts of hazardous wastes generated during project construction and operation; identify types and volumes of wastes and handling, storage, disposal, and management plans; consider alternative industrial processes using less toxic materials; effects of hydrogen leakage and strategies to minimize and mitigate impacts; issues associated with the potential for Valley Fever; risks to project employees and prisoners at Centinela State Prison; concern regarding reflection from mirrors on drivers and aircraft.
<b>Land Use</b>	Identify consistency and/or conflicts with Federal, State, Tribal, and local land use plans, policies, and controls in the project study area; address project and cumulative loss of public lands to other uses (particularly energy projects); impacts to community character in the Ocotillo and Nomirage communities; definition of "limited use" designation.
<b>Noise</b>	Impacts to community character in the Ocotillo and Nomirage communities; noise impacts.
<b>Recreation</b>	Effects on recreational users, including potential hazards to those users associated with the project facilities; identify appropriate safety precautions; impacts to recreational experience at the Plaster City Open Area, Superstition Hills Recreation Area, Painted Gorge Recreation Area, and Anza-Borrego Desert State Park; cumulative effects on recreation uses/users and general quiet enjoyment of public lands.
<b>Seismic</b>	Potential damage/risks to project associated with seismic activity, including activity on the nearby Elsinore/Laguna Salada fault.
<b>Socioeconomics</b>	What kind of jobs at what skill levels will be created; will those jobs be met by existing employees in Imperial County, other American workers, or will they require employees from other countries; what are the economic impacts of the project; concern that jobs go to local people and not people brought from outside the community.
<b>Traffic</b>	Include traffic associated with Centinela State Prison.

<b>Subject</b>	<b>Scoping Issue</b>
<b>Visual Resources</b>	Effects on visual resources in the area, including potential cumulative effect of this and other projects in the area; impacts to community character in the Ocotillo and Nomirage communities, dark skies impacts; potential for glare impacts on motorists on Interstate 8, other streets, and United States Navy, United States Border Patrol, and general aviation activities in the area; assess impacts consistent with the BLM Visual Resources Management guidelines; importance of visual resources in the desert; effects of motion-sensitive lighting.
<b>Water Supplies and Use</b>	Evaluate project need for water and effects on water supply; clarify the water rights permitting process; impacts on Ocotillo/Nomirage aquifer; overall effect on demand for water; confirm that the water needed for the project is available and consistent with existing CEC policy; objects to the use of drinkable water from the Ocotillo aquifer for industrial uses; not clear that IID has committed to provide the water needed for the project; does not think there is sufficient water available for the project; the amount of water that would be stored on site and the issue of evaporation; which aquifer water will come from; concern regarding the demand for water to wash the mirrors.
<b>Groundwater</b>	Direct and indirect effects on groundwater; question effects of high TDS in area groundwater.
<b>Surface Waters</b>	Impacts on springs, open water bodies, and other aquatic resources; need for a Section 404 permit; discuss Section 303(d) impaired waters in the project area; effects on watercourses and groundwater; effects of rare floods on project facilities; debris basins located in floodplains; need for a general or individual storm water permit during construction; coordinate with appropriate water quality control agencies.

Table Source: Final Scoping Report (LSA Associates, Inc. 2009).

Table Key: ATCC = Area of Traditional Cultural Concern; BLM = United States Bureau of Land Management; CEC = California Energy Commission; EEMP = Equipment Emissions Mitigation Plan; MTBF = mean time between failure; MW = megawatts; ROW = right-of-way; SDG&E = San Diego Gas and Electric; TDS = total dissolved solids.

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# **Chapter 1**

## **Introduction and Purpose and Need**

### **1.1 Project Overview**

The Imperial Valley Solar (IVS) project is a privately proposed solar power farm that would be located on approximately 6,500 acres (ac) of vacant land in southwestern Imperial County, California, south of Evan Hewes Highway and north of Interstate 8 (I-8). The project site includes about 6,140 ac of Federal land managed by the United States Bureau of Land Management (BLM) and approximately 360 ac of privately owned land. The site is about 100 miles (mi) east of San Diego, 14 mi west of El Centro, approximately 4 mi east of Ocotillo Wells, and south of a gypsum processing site known as Plaster City.

The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) in February 2010.

The IVS project would be a primary power generating facility constructed in two phases. Phase 1 would include the construction and operation of a 300-megawatt (MW) facility and Phase 2 would include the construction and operation of facilities to generate an additional 450 MW. Power would be generated by up to 30,000 SunCatcher solar dish collectors which would be supported on individual metal pipe or drilled pier foundations. Each SunCatcher consists of a solar receiver heat exchanger and a closed-cycle, high-efficiency Solar Stirling Engine specifically designed to convert solar power to rotary power and then drive an electrical generator to produce electricity. Supporting facilities would include an operation and administration building, a maintenance building, 3 assembly buildings, a substation, a metal canopy cover for a water treatment plant, and storage tanks for fuel and water. Ancillary facilities associated with the solar array would include 2 utility lines, a new approximately 7.2 mi long water supply pipeline, and a new approximately 10.4 mi long electrical transmission line supported on 85 to 100 double-circuit towers. Other improvements would include an on-site septic system, and paved and unpaved roads for site access.

The IVS project will require approvals from the State of California Energy Commission (CEC) for the power generation aspects of the project, and the BLM for siting and operating the project on BLM lands. In addition, other Federal, State and local agencies will be involved in aspects of project development and issuance of required permits.

## **1.2 Purpose of and Need for the Proposed Action**

### **1.2.1 Bureau of Land Management Purpose of and Need for the Proposed Action**

The National Environmental Policy Act (NEPA) implementing regulations published by the Council on Environmental Quality (CEQ) states that Purpose and Need section in an Environmental Impact Statement (EIS) "...shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 Code of Federal Regulations [CFR] Section 1502.13). The section discussion sets forth the purpose of, and need for, the project as required under NEPA.

The BLM's purpose and need for the IVS project is to respond to Imperial Valley Solar, LLC's application under Title V of the Federal Land Policy and Management Act (FLPMA; 43 United States Code [USC] 1701) for a right-of-way grant to construct, operate, maintain, and decommission a solar energy generation facility on public lands in compliance with FLPMA, BLM right-of-way regulations, and other applicable Federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a right-of-way grant to Imperial Valley Solar, LLC for the IVS project. The BLM's actions will also include consideration of concurrently amending the *California Desert Conservation Area Plan* (CDCA Plan) (1980, as amended). The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not already identified in that plan be considered through the plan amendment process. If the BLM decides to approve the issuance of a right-of-way grant for the IVS project, the BLM will also amend the CDCA Plan as required to allow for that solar use on the project site.

In conjunction with FLPMA, BLM authorities include:

- Executive Order 13212 (May 18, 2001) which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "...production and transmission of energy in a safe and environmentally sound manner."
- The Energy Policy Act, Section 2211 of which states "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on public lands with a generation capacity of at least 10,000 megawatts of electricity."

- Secretarial Order 3285 (March 11, 2009) which “...establishes the development of renewable energy as a priority for the Department of the Interior.”

### **1.2.2 Draft Section 404B-1 Alternatives Analysis Basic and Overall Project Purpose**

The United States Army Corps of Engineers (Corps) is a cooperating agency with the BLM on this FEIS.

The Federal Clean Water Act (CWA) Section 404(b)(1) Guidelines (Guidelines) promulgated by the United States Environmental Protection Agency (EPA) explain that, when an action is subject to NEPA and the Corps is the permitting agency, the analysis of alternatives prepared for NEPA will in most cases provide the information needed for analysis under the Guidelines. The Guidelines also state that, in some cases, the NEPA document may have addressed “...a broader range of alternatives than required to be considered under [the Guidelines] or may not have considered alternatives in sufficient detail to respond to the details of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information.” (40 CFR 230.10(a)(4)). In light of this statement in the Guidelines, and because the project purpose statement under NEPA and the Guidelines are not necessarily identical, the Corps has reviewed and refined the project purpose to ensure it meets the standards of the Guidelines.

For CWA Section 404 purposes, the Corps’ *Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project* (Ecosphere Environmental Consulting, July 13, 2010) provided in Appendix H provides the following statement of basic and overall project purpose:

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed action, and is used by the Corps to determine whether an applicant’s project is water dependent (i.e., whether it requires access or proximity to or siting within a special aquatic site). The basic project purpose for the proposed action is “Energy Production.” Although the basic project purpose is not water dependent, the project will not affect any special aquatic sites. Therefore, the rebuttal presumptions that there are less damaging alternatives for the proposed activity that would not affect special aquatic sites does not apply (40 CFR 230.10(a)(3)).

The overall project purpose is “To provide a solar energy facility ranging in size from approximately 300 MW to 750 MW in Imperial County, California.”

### **1.2.3 Department of Energy Purpose and Need**

The Energy Policy Act of 2005 established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of the Energy Policy Act authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that “...avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.” The two purposes of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by the United States Department of Energy (DOE) is to comply with its mandate under the Energy Policy Act by selecting eligible projects that meet the goals of that Act.

The DOE is a cooperating agency with the BLM on the FEIS.

## **1.3 Agency Roles and Authorizations**

The California Energy Commission (CEC) has the exclusive authority to certify the construction, modification, and operation of electric power plants in California which would generate 50 or more megawatts of electricity. The CEC certification is in lieu of any permit required by state, regional, or local agencies to the extent permitted by Federal law (Public Resources Code (PRC), Section 25500). The CEC must review power plant Applications for Certification (AFCs) to assess potential environmental impacts including potential impacts to public health and safety, and potential measures to mitigate those impacts (PRC, Section 25519), and compliance with applicable governmental laws or standards (PRC, Section 25523 (d)). The CEC staff analyses regarding the IVS project were prepared in accordance with PRC, Section 25500 et seq.; Title 20, California Code of Regulations, Section 1701 et seq.; and the California Environmental Quality Act (CEQA, PRC, Section 21000 et seq.).

The BLM’s authority for the proposed action includes the Federal Land Policy and Management Act (FLPMA) of 1976 (43 United States Code [USC] 1701 et seq.), Section 211 of the Energy Policy Act (119 Statutes 594, 600), and BLM’s Solar Energy Development Policy (April 4, 2007). The FLPMA authorizes the BLM to issue right-of-way (ROW) grants for renewable energy projects. In addition, BLM’s authority also extends to the BLM lands in the California Desert District which are governed by the CDCA Plan. Because the CDCA Plan would need to be amended to allow the IVS project on the project site, BLM would also oversee the CDCA amendment process.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Corps, to issue permits regulating the discharge of dredged or fill material into the waters of the United States (waters of the U.S.). Waters of the U.S. are broadly defined in 33 CFR Section 328.3(a)<sup>1</sup> to include navigable waters; perennial, intermittent, and ephemeral streams; lakes, rivers, ponds, wetlands, marshes, and wet meadows.

The United States National Park Service (NPS) is a cooperating agency with the BLM on the FEIS. As a cooperating agency, the NPS did not submit any alternatives to the proposed action under its jurisdiction.

## **1.4 Background on the Joint SA/DEIS**

In August 2007, the CEC and the BLM California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of staff efforts, share staff expertise and information, promote intergovernmental coordination, and facilitate public review.

Consistent with that MOU, the CEC and the BLM prepared a joint environmental compliance document to address the requirements of CEQA and NEPA for the IVS project. Specifically, a Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) was prepared and was circulated for agency and public review and comment between February 12, 2010 and May 28, 2010.

The BLM and the CEC prepared separate final documents for compliance with NEPA and CEQA, respectively.

The BLM is preparing a Final Environmental Impact Statement for the IVS project. The comments received on the SA/DEIS are addressed in this FEIS. After the publication of this FEIS, the BLM will prepare a Record of Decision (ROD) regarding the Agency Preferred

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<sup>1</sup> This regulation, 33 CFR Section 328.3, and the definitions contained in that section, have been the subject of recent litigation. In addition, the United States Supreme Court recently addressed the scope and extent of the Corps' jurisdiction over "navigable waters" and "waters of the United States" under the CWA. *See, e.g., Solid Waste Agency of Northern Cook County versus United States Army Corps of Engineers*, 531 US 159 (2001); *Rapanos versus United States*, 126 Superior Court 2208 (2006). Despite the impact of these recent decisions, the definitions continue to provide guidance to the extent that they establish an outer limit for the extent of the Corps' jurisdiction over "waters of the United States," and, therefore, are referenced here for that purpose.

Alternative. The publication of the ROD in the Federal Register is the final step required of the BLM to meet the requirements of NEPA for the IVS project.

The CEC has a separate process for the consideration of the SA and AFC for the IVS project. Following the 90-day public comment period for the SA/DEIS, CEC staff will prepare a Supplemental SA (SSA) addressing any changes to the SA and/or the AFC for the IVS project. The SSA will be presented to the CEC for hearings and consideration of certification/approval of the AFC.

The SA/DEIS was the primary reference used in preparing this FEIS. The SA/DEIS is incorporated by reference in this FEIS.

## 1.5 Guide to the Final EIS

This FEIS contains the following sections:

- **Department of the Interior Letter:** This is the letter transmitting the FEIS to appropriate Federal and other agencies.
- **Abstract:** The abstract summarizes the proposed action and alternatives to the proposed action; the environmental impacts of the proposed action and the alternatives; and mitigation, project design features, best management practices, and other measures to address adverse impacts.
- **Section ES – Executive Summary:** This section briefly describes the background of the FEIS, the lead agencies roles and responsibilities, the project purpose and need, the proposed action, the alternatives to the proposed action, connected and cumulative actions, the affected environment, the FEIS conclusions, the impacts of the proposed action and the alternatives, the public participation for the environmental process, the Native American consultation process, and the comments received on the SA/DEIS and the responses to those comments.
- **Section 1 – Introduction and Purpose and Need:** This section provides an overview of the proposed action; describes the BLM purpose and need for the proposed action, and agency roles and authorizations; describes the Joint CEC SA/BLM DEIS process, provides a guide to the FEIS; describes the BLM Policies, Plans, and Programs relevant to the project and the FEIS; and describes other applicable plans and programs.

- **Section 2 – Alternatives Including the Proposed Action:** This section describes the construction, operation, and decommissioning of the proposed action and other Build Alternatives evaluated in detail in the FEIS; the three No Action Alternatives evaluated in detail in the FEIS; the three alternative sites not evaluated in detail in the FEIS; and other alternatives considered but eliminated from detailed analysis in the FEIS.
- **Section 3 – Affected Environment:** This section describes the existing setting on and in the vicinity of the project site related to air quality and climate; biological resources, non-native and invasive species; climate change; cultural resources and paleontology; energy; fire/fuels; geology, soils, topography, mineral resources, and seismic; grazing, and wild horses and burros; land use; noise and vibration; public health and safety, and hazardous materials; recreation; socioeconomics and environmental justice; special designations; traffic and transportation; visual resources; and water resources.
- **Section 4 – Environmental Consequences:** This section describes the methodology; defines the resources; identifies applicable regulations, plans, and policies/management goals for the impact analyses for the proposed action and the alternatives; and identifies mitigation, project design features, best management practices, and other measures to address those impacts, and summarizes the unavoidable adverse impacts for the following environmental parameters: air quality and climate; biological resources, non-native and invasive species; climate change; cultural resources and paleontology; energy; fire/fuels; geology, soils, topography, mineral resources, and seismic; grazing, and wild horses and burros; land use; noise and vibration; public health and safety, and hazardous materials; recreation; socioeconomics and environmental justice; special designations; traffic and transportation; visual resources; and water resources. This section also discusses cumulative effects, irreversible and irretrievable commitment of resources, growth inducing impacts, and short-term versus long-term productivity of the environment, and summarizes all the unavoidable adverse impacts of the proposed action.
- **Section 5 – Consultation, Coordination, and Public Participation:** This section describes the BLM scoping process for the proposed action, and the organizations and persons consulted; and provides a summary of the comments received on the SA/DEIS.
- **Section 6 – Monitoring and Compliance:** This section describes the purpose and scope of BLM monitoring compliance with the project measures during project

construction, operations, and decommissioning and how that compliance will be documented by the BLM.

- **Section 7 - Native American Consultation, Concerns, and Values:** This section discusses the Native American consultation conducted by the BLM and summarizes the specific concerns about the project and values related to the project site and area raised to the BLM by the Native American representatives during that consultation process.
- **Section 8 – List of Preparers:** This section lists the BLM, applicant, and consultant staff who participated in the preparation of the FEIS.
- **Section 9 – References:** This section lists the primary references used in the preparation of the FEIS.
- **Section 10 – Index:** This section lists key words and terms used in the FEIS and indicates the pages where those words/terms are used.
- **Section 11 – Glossary:** This section provides a glossary of key terms used in the FEIS.
- **Appendices:** The following appendices provide additional information in support of the analysis and documentation provided in this FEIS:
  - **Appendix A: Figures**
  - **Appendix B: Determination of NEPA Adequacy**
  - **Appendix C: Scoping Report:** This is provided on a compact disc bound in this volume as Appendix C.
  - **Appendix D: Comments on the Draft Environmental Impact Statement**
  - **Appendix E: Seeley Wastewater Treatment Plant Improvements**
  - **Appendix F: Documentation of Tribal Consultation**
  - **Appendix G: Draft Programmatic Agreement**
  - **Appendix H: Draft Section 404B-1 Alternatives Analysis for the Imperial Valley Solar Project**

- **Appendix I: Archaeological and Built Sites within the Area of Potential Effects for Each Build Alternative**

## **1.6 Policy Consistency and Plan Conformance**

Projects requiring Federal action or other Federal involvement require compliance with NEPA and the CEQ Regulations for Implementing NEPA (Parts 1500 to 1508). NEPA specifically requires each Federal agency to review the effects of a proposed project on the natural and human environments before taking any action concerning that project. The SA/DEIS and this FEIS document BLM's compliance with the requirements of NEPA for the IVS project.

In addition to compliance with NEPA, the IVS project is subject to requirements for consistency and conformance with a number of other applicable Federal laws and regulations and BLM policies and programs. Table 1-1 summarizes the Federal statutes; regulations; Executive Orders (EOs); and plans relevant to the IVS project by environmental parameter, briefly describes them, and indicates where in the FEIS those individual environmental parameters are evaluated for consistency and conformance with those statutes, regulations, EOs, and plans.

In addition to the primary statutes, regulations, EOs, and plans listed in Table 1-1, there are a number of other Federal statutes, regulations, EOs, and plans that will also apply to the IVS project. Those other documents are listed in detail throughout Section C in the SA/DEIS, in tables titled "Laws, Ordinances, Regulations, and Standards." Section 4.0, Environmental Consequences also includes discussions of statutes, regulations, EOs, and plans relevant to the analysis of the potential environmental impacts of the IVS project.

## **1.7 Other Applicable Plans and Programs**

In addition to the Federal statutes, regulations, EOs, and plans described above and in Table 1-1, there are also a number of State and local laws, plans, and programs that could apply to the IVS project. Those other documents are listed in detail throughout Section C in the SA/DEIS, in tables titled "Laws, Ordinances, Regulations, and Standards." The primary State and Local documents that would be applicable to the IVS project are described briefly below.

**Table 1-1 Summary of Federal Statutes, Regulations, Executive Orders, and Plans**

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
<b>GENERAL</b>		
Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) (Parts 1500–1508)	CEQ Regulations for implementing NEPA.	Throughout the Final Environmental Impact Statement (FEIS)
Federal Land Policy and Management Act (FLPMA) of 1976, as amended (43 United States Code [USC] 1701 et seq.)	<p>FLPMA provides the mandate to the United States Bureau of Land Management (BLM) for the management of public lands and resources under its stewardship under the principles of multiple use, sustained yield, and maintenance of environmental quality.</p> <p>FLPMA requires the United States Secretary of the Interior to retain and maintain public lands and authorizes the BLM to manage public lands to protect the quality, scientific, scenic, historical, archeological, and other values of those lands. It further authorizes the BLM to develop regulations and plans for the protection of public land areas of critical environmental concern, including important historic, cultural or scenic values.</p>	Throughout Sections 3.0 and 4.0
California Desert Conservation Area Plan (CDCA Plan), 1980, as amended	<p>The development of this plan was mandated as part of the FLPMA. The CDCA Plan is a comprehensive, long-range plan for the management, use, development, and protection of the public lands in the California Desert Conservation Area. The plan covers approximately 25 million acres (ac) of land in California, of which about 10 million ac are directly administered by the BLM. The site proposed for the Imperial Valley Solar (IVS) project is in an area administered by the BLM. The CDCA includes parts of the following deserts: Mojave, Sonoran, and a small part of the Great Basin.</p> <p>The CDCA Plan is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan’s goals and actions for each resource are established in its 12 elements. Each plan elements provide both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.</p>	Throughout Sections 3.0 and 4.0

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
<b>AIR QUALITY</b>		
Clean Air Act (CAA), as amended (42 USC 7401 et seq.)	The CAA regulates air emissions and pollutants from area, stationary, and mobile sources to improve air quality. The CAA authorized the United States Environmental Protection Agency (EPA) to establish national ambient air quality standards to protect public health and the environment.	Sections 3.2 and 4.2, Air Quality
<b>BIOLOGICAL RESOURCES AND NONNATIVE AND INVASIVE SPECIES</b>		
Federal Endangered Species Act (FESA) of 1973, as amended (16 USC 1531 et seq. and 50 Code of Federal Regulations [CFR] 17.1 et seq.)	The FESA provides for the protection of threatened plants, insects, fish, and wildlife. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) administer the FESA. The FESA provides for the listing of threatened and endangered species, requires consultation with the USFWS and/or the NMFS, as appropriate, for Federal actions, prohibits the taking of listed threatened and endangered species, and provides for permits to allow the incidental taking of threatened and endangered species.	Sections 3.3 and 4.3, Biological Resources
Executive Order (EO) 13112, Invasive Species, 2/3/99	This EO requires Federal agencies to take actions to prevent the introduction and spread of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts of invasive species.	Sections 3.3 and 4.3, Biological Resources
Lacey Act, as amended (16 USC 3371-3378)	This Act protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport or sale of protected species.	Sections 3.3 and 4.3, Biological Resources
Federal Noxious Weed Act of 1974, as amended	This Act established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to designate plants as noxious weeds. The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.	Sections 3.3 and 4.3, Biological Resources
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 1/10/01, and the Migratory Bird Treaty Act (MBTA; 16 USC 703 to 711)	The MBTA makes it unlawful to take or possess any migratory nongame bird or any part of such bird as designated in the MBTA.	Sections 3.3 and 4.3, Biological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
CDCA Plan – Wildlife and Vegetation Elements	These elements establish goals and identify management tools addressing the avoidance, mitigation and/or compensation of impacts to wildlife populations and habitats; as well as simultaneously maintain vegetative productivity for consumptive needs and stabilize/improve conditions populations of plant species appearing on the State and Federal lists of threatened and endangered species.	Sections 3.3 and 4.3, Biological Resources
Flat-tailed Horned Lizard (FTHL) Rangeland Management Strategy (2003)	The plan provides guidance for the conservation and management of sufficient habitat to maintain viable populations of the FTHL.	Sections 3.3 and 4.3, Biological Resources
<b>CLIMATE CHANGE</b>		
Mandatory Reporting of GHGs	The CEQ issued draft guidance on February 10, 2010, that requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of carbon dioxide equivalent (MTCO <sub>2</sub> e) emissions per year.	Sections 3.4 and 4.4, Climate Change
Council on Environmental Quality, “Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions” (February 18, 2010)	Draft guidance on ways in which Federal agencies can improve their consideration of the effects of greenhouse gas emissions in the evaluation of proposals under NEPA.	Sections 3.4 and 4.4, Climate Change
<b>CULTURAL AND PALEONTOLOGICAL RESOURCES</b>		
National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470)	The NHPA provided for the establishment of the National Register of Historic Places (National Register) to include historic properties that are significant in American history, architecture, archeology, and culture. Section 106 of the NHPA requires Federal agencies to take into account the effect of a proposed undertaking on resources listed or eligible for listing on the National Register.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
American Indian Religious Freedom Act of 1978 (42 USC 1996)	This Act is intended to protect Native American religious practices, ethnic heritage sites, and land uses.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 11593 Protection and Enhancement of the Cultural Environment 5/6/71	This EO identified several actions required of Federal agencies to contribute to the protection and enhancement of the cultural environment.	Sections 3.5 and 4.5, Cultural and Paleontological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Native American Graves Protection and Repatriation Act (1990); Title 25, USC Section 3001, et seq.,	The statute defines “cultural items,” “sacred objects,” and “objects of cultural patrimony;” establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for the return of specified cultural items.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Archaeological Resources Protection Act of 1979	The purpose of this Act is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Paleontological Resources Preservation Act	Provides for the protection of paleontological resources on Federal lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13007 Indian Sacred Sites	The Agency must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13175 Consultation and Coordination With Indian Tribal Governments	This EO mandates regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
EO 13287 Preserve America	This EO mandates that the Federal Government actively advance the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
CDCA Plan – Cultural Resources Element Goals	<p>The CDCA Plan contains the following goals related to cultural resources:</p> <ol style="list-style-type: none"> <li>1. Broaden the archaeological and historical knowledge of the CDCA through continuing efforts and the use of existing data. Continue the effort to identify the full array of the CDCA’s cultural resources.</li> <li>2. Preserve and protect representative sample of the full array of the CDCA’s cultural resources.</li> <li>3. Ensure that cultural resources are given full consideration in land use planning and management decisions, and ensure that BLM-authorized actions avoid inadvertent impacts.</li> </ol>	Sections 3.5 and 4.5, Cultural and Paleontological Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
	4. Ensure proper data recovery of significant (National Register quality) cultural resources where adverse impacts can be avoided.	
Antiquities Act of 1906 (16 USC 431-433)	Although there is no specific mention of natural or paleontological resources in the Act or in the Act’s uniform rules and regulations (43 CFR Part 3), the term “...objects of antiquity...” has been interpreted to include fossils in the Federal Highways Act of 1956, and by the National Park Service (NPS), the BLM, the United States Forest Service (USFS), and other Federal agencies.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
Paleontologic Resources Preservation Act (PRPA) (Public Law [PL] 111-011)	The PRPA authorizes the Secretaries of the United States Departments of Interior and Agriculture to manage the protection of paleontological resources on Federal lands.	Sections 3.5 and 4.5, Cultural and Paleontological Resources
<b>FIRE/FUELS</b>		
CDCA Plan, 1980, as amended	The Multiple-Use Class Guidelines in the CDCA Plan address fire management in Table 1, Multiple Class Guidelines.	Sections 3.6 and 4.6, Fire and Fuels Management
<b>GRAZING, AND WILD HORSES AND BURROS</b>		
Public Rangelands Improvement Act (PRIA) 1978	The PRIA established and reaffirmed the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves, their habitat, and to other rangeland values.	Sections 3.8 and 4.8, Grazing, and Wild Horses and Burros
Wild Free-Roaming Horses and Burros Act (1971)	This Act authorizes the BLM to protect, manage, and control wild horses and burros to ensure that healthy herds thrive on healthy rangelands. The BLM manages these animals as part of its multiple-use mission under the 1976 FLPMA. A key BLM responsibility under this Act is to determine the appropriate management level of wild horses and burros on public rangelands.	Sections 3.8 and 4.8, Grazing, and Wild Horses and Burros

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
<b>LAND USE</b>		
FLPMA	The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. The FLPMA specifically establishes BLM's authority to grant rights-of-way for the generation, transmission, and distribution of electrical energy.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
CDCA Plan	The IVS project will require an amendment to the CDCA Plan to allow for solar generation of electricity on the project site.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
Yuha Desert Management Plan (YDMP) 1985	The BLM YDMP establishes goals and planned actions designed to meet the goals of the CDCA Plan. They emphasize the protection of wildlife and cultural resource values while permitting a compatible level of competitive vehicle use and energy development.	Sections 3.9 and 4.9, Land Use and Corridor Analysis
<b>NOISE AND VIBRATION</b>		
Occupational Safety and Health Administration 29 USC 651 et seq.	This regulation protects workers from the effects of occupational noise exposure.	Sections 3.10 and 4.10, Noise and Vibration
<b>PUBLIC HEALTH AND SAFETY, AND HAZARDOUS MATERIALS</b>		
Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC 6901 et seq.)	RCRA gives the EPA the authority to control hazardous waste from the “cradle-to-grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
The Superfund Amendments and Reauthorization Act (SARA) of 1986 (42 USC 9601 et seq.)	This Act includes the Emergency Planning and Community Right to Know Act (also known as SARA Title III).	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
CAA	The CAA established a nationwide emergency planning and response program, and imposes reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. The CAA requires new sources that emit more than 10 tons per year (tons/yr) of any specified Hazardous Air Pollutant (HAP) or more than 25 tons/yr of any combination of HAPs to apply Maximum Achievable Control Technology.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended (42 USC 9615)	CERCLA provides for the cleanup of sites contaminated by hazardous substances. It authorizes the Federal government to clean up sites using the Hazardous Substance Superfund. It imposes liability for cleanup on responsible parties and requires them to perform the cleanup, reimburse others for their cleanup expenses or reimburse the Fund when the Fund is used to pay for cleanup. CERCLA requires that responsible parties pay damages to the Federal, state, or tribal government for the destruction or loss of, or injury to, natural resources.	Sections 3.11 and 4.11, Public Health and Safety, and Hazardous Materials
49 CFR Sections 350 to 399 and Appendices A to G	This regulation provides procedures and directions pertaining to interstate and intrastate transport including hazardous materials program procedures and provides safety measures for motor carriers and motor vehicles who operate on public highways.	Sections 3.15 and 4.15, Traffic and Transportation
<b>RECREATION</b>		
CDCA Plan 1980, as amended	The CDCA Plan contains a detailed Recreation Element which addresses recreation resources and uses.	Sections 3.12 and 4.12, Recreation
<b>SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE</b>		
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations 2/11/94	This EO directs each Federal agency to achieve environmental justice as part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
Emergency Economic Stabilization Act of 2008 (Public Law 110-343) Business Solar Investment Tax Credit (Internal Revenue Code Section 48)	This Act extended the 30 percent investment tax credit (ITC) for solar energy property for eight years through December 31, 2016. The Act allows the ITC to be used to offset both regular and alternative minimum tax (AMT) and waives the public utility exception of current law (i.e., permits utilities to directly invest in solar facilities and claim the ITC). The 5-year accelerated depreciation allowance for solar property is permanent and unaffected by passage of the 8-year extension of the solar ITC.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
American Recovery and Reinvestment Act of 2009	The goals of this Act are to create new jobs and save existing jobs, spur economic activity and invest in long-term growth, and foster unprecedented levels of accountability and transparency in government spending.	Sections 3.13 and 4.13, Socioeconomics and Environmental Justice
<b>SPECIAL DESIGNATIONS (Wilderness Characteristics, Areas of Critical Environmental Concern, Prime and Unique Farmlands, National Scenic and Historic Trails, National Wild and Scenic Rivers, and Donated Lands)</b>		
Wild and Scenic Rivers Act as amended (16 USC 1271)	This Act addresses designated wild and scenic rivers. There are no wild and scenic rivers on or in the vicinity of the project site and they are not discussed in the FEIS.	Sections 3.14 and 4.14, Special Designations

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
Wilderness Action of 1964 (16 USC 1131-1136, Statute 890)	This Act directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems and to recommend to the President the suitability of each such area or island for inclusion in the National Wilderness Preservation System. The Secretary of Agriculture was directed to study and recommend suitable areas in the National Forest System. The Act provides criteria for determining suitability and establishes restrictions on activities that can be undertaken on a designated area.	Sections 3.14 and 4.14, Special Designations
Omnibus Public Land Management Act of 2009 (House of Representatives 146/Public Law 111-011)	This Act designates certain land as components of the National Wilderness Preservation System, and authorizes certain programs and activities in the Departments of the Interior and Agriculture.	Sections 3.14 and 4.14, Special Designations
Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)	This addresses the protection of Prime and Unique Farmlands.	Sections 3.14 and 4.14, Special Designations
Farmland Protection Policy Act (FPPA), Subtitle I of Title XV, Section 1539-1549 of the Agriculture and Food Act of 1981	The FPPA is intended to minimize the impact of Federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that, to the extent possible, Federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and farmland of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.	Sections 3.14 and 4.14, Special Designations
CDCA Plan	Chapter 4, Areas of Critical Environmental Concerns and Special Areas, of the CDCA Plan establishes goals to identify and protect natural and cultural resources, and identifies management prescriptions for specific geographic areas containing such resources. There are no donated lands on or in the vicinity of the project site and they are not discussed in this FEIS.	Sections 3.14 and 4.14, Special Designations

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
<b>TRAFFIC AND TRANSPORTATION</b>		
49 CFR 171 to 177 and 350 to 399	The regulation governs the transportation of hazardous materials and related guidelines.	Sections 3.15 and 4.15, Traffic and Transportation
77 CFR Federal Aviation Administration (FAA) Regulations	This regulation implements standards for determining obstructions in navigable airspace, sets forth requirements for notice to the FAA of certain proposed construction or alteration activities, and provides for aeronautical studies of obstructions to air navigation to determine their effects on the safe and efficient use of airspace.	Sections 3.15 and 4.15, Traffic and Transportation
<b>VISUAL RESOURCES</b>		
FLPMA	Section 103(c) identifies scenic values as one of the resources for which public land should be managed as required by the FLPMA. Section 201(a) states that “The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including ... scenic values)...” Section 505(a) requires that “Each right-of-way shall contain terms and conditions which will...minimize damage to the scenic and esthetic values...”	Sections 3.16 and 4.16, Visual Resources
CDCA Plan	<p>The CDCA Plan is the Resource Management Plan (RMP) for the project site and the surrounding area as required under FLPMA. The CDCA Plan does not have Visual Resource Mapping (VRM) for the project site or anywhere in the CDCA.</p> <p>The IVS project site is classified in the CDCA Plan as Multiple-Use Class (MUC) L (Limited Use). MUC L, the most restrictive under the plan, “...protects sensitive, natural, scenic, ecological, and cultural resource values.” Public lands designated Class L are managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. Under the CDCA Plan, electrical power generation facilities including wind/solar facilities may be allowed within MUC L if the NEPA requirements for that proposed use are met.</p>	Sections 3.16 and 4.16, Visual Resources
NHPA	Under the NHPA, visual impacts to a listed or eligible National Register property that may diminish the integrity of the property’s “...setting... (or) feeling...” in a way that affects the property’s eligibility for listing, may result in a potentially significant adverse effect. “Examples of adverse effects...include...Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features...”	Sections 3.16 and 4.16, Visual Resources

Relevant Authority	Description	Where Topic is Addressed or Complied With in the FEIS
<b>WATER RESOURCES</b>		
Clean Water Act (CWA, 33 USC 1251 et seq.)	<p>The CWA requires states to set standards to protect water quality, including regulation of storm water and wastewater discharges during construction and operation of a facility. California’s regulations to comply with the CWA are in the Porter-Cologne Water Quality Control Act of 1967. Sections 401 and 404 of the CWA establish protection of waters of the United States such as perennial and ephemeral drainages, streams, washes, ponds, pools, and wetlands.</p> <p>Section 401 requires that any activity which may result in a discharge into waters of the United States must be certified by the California State Water Resources Control Board (SWRCB) as administered by the Regional Water Quality Control Boards (RWQCBs). This certification ensures that the proposed activity does not violate State and/or Federal water quality standards. The site for the IVS project is within the jurisdiction of the Colorado River RWQCB.</p> <p>Section 404 authorizes the United States Army Corps of Engineers (Corps) to regulate the discharge of dredged or fill material to waters of the United States. The Corps issues individual site-specific or general (nationwide) permits for such discharges. Section 404 Permits are not granted without prior 401 certification.</p> <p>Section 303(d) of the CWA requires states to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs) to improve water quality. Section 311 prohibits the discharge of oil or hazardous materials to waters of the United States.</p>	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EPA Section 404(b)(1) Guidelines (40 CFR 230 et seq.)	Section 404(b)(1) requires the Corps to analyze alternatives to consider the avoidance and minimization of impacts to the extent practicable to determine whether a proposed discharge to waters of the United States can be authorized.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EO 11990 Protection of Wetlands 5/24/77 (42 Federal Register 26961)	This Act directs each Federal agency to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out its responsibilities.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality

<b>Relevant Authority</b>	<b>Description</b>	<b>Where Topic is Addressed or Complied With in the FEIS</b>
EO 11988, Floodplain Management, as amended, 5/24/77	This Act requires each Federal agency to avoid, to the extent possible, impacts associated with the occupancy and modification of floodplains and to avoid supporting floodplain development when there is a practicable alternative.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
Safe Drinking Water Act Amendments of 1996	This Act and its Amendments emphasize preventing contamination through source water protection and enhanced water system management to better provide for the sustainable use of water by our nation’s public water systems.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality
EO 12088, Federal Compliance with Pollution Control Standards (amended by EO 12580, Superfund Implementation) 10/13/78, 2/23/87	These Acts require each Federal agency to ensure that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to Federal facilities and activities under the control of the agency.	Sections 3.17 and 4.17, Hydrology, Water Use, and Water Quality

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010) and LSA Associates, Inc. (2010).

### 1.7.1 State

- **Renewables Portfolio Standard Program:** This State law requires investor-owned utilities to obtain 20 percent of the power supplied to their customers to be generated from renewable sources by 2010. Renewable energy sources include wind, geothermal, and solar.
- **California Global Warming Solutions Act of 2006, AB 32 (Statutes 2006; Chapter 488; Health and Safety Code Sections 38500 et seq.).** This act requires the ARB to enact standards that will reduce GHG emissions to 1990 levels by 2020. Electricity production facilities are regulated by the ARB.
- **Title 17 CCR, Subchapter 10, Article 2, Sections 95100 et seq.** These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006.
- **Title 20, CCR, Section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009.** These regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a GHG emission standard of 0.5 MTCO<sub>2</sub>/MWh or 1,100 lbs CO<sub>2</sub>/MWh.
- **EO S-13-08.** Directs a number of state agencies to address California's vulnerability to sea level rise caused by climate change.

### 1.7.2 Local

- **Imperial County General Plan (1993):** The General Plan provides guidance on future growth in Imperial County. Any development in Imperial County must be consistent with the General Plan and the Imperial County Land Use Ordinance (Title 9, Division 10). The BLM-managed lands within the boundary of the IVS project site are not subject to the requirements of the General Plan because the BLM is a Federal agency. However, BLM regulations require that resource management plans be consistent with local governments' officially approved resource related plans (43 CFR 1610.3-2).
- Applicable rules and other requirements of the Imperial County Air Pollution Control District.

### **1.7.3 State Implementation Plan for PM<sub>10</sub> in the Imperial Valley 1993**

There are currently three State Implementation Plans (SIPs) under review in Imperial County, for ozone (O<sub>3</sub>), emissions controls, and particulate matter less than 10 microns in aerodynamic diameter (PM<sub>10</sub>). The status of each of those is described below.

#### **1.7.3.1 Ozone State Implementation Plan**

On December 3, 2009 the United State Environmental Protection Agency (EPA) issued a final ruling<sup>1</sup> determining that the Imperial County “moderate” 8-hour O<sub>3</sub> nonattainment area attained the 1997 8-hour standard. This determination effectively suspends the requirement for the State to submit an attainment demonstration, a reasonable further progress plan, contingency measures, and other planning requirements for long as Imperial County continues to attain the 1997 8-hour O<sub>3</sub> standard.

Because this determination does not constitute a re-designation to attainment under the Clean Air Act Section 107(d)(3) the designation status will remain “moderate” non-attainment for the 1997 8-hour ozone standard.

However, Imperial County is required to submit for EPA approval a “Modified” 2009 8-hour Ozone Air Quality Management Plan.

#### **1.7.3.2 Reasonably Available Control Technology State Implementation Plan**

The Federal Clean Air Act (CAA) requires SIPs for nonattainment areas to require emission controls that are economically and technologically feasible. Emissions control technologies that meet these criteria are known as Reasonably Available Control Technology (RACT). The Phase 2 rule sets forth guidelines for making RACT determinations in 8-hour O<sub>3</sub> nonattainment areas (70 Federal Register 71612).

#### **1.7.3.3 Particulate Matter Less than 10 Microns in Aerodynamic Diameter (PM<sub>10</sub>) SIP**

On August 11, 2009, the ICAPCD Board held a public hearing and unanimously adopted the Imperial County 2009 PM<sub>10</sub> SIP. The Board’s action included:

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<sup>1</sup> <http://imperialcounty.net/AirPollution/Attainment%20Plans/EPA%20Final%20Rule%20Clean%20Data%201997%20Standard.pdf>.

- Approval and adoption of the Draft Final Imperial County 2009 PM<sub>10</sub> SIP (dated July 10, 2009), with changes as specified in the July 31, 2009 Errata Sheet;
- Adoption of the findings in the associated Staff Report;
- Certification of the Negative Declaration for the 2009 PM<sub>10</sub> SIP;
- Adoption of the transportation conformity budgets in the Imperial County 2009 PM<sub>10</sub> SIP, and
- Direction to staff to submit the Imperial County PM<sub>10</sub> SIP and related documents to the California Air Resources Board for their review and action.

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# Chapter 2

## Alternatives Including the Proposed Action

### 2.1 Overview of Alternatives Development

#### 2.1.1 Alternatives Evaluated in the Staff Assessment/Draft Environmental Impact Statement

In addition to the Imperial Valley Solar (IVS) project (Proposed Action), 27 alternatives were developed for consideration in the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS). These included 8 alternative sites; 3 alternatives that would reduce effects to jurisdictional waters of the United States; a range of solar and renewable technologies, generation technologies using different fuels, conservation/demand-side management; and a 300-megawatt (MW) alternative to the proposed 750 MW IVS project.

The IVS project was originally named and referred to as the Solar Two project. The name was changed to the IVS project by the applicant after the publication of the SA/DEIS in February 2010.

Of the 27 alternatives, three Build Alternatives were carried forward by the California Energy Commission (CEC) and the United States Bureau of Land Management (BLM) for detailed evaluation in the SA/DEIS because they are feasible:

- 300 MW Alternative
- Drainage Avoidance #1 Alternative
- Drainage Avoidance #2 Alternative

As described below, three No Action Alternatives (two of which are referenced as Land Use Plan Amendment Alternatives) were developed to consider different combinations of BLM actions related to the right-of-way (ROW) grant for the IVS project and amendments to the *California Desert Conservation Area Plan* (CDCA Plan; 1980, as amended).

The SA/DEIS evaluated the following seven alternatives in detail:

- **IVS Project: 750 MW Alternative.** The IVS project is the proposed action evaluated in detail in the SA/DEIS. It would generate 750 MW of electricity using 30,000 SunCatchers on a total of approximately 6,500 acres (ac) of land. The IVS project is proposed to be constructed in two phases, with Phase I generating 300 MW of electricity and Phase II generating an additional 450 MW of electricity
- **300 MW Alternative.** The 300 MW Alternative would generate 300 MW of electricity using 12,000 SunCatchers on approximately 2,600 ac of the total IVS project site. The 300 MW Alternative would generate 40 percent of the megawatts of the IVS project, on about 40 percent of the site used by the IVS project, with 40 percent of the total SunCatchers as the IVS project. The 300 MW Alternative would be equivalent to Phase I of the IVS project.
- **Drainage Avoidance #1 Alternative.** The Drainage Avoidance #1 Alternative was developed in consultation with the United States Army Corps of Engineers (Corps) to avoid certain drainages on the IVS project site. The Drainage Avoidance #1 Alternative would generate 632 MW of electricity using 25,000 SunCatchers on approximately 4,690 ac of the total IVS project site. The Drainage Avoidance #1 Alternative would generate 83 percent of the MW of the IVS project, on approximately 72 percent of the site, with 83 percent of the SunCatchers of the IVS project.
- **Drainage Avoidance #2 Alternative.** The Drainage Avoidance #2 Alternative was also developed in consultation with the Corps to avoid certain drainages on the project site. The Drainage Avoidance #2 Alternative would generate 423 MW of electricity using 10,240 SunCatchers on approximately 3,153 ac of the total IVS project site. The Drainage Avoidance #2 Alternative would generate 56 percent of the MW of the IVS project, on approximately 49 percent of the site, with 42 percent of the SunCatchers of the IVS project.
- **No Action Alternative: No ROW Grant and No CDCA Plan Amendment.** Under this No Action Alternative, the BLM would not approve the right-of-way (ROW) grant application and would not amend the CDCA Plan. Because there would be no amendment to the CDCA Plan and no solar project approved for the IVS project site under this No Action Alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, the site would be available for other uses that are consistent

- with the CDCA Plan and, in the absence of the IVS project, other renewable energy projects may be constructed in other locations to meet State and Federal mandates.
- **Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar.** Under this No Action Alternative, the BLM would not approve the ROW grant application and would amend the CDCA Plan to make the IVS project site unavailable for future solar development. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development. Because the CDCA Plan would be amended under this No Action Alternative to make the IVS project site unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. However, in the absence of the IVS project or another solar project on the site, other renewable energy projects may be constructed in other locations to meet State and Federal mandates.
  - **Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar.** Under this No Action Alternative, the BLM would not approve the ROW grant application and would amend the CDCA Plan to make the IVS project site available for future solar development. This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development. Because the CDCA Plan would be amended under this No Action Alternative, it is possible that the site would be developed with the same or a different solar technology in the future.

The remaining alternatives fall into in two categories:

- Alternative sites that were evaluated under the California Environmental Quality Act (CEQA) and Section 404 of the Federal Clean Water Act (CWA) and not under the National Environmental Policy Act (NEPA) because they would require no action by the BLM and were determined not to be reasonable as described later in Section 2.9, Alternatives Considered but Eliminated from Detailed Analysis.

- Other alternative sites and various technologies that were considered but eliminated from detailed analysis

### **2.1.2 Applicant Proposed Modifications to the Alternatives after the Staff Assessment/Draft Environmental Impact Statement**

After the SA/DEIS was released for public review in February 2010, the applicant proposed the following four modifications/refinements to the IVS project and the other Build Alternatives:

- **Transmission Line Alignment Modifications:** Modifications to the original transmission line alignment include shifting 2 segments of the transmission line. The western transmission line alignment modification would occur over a 750-foot (ft) long span and would be shifted approximately 120 ft southeast of the original alignment. The second segment modification north of the Imperial Valley SDG&E Substation would occur over a 1,025-ft long span with the transmission line shifted approximately 300 ft east of the original alignment.
- **Waterline Alignment Modifications:** The waterline alignment was modified slightly to follow the Evan Hewes Highway ROW where feasible. The waterline realignments would occur on two segments. The western modification would occur over a 300-ft long span and the eastern modification would occur over a 160-ft long span.
- **Hydrogen Storage Modifications:** The IVS project includes a centralized hydrogen gas supply, storage, and distribution system. Modifications proposed to this system would require the amount of hydrogen stored for each SunCatcher to be increased from 3.4 to 11 standard cubic feet (scf). To support this increase in hydrogen storage for each SunCatcher, the high pressure supply tanks and low pressure dump tanks at each compressor group would accommodate 29,333 scf and 9,900 scf, respectively. In addition, each of the 30 high pressure tanks that supply hydrogen to the power conversion unit (PCU) within a group of 12 SunCatchers will have a capacity of 489 scf.
- **Alternative Water Supply Modifications:** The water supply for the IVS project was anticipated to be supplied by the Seeley County Water District (SCWD) which was expected to provide secondary treated water from its Seeley Wastewater Treatment Plant (SWWTP) to the IVS project site. Although the SWWTP would be able to supply water for the IVS project in the long term, the construction of the SWWTP improvements to ensure that water obtained for the IVS project does not exceed

effluent limits may not be completed by the time the IVS project construction and early operation come online. In the event that the SWWTP improvements have not been completed at the start of construction of the IVS project, the applicant proposes to use a temporary, alternative water supply until SWWTP water is available.

This alternative water supply would be provided from an existing, permitted well through the Dan Boyer Water Company in Ocotillo. That water source is potable and permitted for use by construction or personal consumption. It is expected that the Build Alternatives would require this temporary water supply for between 6 months and 3 years. Water would be transported from the well to the IVS project site in 7,000 gallon (gal) water trucks. It is anticipated that up to 13 round-trip truck trips per day would be required during construction and up to 7 round-trip truck trips per day would be required during operation until SWWTP water can be used.

These applicant proposed modifications were incorporated in the IVS project, the 300 MW Alternative, Drainage Avoidance #1 Alternative, and Drainage Avoidance #2 Alternative. Because these modifications to these Build Alternatives could potentially result in environmental concerns that were not analyzed in the SA/DEIS, and may result in more, not fewer, environmental impacts, the potential effects of these modifications were evaluated in detail in the Determination of NEPA Adequacy (DNA) provided in Appendix B, Determination of NEPA Adequacy (DNA). Although not required, the BLM has chosen to use a DNA in this case as an internal administrative tool to determine whether a supplement to the DEIS is required as a result of the four applicant proposed modifications described above. The BLM has determined that no supplement is required because the applicant-proposed modifications are similar to features of previously analyzed alternatives, result in an alternative within the range of the alternatives analyzed previously, do not substantially change the previous analysis, and have effects that are similar to or less than those analyzed for the IVS project and the other Build Alternatives. The potential effects of these four modifications are presented in the analyses provided in this Final Environmental Impact Statement (FEIS) and are summarized in the DNA.

### **2.1.3 Agency Preferred Alternative (709 MW Alternative)**

After the release of the SA/DEIS for public review in February 2010, the BLM and the Corps continued to coordinate and consult regarding possible refinements to avoid specific drainages on the IVS project site. The following modifications to the IVS project, to reduce effects to aquatic resources, the flat tailed horned lizard (FTHL), and cultural resources, were identified in that continued consultation:

- Relocating the Main Services Complex out of some of the primary wash segments of Drainage E

- Removing all SunCatchers within 100 ft of the centerline of Drainage E to provide a 200-ft wide corridor along this drainage through the site

As a result of these modifications to the IVS project, the following specific changes were made to that Alternative, which resulted in a 709 MW Alternative, which has been identified by the BLM as the Agency Preferred Alternative:

- Reduction in the total number of SunCatchers from 30,000 to 28,360 SunCatchers
- Reduction in the amount of energy generated from 750 MW to 709 MW

The 709 MW Alternative would be on the same approximately 6,500 ac site as the IVS project, except that areas within the site, particularly along Drainage E, would be avoided and no project construction or structures would occur in those areas.

Although the BLM did not anticipate this alternative in the DEIS, the BLM has determined that the 709 MW Agency Preferred Alternative is essentially similar to the 750 MW proposed action analyzed in the DEIS in that both alternatives would be on the same site and would be constructed and operated nearly identically. The BLM has determined that the findings of the DNA analyses regarding the applicant's four modifications to the Build Alternatives, which are included in the 709 MW Alternative, and the modifications associated with Drainage E, which are included only in the 709 MW Alternative, are not significantly different than the findings of the analyses in the DEIS for the 750 MW Alternative. For further discussion and evaluation regarding the 709 MW Alternative, refer to Chapter 4, Environmental Consequences, and Appendix B.

The Agency Preferred Alternative is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) as discussed in the *Draft 404B-1 Alternatives Analysis for the Imperial Valley Solar Project*, which is provided in Appendix H, Draft Section 404B-1 Alternatives Analysis for the IVS project. The Corps is currently in the process of a detailed evaluation of that analysis along with the EPA. A Final 404(b)(1) Alternatives Analysis and LEDPA determination will be included as part of the Corps' Record of Decision (ROD).

#### **2.1.4 Alternatives Evaluated in the Final Environmental Impact Statement**

The alternatives considered in detail in this FEIS are summarized in Table 2-1 and are described in Sections 2.2 to 2.6, below. Additional detail regarding the IVS project and the other alternatives is provided in the SA/DEIS and in the Plan of Development (POD, June 2010).

**Table 2-1 Summary of Alternatives Evaluated in Detail in the FEIS**

<b>Alternative</b>	<b>Comments</b>
<p><b>IVS Project: 750 MW Alternative</b></p> <p>750 MW 6,500 ac (6,144 ac BLM managed and 332 ac privately owned) 30,000 SunCatchers</p>	<p>This is the IVS project and was the original proposed action.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>709 MW Alternative: Agency Preferred Alternative</b></p> <p>709 MW 6,500 ac (6,144 ac BLM managed and 332 ac privately owned) 28,360 SunCatchers</p>	<p>This is the BLM Agency Preferred Alternative. It is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative.</p>
<p><b>300 MW Alternative</b></p> <p>300 MW (40% of the megawatts of the IVS project) 2,600 ac (40% of the acreage of the IVS project) 12,000 SunCatchers (40% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>Drainage Avoidance #1 Alternative</b></p> <p>632 MW (83% of the megawatts of the IVS project) 4,690 ac (72% of the acreage of the proposed action) 25,000 SunCatchers (83% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project. This alternative was developed in consultation with the Corps to avoid drainages on the project site.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>Drainage Avoidance #2 Alternative</b></p> <p>423 MW (56% of the megawatts of the IVS project) 3,153 ac (49% of the acreage of the proposed action) 10,240 SunCatchers (42% of the IVS project)</p>	<p>This is a reduced project using the same SunCatcher technology as the IVS project. This alternative was developed in consultation with the Corps to avoid drainages on the project site.</p> <p>This Alternative meets the BLM project purpose and need.</p>
<p><b>No Action Alternative: No ROW Grant and No CDCA Plan Amendment</b></p> <p>BLM does not approve the ROW grant for the IVS project. BLM does not amend the CDCA Plan.</p>	<p>This No Action Alternative was evaluated in the SA/DEIS under both CEQA and NEPA.</p>
<p><b>Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar</b></p> <p>BLM does not approve the ROW grant for the IVS project. BLM amends the CDCA Plan to make the project site unavailable for future solar development.</p>	<p>This Land Use Plan Amendment Alternative was evaluated in the SA/DEIS under NEPA only.</p> <p>This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site unavailable for further solar development.</p>

Alternative	Comments
<p><b>Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar</b></p> <p>BLM does not approve the ROW grant for the IVS project.</p> <p>BLM amends the CDCA Plan to make the project site available for future solar development.</p>	<p>This Land Use Plan Amendment Alternative was evaluated in the SA/DEIS under NEPA only.</p> <p>This is not a typical no action alternative because the BLM would take action to amend the CDCA Plan under this No Action Alternative. However, it was evaluated because it provided an opportunity for the BLM to consider the effects of not approving the ROW grant application and also amending the CDCA Plan to make the specific IVS project site available for further solar development.</p>

*Table Source:* Staff Assessment/Draft Environmental Impact Statement (2010) and LSA Associates, Inc. (2010).

*Table Key:* ac = acres; BLM = United States Bureau of Land Management; CDCA = California Desert Conservation Area; CEQA = California Environmental Quality Act; Corps = United States Army Corps of Engineers; IVS = Imperial Valley Solar; MW = megawatts; NEPA = National Environmental Policy Act; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement.

All the Build Alternatives described in Table 2-1, including the Agency Preferred Alternative, would require a CDCA Plan amendment and a ROW grant.

## 2.2 IVS Project: 750 MW Alternative (Proposed Action)

On June 30, 2008, Stirling Engine Systems (SES) Solar Two, LLC (now Tessera Solar) submitted an Application for Certification (AFC) to the CEC to develop the IVS project on both privately owned land and public land managed by the BLM in Imperial County, California. On October 1, 2008, the CEC Commission accepted the AFC as complete.

Tessera Solar has applied for a right-of-way (ROW) grant from the BLM California Desert District for the part of the project site managed by the BLM.

The site proposed for the IVS project is approximately 6,500 ac in the southwest part of Imperial County approximately 100 miles (mi) east of the City of San Diego, 14 mi west of El Centro, and 4 mi east of Ocotillo. Figure 2-1 shows the location of the IVS project site. The figures cited in this section are provided following the last page of text in this section.

The site consists of approximately 6,140 ac of public land administered by the BLM, and approximately 332 ac of private land under the jurisdiction of Imperial County. The analysis in this Final Environmental Impact Statement (FEIS) generally focuses on the 6,144 ac under the jurisdiction of the BLM as that is the area subject to the BLM ROW grant and the proposed amendment to the CDCA Plan. The approximately 332 ac in private ownership are not within the jurisdiction of the BLM and would not be included in the ROW grant or the CDCA Plan

amendment. However, impacts to resources on those privately owned 332 ac are included in the total impacts described in this FEIS.

As shown in Table 2-1, the IVS project proposes 30,000 SunCatchers on the approximately 6,500 ac site generating an estimated 750 MW of electricity. This is the project as proposed originally by the project applicant. The IVS project would be a nominal 750-MW project, with construction planned to begin in late 2010. Although construction would take approximately 40 months to complete, power would be available to the grid as each 60-unit group of SES engine modules is completed. The primary equipment for the generating facility would be approximately 30,000, 25-kilowatt (kW) solar dishes referred to as SunCatchers, and their associated equipment, systems, and support infrastructure.

Although the construction of the IVS project and the initiation of electricity generation will be phased (Phases I and II), the project is analyzed in this FEIS as if all 30,000 SunCatchers are operational at the same time. The following sections describe the structures and facilities proposed on the project site; the process for generating electricity with the SunCatcher technology; and key project-related construction, operations and maintenance, and decommissioning activities for the IVS project.

## **2.2.1 Bureau of Land Management Actions for the Imperial Valley Solar Project**

In order for the IVS project to be constructed and operated on BLM lands, the BLM must take the actions described in the following sections.

### **2.2.1.1 National Environmental Policy Act**

Prior to taking any action regarding the proposed IVS project, the BLM must comply with the requirements of the National Environmental Policy Act (NEPA). The BLM and the CEC prepared a joint SA/DEIS for the proposed IVS project. That SA/DEIS was circulated for agency and public review on February 10, 2010, and the comments received on that report and responses to those comments are included as Appendix D, Public Comments on the Draft Environmental Impact Statement. To the extent that opposing views were expressed in the public comments, those opposing views are summarized in Chapter 5, Consultation, Coordination, and Public Participation, and are responded to in the responses to comments provided in Appendix D. Other comments on the DEIS received by the BLM are also summarized in Chapter 5 and are also responded to in Appendix D. After issuing the ROD, the BLM must publish a Notice of Availability of the ROD in the Federal Register.

### **2.2.1.2 California Desert Conservation Area Plan Amendment**

BLM lands in the California Desert District are governed by the *California Desert Conservation Area Plan* (CDCA Plan, 1980 as amended). The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not specifically identified in the CDCA Plan for a project site be considered through the Plan Amendment process. The Planning Criteria for considering a Plan Amendment are discussed in Chapter 4.10, Land Use and Corridor Analysis.

The IVS project site currently is classified as Multiple-Use Class L (Limited Use) Designation in the CDCA Plan. The Limited Use classification is intended to protect sensitive, natural, scenic, ecological and cultural resource values. Public lands classified as Limited Use are managed to provide for multiple use of resources at a lower intensity, ensuring that sensitive values are not significantly diminished. The construction and operation of a solar generating project on the IVS project site would require the BLM to amend the CDCA Plan to allow solar energy generating activities in the Multiple Use Class L (Limited Use) on the IVS project site. The CDCA Plan amendment would restrict the use of the IVS project site to that solar use only.

Based on Table 1, Multiple Use Class Guidelines, in the CDCA Plan, solar uses are conditionally allowed in the Multiple Use Class L designation contingent on NEPA requirements being met for the proposed use. This FEIS meets the NEPA requirements for consideration of the proposed IVS project.

### **2.2.1.3 Guidance for Processing Applications on BLM Lands**

Also, pursuant to the *Guidance for Processing Applications for Solar Power Generation Facilities on BLM Administered Public Lands in the California Desert District* (BLM 2008) and Title 43, Part 2804.25 of the Code of Federal Regulations (CFR):

“When all or part of a proposed renewable energy project is located in a designated utility corridor, the impacts of occupying the utility corridor must be analyzed, along with alternatives that would help mitigate the impacts to the utility corridor. The EIS prepared for a proposed solar energy project should analyze the impact that the project would have on the ability of the utility corridor to serve its intended purpose, i.e., would the corridor continue to retain the capacity to site additional utilities in the corridor or would the project so constrain the available land within the corridor that it would limit the corridor’s ability to locate additional linear facilities, e.g. transmission lines, pipelines, etc.”

As discussed in Section 3.9, Land Use and Corridor Analysis, the IVS project site is within existing designated Utility Corridor “N” Section 368 115-238 (CDCA N, 368 115-238). The IVS project site occupies approximately 60 percent of the northern half of Utility Corridor “N” 368 115-238.

The potential impacts of occupying a utility corridor are evaluated in Section 4.9, Land Use and Corridor Analysis. In the immediate vicinity of the IVS project site and in Utility Corridor CDCA N, 368 115-238, additional capacity is available for future and currently unproposed projects. Joint use of the corridor is adequate to accommodate the IVS project, ancillary facilities, and current authorized but yet unbuilt and pending projects.

#### **2.2.1.4 Revisions to Open Routes**

In 2002, the BLM updated access plans and routes in the Western Colorado Desert through the *Western Colorado Desert Routes of Travel Designations (WECO)* amendment to the CDCA Plan. The WECO amendment assigned and/or revised access for off highway vehicle (OHV) routes in the Western Colorado Desert. Currently, there are 10 Open Routes traversing the IVS project site. Open Route access is defined in the CDCA Plan as follows:

“Access on route by motorized vehicles is allowed. Special uses with potential for resource damage or significant conflict with other use may require specific authorization.”

The 10 Open Routes on the IVS project are listed in Table 2-2. As part of approval of the ROW grant, BLM would need to revise the Open Routes on the IVS project site. These revisions would involve closure of some or all of the Open Routes on the IVS site, depending on which Build Alternative is selected.

The process for revisions to designated routes on BLM lands is described in both the CDCA Plan Motorized Vehicle Access Element and BLM’s guidance on the Comprehensive Travel and Transportation Management (CTTM) program. These revision processes recognize the changing contexts and need for flexibility in allowing OHV public access on BLM managed lands. The Motorized Vehicle Access Element of the CDCA Plan (page 82), describes the process for changing the designations of vehicle access routes as follows:

**Table 2-2 Open Routes on the IVS Project Site**

Route ID No.	Location
T670246	North/south from west of Plaster City quarry to intersect with T6700254 and then turns west to intersect with T670251
T670247	Parallel along San Diego Metropolitan Transit System rail track on northwest side of site then deviates south and returns to parallel track
T670248	Perimeter route for most of site connecting with T670247 and intersecting numerous routes
T670251	West side of site running northwest to south east connecting with T670247 and T670246
T670254	Small connector route on south side of site between T670246 and T670254
T670255	Follows diagonal across site from northwest to southeast under the Southwest Powerlink transmission line
T670256	Roughly parallel to T670255 connecting T670246 and T670248
T670260	Short route from middle of southern edge to northeast terminating local wash
T670345	Connector route on southeast side of site roughly paralleling transmission line connecting T670256 and T670248
T670350	On east boundary of site intersecting route T670248

*Table Source:* BLM Website for Western Colorado Desert Routes of Travel Designations (WECO), [http://www.blm.gov/ca/news/pdfs/weco\\_2002/WECO%20Route%20List-Final\\_1201.pdf](http://www.blm.gov/ca/news/pdfs/weco_2002/WECO%20Route%20List-Final_1201.pdf), Table of Open, Limited and Closed Routes

“Decisions affecting vehicle access, such as area designations and specific route limitations, are intended to meet present access needs and protect sensitive resources. Future access needs or protection requirements may require changes in these designations or limitations, or the construction of new routes...Access needs for other uses, such as roads to private lands, grazing developments, competitive events, or communication sites, will be reviewed on an individual basis under the authority outlined in Title V of FLPMA and other appropriate regulations. Each proposal would be evaluated for environmental effects and subjected to public review and comment. As present access needs become obsolete or as considerable adverse impacts are identified through the monitoring program, area designations or route limitations will be revised. In all instances, new routes for permanent or temporary use would be selected to minimize resource damage and use conflicts, in keeping with the criteria of 43 CFR 8342.1.”

In addition, BLM has an administrative process for revising route designations given the evolving and changing priorities for lands under its control. These processes are included in the CTTM and Land Use Plan (LUP) programs. Therefore, this administrative process along with the administrative process described in the CDCA Plan, and as allowed under Title V of the FLMPA, would be implemented to revise the affected Open Routes to Closed Routes, as necessary, depending on the selected Build Alternative.

### **2.2.1.5 Bureau of Land Management Right-of-Way Grant**

Under Federal law, the BLM is responsible for processing requests for right-of-way (ROW) grant applications to determine whether and to what extent to authorize proposed projects such as renewable energy projects, transmission lines and other appurtenant facilities on land it manages. Because the IVS project is a privately initiated venture that would be sited on lands management by the BLM, the project applicant has applied for a ROW grant from BLM pursuant to the United States Department of the Interior regulations. If the ROW Grant is approved by BLM, it will have conditions based on this Final EIS and other Federal rules and regulations applied to Federal lands. If the ROW grant is approved, the applicant would then be authorized to construct and operate the project, if it meets the requirements of the ROD. The ROD will require, if the project is approved, that the applicant secure certification from the CEC before the BLM will issue a Notice to Proceed to the applicant. The applicant would then be able to construct and operate the proposed IVS project on the project site.

If the ROW grant application and the CDCA Plan amendment are approved by the BLM, the IVS project would be authorized in accordance with Title V of the Federal Land and Management Policy Act FLMPA of 1976 (FLMPA) and 43 CFR Part 2800.

## **2.2.2 Structures and Facilities**

### **2.2.2.1 Site Layout/Arrangement**

The basic building blocks for the 750 MW IVS project would be 1.5 MW groups of 60 SunCatchers. The 1.5-MW groups would be connected in series to create 3-, 6-, and 9-MW solar groups which would then be connected to overhead collection lines rated at 48 or 51 MW. The typical solar groups would be arranged as necessary to fit the contours of the site. The layout of the major project structures and features is shown on Figure 2-2.

### **2.2.2.2 Major Project Equipment and Structures**

The major equipment and structures proposed for the IVS project are described briefly in Tables 2-3 and 2-4, respectively. The primary features of the IVS project are described in more detail in the following sections.

**Table 2-3 Major Equipment List**

<b>Description</b>	<b>Quantity</b>	<b>Size/Capacity</b>	<b>Remarks</b>
SunCatcher power generating system	30,000	25 kW	Each SunCatchers will focus solar energy onto a power conversion unit to generate 25 kW of electricity
Generator collection sub-panel; distribution panel, 42 circuit, with circuit breakers in a weatherproof enclosure	2,500	400 A, 600 V	The generator will collect the output from 12 dish assemblies (a group of SunCatchers generating 300-MW). Each dish assembly will connect to a 40-A, 3-pole circuit breaker (36 poles total).
Generator collection power center, distribution switchboard with 6 400-A circuit breakers	500	2,000 A Bus, 600 V	This power center will collect 5 1.5-MW solar groups and connect one power factor correction capacitor group.
Collector GSU transformer, with taps	500	1,750 kVA, 575 V to 34.5 kV	The GSU will step up power from the 1.5-MW solar groups (each group of 60 SunCatchers).
Power factor correction capacitor, switched in 5 each 200 kVAR steps	500	1,000 kVAR, 600 V	This capacitor will provide power factor correction at the 1.5-MW solar group level.
Open bus switch rack, 5 1,200-A feeder breakers, 40-kA INT, with switches, insulators, and bus work	5	34.5 kV, 3,000A	Each switch rack lineup will collect 150 MW at 34.5 kV.
Shunt capacitor bank, switched in 6 15-MVAR steps	5	34.5 kV, 90 MVAR	This facility will provide power factor correction at the 150-MW solar group level.
DVAR compensation system in coordination with shunt capacitor banks; size to be determined by studies	1	34.5 kV, size to be determined	This system will provide active VAR compensation to maintain a required power factor profile and to aid in meeting low-voltage ride-through requirements.
Disconnect switch, 35 kV, 200 kVBIL, group-operated	10	35 kV, 3,000 A	This switch will provide the capability to isolate a power transformer from the 34.5-kV collection system.
Power transformer, 3-phase, oil filled	5	120/160/200 MVA, 230/132.8 to 134.5/19.9 kV, 750 kV BIL	This power transformer will step up power from the 34.5-kV collection voltage to the 230-kV transmission voltage.
Power circuit breaker	7	242 kV, 2,000 A, 40-kA interrupting capacity	This circuit breaker will provide transformer and line protection.

Description	Quantity	Size/Capacity	Remarks
Coupling capacitor voltage transformer	6	242 kV, 900 kV BIL, 60 Hz, PT Ratio 1,200/2,000:1	This transformer will provide voltage source for protection and control.
Disconnect switch, 242 kV, 900 kV BIL, group operated	10	242 kV, 2,000 A	This switch will provide for the isolation of the power transformers, breakers and for isolating the substation from the interconnect transmission lines.
Diesel power generator set	1	250 kW, 480 V	This generator set will be in the Main Services Complex.
Fire water pump, diesel	1	26 HP	This fire water pump will be in the Main Services Complex.
Water Treatment	1	64,000 gpd	The water treatment on the site will be an automatic RO.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 12, 2010).

Table Key: A = ampere (amp); BIL = basic impulse level; D = dynamic volt amp reactive; gpd = gallons per day; GSU = generator step-up unit; HP = horsepower; Hz = hertz; INT = international; kA = kilo amps; kV = kilovolt; kVA = kilovolt amps; Kvar = kilovolt amp reactive; kW = kilowatt; kWe = kilowatt-electric; MVA = megavolt amps; MVAR = megavolt amp reactive; MW = megawatts; RO = reverse osmosis; V = volts; VAR = volt amp reactive; W = watts.

**Table 2-4 Major Structures and Equipment**

Description	Quantity	Length (feet)	Width (feet)	Height (feet)
SunCatcher power generating system (individual SunCatcher dishes)	30,000	38	38	40
Main Services Complex administration building	1	200	150	14
Main Services Complex maintenance building	1	180	250	44
Main SunCatcher assembly building	3	211	170	78
Raw water storage tank, 175,000 gallons	1	40	40	20
Demineralized water tank, 175,000 gallons	2	40	40	20
Potable water tank, 17,000 gallons	1	18	18	10
230-kV transmission line towers, double-circuit with upswept arms	85 to 100	--	32	90 to 110
Generator collection sub-panel; distribution panel, 42 circuit, 400 A, 600 V, with circuit breakers in a weatherproof enclosure	2,500	1	2.67	5
Generator collection power center, 2,000-A distribution panels with 6 400-A circuit breakers	500	2	3.33	7.5

Description	Quantity	Length (feet)	Width (feet)	Height (feet)
Collector GSU transformer, 1,750 kVA, 575 V to 34.5 kV, with taps	500	6.67	7.5	6.67
Power factor correction capacitor, 600 V, 1,000 kVAR, switched in 5, each 200 kVAR steps	500	2.5	6.67	7.5
Open bus switch rack, 35 kV, 7 bay with 5 35-kV, 1,200-A, 40-kVA INT, circuit breakers, insulators, switches, and bus work	5	105	20	30
Shunt capacitor bank, 34.5 kV, 90 MVAR switched in 6 each 15 MVAR steps	6	15	8	20 (Table Note 1)
DVAR compensation system in coordination with shunt capacitor banks – size to be determined by studies	4	60	12	16
Disconnect switch, 35 kV, 3,000 A, 200 kV BIL, group-operated	5	3	11	16 (Table Note 1)
Power transformer, 3-phase, 100/133/166.7 megavolt amp, 230/132.8-34.5/19.9 kV, 750 kV BIL, oil filled	5	15	35	23
Power circuit breaker, 242 kV, 2000A, 40 kilo amp interrupting capacity	7	12	20	16
Coupling capacitor transformer for metering, 242 kV, 900 kV BIL, 60 hertz, potential transformer ratio 1,200/2,000:1	6	1	1	25 (Table Note 1)
Disconnect switch, 242 kV, 2000A	10	10	25	25 (Table Note 1)

*Table Source:* Staff Assessment/Draft Environmental Impact Statement (February 12, 2010).

*Table Note 1:* Includes structure height to provide electrical safety clearances to ground.

*Table Key:* -- = not applicable; A = ampere (amp); BIL = basic impulse level; DVAR = dynamic volt amp reactive; GSU = generator step-up unit; INT = international; kV = kilovolt; kVA = kilovolt amp; kVAR = kilovolt amp reactive; MVAR = megavolt amp reactive; v = volts; GSU = generator step-up unit.

### 2.2.2.3 SunCatchers

As shown in Tables 2-3 and 2-4, the primary equipment for the generating facility would be the approximately 30,000, 25-kW solar dishes referred to as SunCatchers, and their associated equipment, systems, and support infrastructure. Each SunCatcher would consist of a solar receiver heat exchanger and a closed-cycle, high-efficiency SES engine specifically designed to convert solar power to rotary power to drive an electrical generator to produce electricity.

The SunCatchers in Phase I would require approximately 2,600 ac and in Phase II would require approximately 3,500 ac of the site. The total area for both phases, including the areas for the Main Services Complex, the operation and administration building, the maintenance

building, and the substation building and other infrastructure, is approximately 6,500 ac. The 230-kV transmission line required for Phase I would parallel the existing San Diego Gas and Electric (SDG&E) Southwest Powerlink transmission line and would be within the existing ROW for that SDG&E transmission line.

Each SunCatcher would include three major components: the foundation/pedestal, the dish assembly, and the power conversion unit (PCU) as described in the following sections.

### **Foundation/Pedestal**

Each solar dish would typically be mounted on a foundation consisting of a metal pipe hydraulically driven into the ground. When conditions are not conducive to the use of the metal pipe foundation, the foundation would consist of rebar-reinforced concrete constructed below grade. Both these foundation designs would meet all applicable structural design requirements and applicable laws, ordinances, regulations, and standards (LORS).

The SunCatcher dish assembly would be secured on a pedestal approximately 18 feet (ft) 6 inches (in) high. The pedestal would be either an integrated part of the metal pipe foundation or a separate structure fastened to the rebar-reinforced concrete foundation at ground level.

### **Dish Assembly**

The SunCatcher is a 25-kilowatt-electrical (kWe) solar dish designed to automatically track the sun and collect and focus solar energy onto a PCU, which generates electricity. The system would consist of a 40-ft-high by 38-ft-wide solar concentrator in a dish structure supporting an array of curved glass mirror facets. The curved shape of the mirrors will be engineered to concentrate solar energy onto the solar receiver part of the PCU. The dish assembly would include azimuth and elevation drives for tracking the sun and a PCU support boom. Refer to Figure 2-3.

The SunCatcher dish positioning control system employs proprietary algorithms to track the sun. This system focuses the solar energy onto the solar receiver by controlling elevation and azimuth drives, and executes startup, shutdown, and de-track procedures. These procedures allow the dish to wake up in the morning from the night-stow position to focus the dish mirror facets on the solar receiver of the PCU, and then to track the sun during daylight hours. The dish control system communicates with and receives instructions from the central control room via the supervisory control and data acquisition (SCADA) system. The SCADA system is designed to place the dish into a wind stow position when sustained winds exceed 35 miles per hour (mph) to protect the system from wind damage, on loss of communications with the central control room, or on receipt of a fault signal from the PCU control system.

## **Power Conversion Unit**

A generator connected to the engine will produce the electrical output of the SunCatcher. Each generator will be capable of producing 25 kWe at 575 volts alternating current (VAC)/60 hertz (Hz) of grid-quality electricity when operating with rated solar input. Waste heat from the engine would be transferred to the ambient air via a radiator system similar to those used in automobiles.

The hydrogen gas will be cooled by a standard glycol-water radiator system and will be continually recycled within the engine during the power cycle. The conversion process will not consume water. The only water used for the SunCatchers will be for washing the mirrors to remove accumulated dust and replenishing small losses to the cooling system radiator in a 50-50 glycol-water coolant.

The PCUs are approximately 7 ft long, 5 ft wide, and 3 ft high and weigh approximately 1,400 pounds.

### **2.2.2.4 Project Buildings and Structures**

A number of building and structures will be required on the project site, as listed in Table 2-4 and as described below. All buildings and structures on the project site would be constructed in accordance with the appropriate edition of the California Building Code (CBC) and other applicable LORS.

The Main Services Complex would include a number structures and facilities. This Complex would be located in a central location on the project site to provide for efficient access routes for maintenance vehicles servicing the SunCatcher solar field. Structures and facilities in the Main Services Complex will include the main control room; warehouse and shop spaces to provide work areas and storage for spare parts for project maintenance; meeting and training rooms; maintenance and engineering offices; and administrative offices.

The administration offices and personnel facilities would be in a one-story operation and administration building. That building would be approximately 200 ft long, 150 ft wide, and 14 ft high. This building would also contain meeting and training rooms, engineering offices, a visitor's room, and support services.

The project maintenance facilities, shop, and warehouse storage building would be adjacent to the operation and administration building. The maintenance building would be approximately 180 ft wide, 250 ft long, and 44 ft high. This building would contain maintenance shops and

offices, PCU rebuild areas, maintenance vehicle servicing bays, chemical storage rooms, the main electrical room, and warehouse storage for maintenance parts to service the SunCatchers.

The water treatment shade structure would be northeast of and next to the Main Services Complex. That structure would house water treatment equipment and safe storage areas for water treatment chemicals. A motor control center for the water treatment equipment and pumps would be in the structure. Two netted wastewater evaporative ponds for water treatment containment would be just north of the water treatment structure.

A control building would be located near the on-site electricity substation. This building would contain relay and control systems for the substation and the project operations control room.

A diesel-powered fire water pump and a diesel operated standby power generator would be adjacent to and on the north side of the operation and administration building.

Electric service for the Main Services Complex would be obtained from Imperial Irrigation District (IID). Electric power would be provided via an overhead service line from an existing IID overhead distribution line on the north side of Evan Hewes Highway. The applicant would be responsible for applying to the IID for the extension of electric lines from the existing overhead line onto the IVS project site. The IID would need to apply for and receive an easement from the BLM for the part of that line on BLM managed land on the IVS project site.

Communications service for the Main Services Complex would be provided by L3 Communications Holdings, Inc. That service would be provided via an overhead service line from existing underground communications lines on the north side of the railroad south of Evan Hewes Highway. The applicant would be responsible for applying to L3 Communications Holdings, Inc. for the extension of the existing communication line onto the IVS project site. L3 Communications Holdings, Inc. would need to apply for and receive an easement from the BLM for the part of that line on BLM managed land on the IVS project site.

The operation and administration building, maintenance building, and Main Services Complex would be manufactured buildings painted with a matching desert sand color. The water treatment building and the water holding tanks, including the potable water, raw water, and demineralized/fire protection water tanks at the Main Services Complex, would also be painted with a matching desert sand color.

The exterior material for the assembly buildings would be a fire retardant vinyl fluoride film with ultraviolet blocking characteristics and would be chemical and weather resistant. The exteriors would be painted a desert sand color to match the other structures.

The IVS project includes an electrical transmission line, water supply pipeline, and a site access road. The off-site 6-in-diameter water supply pipeline would extend approximately 11.8 mi from the SWWTP to the project site boundary. The water supply pipeline would be routed in the Evan Hewes Highway ROW, or adjacent to that ROW on public and private lands. As described earlier, the applicant is proposing an alternative water supply source until the improvements at the SWWTP are operational and the SCWD is able to provide treated water to the site.

Approximately 7.6 mi of the 10.3-mile double-circuit generation interconnection transmission line would be constructed off-site. The transmission line would connect the IVS project on-site substation to the existing San Diego Gas & Electric (SDG&E) Imperial Valley Substation.

A site access road would be constructed from Evan Hewes Highway to the northern boundary of the project site.

The project site will be fenced for security. The design of the fencing will be finalized in coordination with the regulatory and resource agencies to protect sensitive ecological areas and address storm flows in washes. The fenced boundary of the site would encompass approximately 6,500 ac of land, not including the private parcels of land designated as not a part of the project.

During project construction and operation, the main access to the project site would be from the north from Evan Hewes Highway. Secondary access would be from the east via Dunaway Road and Interstate 8 (I-8). There will be paved arterial roads, unpaved perimeter roads, and unpaved access roads on the project site. The paved roads would reduce fugitive dust while allowing full access to all dishes and infrastructure. Polymeric stabilizers may be used in lieu of traditional road construction materials for paved roads and/or to stabilize unpaved roads. All access to the project site would be through controlled gates.

### **2.2.3 Construction Activities**

#### **2.2.3.1 Overview of Construction**

The IVS project would be constructed in two phases. Phase I would consist of the assembly and installation of up to 12,000 SunCatchers configured in 200 1.5-MW solar groups of 60 SunCatchers per group. Phase I would have a net nominal generating capacity of 300 MW. Phase II would add approximately 18,000 SunCatchers, expanding the IVS project to a total of approximately 30,000 SunCatchers configured in 500 1.5 MW solar groups with a total net generating capacity of 750 MW. The construction and installation of the 30,000 SunCatchers will take approximately 40 months.

Heavy construction for the project would be scheduled to occur between 0700 and 1900 Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities.

Some construction activities would continue 24 hours per day, 7 days per week. These activities include, but are not limited to, SunCatcher assembly, refueling of equipment, staging of materials for the next day's construction activities, quality assurance/control, and commissioning.

The construction of the IVS project would be conducted in accordance with project plans and mitigation measures to ensure the construction conforms with applicable LORS and addresses potential adverse project impacts. The plans and measures are provided in Chapter 4, Environmental Consequences.

### **2.2.3.2 Temporary Facilities and Structures**

The construction of the IVS project would require some temporary facilities and structures as described below.

#### **Temporary Laydown Areas**

Two temporary laydown areas would be required during construction of the IVS project. One would be on an approximately 110 ac parcel east of Dunaway Road and north of I-8. The other laydown area would be on approximately 11 ac on the project site, adjacent to the Main Services Complex.

#### **Temporary SunCatcher Assembly Buildings**

The SunCatcher assembly would be performed on-site in temporary structures. These buildings would be decommissioned after all the SunCatchers are assembled and installed. The three assembly buildings would be adjacent to the Main Services Complex.

Each assembly building would be 170 ft wide, 211 ft long, and 78 ft high and would contain two assembly lines. Each assembly building would be adjacent to a 50 ft by 510 ft concrete pad for the storage of SunCatcher components and assembled SunCatcher staging before field installation.

The primary purpose of the SunCatcher assembly buildings would be the assembly of the SunCatcher superstructure, the main beam assembly and trusses, the pedestal trunnion, mirrors, wire harnesses, control systems, drive position motors, and the calibration of the

mirrors and control systems before field installation. Each assembly bay would be equipped with an automated platform on rails to move each SunCatcher through the assembly process.

There would be transport trailer storage south of the assembly bays. This storage facility would accommodate approximately 75 to 100 trailers, maintaining a 3 to 5 day inventory of SunCatcher parts during the assembly phase of construction.

The temporary assembly buildings would be decommissioned and salvaged after all the SunCatchers are assembled and installed.

### **2.2.3.3 Site Grading and Drainage**

Brush trimming would be conducted between alternating rows of SunCatchers during construction and operations. This trimming would consist of cutting the top of the existing brush while leaving the existing native plant root system in place to minimize soil erosion. To minimize shading on the SunCatchers and prevent potential brush fire hazards, natural vegetation would be cleared in the area of each SunCatcher as well as on either side of the paved arterial roads. Vegetation would be removed (mowed) during installation of the SunCatchers and only the areas beneath the SunCatchers would be maintained in a mowed condition to eliminate interference with dish operations. Unpaved roads used for maintenance of the dishes would also remain unvegetated.

After the initial installation of the dishes, the areas between each set of dishes (two rows of six SunCatchers) and each array group (five groups of 12-unit sets) would be left undisturbed, and these areas would return to a vegetated condition. It is estimated that only 5 percent of the area originally mowed for the installation of the SunCatcher units would be maintained in a mowed condition after the construction of the project is complete.

After brush has been trimmed, blading for roads and foundations would be conducted between alternating rows to provide access to individual SunCatchers. Blading would consist of limited removal of terrain undulations. Although ground disturbance would be minimized wherever possible, localized rises or depressions within the individual 1.5-MW solar groups may be removed to provide for the proper alignment and operation of the individual SunCatchers. Paved road would be constructed as close to the existing topography as possible, with limited cut-and-fill operations to maintain a maximum 10 percent slope on the roads.

The layout of the project facilities would maintain the local pre-development drainage patterns where feasible, and water discharge from the site would remain at the eastern boundary. The paved roads would have a low-flow, unpaved swale or road dip as needed to convey nuisance runoff to existing drainage channels/swales. It is expected that storm water runoff would flow

over the crown of the paved roads, which are typically less than 6 in from the swale flow line to the crown at the centerline of the road, thus maintaining existing local drainage patterns during storms. Unpaved roads would use low-flow culverts.

There would be localized channel grading on a limited basis to improve channel hydraulics within the dry washes and to control flow direction where buildings and roads are proposed. The Main Services Complex would be protected from a 100-year flood by berms or channels that would direct flows around the perimeter of the Complex, if required.

## **2.2.4 Operations and Maintenance Activities**

### **2.2.4.1 Electricity Generation**

The IVS project would be an as-available resource. The project would operate anywhere between a minimum of approximately 18 MW net when the first SunCatcher units are interconnected to the grid to 750 MW on completion of installation of all 30,000 SunCatchers. The capability for independent operation of all 30,000 units would provide for maximum flexibility in operations.

The electricity generated by the IVS project would be dispatched by the California Independent System Operator (California ISO), through day-ahead, hour-ahead, and real-time scheduling, as required to meet the demands of the southern California market. The market would dictate unit operations and total power requirements. The IVS project is anticipated to operate approximately 3,500 hours yearly, with an overall availability of 99 percent or higher. The number of available operating hours will be determined by the availability of the sun's energy at greater than 250 watts per square meter (sq m). SunCatchers would be unable to generate electricity when the sun's energy is below 250 watts per sq m such as in the early morning, late evening, and when cloud cover limits the sun's energy. SunCatchers would also be unable to generate electricity during daylight hours when wind speed exceeds 35 mph, because the SunCatchers would be stowed in a safe de-track position at or above this wind speed to prevent damage SunCatchers. SunCatchers are designed to withstand wind speeds of 50 mph in the operating mode and 90 mph in the stowed position. Because the SunCatchers move slowly, they would start moving into the stow position once winds reach 35 mph in order to be in the stow position by the time winds reach 90 mph. Because of the size of the project site, cloud cover and/or wind conditions may affect only some of the SunCatchers at any given time.

It is expected that the IVS project would be operated with a staff of approximately 164 full-time employees. The project would operate 7 days per week, generating electricity during normal

daylight hours when the solar energy is available. Maintenance activities would occur 7 days a week, 24 hours a day to ensure SunCatcher availability when solar energy is available.

#### **2.2.4.2 Transmission System Interconnection and Upgrades**

The IVS project would include construction of a new 230-kV substation approximately in the center of the project site. The substation would consist of an open air bus with 15 35-kV collection feeder circuit breakers. Each feeder breaker would be connected to one of the 48- or 51-MW overhead collection lines. Additional 35-kV circuit breakers would connect to power factor correction capacitor banks located in the substation yard. This new substation would be connected to the existing SDG&E Imperial Valley Substation via an approximately 10.3-mi long, double-circuit, 230-kV transmission line. Other than this interconnection transmission line, no new transmission lines or off-site substations would be required for the operation of the 300-MW Phase I of the IVS project. The substation on the IVS project site would be expanded with the addition of 3 power transformers in Phase II of the IVS project.

Control, metering, and protection systems for the line, substation, and collection systems would be in a control building adjacent to the substation. The control building would also contain the necessary communications equipment to meet owner, California ISO, and SDG&E requirements. Additional substation equipment would include a 34.5-kV power-factor correction capacitor control system designed to meet the power factor and zero and low-voltage ride-through requirements of the Interconnect Agreement.

The on-site segment of the interconnection transmission line would be installed in a 100 ft wide ROW from the IVS project substation east and south to the point where the SDG&E Southwest Powerlink transmission line ROW crosses the southern boundary of the project site. That routing was selected to minimize the distance required and to reduce the undercrossing of the line with assembled SunCatchers.

The off-site segment of the 230-kV interconnect transmission line would be routed in a 100-ft wide ROW parallel to the existing SDG&E 500-kV Southwest Powerlink transmission line on the southwest side until approximately the third tower from the SDG&E Imperial Valley Substation, where the line would cross under the existing 500-kV transmission line. This route was chosen to minimize effects on the flat-tailed horned lizard management area south of I-8 by using existing access roads for the existing transmission line and by placing the interconnect transmission line immediately adjacent to an existing disturbed area.

The interconnect transmission line would cross under the existing 500-kV transmission line and the proposed future second 500-kV transmission line (part of the Sunrise Powerlink project) at

approximately the third tower from the SDG&E Imperial Valley Substation and would then continue east and due south to the point of interconnect. This crossing point was selected to maintain the routing along the existing corridor as long as possible.

The transmission line towers would consist of H-frame towers at the undercrossing of the existing 500-kV transmission line and double-circuit lattice steel towers and/or steel poles elsewhere. Both circuits of the overhead 230-kV transmission line would be constructed with one 1,590-kilo circular miles/phase, aluminum steel-reinforced conductor per line, each thermally rated to carry full project output in emergency conditions and one-half of project output in normal conditions. Two fiber optic cables would be provided for communication with SDG&E and the California ISO.

Each set of overhead 230-kV transmission conductors to the physical connection with the existing Imperial Valley Substation 500-kV transmission line would be supported by a dead-end structure in the IVS project substation and 85 to 100 double-circuit lattice steel transmission towers and/or steel poles.

### **2.2.4.3 Hydrogen System**

The hydrogen gas needed during IVS project operations will be produced using electrolysis by a single on-site hydrogen generator. The hydrogen generator will produce 1,065 standard cubic feet of hydrogen per hour (scfh) and will require 146 watts/scf of electricity and 2.6 cubic inches (in) of water/scf/hour during operation. Approximately 184 gallons per day (gpd) of water, or 0.0133 acre feet per year, would be required for this generator.

Reclaimed water would be obtained from the Seeley County Water District (SCWD), processed through the on-site reverse osmosis (RO) system to produce demineralized water and fed to the electrolyzer mounted on the hydrogen generator skid. The electrolyzer would eliminate any final impurities in the water prior to processing. The annual power consumption to meet the hydrogen production needs is 100 KW per day, or 36.6 MW per year. Although the hydrogen generator could run full time if needed to support the SunCatcher hydrogen requirements, the generator would normally be operated at off-peak electric hours using grid power. The hydrogen gas would be stored in a steel storage tank capable of storing approximately 2 days supply of hydrogen gas. It would be piped through a 1.5 in diameter stainless steel piping system to 87 individual compressor groups. Each compressor group will be electrically operated and consist of a compressor, delivering gas at approximately 2,900 pounds per square inch gauge (psig) pressure, and a high pressure supply tank.

Initially, it would take 3.4 scf of hydrogen to charge each Stirling engine. Each power conversion unit (PCU) is estimated to lose about 200 scf of hydrogen per year. Each high pressure supply tank would supply hydrogen gas to 360 SunCatchers via a 0.25 in diameter stainless tubing. A low pressure dump tank would be installed with each compressor group using a 0.25 in diameter stainless steel return line to recover hydrogen gas when the SunCatchers are not in-service. This would reduce hydrogen leaks through fittings and seals on the Stirling Engine. In the event the hydrogen generator fails, an unloading station designed to receive and transfer hydrogen gas to the storage tank would allow for the delivery of hydrogen gas to the site by an outside supplier. The hydrogen gas storage tank would provide a few days of hydrogen supply as a back-up system. SES would complete all scheduled maintenance to the hydrogen generator, when the gas supply is adequate.

The applicant described the hydrogen use, supply and storage in the AFC, filed June 30, 2008. The hydrogen system was described as a k-bottle of hydrogen on each Power Conversion Unit (PCU). One hydrogen gas cylinder would contain approximately 195 cubic feet of hydrogen, used to replenish lost hydrogen gas within the gas circuit. Each k-bottle was to be supported from the base of the PCU boom. Each PCU's k-bottle would either need to be removed and replaced or refilled at each dish site as required (approximately two times per year). The applicant reconsidered the plan for providing hydrogen to the PCUs and has proposed an on-site hydrogen gas supply, storage and distribution system that would eliminate the need for the delivery of hydrogen k-bottles.

#### **2.2.4.4 Drainage**

Arizona crossings (road dips) would be placed along the roads or low-flow culverts consisting of a small-diameter storm drain with a perforated stem pipe, as needed to cross the minor or major channels/swales. These designs would be based on best management practices (BMPs) for erosion and sediment control. Arizona crossings would also be used for major washes where the channel cross section exceeds 8 ft in width and 3 ft in depth or exceeds 20 ft in width and 2 ft in depth. The road section at the channel flow line would not have a crown. If asphalt is selected as a paving material, road protection would be provided by a concrete cut-off wall along the edges of the road with un-grouted (loose) riprap upstream and downstream of the concrete cut-off wall. Alternatively, if polymeric stabilizers are selected, no protection measures would be used or protection may be limited to un-grouted (loose) riprap at critical areas.

The proposed east-west on-site paved arterial road between the Main Services Complex and Dunaway Road would be designed as a designated evacuation route. The culverts for this road would be designed so that the driving surface of the road section is constructed above the projected profile of a 25-year event.

Road maintenance is anticipated to be required after rainfall events. For minor storm events, it is anticipated that the unpaved road sections may need to be bladed to remove soil deposition, along with sediment removal from stem pipe risers at the culvert locations. For major storm events, in addition to that blading and sediment removal, repairs may be required due to possible damage to pavement where the roads cross channels and where flows exceed the culvert capacity. Additional maintenance may be required after major storm events to replace soil eroded from around any SunCatcher pedestals located in washes.

The building sites would be developed per applicable drainage criteria, with provision for soft bottom storm water retention basins. Rainfall from paved areas and building roofs would be collected and directed to those storm water retention basins. The retention or detention basins would have a total volume capacity for a 3-in minimum precipitation covering the entire site. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas. The retention basins would be designed so that the retained flows would empty within 72 hours after the storm to provide mosquito abatement. This design can be accomplished by draining, evaporation, infiltration, or a combination of these.

The post-development flow rates released from the project site are expected to be less than the pre-development flow rates based on the following:

- Except for the building sites, the majority of the project site would remain 100 percent pervious, as only a negligible part of the site would be covered by pavement and the SunCatcher foundations.
- The increased runoff expected from the building sites would be over-mitigated by capturing 100 percent of the runoff in a retention basin, where the storm runoff would be infiltrated and/or evaporated to the atmosphere.

The proposed perforated risers constructed upstream of the roadway culverts would provide for additional detention.

#### **2.2.4.5 Water Supply and Treatment**

The following types of water will be required for the project:

- Equipment washing water,
- Potable water,
- Dust control water, and

- Fire protection water.

When completed, the IVS project would require a total of approximately 32.7 acre-feet (af) of raw water per year. SunCatcher mirror washing and operations dust control under regular maintenance routines will require an average of approximately 23.3 gallons (gal) of raw water per minute, with a daily maximum requirement of approximately 39.2 gal of raw water per minute during the summer peak months each year, when each SunCatcher receives a single mechanical wash per month.

Potable water to meet plant requirements would be delivered by truck and stored in a 5,000 gal tank in the water treatment area. This tank would be able to provide all required potable water for the operating facility for 2 to 3 days at which time it would need to be replenished.

The IVS project water supply requirements are tabulated in detail in the SA/DEIS.

The IVS project was assumed to have tertiary treated water delivered via a pipeline from the SWWTP. This will require a water supply pipeline approximately 11.8 mi long, buried within the ROW of Evan Hewes Highway approximately 30 inches below the existing grade. The line would enter the IVS project site approximately 1,000 yards east of Plaster City and then run due south to the Raw Water Storage Tank on the IVS project site.

The SWWTP is at 1898 West Main Street in Seeley, California, approximately 13 mi east of the IVS project site. It is operated by the Seeley County Water District (SCWD) and is designed to produce secondary treated water at the rate of 200,000 gallons per day (gpd) (139 gallons per minute [gpm] or 224 acre feet per year [afy]).

According to the current National Pollutant Discharge Elimination System (NPDES) Permit for the SWWTP, the treatment system consists of a lift station, a drum screen, a bar screen, a “Clemson” aerated pond treatment system with surface aerators, pressure sand filters, and an ultraviolet (UV) disinfection system. The facility’s “Clemson” system consists of 5 aerated ponds operated in series. Bio-solids are removed by draining the last 2 ponds, removing the sludge and storing it in the out of service treatment ponds of the replaced treatment system, prior to removal. Wastewater is discharged from Discharge Point 001 to the New River, a water of the United States, tributary to the Salton Sea, and within the Salton Sea Transboundary Watershed.

There is a proposed upgrade to the existing SWWTP facility to allow it to meet Title 22 water quality standards and would fund the training of operators for the new facility. The SCWD would provide as much treated effluent water as needed to the IVS project. The current influent flow rate is approximately 150,000 gpd, or 168 afy. Improvements to the SWWTP would increase the Title 22 effluent capacity to 250,000 gpd. Any surplus water not needed by the IVS project will

be used by SCWD for irrigation or discharged into the New River. The discharge rate is based on the population of the service area, not the annual rain fall.

The water from SWWTP is characterized as secondary treated water and will require treatment to remove dissolved solids for SunCatcher mirror wash water applications.

In March 2010, the CEC prepared analysis regarding the use of secondary treated water from the SWWTP. That analysis is provided in Appendix E, Seeley Wastewater Treatment Plant Improvements.

As described earlier, the applicant proposes to use a temporary, alternative water supply until SWWTP water is available. This alternative water supply would be provided from an existing, permitted well through the Dan Boyer Water Company in Ocotillo. That water source is potable and permitted for use by construction or personal consumption. It is expected that the Build Alternatives would require this temporary water supply for between 6 months and 3 years. Water would be transported from the well to the IVS project site in 7,000 gal water trucks. It is anticipated that up to 13 round-trip truck trips per day would be required during construction and up to 7 round-trip truck trips per day.

#### **2.2.4.6 Wastewater Management**

The wastewater generated on site by a reverse osmosis (RO) unit would contain relatively high concentrations of total dissolved solids (TDS). Wastewater or brine generated by the RO unit would be discharged to a polyvinyl chloride (PVC)-lined concrete evaporation pond that meets the requirements of the local Regional Water Quality Control Board. Each pond would be sized to contain 1 year of discharge flow, approximately 2.4 million gallons (gal). A minimum of 1 year is required for the wastewater to undergo the evaporation process. The second pond would be in operation while the first is undergoing evaporation. The two ponds would alternate their functions on an annual basis.

After the brine has gone through the evaporation process, the solids that settle at the bottom of the evaporation pond would be collected and disposed of in an appropriate non-hazardous waste disposal facility. The solids would be removed during the summer months, when the concentration of solids would be at its greatest due to an increase in evaporation rates, to achieve maximum solids removal.

### **2.2.4.7 Hazardous Waste Management**

Hazardous materials used during facility construction and operations would include paints, epoxies, grease, transformer oil, and caustic electrolytes (battery fluid). Several methods would be used to properly manage and dispose of hazardous materials and wastes. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in large storage tanks, while most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in concrete containment areas.

### **2.2.5 Decommissioning Activities**

Project closure can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, including closure for overhaul or replacement of the major components, such as major transformers, switchgear, etc. Causes for temporary closure include inclement weather and/or natural hazards (e.g., winds in excess of 35 mph, or cloudy conditions limiting solar insolation values to below the minimum solar insolation required for positive power generation, etc.), or damage to the facility from earthquake, fire, storm, or other natural acts.

Permanent closure is defined as a cessation in operations with no intent to restart operations owing to project age, damage to the project that is beyond repair, adverse economic conditions, or other substantial reasons.

The decommissioning associated with temporary and permanent closures are described in the following sections.

#### **2.2.5.1 Temporary Closures**

In the unforeseen event that the IVS project facility is temporarily closed, a contingency plan for the temporary cessation of operations will be implemented. The contingency plan will be followed to ensure conformance with applicable LORS and to protect public health, safety, and the environment. The plan, depending on the expected duration of the shutdown, may include the draining of chemicals from storage tanks and other equipment and the safe shutdown of equipment. Wastes will be disposed of according to applicable LORS.

### **2.2.5.2 Permanent Closure**

The planned life of the IVS project is 40 years. However, if the project is still economically viable, it could be operated longer than 40 years. It is also possible that the project could become economically noncompetitive before 40 years have passed, resulting in early decommissioning. Whenever the project is permanently closed, the closure procedure will follow a decommissioning plan as generally described below.

The removal of the project from service, or decommissioning, would include the removal of equipment and appurtenant facilities. Because the conditions that would affect the decommissioning decision are largely unknown at this time, these conditions would be presented to the CEC, the BLM, and other applicable agencies for review and approval at the time of decommissioning, as part of the decommissioning plan. The decommissioning plan will discuss the following:

- Proposed decommissioning activities for the project and appurtenant facilities constructed as part of the project,
- Conformance of the proposed decommissioning activities with applicable LORS and local/regional plans,
- Activities necessary to restore the project site if the plan requires removal of equipment and appurtenant facilities,
- Decommissioning alternatives other than complete restoration to the original condition, and
- Associated costs of the proposed decommissioning and the source of funds to pay for the decommissioning.

In general, the decommissioning plan for the IVS project will attempt to maximize the recycling of project components. If not recyclable, the project components will be removed from the site and disposed of in an appropriate landfill or other disposal facility. The operator will attempt to sell unused chemicals back to the suppliers or other purchasers or users. Equipment containing chemicals will be drained and shut down to ensure public health and safety and to protect the environment. Nonhazardous wastes will be collected and disposed of in appropriate landfills or waste collection facilities. Hazardous wastes will be disposed of according to applicable LORS. The site will be secured 24 hours per day during the decommissioning activities, and the applicant will provide periodic update reports on the status of the implementation of the decommissioning plan to the CEC, the BLM, and other appropriate parties.

### **2.2.6 Related Facilities**

This section describes the Sunrise Powerlink Project Transmission Upgrades which are related to the IVS project, but outside the BLM's ROW grant and CDCA Plan amendment consideration for the IVS project.

Phase II of the IVS project, and delivery of the additional renewable power generated by the total 750 MW IVS project to the San Diego regional load center, would require the construction of the 500-kV Sunrise Powerlink transmission line proposed by SDG&E. The California Public Utilities Commission (CPUC) is the lead agency for the CEQA compliance for that project and the BLM is the lead agency for the NEPA compliance for that project. An ROD for the Sunrise Powerlink Project has been issued by the BLM.

SDG&E received a Certificate of Public Convenience and Necessity from the CPUC for the Sunrise Powerlink project. Construction on the Sunrise Powerlink project is scheduled to begin mid to late 2010 once the CPUC and the BLM issue Notices to Proceed (NTPs) for each segment. The issuance of those NTPs will be contingent on SDG&E compliance with pre-construction requirements as specified by the approved mitigation measures for the project.

The Sunrise Powerlink project consists of a 150-mi long transmission line between Imperial and San Diego Counties. The major project components are:

- A new 91-mi long, single-circuit 500 kV overhead electric transmission line linking SDG&E's existing Imperial Valley Substation in Imperial County near the City of El Centro with a new 500/230 kV Central East Substation to be constructed in the San Felipe area of central San Diego County, southwest of the intersection of County Highways S22 and S2; and
- A new 59-mi long 230 kV double-circuit and single-circuit transmission line, running partly overhead and partly underground through San Diego County from the proposed new 500/230 kV Central East Substation to SDG&E's existing Peñasquitos Substation in the City of San Diego.

## **2.3 Agency Preferred Alternative**

The BLM has identified the Agency Preferred Alternative. It is the 709 MW Alternative, which is essentially the IVS project with modifications. The BLM based its identification of the Agency Preferred Alternative on:

- The analysis of the potential environmental effects of the IVS project and the other project alternatives as documented in the SA/DEIS
- Input from agencies, groups and organizations, and members of the general public on the SA/DEIS
- Consultation with the Corps regarding minimization of avoidance of drainages on the site consistent with the requirements of the Federal Clean Water Act

The primary modifications made to the 750 MW IVS project to develop the 709 MW Agency Preferred Alternative were redistribution of the SunCatchers and other facilities on the site to minimize impacts to drainages and cultural resources by moving SunCatchers and other facilities out of and farther away from drainages and cultural resources. The following additional modifications were made:

- Reduction of the total number of SunCatchers from 30,000 to 28,360 SunCatchers
- Reduction in the amount of energy generated from 750 MW to 709 MW
- Other minor reductions or other modifications to the project features to support 709 MW and 28,360 SunCatchers

The Agency Preferred Alternative would require the following BLM actions:

- Compliance with the requirements of NEPA
- Amendment of the CDCA Plan to reflect the use of the site for solar energy generation
- Approval of a ROW grant for approximately 6,144 ac under the jurisdiction of the BLM

The analysis of the potential environmental impacts of the Agency Preferred Alternative is provided in Appendix B and is described in Chapter 4.0, Environmental Consequences. The Agency Preferred Alternative is also the Corps' preliminary Least Environmentally Damaging Practicable Alternative (LEDPA). This proposed LEDPA is currently under detailed consideration and evaluation as described in the *Draft 404B-1 Alternatives Analysis* included in Appendix H.

## **2.4 300 MW Alternative**

### **2.4.1 Overview**

As shown in Table 2-1, the 300 MW Alternative is a 300 MW solar project on part of the site for the IVS project. The 300 MW Alternative would provide 12,000 SunCatchers generating 300 MW, similar to Phase I of the IVS project. The site boundary of the 300 MW Alternative is shown on Figure 2-4. The 300 MW Alternative would require a ROW grant from the BLM and would require a CDCA Plan amendment to allow solar use on the site. The general characteristics of the 300 MW Alternative are summarized in Table 2-1 and are described briefly in the following sections.

### **2.4.2 Structures and Facilities**

The 300 MW Alternative would consist of 12,000 SunCatchers with a net generating capacity of approximately 300 MW on approximately 2,600 ac of land. The 300 MW Alternative would retain 40 percent of the SunCatchers and would affect 40 percent of the land area compared to the 750 MW IVS project. The SunCatchers and the supporting infrastructure for the 300 MW Alternative would be similar to the IVS project, except reduced to support 12,000 instead of 30,000 SunCatchers.

Similar to the IVS project, the 300 MW Alternative would transmit power to the grid through the SDG&E Imperial Valley Substation and would require supporting infrastructure including a water supply pipeline, transmission line, road access, operations facilities, substation, and hydrogen system. This infrastructure would require approximately 40 ac.

### **2.4.3 Construction Activities**

The construction of the 300 MW Alternative would be similar to the IVS project, except scaled down for the construction of 12,000 SunCatchers and the infrastructure to support those SunCatchers. The construction activities for the 300 MW Alternative would be similar to the activities described above for the IVS project. The construction of the 300 MW Alternative would occur in one phase. The construction period for the 300 MW Alternative would be approximately the same as the construction period for Phase 1 of the IVS project.

#### **2.4.4 Operations and Maintenance Activities**

The operations and maintenance activities under the 300 MW Alternative would be the same as under the IVS project, except reduced to support 12,000 SunCatchers instead of the 30,000 SunCatchers under the IVS project.

#### **2.4.5 Decommissioning Activities**

The decommissioning of the SunCatchers and other facilities on the project site under the 300 MW Alternative would be the same as for the IVS project, except reduced to address decommissioning 12,000 instead of 30,000 SunCatchers.

#### **2.4.6 Related Facilities**

The 300 MW Alternative would not require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The 300 MW Alternative would use reclaimed water from the SWWTP which would be supported by the proposed upgrades that plant. The 300 MW Alternative would require less reclaimed water than the IVS project because only 12,000 and not 30,000 SunCatchers would require washing.

### **2.5 Drainage Avoidance #1 Alternative**

#### **2.5.1 Overview**

The Drainage Avoidance #1 Alternative was developed in consultation with the Corps to reduce impacts on waters of the United States. The Drainage Avoidance #1 Alternative would prohibit permanent impacts within the 10 primary drainages within the boundary of the project site.<sup>1</sup>

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<sup>1</sup> The ephemeral streams on the project site have been categorized as primary or secondary for the purposes of developing and analyzing project alternatives. The categorization is further described in Section 3.3, Biological Resources, but generally primary streams are main-stem streams originating south of the project site with a minimum Strahler order of 3 or higher and secondary streams are tributaries that originate on-site with a Strahler order of 1 or 2 (Strahler 1957).

The Drainage Avoidance #1 Alternative is shown on Figure 2-5. Although the Drainage Avoidance #1 Alternative would have the same site boundary as the IVS project, it would prohibit installation of any permanent structures within the ten primary drainages. As shown in Table 2-1, this would reduce the acreage available for development and would reduce the amount of power that could be generated on the site. This would reduce the acreage available for development from 6,500 to 4,690 ac which would reduce the generation capacity from 750 MW under the IVS project to 632 MW with a total of 25,000 SunCatchers.

The Drainage Avoidance #1 Alternative was developed in consultation with the Corps with the following considerations:

- To avoid permanent effects on all Primary Waters of the United States; those primary streams are shown on Figure 2-5.
- Tributaries to the primary streams are considered secondary streams and are not fully avoided under the Drainage Avoidance #1 Alternative.
- The Drainage Avoidance #1 Alternative would allow for limited road and transmission line crossings through primary streams, but would prohibit the installation of SunCatchers within waters of the United States.
- Transmission crossings below the existing grades on the site would have temporary impacts and road crossings would be designed to have minimal impacts. Minimal impacts means that arch crossings, bottomless culverts, or bridges would be used that allow full conveyance of hydrology and sediment and help maintain habitat connectivity for wildlife.

Under the Drainage Avoidance #1 Alternative, a ROW grant for the appropriate acreage would be issued by the BLM, and the CDCA plan would be amended to include the solar power generation facilities and transmission line as approved uses on the site in the amended CDCA Plan.

### **2.5.2 Structures and Facilities**

The Drainage Avoidance #1 Alternative would provide 25,000 SunCatchers and would transmit power from the project site to the SDG&E Imperial Valley Substation. The Drainage Avoidance #1 Alternative would require infrastructure including a water supply pipeline, a transmission line from the site to the SDG&E Imperial Valley Substation, road access, operations facilities and structures, an on-site substation, and a hydrogen system. This infrastructure would be similar to

the structures and facilities under the IVS project, reduced to support 25,000 SunCatchers rather than the 30,000 SunCatchers in the IVS project.

### **2.5.3 Construction Activities**

The construction of the Drainage Avoidance #1 Alternative would be similar to the IVS project, except scaled down for the construction of 25,000 SunCatchers and the infrastructure to support those SunCatchers. In addition, there would be substantial restrictions on access to, in, and across the primary drainages on the site during construction to avoid impacts to those drainages. The construction of the Drainage Avoidance #1 Alternative could occur in one or two phases. The construction period for the Drainage Avoidance #1 Alternative would be less than the construction period for the IVS project.

### **2.5.4 Operations and Maintenance Activities**

The operations and maintenance activities under the Drainage Avoidance #1 Alternative would be the same as under the IVS project, except reduced to support 25,000 SunCatchers instead of the 30,000 SunCatchers under the IVS project. In addition, there would be restrictions throughout the life of the project on access to, in, and across the primary drainages on the site under the Drainage Avoidance #1 Alternative.

### **2.5.5 Decommissioning Activities**

The decommissioning of the SunCatchers and other facilities on the project site under the Drainage Avoidance #1 Alternative would be the same as for the IVS project, except reduced to address decommissioning 25,000 instead of 30,000 SunCatchers. In addition, there would be restrictions on access to, in, and across the primary drainages on the site during the decommissioning under the Drainage Avoidance #1 Alternative.

### **2.5.6 Related Facilities**

The Drainage Avoidance #1 Alternative would require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The Drainage Avoidance #1 Alternative would use reclaimed water from the SWWTP which would be supported by the proposed upgrades to the plant. Drainage Avoidance #1 Alternative

would require less reclaimed water than the IVS project because 25,000 and not 30,000 SunCatchers would require washing.

## **2.6 Drainage Avoidance #2 Alternative**

### **2.6.1 Overview**

The Drainage Avoidance #2 Alternative would prohibit development in the easternmost and westernmost parts of the project site, where the largest drainage complexes are located. The Drainage Avoidance #2 Alternative is shown on Figure 2-6. It would reduce the overall size of the project area by over 50 percent (from 6,500 ac to 3,153 ac). It would also reduce the generation capacity from 750 MW to 423 MW (retaining about 42 percent of the proposed number of SunCatchers). In the Drainage Avoidance #2 Alternative, permanent structures (SunCatchers) would be allowed within all drainages inside the revised, smaller project boundary, but the only development allowed outside of the alternative boundary would be access roads and transmission line crossings.

The Drainage Avoidance #2 Alternative was developed in consultation with the Corps with the following intent:

- The alternative would avoid the most severe effects on tributaries to the New River and the Salton Sea by avoiding the largest drainage complexes.
- It would avoid effects on all primary and secondary streams on the western and eastern edges of the project site with the exception of limited road and transmission line crossings required to serve the remaining center part of the project site.
- The Drainage Avoidance #2 Alternative would require a ROW grant from the BLM and would require a CDCA Plan amendment to allow a solar use on the site.

### **2.6.2 Structures and Facilities**

The Drainage Avoidance #2 Alternative would provide 10,240 SunCatchers instead of the 30,000 SunCatchers under the IVS project. The Drainage Avoidance #2 Alternative would result in generation of approximately 423 MW on 3,153 ac of land. The Drainage Avoidance #2 Alternative would retain 42 percent of the SunCatchers and would affect 49 percent of the land area compared to the 750 MW IVS project. The SunCatchers and the supporting infrastructure

for the Drainage Avoidance #2 Alternative would be similar to the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

Similar to the IVS project, the Drainage Avoidance #2 Alternative would transmit power to the grid through the SDG&E Imperial Valley Substation and would require supporting infrastructure including a water supply pipeline, transmission line, road access, operations facilities, substation, and hydrogen system.

### **2.6.3 Construction Activities**

The construction of the Drainage Avoidance #2 Alternative could occur in one or two phases. The construction activities for the Drainage Avoidance #2 Alternative would be similar to the activities described above for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

### **2.6.4 Operations and Maintenance Activities**

The operation and maintenance activities for the Drainage Avoidance #2 Alternative would be similar to those described for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

### **2.6.5 Decommissioning Activities**

The decommissioning activities for the Drainage Avoidance #2 Alternative would be similar to those described for the IVS project, except reduced to support 10,240 instead of 30,000 SunCatchers.

### **2.6.6 Related Facilities**

The Drainage Avoidance #2 Alternative would/would not require the additional transmission capacity that would be available from the Sunrise Powerlink Project Transmission Upgrades project.

The Drainage Avoidance #2 Alternative would use reclaimed water from the SWWTP, which would be supported by the proposed upgrades to the plant. The Drainage Avoidance #2 Alternative would require less reclaimed water than the IVS project because 10,240 and not 30,000 SunCatchers would require washing.

## **2.7 No Action Alternatives**

As shown in Table 2-1, the BLM considered three No Action Alternatives. Those alternatives are described in the following sections.

### **2.7.1 No Action Alternative: No ROW Grant and No CDCA Plan Amendment**

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would not amend the CDCA Plan

This No Action Alternative reflects rejection of the IVS project as submitted in the ROW grant application and no further action on the part of BLM.

This No Action Alternative was evaluated in the SA/DEIS under CEQA and NEPA.

### **2.7.2 Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for No Solar**

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would amend the CDCA Plan to make the project site unavailable for any future solar development

This No Action Alternative reflects rejection of the IVS project as submitted in the ROW grant application and also amends the CDCA Plan to eliminate the possibility of future use of the site for any solar projects.

This No Action Alternative was evaluated in the SA/DEIS under NEPA only.

### **2.7.3 Land Use Plan Amendment Alternative – No Action Alternative: No ROW Grant and Amend the CDCA Plan for Other Solar**

Under this No Action Alternative, the following would occur:

- The BLM would not approve the ROW grant for the IVS project
- The BLM would amend the CDCA Plan to make the project site available for future solar development

In essence, this No Action Alternative reflects rejection of the project as submitted in the ROW grant application and also amends the CDCA Plan to allow for the future use of the site for solar projects.

This No Action Alternative was evaluated in the SA/DEIS under NEPA only.

## **2.8 Comparison of the Proposed Action and the Alternatives**

Tables ES-2 through ES-17, provided in the Executive Summary, summarize the impacts of the 750 MW IVS project, the 709 MW Agency Preferred Alternative, the other three Build Alternatives, the two CDCA Land Use Plan Amendment Alternatives, and the remaining No Action Alternative.

## **2.9 Alternatives Considered but Eliminated from Detailed Analysis**

### **2.9.1 Rationale for Eliminating Alternatives**

As discussed earlier, three alternative sites were considered for compliance under CEQA and the Federal CWA Section 404(b)(1) Guidelines. In addition, other alternative sites and various renewable and nonrenewable generation technologies were considered but eliminated from detailed analysis under NEPA. These alternatives were eliminated from detailed analysis because one or more of the following criteria from the *BLM NEPA Handbook H-1790-1* (BLM 2008) apply:

- (1) It is ineffective (it would not respond to the BLM project purpose and need)
- (2) It is technologically or economically infeasible
- (3) It is inconsistent with the basic policy objectives for the management of the area (not conforming to the CDCA plan)
- (4) Its implementation is remote or speculative
- (5) It is substantially similar in design to an alternative that is analyzed
- (6) It would have substantially similar effects to an alternative that is analyzed.

Not all these criteria from the *BLM Handbook* were used in eliminating alternatives from consideration as described below.

This process for eliminating these alternatives from detailed analysis complies with 40 Code of Federal Regulations (CFR) 1502.14(a) is described briefly in the following sections.

### **2.9.2 Alternative Sites Considered Under the California Environmental Quality Act and the Federal Clean Water Act But Not Under the National Environmental Policy Act**

Three of the eight alternative sites were evaluated in detail in the SA/DEIS under CEQA only: the Mesquite Lake, Agricultural Lands, and South of Highway 98 alternative sites. Those sites are shown on Figure 2-7 and are described briefly in Table 2-5. In the SA/DEIS, all three sites were evaluated considering a 750 MW project on those sites, similar to the IVS project. While the impacts of a solar project on these three sites would be similar to those of the IVS project in many resource elements, all three alternative sites are likely to have less severe cultural and visual impacts than on the IVS project site, and two of the three alternative sites would have reduced impacts to biological resources because they are on already disturbed land.

**Table 2-5 Alternative Sites Evaluated Under CEQA and Section 404 of the Federal Clean Water Act**

<b>Alternative Site</b>	<b>Description of Alternative</b>	<b>Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA</b>
<p>Mesquite Lake Alternative</p>	<p>The Mesquite Lake site is approximately 1 mi north of the City of Imperial and approximately 4 mi south of the City of Brawley. That site would be accessed via the Keystone Road exit from State Route 86R-86. The Mesquite Lake Alternative would require approximately 6,500 ac to accommodate a 750 MW solar project although it is possible that fewer than 6,500 ac could be required because this site is flatter and does not have large washes. The parcels constituting this alternative site are in private ownership.</p>	<p>The Mesquite Lake Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated by the BLM in the FEIS because the site consists of approximately 70 individual parcels owned by 52 different parties. The BLM does not own or manage any of those parcels. As a result, obtaining control over sufficient land at this site for the IVS project would be extremely remote. This site could result in substantial impacts to Corps jurisdictional waters. In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on this site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, it was not carried forward for analysis and evaluation under NEPA by the BLM because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For these reasons, the BLM did not consider this to be a reasonable site alternative.</p> <p>This alternative was evaluated in the Corps' <i>Draft 404B-1 Alternatives Analysis</i> provided in Appendix H. However, the Mesquite Lake site was considered impracticable and unreasonable by the Corps for two reasons: the site supports approximately 716 acres of wetlands mapped by the National Wetlands Inventory that may be all or partially Corps jurisdictional wetland waters of the United States and use of the site for the IVS project would likely result in greater impacts to waters of the United States, particularly to wetlands, which are special aquatic sites under Section 404 of the Clean Water Act; and obtaining ownership or access to 70 parcels owned by 52 different parties makes securing the site for solar development impracticable.</p>

<b>Alternative Site</b>	<b>Description of Alternative</b>	<b>Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA</b>
<p>Agricultural Lands Alternative</p>	<p>The Agricultural Lands site is approximately 7 miles west of Calexico, adjacent to the Wisteria and Wormwood Canals. This alternative would require approximately 4,600 ac to accommodate a 750 MW solar project. The parcels constituting this alternative site are in private ownership.</p>	<p>The Agricultural Lands Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated by the BLM in the FEIS because the site consists of 7 separate and unconnected parcels owned by different parties. The BLM does not own or manage any of those parcels. In addition, using noncontiguous parcels, although viable because the SunCatchers could be constructed in separate groups, would result in the need for an unknown amount of additional acreage to accommodate the same number of SunCatchers as the IVS project and to avoid shading effects outside the boundary of this site. Site security would be far more complicated, but not impossible, than a contiguous parcel of land. This site would also require 2 separate transmission interconnections because the parcels are separated by about 6 mi. Because the site consists of 7 separate parcels owned by different parties, obtaining site control would be challenging. In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on that site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, this site alternative was not carried forward by the BLM in the FEIS because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For all of these reasons, the BLM did not consider this to be a reasonable site alternative.</p> <p>This alternative was evaluated in the Corps' <i>Draft 404B-1 Alternatives Analysis</i> provided in Appendix H. The draft indicates this alternative would meet the Corps stated Overall Project Purpose, but may not meet the cost, logistical, and environmental screening criteria. As such, although this site alternative would be within the jurisdiction of the Corps, it was determined not to be a reasonable site location.</p>

Alternative Site	Description of Alternative	Comparison of Alternative Sites to Other Alternatives and Why Not Considered by the BLM Under NEPA
<p>South of Highway 98 Alternative</p>	<p>The South of Highway 98 Alternative site is on Federally owned land that is designated as BLM land, but it was withdrawn from BLM management by the Bureau of Reclamation in 1928. The approximately 5,000 ac site is about 4 mi southeast of El Centro. Highway 98 is the northern border of the alternative site and the United States/Mexico border is the southern border of the site. The site is between the Lake Cahuilla-D ACEC and would surround the BLM Tamarisk Long Term Visitor Area campground. It is north and south of the All-American Canal. The site is accessible via I-8 and Highway 98.</p>	<p>The South of Highway 98 Alternative was evaluated in detail in the SA/DEIS under the requirements of CEQA. This alternative site was not fully evaluated for NEPA purposes by the BLM in the FEIS because the site is directly adjacent to the Cahuilla-D ACEC and the Tamarisk Long-Term Visitor Area. This site would require an approximately 38 mi long water transmission pipeline from the SWWTP to the site and an approximately 30 mi transmission line to the SDG&amp;E Imperial Valley Substation, which far exceed the public lands required for water and transmission lines for the IVS project (proposed action). In addition, the use of this alternative site is speculative because the applicant has expressed no interest in attempting to acquire the land to develop the IVS project on that site and to the best of BLM's knowledge, the CEC has not received any applications proposing solar or other renewable energy projects on this site. Finally, although this site was evaluated by the CEC, this site alternative was not considered reasonable by the BLM because a project on this site would not require any action by BLM and would not meet the BLM project purpose and need. For these reasons, the BLM did not consider this to be a reasonable site alternative.</p> <p>This alternative was evaluated in the Corps' <i>Draft 404B-1 Alternatives Analysis</i> provided in Appendix H. The draft indicates this alternative would meet the Corps stated Overall Project Purpose, but may not meet the cost and environmental screening criteria. As such, although this site alternative would be within the jurisdiction of the Corps, it was determined not to be a reasonable site location.</p>

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: ac = acres; ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; CEC = California Energy Commission; CEQA = California Environmental Quality Act; Corps = United States Army Corps of Engineers; FEIS = Final Environmental Impact Statement; I-8 = Interstate 8; IVS = Imperial Valley Solar; mi = miles; MW = megawatts; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement; SDG&E = San Diego Gas and Electric; SWWTP = Seeley Wastewater Treatment Plant; waters of the U.S. = waters of the United States.

Two of the three alternative sites are not located on BLM-managed land, and the third site is subject to an existing land withdrawal. All three sites would be ineffective in that the sites would not meet the BLM purpose to identify and implement renewable energy projects on BLM-managed land, would not require any action by the BLM, and are not within the available decision space of the lead agency (the BLM). In addition, the Mesquite Lake Alternative is considered to be remote and speculative because site control would need to be secured for 70 parcels from 52 land owners. The Agricultural Lands Alternative consists of 7 separate and noncontiguous parcels of land, would also have similar site control issues, and would result in two separate transmission interconnections, each of which would require additional permitting from appropriate sources. The South of Highway 98 Alternative is directly adjacent to an Area of Critical Environmental Concern (ACEC) and long-term visitor area, land designations that are not prohibited from, but do not necessarily encompass, adjacent industrial development. Also, this site has been withdrawn for Federal Bureau of Reclamation purposes which have not been revoked, thereby making its use infeasible at the present time. For these reasons, the three private land alternatives are not further evaluated in the FEIS.

### **2.9.3 Other Alternatives Considered but Eliminated from Detailed Analysis**

In addition to the three alternative sites that were considered but not carried forward, several other sites and a number of technologies for renewable energy were also considered but not carried forward for detailed analysis in the SA/DEIS. Those alternatives are briefly described in Table 2-6 including the rationale for why they were eliminated from detailed analysis.

## **2.10 Overview of the Cumulative Impacts Analysis**

### **2.10.1 Overview**

This section provides information regarding cumulative projects and cumulative study areas considered in the cumulative impacts analyses conducted for the IVS project.

Preparation of a cumulative impact analysis is required under the National Environmental Policy Act (NEPA). A “cumulative impact” is an impact on the environment which results from the incremental impact of a proposed project when considered with other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such other actions (40 CFR Section 1508.7).

**Table 2-6 Alternatives Considered But Eliminated from Detailed Analysis**

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
900 MW Alternative	<p>The 900 MW Alternative was the original project proposed by the applicant. This Alternative was proposed to be constructed in two phases on approximately 7,600 ac. This Alternative would be dependent on expansion of the Sunrise Powerlink Project. 36,000 SunCatchers would be provided in this Alternative.</p> <p>The 900 MW Alternative would impact the same drainages as the IVS project as well as additional drainages on the easternmost side of the site that flow toward the Westside Main Canal.</p>	<p>The project applicant’s first proposal for the IVS project was for a 900 MW Alternative on a larger site at the same location as the 750 MW Alternative. Early analysis indicated that this alternative would result in substantial adverse impacts related to the ancient Lake Cahuilla, cultural resources, drainages, and biological resources among others. As a result, the applicant withdrew that proposal and submitted an application for certification to the CEC and a ROW grant application to the BLM proposing the 750 MW Alternative. The 750 MW Alternative was then identified by the CEC and the BLM as the proposed project/action and was evaluated in detail in the SA/DEIS. This alternative site was eliminated from detailed analysis because it would result in greater impacts for all resource elements. Further, implementation of a 900 MW Alternative is speculative because the applicant has expressed no interest in attempting to develop a 900 MW facility on the project site, and to the BLM and the CEC have not received any applications proposing a 900 MW facility on the IVS project site. The BLM determined that this site is ineffective in meeting the purpose and need for the project; is inconsistent with basic policy objectives and was eliminated during early application procedures; its early implementation is remote and speculative; the site is similar to the proposed action with similar, although greater environmental effects; and is, therefore, not an alternative that will avoid or minimize adverse effects of the 750 MW IVS project.</p>
Alternative Site #1	<p>Alternative Site #1 is in the WECO amendment area along the border between San Diego and Imperial Counties. It is north of the Fish Creek Mountains Wilderness, approximately 1 mile east of the Anza-Borrego Desert State Park, and less than 2 miles east of the Vallecito Mountain Wilderness in the Anza-</p>	<p>This Alternative was eliminated from detailed analysis because it would not substantially reduce the impacts of the IVS project; the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; the site is distant from existing roads and would require longer access roads; and it lacks</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	<p>Borrego Desert State Park. The Juan Bautista de Anza National Historic Trail crosses the site.</p>	<p>an adequate water supply. The site is in a DOD no fly/no build area and it would violate the DOD height restrictions for these zones; as such it is not a reasonable alternative within the jurisdiction of the DOD. This site is also much closer than the IVS project to the Anza-Borrego Desert State Park and the Vallecito Mountain Wilderness in the Anza-Borrego Desert State Park than the IVS site; and because of this location, implementation of this site may be remote or speculative. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project. The BLM determined that this site is ineffective in meeting the purpose and need for the project; it may be inconsistent with basic policy objectives due to wilderness considerations; its implementation is remote and speculative because, although it is within their jurisdiction, it is an unreasonable alternative to DOD and State Park’s interests; the site is similar to the proposed action with similar, although greater environmental effects; and is, therefore, not an alternative that will avoid or minimize adverse effects of the 750 MW IVS project.</p>
<p>Alternative Site #2</p>	<p>Alternative Site #2 is in the WECO amendment area along the border between San Diego and Imperial Counties. It is northeast of the Fish Creek Mountains Wilderness and is just west of and overlaps with the boundary of the West Mesa ACEC. It is approximately 1 mi east of Alternative Site #1.</p>	<p>This Alternative was eliminated from detailed analysis because it would not substantially reduce the impacts of the IVS project; the site is in a DOD no fly/no build area and it would violate the DOD height restrictions for these zones; the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; the site is distant from existing roads and would require longer access roads; and it lacks an adequate water supply. This site also includes some privately owned parcels which may result in site acquisition and control difficulties.</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		<p>The site is also much closer to the Fish Creek Mountains Wilderness and the West Mesa ACEC than the IVS site. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project. The BLM determined that this site is ineffective in meeting the purpose and need for the project; it may be inconsistent with basic policy objectives due to wilderness and ACEC considerations; its implementation is remote and speculative because, although it is within its jurisdiction, it is an unreasonable alternative to DOD interests; site control is complicated and, therefore, speculative; the site topography is incompatible with the project design; and there is pending application for the site.</p>
<p>Alternative Site #3</p>	<p>Alternative Site #3 is due west of Westmorland and southwest of the Salton Sea. It is in the WECO amendment area along the border between San Diego and Imperial Counties and approximately 1 mi southwest of the Salton Sea National Wildlife Refuge.</p>	<p>This alternative site was eliminated from detailed analysis because the ground slope on parts of the site exceed the 5 percent threshold identified for the SunCatcher solar fields; it lacks an adequate water supply; and it would require off-road access, additional transmission capacity, and extensive off-site transmission lines. The site is also much closer to the Salton Sea National Wildlife Refuge than the IVS site. Further, implementation of the project on this alternative site is speculative because the applicant has expressed no interest in attempting to develop a solar facility on this site. Finally, there is a pending ROW grant application for the use of this site which, if approved, would preclude the use of this site as an alternative site for the IVS project.</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
Wind Zero Site (Ocotillo)	The Wind Zero Alternative site is on approximately 944 ac of privately owned land.	This alternative site was eliminated from detailed analysis because it is not large enough, at 944 ac, to accommodate a 750 MW project; and a military training facility and motorsport race resort are already proposed for the site and undergoing environmental review. Implementation of the IVS project on this alternative site is speculative because there are previous projects proposed on it which, if approved, would preclude the use of this site as an alternative site for the IVS project and because the applicant has expressed no interest in attempting to develop a solar facility on this site.
Parabolic Trough Solar System Technology	A parabolic trough solar system converts solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. The plant consists of a large field of trough-shaped solar collectors arranged in parallel rows, normally aligned on a north-south horizontal axis. A parabolic trough power plant would include parabolic trough collectors, solar boilers, heat transfer fluid oil heater. It would require approximately 3,750 to 6,000 ac to accommodate a 750 MW facility.	The use of the parabolic trough solar system technology on the IVS project site was eliminated from detailed analysis it is not the technology proposed by the applicant; it would likely require more grading than the IVS project, and it could require approximately 600 AFY of water per 100 MW of capacity if wet cooling is used and 18 AFY of water per 100 MW if dry cooling is used. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Solar Power Tower Technology	Solar power tower technology converts thermal energy to electricity by using heliostat (mirror) fields to focus energy on a boiler located on power tower receivers near the center of each heliostat array. The solar power towers can be up to 459 ft tall with additional 10 ft tall lightning rods. In general, a solar power tower power plant requires 5 to 10 ac of land per megawatt of power generated. A 750 MW solar power tower field would require from 3,750 to 7,500 ac of land.	The use of the solar power tower technology on the IVS project site was eliminated from detailed analysis because it would have towers substantially taller than any of the SunCatcher features which could conflict with aviation and military activities; it would be in the DOD Airspace Consultation Area for the nearby El Centro Naval Air Facility; and this is not the technology proposed by the applicant. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Linear Fresnel Technology	<p>A solar linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. During daylight hours, the solar concentrators focus heat on the receivers to produce steam, which is collected in a piping system and delivered to steam drums located in a solar field and then transferred to steam drums in a power block. The steam drums transferred to the power block will be used to turn steam turbine generators and produce electricity. The steam is then cooled, condensed into water, and recirculated back into the process. A 750 MW solar linear Fresnel field would require approximately 3,000 to 3,750 ac of land.</p> <p>The Fresnel solar technology is a proprietary technology owned by Ausra, Inc. However, Ausra, Inc. has changed its focus to being a technology and equipment provider rather than an independent power developer and owner and will focus on medium-sized (50 MW) solar steam generating systems.</p>	The use of the linear Fresnel technology on the IVS project site was eliminated from detailed analysis because it a proprietary technology that may not be appropriate for a facility as large as 750 MW and this is not the technology proposed by the applicant. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.
Utility Scale Solar Photovoltaic Technology	<p>A utility scale solar PV power generation facility would consist of PV panels that would absorb solar radiation and convert it directly to electricity. For this analysis, a utility scale project would consist of any solar PV facilities that would require transmission to reach the load center, or center of use.</p> <p>The land requirement for PV facilities varies from approximately 3 ac per megawatt of capacity for crystalline silicon to more than 10 ac per megawatt produced for thin film</p>	The utility scale solar PV technology was eliminated from detail analysis because it could require slightly more water than the IVS project, it could require a larger site to accommodate a 750 MW facility, and it could require more grading than the IVS project. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	<p>and tracking technologies. A nominal 750 MW solar PV power plant would require between 2,250 and 7,500 ac.</p> <p>Utility-scale solar PV installations require land with less than a 3 percent slope. Solar photovoltaics only require water for only for washing the solar PV arrays.</p>	<p>project site.</p>
<p>Distributed Solar Technology</p>	<p>A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity. The PV panels could be installed on building rooftops or in other disturbed areas such as parking lots or adjacent to existing substations. Installations of 750 MW distributed solar PV panels would require up to approximately 5,000 ac.</p>	<p>The distributed solar technology was eliminated from detailed analysis because it is uncertain whether it would be possible to achieve 750 MW of distributed solar energy from this technology on the project site; there are barriers related to interconnection with the existing electric distribution grid; this is already one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements; and it may be technologically or economically infeasible at the 750 MW scale. Implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not received any applications to use this technology on the IVS project site.</p>
<p>Wind Energy</p>	<p>Wind carries kinetic energy that can be used to spin the blades of a wind turbine rotor and an electrical generator, which would then feed AC into the existing utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40 percent of the wind's kinetic energy into electricity. A single 1.5 MW turbine operating at a 40 capacity factor generates 2,100 MW annually. Approximately 3,750 to 12,750 ac of land would be required for a 750 MW wind electricity power plant. Wind turbines are often over 400 ft high for 2 MW turbines.</p>	<p>Wind energy technology was eliminated from detailed analysis because wind energy is already is one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements, the tall wind turbines could conflict with civilian aviation operations, and this technology would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site. In addition, implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
		received any applications to use this technology on the IVS project site.
Geothermal Energy	<p>Geothermal technologies use steam or high-temperature water from naturally occurring geothermal reservoirs to drive steam turbines or generators. There are vapor dominated resources (dry, super-heated steam) and liquid-dominated resources where various techniques are used to extract energy from the high-temperature water. It is expected that 5 to 10 small projects would be required to achieve 750 MW of geothermal energy. The land requirement for geothermal energy facilities could range from 900 to 6,000 ac to achieve 750 MW of energy. Additionally, while the power plant, cooling towers and brine ponds would likely be fenced, there would not likely be fencing required for the wells and well pads. In that 5 to 10 geothermal facilities would be required for provision of 750 MW, depending on the locations of the new facilities, more transmission lines and switchyards may be required for grid interconnection, when compared to the IVS project.</p>	<p>Geothermal energy technology was eliminated from detailed analysis because there are no geothermal resources on the project site and this technology would not meet the BLM purpose and need to respond to the applicant’s proposal to develop a solar facility on the IVS project site.</p>
Biomass Energy	<p>Biomass energy generation creates electricity by burning organic fuels in a boiler to produce steam, which then turns a turbine. Biomass can also be converted into a fuel gas such as methane and burned to generate power. Wood is the most commonly used biomass for power generation. Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Techniques to convert these fuels to electricity include direct combustion, gasification, and anaerobic fermentation. Biomass facilities do not require the extensive amount of land required by other renewable energy sources, but they generate only small amounts of electricity, in the range of 3 to 10 MW.</p>	<p>Biomass energy technology was eliminated from detailed analysis because most biomass facilities produce only small amounts of electricity in the range of 3 to 10 MW; it would not meet the project objectives related to the California Renewable Portfolio Standard; between 75 and 250 facilities would be needed to generate 750 MW which could result in impacts substantially greater than the IVS project; and this technology would not meet the BLM purpose and need to respond to the applicant’s proposal to develop a solar facility on the IVS project site. In addition, implementation of this technology on the IVS project site is speculative because the applicant has its own proprietary technology it is proposing to use, the applicant has expressed no interest in attempting to use this technology; and the BLM has not</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	<p>Biomass facilities also generate significant air emissions and require numerous truck deliveries to supply the plants with the biomass waste materials. In waste-to-energy facilities, there is some concern regarding the emission of toxic chemicals, such as dioxin, and the disposal of the toxic ash that results from biomass burning.</p>	<p>received any applications to use this technology on the IVS project site.</p>
Tidal Energy	<p>The oldest technology to harness tidal power for the generation of electricity involves building a dam, known as a barrage, across a bay or estuary that has large differences in elevation between high and low tides. Water retained behind a dam at high tide generates a power head sufficient to generate electricity as the tide ebbs and water released from within the dam turns conventional turbines. To produce practical amounts of power for tidal barrages, a difference between high and low tides of at least 5 meters is required.</p>	<p>Tidal energy technology was eliminated from analysis because it has not been demonstrated and proven at the scale that would be required to generate 750 MW, particularly with Pacific tides; there are no water bodies near the IVS project site that experience tides; and this technology would not meet the BLM purpose and need to respond to the applicant’s proposal to develop a solar facility on the IVS project site.</p>
Wave Energy	<p>Wave power technologies have been used for nearly 30 years. Setbacks and a general lack of confidence have contributed to slow progress towards proven devices that would have a good probability of becoming commercial sources of electrical power using wave energy. The highest energy waves are concentrated off the western coasts of the United States in the 40- to 60-degree latitudes range north and south. The power in the wave fronts varies in these areas between 30 and 70 kW/m with peaks to 100 kW/m. Many wave energy devices are still in the research and development stage, and would require large amounts of capital to get started. Additional costs from permitting and environmental assessments also make wave energy problematic</p>	<p>Wave energy technology was eliminated from analysis because it has not been demonstrated and proven at the scale that would be required to generate 750 MW, particularly with Pacific tides; there are no water bodies near the IVS project site that generate waves; and this technology would not meet the BLM purpose and need to respond to the applicant’s proposal to develop a solar facility on the IVS project site.</p>
Natural Gas	<p>Natural gas power plants typically consist of combustion turbine generators, heat recovery steam generators, a steam turbine generator, wet or dry cooling towers, and associated</p>	<p>Natural gas was eliminated from detailed analysis because it would not meet the basic project objective of generating renewable power to help meet California’s renewable energy</p>

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
	support equipment. An interconnection with a natural gas pipeline, a water supply, and electric transmission are also required. A gas-fired power plant generating 750 MW would generally require less than 80 ac of land.	needs; it results in greenhouse gas emissions; it would not reduce dependence on nonrenewable petroleum resources; and this energy source would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Coal	Traditional coal-fired plants generate large amounts of greenhouse gases. New clean coal technology includes a variety of energy processes that reduce air emissions and other pollutants from coal-burning power plants. The Clean Coal Power Initiative is providing government co-financing for new coal technologies that help utilities meet the Clear Skies Initiative to cut sulfur, nitrogen, and mercury pollutants by nearly 70 percent by 2018. However, these technologies are not yet in use.	Coal was eliminated from detailed analysis because it would not meet the basic project the objective of generating renewable power to help meet California's renewable energy needs; it would generate greenhouse gases; it is not a feasible alternative in California; and this energy source would not meet the BLM purpose and need to respond to the applicant's proposal to develop a solar facility on the IVS project site.
Nuclear Energy	Due to environmental and safety concerns, California law currently prohibits the construction of new nuclear power plants in the state until the California Energy Commission finds that the Federal government has approved and there exists demonstrated technology for the permanent disposal of spent fuel from these facilities.	Nuclear energy was eliminated from detailed analysis because the permitting of new nuclear facilities in California is not currently allowable by law and, therefore, this technology is infeasible.
Conservation and Demand-Side Management	Conservation and demand-side management consist of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution.	Conservation and demand-management were eliminated from detailed analysis because they alone are not sufficient to address all of California's energy needs, and would not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements. In addition, these types of measures are outside the jurisdiction and authority of the BLM to implement.

Alternative	Description of Alternative	Why Alternative was Eliminated from Detailed Analysis
<p>Drainage Avoidance #3 Alternative (to avoid Waters of the United States)</p>	<p>This was the third avoidance alternative developed in consultation with the Corps to avoid waters of the United States, typically referred to as the No Federal Action Alternative when the Corps is the lead agency. This alternative would require avoidance of all permanent effects on waterways on the project site. All the drainages on the site have been determined to be under the jurisdiction of the Corps. This alternative would allow limited crossings of streams by roads and electric collection system lines, but would not allow any permanent facilities (i.e., SunCatchers) to be installed within the boundaries of Waters of the United States. Primary and secondary streams were throughout the project site. As a result, the alternative would allow development only in the centermost part of the site. This alternative would result in elimination of 6,580 SunCatchers and would isolate an additional 19,976 SunCatchers, making them infeasible to construct and operate. There would remain about 3,444 SunCatchers (retaining only about 10 percent of the proposed SunCatchers). Permanent structures would be allowed on only about 10 percent of the project site. This alternative would result in the generation of less than 100 MW of energy.</p>	<p>The Drainage Avoidance #3 Alternative was eliminated from detailed analysis because, by avoiding all Corps jurisdictional waters of the U.S., which form a complex web of streams across the project site, permanent structures would be limited to approximately 10 percent of the project site resulting in the generation of less than 100 MW of energy. Therefore, from the applicant’s perspective, this alternative would be considered infeasible because it would not meet the applicant’s objectives for the project which include generating 750 MW of energy.</p>

Table Source: Staff Assessment/Draft Environmental Impact Statement (2010).

Table Key: ac = acres; AC = alternating current; ACEC = Area of Critical Environmental Concern; AFY = acre-feet/year; BLM = United States Bureau of Land Management; CEC = California Energy Commission; Corps = United States Army Corps of Engineers; DOD = United States Department of Defense; ft = feet; IVS = Imperial Valley Solar; kV/m = kilowatts per meter; mi = miles; MW = megawatt; PV = photovoltaic; ROW = right-of-way; SA/DEIS = Staff Assessment/Draft Environmental Impact Statement; WECO = Western Colorado Desert Routes of Travel Designations.

NEPA states that cumulative effects can result from "...individually minor but collectively significant actions taking place over a period of time" (40 CFR Section 1508.7). Under NEPA, both context and intensity are considered. When considering the intensity of an effect, it is necessary to consider "...whether the action is related to other actions with individually minor but cumulatively significant impacts. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts." 40 CFR Section 1508.27(b)(7).

The cumulative impacts analyses based on the cumulative projects and study areas described here are provided in Chapter 4.0, Environmental Consequences, by environmental parameter.

This section describes the overall approach and context for the cumulative impacts analysis. It also describes the study areas and relevant projects considered in the analyses for the different environmental parameters. Chapter 4, Environmental Consequences, provides detailed discussions of the potential for cumulative adverse impacts, by environmental parameter, following the overall approach, individual study areas, and relevant cumulative projects described in this section.

### **2.10.2 Cumulative Impact Approach**

The DEIS and this FEIS evaluated cumulative impacts of the IVS project and the Agency Preferred Alternative within the analysis of each resource area, following these steps:

- (1) Define the geographic scope of cumulative impact analysis for each discipline, based on the potential area within which impacts of the IVS project could combine with those of other projects.
- (2) Evaluate the effects of the IVS project in combination with past and present (existing) projects in the study area.
- (3) Evaluate the effects of the IVS project with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

Each of these steps is described below.

#### **2.10.2.1 Geographic Scope of Cumulative Analysis**

The area of cumulative effect varies by resource. For example, air quality impacts tend to disperse over a large area, while traffic impacts are typically more localized. For this reason, the

geographic scope for the analysis of cumulative impacts must be identified for each resource area.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the IVS project site and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects of a proposed project, but not beyond the scope of the direct and indirect effects of that proposed project.

In addition, each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the construction schedule for the IVS project. This is a consideration for short-term impacts from the IVS project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the IVS project.

### **2.10.2.2 Project Effects in Combination with Past, Present and Foreseeable Future Projects**

Each discipline evaluates the impacts of the IVS project on top of the current baseline; the past, present (existing) and future projects near the IVS project site. The Council on Environmental Quality (CEQ) states that the intensity, or severity, of the cumulative effects should consider the magnitude, geographic extent, duration and frequency of the effects. The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic.

Reasonably foreseeable projects that could contribute to the cumulative effects scenario for the IVS project depend on the extent of resource effects, but could include projects in the immediate Plaster City area as well as other large renewable projects in Imperial County, or the greater California desert.

### **2.10.3 Past, Present and Reasonably Foreseeable Projects**

In order to provide a basis for the cumulative impacts analysis for each discipline, the cumulative projects scenario described in detail in Section B.3 in the SA/DEIS provides detailed information on the potential cumulative solar and other development projects in the project area.

Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the IVS project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on Figures 2-8 and 2-9 and in Tables 2-7 and 2-8. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate Plaster City area, as shown on Figure 2-10 and Tables 2-9 and 2-10. Table 2-9 presents existing projects in this area and Table 2-10 presents future foreseeable projects in the Plaster City Area. Both tables provide the project name, types, locations, and status.

**Table 2-7 Renewable Energy Projects in the California Desert District**

<b>BLM Field Office</b>	<b>Number of Projects and Acreage</b>	<b>Total MW</b>
<b>Solar Energy</b>		
Barstow Field Office	• 20 projects (150,217 acres)	13,176 MW
El Centro Field Office	• 9 projects (62,989 acres)	4,820 MW
Needles Field Office	• 19 projects (284,680 acres)	15,700 MW
Palm Springs Field Office	• 19 projects (127,561 acres)	11,400 MW
Ridgecrest Field Office	• 5 projects (31,743 acres)	2,935 MW
<b>TOTAL – California Desert District</b>	<b>• 72 projects (649,440 acres)</b>	<b>48,531 MW</b>
<b>Wind Energy</b>		
Barstow Field Office	• 25 projects (171,560 acres)	N/A
El Centro Field Office	• 8 projects (49,506 acres)	N/A
Needles Field Office	• 8 projects (111,931 acres)	N/A
Palm Springs Field Office	• 4 projects (5,852 acres)	N/A
Ridgecrest Field Office	• 16 projects (94,872 acres)	N/A
<b>TOTAL – California Desert District</b>	<b>• 61 projects (433,721 acres)</b>	<b>N/A</b>

*Table Source:* Staff Assessment/Draft Environmental Impact Statement (February 2010).

*Table Key:* BLM = United States Bureau of Land Management; MW = megawatts; N/A = not applicable

**Table 2-8 Renewable Energy Projects on State and Private Lands**

<b>Renewable Resource</b>	<b>Project Name</b>	<b>Location</b>	<b>Status</b>
Solar	Abengoa Mojave Solar Project (250 MW solar thermal)	San Bernardino County, Harper Lake	Under environmental review
Solar	Rice Solar Energy Project (150 MW solar thermal)	Riverside County, north of Blythe	Under environmental review
Solar	3 MW solar PV energy generating facility	San Bernardino County, Newberry Springs	MND published for public review
Solar	Blythe Airport Solar 1 Project (100 MW solar PV)	Blythe, California	MND published for public review
Solar	First Solar's Blythe (21 MW solar PV)	Blythe, California	Under construction
Solar	California Valley Solar Ranch (SunPower) (250 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
Solar	LADWP and OptiSolar Power Plant (68 MW solar PV)	Imperial County, SR-111	Under environmental review
Solar	Topaz Solar Farm (First Solar) (550 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
Solar	AV Solar Ranch One (230 MW solar PV)	Antelope Valley, Los Angeles County	Under environmental review
Solar	Bethel Solar Hybrid Power Plant (49.4 MW hybrid solar thermal and biomass)	Seeley, Imperial County	Under environmental review
Solar	Mt. Signal Solar Power Station (49.4 MW hybrid solar thermal and biomass)	8 miles southwest of El Centro, Imperial County	Under environmental review
Wind	Alta-Oak Creek Mojave Project (up to 800 MW)	Kern County, west of Mojave	Under environmental review
Wind	PdV Wind Energy Project (up to 300 MW)	Kern County, Tehachapi Mountains	Approved
Wind	Solano Wind Project Phase 3 (up to 128 MW)	Montezuma Hills, Solano County	Under environmental review
Wind	Hatchet Ridge Wind Project	Shasta County, Burney	Under construction
Wind	Lompoc Wind Energy Project	Lompoc, Santa Barbara County	Approved
Wind	Pacific Wind (Iberdrola)	McCain Valley, San Diego County	Under environmental review

<b>Renewable Resource</b>	<b>Project Name</b>	<b>Location</b>	<b>Status</b>
Wind	TelStar Energies, LLC (300 MW)	Ocotillo Wells, Imperial County	Under environmental review
Geothermal	Buckeye Development Project	Geyserville, Sonoma	Under environmental review
Geothermal	Orni 18, LLC Geothermal Power Plant (49.9 MW)	Brawley, Imperial County	

*Table Source:* Staff Assessment/Draft Environmental Impact Statement (February 2010).

*Table Key:* MND = Mitigated Negative Declaration; MW = megawatts; PV = photovoltaic; SR-111 = State Route 111.

**Table 2-9 Existing Projects in the Plaster City Area**

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
1	U.S. Naval Air Facility El Centro	West Mesa	U.S. Navy	Existing	El Centro Naval Air Facility U.S. Naval Reservation Target 103 and Parachute Drop Zone. Desert range is used for air-to-ground bombing, rocket firing, strafing, dummy drops and mobile land target training.
2	Recreation Activities	West Mesa FTHL Management Area	BLM	Ongoing	The area is primarily used for the conservation of Flat Tailed Horned Lizard. OHV activity is limited to designated routes of travel only within this area. There are occasional groups that visit this area for trail rides.
3	Recreation Activities	Yuha Desert ACEC	BLM	Ongoing	The area is primarily used for the conservation of Flat Tailed Horned Lizard, and archaeological resources. OHV activity is limited to designated routes of travel only within this area. The Juan Bautista De Anza National Historic Trail runs through this area. This region is also rich with paleontological and geological resources. Visitors come to this area to find fossils and explore the area’s geology and enjoy the desert landscape. Some schools and universities have visited this region for educational field trips and research.
4	U.S. Gypsum Mining	Plaster City	Gypsum Mining	Existing; Quarry is undergoing expansion FEIR released Jan 2008.	Existing gypsum plant; proposal to expand active gypsum quarry undergoing environmental review. Gypsum quarry is located 26 miles northwest of the plant located at Plaster City.
5	California State Prison, Centinela	2302 Brown Road, Imperial, CA	State of California	Existing	Existing prison opened in 1993 which covers 2,000 acres.

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
6	Recreation Activities	Superstition Mountain and Plaster City Open Area	BLM	Ongoing	Cross-country OHV use is permitted within the boundaries of this area. Approximately 20 to 30 Permitted and Organized events occur on the Plaster City Open Area and Superstition Mountain Open Area. Many of these events are competitive OHV races involving as many as 100 riders and several hundred spectators. The area is a popular OHV riding area with high visitation during the cool season and on holiday weekends.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: ACEC = Area of Critical Environmental Concern; BLM = United States Bureau of Land Management; FEIR = Final Environmental Impact Report; FTHL= flat-tailed horned lizard; OHV = off-highway vehicle.

**Table 2-10 Future Foreseeable Projects in the Plaster City Area**

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
A	Mount Signal Solar Power Station	Imperial Valley – Need further detail.	MMR Power Solutions, LLC	PPA with SDG&E. SDG&E filed request for approval of PPA with CPUC Energy Division and approval was granted 9/18/08.	New 49.4 MW solar thermal hybrid project due online in December 2009.
B	Green Path	From the Imperial Valley Substation to the Dixieland Substation	IID	Draft EIS in progress, Scoping Report available. Preparing Draft EIS: Draft Alternatives Working Paper is available. Construction expected to begin 2012.	Green Path 230 kV Project (Board Approved). The upgrade would serve solar, wind and biomass generators near the Imperial Valley Substation, and act as a back-up to the current ‘S’ line and creating greater system reliability to the entire IID system. Construct two new 230 kV electrical substations on 10 acres with a 230 kV transmission line connection.
C	Wind Zero – Training Facility	Ocotillo	Wind Zero Group, Inc.	Wind Zero Group, Inc. submitted plans to Imperial County May 2008.	Wind Zero proposes to build a 400-acre training facility for law enforcement, government, college and public near Ocotillo (south of Interstate 8 and north of SR 98) on land that it purchased in 2007. Wind Zero proposes to use the additional 600-acre site to build a 6.1-mile road coarse and racetrack country club.
D	Atlas Storage Facility	Ocotillo townsite/ Imperial Highway	Atlas Storage Centers	Atlas Storage Centers	RV storage facility related to new water well on 5.3 acre parcel currently vacant land.
E	Mixed-Use Development	South of Ross Avenue/east of Austin	Miller Burson Development Design and Engineering	Responses to Draft EIR under preparation.	570 single-family lots and a school site on 160 acres. COZ No. 05-02, EIR No. 05-02.

<b>ID</b>	<b>Project Name/Agency ID</b>	<b>Location</b>	<b>Ownership</b>	<b>Status</b>	<b>Project Description</b>
F	Mixed-Use Development	West of La Brucherie/east of Austin and north of West Evan Hewes Highway	Las Aldeas Specific Plan Westshore (Lerno) Development	City of El Centro staff working on staff report and conditions of approval.	2,641 residential lots, general commercial (27.46 acres), heavy commercial (10.17 acres), 2 school sites for a total of over 680 acres.
G	Mixed-Use Development	Southeast corner of 8th Street (Clark Road) about 630 feet south of Horne Road	Michael H Galey/The Kennedy Group	MND proposal being reviewed by applicant	65 single-family lots on over 36 acres.
N/A	Update General Plan	El Centro city-wide	City of El Centro	Tentative schedule for PC meeting of January 6, 2009	Update Circulation Element of General Plan; Update Housing Element of General Plan;
N/A	Update Park Master Plan	El Centro city-wide	City of El Centro	Scheduled for CC meeting December 17, 2008	Preparation of Parks & Recreation Facilities Master Plan
H	Mixed-Use Development	South of Interstate 8 between La Brucherie and Lotus Canal and Drain	Lotus Ranch (Gary McPhetridge)	On hold per applicant request (June 2008)	658 single family lots, detention basin on over 213 acres.
I	Mixed-Use Development	East of Austin Road and north of W. Ross Rd.	Desert Village #6	Approved – granted extension of 2 years for filing final map of Subdivision Map (August 2008)	110 single-family units, 125 multiple-family units, 5.5 acres of commercial development

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
J	Mixed-Use Development	East of Austin Road and south of Orange Avenue	Courtyard Villas	EIR in process	21.5 acres, 54 single-family units
K	Mixed-Use Development	1002 East Evan Hewes Highway	Colace Brothers Industrial Park	Approved by City of El Centro March 2008	15 parcel subdivision on APN 054-280-024 and 054-280-048
L	Sunrise Powerlink Project	From Imperial County to San Diego County	SDG&E	FEIR/EIS released, awaiting Commission and BLM decision	Approximately 120-mile long 500 kV transmission line from Imperial Valley Substation to Sycamore Canyon Substation, BLM preferred route would bisect the proposed IVS project site
M	Ocotillo Express Wind Facility	Immediately east of the proposed site	Pattern Energy Group	Under environmental review	Construct an approximately 550 MW wind facility immediately east of the proposed project on approximately 15,000 acres.
N	Pedestrian Fence 225 and Pedestrian Fence 70	Along the U.S./Mexico Border	U.S. Department of Homeland Security	Under construction	Construct a tactical infrastructure project that plans to construct approximately 225 miles of primary pedestrian fencing along the southwest border of the United States.
O	Mixed Use–Recreation	Plaster City Open Area; Yuha; Superstition Mountain Open Area	BLM	The recreational use of the open areas, especially OHV use, is expected to continue and potentially grown in the foreseeable future.	Cross-country OHV use is permitted within the boundaries of Plaster City Open Area and Superstition Mountain Open Area, Limited Use area is allowed in Yuha which offers washes and trails. Organized and permitted OHV events occur at both Plaster City Open Area and Superstition Mountain Open Area.
P	West-wide Energy Corridor	Throughout the Imperial Valley on BLM land	DOE	Final Programmatic EIS was published Nov. 28; awaiting Record of Decision	Section 368 of the Energy Policy Act of 2005 (the Act), Public Law 109-58 (H.R. 6), enacted August 8, 2005, directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior (the Agencies) to designate under their respective authorities corridors

ID	Project Name/Agency ID	Location	Ownership	Status	Project Description
					on Federal land in 11 Western States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors).
Q	Seeley Wastewater Treatment Plant Upgrade	New River Boulevard, Seeley, California	Seeley County Water District	Engineering plans required, completion of project expected March 2010.	The IVS project applicant would finance an upgrade to the existing facility to allow it to meet the Title 22 water quality standards.

Table Source: Staff Assessment/Draft Environmental Impact Statement (February 2010).

Table Key: APN = Assessor’s Parcel Number; BLM = United States Bureau of Land Management; CC = City Council; CPUC = California Public Utilities Commission; DOE = United States Department of Energy; EIR = Environmental Impact Report; EIS = Environmental Impact Statement; FEIR = Final Environmental Impact Report; IVS = Imperial Valley Solar; kV = kilovolts; MND = Mitigated Negative Declaration; MW = megawatts; OHV = off-highway vehicle; PPA = Power Purchase Agreement; RV = recreational vehicle; SDG&E = San Diego Gas and Electric; SES = Stirling Energy Systems; SR-98 = State Route 98.

These projects are defined within a geographic area that has been identified by the BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under the California Environmental Quality Act (CEQA) and/or NEPA. Even if the cumulative projects have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in the DEIS and this FEIS.

Additionally, the following additionally reasonably foreseeable projects have been identified and were incorporated in the cumulative impacts analysis for the IVS project.

### **2.10.3.1 Solar Programmatic Environmental Impact Statement**

On May 29, 2008, the United States Department of Energy (DOE) and Department of Interior issued a Notice of Intent in the Federal Register (73 Federal Register [FR] 30908) to prepare a Solar Programmatic Environmental Impact Statement (Solar PEIS). The Solar PEIS is a NEPA environmental review focused on the proposed development and implementation of agency-specific programs to establish environmental policies and mitigation strategies for solar energy development in six western states. The agencies' proposals are in response to Executive Order 13212, Actions to Expedite Energy-Related Projects, which directs Federal executive departments and agencies to take appropriate actions "...to expedite projects that will increase the production, transmission, or conservation of energy..." and to implement Title II, Section 211 of the Energy Policy Act of 2005 (Public Law 109-58) which directs the United States Secretary of the Interior to seek to have approved non-hydropower renewable energy projects on public lands with a generation capacity of at least 10,000 MW within 10 years of enactment of the Energy Policy Act.

Through this Solar PEIS, the DOE is considering whether to develop a solar energy program of environmental policies and mitigation strategies that would apply to the deployment of DOE supported solar energy projects on BLM-administered lands or other Federal, State, tribal or private lands. The BLM is also considering whether: (1) to establish a BLM-wide solar energy program to supplement or replace existing BLM solar development policy, and to amend land use plans in a six-state study area to adopt the new program; (2) to identify BLM-administered land in the study areas that may be environmentally suitable for solar energy development and land that would be excluded from such development; and (3) whether designation by BLM of additional electricity transmission corridors on BLM-administered lands is necessary to facilitate utility-scale solar energy development. There are 24 Solar Energy Study Areas evaluated in the Solar PEIS, encompassing about 670,000 ac in Nevada, Arizona, California, Colorado, New Mexico, and Utah.

The Draft Solar PEIS is scheduled for publication in late 2010 and the Final EIS is anticipated to be completed by late 2011. The BLM's processing of ROW grant applications for solar energy projects received after the Solar PEIS is completed may be affected by changes in the BLM solar energy program and policies. However, until the Solar PEIS is completed and the BLM issues a Record of Decision concerning its content, the BLM will continue to process the IVS ROW grant application and all other active solar applications that have been filed pursuant to existing agency policies and procedures.

For more information on the Solar PEIS, refer to the BLM web site: <http://solareis.anl.gov/index.cfm>.

### **2.10.3.2 Seeley Wastewater Treatment Plant Upgrades**

The IVS project anticipates receiving reclaimed water from the Seeley Wastewater Treatment Plant (SWWTP). The applicant would finance upgrades to the existing SWWTP so the effluent from the plant meets Title 22 requirements for recycled water. In exchange, the IVS project would have access to at least 150,000 gal and up to 200,000 gal of reclaimed water per day for use in all project construction and operation activities except for potable water.

The Seeley County Water District (SCWD) serves customers in the town of Seeley in unincorporated Imperial County with certain utility services, including, without limitation, sewage collection and water treatment services. Currently, sewage collected in Seeley's system is treated and, thereafter, flows into the New River. The SCWD has signed a Will Serve Letter with Tessera Solar to provide reclaimed water to the IVS project. An agreement between SCWD and the applicant was signed at the SCWD Board Meeting on May 18, 2009. As a result of the terms of that Agreement, the sewage treatment facilities at the SWWTP will be upgraded to treat 250,000 gallons per day (gpd) and 200,000 gpd of that treated effluent (Title 22 water) would be made available to the IVS project. This effluent level reflects SCWD's future influent levels expected due to population growth in its service area and would be provided to the IVS project if requested.

The SCWD is the lead agency for the SWWTP upgrades under CEQA, and is responsible for approving the upgrades to the facility. The SCWD prepared a Mitigated Negative Declaration (MND) for the upgrade project in 2009. In early 2010, the SCWD initiated preparation of an Environmental Impact Report (EIR) for the proposed upgrades. The Final EIR is expected in late 2010.

The SCWD and the applicant have identified an engineer to design the upgrades to the SWWTP. Following approval of the Final EIR for the upgrade project, the engineer will complete

the design for the upgrades to make it possible for the SWWTP to supply up to 200,000 gpd of treated effluent to the IVS project. It was anticipated that the bid for the design of the improvements would be completed in late 2010.

#### **2.10.4 Cumulative Impact Study Areas and Projects**

This section outlines the geographic scope of the cumulative analysis and past, present and reasonably foreseeable projects that potentially contribute to the cumulative conditions associated with each environmental parameter considered in the DEIS and this FEIS.

##### **2.10.4.1 Air Quality**

#### **Geographic Scope of Analysis**

The geographic analysis area for air quality is the Imperial County part of the Salton Sea Air Basin.

#### **Past, Present and Reasonably Foreseeable Future Projects**

Air quality analysis by its nature is a cumulative assessment of potential air pollutant emissions on both the regional and local levels. For regional analysis, the projections for criteria pollutants have been established by the Imperial County Air Pollution Control District (ICAPCD) based on planned population and job growth in that air district. Additionally, new development projects and stationary sources that have potential for emissions of criteria air contaminants within 6 mi of the IVS project site that are either under construction, or have received permits to be built or operate in the foreseeable future were identified. Of a total of 31 projects identified in Tables 2-1 to 2-4, 24 are outside a 6 mi radius of the IVS project site and were, therefore, not included in the list of cumulative emission sources. Six projects were eliminated due to their annual permitted emission increases being negative, negligible, or less than 5 tons per year (tpy). The last project was eliminated because it is indefinitely on hold. Therefore, it has been determined that there are no planned stationary sources requiring a cumulative modeling analysis within a 6-mi radius of the IVS project site.

In addition to the projects assessed in consultation with the ICAPCD, there are a number of other large development projects proposed in the region. For example, there are 2 large wind projects proposed on BLM land within a few miles of the IVS project site in addition to large wind projects proposed in Mexico, south of the IVS project site. In addition, there are 7 large solar projects proposed on BLM land within the service area of the BLM El Centro Field Office.

Refer to Section 4.2, Air Quality, for the detailed air quality cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

#### **2.10.4.2 Biological Resources**

##### **Geographic Scope of Analysis**

The geographic area considered for cumulative impacts on biological resources is flat-tailed horned lizard (FTHL) habitat in California. The historical range of the FTHL in California encompassed 1.8 to 2.2 million ac mainly in Imperial County, but also in central Riverside County and eastern San Diego County. Its current range is only approximately 50 percent of its historical range.

##### **Past and Present Projects**

Numerous past and present activities have affected biological resources within the geographic scope of analysis for the IVS project. These activities include off-highway vehicle (OHV) recreation, mineral and sand/gravel extraction, operation of military and institutional facilities, agricultural practices, urban development, and construction of the United States/Mexico international border fence.

Over the past 200 years, southern California deserts have been subject to major human-induced changes that have threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Some of the most conspicuous threats are those activities that have resulted in large scale habitat loss as a result of urbanization, agricultural uses, landfills, military operations, mining activities, and activities that fragment and degrade habitats such as roads, OHV activity, recreational use, and grazing. The introduction of nonnative plant species and increases in predators has also contributed to population declines and range contractions for many special status plant and animal species.

Approximately 50 percent of the historical range of the FTHL has been destroyed mainly by agricultural and urban development. Agricultural practices, in particular irrigation, have altered FTHL habitat to such a degree to be unsuitable for this species. Agricultural and urban development have also affected other wildlife and native plants by reducing native habitat. Other projects and activities that have reduced the range of FTHL in the Imperial Valley include the United States Gypsum Corporation (Plaster City) processing plant north of the IVS project site along Evan Hewes Highway; sand and gravel operations north of Evan Hewes Highway, 5 mi west of Ocotillo and east of the IVS project site; OHV use at the Plaster City Open OHV Area

north of Evan Hewes Highway and limited use on designated routes on the IVS site; intensive agricultural production and urban development east of the IVS project site; and former sand and gravel operations on the IVS project site in the past, which has been subsequently reclaimed. The international fence at the United States/Mexico border approximately 8 mi south of the IVS project site is under construction. Even though that border fence would eliminate illegal drive-through traffic, thus lessening impacts to FTHL along the border, the large scale habitat loss associated with the currently proposed projects negates FTHL population gains in the region. In this context, the potential of the IVS project to contribute to cumulative significant loss, degradation, and fragmentation of habitat, including loss of connectivity for desert plants and wildlife, including FTHL and other special status species was assessed.

### **Reasonably Foreseeable Future Projects**

Biological resources are expected to be affected by reasonably foreseeable future projects. These projects, which are located in FTHL habitat, include all the future foreseeable projects in the Plaster City area listed in Table 2-10 and the proposed renewable energy projects in Table 2-8.

The proposed solar and wind energy projects have the potential to further reduce and degrade native plant and animal populations, in particular special status species such as FTHL. In comparison to solar projects which would permanently impact most of the IVS project site for FTHL, wind energy projects would not impact the FTHL habitat to the same extent as permanent ground disturbance would be limited to the bases of wind turbines and the corresponding access roads for maintenance. However, the wind turbines would impact birds and bats.

Refer to Section 4.3, Biological Resources, for the detailed biological resources cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

#### **2.10.4.3 Climate Change**

As discussed in detail in Section 4.4, Climate Change, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would result in a net reduction in greenhouse gas (GHG) emissions across the electricity system by reducing emissions from power plants and they would not worsen existing conditions related to GHG. As a result, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would result in beneficial effects related to GHG and would not contribute to adverse cumulative GHG impacts. Therefore, no detailed discussion regarding the geographic area of analysis, past and present projects, and

reasonably foreseeable future projects is provided relative to climate change. Refer to Section 4.4, Climate Change, for the detailed climate change cumulative impacts analysis.

#### **2.10.4.4 Cultural and Paleontological Resources**

##### **Geographic Scope of Analysis**

The geographic area considered for cumulative impacts on cultural resources is the Plaster City area.

The geographic area considered for cumulative impacts related to paleontology is, essentially, the western half of the Colorado Desert geomorphic province of extreme south-central California, bordering Mexico. More specifically, the area includes all of Imperial County west of Range 17 and a small part of the extreme east end of San Diego County. It is these areas that roughly define the limits of the Lake Cahuilla Formation and the older, underlying Palm Springs Formation.

##### **Past and Present Projects**

For this analysis, the projects, developments or ongoing activities that have or may have effects on cultural resources include recreational activities on BLM land, mineral extraction, and operation of military and institutional uses. The most relevant projects or developments for effects on cultural resources are the United States Naval Air Facility El Centro, the recreation activities in the BLM West Mesa FTHL Management Area and the BLM Yuha Desert ACEC, the California State Prison, Centinela, and the recreation activities in the BLM Superstition Mountain and Plaster City Open Area. Because cultural resources are nonrenewable, the removal or destruction of any resource results in a net loss of resources. Additionally, existing development in the Plaster City area and the surrounding areas has resulted in the removal or destruction of cultural resources, resulting in a net loss of resources in these areas.

Given the general scarcity of fossils, even within known fossil bearing strata, the likelihood of prior damage to paleontological resources is modest but unavoidable. The existing projects most likely to have damaged paleontological resources in geological formations similar to those on the IVS project site include mineral extraction activities and operation of institutional uses.

##### **Reasonably Foreseeable Future Projects**

Cultural and paleontological resources are also expected to be affected by the following reasonably foreseeable future renewable energy and urban development projects:

- Mount Signal Solar Power Station
- Green Path – construction of 2 electrical substations
- Wind Zero – Training Facility
- Atlas Storage Facility – RV storage facility
- 7 mixed-use developments
- Update of the City of El Centro General Plan
- Update the City of El Centro Park Master Plan
- Sunrise Powerlink Project – installation of a 120-mile 500 kV transmission line
- Ocotillo Express Wind Facility – a 15,000 ac wind facility
- Pedestrian Fence 225 and Pedestrian Fence 70 – constructed along the United States/Mexico international border
- Mixed Use – Recreational OHV use area
- West-wide Energy Corridor – designation of energy corridors and facilities
- Seeley Wastewater Treatment Plant Upgrade

Refer to Section 4.5, Cultural and Paleontological Resources, for the detailed cultural and paleontological resources cumulative impacts analysis based on the geographic analysis area and relevant projects described above.

#### **2.10.4.5 Fire and Fuels Management**

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives were reviewed to determine if they could contribute to a cumulative adverse impact on the fire and emergency service capabilities of the El Centro Fire Department (EFD). It was determined through review of the plans, application of the applicable laws, ordinances, regulations, and standards, and the measures, identified in Section 4.6, Fire and Fuels Management, applicable to these Alternatives, that they would not contribute to cumulative adverse impacts to existing fire protection and prevention services.

The potential risk of added fire fuels on the IVS project site would be localized and would not contribute to a cumulative fire and fuels issue for the area because measures are included in the IVS project, the Agency Preferred Alternative, and the other Build Alternatives to ensure that the growth of additional fuels on the project site is regularly checked and controlled.

Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to fire and fuels. In summary, the IVS project, the Agency Preferred Alternative, and the other Build Alternatives would not contribute to cumulative adverse impacts related to fire and fuels management.

Refer to Section 4.6, Fire and Fuel Management, for the detailed cumulative impacts analysis for these parameters.

#### **2.10.4.6 Geology, Soils, Topography, Mineral Resources, and Seismic**

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives were reviewed to determine if they could contribute to a cumulative adverse impact related to geological hazards. The analysis indicated that these Build Alternatives would not contribute to cumulative adverse impacts related to geological hazards. The IVS project, the Agency Preferred Alternative, and the other Build Alternatives include the use of private well water under an existing permit to extract that water. As a result, these alternatives will not withdraw more water than allowed under that existing permit and, therefore, will not contribute to a cumulative adverse impacts related to regional subsidence as a result of groundwater withdrawal. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to geological hazards.

Refer to Section 4.7, Geology, Soils, Topography, Mineral Resources, and Seismic, for the detailed cumulative impacts analysis for these parameters.

#### **2.10.4.7 Grazing, and Wild Horses and Burros**

##### **Geographic Scope of Analysis**

Because there are no Herd Management Areas (HMAs) or Herd Areas (HAs) on or in the immediate vicinity of the IVS project site, the geographic scope for the analysis of cumulative impacts related to horses and burros is the Imperial Valley region. Cumulative impacts would

result in changes in the existing environment which, due to their nature or location, would result in interference with BLM's management of HMAs. The cumulative analysis of wild horses and burros was conducted using BLM maps of HMAs and HAs.

There are no grazing lands on or in the vicinity of the IVS project site. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to grazing lands.

### **Past and Present Projects**

The Chocolate-Mule Mountains HMA is the closest HMA, which is approximately 58 mi northeast of the IVS project site near the California-Arizona border. This area is not notable for substantial past or present development.

### **Reasonably Foreseeable Future Projects**

#### ***Plaster City Area***

Because there are no HMAs or HAs in the vicinity of the IVS project site, it is unlikely that future projects in the Plaster City area would impact horses or burros, or BLM HMAs and HAs.

#### ***California and Arizona Deserts***

As shown in Figures 2-8 and 2-9, two energy applications are proposed in areas surrounding the Chocolate-Mule Mountains HMA.

Refer to Section 4.8, Grazing, and Wild Horses and Burros, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

### **2.10.4.8 Land Use and Corridor Analysis**

#### **Geographic Extent – Land Use Compatibility**

The geographic scope for the analysis of cumulative impacts related to land use compatibility and Laws, Ordinances, Regulations and Standards (LORS) compliance are the local and regional communities and sensitive receptors. Cumulative impacts could result from the physical

division of an established community or from conflict with any applicable land use plan, policies, or regulation adopted for the purposed of avoiding or mitigating environmental impacts.

### **Past and Present Projects – Land Use Compatibility**

Past and present projects in the vicinity of the IVS project site include recreational activities proposed by the BLM, quarry activities in Plaster City, and the State prison.

### **Reasonably Foreseeable Future Projects – Land Use Compatibility**

#### ***Plaster City Area***

Proposed projects in the vicinity of the IVS project site and Plaster City include the West-Wide Energy Corridor, which generally follows I-8 east from the San Diego-Imperial County border to the edge of the Yuha Basin. In addition to the IVS project, a wind energy development project immediately east of the IVS project site and the Mount Signal Solar Power Station, northeast of the project site, are proposed. The Sunrise Powerlink Project follows the entire length of the proposed energy corridor west into San Diego County and east to southern Arizona. Additional projects include a 225 mi long pedestrian fence along the United States/Mexico international border, and mixed-use developments.

#### ***California and Arizona Deserts***

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California Desert District. As shown in Table 2-7, 72 solar energy projects are proposed on 649,440 ac of California desert lands and 61 wind energy projects are proposed on 433,721 ac of California desert lands.

Refer to Section 4.9, Land Use and Corridor Analysis, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

## **2.10.4.9 Noise and Vibration**

### **Geographic Scope of Analysis**

The geographic scope for considering cumulative noise impacts on sensitive receptors for the IVS project is the area immediately surrounding the potentially sensitive receptors in the vicinity of the IVS project site.

The construction and operation of the IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in vibration effects at any appreciable distance from the IVS project site. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to vibration.

### **Past and Present Projects**

Any existing cumulative noise conditions are included in the existing ambient noise survey conducted at the sensitive receptors.

### **Reasonably Foreseeable Future Projects**

#### ***Plaster City Area***

There are no future foreseeable projects close enough to IVS project site to contribute to cumulative noise impacts on sensitive receptors near the IVS project site.

#### ***California and Arizona Deserts***

Energy and other projects beyond the immediate vicinity of the IVS project site would be outside the geographic scope of consideration for noise impacts of the IVS project and would not contribute to cumulative noise levels at the sensitive receptors.

Refer to Section 4.10, Noise and Vibration, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

## **2.10.4.10 Public Health and Safety, and Hazardous Materials**

### **Geographic Scope of Analysis**

The geographic area considered for cumulative impacts from the use of hazardous materials is the area within 1 mi of the boundary of the IVS project site.

### **Past and Present Projects**

There are no past or currently operating projects in the geographic area for the hazardous materials cumulative impacts analysis beyond a few low level recreation uses on the IVS project site.

### **Reasonably Foreseeable Future Projects**

There are no reasonably foreseeable future projects in the geographic area for the hazardous materials cumulative impacts analysis.

### **Past, Present and Reasonably Foreseeable Projects**

There are no current or future projects within a 6 mi radius of the IVS project site that could contribute to a public health cumulative impact.

Refer to Section 4.11, Public Health and Safety, and Hazardous Materials, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis areas and relevant projects described above.

## **2.10.4.11 Recreation**

### **Geographic Scope of Analysis – Recreation**

The geographic scope for the analysis of cumulative impacts related to recreation includes the local and regional recreation facilities in the Imperial Valley. Recreational facilities primarily include OHV and camping sites throughout Imperial County. They also include the Juan Batista de Anza National Historic Trail (Anza Trail) which crosses Imperial County and also crosses part of the IVS project site.

## **Past and Present Projects – Recreation**

Existing recreation areas throughout the County are abundant and maintained by the BLM and California State Parks. However, past and present developments, particularly Department of Defense sites, occupy substantial amounts of undeveloped areas throughout the County which preclude recreation activities on those lands.

## **Reasonably Foreseeable Future Projects – Recreation**

### ***Plaster City Area***

Proposed projects in the vicinity of the IVS project site and Plaster City include the West-Wide Energy Corridor, which generally follows I-8 east from the San Diego–Imperial County border to the edge of the Yuha Basin. A wind energy development project is proposed immediately east of the IVS project site, the Mount Signal Solar Power Station is proposed northeast of the IVS project site, and the Sunrise Powerlink Project follows the entire length of the proposed energy corridor west into San Diego County and east to southern Arizona. Additional projects include a 225 mi long pedestrian fence along the United States/Mexico international border, and mixed-use developments.

### ***California and Arizona Deserts***

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California Desert District. As shown in Table 2-7, a total of 72 solar energy projects are proposed on 649,440 ac of California desert lands and 61 wind energy projects are proposed on 433,721 ac of California desert lands.

Refer to Section 4.12, Recreation, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

## **2.10.4.12 Socioeconomics and Environmental Justice**

### ***Geographic Scope of Analysis***

The geographic extent of cumulative impacts related to socioeconomics is Imperial County. This is an appropriate area to consider because socioeconomic factors such as public services and benefits would be in Imperial County. The geographic extent for the labor force would be Imperial, San Diego, Riverside, and San Bernardino Counties.

### **Past and Present Projects**

Figure 2-10 and Table 2-9 show past projects which may have contributed to cumulative socioeconomic impacts in the study area.

### **Reasonably Foreseeable Future Projects**

Reasonably foreseeable projects that could contribute to cumulative effects related to socioeconomics include projects in the immediate Plaster City area as well as other large renewable projects in Imperial County and the California desert. These projects are shown on Figures 2-8 and 2-9. There are a number of projects in the immediate area around Plaster City whose impacts could combine with those of the IVS project. As shown on Figure 2-9 and in Tables 2-7 and 2-8, solar and wind development applications for use of BLM land have been submitted for approximately 107,000 ac of the land in the Imperial County part of the California Desert Conservation Area.

Refer to Section 4.13, Socioeconomics and Environmental Justice, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

#### **2.10.4.13 Special Designations**

The IVS project, the Agency Preferred Alternative, and the other Build Alternatives will not result in impacts to Wilderness Areas or Special Areas. Therefore, no detailed discussion regarding the geographic area of analysis; past and present projects; and reasonably foreseeable future projects is provided relative to these special designations.

The geographic area of analysis, past and present projects, and reasonably foreseeable future projects related to cumulative impacts on farmlands are provided in the following sections.

#### **Geographic Scope of Analysis**

The geographic scope for the analysis of cumulative impacts related to agricultural and range lands include agricultural land in Imperial County and range lands under BLM jurisdiction throughout the Imperial Valley region. Cumulative impacts include the conversion of agricultural and/or range lands to other uses. Projects that can affect agriculture and range lands consist of all construction activities, and residential, and industrial developments in the region. For this analysis, in addition to the projects listed in Tables 2-9 and 2-10, data obtained from the Natural Resources Conservation Service (NRCS), the United States Census, and the BLM online

geographic information system (GIS) maps were considered when identifying activities that could contribute to cumulative impacts on agricultural and range lands.

### **Past and Present Projects**

A wide variety of past and present development projects contribute to the cumulative conditions for agricultural lands. The majority of the agricultural land in Imperial County is surrounded by the county's largest urban areas. According to the United States Census, from 1990 to 2000 the population of El Centro increased by 20.5 percent, and from 2000 to 2007 the population increased by 4.8 percent. This is an example of the steady growth that has occurred throughout that part of Imperial County. As a result, past and present residential, commercial, and industrial development has contributed to the conversion of existing agricultural land to other land uses.

The BLM has no range land allotments in Imperial County. The BLM rangeland allotments closest to the IVS project site are in San Diego County throughout the areas between the Cleveland National Forest, Cuyamaca Rancho State Park, and Anza-Borrego Desert State Park. There are also a number of range land allotments in Riverside County near the California-Arizona border. Past and present projects contributing to the cumulative conditions for rangelands including industrial and military developments.

### **Reasonably Foreseeable Future Projects**

#### ***Plaster City Area***

As shown on Figure 2-10 and Table 2-10, about 12 multiple mixed-use developments are proposed for approximately 1,200 ac of undeveloped and agricultural land in El Centro east of the IVS project site.

#### ***California Desert***

As shown in Tables 2-7 and 2-8, renewable energy projects are proposed throughout the California desert lands. As shown in Table 2-7, a total of 72 solar energy projects are proposed on 649,440 ac of California desert lands and 61 wind energy projects are proposed on 433,721 ac California desert lands. This represents a worst-case scenario because all of these projects would not be ultimately developed. In addition, according to the BLM online GIS data, 1 proposed solar energy project in Riverside County may traverse the Ford Dry Lake allotment, and 1 solar energy project would be in the vicinity of the Keoughs allotment.

Refer to Section 4.14, Special Designations, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

#### **2.10.4.14 Traffic and Transportation**

##### **Geographic Scope of Analysis**

The geographic boundary of the cumulative traffic analysis consisted of the following locations on the road network in the vicinity of the IVS project site:

- I-8 westbound (WB) ramp/Imperial Highway
- I-8 eastbound (EB) ramp/Imperial Highway
- State Route 98 (SR-98)/Imperial Highway
- I-8 WB Ramp/Dunaway Road
- I-8 EB Ramp/Dunaway Road
- I-8 west of Imperial Highway
- I-8 east of Dunaway Road
- SR-98 west of Imperial Highway
- Imperial Highway: North of SR 98
- Evan Hewes Highway east of Imperial Highway
- Evan Hewes Highway west of Dunaway Road
- Dunaway Road north of the I-8 westbound ramps

##### **Past, Present and Reasonably Foreseeable Future Projects**

In addition to the IVS project, the following have been identified as planned developments in the vicinity of the IVS project site: Miller Burson Development, Las Aldeas Specific Plan, Lotus

Ranch, Desert Village #6, Courtyard Villas, Colace Brothers Industrial Park, and Desert Springs Resort.

Refer to Section 4.15, Traffic and Transportation, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

#### **2.10.4.15 Visual Resources**

##### **Geographic Scope of Analysis**

The geographic study areas for potential cumulative adverse visual impacts are:

- Cumulative impacts in the immediate IVS project viewshed, essentially comprising foreseeable future projects in southwestern Imperial County within a distance of 5 or fewer mi of the IVS project site
- Cumulative impacts of foreseeable future projects in the southern California Colorado (Sonoran) desert, or other broad basin of the project's affected landscape type, most notably including proposed solar and other renewable energy projects. The widest applicable basin of cumulative effect at this scale would include all the southern California desert, or the Sonoran and Mojave Desert landscapes extending into neighboring states. The region-wide focus is appropriate because the affected landscape type, the southern California Desert, has been specifically identified as a resource of concern in the CDCA Plan, the California Desert Protection Act of 1994, and the proposed 2010 California Desert Protection Act. In each case, the scenic value of the desert landscape is cited as a primary reason for its conservation.

##### **Past and Present Projects**

For this analysis, the following past and present projects or developments are considered most relevant to effects on visual resources: the U.S. Gypsum Plaster City Plant, and existing recreational activities and related land disturbances in the Plaster City OHV Open Area.

The U.S. Gypsum Plant is the most visually prominent existing feature in the viewshed and detracts from its scenic intactness, presenting a prominent man-made, industrial feature into views within a radius of a few miles, including the IVS project site. The Plaster City OHV Open Area would interact visually with the IVS project in two ways: by providing a recreational viewer group into the visual foreground and middle ground that would be exposed to views of the IVS

project; and by the general visual disturbance of the terrain in the immediate vicinity of the OHV Open Area due to periodic heavy OHV use that accounts for its moderate to moderately low visual quality. Both these projects would interact with the IVS project by contributing to the overall disturbed character of their local cumulative viewshed.

### **Reasonably Foreseeable Future Projects**

Visual resources are also expected to be affected by the following reasonably foreseeable future projects: the GreenPath 230 kV Upgrade Project, the Sunrise PowerLink Project, and the Ocotillo Express Wind Facility; the West-wide Energy Corridor. Each of these would be located in the immediate local viewshed of the IVS project.

Refer to Section 4.16, Visual Resources, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.

#### **2.10.4.16 Hydrology, Water Use, and Water Quality**

##### **Geographic Scope of Analysis**

The geographic area considered for cumulative impacts related to soil and water resources are described as follows:

- **Soil Erosion Potential by Water and Wind:** Soil erosion can be affected by any development or land alteration. The effects occur in terms of air quality as well as general deterioration of the land surface with potential regional effects. Cumulative impacts would be evaluated over all BLM managed lands in southern, including the California Desert Conservation Area.
- **Surface Water Quality:** Project-related surface water quality impacts potentially extend from the IVS project site to the Imperial County agricultural area and into the Salton Sea. The geographic extent of cumulative impacts would encompass those areas south of the Salton Sea that could potentially have similar extent. Imperial County is considered the geographical extent of surface water quality impacts for the cumulative impacts assessment.
- **Groundwater Quality:** Groundwater quality impacts could affect the Coyote Wells Valley and Imperial Valley Groundwater Basins. These basins are the geographic area for impacts cumulative analysis for groundwater.

- **Hydrology/Flooding:** Hydrology and flooding impacts are generally managed on a county-wide or city-wide level. Imperial County is considered the geographic extent of hydrology and flooding impacts for the cumulative impacts analysis.
- **Water Supply:** With the exception of a minimal amount of water for potable uses, the IVS project would use reclaimed water that is currently discharged into the New River.

### **Past and Present Projects**

For this analysis, the following past or present projects or developments are considered most relevant to effects on soil and water resources: all the renewable energy projects listed in Table 2-7 and all the recreational, military, institutional and mineral extraction activities listed in Table 2-9.

### **Reasonably Foreseeable Future Projects**

Soil and water resources are also expected to be affected by the all of the reasonably foreseeable future projects listed in Table 2-10.

Refer to Section 4.17, Hydrology, Water Use, and Water Quality, for the detailed cumulative impacts analysis for these parameters based on the geographic analysis area and relevant projects described above.