Draft
Environmental Impact Report
SCH# 2021010168

Volume 2
Technical Appendices A to C

Bellefield Solar Project
by 50LW 8ME LLC

Zone Change Case No. 2, Map No. 195
Zone Change Case No. 57, Map No. 196
Conditional Use Permit No. 1, Map No. 195
Conditional Use Permit No. 57, Map No. 196
General Plan Amendment No. 2, Map No. 195
General Plan Amendment No. 3, Map No. 195 (Circulation)
Specific Plan Amendment No. 31, Map No. 196 (Circulation)

Kern County
Planning and Natural Resources Department
Bakersfield, California

July 2021

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Kern County
Planning and Natural Resources Department
2700 M Street, Suite 100
Bakersfield, California 93301-2370
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Technical Assistance by:
Michael Baker International
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July 2021

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Appendix A
Notice of Preparation / Initial Study and Comments

A.1 Notice of Preparation/Initial Study

A.2 Public Comments

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A.1 Notice of Preparation/Initial Study

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Lorelei H. Oviatt, AICP, Director
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Fax: (661) 862-8601 TTY Relay 1-800-735-2929
Email: planning@kerncounty.com
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PLANNING AND NATURAL RESOURCES DEPARTMENT

Planning
Community Development
Administrative Operations

DATE: January 15, 2021

TO: See Attached Mailing List

FROM: Kern County Planning and Natural Resources Department
Attn: Ronelle Candia
2700 "M" Street, Suite 100
Bakersfield, CA 93301
(661)862-8997; CandiaR@kerncounty.com

SUBJECT: NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE BELLEFIELD SOLAR PROJECT BY 50LW 8ME LLC

The Kern County Planning and Natural Resources Department as Lead Agency (per CEQA Guidelines Section 15062) has determined that preparation of an Environmental Impact Report (per CEQA Guidelines 15161) is necessary for the proposed project identified below. The Planning and Natural Resources Department solicits the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval of the project.

You are invited to view the NOP and submit written comments regarding the content of the environmental information in connection with the proposed project should you wish to do so. Due to the limits mandated by State law, your response must be received by **February 15, 2021 at 5:00 p.m**. Comments can be submitted to the Kern County Planning and Natural Resources Department at the address shown above. A Scoping meeting that will be held on **Friday, February 5, 2021 at 1:30 p.m.** In compliance with the Governor's Executive Order, the California Department of Public Health's guidelines on gatherings regarding COVID-19, and Kern County Local Emergency Declaration, the scoping meeting required by the CEQA Guidelines will be conducted online. Instructions for accessing the virtual scoping meeting will be available three (3) days before the meeting date on the Kern County Planning and Natural Resources website at https://kernplanning.com.

Comments on the scope and content of the NOP should be sent to CandiaR@kerncounty.com.

PROJECT TITLE: Bellefield Solar Project by 50LW 8ME LLC (PP20403); GPA #2, Map 195; ZCC #2, Map 195; ZCC #57, Map 196; CUP #1, Map 195; CUP #57, Map 196; and SPA #31, Map 196.

PROJECT LOCATION: The proposed project site is located in portions of unincorporated Kern County and the City of California City. The project site is located east of the community of Mojave and the Mojave Air and Space Port Airport (Mojave Airport), straddles State Route (SR) 58, and is just west and south of the Hyundai Proving Ground. SR-58, a four-lane divided highway, provides regional access to the project site. Access to the site would be from Altus Ave, Arroyo Ave, Denise Ave, Sunset Ave, Silver Queen Road, and 20th, 30th, 50th and 70th Streets. The site is located within Township 11N, Range 11W, all or portions of Sections 5, 6, 7, 17, 18, 19, 20, 21 (all), 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35 and Township 11N, Range 12W, portions of Sections 1 and 2.

PROJECT DESCRIPTION: The Bellefield Solar Project by 50LW 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity on approximately 8,371 acres of privately-owned land. The proposed project would be supported by a 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation. The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels, while the gen-tie alternatives generally originate from the central portion of the Project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes. The proposed project's permanent facilities would include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed includes the following requests:

The proposed project consists of the following requests:

- Kern County
    - General Plan Amendment #2, Map 195
        - From 1.1 (State or Federal Land) to 8.5 (Resource Management) for approximately 82.19 acres; and
        - Amendment to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.
    - Zone Change Case # 2, Map 195:
        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 5,291.55 acres; and
        - From A-1 MH (Limited Agriculture Mobile Home Combining) to A for approximately 146.71 acres.
    - Zone Change Case #57, Map 196
        - From M-3 PD to M-1 PD for approximately 477.39 acres; and
        - From M-2 PD to M-1 PD for approximately 141.43 acres.
    - Issuance of Conditional Use Permit #1, Map 195 to allow for the construction and operation of a 5,438.26-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance.
    - Issuance of Conditional Use Permit #57, Map 196 to allow for the construction and operation of a 830.87-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to

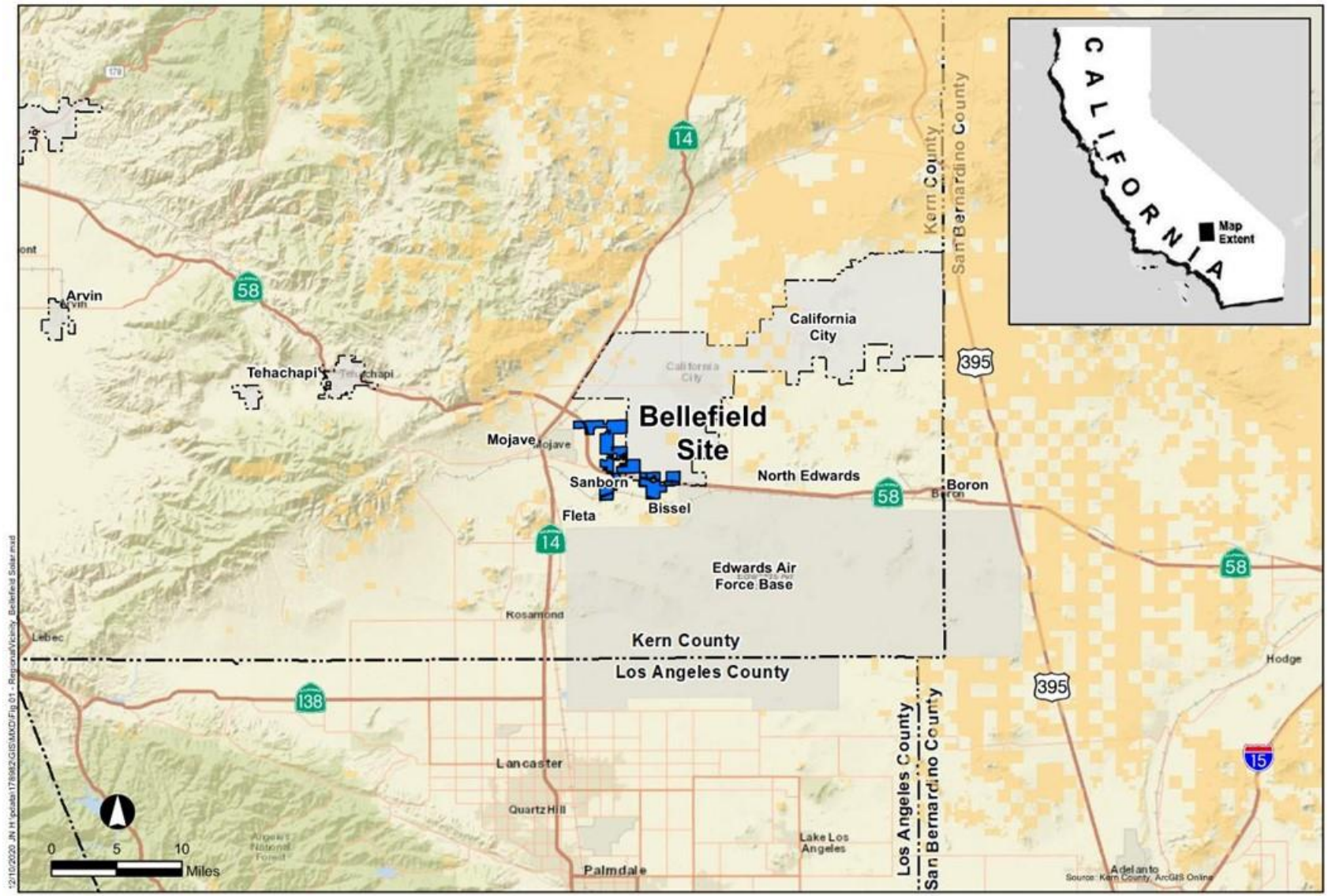
Section 19.12.030G, M-1 PD (Light Industrial, Precise Development) pursuant to Section 19.36.030G, and M-3 PD (Heavy Industrial, Precise Development) pursuant to Section 19.40.030G of the Kern County Zoning Ordinance.

- Specific Plan Amendment #31, Map 196
  - Amendment to the Circulation Element of the Mojave Specific Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.

- City of California City (Responsible Agency)
  - The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City will require that the applicant acquire a Conditional Use Permit (CUP) from the City to allow for the construction and operation of a solar facility, in the O/RA (Open Space/Residential Agricultural) zone (CUP 19-03), of a 2,103.63-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

Documents can be viewed online at: https://kernplanning.com/planning/notices-of-preparation/

Signature: 
Name: Ronelle Candia, Supervising Planner



GPA #2, Map 195 | ZCC #57, Map 196 | CUP #57, Map 196
ZCC #2, Map 195 | CUP #1, Map 195 | SPA #31, Map 196

KERN COUNTY, CALIFORNIA ■ BELLEFIELD SOLAR ■ BY: 50LW 8ME LLC

REGIONAL VICINITY MAP

GPA #2; ZC #2; CUP #1, Map #195
WO #PP20403 (EIR 08-19 - Bellefield)
I:\Planning\WORKGRPS\WP\LABELS\eir08-19jj.ec.doc
Sc 08/05/20

City of Arvin
P.O. Box 548
Arvin, CA 93203

Bakersfield City Planning Dept
1715 Chester Avenue
Bakersfield, CA 93301

Bakersfield City Public Works Dept
1501 Truxtun Avenue
Bakersfield, CA 93301

City of Maricopa
P.O. Box 548
Maricopa, CA 93252

California City Planning Dept
21000 Hacienda Blvd.
California City, CA 93515

Delano City Planning Dept
P.O. Box 3010
Delano, CA 93216

City of Shafter
336 Pacific Avenue
Shafter, CA 93263

City of McFarland
401 West Kern Avenue
McFarland, CA 93250

City of Ridgecrest
100 West California Avenue
Ridgecrest, CA 93555

City of Wasco
764 E Street
Wasco, CA 93280

City of Taft
Planning & Building
209 East Kern Street
Taft, CA 93268

City of Tehachapi
Attn: John Schlosser
115 South Robinson Street
Tehachapi, CA 93561-1722

Los Angeles Co Reg Planning Dept
320 West Temple Street
Los Angeles, CA 90012

Inyo County Planning Dept
P.O. Drawer "L"
Independence, CA 93526

Kings County Planning Agency
1400 West Lacey Blvd, Bldg 6
Hanford, CA 93230

Santa Barbara Co Resource Mgt Dept
123 East Anapamu Street
Santa Barbara, CA 93101

San Bernardino Co Planning Dept
385 North Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0182

San Luis Obispo Co Planning Dept
Planning and Building
976 Osos Street
San Luis Obispo, CA 93408

U.S. Bureau of Land Management
Ridgecrest Field Office
300 South Richmond Road
Ridgecrest, CA 93555

Tulare County Planning & Dev Dept
5961 South Mooney Boulevard
Visalia, CA 93291

Ventura County RMA Planning Div
800 South Victoria Avenue, L1740
Ventura, CA 93009-1740

Federal Aviation Administration
Western Reg Office/
777 South Aviation Boulevard
Suite 150
El Segundo, CA 90245

China Lake Naval Weapons Center
Tim Fox, RLA - Comm Plans & Liaison
429 E Bowen, Building 981
Mail Stop 4001
China Lake, CA 93555

Edwards AFB, Mission Sustainability Liaison
412 TW, Bldg 2750, Ste 117-14
195 East Popson Avenue
Edwards AFB, CA 93524

Eastern Kern Resource Cons Dist
300 South Richmond Road
Ridgecrest, CA 93555-4436

Federal Communications Comm
18000 Studebaker Road, #660
Cerritos, CA 90701

U.S. Fish & Wildlife Service
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, CA 92262

Southern California Edison
Planning Dept.
421 West "J" Street
Tehachapi, CA 93561

Environmental Protection Agency
Region IX Office
75 Hawthorn Street
San Francisco, CA 94105

U.S. Dept of Agriculture/NRCS
5080 California Avenue, Ste 150
Bakersfield, CA 93309-0711

U.S. Army Corps of Engineers
P.O. Box 997
Lake Isabella, CA 93240

U.S. Army Corps of Engineers
Regulatory Division
1325 "J" Street, #1350
Sacramento, CA 95814-2920

State Air Resources Board
Stationary Resource Division
P.O. Box 2815
Sacramento, CA 95812

So. San Joaquin Valley Arch Info Ctr
California State University of Bkfd
9001 Stockdale Highway
Bakersfield, CA 93311

Caltrans/Dist 6
Planning/Land Bank Bldg.
P.O. Box 12616
Fresno, CA 93778

Caltrans/Dist 9
Planning Department
500 South Main Street
Bishop, CA 93514

Caltrans/
Division of Aeronautics, MS #40
P.O. Box 942873
Sacramento, CA 94273-0001

State Clearinghouse
Office of Planning and Research
1400 - 10th Street, Room 222
Sacramento, CA 95814

State Dept of Conservation
Director's Office
801 "K" Street, MS 24-01
Sacramento, CA 95814-3528

State Dept of Conservation
Geologic Energy Management Division
4800 Stockdale Highway, Ste 108
Bakersfield, CA 93309

California State University
Bakersfield - Library
9001 Stockdale Highway
Bakersfield, CA 93309

California Energy Commission
James W. Reed, Jr.
1516 Ninth Street
Mail Stop 17
Sacramento, CA 95814

California Fish & Wildlife
1234 East Shaw Avenue
Fresno, CA 93710

California Highway Patrol
Planning & Analysis Division
P.O. Box 942898
Sacramento, CA 94298-0001

Integrated Waste Management
P.O. Box 4025, MS #15
Sacramento, CA 95812-4025

Public Utilities Comm Energy Div
505 Van Ness Avenue
San Francisco, CA 94102

California Regional Water Quality
Control Board/Lahontan Region
15095 Amargosa Road - Bld 2, Suite 210
Victorville, CA 92392

State Lands Commission
100 Howe Avenue, Ste 100-South
Sacramento, CA 95825-8202

State Dept of Toxic Substance Control
Environmental Protection Agency
1515 Tollhouse Road
Clovis, CA 93612

Cal Environmental Protection Agency/
Dept of Toxic Substances Control, Reg 1
Attn: Dave Kereazis, Permit Div - CEQA
8800 Cal Center Drive, 2nd Floor
Sacramento, CA 95826

State Dept of Water Resources
San Joaquin Dist.
3374 East Shields Avenue, Room A-7
Fresno, CA 93726

Kern County
Agriculture Department

Kern County Airports Department

Kern County Administrative Officer

Kern County Public Works Department/
Building & Development/Floodplain

Kern County Public Works Department/
Building & Development/Survey

Kern County
Env Health Services Department

Kern County Fire Dept
David Witt, Fire Chief

Kern County Fire Dept
Michael Nicholas, Asst. Fire Marshall

Kern County Library/Beale
Local History Room

Kern County Library/Beale
Andie Sullivan

Kern County Library
California City Branch
9507 California City Boulevard
California City, CA 93505

Kern County Parks & Recreation

Kern County Sheriff's Dept
Administration

Kern County Public Works Department/
Building & Development/Development
Review

Kern County Public Works
Department/Operations &
Maintenance/Regulatory Monitoring &
Reporting

Kern County Public Works Department/
Building & Development/Code
Compliance

Mojave Unified School Dist
3500 Douglas
Mojave, CA 93501

Muroc Unified School Dist
17100 Foothill Avenue
North Edwards, CA 93523

Kern County Superintendent of Schools
Attention School District Facility Services
1300 - 17th Street
Bakersfield, CA 93301

KernCOG
1401 19th Street - Suite 300
Bakersfield, CA 93301

Local Agency Formation Comm/LAFCO
5300 Lennox Avenue, Suite 303
Bakersfield, CA 93309

Antelope Valley-East Kern
Water Agency
6500 West Avenue N
Palmdale, CA 93551

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302-0058

California City Airport
22636 Airport Way, #8
California City, CA 93505

Mojave Airport
1434 Flightline
Mojave, CA 93501

East Kern Airport Dist
Attention Stuart Witt
1434 Flightline
Mojave, CA 93501

East Kern Airport Dist Engineer
3900 Ridgemoor Avenue
Bakersfield, CA 93306

Northcutt and Associates
4220 Poplar Street
Lake Isabella, CA 93240-9536

Adams, Broadwell, Joseph & Cardozo
Attention: Janet M. Laurain
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Kern Audubon Society
Attn: Frank Bedard, Chairman
4124 Chardonnay Drive
Bakersfield, CA 93306

Los Angeles Audubon
926 Citrus Avenue
Los Angeles, CA 90036-4929

Center on Race, Poverty
& the Environment
Attn: Marissa Alexander
1999 Harrison Street – Suite 650
San Francisco, CA 94612

Center on Race, Poverty
& the Environmental/
CA Rural Legal Assistance Foundation
1012 Jefferson Street
Delano, CA 93215

Defenders of Wildlife/
Kim Delfino, California Dir
980 - 9th Street, Suite 1730
Sacramento, CA 95814

Desert Tortoise Preserve Committee
4067 Mission Inn Avenue
Riverside, CA 92501

Native American Heritage Council
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Attn: Gene Albitre
3401 Aslin Street
Bakersfield, CA 93312

Pacific Gas & Electric Co
Land Projects
650 "O" Street, First Floor
Fresno, CA 93760-0001

Sierra Club/Kern Kaweah Chapter
P.O. Box 3357
Bakersfield, CA 93385

Southern California Edison
2244 Walnut Grove, Ave, GO-1 Quad 2C
Rosemead, CA 91770

Verizon California, Inc.
Attention Engineering Department
520 South China Lake Boulevard
Ridgecrest, CA 93555

Chumash Council of Bakersfield
2421 "O" Street
Bakersfield, CA 93301-2441

David Laughing Horse Robinson
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Bakersfield, CA 93390

Kern Valley Indian Council
Attn: Robert Robinson, Chairperson
P.O. Box 401
Weldon, CA 93283

Kern Valley Indian Council
Historic Preservation Office
P.O. Box 401
Weldon, CA 93283

Santa Rosa Rancheria
Ruben Barrios, Chairperson
P.O. Box 8
Lemoore, CA 93245

Tejon Indian Tribe
Kathy Morgan, Chairperson
1731 Hasti-acres Drive, Suite 108
Bakersfield, CA 93309

Kitanemuk & Yowlumne Tejon Indians
Chairperson
115 Radio Street
Bakersfield, CA 93305

Tubatulabals of Kern County
Attn: Robert Gomez, Chairperson
P.O. Box 226
Lake Isabella, CA 93240

Tule River Indian Tribe
Neal Peyron, Chairperson
P.O. Box 589
Porterville, CA 93258

San Fernando Band of Mission Indians
Attn: John Valenzuela, Chairperson
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Newhall, CA 91322

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Bakersfield, CA 93301

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Bakersfield, CA 93301

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16922 Airport Boulevard
Mojave, CA 93501

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Inyokern, CA 93555

Pleistocene Foundation
2362 Lumill Street
Ridgecrest, CA 93555

Raymond Kelso/
Pleistocene Foundation
2362 Lumill Street
Ridgecrest, CA 93555

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11512 El Camino Real, Suite 370
San Diego, CA 92130-3025

U.S. Army
Attn: Philip Crosbie, Chief
Strategic Plans, S3, NTC
P.O. Box 10172
Fort Irwin, CA 92310

U.S. Navy
Attn: Steve Chung
Regional Community & Liaison Officer
1220 Pacific Highway
San Diego, CA 92132-5190

U.S. Air Force
Attn: David Bell/AFCEC CZPW
Western Regional/Leg Branch
510 Hickman Ave., Bld 250-A
Travis AFB, CA 94535-2729

U.S. Marine Corps
Attn: Patrick Christman
Western Regional Environmental Officer
Building 1164/Box 555246
Camp Pendleton, CA 92055-5246

U.S. Army
Attn: Tim Kilgannon, Region 9
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Office of Strategic Integration
721 - 19th Street, Room 427
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Renewal Resources Group
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Rupal Patel
113 South La Brea Avenue, 3rd Floor
Los Angeles, CA 90036

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Rick Neff
9405 Arrowpoint Blvd
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Fotowatio Renewable Ventures
Sean Kiernan
44 Montgomery Street, Suite 2200
San Francisco, CA 94104

EDP Renewables Company
53 SW Yamhill Street
Portland, OR 97204

Wind Stream, LLC
Albert Davies
1275 - 4th Street, No. 107
Santa Rosa, CA 95404

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New York, NY 10036-6797

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Palm Springs, CA 92263-2190

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77 Beal Street, Room 5361
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Seth Israel
300 California Street, 8th Floor
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803 Tucker Road
Tehachapi, CA 93561

Kelly Group
Kate Kelly
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Winters, CA 95694

Beyond Coal Campaign/Sierra Club
Sarah K. Friedman
1417 Calumet Avenue
Los Angeles, CA 90026

Robert Burgett
9261 - 60th Street, West
Mojave, CA 93501

Structure Cast
Larry Turpin, Sales Mgr
8261 McCutchen Road
Bakersfield, CA 93311

David Walsh
22941 Banducci Road
Tehachapi, CA 93561

East Kern Air Pollution Control District

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Email: planning@kerncounty.com
Web Address: http://kernplanning.com/

PLANNING AND NATURAL RESOURCES DEPARTMENT

Planning
Community Development
Administrative Operations

DATE: January 15, 2021

TO: Surrounding Property Owners within 1,000 Feet of Project Boundary; and, Interested Parties

FROM: Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

SUBJECT: INITIAL STUDY/NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT – BELLEFIELD SOLAR PROJECT BY 50LW 8ME LLC (PP20403)

Dear Sir or Madam:

The Kern County Planning and Natural Resources Department has determined that preparation of an Environmental Impact Report (EIR) is necessary for the proposed project identified below. The purpose of this letter is to notify surrounding property owners within 1,000 feet of the project boundaries of this determination. A copy of the Initial Study/Notice of Preparation (IS/NOP) prepared for this proposed project is available for viewing at the following Kern County website:

https://kernplanning.com/planning/notices-of-preparation/

The purpose of the IS/NOP is to describe the proposed project, specify the project location, and to identify the potential environmental impacts of the project so that Responsible Agencies and interested persons can provide a meaningful response related to potential environmental concerns that should be analyzed in the Environmental Impact Report.

You are invited to view the NOP and submit written comments regarding the content of the environmental information in connection with the proposed project should you wish to do so. Due to the limits mandated by State law, your response must be received by **February 15, 2021 at 5:00 p.m**. Comments can be submitted to the Kern County Planning and Natural Resources Department at the address shown above. A Scoping meeting will be held for the project on **Friday, February 5, 2021 at 1:30 p.m.** In compliance with the Governor's Executive Order, the California Department of Public health's guidelines on gatherings regarding COVID-19, and Kern County Local Emergency Declaration, the scoping meeting required by the CEQA Guidelines will be conducted online. Closed captioning in Spanish will be available to attendees. Instructions for accessing the virtual scoping meeting will be available three (3) days before the virtual scoping meeting on the Kern County Planning and Natural Resources website at https://kernplanning.com.

Comments on the scope and content of the NOP should be sent to CandiaR@kerncounty.com.

Please be advised that any comments received after the dates listed above will still be included in the public record for this project and made available to decision makers when this project is scheduled for consideration at a public hearing. Please also be advised that you will receive an additional notice in the mail once a public hearing date is scheduled for this project. You will also be provided additional opportunities to submit comments at that time.

PROJECT TITLE: Bellefield Solar Project by 50LW 8ME LLC (PP20403); GPA #2, Map 195; ZCC #2, Map 195; ZCC #57, Map 196; CUP #1, Map 195; CUP #57, Map 196; and SPA #31, Map 196.

PROJECT LOCATION: The proposed project site is located in portions of unincorporated Kern County and the City of California City. The project site is located east of the community of Mojave and the Mojave Air and Space Port Airport (Mojave Airport), straddles State Route (SR) 58, and is just west and south of the Hyundai Proving Ground. SR-58, a four-lane divided highway, provides regional access to the project site. Access to the site would be from Altus Ave, Arroyo Ave, Denise Ave, Sunset Ave, Silver Queen Road, and 20th, 30th, 50th and 70th Streets. The site is located within Township 11N, Range 11W, all or portions of Sections 5, 6, 7, 17, 18, 19, 20, 21 (all), 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35 and Township 11N, Range 12W, portions of Sections 1 and 2.

PROJECT DESCRIPTION: The Bellefield Solar Project by 50LW 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity on approximately 8,371 acres of privately-owned land. The proposed project would be supported by a 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation. The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels, while the gen-tie alternatives generally originate from the central portion of the Project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes. The proposed project's permanent facilities would include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed includes the following requests:

The proposed project consists of the following requests:

- Kern County
    - General Plan Amendment #2, Map 195
        - From 1.1 (State or Federal Land) to 8.5 (Resource Management) for approximately 82.19 acres; and
        - Amendment to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.
    - Zone Change Case # 2, Map 195:
        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 5,291.55 acres; and
        - From A-1 MH (Limited Agriculture Mobile Home Combining) to A for approximately 146.71 acres.
    - Zone Change Case #57, Map 196
        - From M-3 PD to M-1 PD for approximately 477.39 acres; and
        - From M-2 PD to M-1 PD for approximately 141.43 acres.

- Issuance of Conditional Use Permit #1, Map 195 to allow for the construction and operation of a 5,438.26-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance.

- Issuance of Conditional Use Permit #57, Map 196 to allow for the construction and operation of a 830.87-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to Section 19.12.030G, M-1 PD (Light Industrial, Precise Development) pursuant to Section 19.36.030G, and M-3 PD (Heavy Industrial, Precise Development) pursuant to Section 19.40.030G of the Kern County Zoning Ordinance.

- Specific Plan Amendment #31, Map 196

  - Amendment to the Circulation Element of the Mojave Specific Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.

- City of California City (Responsible Agency)

  The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City will require that the applicant acquire a Conditional Use Permit (CUP) from the City to allow for the construction and operation of a solar facility, in the O/RA (Open Space/Residential Agricultural) zone (CUP 19-03), of a 2,103.63-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

Should you have any questions regarding this project, or the Initial Study/Notice of Preparation, please feel free to contact me at (661) 862-8997 or CandiaR@kerncounty.com

Sincerely,

Ronelle Candia, Supervising Planner
Advanced Planning Division

Attachments: Figure 1 - Vicinity Map and Figure 2 – Project Boundary Map

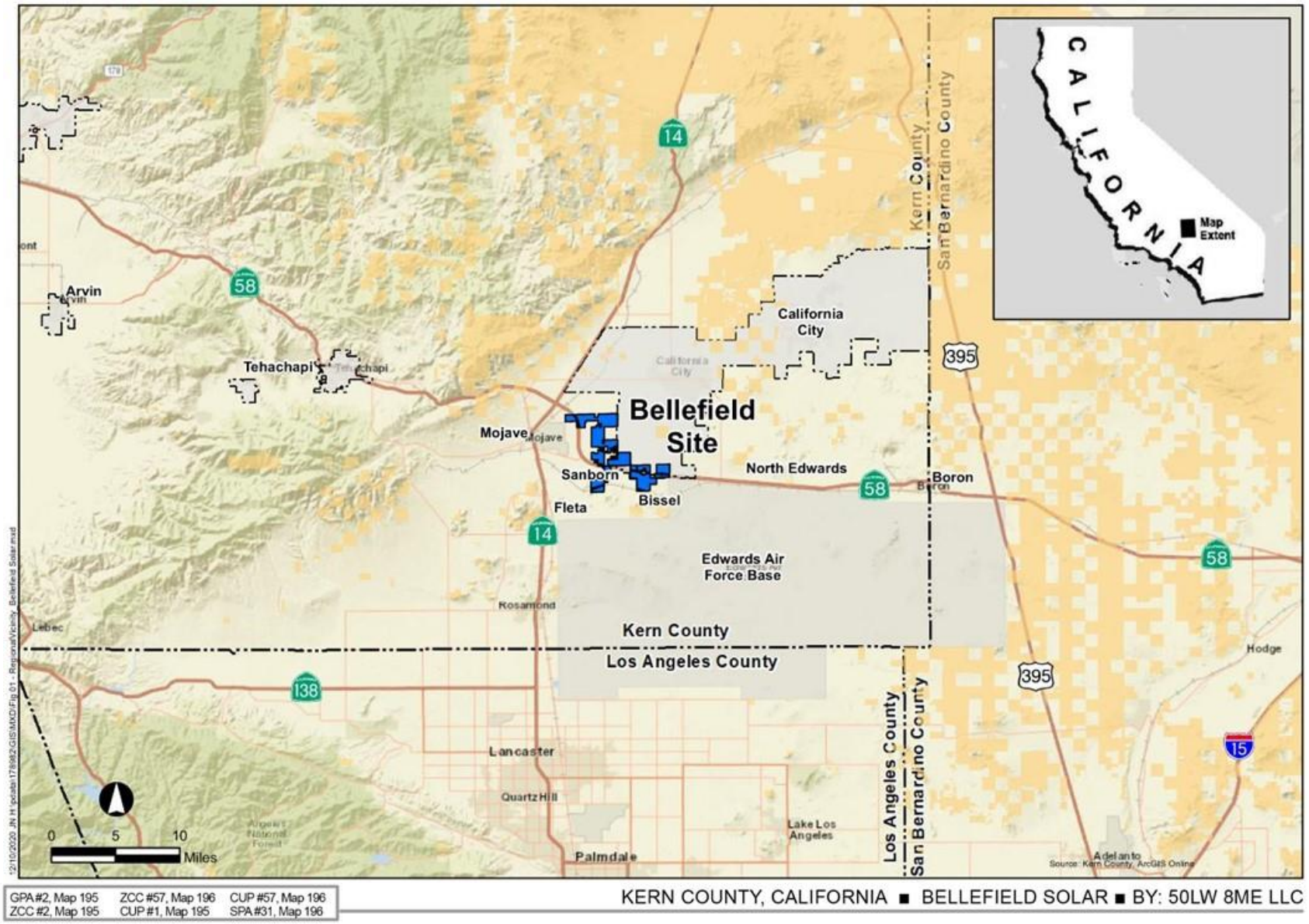


FIGURE 1
VICINITY MAP

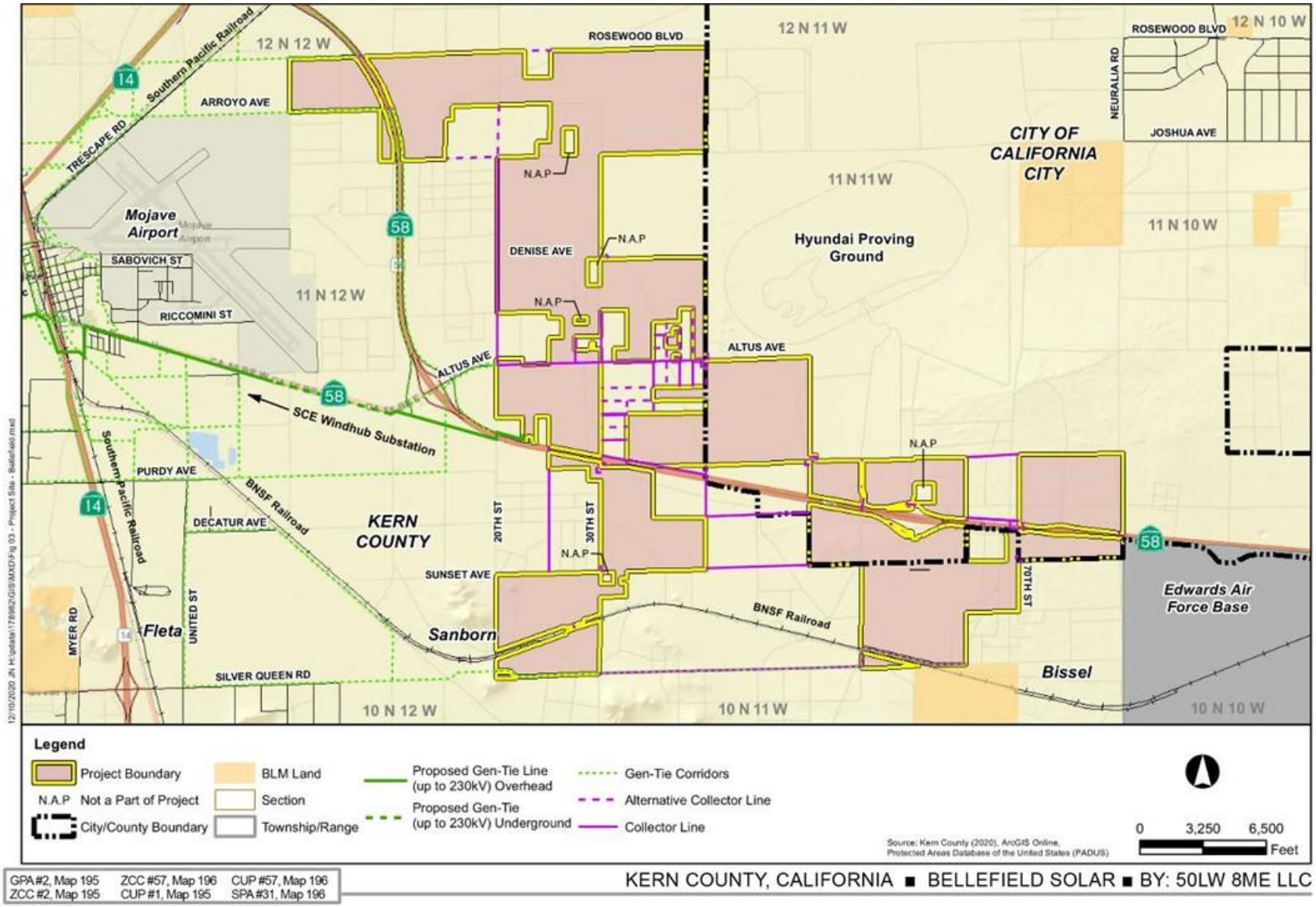


FIGURE 2
PROJECT BOUNDARY MAP

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GPA #2; ZC #2; CUP #1, Map #195
WO #PP20403 (EIR 08-19 - Bellefield)
I:\Planning\WORKGRPS\WP\LABELS\eir 08-19jj(Bellfield).noa.docx
Sc 08/05/20 (sc 12/23/20)

235 310 14 00 3 **DUP**
2318844 ONTARIO INC
ADDRESS UNKNOWN

235 132 50 00 9 **DUP**
A T S F RAILWAY CO
ADDRESS UNKNOWN

428 053 05 00 9
ADAIR JOHN A & MARILYN V
3216 NE CLASSIC AV
BREMERTON WA 98310

235 024 03 00 5
AEK GLOBAL INVS LLC
4603 HURFORD TR
ENCINO CA 91436-3345

235 082 16 00 7
AFFONSO JANET
226 DERECHO WY
TRACY CA 95376-1945

235 101 10 00 7
AGDEPPA JOSEPH & HELEN LIVING TRUST
928 CALLE DEL PACIFICO
GLENDALE CA 91208-3019

428 053 04 00 6
AGRAWAL GYANESH & RAUSHNI
4232 W AVENUE N
PALMDALE CA 93551-1293

428 062 27 00 9
ALAMILLO MARIA CABRERA
2751 MARENGO ST
LOS ANGELES CA 90033-2026

235 410 09 00 8
ALBERTS LARRY & SANDRA
3860 MISSION HILLS RD
NORTHBROOK IL 60062-5742

428 093 24 00 6
ALEXANDER FAMILY TRUST
112 CANYON VIEW RD
GEORGETOWN TX 78628-2145

428 093 11 00 8
ALEXANDER GARY & GIGI
112 CANYON VIEW RD
GEORGETOWN TX 78628-2145

235 282 08 00 2
ALGAZALI SAMIR
20651 HIGHWAY 202
TEHACHAPI CA 93561

235 102 35 00 7
ALLEN FAMILY TRUST A
5900 LANDFAIR DR
BAKERSFIELD CA 93309-3677

428 041 11 00 9
ALMEIDA J & J TRUST
15625 N 105TH DR
SUN CITY AZ 85351-1823

235 330 42 00 0
ALMONTE ROSSANA
25134 VIA VERACRUZ #3
LAGUNA NIGUEL CA 92677

235 352 03 00 7
ALVA FAMILY TRUST
901 FONTES PL
WALNUT CA 91789-4313

235 024 06 00 4
AMADOR FRANCISCO LIV TR
12000 SLAUSON AV # 14
SANTA FE SPGS CA 90670

235 380 01 00 6
AMBERLAND CORP
6037 N LICHFIELD AV
MERIDIAN ID 83686

428 042 06 00 2
AMORUSO FMLY TR
27178 STARK ST
SUN CITY CA 92586-2045

428 092 08 00 3
AMSTERDAM JOSEPH F & ESTHER
3 PLEASANT LN
BAY SHORE NY 11706

235 140 33 00 9
ANA PROPERTIES LLC
P O BOX 1510
LA MIRADA CA 90637

235 401 21 00 6
ANCHETA EDISON O & JANE F
12038 S RENTON AV
SEATTLE WA 98178

235 320 17 00 5
ANDERSON JEFFREY C & PATRICIAL
5145 VIA DANIEL
YORBA LINDA CA 92886

235 102 29 00 0
ANTELOPE VALLEY E KERN WTR AG
P O BOX 3176
QUARTZ HILL CA 93534

235 132 56 00 7 **DUP**
ANTELOPE VALLEY E KERN WTR AG
ADDRESS UNKNOWN

235 031 32 00 1
ANTONIO CORAZON G
6239 GARLAND CT
NEW PORT RICHEY FL 34652

235 064 16 00 5
ANZURES FRANK F & GUADALUPE FAMILY TR
5011 LA LUNA DR
LA PALMA CA 90623-2002

235 282 12 00 3
AOKI RONALD T & MIDORI
18566 CORK ST
FOUNTAIN VLY CA 92708

235 410 27 00 0
APPELL MICHAEL
3188 WILLOW CANYON ST
THOUSAND OAKS CA 91362

235 204 20 00 6
APPLE VALLEY LAND OWNERS
3787 E 11TH ST
LONG BEACH CA 90804

235 282 10 00 7
ARABI REZA & RAFI SHAHIN
5330 E HONEYWOOD LN
ANAHEIM CA 92807-3705

235 300 06 00 7
ARAUZ DENIS
940 SW 143 CT
MIAMI FL 33184

428 202 37 00 8
ARCA LILIA F
91-1201 KANEANA ST APT 3-D
EWA BEACH HI 96706

235 202 14 00 5
ARCHER FAM TR
31044 RD 400
COARSEGOLD CA 93614

235 260 14 00 9
ARCHER HUTCHISON KAREN
2421 VICTORIA AV
OXNARD CA 93035-2969

235 330 38 00 9
ARELLANO ISIDRO & GABRIEL
284 FLOWER ST
PASADENA CA 91104-1016

235 290 06 00 5
ARMSEY KENNETH K &
MARGARET H
21100 STATE ST # 226
SAN JACINTO CA 92583

235 282 06 00 6
ASSET RECOVERY INTERNAT LLC
620 CAMINO DE LOS MARES # E501
SAN CLEMENTE CA 92673

235 101 02 00 4
AT & T COMMUNICATIONS CA INC
340 MT KEMBLE AV
MORRISTOWN NJ 07960

235 101 40 00 4
AUYON MIROSLABA
616 S. PEPPER ST
ANAHEIM CA 92802

235 340 33 00 7
AVILES ROGELIO D & TERESA N
11049 BRIGANTINE ST
CERRITOS CA 90703-1676

235 282 17 00 8
AYVAZIAN GEORGE & JULIETTA
13960 THUNDERBIRD DR # 5G
SEAL BEACH CA 90740-5364

428 010 03 00 0
BABBITT ROBERT J
1709 W AVENUE L12
LANCASTER CA 93534-6934

235 360 02 00 3
BABTIWALE SUHAS GOVIND
TRUST
13121 ROBIN CT
CHINO CA 91710-3893

235 290 12 00 2
BADKOUBEI SURVIVORS TRUST
1560 COLINA DR
GLENDALE CA 91208-2413

428 102 23 00 8
BAGHGERAGIAN BERGE
1905 N VALLEY ST
BURBANK CA 91505

235 281 19 00 7
BAGWELL BETH TR
235 KUUPUA
KAILUA HI 96734

428 041 33 00 3
BAHMAN NOSRATOLAH
23116 BIGLER ST
WOODLAND HILLS CA 91364

235 064 31 00 8
BARAJAS JAVIER & MARTHA
6275 W CROW CT
SUN VALLEY NV 89433-6623

428 041 20 00 5
BARBER AUDREY M TRUST
5954 NEWBURY CI
MELBOURNE FL 32940-1880

235 300 11 00 1
BARBER GROVER TR
1514 W ALEXIS AV
ANAHEIM CA 92802

428 052 03 00 6
BARNARD KEVIN
2708 COUNTRY CLUB DR
ESCONDIDO CA 92029

235 353 15 00 9
BARNETT L C & KAILIWAI
BARNETT F Y TR
5604 W AVENUE L1
QUARTZ HILL CA 93536-4419

235 370 09 00 7
BARNHART CHARLES A & EVELYN
TR
325 KEMPTON ST 203
SPRING VALLEY CA 91977-5899

428 212 11 00 5
BASTIDA ROGELIO & VICTORIA
2848 AUGUSTA WY
SANTA ANA CA 92706-1121

235 134 17 00 8
BAUER DENNIS JAMES
14420 CARLSBAD ST
SYLMAR CA 91342-5112

235 134 05 00 3
BEDOLLA TERESA
3713 WILLIAM DEHAES DR APT
2103
IRVING TX 75038-8918

235 410 04 00 3
BELL LAWRENCE W & VERA G
701 W RIVERSIDE DR
CARLSBAD NM 88220-5221

235 192 07 00 3
BELTRAN TR & BERG N & M TR
25175 LUNA BONITA DR
LAGUNA HILLS CA 92653-5650

234 520 22 00 0
BEMENT PAULINE E TR
1800 DRUMMOND AV
RIDGECREST CA 93555-8970

235 140 01 00 6
BEVERLY ARNOLD
PO BOX 43512
LAS VEGAS NV 89116-1512

235 340 32 00 4
BILLUPS JOHN R 111 & BARBARA
FAMILY TR
134 RAINIER CT
CHULA VISTA CA 91911-5423

235 270 14 00 2
BITTON JANELL
25202 FAIRGREEN
MISSION VIEJO CA 92692-2882

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BLANKE CHAD A
865 7TH ST
OGDEN UT 84404-5159

235 310 21 00 3
BLEHM BROS 2014 TRUST
14613 W BELMONT AV
KERMAN CA 93630-9602

428 171 03 00 4
BOBBITT JANET J
9000 5TH AV
INGLEWOOD CA 90305

234 520 24 00 6
BOLANOS JAIME & JUANA
37631 CHERRY DR
PALMDALE CA 93550

235 191 09 00 2
BRACAMONTES FRANCISCA
4889 INGLEWOOD BL
CULVER CITY CA 90230-5861

235 290 01 00 0
BROCKMANN JOYCE A
24359 LAWTON AV
LOMA LINDA CA 92354-3317

428 232 28 00 1
BERGMANS ELBERT H
1661 KAISER ST
FALLON NV 89406-3145

235 140 30 00 0
BICKEL LEE & CATHY
2411 HILL ST
HUNTINGTON PARK CA 90255

428 093 08 00 0
BIMBI ANNA
1015 9TH ST APT 202
SANTA MONICA CA 90403-4130

235 191 10 00 4
BIVEN EARL U
6352 SIERRA ELENA RD.
IRVINE CA 92715-3927

235 134 15 00 2 **DUP**
BLANKE CHAD A
895 7TH ST
OGDEN UT 84404-5159

235 270 16 00 8
BLUME BERNARD E & MARY E
P O BOX 158
LA MIRADA CA 90637

235 065 16 00 2
BOBIAS SIMPLICIO B &
VALENTINA
2201 FRANCIS AV
SANTA CLARA CA 95051

428 093 26 00 2
BOQUILLA ARTURO & CELEDONIA
1215 S WESTLAKE AV
LOS ANGELES CA 90006

428 093 10 00 5
BRADER ANITA M
3689 S STATE HIGHWAY J
SPRINGFIELD MO 65809-4350

428 052 10 00 6
BROCKMANN JOYCE ANN
24359 LAWTON AV
LOMA LINDA CA 92354-3317

428 202 28 00 2
BERNALES CHERRY B CUSTDN
1977 8TH ST
LOS OSOS CA 93402

428 051 13 00 8
BIDINOST LIDIA
2305 6TH ST
CONCORD CA 94519

235 064 18 00 1
BISNETT MICHAEL J
2411 GRAPEVINE DR
OXNARD CA 93036-1576

235 290 03 00 6
BLANKE CHAD & TAYLOR LINDA
895 7TH ST
OGDEN UT 84404-5159

235 204 22 00 2
BLAUSTEIN MARK MORRIS
1557 TIMBERLINE
BEAUMONT CA 92223-3438

428 200 02 00 2
BNSF RAILWAY CO
PO BOX 961039
FORT WORTH TX 76161

235 064 09 00 5
BOEHM HERBERT & MARIE
2255 W AVE M8
PALMDALE CA 93551-1394

235 300 05 00 4
BOWDEN DOREEN FAMILY TRUST
3235 COBBLESTONE DR
SANTA ROSA CA 95404

235 330 28 00 0
BREMNER ROCHELLE
22356 WEST PARAGON DR
SAUGUS CA 91350

235 330 12 00 3
BRODER RONALD S & LISA ANN
REV TR
12021 FOSTER RD
LOS ALAMITOS CA 90720

428 093 20 00 4
BROWNSON RONALD L & ANNA M
FAMILY TRUST
2946 S MICHAEL ST
VISALIA CA 93292-1117

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BUCHAN DOUGLAS JR
4317 W SPARROW SPRINGS LP 304
BARTLETT TN 38135

235 202 04 00 6
BULL JACK W
15514 CALLE HERMOSA
SANTA CLARITA CA 91390-1014

428 171 04 00 7
BURNS YVONNE
830 RIESSEN RD
GRANTS PASS OR 97526-9374

235 353 07 00 6
BURSIK GEORGE REV TR
113 W MINARETS
PINEDALE CA 93650

235 340 40 00 7
BURTON STANLEY C & LARAINE B
718 SYCAMORE AV STE 150
VISTA CA 92083-7901

235 134 18 00 1
BUSH DAVID ALAN
15577 ROCKWELL AV
FONTANA CA 92336-4177

235 181 13 00 0
BUSH FAMILY TRUST
4095 FRUIT ST SP 212
LA VERNE CA 91750-2919

235 134 19 00 4
BUSH KAREN L
737 PEPPERMINT WY
PRESCOTT AZ 86305

428 042 11 00 6
BXI TRADE EXCHANGE INC
4616 W SAHARA AV # 317
LAS VEGAS NV 89102-3654

235 101 45 00 9
CA KERN LP
22160 VENTURA BL
WOODLAND HILLS CA 91364

235 202 02 00 0
CACHOLA ROSARIO L & ARLENE B
19000 VISTA GRANDE WY
NORTHRIDGE CA 91326

235 031 37 00 6
CAL CITY 118 VENTURES LLC
12671 HIGH BLUFF DR
SAN DIEGO CA 92130

235 182 01 00 2
CAL R E SAVINGS
P O BOX 3694
VICTORVILLE CA 92393

235 101 50 00 3 **DUP**
CALIF CITY CITY OF
21000 HACIENDA BL
CALIFORNIA CITY CA 93505

235 031 36 00 3
CALIF CITY SUCCESSOR AGENCY
21000 HACIENDA BL
CALIFORNIA CITY CA 93505-2293

235 101 37 00 6
CAMARA MARGARET ELDRED
TRUST
PO BOX 1024
PISMO BEACH CA 93448-1024

235 172 07 00 7
CAMENETI MICHAEL ALAN
30634 PERSIMMON LN
VALLEY CENTER CA 92082-5265

235 310 15 00 6
CAMPBELL BRADLEY C TRUST
22394 MONTERA CT
SALINAS CA 93908-1024

235 380 11 00 5
CAMPBELL MARGARET J
17481 US ROUTE 11 # 11I
WATERTOWN NY 13601-5356

235 191 07 00 6
CAMPBELL SHANNON M
12885 OAK TREE LN
POWAY CA 92064-6048

428 093 14 00 7
CANU ANTHONY J TRUST
PO BOX 1440
TUSTIN CA 92781-1440

235 202 09 00 1
CARDENAS IGNACIO M &
ADELAIDA
25713 MESA EDGE CT
MENIFEE CA 92585-8970

235 134 02 00 4
CARDER ALDEN BRENT & NAN
REV TR
6120 EAST AVENUE G
LANCASTER CA 93534

235 290 11 00 9
CARLSON CHILDRENS TR
25612 GOLDENSPRING DR
DANA POINT CA 92629-1537

235 310 16 00 9
CARLSON HERB TR
25612 GOLDENSPRING DR
DANA POINT CA 92629-1537

428 092 16 00 6
CARLSON RAYMOND L & LIVIA
2271 E VAN OKER ST
MERIDIAN ID 83642

235 282 23 00 5
CARRILLO JESUS
7900 HERMOSILLO DR
EL PASO TX 79915

428 231 25 00 5
CARTEE DAVID R & JANICE E
14795 GROVE ST
HEALDSBURG CA 95448-4819

235 282 14 00 9
CASANO WILLIAM A
797 GUADALUPE RD
ARROYO GRANDE CA 93420-5815

235 102 09 00 2
CASE FAMILY TRUST
155 W 226TH PL
CARSON CA 90745-3714

235 191 04 00 7
CATBAGAN POMPEYO &
ADELAIDA Z
2354 PERU ST
LOS ANGELES CA 90039

235 192 06 00 0
CEDERLIND LEON E LIV REV TR
807 W 15 RD
PHILLIPS NE 68865-3704

235 101 35 00 0
CHAN FAMILY TRUST B
11584 MURPHY ST
LOMA LINDA CA 92354-3620

235 353 09 00 2
CHANDLER HAROLD D
3825 DIAMOND RIDGE ST
LAS VEGAS NV 89129

235 282 29 00 3
CHANG BARBARA
2320 RIM RD
DUARTE CA 91010-1239

235 102 27 00 4
CHANG IK HOON & SOON HEE
1722 CHANTILLY LN
FULLERTON CA 92833-1288

235 370 06 00 8
CHANG JERRY K
6920 LACEY ST
CHINO CA 91710-8300

428 082 12 00 1
CHAPMAN ROBERT & CANDACE
10651 SOMMA WY
LOS ANGELES CA 90077

235 330 01 00 1
CHASE WILLIAM P & AMELIA
5637 VIRGINIA AV
LOS ANGELES CA 90038

428 053 09 00 1
CHAU FAMILY TRUST
917 LEXINGTON AV
MONTEBELLO CA 90640-2528

235 082 26 00 6
CHAVEZ RODOLFO M & DOLORES
TR
1631 E FRUIT ST
SANTA ANA CA 92701

235 024 20 00 4 **DUP**
CHELL ERIK & STADIN VERA TR
ADDRESS UNKNOWN

428 010 11 00 3
CHENG SUE HOA
1942 SAMARA DR
ROWLAND HEIGHTS CA 91748

428 240 66 00 0
CHENG TR
1917 ERNEST AV
REDONDO BEACH CA 90278

235 352 11 00 0
CHIU STEVE H-K
2360 TERRAZA PL
FULLERTON CA 92835

235 064 33 00 4
CHOI MABEL
605 OAK ST
BOONTON NJ 07005-1253

302 242 01 00 8
CHOKSI NISHITH & MINAXI
12903 MOORESHIRE DR
CERRITOS CA 90703

428 041 18 00 0 **DUP**
CHUA CARLOS C & VIRGINIA S
ADDRESS UNKNOWN

235 270 28 00 3
CLOVIS WAYNE H & SANDRA A
1101 N THORNBUSH CI
ARLINGTON TX 76013

235 134 06 00 6
COLTON RONALD & JOAN SUR
3600 DRAGONFLY DR APT 204
THOUSAND OAKS CA 91360-8455

428 051 02 00 6
COMPTON FAM TR
38214 SUNNY DAYS DR
PALM DESERT CA 92211-1204

235 300 07 00 0
COOK LORAINE TODD
4984 BOWIE CT
SIMI VALLEY CA 93063-1402

235 380 05 00 8
COONS ARTHUR L & MARILYN J
8446 ROAD 224
TERRA BELLA CA 93270-9310

235 024 28 00 8
CORBET MARY S
23951 DECORO DR APT 220
VALENCIA CA 91354-4957

235 310 07 00 3
COUGHRAN FAMILY TR
5081 SAUSALITO CI
LA PALMA CA 90623-2222

235 320 11 00 7
CRUZ MARIA ROWENA D
100 MOUNTAIN VIEW RD
HOT SPRINGS NC 28743-7182

428 231 29 00 7
CURTIS ADRIANA
22583 FLAMINGO ST
WOODLAND HILLS CA 91364-4917

234 520 09 00 3
DAMASO ROMULO F & DOLORES
TRUST
1013 ATTICUS AV
HENDERSON NV 89015-5962

235 024 11 00 8
DANEBROCK SHARON M TR
P O BOX 411715
LOS ANGELES CA 90041-8715

235 401 11 00 7
DANG HIEU NGOC
614 W JUANITA AV
GILBERT AZ 85233-2672

235 310 25 00 5
DANIELS FRED JR
17701 S AVALON BL # 262
CARSON CA 90746

428 093 12 00 1
DAREJEH MELISSA
4208 ALHAMA DR
WOODLAND HILLS CA 91364

235 353 23 00 2
DARRINGTON RITA B
6728 SHERBOURNE DR
LOS ANGELES CA 90056

428 231 02 00 8
DATWYLER REV TR
1190 FLYING FISH ST
FOSTER CITY CA 94404

428 202 35 00 2
DAVIS RANDOLPH S & MELINDA
24 SYDNEY CI
HARPERS FERRY WV 25425

235 352 12 00 3
DE CASAS MAGDALENA H
7532 TROOST AV
NO HOLLYWOOD CA 91605-3305

428 053 07 00 5
DE LA PENA PATRICIA A
410 HUMPHREY DR
BUDA TX 78610-3133

235 024 07 00 7
DE LOS SANTOS WILLIAM A
960 CARRIAGE LN
WALNUT CA 91789

428 052 14 00 8
DE MONTE FAMILY TRUST A
2545 OCOTILLO AV
SANTA MARIA CA 93455-1613

428 053 16 00 1
DE MONTE FAMILY TRUST A
2423 NICKLAUS DR
SANTA MARIA CA 93455-1524

428 231 26 00 8
DE MONTE RALPH E
2446 DUNSTAN ST
OCEANSIDE CA 92054-5727

235 282 18 00 1
DE MOSS ROBERT G TR
3706 WOODROFF
LONG BEACH CA 90808

235 111 16 01 7
DE VILLA AMADO MAGNATE &
LEONILA VERGARA
1134 HYATT AV
WILMINGTON CA 90744-3622

235 112 03 00 7
DEAN LESLIE I
5528 N 50TH AV
OMAHA NE 68104-1838

235 410 16 00 8
DEDOMENICO FAM TR
16 VIA MONTANERO
SANTA MARGARITA CA 92688

235 402 02 00 8
DEGUZMAN ROSALINO & ROSA
915 WEST LAS FLORES
SANTA MARIA CA 93454

244 234 15 00 7
DEL SOL PROPERTIES
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

235 064 17 00 8 **DUP**
DEL SOL PROPERTIES INC
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

235 370 10 00 9
DELA CRUZ VICENTE & MA
CECILIA
2527 ARF AV
HAYWARD CA 94545-4108

235 121 06 00 2
DELACRUZ EDGARDO L
22720 NICOLLE AV
CARSON CA 90745

235 111 27 00 0
DELACRUZ EDGARDO L ET AL
22720 NICOLLE AV
CARSON CA 90745

235 290 08 00 1
DELGADO RICARDO
11766 PEARWOOD AV
SAN FERNANDO CA 91340

235 353 19 00 1
DENNIS WAYNE D
32606 OAK PARK DR
LEESBURG FL 34748-8726

428 232 25 00 2
DINH LONG T & NGUYEN VIVIEN U
4105 SERGIO CT
BAKERSFIELD CA 93311

235 360 08 00 1
DISCOUNTLAND INC
2261 MONACO DR
OXNARD CA 93035-2915

428 093 15 00 0
DO HIEU VAN
3021 BOWEN ST
GARDEN GROVE CA 92843

235 082 03 00 9
DO HUAN X & NGUYEN N YEN
5414 W FLIGHT AV
SANTA ANA CA 92704

235 082 02 00 6 **DUP**
DO HUAN X & NGUYEN YEN N
5414 W FLIGHT AV
SANTA ANA CA 92704

235 353 13 00 3
DODD BILL & NOREEN FAMILY
TRUST
1659 W POLO GREEN AV
POST FALLS ID 83854

235 132 13 00 2
DORSETT DANA P
87 HICKS ST # 2B
BROOKLYN NY 11201

235 340 29 00 6
DRAHOS CHET J & RITA MAY
1200 S CATALINA AV APT 106
REDONDO BEACH CA 90277-4934

235 353 05 00 0 **DUP**
DUNATTE ALFRED & CATHERINE
ADDRESS UNKNOWN

235 101 38 00 9
DUNCAN KAY ANN
38721 ROMA CT
PALMDALE CA 93550-8137

235 082 22 00 4
DUNNE WILBUR P
1256 N PALO VERDE LN
COOLIDGE AZ 85228

235 310 18 00 5
DUNWOODY KENT & COLLEEN TR
20142 HAYFIELD LN
TEHACHAPI CA 93561-7819

428 053 03 00 3
DUONG SANG VAN
2302 SAHARAH DR
GARLAND TX 75044

235 204 35 00 0
DUTRA GERALD O TR
2845 CARRADALE DR
ROSEVILLE CA 95661-4047

235 310 22 00 6
EAGLE DESERT VISTA CORP
PO BOX 2470
VICTORVILLE CA 92393-2470

428 010 04 00 3
EAST KERN AIRPORT DIST
MOJAVE AIRPORT
MOJAVE CA 93501

235 360 01 00 0
EDDINS ERVIN R & SHIRLEY TR
8368 ORA BELLE LN
EL CAJON CA 92021

428 102 24 00 1
EDEJER SHIRLEY BARRERA
10913 HOBACK ST
NORWALK CA 90650-3553

235 112 09 00 5
EDGE ERNEST W ET AL
45657 TOWNE ST
INDIO CA 92201

235 310 04 00 4
EGLASH STEVEN M
5580 BILL CODY RD
HIDDEN HILLS CA 91302-1101

235 300 01 00 2
EISIKOWITZ JEFFREY L & LINDA V
10341 MONOGRAM AV
GRANADA HILLS CA 91344-6763

235 320 09 00 2
EL PASO NATURAL GAS CO
PO BOX 4372
HOUSTON TX 77210-4372

235 340 13 00 9
ELLI NATIVEDAD M
16413 TAYLOR CT
TORRANCE CA 90504-1917

428 041 17 00 7
ELLIS CHARLES L & EMMA J TR
4432 PACIFIC COAST HW
TORRANCE CA 90505-5666

235 370 02 00 6
ENRIQUEZ ERIC J
13917 NORDHOFF ST
ARLETA CA 91331

235 260 15 00 2
ENRIQUEZ MICHAEL JASON
13917 NORDHOFF ST
ARLETA CA 91331

235 353 26 00 1
EPPERLY ELGIN SHONNE E &
ELGIN STEPHEN H
5559 IVYWOOD CT
FORESTHILL CA 95631-9754

235 310 09 00 9
ERIN NICOLE LLC
1801 W AVENUE K
LANCASTER CA 93534

235 022 05 00 7
EVANGELICAL MISSION &
SEMINARY INTERNAT INC
36 ALPINE RD
TOWACO NJ 07082

235 320 13 00 3
EWASKEY LEONARD L & MARY R
EWASKEY TRUST
3431 MARBER AV
LONG BEACH CA 90808

235 401 10 00 4
FABELA MANUEL & EUFEMIA ET
AL
3436 GREENACRE DR
SANTA MARIA CA 93455-2454

235 024 16 00 3
FAIR GREGORY & NATALIE FAM
TR
999 BISHOP ST # 2100
HONOLULU HI 96813-4443

235 111 01 00 4
FAMILY NURSERY CO INC
PO BOX 389
VICTORVILLE CA 92393-0389

235 112 02 00 4
FANE ELOIS J REV LIV TR
2466 S LAUREEN AV
FRESNO CA 93725

235 102 17 00 5
FELLOWS MARY G TR
12200 SIERRA VIEW
BORON CA 93516

235 310 30 00 9
FERGUSON OPAL M
75 GOLF ESTATES RD
EASTSOUND WA 98245

235 064 10 00 7
FIRST EQUITABLE REAL EST INC
6720 SUNSET BL
LOS ANGELES CA 90028

235 101 05 00 3 **DUP**
FISCHIETTO FREDERICK C
1604 VALLEY VIEW CT
ROSEVILLE CA 95661

235 101 04 00 0
FISCHIETTO FREDRICK C & ROBERT
1604 VALLEY VIEW CT
ROSEVILLE CA 95661

235 204 34 00 7
FLOWERS SHARRON M TR
4093 HILLSIDE AV
NORCO CA 91761

428 231 03 00 1
FOGLI FAMILY ENTERPRISES LLC
260 PORTOLA DR
SAN MATEO CA 94403-2327

428 042 24 00 4
FOLGARELLI GENEVIEVE
29950 LARRABEE ST
HAYWARD CA 94544-6808

428 041 31 00 7
FORECAST LAND CORP
PO BOX 36
WOODLAND HILLS CA 91365-0036

235 282 16 00 5
FOREMAN ALBERTA F TR
1637 NORWOOD HILLS DR
O FALLON MO 63366

428 102 07 00 2
FOWLER RHUDOLPH W & NANCY H REV TR
8 STEVENS CREEK CI
DURANGO CO 81301

428 102 28 00 3
FOWLER RHUDOLPH W & NANCY H REV TR
2622 BAYSIDE WALK
SAN DIEGO CA 92109-8265

428 052 05 00 2
FREY KURT & MARTHA
630 BROOKSIDE AV
REDLANDS CA 92373

235 352 08 00 2
FRIEDMAN ESTHER
23427 BLYTHE ST
CANOGA PARK CA 91304-4496

428 062 29 00 5
FRISINGER FMLY TR
6281 TURNBERRY CI
HUNTINGTON BCH CA 92648

428 231 17 00 2
FUNG RONALD & MARIE TR
128 CREEDON CIRCLE
ALAMEDA CA 94502

235 330 35 00 0
FUTURE ESTS LAND HOLDINGS LLC
P O BOX 304
HERMOSA BEACH CA 90254

235 102 38 00 6
GAETZ MICHAEL P
10816 SHELLABARGER RD
BAKERSFIELD CA 93312

235 031 22 00 2
GANDINGCO GUADALUPE R TRS
341 THIRD AV
DALY CITY CA 94014

235 320 18 00 8
GANNON FAMILY TRUST
8467 LOWER SCARBOROUGH CT
SAN DIEGO CA 92127-6119

428 202 50 00 5
GAOIRAN LUIS G & TERESITA T
440 KEA ST
KAHULUI HI 96732-1424

235 204 33 00 4
GAPUZ CHRISTOPHER A
1834 ARROYO DE PLATINA
SAN JOSE CA 95116-1328

428 202 24 00 0
GARCES ART
1313 N GRAND AV
WALNUT CA 91789-1374

428 092 15 00 3
GARCIA BENEDICTO F & SIMPLICIA D TRUST
536 N ST ANDREWS PL
LOS ANGELES CA 90004

235 082 09 00 7
GARRETT MURRAY
4430 ATOLL
SHERMAN OAKS CA 91403

235 202 08 00 8
GARRIDO MARLIS JO ANN
809 BUNDY DR # 309
W LOS ANGELES CA 90049

235 410 15 00 5
GATES MAUREEN E
25301 PIZARIO
EL TORO CA 92630

429 030 02 00 0
GENUS L P
2006 HIGHWAY 395
FALLBROOK CA 92028

428 232 27 00 8
GERGIS NASR N & LAURICE R
1544 LEANNE TL
WALNUT CA 91789

235 111 04 00 3
GERSTNER DAN & SILVIA FAM TR
P O BOX 545
SAN GABRIEL CA 91776

235 111 10 00 0
GERSTNER SILVIA SEPARATE TRUST
P O BOX 545
SAN GABRIEL CA 91778

235 340 15 00 5
GIBSON PAULINE C LIVING TRUST
1008 VALLEY RD
EVERGREEN CO 80439

235 410 05 00 6
GILES BRUCE I
601 WEST GILES RD
MUSKEGON MI 49445

235 191 06 00 3
GILL NANCY G
11572 MORNING SPRING CT
CUPERTINO CA 95014-5121

235 204 21 00 9
GILSDORF E G SR & B A & S
248 PARK LAKE DR
BULLHEAD CITY AZ 86429-7252

235 065 05 00 0 **DUP**
GIRARD JASON CLINTON
ADDRESS UNKNOWN

235 121 07 00 5
GIVENS WALTER
2158 WEST 82ND ST
LOS ANGELES CA 90047

235 192 08 00 6
GOMES DANIEL
3630 W BOUQUET AV
ANAHEIM CA 92804-4611

235 340 24 00 1
GOMEZ M G & MARTIN A ET UX
12315 VAN WICKLIN AV
SYLMAR CA 91342

235 171 09 00 6
GOMEZ WENDY 273228 TRUST
PO BOX 6492
ORANGE CA 92863

428 042 22 00 8
GONZALES DOLORES
2748 STOCKTON AV
ANAHEIM CA 92801

235 101 16 00 5
GONZALEZ JOSE
4804 PASSONS BL
PICO RIVERA CA 90660

235 401 23 00 2
GONZALEZ JOSE CASTRO
PO BOX 20027
OXNARD CA 93034-0027

235 401 01 00 8
GONZALEZ RAYMOND LARA
PO BOX 20027
OXNARD CA 93034-0027

235 024 04 00 8
GOTO BEN T SURVIVORS TRUST
1631 WEST CRAIG PL
SAN PEDRO CA 90732

428 082 13 00 4
GRACE ONE HOLDINGS LLC
17012 ROPER ST
MOJAVE CA 93501-1689

428 093 23 00 3
GREEN KEVIN A TR
42450 NORTH 12TH ST WEST
LANCASTER CA 93534

235 310 02 00 8 **DUP**
GREEN WILMA J TRUST
ADDRESS UNKNOWN

235 310 11 00 4
GRIZZELL DALE & ELEDA TR ET AL
4168 MISTY HOLLOW CT
MOORPARK CA 93021-3327

235 111 06 00 9
GROSS KENNETH J & KAREN J
9391 PIONEER LN
GLEN IVY CA 92883

235 402 01 00 5
GUERVARA ALMA N SANTELIZ
P O BOX 564
MARINA CA 93933

428 042 07 00 5
HA JUNE GI & KYUNG SOON
23010 PASEO DE TERRADO U 3
DIAMOND BAR CA 91765-2239

235 102 40 00 1
HAI FRANCIS & BETTINA
4732 BULOVA ST
TORRANCE CA 90503-1468

235 024 29 00 1
HALEY LAURIE J
15818 N 60TH AV
GLENDALE AZ 85306-2323

428 202 19 00 6
HALL JON BERNARD & JANET
12830 QUAKER HILL CROSS RD
NEVADA CITY CA 95959-9514

428 051 10 00 9
HALL TR
6735 W GOLDEN LN APT 29
PEORIA AZ 85345-4373

235 370 04 00 2
HALLETT JAMES A & PATRICIA P
5075 WILLOW HILLS LN
CINCINNATI OH 45243-4219

235 082 28 00 2
HALYARD DANIEL & BETTY REV TR
1461 GATEWAY DR
VALLEJO CA 94589

235 082 11 00 2
HAMER ERNESTINE
1 SAGE CANYON RD
POMONA CA 91766-4868

235 102 14 00 6
HAMMER CHRISTOPHER DAVID
21702 FLAMENCO
MISSION VIEJO CA 92692-1016

235 380 07 00 4
HANSEN DENNIS V
PO BOX 773
BIG BEAR LAKE CA 92315-0773

235 171 03 00 8
HARA MINA TR
537 E PROCTOR ST
WILMINGTON CA 90744-1530

428 212 10 00 2
HARDIN ROBERT L & PHYLLIS M TREMBLE
4316 W HOPI TR
LAVEEN AZ 85339-2063

235 352 09 00 5
HARKAY NICOLAS & GABRIELLE
6430 LONGRIDGE AV
VAN NUYS CA 91401

234 520 10 00 5
HARO FERNANDO L & NELLY D
16303 RIDGE VIEW DR
APPLE VALLEY CA 92307-1243

302 243 10 00 1
HELMAND ROBERT B
15210 N SCOTTSDALE RD STE 230
SCOTTSDALE AZ 85254-8217

235 282 31 00 8
HENRY MONTY L & GLORIA J
22118 SCHOOLCROFT ST
CANOGA PARK CA 91303

235 064 06 00 6
HERNANDEZ CESAR A & DORY J
1242 S ROWAN AV
LOS ANGELES CA 90023

428 041 23 00 4
HI TECH UNIVERSE
19638 EAGLE RIDGE LN
NORTHRIDGE CA 91326

235 065 17 00 5 **DUP**
HIGHWAY 58 PROP LLC
4370 LA JOLLA VILLAGE DR STE 960
SAN DIETO CA 92122

428 202 23 00 7
HOFFMAN SIGEL J & GUANELL C
P O BOX 1059
BAKERSFIELD CA 93302

235 270 26 00 7
HOLQUIN MELINDA LIVING T
2050 VIA MARIPOSA EAST U B
LAGUNA WOODS CA 92637-0800

235 310 32 00 5
HARFORD AARON
15952 K ST APT 4
MOJAVE CA 93501-1753

235 082 07 00 1
HARKIRAT & GURMAIL FAMILY TRUST
636 AZURE HILLS DR
SIMI VALLEY CA 93065-5517

235 024 18 00 9
HAYES DORIS
PO BOX 4074
INGELWOOD CA 90309

235 192 15 00 6
HEMMINGSEN GEORGE TR
700 I AV
CORONADO CA 92118

302 243 03 00 1
HERBST MICHAEL T
11 LYNBROOK RD
TRUMBULL CT 06611

235 352 15 00 2
HERNANDEZ MARY-ANNE
33E CAMBRIDGE CT
LAKEWOOD NJ 08701-6293

235 282 28 00 0
HIGA FAMILY TRUST
2317 W 177TH ST
TORRANCE CA 90504-4228

235 282 22 00 2
HIGHWAY 58 PROP LLC
4370 LA JOLLA VILLAGE DR # 960
SAN DIEGO CA 92122

235 064 25 00 1 **DUP**
HOLLOSCHUTZ LEON TRUST
ADDRESS UNKNOWN

235 192 12 00 7
HOLZER SURVIVOR TRUST
261 W KENNETH RD
GLENDALE CA 91202-1458

428 052 06 00 5
HARING ISOBEL S REV TR
2294 MORGAN RD
CARLSBAD CA 92008-7114

235 111 15 00 5
HARMON WILLIAM F
12124 MONROVIA
OVERLAND PARK KS 66213

428 232 09 00 6
HELGESEN ROBERT MAURICE JR
8 BILTMORE ESTATE U 318
PHOENIX AZ 85016-2852

428 010 10 00 0
HENG LIPMENG & LYCHHENG
1942 SAMARA DR
ROWLAND HEIGHTS CA 91748-2510

235 270 18 00 4
HERNANDEZ AQUILINO & ROJAS B
15103 CABELL AV
BELLFLOWER CA 90706-3718

235 340 26 00 7
HERRERA LEONARDO C
5715 HAROLD WY APT 105
LOS ANGELES CA 90028-6794

235 061 02 00 3
HIGHWAY 58 PROP LLC
4370 LA JOLLA VILLAGE DR, STE 960
SAN DIEGO CA 92122

428 051 15 00 4
HO DAVID W & IRENE M
309 E MARSHALL ST
SAN GABRIEL CA 91776-3805

235 270 15 00 5
HOLMAN GREGORY E TR
4225 OCEANSIDE BL STE H
OCEANSIDE CA 92056-3473

235 204 28 00 0
HOME EQUITY OPTIONS LLC
10401 VENICE BL # 283
LOS ANGELES CA 90034

428 093 13 00 4
HOME EQUITY OPTIONS LLC
10401 VENICE BL 283
LOS ANGELES CA 90034

235 064 12 00 3
HONDA REAL PROPERTY TRUST
1935 MANCHA WY
MONTEREY PARK CA 91755-6711

235 121 02 00 0
HOOVER JOSEPH ROGER JR
133 ALAMO AV
SANTA CRUZ CA 95060-3001

235 320 12 00 0
HOTTA GEORGE M & TOSHIKO
1651 SO BRADSHAWE AV
MONTEREY PARK CA 91754

235 112 10 00 7
HOWARD SUSAN & JACQUELINE
1121 LINCOLN AV
PASADENA CA 91103

235 320 07 00 6
HOYOS MARIA D TRUST
220 E 68TH WY
LONG BEACH CA 90805-1228

235 204 26 00 4
HSU SHIH CHIEH
105 MOUNTAIN VIOLET
IRVINE CA 92620-3103

235 340 27 00 0
HUANG TED & LUCINDA TRUST B
635 GARDENIA DR
AZUSA CA 91702-6296

235 082 12 00 5
HUI JOHN
5560 S FORT APACHE RD STE 100
LAS VEGAS NV 89148

235 024 08 00 0
HULIGANGA TR
1920 RIPPLE ST
LOS ANGELES CA 90039-3431

235 290 10 00 6
HUTCHISON MELVIN D
483 E CERRITOS
RIALTO CA 92376

235 081 02 00 9
HUYNH CHIN & NGUYEN BINH
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

235 064 21 00 9
HYMAN CALIFORNIA PROPERTY TR
22591 ALBARES
MISSION VIEJO CA 92691-1402

235 031 42 00 0
HYUNDAI MOTOR AMER
10550 TALBERT AV
FOUNTAIN VALLEY CA 92708-6032

428 231 07 00 3
IGE DANIEL S TRUST
493 DORAL CT
BRENTWOOD CA 94513-5030

235 330 39 00 2
IGLESIAS FERMIN & CLARA E
15505 VIRGINIA AV
PARAMOUNT CA 90723

235 065 14 00 6
IPARADISO LLC
2629 FOOTHILL BL
LA CRESCENTA CA 91214-3511

235 380 03 00 2
ISHIDA FAMILY TR
660 FERNGLEN CI
FILLMORE CA 93015-1342

428 240 19 00 4
ITURRIOS RUTH
15622 LEMOLI AV
GARDENA CA 90249-4462

235 191 11 00 7
J D LOOMIS INVS LLC
7100 LOCH LOMOND DR
BETHESDA MD 20817-4760

235 112 04 00 0
JACKSON ANDREW P
341 WEST AVENUE G
LANCASTER CA 93534

235 064 38 00 9
JACKSON ROY
4672 TOPANGA CANYON BL # 269
WOODLAND HILLS CA 91364

235 192 03 00 1
JACOBSON FRANK R & LINDA FAMILY TR
728 ORANGE BELT LOOP
WINTER GARDEN FL 34787

235 282 04 00 0
JACQUEZ RAUL H & MARIA C
13137 MUSCATINE ST
ARLETA CA 91331-4818

235 204 23 00 5
JAMES LON O TR
2714 KITCHEN DICK RD
SEQUIM WA 98382-9538

244 234 35 00 5
JAMES MILDRED J SEPARATE PROPERTY TRUST
12823 ENCANTO WY
REDDING CA 96003

428 092 11 00 1
JANKUS FAMILY LTD
9554 BONE BLUFF DR
NAVARRE FL 32566

428 072 04 00 5
JELUSICH TR
3421 CURTIS ST
SAN DIEGO CA 92106-1360

235 134 21 00 9
JERIES KHADER FAM TR
3 VIA PUMA
RCHO SANTA MARG CA 92688

235 134 12 00 3
JOHNSON FAMILY TRUST
2906 ALDER PL
FULLERTON CA 92635

428 202 27 00 9
JOHNSON G ROBERT & DOLLIE J
222 OLLIS RD SP 91
CAPE JUNCTION OR 97523

235 370 03 00 9
JOHNSON TRUST
17572 SHERBROOK DR
TUSTIN CA 92780

244 234 12 00 8
JOHNSTON BARBARA Z
106 SILVER VALLEY BL
MUNROE FALLS OH 44262

235 410 12 00 6
JONES MERLYN J
52 VISTA LA CUESTA
RNCH ST MRGRT CA 92688

428 202 22 00 4
JONES ROBERT A & JERRI J
PO BOX 2193
TEHACHAPI CA 93581

235 330 43 00 3
JUAREZ FELIPE H REV LIV TR
1166 N 6TH PL
PORT HUENEME CA 93041

428 052 07 00 8
JUNKIN FAMILY TRUST 1990
81429 AVENIDA MONTURA
INDIO CA 92203

428 082 14 00 7
KADUBEC JOHN
508 SE 157TH AV U 42
VANCOUVER WA 98684-8879

302 243 11 00 4
KAGAN SPENCER
4821 BEEMAN AV
VALLEY VILLAGE CA 91607

428 092 18 00 2
KAHENYA LOISE W
645 REDONDO AV APT 201
LONG BEACH CA 90814

235 340 02 00 7
KANG HENRY & JANIE ET AL
6208 OAK PARK AV
LAS VEGAS NV 89118

428 231 10 00 1
KANG SHIN S & TERESA A
22098 PHEASANT ST
LAKE FOREST CA 92630

234 520 34 00 5
KARAPETYAN TAGUI LIVING TRUST
7037 MAMMOTH AV
VAN NUYS CA 91405-3328

235 340 34 00 0
KASHIWAGI KAREN
1766 N WILLOW WOODS DR # D
ANAHEIM CA 92807

235 172 14 00 7
KAUFMANN FAMILY TR
14165 COPENHAGEN DR
TRUCKEE CA 96161

235 310 27 00 1
KELLEY HUBERT JR & DELORES
1233 HYDE LN
RICHMOND VA 23229

428 231 30 00 9
KENNEDY JONATHAN L
P O BOX 2947
LANCASTER CA 93539

235 025 21 00 4
KEREN & ASSCS LLC
P O BOX 2016
BEVERLY HILLS CA 90213

235 111 14 00 2
KERN LAND DEV LLC
10450 WILSHIRE BL #5G
LOS ANGELES CA 90024

235 134 01 00 1
KHAN FAMILY TRUST 2001
5315 HEIDORN RANCH RD
BRENTWOOD CA 94513-5304

235 065 08 00 9
KHATIBI RICHARD
P O BOX 16296
ENCINO CA 91416

235 290 09 00 4
KHERA NARENDRA & NORIEGA JOE C
15305 METROPOL DR
HACIENDA HGTS CA 91745

235 370 07 00 1
KILLMER KENNETH G
P O BOX 276
CATHEYS VLY CA 95306

235 024 22 00 0
KIM ANTHONY
P O BOX 3694
VICTORVILLE CA 92393

428 092 19 00 5
KIM CHONG OH & KIMIE DOHYANG
3445 CLEARVIEW CI
HOUSTON TX 77025-5927

235 282 30 00 5
KIM ISSAC & LOIS
4225 NEUHAUS DR
MCALLEN TX 78503-8218

235 380 02 00 9
KING DESMOND N
1130 E ALOSTA AV U B102
AZUSA CA 91702-2703

428 041 16 00 4
KINKER JAMES W & DOROTHY L
15692 HUMMINGBIRD LN
HUNTINGTON BEAC CA 92649-1417

428 041 28 00 9
KIRILLOVA ELIZAVETA
5757 OWENSMOUTH AV APT 10
WOODLAND HILLS CA 91367

428 202 36 00 5
KIRKSEY FAMILY TRUST
512 GALLEON WY
SEAL BEACH CA 90740-5939

428 093 22 00 0
KITE CONSTANCE J TR ET AL
2489 W BEECHWOOD AV
FRESNO CA 93711-7015

428 042 21 00 5
KLEPL DONALD
208 ANDERSON RD
PRESCOTT AZ 86303-3755

235 340 21 00 2
KNUST GRAICHEN FAMILY TRUST
2524 KING WY
CLAREMONT CA 91711-1719

302 241 12 00 3
KOMSKY SUBTRUST A
PO BOX 667
WOODLAND HILLS CA 91365-0667

428 231 14 00 3
KONGSHOY FAMILY TRUST
18 LINDEN RD
WATSONVILLE CA 95076-0808

235 101 19 00 4
KOTKIN LEIGH TR
12325 EVENSONG DR
LOS ANGELES CA 90064

428 202 25 00 3
KOULEYAN FAMILY TRUST
1008 LINDENWOOD LN
LOS ANGELES CA 90049-1409

235 282 21 00 9
KUBOTA EDWIN J & JANET S
26 TRUMPET VINE
IRVINE CA 92603-4210

235 064 24 00 8
KUNTZ SEYMOUR & ROSE TRUST
10847 CHARBONO PT
SAN DIEGO CA 92131-1505

235 134 23 00 5 **DUP**
KURATA SATOKO TR
P O BOX 2645
CULVER CITY CA 90231-2645

235 134 24 00 8
KURATA YASUO & SATOKO TRUST
P O BOX 2645
CULVER CITY CA 90231-2645

235 031 07 00 9
KUTU INV CO
PO BOX 7663
LAGUNA NIGUEL CA 92607-7663

428 051 04 00 2
L & P INVESTMENTS INC
1100 ALAKEA ST # 7
HONOLULU HI 96813-2855

428 240 09 00 5
L I LAND PORTFOLIO LLC
12671 HIGH BLUFF DR STE 150
SAN DIEGO CA 92130-3018

428 240 20 00 6
L I LAND PORTFOLIO LLC
126715 HIGH BLUFF DR 150
SAN DIEGO CA 92130

235 310 06 00 0
LA VERTU DENIS J
24071 LANDISVIEW AV
LAKE FOREST CA 92630-5133

234 052 06 00 2
LAND INV NETWORK LLC
3142 PACIFIC COAST HW STE 200
TORRANCE CA 90505-6750

235 102 23 00 2 **DUP**
LAND INVS NETWORK
3142 PACIFIC COAST HW STE 200
TORRANCE CA 90505-6750

428 092 14 00 0
LAND PARCEL LIQUIDATORS INC
4765 PARK ENCINO LN U 333
ENCINO CA 91436-3276

428 232 08 00 3 **DUP**
LAND PARCEL LIQUIDATORS INC
4765 PARK ENCINO LN # 333
ENCINO CA 91436

235 380 04 00 5
LANDER COLEMAN H & POORE MARY
6030 VAN NOORD
VAN NUYS CA 91401

428 231 16 00 9
LANDRUSH
P O BOX 348
SAN FERNANDO CA 91341

235 064 05 00 3
LANE FAMILY TRUST
P O BOX 6196
LANCASTER CA 93539

235 202 13 00 2
LANG ADOLPH & ANNE
4529 FAIR AV
OAKLAND CA 94619-2926

235 101 08 00 2
LANSING INDUSTRIES PSP LLC
12671 HIGH BLUFF DR STE 150
SAN DIEGO CA 92130-3018

428 051 16 00 7
LAU LAWRENCE H & AMY KAM-MAI ET AL
216 S ELECTRIC AV
ALHAMBRA CA 91801

235 111 05 00 6
LAURENTI EDWARD
31 RAMAPO RD
CRANFORD NJ 07016-3465

428 042 09 00 1
LAWLOR JOHN & CHARLENE TRUST
43843 JENKINS LN
ASHBURN VA 20147

428 231 01 00 5
LAWS JERRY JOSEPH
19453 8TH PL
ESCONDIDO CA 92029-8127

235 300 14 00 0
LAZERSON JACOB & JANICE M TR
11 LARKFIELD LN
LAGUNA NIGUEL CA 92677

234 520 36 00 1
LE TAM THI
1040 GRAPE ST
SAN MARCOS CA 92069-3164

428 174 01 00 9
LEE JANG WOO
2867 MUIR TRAIL DR
FULLERTON CA 92833-5517

235 112 05 00 3
LENDIO JAMES
5732 PLAZA CT
PALMDALE CA 93552-4695

428 041 10 00 6
LEPPO AMY L
229 SMITH RD
ALAMO CA 94507

235 024 31 00 6
LESH THOMAS A
21723 HERCULES ST
APPLE VALLEY CA 92308-8490

302 241 08 00 2 **DUP**
LEVY GABRIEL & ESTHER
ADDRESS UNKNOWN

235 065 03 00 4
LIU WARNER
18830 NORWALK BL
ARTESIA CA 90701-5973

235 410 08 00 5
LOH INV L P
5625 RUFFIN RD # 210
SAN DIEGO CA 92123-4446

235 204 31 00 8
LOPEZ CONSUELO TRUST
12648 REXTON ST
NORWALK CA 90650-4458

244 234 36 00 8
LORENZO VENTON T
2115 DENMEAD ST
LAKEWOOD CA 90712

235 024 38 00 7
LEBOVIC JOAN SURVIVORS TR
18839 LA AMISTAD PL
TARZANA CA 91356-5211

235 111 28 00 3
LEE JOO S
466 FOOTHILL BL # 317
LA CANADA FLINT CA 91011-3518

235 410 35 00 3
LEON CESAR OCTAVIO
2505 ILLINOIS AV APT C
SOUTH GATE CA 90280-3907

428 051 11 00 2
LEPPO JAN R
553 SUZANNE CT
PALO ALTO CA 94306

428 051 22 00 4
LEVEY WILLIAM C & PENELOPE
FAMILY TRUST
735 CALLA DR # 1
SUNNYVALE CA 94086-8004

235 340 37 00 9
LEWIS DAVID ACTON & BEVERLY
P O BOX 3053
EUREKA CA 95501

235 065 15 00 9
LLOYD J D JR
8916 NE 299TH ST
BATTLE GROUND WA 98604

428 232 23 00 6
LONGO FAMILY TRUST
4500 DIETZ DR
FAIR OAKS CA 95628

428 042 05 00 9
LOPEZ JOSE A & MARIA J
5954 8TH AV
LOS ANGELES CA 90043

235 064 20 00 6
LORICH CARL A
12220 5TH ST # 140
YUCAIPA CA 92399

428 232 29 00 4
LEE CHARLES T & TINA K
2771 MARIPOSA ST
TORRANCE CA 90503

428 010 02 00 7
LEE MEI RUEY YANG TRUST
1680 WILLIAMSPORT ST
HENDERSON NV 89052-6831

235 310 03 00 1
LEON JOSE P & SUAREZ CARLOS A
P O BOX 9686
GLENDALE CA 91226-9686

428 041 07 00 8
LEPPO ROBYN B
8711 PEZZI RD
STOCKTON CA 95215

428 202 20 00 8
LEVISTE MANAGEMENT SYSTEMS
INC
1246 5 CAHUENGA BL
LOS ANGELES CA 90038

428 062 05 00 5
LIGHT FRANCINE JUDITH TRUST &
ET AL
10257 CENTURY WOODS DR
LOS ANGELES CA 90067-6312

235 134 07 00 9 **DUP**
LO LIEN-GWEN & EDITH
ADDRESS UNKNOWN

428 232 24 00 9 **DUP**
LONGO FAMILY TRUST
4500 DIETZ DR
FAIROAKS CA 95628

235 192 04 00 4
LORENZ LARRY G & SARAH G TR
2127 WEST 230TH ST
TORRANCE CA 90501

235 102 36 02 8
LUITWIELER GEORGE R & JANE TR
1713 SOUTH ALMANSON
ALHAMBRA CA 91801

235 330 07 00 9
LUNCHE ROBERT G SURV TR
2530 CABRILLO WY
OXNARD CA 93010

235 140 22 00 7
LUNING ASSCS L P
1888 BROADWAY PL
WENATCHEE WA 98801-8333

235 101 29 00 3
LUONG KHANH DAN & LE XUAN UYEN
2706 E LOCUST AV
ORANGE CA 92867

235 024 33 00 2
LY KHANH TUYET
2107 WALNUT GROVE LN
RICHMOND TX 77406-6627

235 330 05 00 3
MACAPAGAL LEONARDO L & ELEANOR
13333 MISSION TIERRA WY
GRANADA HILLS CA 91344

235 111 08 00 5
MACIEL SILVANO & KHALIL VICTOR
44200 KINGTREE AV U 26
LANCASTER CA 93534

235 282 05 00 3
MADRIAGA EDWIN & IMELDA
4516 THIRA WY
ELK GROVE CA 95758-5156

235 340 16 00 8
MAHER DONALD & GAIL FAMILY TRUST
18523 KINGSBURY ST
NORTHRIDGE CA 91326

235 025 01 00 6
MALAD FAMILY L P
3967 CORTE MAR DE BRISA
SAN DIEGO CA 92130-2640

235 082 10 00 9
MANN ALFONS & LIDA
20 ANJOU
NEWPORT COAST CA 92657-1036

428 202 32 00 3
MANUEL RENATO S & ZENAIDA C
3102 SW 313TH PL
FEDERAL WAY WA 98023-7828

235 064 02 00 4
MARCOS RUFINO C
3531 ARROYA SICO AV U 1
LOS ANGELES CA 90065

235 082 06 00 8
MARGOLIN MALCOLM L TR
620 PALISADES DR
PACIFIC PALISAD CA 90272-2849

235 082 08 00 4
MARGOLIS K W TR & WENDIE & RADIST TR
4400 AZALIA AV
TARZANA CA 91356

428 041 21 00 8
MARK E THOMPSON A P C PROFIT SHARING PLAN
963 W AVENUE J
LANCASTER CA 93534-3428

235 112 07 00 9
MARLOWE SAMUEL B
913 W MYRRH ST
COMPTON CA 90220

302 243 07 00 3
MARTINEZ ANANDY
13301 WESTLAKE ST
GARDEN GROVE CA 92843

235 340 06 00 9
MARTINEZ OSCAR
2606 SANTA ANITA AV # 3
EL MONTE CA 91733

244 234 30 00 0
MARTINI JOSEPH F TR
41181 SUMMITVIEW LN
PALMDALE CA 93551-2763

235 290 07 00 8
MASCHKE MICHELLE
252 HEMENWAY RD
WINLOCK WA 98596

235 290 05 00 2
MASCHKE ROBERT
PO BOX 94
THERMOPOLIS WY 82443

235 191 02 00 1
MASON FAMILY TRUST A
1855 HAREN DR
HENDERSON NV 89011-4366

235 204 41 00 7
MASON RANDY L TRUST
1452 E HOGAN ST
EAGLE ID 83616-6525

235 171 02 00 5
MASTIN DEBORAH
500 NE 55TH TR
MIAMI FL 33137-2619

428 053 08 00 8
MATROS BARBARA L
2556 WEST N-4
PALMDALE CA 93551

235 121 01 00 7
MATTISON CHARLES A
9 CROWN CT
RANCHO MIRAGE CA 92270-1622

235 353 01 00 8
MAY PATRICIA L
437 E FEDORA AV
FRESNO CA 93704-4706

235 102 20 00 3
MC CAFFREY THOMAS F
P O BOX 561
BORON CA 93596

428 042 31 00 4 **DUP**
MC PHERSON HOWARD L
ADDRESS UNKNOWN

235 310 19 00 8
MEDER EDWARD R & NORMA E
174 FLORIDA SHORES BL
DAYTONA BCH SH FL 32118-5639

235 282 15 00 2
MEDINA RANDY
PO BOX 2061
MONTCLAIR CA 91763-0561

235 204 29 00 3
MEINERT GORDON E & LINDA
1649 2ND ST
DUARTE CA 91010

428 240 16 00 5
MEJIA CARMEN SOLEDAD
6475 ATLANTIC AV SP 412
LONG BEACH CA 90805-8602

428 240 69 00 9
MEJIA FERDINAND N
PO BOX 2083
LEHIGH ACRES FL 33970-2083

428 240 59 00 0
MEJIA RAUL
3914 N CREOSOTE CT
CASA GRANDE AZ 85122-8286

235 360 07 00 8
MERCADO LIVING TRUST
11014 FIORE DR
RANCHO CORDOVA CA 95670-6945

235 181 02 00 8
MERKEL LARRY
5136 GROSSE POINT PW
TOLEDO OH 43611

428 231 15 00 6
MEYER STERLING P
155 LAIDLEY ST
SAN FRANCISCO CA 94131

235 064 11 00 0
MICU ELENA U REVOCABLE TRUST
230 N LIMA ST
BURBANK CA 91505-3509

234 520 23 00 3
MILLER CAMILLE K
111 CLARK ST
SAN RAFAEL CA 94901

235 101 25 00 1
MILLER FAMILY TR
531 TOWERING VISTA PL
HENDERSON NV 89012

235 290 15 00 1
MILLER NORMAN L & CHRISTA M
P O BOX 503
LANCASTER CA 93584

235 310 29 00 7
MILLS LEIGHTON S & VALERIE TR
2447 N SHADY FOREST LN
ORANGE CA 92667

235 330 08 00 2
MIN BYONG KWAN
1119 ALBANY ST APT 331
LOS ANGELES CA 90015-2073

235 310 08 00 6
MITCHELL BARBARA E
26245 ACORN LN
MUNDELEIN IL 60060

428 041 32 00 0
MOFFETT JAMES H & BONNIE B
2322 PALO DANZANTE
ALPINE CA 91901-3620

428 102 32 00 4
MOJAVE 58 INVS LLC
PO BOX 20819
BAKERSFIELD CA 93390-0819

428 051 09 00 7
MOJAVE AIR & SPACE PORT
1434 FLIGHT LINE
MOJAVE CA 93501-2016

235 191 03 00 4
MOJAVE AIRPORT INDUSTRIAL LLC
12671 HIGH BLUFF DR STE 150
SAN DIEGO CA 92130

235 111 02 00 7
MOORE HARRY M ET AL
P O BOX 107
WEST LINN OR 97068

235 121 09 00 1
MORITA ROY
3432 IVAR AV
ROSEMEAD CA 91770-2838

235 353 10 00 4
MORRIS FMLY TR
23981 JUANENO DR
MISSION VIEJO CA 92691

235 380 13 01 0
MORTIMER RICHARD
19640 DELIGHT ST
CANYON COUNTRY CA 91351

428 072 07 00 4
MOSELY MARILYN MYRTLE REV LIV TRUST
8146 BAY VIEW DR
FOLEY AL 36535

428 072 10 00 2
MOSELY MARILYN MYRTLE REV LIV TRUST
8146 BAYVIEW DR
FOLEY AL 36535

235 353 12 00 0
MOZENA LINDSAY ANNE STEINBACK
5604 W WINSTON DR
LAVEEN AZ 85339-5257

428 232 06 00 7
MYERS KENNETH D & PATRICIA A
13530 OAK MESA DR
YUCAIPA CA 92399

235 320 10 00 4 **DUP**
NAHAS LOUAI K
ADDRESS UNKNOWN

428 092 10 00 8 **DUP**
NAKAGAWA MAKOTO
ADDRESS UNKNOWN

428 041 15 00 1
NARVELL DAVID C
15401 POPPYSEED LN
CANYON CNTRY CA 91351

428 102 25 00 4
NATHAN RICHARD C
P O BOX 1577
OLYMPIA WA 98507

235 140 21 00 4
NAYLOR DAVID
155 JACKSON ST APT 405
SAN FRANCISCO CA 94111-1921

235 310 01 00 5
NELSON FAMILY TRUST
15 LEXINGTON
IRVINE CA 92720-2535

235 410 02 00 7
NELSON TAWNEY LYNNE
188 MEADOW VIEW DR
PHOENIX OR 97535-9431

428 092 22 00 3
NELSON WALTER F REV LIV TRUST
45120 HIGHWAY 79 # 660
AGUANGA CA 92536

428 092 24 00 9
NELSON WALTER SEPARATE PROPERTY TRUST
PO BOX 549
QUARTZSITE AZ 85346-0549

235 260 21 00 9 **DUP**
NEW EDEN PROP
ADDRESS UNKNOWN

428 051 03 00 9
NGHIEM MICHAEL & TRAN THUY TP
4300 DUNCAN DR
ANNANDALE VA 22003-3727

235 340 14 00 2
NGUYEN BINH & HUYNH CHIN T
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

235 024 35 00 8 **DUP**
NGUYEN BINH N & HUYNH CHIN T
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

428 162 06 00 7 **DUP**
NGUYEN BINH NAM & HUYNH CHIN THI
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

235 082 14 00 1
NGUYEN KENEDY PHU & LENA TRUST
4569 W 136TH ST
HAWTHORNE CA 90250-5733

235 065 12 00 0
NGUYEN LUAN K
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

428 082 09 00 3 **DUP**
NGUYEN LUAN KINH
16098 MOUNT HICKS ST
FOUNTAIN VALLEY CA 92708-1723

235 024 27 00 5
NGUYEN NHUT M & PHUONGCHI T
11721 DEBBIE LN
GARDEN GROVE CA 92840-2617

428 231 09 00 9
NGUYEN NINH VAN & TA TRACY THU
1270 CHAD DR
ROUND ROCK TX 78665-2038

234 052 02 00 0
NGUYEN YEN MY
107 E MELBOURNE AV
SILVER SPRING MD 20901

235 410 11 00 3
NIERGARTH CHARLES LIV TR
1468 SIGNAL ST
SAN DIEGO CA 92154

235 352 06 00 6
NOLASCO WILBER ULISES RUIZ
2609 PIPER CT
BAKERSFIELD CA 93306-2818

235 352 17 00 8
NORIEGA NELLY C LIV TR
560 GOLDEN SPUR CI
WALNUT CA 91789-4203

235 300 13 00 7
NORITAKE ROY FAMILY TRUST
724 DE PALMA WY
MONTEBELLO CA 90640-3516

428 093 25 00 9
NORTON LYNN MARIE
6005 PASEO CANYON DR
MALIBU CA 90265-3131

235 182 02 00 5
OAKLEY KIM LY
23106 AUDREY AV
TORRANCE CA 90505-3708

428 082 15 00 0
OH GAP HYUN TRUST
4933 LA CRESCENTA AV
LA CRESCENTA CA 91214-2944

235 352 01 00 1
OISHI MARCIA HUYNH
36108 MANGROVE LN
NEWARK CA 94560-1931

235 270 29 00 6
OJO DAVID A
3053 RANCHO VISTA BL STE H147
PALMDALE CA 93551-4843

235 112 08 00 2
OJO IDOWU
5391 QUINCY ST # 2
HYATTSVILLE MD 20784

235 353 02 00 1
OKA MILTON M
1062 KALAPAKI ST
HONOLULU HI 96825-2706

235 353 20 00 3
OKAGI CHRISTOPHER S EST
440 N JUDD ST U A
HONOLULU HI 96817

235 410 21 00 2
OLIVER FAM LIV TR
2028 WEST 66TH ST
LOS ANGELES CA 90047

235 410 22 00 5
ORNG CLARINDA W
21236 WILDER AV
LAKEWOOD CA 90715-2415

235 102 31 00 5
ORTEGA SEFERINO JR & CATALINA
13 CTY RD 1517
BAY SPRINGS MS 39422

235 102 15 00 9
OSTBY MARILYN M TR
15723-4 LA SUBIDA DR
HACIENDA HTS CA 91745

428 240 15 00 2
PACHECO BERTA O
1046 CATALINA
LOS ANGELES CA 90006

428 231 19 00 8
PACIFIC STATES LAND CO
P O BOX 880088
SAN DIEGO CA 92168

234 052 04 00 6
PAE KWANG CHIN
560 JOHN K DR APT 102
LONG BEACH CA 90803

235 024 25 00 9
PAE MOON BOO & HEA JA
2066 VILLA DEL LAGO # A
CHINO HILLS CA 91709

235 064 34 00 7
PAJAK SHARLENE LIVING TRUST
2000 RAMAR RD # 661
BULLHEAD CITY AZ 86442-9341

235 290 13 00 5
PALADIJCZUK TR
745 N 184TH ST
SHORELINE WA 98133

302 243 09 00 9
PALISADES LUTHERAN CHURCH
15905 W SUNSET BL
PACIFIC PALISAD CA 90272-3499

235 340 01 00 4
PARK KOO WON & NAN SOOK
19707 EAGLE RIDGE LN
NORTHRIDGE CA 91326

235 282 19 00 4
PARK PUNG SAN & POK CHU
22805 LOUMONT DR
LAKE FOREST CA 92630

235 101 20 00 6
PARKS MERLINE F & DONALD J
2946 ASPEN ST
HANFORD CA 93230

235 024 17 00 6
PARNELL LIVING TRUST
11135 SARAH ST
NO HOLLYWOOD CA 91602-1739

235 270 23 00 8
PARSONS GARY D & NORMA E
1408 SKI LODGE RD
VIRGINIA BCH VA 23456

235 340 08 00 5
PATERNO MARIA BELEN
45 ARLINGTON AV
KENSINGTON CA 94707

235 024 23 00 3
PATTERSON-ENGELHARDT
43912 W 20TH ST
LANCASTER CA 93534

428 041 35 00 9
PAULEY JOSEPH L & BEVERLY M
REV TRUST
P O BOX 57
ROSAMOND CA 93560

235 300 17 00 9
PAULEY JOSEPH L & BEVERLY M
TR
P O BOX 57
ROSAMOND CA 93560

235 082 23 00 7
PAULY BENJAMIN J
688 N. CLINTON
ORANGE CA 92667

235 260 20 00 6
PELLO GENE & LISA
3815 BALDWIN AV # 12
EL MONTE CA 91731

235 310 23 00 9
PENA KATYA L
14285 TONTO CT
VICTORVILLE CA 92394-6412

235 081 01 00 6
PEREZ MANUEL & GLORIA P
9111 MYRON ST
PICO RIVERA CA 90660

428 202 48 00 0
PEREZ PEDRO & CONNIE FAMILY
TRUST
828 S 6TH ST
MONTEBELLO CA 90640-5914

235 330 27 00 7
PERRETTA MARILYN
515 S DARTMOUTH LN
ALTOONA PA 16602-7330

428 093 27 00 5
PETRELL CHRIS
PO BOX 5
GERLACH NV 89412-0005

235 102 13 00 3
PINNIX JOHN D & MICHELLE A
1811 HACIENDA DR
EL CAJON CA 92020

225 250 21 00 3
PIONEER PARTNERS 2000 LLC
2001 KIRBY DR STE 500
HOUSTON TX 77019

235 370 08 00 4
PONG J A FAM TRUST
23081 GRAND TERRACE RD
GRAND TERRACE CA 92313-4927

235 140 09 00 0
PORTER DON C
69811 BURLWOOD DR
MOUNTAIN CENTER CA 92561-3575

235 380 10 00 2
PRICE PATSY LEE
812 RYE RD
NORMAN OK 73072

428 042 30 00 1
PRINSTER GANNA
11901 SANTA MONICA BL # 391
LOS ANGELES CA 90025

428 092 09 00 6
PROFESSIONAL EQUITIES IN
23201 MILL CREEK DR FLR 3
LAGUNA HILLS CA 92653-1692

428 051 01 00 3
PROFESSIONAL EQUITIES IN
23201 MILL CREEK DR FLR 3
LAGUNA HILLS CA 92653-1692

235 320 08 00 9
PRONIN FMLY TR
37144 AVENUE 12 # 102
MADERA CA 93638

235 064 07 00 9
QUINATA RONALD C
PO BOX 326011
HAGATNA GU 96932-6000

235 064 04 00 0
QUINDOY SENEN B
8119 SHADYGLADE AV
NO HOLLYWOOD CA 91605

428 202 18 00 3 **DUP**
QUINTAS DOMINGO M &
EDUVEDES P
ADDRESS UNKNOWN

235 102 19 00 1
QUIROZ PATRICIA JOAN TRUST
32013 CORTE SOLEDAD
TEMECULA CA 92592-6464

428 042 08 00 8
RAMIREZ CYNTHIA JORDAN
213 OCEAN AV APT A
SEAL BEACH CA 90740

235 410 29 00 6
RAMIREZ FELIPE
1903 GALE AV
LONG BEACH CA 90810-4133

428 053 06 00 2
RAMIREZ NELLIE G SEPARATE
PROP TR
15708 CAMEO AV
NORWALK CA 90650

428 041 12 00 2
RAMIREZ SALAS RICARDO
ALBERTO
2100 TURQUOISE RIDGE ST U 104
LAS VEGAS NV 89117-5969

428 102 05 00 6
RAMOS LINDA
3406 E 17TH AV
ANCHORAGE AK 99502

428 102 08 00 5
RAMOS NORMA T & LUCAS T
1975 SE 211TH AV
SAMMAMISH WA 98075-7501

235 101 27 00 7
RAMOS STEPHANIE LEINANI
RITUA
662 BOWCREEK DR
DIAMOND BAR CA 91765-1853

428 051 14 00 1
RANCHERS CATTLE OIL & LAND
CO
1510 S MILLS AV APT 109
LODI CA 95242-4237

235 082 13 00 8
RATCLIFF FAMILY TRUST
3064 BLACKWELL DR
VISTA CA 92084-1424

235 353 06 00 3
RATLIFF DEANNA
P O BOX 626
OAKDALE CA 95361

235 410 13 00 9
RAWLS SHANNON WENDELL &
CHISTANN CHANELL
312 S BEVERLY DR U 6493
BEVERLY HILLS CA 90212-2066

235 191 05 01 9
RAWLS SHEILA D
3108 W GRANDVIEW AV
SPOKANE WA 99224-5527

235 101 15 00 2
RAYAS REYNALDO
15060 MINNEHAHA ST
MISSION HILLS CA 91345

235 024 24 00 6
RECCHIA WILLIAM & GOBY TERRI
P O BOX 9040
CANOGA PARK CA 91309

235 282 27 00 7
REDDEN JERRY
501 BOKMEN PL
SOMONA CA 95476

235 243 04 00 5
REDEV AGENCY OF CITY OF CAL
CITY
21000 HACIENDA BL
CALIFORNIA CITY CA 93505

235 204 30 00 5
REDMAN INVESTMENT CO
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

235 330 41 00 7
REDMAN MARSHALL & DORIS E
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

428 231 24 00 2
REED FAMILY TR
10036 LA PLACITA DR
RNCH CORDOVA CA 95670

428 042 20 00 2 **DUP**
REINTS LARRY LEE & ROBERTA R
ET AL
ADDRESS UNKNOWN

428 092 20 00 7
REITTER ARDA TRUST
2484 JADA DR
HENDERSON NV 89044

235 282 36 00 3
RETHY KATHERINA TRUST EST
16921 SE 32ND PL
BELLEVUE WA 98008-5769

235 310 24 00 2
RETZ FAMILY 2005 REVOCABLE TR
9019 DURAM WHEAT DR
BAKERSFIELD CA 93313

235 290 02 00 3
REYNOLDS FAMILY TR
57 D ST
EPHRATA WA 98823

235 270 21 00 2
REYNOSO ENRIQUE & MARIA
9552 E AVENUE Q4
PALMDALE CA 93591-2215

235 140 28 00 5
RIAZ PARVEEN
11866 BROADWAY RD
MOORPARK CA 93021

428 051 23 00 7
RICH FREDERICK W
4844 LEIGH AV
SAN JOSE CA 95124

428 051 21 00 1
RICH FREDERICK W & TOMI
4844 LEIGH AV
SAN JOSE CA 95124

428 051 24 00 0
RICH GEORGE W & CLAUDIA J TRUST
2540 BUTANO DR
SACRAMENTO CA 95821-6506

235 300 09 00 6
RICHARDS JAMES & VIOLET
P O BOX 5549
EUGENE OR 97405-0549

235 181 08 01 5
RIVAS OMAR
8467 PENFIELD AV
WINNETKA CA 91306

428 041 06 00 5
ROBERTSON LA VERNE
830 TORO CANYON RD
SANTA BARBARA CA 93108

234 052 01 00 7 **DUP**
ROBERTSON PAUL BARLOW
ADDRESS UNKNOWN

235 353 16 00 2
RODDICK DONALD L & MARILYN J FAM TR
841 17 MILE DR
PACIFIC GROVE CA 93950

235 340 05 00 6
RODEO GREEN TREE LLC
12671 HIGH BLUFF DR
SAN DIEGO CA 92130

235 064 22 00 2
RODICA ELISA N REV TRUST
15224 DYLA WY
BROOKSVILLE FL 34604-0735

235 352 05 00 3
RODMAN MARSHALL & DORIS E
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

428 051 17 00 0
RODRIGUEZ JESUS & CONCEPCION
8540 RUDNICK AV
WEST HILLS CA 91304-2259

235 401 22 00 9
RODRIGUEZ ROSENDO
2100 RAYO DEL SOL DR
ARVIN CA 93203-9447

235 065 06 00 3
ROLANDELLI KAREN W
3108 TEIGLAND RD
LAFAYETTE CA 94549-2015

235 192 13 00 0
ROMERO ANTHONY & PATRICIA
21391 VINTAGE WY
LAKE FOREST CA 92630-5827

428 202 33 00 6
RONAS ERLINDA P
77 SARRAGUT ST
SAN FRANCISCO CA 94112

428 231 06 00 0
ROOT LISA A
9813 SATTLEY PL
GRANITE BAY CA 95746-6715

235 204 40 00 4
ROSAS MIGUEL R & OFELIA L
32211 FALL RIVER RD
TRABUCO CANYON CA 92679-3317

235 111 26 00 7
ROSEMARY JACK C
P O BOX 2474
LA HABRA CA 90632

235 410 20 00 9
ROXY TR
19401 OPAL LN
SANTA CLARITA CA 91350-3244

235 370 05 00 5
RUBIN ARLENE
4001 N OCEAN BL # 304B
BOCA RATON FL 33431

235 401 03 00 4
RUDOLPH ALICE L
720 WEST 4TH ST
LONG BEACH CA 90802

235 380 08 00 7
RUOTOLO PAUL
668 AMALIA AV
LOS ANGELES CA 90022

428 062 16 00 7
RUSH GRANVILLE A TR
RR 2 BOX 340C
LEWISBURG WV 24901-9344

235 330 40 00 4
SAAVEDRA FERNANDO & FERNANDO I
2227 LLANO MEDIANO LN
EDINBURG TX 78542-2551

235 401 02 00 1
SAAVEDRA GUADALUPE &
MONICA
2227 LLANO MEDIANO LN
EDINBURG TX 78542-2551

235 102 05 00 0
SAGLIMBENI NICK
530 S LAKE AV STE 601
PASADENA CA 91101-3515

235 132 16 00 1
SAHOTA MANDEEP K
8499 MONTE CRISTO AV
LIVINGSTON CA 95334-9354

428 212 23 00 0
SAHOTA SARIKA NISHA
4154 PRADO DE LA PUMA
CALABASAS CA 91302-3629

235 065 04 00 7
SAHOTA SOHAN SINGH
8499 MONTE CRISTO AV
LIVINGSTON CA 95334-9354

235 024 05 00 1
SAKURAI SURVIVORS TRUST
23442 EL TORO RD APT E133
LAKE FOREST CA 92630-6905

235 401 13 00 3
SALAMEH YOUSEF MANUEL
4400 TRUXEL RD # 59
SACRAMENTO CA 95835-2615

235 310 05 00 7
SALTZGIVER JOHN
56925 YUCCA VALLEY TR
YUCCA VALLEY CA 92284

235 330 33 00 4
SANABRIA FRANCISCA IBARRA TR
1215 DIANA RD
SANTA BARBARA CA 93103-2537

302 243 08 00 6
SARKESHIK AMIR
6447 E LOOKOUT LN
ANAHEIM CA 92807-4827

428 053 02 00 0
SARTO FAMILY TR
1119 SO OAKHURST DR APT 1
LOS ANGELES CA 90035

235 300 16 00 6
SAUNDERS ROBERT & DEBBIE
10728 BING DR
FORT WORTH TX 76108-4620

235 310 31 00 2
SAWYER GARY J
332 HERITAGE LP
GLASSBORO NJ 08028-3236

235 380 12 00 8
SAYSON ERNESTO CALDERON JR
9328 HAMBLEY CI
ELK GROVE CA 95624-6043

235 380 14 00 4
SAYSON JONATHAN JARRED
432 BEGONIA DR
SAN LEANDRO CA 94578-3802

428 093 16 00 3
SCHNEPPER FRED W IRA
75 N UNIVERSITY AV
PROVO UT 84601-4429

235 410 28 00 3
SCHONBORG PALMETTA L GILL
20560 MONTALVO LN
SARATOGA CA 95070-6313

428 041 19 00 3
SCHREY TRUST
26650 MACMILLAN RANCH RD
CANYON COUNTRY CA 91387-4036

235 282 24 00 8
SCHWEIGER GARRY LIV TR
9107 OLIN DR
CHATSWORTH CA 91311-6301

428 042 23 00 1
SCHWERING PAUL J & CARL J
7900 PASO ROBLES AV
VAN NUYS CA 91406

428 202 26 00 6
SCIONTI ALFRED
9651 S PLACITA DE LA CAUSA
VAIL AZ 85641-2074

244 234 13 00 1
SCOTT LINDA LEE
PO BOX 274
FALL RIVER MILL CA 96028-0274

235 410 14 00 2
SEASONS LAND CORP
3595 INLAND EMPIRE BL # 3
ONTARIO CA 91764

244 411 01 00 7
SECORD DEBRA A LIVING TRUST
9330 EL CAMINO AV
FOUNTAIN VALLEY CA 92708-4524

235 064 32 00 1
SEELEY RUTH M
1841 COTTONWOOD ST
SOLVANG CA 93463

235 204 39 00 2
SEIFFERT BEATRICE E
645 STANLEY CT
ESCONDIDO CA 92026

428 072 09 00 0
SELECT ENTERPRISES INC
7185 S DURANGO DR STE 109
LAS VEGAS NV 89113-2018

428 202 49 00 3
SELIS LAURA
1200 ARCADIA AV APT B
AUSTIN TX 78757-3044

235 270 20 00 9
SEMINARO MARK L
P O BOX 8105
NEWPORT BEACH CA 92658

235 024 12 00 1
SEPEHR ALI
18175 KAREN DR
TARZANA CA 91356

235 290 04 00 9
SHAW TERRY C
19005 E 60TH ST
LAKE TAPPS WA 98391-8808

428 231 11 00 4
SHAY TINA
P O BOX 660162
ARCADIA CA 91066

235 024 19 00 2
SHEFI RON
700 NORWOOD DR
NASHVILLE TN 37204-3513

235 270 19 00 7
SHEN FAMILY TRUST
933 EL CAMPO DR
PASADENA CA 91107

428 072 08 00 7
SHIMER K L & F C & S E
42448 22ND STREET WEST
LANCASTER CA 93534

428 072 06 00 1
SIDDALL LARRY D
PO BOX 138
LAURENS IA 50554

235 380 09 00 0
SIMMONS VIVIAN & BEAKLEY TR
3934 POZZALLO LN
SACRAMENTO CA 95834-7519

235 101 18 00 1
SINGH HARKIRAT & GURMAIL FAMILY TRUST
636 AZURE HILLS DR
SIMI VALLEY CA 93065-5517

428 051 19 00 6
SKANKEY A O & MARGUERITE TR
PO BOX 526297
SALT LAKE CTY UT 84152

235 064 08 00 2
SKAUG WAYNE A
2502 BRIAR GLEN RD
ACTON CA 93510-2108

235 330 10 00 7
SMALL VERDA I
309 NW NINTH ST
ANKENY IA 50021

235 330 11 00 0
SMALL VERDA I
309 NW 9TH ST
ANKENY IA 50021

235 024 34 00 5
SMITH DAWN MARIA
4440 MAMMOTH AV
SHERMAN OAKS CA 91423

235 111 12 00 6
SMITH DIANE RENEE BUSH
6653 E STRATFORD DR
PRESCOTT VALLEY AZ 86314-3834

235 340 35 00 3
SMITH JAMES D & PATRICIA A TRUST
1920 W BAYSHORE DR
ANAHEIM CA 92801

235 320 16 00 2
SMITH MICHELE TR
250 E TELEGRAPH RD SP 180
FILLMORE CA 93015

428 062 15 00 4
SMITH WILLIAM H & BARBARA J TRUST
959 S GRANTHAM DR
VAIL AZ 85641-2832

235 101 51 00 6
SMY LAND LLC TR
17350 W SUNSET BL U 303C
PACIFIC PALISAD CA 90272-4105

235 282 11 00 0
SNYDER ROBERT E REV TR
55 CAYMAN ISLES BL
ENGLEWOOD FL 34223-1832

225 250 05 00 7
SOHN SOON CHON
6180 VILLA FLORA
BONSALL CA 92003

235 101 26 00 4
SOMMERS JOAN R
3126 TRUENO RD
HENDERSON NV 89014-3650

235 360 06 00 5 **DUP**
SORIANO LEO M & MARIA LUZ
ADDRESS UNKNOWN

235 330 04 00 0
SOUMEKH MICHAEL & RACHEL
1140 S ALFRED ST
LOS ANGELES CA 90035

234 042 01 00 4 **DUP**
SOUTH AV PROP LLC
4370 LA JOLLA VILLAGE DR
STE 960
SAN DIEGO CA 92122

234 520 27 00 5
SOUTH AV PROP LLC
4370 LA JOLLA VILLAGE DR # 960
SAN DIEGO CA 92122

235 024 09 00 3
SPENCER PATRICIA L
PO BOX 2456
CORRALES NM 87048-2456

235 024 10 00 5
SPENCER STEVEN R
P O BOX 2456
CORRALES NM 87048

235 102 34 00 4
SPOLSDOFF PAUL P JR ET AL
1000 ROSEWOOD AV
WASCO CA 93280

235 320 06 00 3
ST JOHN LINDA J LIV TR
800 COMMUNITY COLLEGE DR #365
SAN JACINTO CA 92583

235 282 20 00 6
STASIAK IRENE R
1380 CENTERVILLE LN # 126
GARDNERVILLE NV 89410

225 250 15 00 6
STATE OF CALIFORNIA
500 S MAIN ST
BISHOP CA 93514

428 052 09 00 4
STEELE 1994TRUST
29943 QUAIL RUN
AGOURA HILLS CA 91301

428 072 05 00 8
STEFFES EUGENE & BETTY J TR
39 SW 106TH PL
PORTLAND OR 97225-6973

235 101 21 00 9
STEMWEDEL JERALD P & POPPY C
1111 CONDADO DR
ROCKLEDGE FL 32955-3305

235 282 25 00 1
SUBLABAN FAISAL E
2658 DEL MAR HEIGHTS RD 515
DEL MAR CA 92014-3100

235 353 03 00 4
SUGIURA ISAMU & KYUNG S
115 ARUSHA AV
SAVANNAH GA 31419-3194

235 340 22 00 5
SULLIVAN RAYMOND ANTHONY TR
37158 E 28TH ST
PALMDALE CA 93550

235 410 17 00 1
SUTTON LEE L JR & CHARLOTTE R
1591 GILHAM RD
EUGENE OR 97401

428 231 18 00 5
TABIBIAN MORAD
2304 S BEVERLY GLEN APT 104
LOS ANGELES CA 90064

235 064 37 00 6
TAKECARE CHARLES A & MILDRED
1833 WEST CHASE AV
CHICAGO IL 90626

235 024 02 00 2
TAM JASON
708 E 15TH ST
OAKLAND CA 94606-2928

235 102 37 00 3
TANDOC SALVADOR C & CANDACE Y
319 TURNBERRY WY
VALLEJO CA 94591

225 250 07 00 3
TANG SAMANTHA K
1942 SAMARA DR
ROWLAND HEIGHTS CA 91748-2510

235 282 32 00 1
TAYLOR FAMILY TRUST
18644 LOS LEONES
FOUNTAIN VLY CA 92708

235 064 23 00 5
TAYLOR LINDA L
895 7TH ST
OGDEN UT 84404-5159

428 231 08 00 6
TAYLOR STEPHEN A ET AL
11676 TERRY PL
ANACORTES WA 98221-8425

428 202 29 00 5
TDP CA LLC
6200 N ROCKSIDE WOODS BL
STE 215
INDEPENDENCE OH 44131-2373

235 352 16 00 5
TENA SERGIO & MARTHA EMMA
1506 S KENILWORTH
BERWYN IL 60402

235 260 19 00 4
TEXAS LAND & CATTLE CORP
5560 S FORT APACHE RD STE 100
LAS VEGAS NV 89148

235 340 07 00 2 **DUP**
TEXAS LAND & CATTLE CORP
5560 S FT APACHE RD # 100
LAS VEGAS NV 89148-7699

235 353 11 00 7
THOMAS PAUL L
1161 MCINTEER CI
GREENSBORO GA 30642-6049

428 041 29 00 2 **DUP**
THOMAS SHERYL
27149 HOWARD ST
MENIFEE CA 92586-2003

428 232 11 00 1
THOMAS WARREN & SHERYL L
27149 HOWARD ST
MENIFEE CA 92586-2003

235 330 03 00 7
THOMPSON LELAND J & PEGGY SUE THOMPSON TRUST
13864 SEA GRAPE DR
RIVERSIDE CA 92503-6912

235 102 41 00 4
TONG NHIEM & LY HUONG P
PO BOX 2411
LA HABRA CA 90632-2411

428 092 21 00 0
TOPETE JOSE V
5669 MINERAL CITY CT
LAS VEGAS NV 89110-1739

235 410 06 00 9
TOPPETA MICHAEL
PO BOX 875
TEHACHAPI CA 93581-0875

428 042 19 00 0
TORAL MIGUEL A ET AL
13665 LEXICON PL
SYLMAR CA 91342

235 192 02 00 8
TORRES ROMULO R & NORMA A
13626 JANETTE LN
POWAY CA 92064-4074

244 234 03 00 2
TORRES VINCENT G
17422 KLEE ST
SHERWOOD FOREST CA 91325-3235

235 065 13 00 3
TRAINA JAMES J & ANTONIA C
51-20 64TH ST
WOODSIDE NY 11377

235 260 22 00 2
TRAN HUAN HOANG
2362 MOSSDALE WY
SAN JOSE CA 95133

428 240 17 00 8
TREJO ALFREDO
515 N INDIANA ST
LOS ANGELES CA 90063

235 172 15 00 0
TREJO LUISA
12995 RISING MOON WY
VICTORVILLE CA 92392-8341

235 270 17 00 1
TREMBLEY FAM TRUST
16294 SHARON WY
GRASS VALLEY CA 95949-6601

235 024 01 00 9
TREND CAPITAL GROUP INC
PO BOX 10476
BEVERLY HILLS CA 90213-3476

235 353 08 00 9
TRIPLE E DEV CORP
5560 S FORT APACHE RD # 100
LAS VEGAS NV 89148-7699

428 041 09 00 4
TRUONG HAI T
11780 OVERLAND DR
FONTANA CA 92337-7640

235 191 01 00 8
TRUSKIER PETER & MARY TR
21 ELYSIAN FIELDS DR
OAKLAND CA 94605-4940

235 353 04 00 7
TURNER JACK H & JEAN M
SURVIVORS TRUST
1210 WILLIAMS WY
TAFT CA 93268-2019

235 340 12 00 6
TURNER KATHERINE
44526 E 15TH ST U 7
LANCASTER CA 93535-6322

428 093 21 00 7
TURNWALL CHERYL M
967 N ADELE SP 115
ORANGE CA 92867

235 064 13 00 6
TWO GATOS FAMILY TRUST
5334 MEDINA RD
WOODLAND HILLS CA 91364-1915

234 052 16 00 1
U S A
450 GOLDEN GATE AVE
SAN FRANCISCO, CA 94102

235 101 17 00 8 **DUP**
UEMURA Y
ADDRESS UNKNOWN

428 092 12 00 4 **DUP**
UTSUMI DAIJIRO & NAKAO J
ADDRESS UNKNOWN

235 282 13 00 6
UYEHARA CAROL
41410 JUNIPER ST U 2921
MURRIETA CA 92562-7515

428 212 09 00 0
VAKIL AKHTAR & I U &
ABUBAKAR
548 C L FLEMING CI
CORONA CA 92881-3592

235 330 06 00 6
VALDIVIEZ ELVIRA S SEPARATE
PROP TRUST
11208 GALAX ST
S EL MONTE CA 91733

235 340 39 00 5
VALDIVIEZ TOM R & MARY N TR
901 COUNTRY LN
LA HABRA CA 90631-3050

235 101 42 00 0
VALENCIA ALFONSO ALONZO
321 JAMES ST
RIALTO CA 92376

235 101 36 00 3
VALVERDE EVANSWINDA
6774 LOS VERDES DR APT 2
RANCHO PALOS VE CA 90275-5552

234 520 08 00 0
VAN TRAN HOA & NGOC VAN THI
19351 HICKORY LN
HUNTINGTON BCH CA 92646

428 051 05 00 5
VIK DAVID
1613 SHIRLEY AV
LOS ALTOS CA 94024

302 243 06 00 0
VIVEROS SHAWN R
36501 MUSTANG LN
PALMDALE CA 93550-7991

234 520 37 00 4
VU FAMILY TR
1515 E ARMANDO DR
LONG BEACH CA 90807

235 102 12 00 0
VU JOSEPH P M
902 FULLER RD
COLORADO SPGS CO 80920

235 410 23 00 8
VUONG VU A
2817 ELSMOR ST
FAIRFAX VA 22031

235 024 37 00 4
WAGNER CHARLES & VIRGINIA O
304 KILLDEER LN
OCEANSIDE CA 92057-6451

235 111 25 00 4 **DUP**
WAGSHALL HERBERT &
MARGARET
ADDRESS UNKNOWN

235 202 10 00 3
WALSH THOMAS S TRUST
160 TELOMA DR
VENTURA CA 93003-2138

428 052 04 00 9
WANG NATHAN & LYNDA S
12523 NEON WY
GRANADA HILLS CA 91344-1342

235 065 02 00 1
WANG PEI-HO CHEN
1235 S 1ST AV
ARCADIA CA 91006

235 360 03 00 6
WARNE LARRY H & JODY TR
29400 SAN JOAQUIN DR
TEHACHAPI CA 93251

235 192 14 00 3
WASSENAAR JOHN & DOROTHY
2341 FLORENCE ST
BLUE ISLAND IL 60406-1628

244 234 02 00 9
WEBSTER CHARLEEN
5161 DECATUR DR
LA PALMA CA 90623

235 181 01 00 5
WEBSTER IRENE M FAMILY TR
1519 SUNDALE RD
EL CAJON CA 92019-0372

235 282 33 00 4
WEI JANNY
3525 WILLETT PL
SANTA CLARA CA 95051

235 024 26 00 2
WEIL FAMILY TRUST
726 LA JOLLA AV
LOS ANGELES CA 90046

244 234 14 00 4
WEISSMAN RICHARD RECEIVER
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

428 041 34 00 6
WEISZ TIM
19490 BIG HORN ST
APPLE VALLEY CA 92308-3337

428 051 07 00 1
WENZEL JUDITH L
5701 HILLCREST TERRACE
SAN LUIS CO 81152

235 022 01 00 5 **DUP**
WEST MOJAVE PROP LLC
4370 LA JOLLA VILLAGE DR
STE 960
SAN DIEGO CA 92122

235 022 02 00 8 **DUP**
WEST MOJAVE PROP LLC
4370 LA JOLLA VLG DR STE 960
SAN DIEGO CA 92122

235 022 07 00 3
WEST MOJAVE PROP LLC
4370 LA JOLLA VILLAGE DR # 960
SAN DIEGO CA 92122

428 041 27 00 6
WESTFALL FAMILT TRUST
6728 SYCAMORE LN
PALMDALE CA 93551

428 202 30 00 7
WHITE LUTHER J & MARGARET F
TRUST
PO BOX 190
CERRILLOS NM 87010-0190

235 064 19 00 4
WIGAL ROGER K & BLIANCA P
10914 WINCHELL ST
WHITTIER CA 90606-2161

235 031 24 00 8
WILKINS ROBERT & LYNN
11048 GRACELAND LN
FRISCO TX 75034-0064

235 111 03 00 0
WILLIAMS FMLY TR
4627 MARBELA CT
SAN JOSE CA 95124

235 204 42 00 0 **DUP**
WILLIAMS FMLY TR
4627 MARBELLA CT
SAN JOSE CA 95124

235 353 25 00 8
WILSON MERLE D & MARY HELEN
21811 VERA ST # 66
CARSON CA 90745

428 052 02 00 3
WILSON STEVEN M
4308 MONTEREY DR
PASCO WA 99301-8102

235 340 17 00 1
WINTERROWD GARY LEE & PEGGY
JO
31 COUNTRY MEADOW
ROLLING HLS EST CA 90274

235 025 18 00 6
WOLFE GLENDA
P O BOX 2016
BEVERLY HILLS CA 90213

235 171 12 00 4
WOLFORD ROGER R & BARBARA J
4285 S CAVALRY RD
FORT MOHAVE AZ 86426-6228

235 204 25 00 1
WOODS LONNIE C
4709 LA RICA AV
BALDWIN PARK CA 91706

235 320 14 00 6
WPL HOLDINGS LLC
PO BOX 1084
HIGHLAND PARK IL 60035

235 410 34 00 0
WPL HOLDINGS LLC
166 W WASHINGTON ST STE 730
CHICAGO IL 60602-3588

428 052 08 00 1
WRIGHT FAMILY TRUST
14275 BRIDGE ST
CORONA CA 92880-9108

235 410 03 00 0
WRIGHT MILDRED L TR
1732 S MAGNOLIA AV
ONTARIO CA 91762

235 204 27 00 7
WU CHIE HUEI & YU-CHEN
10521 FREDRICK DR
VILLA PARK CA 92667-5334

235 320 15 01 8
WU FAMILY TR
5012 SPENCER ST
TORRANCE CA 90503

235 171 01 00 2
WYMAN ROBERT & TATMAN KENNETH
1512 18TH AV
SAN FRANCISCO CA 94122

428 232 07 00 0
YADEGAR FAMILY TRUST
18258 ROSITA ST
TARZANA CA 91356-4622

235 300 10 00 8
YEH FAMILY TRUST
3617 W 227TH PL
TORRANCE CA 90505-2660

235 064 35 00 0
YEP JING CHEW
68 VALLEY CREST RD
SIMI VALLEY CA 93065

234 520 35 00 8
YIP CATHY
44353 N ALBECK
LANCASTER CA 93536

428 051 20 00 8
YOO STEVEN C
5801 LUMBERDALE RD U 144
HOUSTON TX 77092-1515

428 240 60 00 2
YOUNG JACOB D ET AL
2401 E CREEK COVE
DRIPPING SPGS TX 78620

235 352 10 00 7
YOUSSEF A MALEK FAMILY TRUST
9503 LAURLIN CT
VIENNA VA 22182-1457

235 352 13 00 6
ZAMARRIPA ALFREDO & MAURA C
20833 HORST AV
LAKEWOOD CA 90715-1529

428 041 22 00 1
ZAMORAS LUCITA A
8933 W GOLF RD
NILES IL 60714-5812

234 052 03 00 3
ZEDAN NAJIB T & NELLY N
14201 STREAMS TOWN CT
ORLAN PARK IL 60462

235 300 15 00 3
ZIMMERMAN KAY & NELSON JAMES
30464 BATTLE CRK BOTTOM RD
MANTON CA 96059

235 024 42 00 8
1987 DE MONTE FAMILY TRUST A
2423 NICKLAUS DR
SANTA MARIA CA 93455-1524

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # _____

Project Title: Bellefield Solar Project by 50LW 8ME LLC

Lead Agency: Kern County Planning and Natural Resources Department | Contact Person: Ronelle Candia

Mailing Address: 2700 "M" Street Suite 100 | Phone: (661) 862-8997

City: Bakersfield | Zip: 93301 | County: Kern

Project Location: County: Kern | City/Nearest Community: City of California City

Cross Streets: Altus Avenue & State Route 58 | Zip Code: 93501 & 93505

Lat. / Long.: 35° N / 118°W | Total Acres: 8,371

Assessor's Parcel No.: Multiple | Section: Multiple | Twp.: 11N | Range: 11W, 12W | Base: SBB&M

Within 2 Miles: State Hwy #: SR 58 | Waterways: None

Airports: Mojave Air and Spaceport | Railways: Southern Pacific Railroad | Schools: _____

Document Type:

CEQA: ☒ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) _____ Other _____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other _____

Local Action Type:

☐ General Plan Update ☒ General Plan Amendment ☐ General Plan Element ☐ Community Plan

☒ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan

☒ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other _____

Development Type:

☐ Residential: Units _____ Acres _____
☐ Office: Sq.ft. _____ Acres _____ Employees _____
☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
☐ Educational _____
☐ Recreational _____

☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type _____
☐ Mining: Mineral _____
☒ Power: Type Solar PV MW 1,500
☐ Waste Treatment: Type _____ MGD _____
☐ Hazardous Waste: Type _____
☒ Other: Battery Energy Storage – 1,500 MW

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☒ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Wildlife
☒ Growth Inducing
☒ Land Use
☒ Cumulative Effects
☒ Other GHG, Wildfire, Tribal Cultural Resources, Energy

Present Land Use/Zoning/General Plan Designation:

Undeveloped Land/*Kern County General Plan:* 1.1 (State and Federal Land); *8.5 (*Resource Management, Min. 20 Acre Parcel Size); and 8.5/2.5 (Resource Management, Min. 20 Acre Parcel Size/Flood Hazard).

Undeveloped Land/*Mojave Specific Plan:*7.1 (7.1 – Light Industrial); and 7.3 (7.3 – Heavy Industrial).

Kern County Zoning: A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture Mobilehome Combining District); M-2 PD (Medium Industrial Precise Development Combining District); and M-3 PD (Heavy Industrial Precise Development Combining District).

California City General Plan: O/RA – Controlled Development & Open Space.

California City Zoning: O/RA (Open Space/Residential/Agricultural).

Project Description:

The Bellefield Solar Project by 50LW 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity on approximately 8,371 acres of privately-owned land. The proposed project would be supported by a 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation. The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels, while the gen-tie alternatives generally originate from the central portion of the Project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes. The proposed project's permanent facilities would include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed would require: *Kern County (Lead Agency)*: a) GPA #2, Map 195; b) ZCC 2, Map 195; c) ZCC #57, Map 196; d) CUP #1, Map 195; e) CUP #57, Map 196; and f) SPA #31, Map 196. *California City (Responsible Agency)*: a) CUP 19-03.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

S	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
S	California Highway Patrol		Office of Public School Construction
X	CalFire	S	Parks & Recreation
S	Caltrans District # 6 & 9		Pesticide Regulation, Department of
S	Caltrans Division of Aeronautics	S	Public Utilities Commission
	Caltrans Planning (Headquarters)	S	Regional WQCB # Lahontan
	Central Valley Flood Protection Board		Resources Agency
	Coachella Valley Mountains Conservancy		S.F. Bay Conservation & Development Commission
	Coastal Commission		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
S	Conservation, Department of		Santa Monica Mountains Conservancy
	Corrections, Department of	S	State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
S	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # Fresno		Tahoe Regional Planning Agency
	Food & Agriculture, Department of	S	Toxic Substances Control, Department of
	General Services, Department of	S	Water Resources, Department of
	Health Services, Department of		
	Housing & Community Development		Other
	Integrated Waste Management Board		Other
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date January 15, 2021 Ending Date February 15, 2021

Lead Agency (Complete if applicable):

Consulting Firm: Michael Baker International
Address: 3760 Kilroy Airport Way, Suite 270
City/State/Zip: Long Beach, CA 90806
Contact: Randy Nichols, Senior Project Manager
Phone: (562) 200-7168

Applicant: 50LW 8ME, LLC c/o 8minute Solar Energy
Address: 250 Sutter Street, Suite 600
City/State/Zip: San Francisco, CA 94108
Phone: (415) 818-5103

Signature of Lead Agency Representative: /s/ **Date:** 01/15/2021

Ronelle Candia, Supervising Planner

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

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INITIAL STUDY CHECKLIST

Bellefield Solar Project
by 50LW 8ME LLC

General Plan Amendment #2, Map 195
Zone Change Case #2, Map 195
Zone Change Case #57, Map 196
Conditional Use Permit #1, Map195
Conditional Use Permit #57, Map 196
Specific Plan Amendment #31, Map 196

(PP20403)

LEAD AGENCY:

Kern County Planning and Natural Resources Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2370
Contact: Ronelle Candia, Supervising Planner
(661) 862-8997
candiar@kerncounty.com

RESPONSIBLE AGENCY:

California City Planning & Economic Development Administrator
21000 Hacienda Boulevard
California City, CA 93505
Contact: Shawn Monk, Planning and Economic Development Administrator
(760) 373-7141
planning@californiacity-ca.gov

TECHNICAL ASSISTANCE BY: Michael Baker International

January 2021

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1. Project Description

1.1. Project Location

The proposed Bellefield Solar Project (proposed project) is a proposal by 50LW 8ME LLC (project proponent) to construct and operate a photovoltaic (PV) solar facility and associated infrastructure to generate up to 1,500 megawatts (MW) of alternating current (AC) renewable electrical power with an up to 1,500 MW-AC energy storage system on approximately 8,371 acres located on private land . The project site is located within portions of unincorporated Kern County and the City of California City. Refer to **Figure 1**, *Regional Vicinity Map*. The project site is located east of the community of Mojave and the Mojave Air and Space Port Airport (Mojave Airport), straddles State Route (SR) 58, and is just west and south of the Hyundai Proving Ground (**Figure 2**, *Aerial Photograph*). The project site boundaries are illustrated in **Figure 3**, *Project Boundaries*. SR-58, a four-lane divided highway, which is eligible for listing as a scenic highway within the project area, provides regional access to the project site. Vehicular access to the site would be also be from Altus Ave, Arroyo Ave, Denise Ave, Sunset Ave, Silver Queen Road, and 20th, 30th, 50th and 70th Streets. Many unmaintained dirt roads crisscross the Project site.

According to the U.S. Geological Survey (USGS), the majority of the project falls within the lower ¾ portion of the Sanborn USGS 1:24,000 topographic map (7.5-minute quadrangle). The project extends east into the southwest portion of the California City South quadrangle and into the upper northern portion of the Bissell quadrangle, and into the eastern portion of the Mojave quadrangle. More specifically, the project is located as follows: Township 11N, Range 11W, all or portions of Sections 5, 6, 7, 17, 18, 19, 20, 21 (all), 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35 and Township 11N, Range 12W, portions of Sections 1 and 2 (**Figure 3,** *Project Boundaries*).

As shown on **Figure 4**, *Parcel Map*, the project site consists of 90 parcels comprising approximately 8,371 acres located in unincorporated Kern County and the City of California City. The project includes 82 parcels (totaling 6,269 gross acres) located within unincorporated Kern County and 8 parcels (totaling approximately 2,102 gross acres) located within the jurisdictional limits of California City. The project is located within the boundaries of the Kern County General Plan, the Mojave Specific Plan, and the City of California City General Plan planning boundaries, as shown in **Figure 5**, *Existing General Plan and Mojave Specific Plan Designations -- Kern County*. One parcel (parcel with APN 235-024-14) within the project site has the existing Kern County General Plan Map Code 1.1, State or Federal Land; however, the property is privately-owned. The property map code will be changed to 8.5, Resource Management, as part of the proposed project action. Refer to **Figure 6**, *Proposed General Plan Designation – Kern County.* The project area General Plan designations are shown in and **Figure 7,** *Existing General Plan Designations -- California City.*

The project site zone classifications in Kern County and California City are shown on **Figure 8**, *Existing Zoning Classifications-- Kern County,* and **Figure 9**, *Existing Zoning Classifications – California City,* respectively. **Table 1**, *Project Assessor Parcel Numbers, Existing and Proposed Map Code Designations, Existing and Proposed Zoning, ALUCP Designations, and Acreage,* identifies the 90 individual APNs, their respective acreages, map code designations, and existing and proposed zoning classifications. Refer to **Figure 10**, *Proposed Zoning Classifications – Kern County*, showing the project's proposed zoning classifications in Kern County.

TABLE 1. PROJECT ASSESSOR PARCEL NUMBERS, EXISTING AND PROPOSED MAP CODE DESIGNATIONS, EXISTING AND PROPOSED ZONING, ALUCP DESIGNATIONS, AND ACREAGE

Map ID	APN	Existing Map Code Designation	Proposed Map Code Designation	Existing Zoning	Proposed Zoning	ALUCP Designation	Acres
Kern County							
1	428-010-11	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-3 PD	M-1 PD	B2	263.77
2	428-010-10	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-3 PD	M-1 PD	B2	42.61
3	428-010-02	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-3 PD	M-1 PD	B2	171.12
4	428-010-03	7.3 (Mojave Specific Plan)	7.3 (Mojave Specific Plan)	M-3 PD	M-3 PD	--	170.95
5	235-024-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	120.51
5	235-024-01	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1	A	--	2.94
6	428-052-15	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	4.32
7	428-052-17	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	7.20
8	428-053-18	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	9.35
9	428-053-16	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	10.19
10	428-041-38	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	15.69
11	428-042-35	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	7.36
12	428-041-02	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	20.51
13	428-042-02	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	20.43
14	428-041-03	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	20.56
15	428-042-03	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	A	A	B2	20.48
16	428-041-04	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	20.61
17	428-042-04	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	A	A	B2	20.53
18	428-041-05	7.1 (Mojave Specific Plan)	7.1 (Mojave Specific Plan)	M-2 PD	M-1 PD	B2	5.21
19	235-024-42	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	--	26.95
19	235-024-42	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1 MH	A	--	14.04
20	235-024-43	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	--	25.67
20	235-024-43	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1 MH	A	--	15.41

TABLE 1, CONTINUED

Map ID	APN	Existing Map Code Designation	Proposed Map Code Designation	Existing Zoning	Proposed Zoning	ALUCP Designation	Acres
21	235-024-14	1.1 (Kern County General Plan)[1]	8.5 (Kern County General Plan)	A	A	--	82.34
22	235-022-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	538.26
22	235-022-01	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1	A	--	118.74
23	235-024-40	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.57
24	235-024-17	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	63.64
25	235-024-15	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	79.94
26	235-024-41	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	B2, C	655.00
27	235-351-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	B2, C	81.53
28	235-081-09	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	61.19
29	235-081-12	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.18
30	235-351-02	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	20.47
31	235-351-03	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	20.45
32	235-351-04	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	40.86
33	235-081-10	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	20.43
34	235-081-11	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.19
35	235-081-07	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.20
36	235-081-05	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.21
37	235-081-03	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.19
38	235-081-04	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.20
39	235-064-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	332.71
40	235-082-25	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	2.56
41	235-082-24	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	2.56
42	235-082-19	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	10.22
43	235-082-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	5.10
44	235-082-06	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	25.53
45	235-082-18	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	5.11

TABLE 1, CONTINUED

Map ID	APN	Existing Map Code Designation	Proposed Map Code Designation	Existing Zoning	Proposed Zoning	ALUCP Designation	Acres
46	235-082-17	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	5.12
47	235-082-07	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	5.11
48	235-340-07	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.30
49	235-340-09	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	82.69
50	235-340-10	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.38
51	235-340-11	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.39
52	235-340-28	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.60
53	235-340-36	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	--	2.59
54	235-340-19	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	--	10.37
55	235-340-29	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	2.59
56	235-353-22	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	C	0.89
56	235-353-22	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1 MH	A	C	1.69
57	235-353-21	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	C	1.59
57	235-353-21	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1 MH	A	C	0.98
58	235-353-11	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	C	5.15
59	235-082-16	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1 MH	A	C	40.99
60	235-082-15	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	20.48
61	235-082-12	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	1.28
62	235-065-18	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	398.53
62	235-065-18	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1	A	C	44.11
63	235-065-04	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	15.50
64	235-065-05	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	0.99
65	235-065-07	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	1.49
66	235-065-17	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	C	33.49
67	235-064-12	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.38

TABLE 1, CONTINUED

Map ID	APN	Existing Map Code Designation	Proposed Map Code Designation	Existing Zoning	Proposed Zoning	ALUCP Designation	Acres
69	235-064-29	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	77.86
70	235-064-26	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.39
71	235-064-25	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.40
72	235-064-28	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.37
73	235-064-27	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	41.40
74	235-191-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.32
75	235-134-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	392.03
75	235-134-01	8.5/2.5 (Kern County General Plan)	8.5/2.5 (Kern County General Plan)	A-1	A	--	98.78
76	235-132-16	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	601.25
76	235-132-16	8.5/2.4 (Kern County General Plan)	8.5/2.4 (Kern County General Plan)	A-1	A	--	0.22
77	235-410-04	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	8.04
78	235-410-02	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.16
79	235-410-06	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	10.08
86	235-101-29	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	22.83
88	235-102-02	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	305.10
89	235-102-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	11.58
90	235-221-01	8.5 (Kern County General Plan)	8.5 (Kern County General Plan)	A-1	A	--	489.82
						Subtotal –Kern County Acres	*6,268.07*
California City							
68	235-061-02	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	658.81
80	235-282-22	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	2.55
81	235-101-51	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	262.88
82	235-101-47	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	154.85
83	235-101-45	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	304.05
84	235-101-46	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	103.66
85	235-101-49	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	464.68
86	235-101-29	O/RA (California City General Plan)	O/RA (California City General Plan)	O/RA	O/RA	--	0.72

TABLE 1, CONTINUED

Map ID	APN	Existing Map Code Designation	Proposed Map Code Designation	Existing Zoning	Proposed Zoning	ALUCP Designation	Acres
87	235-101-48	O/RA (California City General Plan	O/RA (California City General Plan	O/RA	O/RA	--	151.16
						Subtotal – California City Acres	2,103.36
						Total	8,371.43

Notes:
Kern County General Plan Map Code Designation:
1.1 (State or Federal Land) ;
8.5 (Resource Management, Min. 20 Acre Parcel Size);
8.5/2.5 (Resource Management, Min. 20 Acre Parcel Size/Flood Hazard)

Mojave Specific Plan Map Code Designation
7.1 (Light Industrial);
7.3 (Heavy Industrial)

Kern County Zone District:
A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); M-2 PD (Medium Industrial, Precise Development Combining); M-3 PD (Heavy Industrial, Precise Development Combining)
California City General Plan Designation:
O/RA = Controlled Development, Public Parks and Recreation or Public Schools

California City General Plan
O/RA = Controlled Development & Open Space

California City Zoning District:
O/RA = Open Space/Residential Agricultural

Airport Land Use Compatibility Plan – Mojave Air and Spaceport
B2: Zone B2, The Extended Approach/Departure Zone includes areas where aircraft are commonly below 800 feet above ground level on a straight-in approach or straight-out departure. The 60 CNEL contour should be encompassed within this zone.
C: Zone C, the outer boundary of the Common Traffic Pattern Zone is defined as the area where aircraft are commonly below 1,000 feet above ground level (i.e., the traffic pattern and pattern entry points). This area is considered to extent 5,000 feet laterally from the runway centerline.

Proposed Gen-Tie Routes

Power generated from the proposed project would be delivered by up to a 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation (**Figure 2**, *Aerial Photograph*). The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels, while the gen-tie alternatives generally originate from the central portion of the Project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation (**Figure 2**, *Aerial Photograph*). The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes.

The proposed gen-tie routes cross the western portion of the Sanborn quadrangle and extends from the project south into the upper northern portion of the Bissell and Soledad Mountain quadrangles, the southern portion of the Mojave quadrangle, and the southeastern portion of the Monolith quadrangle.

1.2. Environmental Setting

Several unincorporated rural communities are located near the project site. The rural community of Mojave is located adjacent to the northwestern corner of the project site; however, the nearest uses in this area consist of non-residential and airport uses. Mojave generally consists predominantly of scattered single-family homes and the Mojave Airport. The Hyundai Proving Ground, which is a 3,840-acre testing site for Hyundai new automobile and powersports products, is adjacent to the project site to the north and east. Additionally, the smaller, rural communities of Fleta, Sanborn, and Bissell are located to the southwest, south, and southeast of the project site. The nearest sensitive receptors consist of several scattered rural residences located approximately 1.2 miles southwest of the southwest corner of the project site. The closest residences are located off Dalton Avenue, in the community of Sanborn. Edwards Air Force Base (AFB) is directly southeast of the project site. The BNSF railway is a single track through the Gen-tie Corridor that becomes a double track line railroad through the project area. The railroad generally parallels the east-west portion of SR 58 a little over a mile to the south. Refer to **Figure 3,** *Project Boundaries*, showing the locations of the communities near the project site.

Approximate elevations within the project site range from 2,798 feet above mean sea level (amsl) in the northwest corner to 2,532 feet amsl in the southern portion. The Project is relatively flat with increases in elevation to the west and east. The Gen-tie Corridor ranges in elevation from 2,541 feet AMSL near the southeastern portion of the Project to 3,468 feet amsl at the northwestern corner of the SCE Windhub Substation.

The project site is located in the Mojave Desert Region of the Desert Floristic Province. Landforms in the region include granite-derived basin floors, flood plains, alluvial fans, small clay pans, and rock pediments. Mountains and hills, residuum weathered from basalt, granite, and sandstone, are also present. Cache Creek, a major stream on the east slope of the Tehachapi Mountains, traverses the north of the project site and ultimately drains into Koehn Dry Lake to the northeast. The southern portion of the project drains southeast towards Rogers Dry Lake.

Native vegetation on-site is typical of that found throughout the Mojave Desert. Kern County parcels and collector lines support seven and eight vegetation communities, respectively, of which three are considered to be sensitive by the California Department of Fish and Wildlife. California City parcels and collector lines support seven and five vegetation communities, respectively, of which three are sensitive. Sensitive communities consist of Spinescale Scrub, Winter Fat Scrubland, and Joshua Tree Woodland. The gen-tie corridor traverses through the various vegetation communities, including the sensitive communities of Spinescale Scrub and Joshua Tree Woodland.

Evidence of sheep grazing, including sheep trails, pellets, and heavily impacted watering areas, is present on the project site. In addition, there is also widespread sporadic shooting activity including a heavily used area located in the southwestern portion of the project; illegal dump sites as well as blown trash; and limited off-highway vehicle (OHV) use was also observed throughout the project site.

The Federal Emergency Management Agency (FEMA) delineates flood hazard areas on its Flood Insurance Rate Maps (FIRMs). Based on a review of the FIRMs for the project area, portions of the solar facility site and gen-tie line are mapped in 100-year (Zone A) floodplains. Zone A is defined as areas subject to inundation by the 1-percent-annual-chance flood event, generally determined using approximate methodologies. The rest of the project site is mapped as Zone X, which is defined as areas of minimal flood hazard that are outside of the Special Flood Hazard Area and beyond the limits of the 0.2-percent-annual-chance (500-year) flood (refer to **Figure 11**, *FEMA Map*).

The project site is not designated by the California Department of Conservation (DOC) as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. The project site is designated as nonagricultural and natural vegetation. There are no lands designated as important farmland located adjacent to or in the vicinity of the project site. Additionally, no lands affected by the project are subject to a Williamson Act Land Use contract, nor are they located within a Kern County Agricultural Preserve.

The project site is not within a mineral recovery area or within a designated mineral and petroleum resource site designated by the Kern County or California City General Plans, nor is it identified as a mineral resource zone by the Department of Conservation's California Geologic Energy Management Division (CalGEM) State Mining and Geology Board.

The Kern County Fire Department and California City Fire Department would provide fire suppression and emergency medical services to the project area. The portion of the project site located within unincorporated Kern County would be served by Station #14 located at 1773-1999 Mojave-Barstow Highway in Mojave. The portion of the project site located within California City would be served by Station #85, located at 20890 Hacienda Boulevard in California City.

Law enforcement services in the project area are provided by the Kern County Sheriff's Department and California City Police Department. The portion of the project site located within unincorporated Kern County would be served by the Kern County Sheriff's Department - Mojave Substation located at 1771 SR 58. The portion of the project site located within California City would be served by the station located at 21130 Hacienda Boulevard.

A large east-west utility corridor is located just south of SR 58 that bisects the southern portion of the project site. This corridor includes at least three gas pipelines and a petroleum products pipeline operated by Pacific Gas and Electric and El Paso Corporation (Mojave Pipeline). One of these pipeline rights-of-ways also crosses to the north side of SR 58 in the eastern portion of the project area. An AT&T fiber optic line also passes through the project area in an east-west direction south of SR 58 in the west and then just north of SR 58 where it exits the project area to the east. An Antelope Valley East Kern Water Agency (AVEKWA) water pipeline and its associated right-of-way road is located along the southern boundary of the project area.

The Mojave Air and Spaceport is located approximately two miles west of the project site, and the western portion of the project site is located within an area governed by the Kern County Airport Land Use Compatibility Plan (ALUCP). Specifically, as shown on **Figure 12**, *ALUCP Designations*, portions of the project site are located in "Compatibility Zone B2 – Extended Approach/Departure Zone" and "Compatibility Zone C – Common Traffic Pattern". Refer to **Table 1**, *Project Assessor Parcel Numbers, Existing and Proposed Map Code Designations, Existing and Proposed Zoning, ALUCP Designations, and Acreage.*

As shown on **Figure 4**, *Parcel Map*, the project site consists of 90 parcels located in unincorporated Kern County and California City. The project includes 82 parcels totaling 6,269 gross acres within unincorporated Kern County and 8 parcels totaling approximately 2,102 gross acres within California City. **Table 1**, *Project Assessor Parcel Numbers, Existing and Proposed Map Code Designations, Existing and Proposed Zoning, ALUCP Designations, and Acreage*, identifies the 90 individual APNs, their respective acreages, map code designations, and existing and proposed zoning classifications. As shown on **Figure 5**, *Existing General Plan and Mojave Specific Plan Designations -- Kern County*, the project parcels located in unincorporated Kern County area are designated by the Kern County General Plan 8.5 (Resource Management, minimum 20 acre parcel size), and 8.5/2.5 (Resource Management, minimum 20 acre parcel

size/ Flood Hazard) and the Mojave Specific Plan as Map Code 7.1 (Light Industrial) and 7.3 (Heavy Industrial). As mentioned previously, one parcel (parcel with APN 235-024-14) within the project site has the existing Kern County General Plan Map Code 1.1, State or Federal Land; however, the property is privately-owned. The property map code will be changed to 8.5, Resource Management, as part of the proposed project action. Refer to **Figure 6**, *Proposed General Plan Designation – Kern County.* As shown on **Figure 7,** *Existing General Plan Designations -- California City*, the project parcels located in unincorporated Kern County have a zone classification of A (Exclusive Agriculture), A-1 (Limited Agriculture), A-1 MH (Limited Agriculture, Mobile Home Combining), M-2 PD (Medium Industrial, Precise Development Combining), and M-3 PD (Heavy Industrial, Precise Development Combining).

As shown on **Figure 7**, *Existing General Plan Designations -- California City*, the project parcels located in California City are designated by the General Plan as O/RA (Controlled Development & Open Space). As shown on **Figure 9**, *Existing Zoning Classifications – California City*, the project parcels located in California City have a zone classification of O/RA (Open Space/Residential Agriculture). Existing land uses in the surrounding area are primarily undeveloped. **Table 2**, *Existing On- and Off-site Land Use, General Plan and Specific Plan Map Code Designations, and Zoning*, identifies the project site and surrounding land uses.

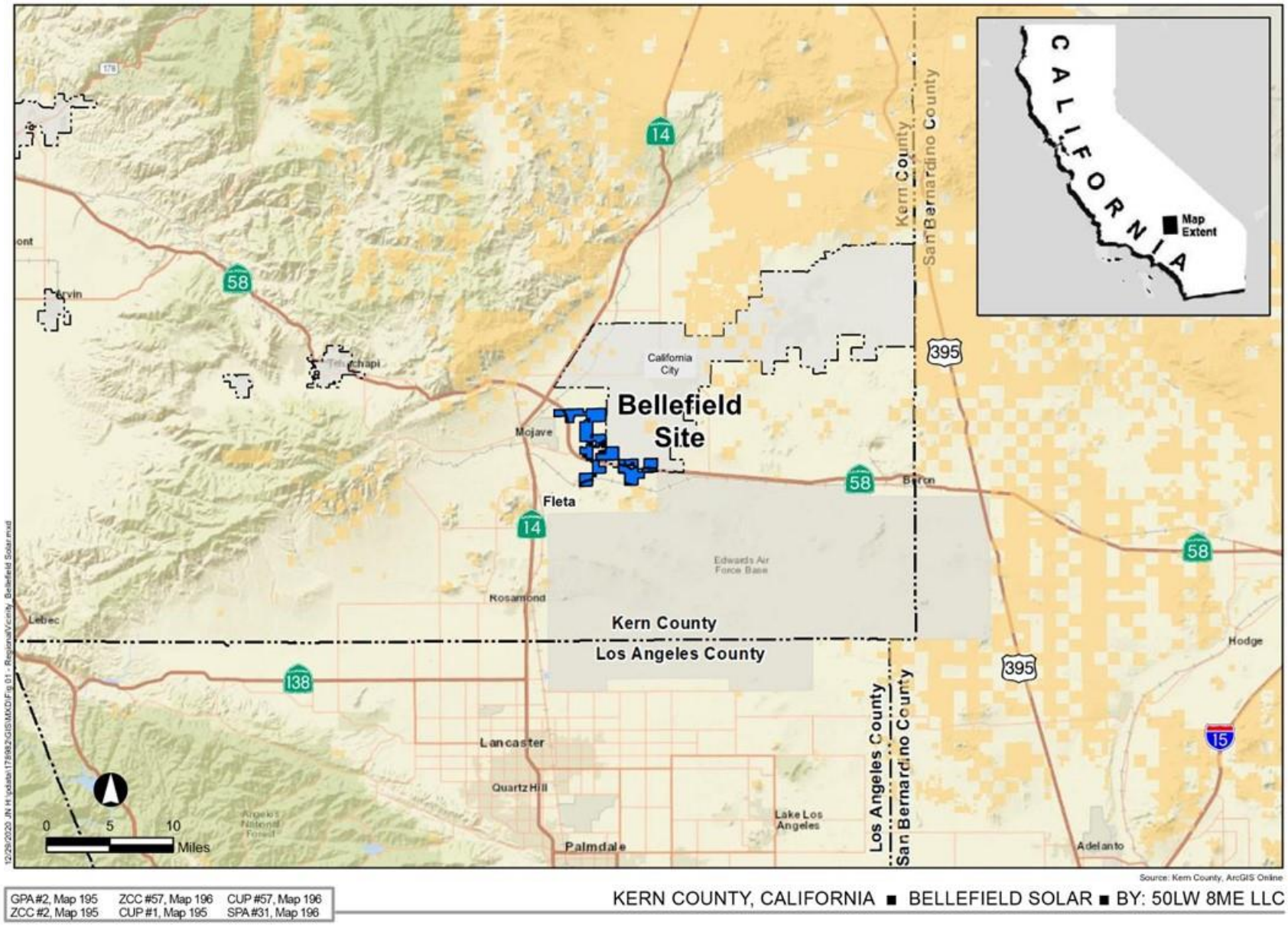


FIGURE 1
REGIONAL VICINITY MAP

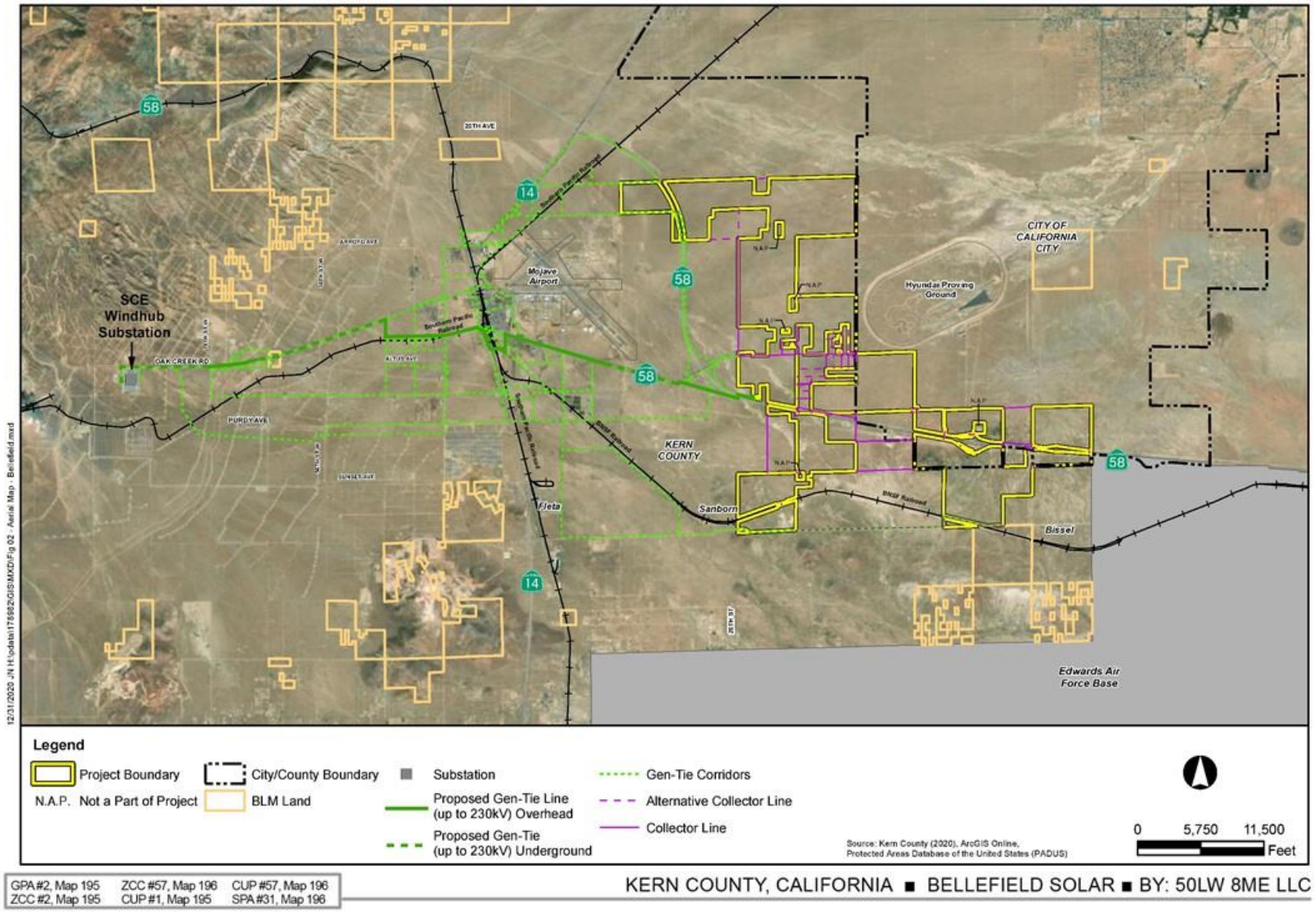


FIGURE 2
AERIAL PHOTOGRAPH

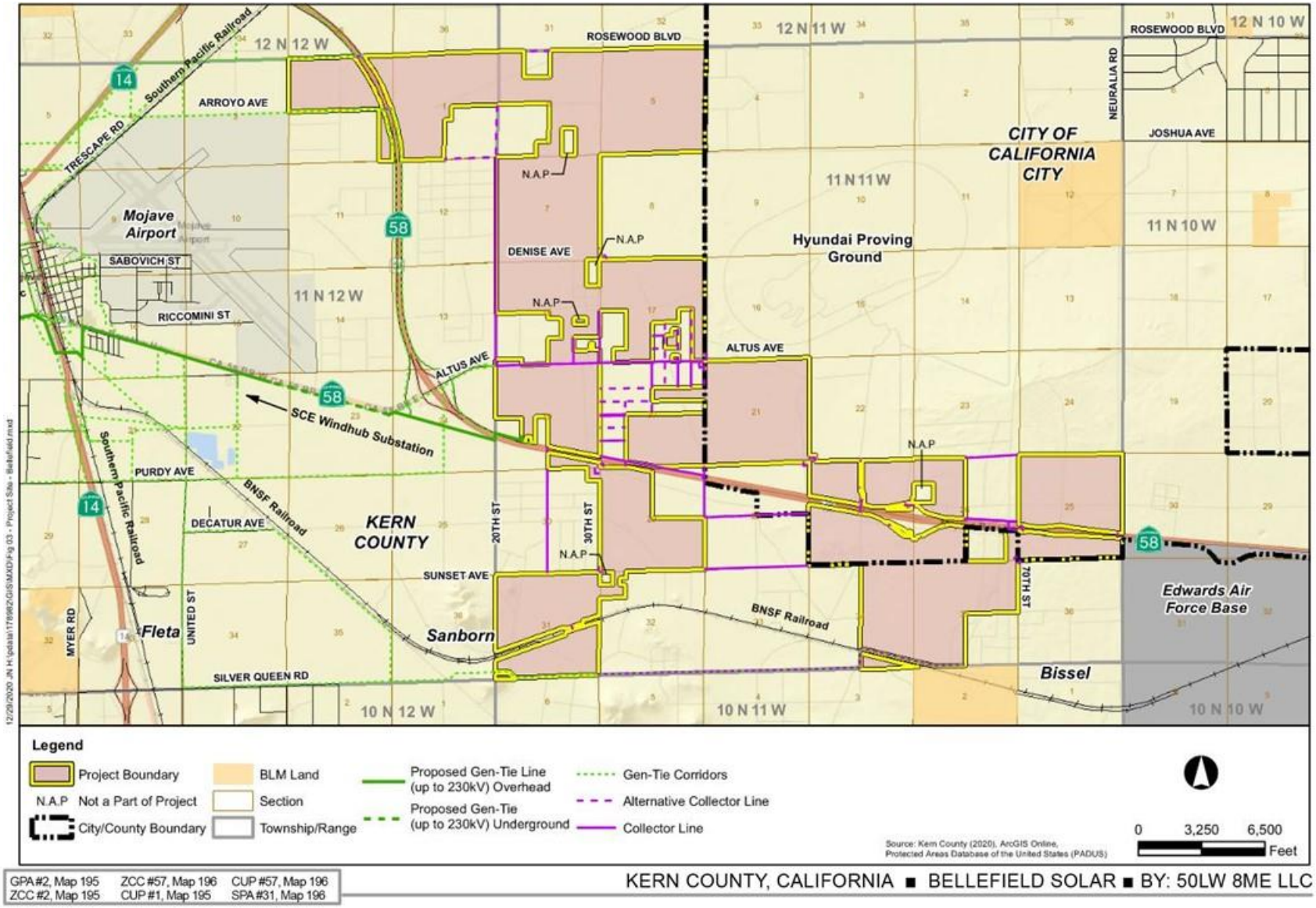


FIGURE 3
PROJECT BOUNDARIES

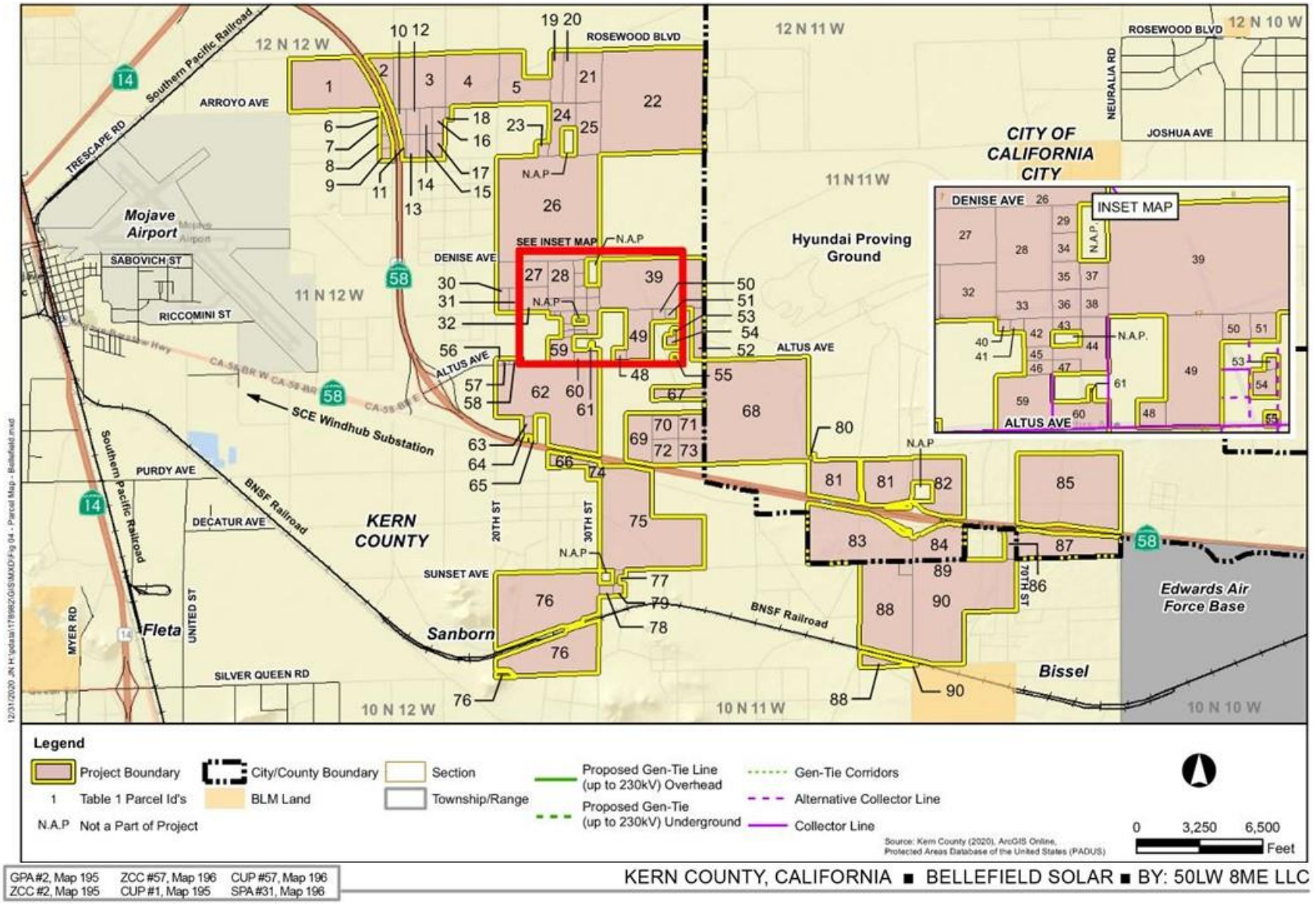


FIGURE 4
PARCEL MAP

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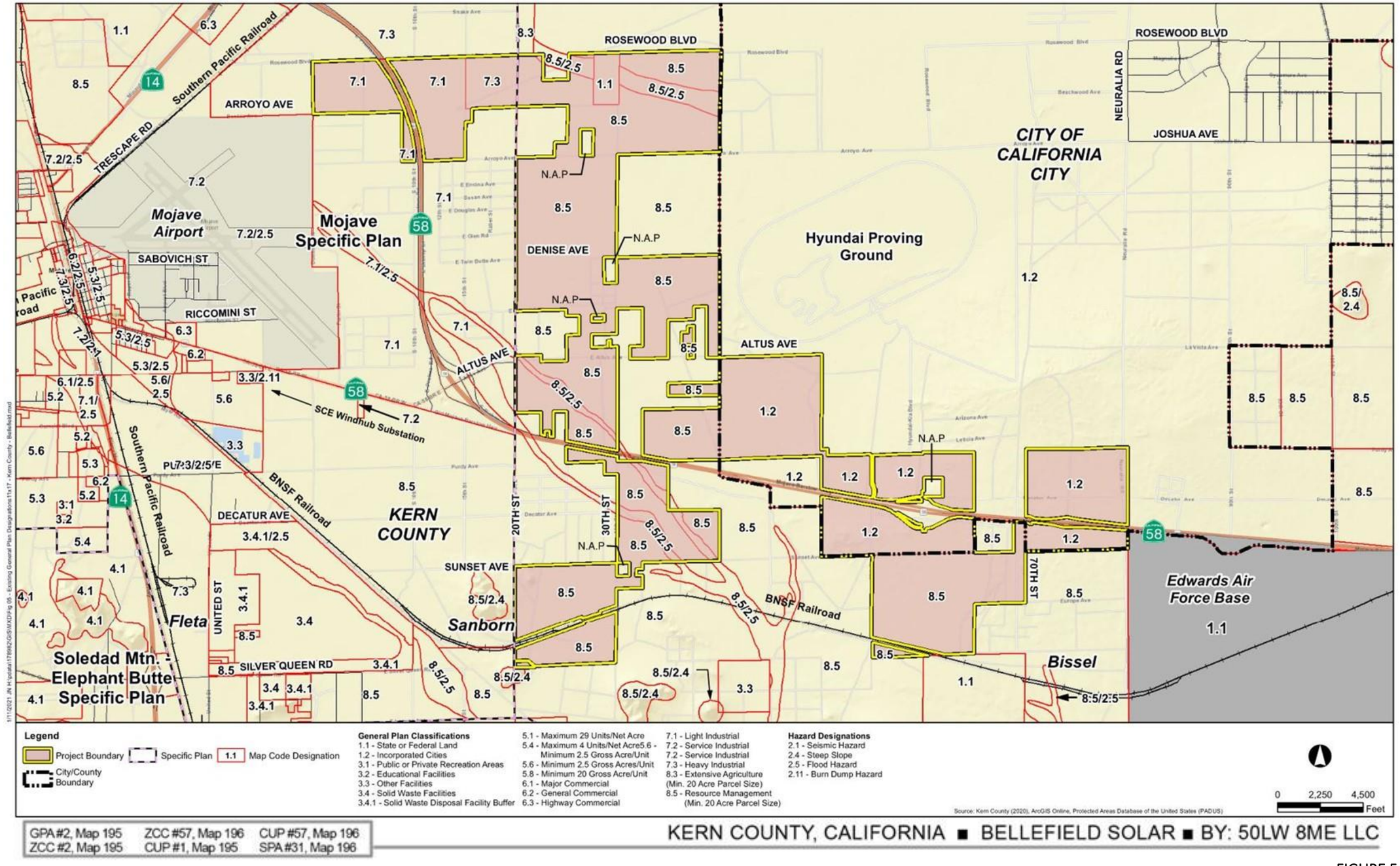


FIGURE 5
EXISTING GENERAL PLAN AND MOJAVE SPECIFIC PLAN DESIGNATIONS -- KERN COUNTY

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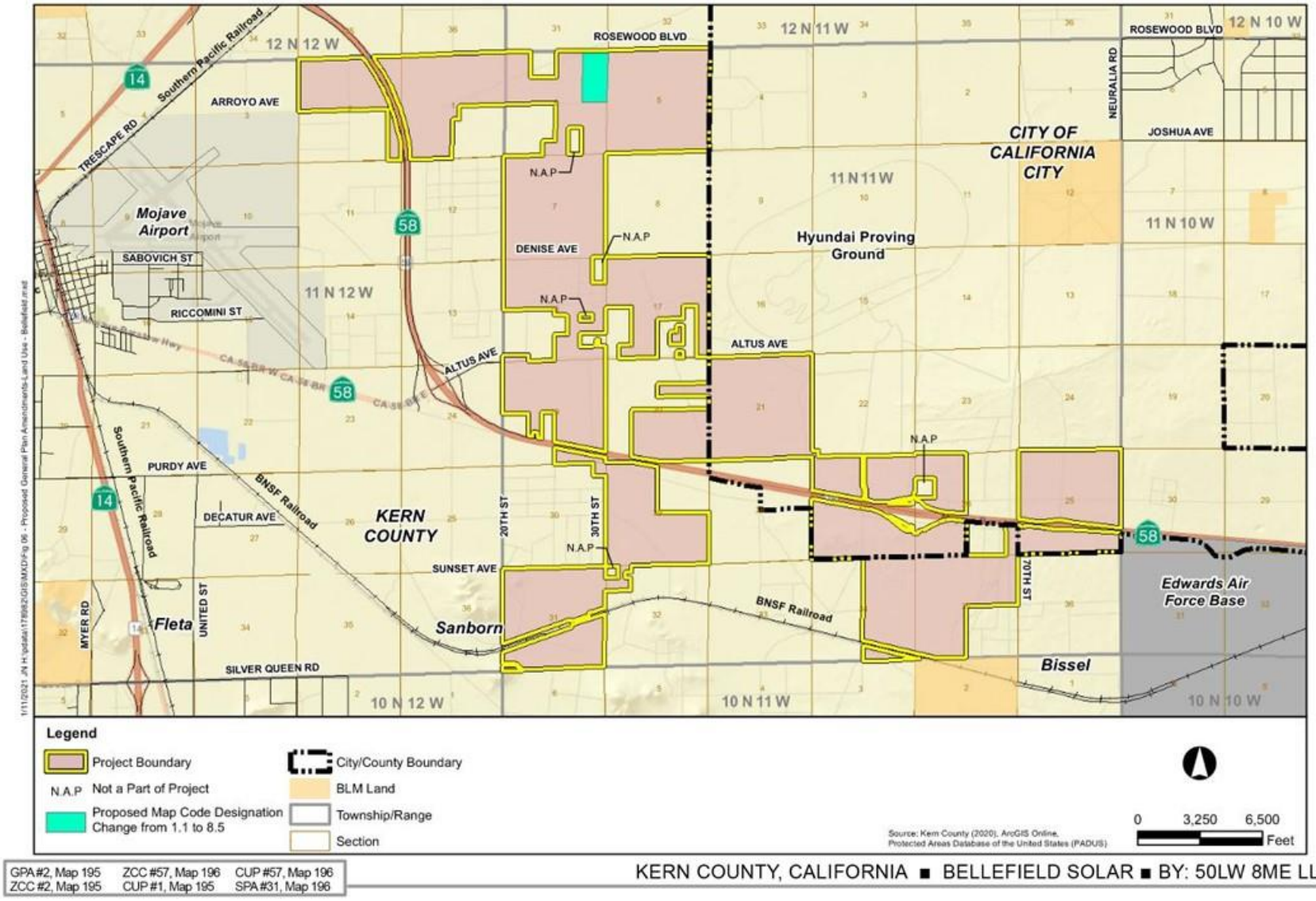


FIGURE 6
PROPOSED GENERAL PLAN DESIGNATION – KERN COUNTY

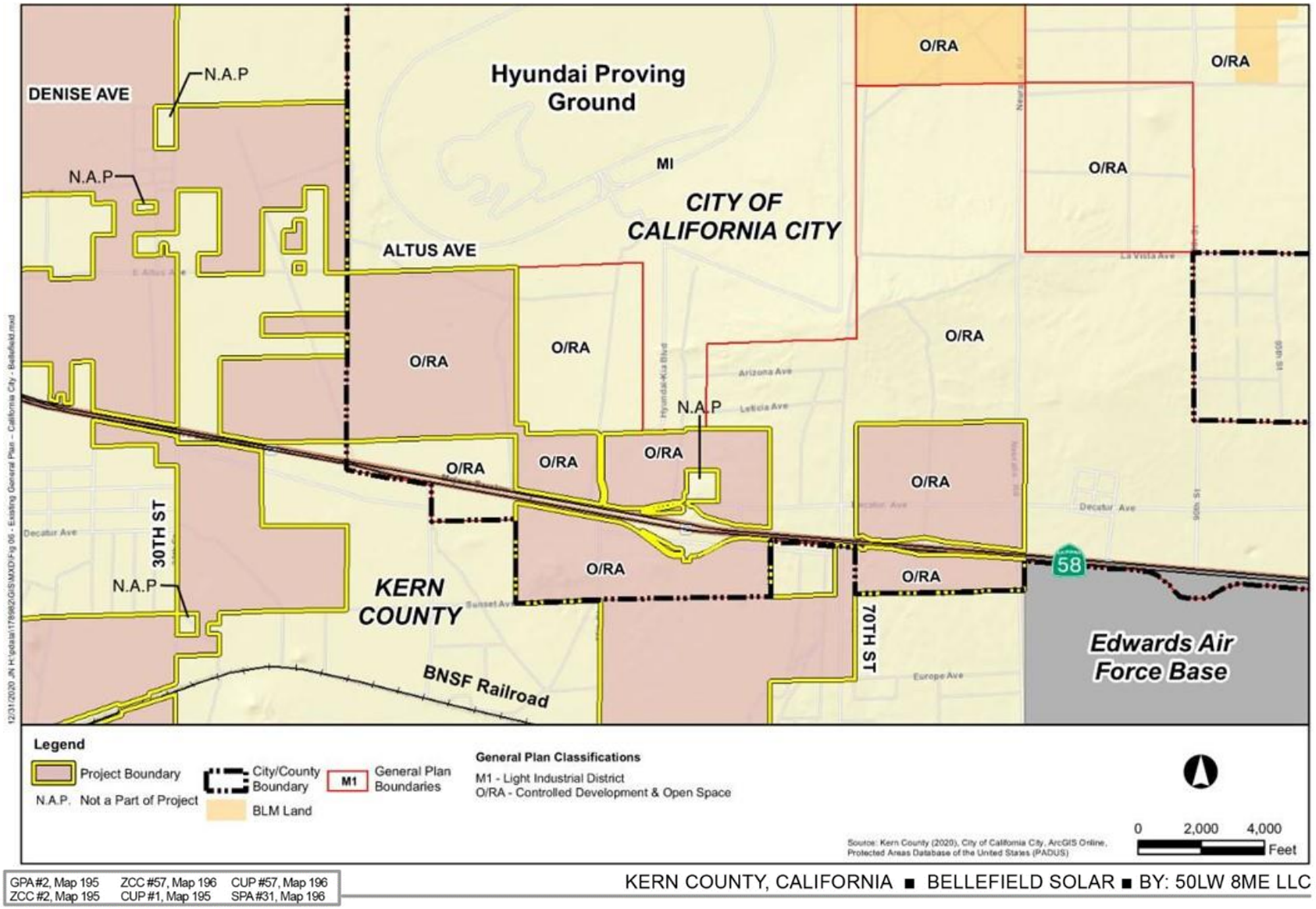
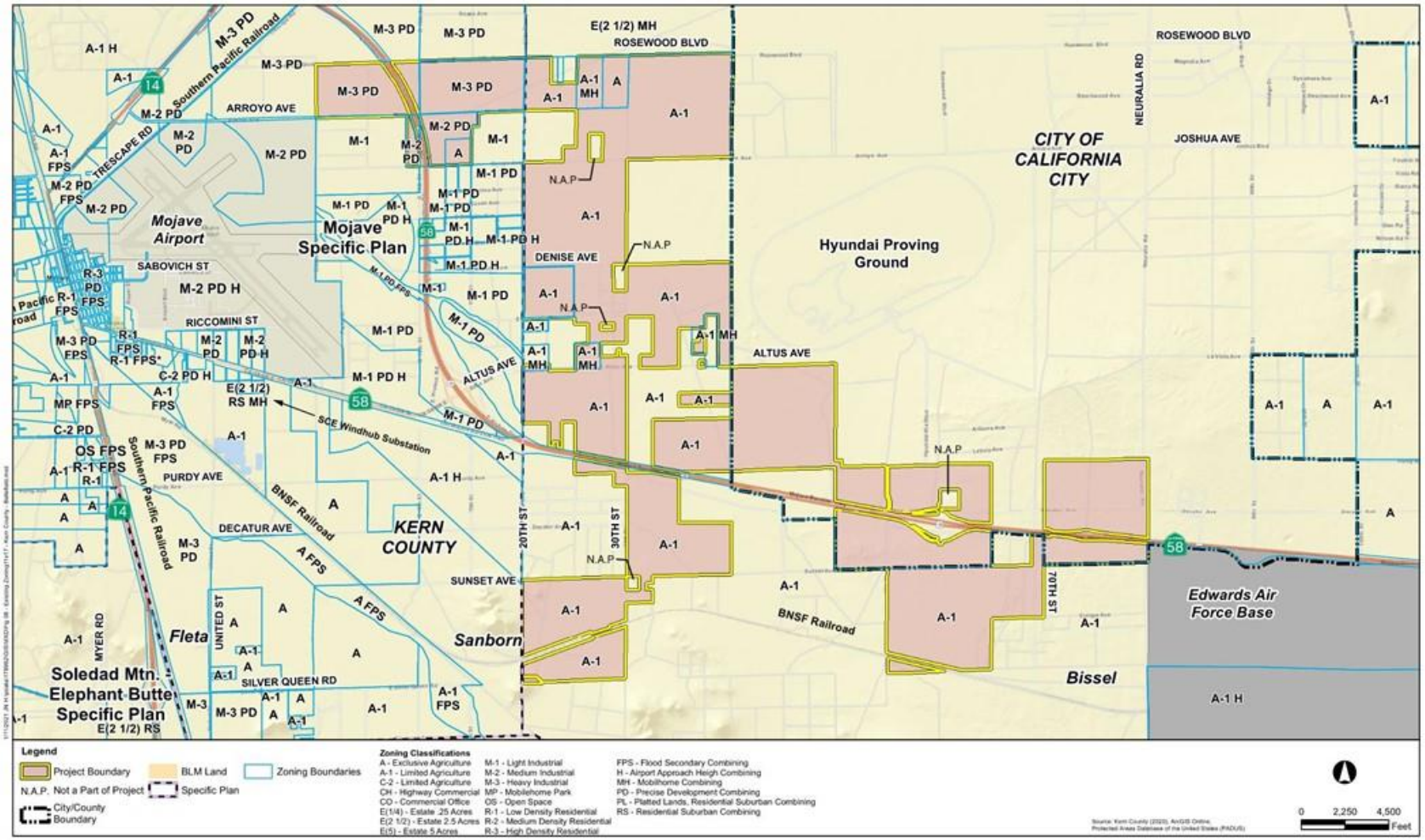


FIGURE 7
EXISTING GENERAL PLAN DESIGNATIONS -- CALIFORNIA CITY



GPA #2, Map 195 ZCC #57, Map 196 CUP #57, Map 196
ZCC #2, Map 195 CUP #1, Map 195 SPA #31, Map 196

KERN COUNTY, CALIFORNIA ■ BELLEFIELD SOLAR ■ BY: 50LW 8ME LLC

FIGURE 8
EXISTING ZONING CLASSIFICATIONS-- KERN COUNTY

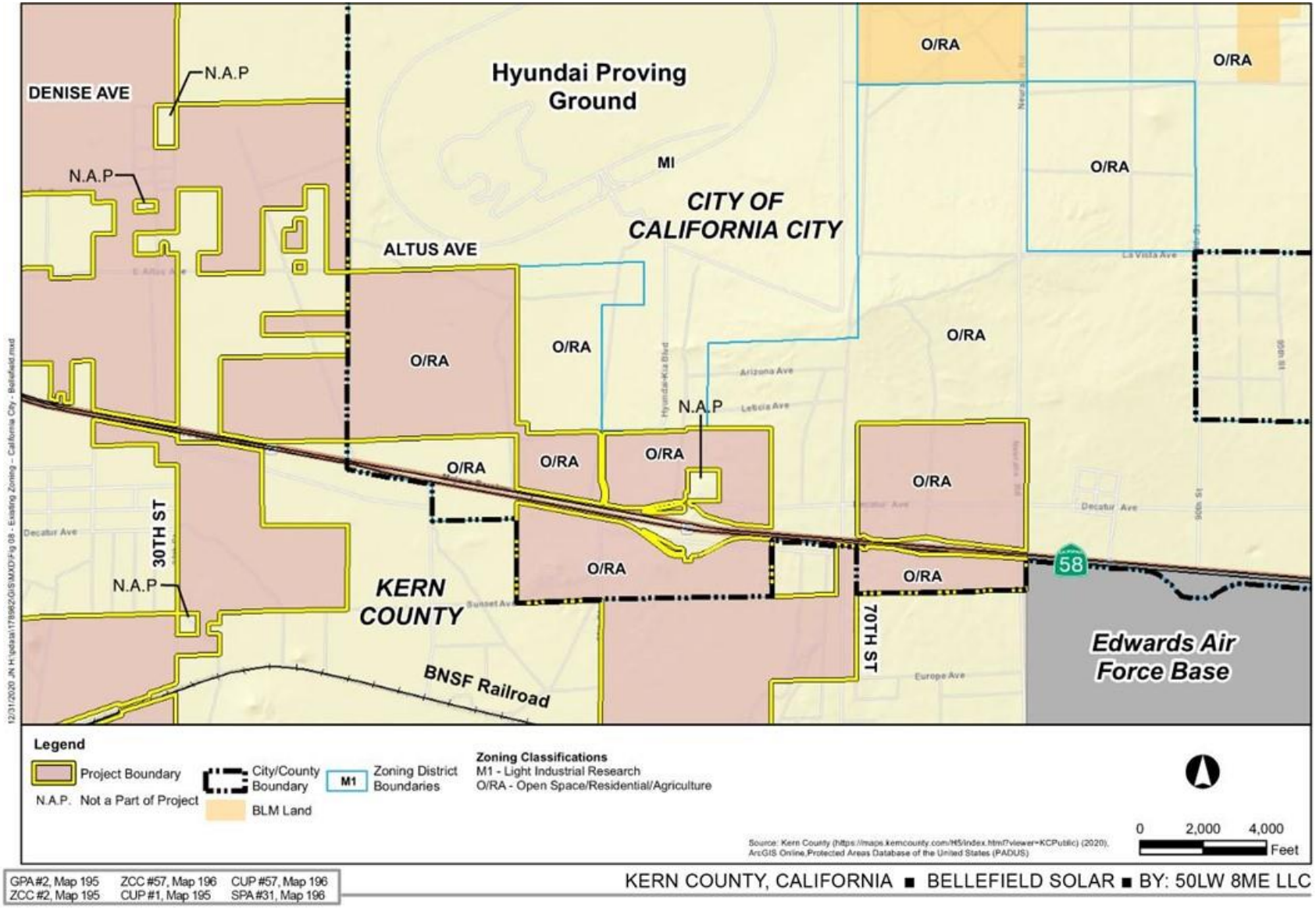


FIGURE 9
EXISTING ZONING CLASSIFICATIONS – CALIFORNIA CITY

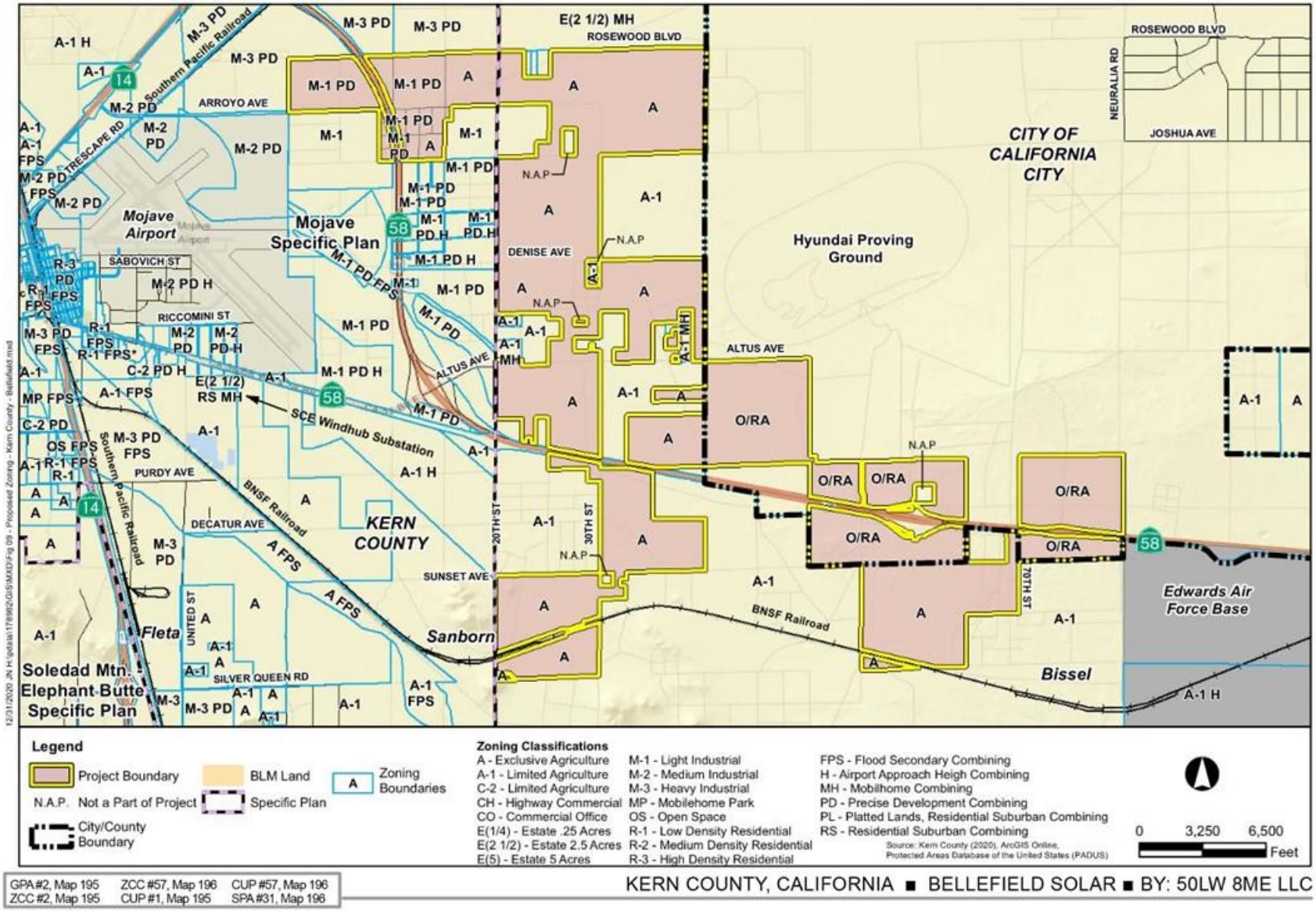


FIGURE 10
PROPOSED ZONING CLASSIFICATIONS – KERN COUNTY

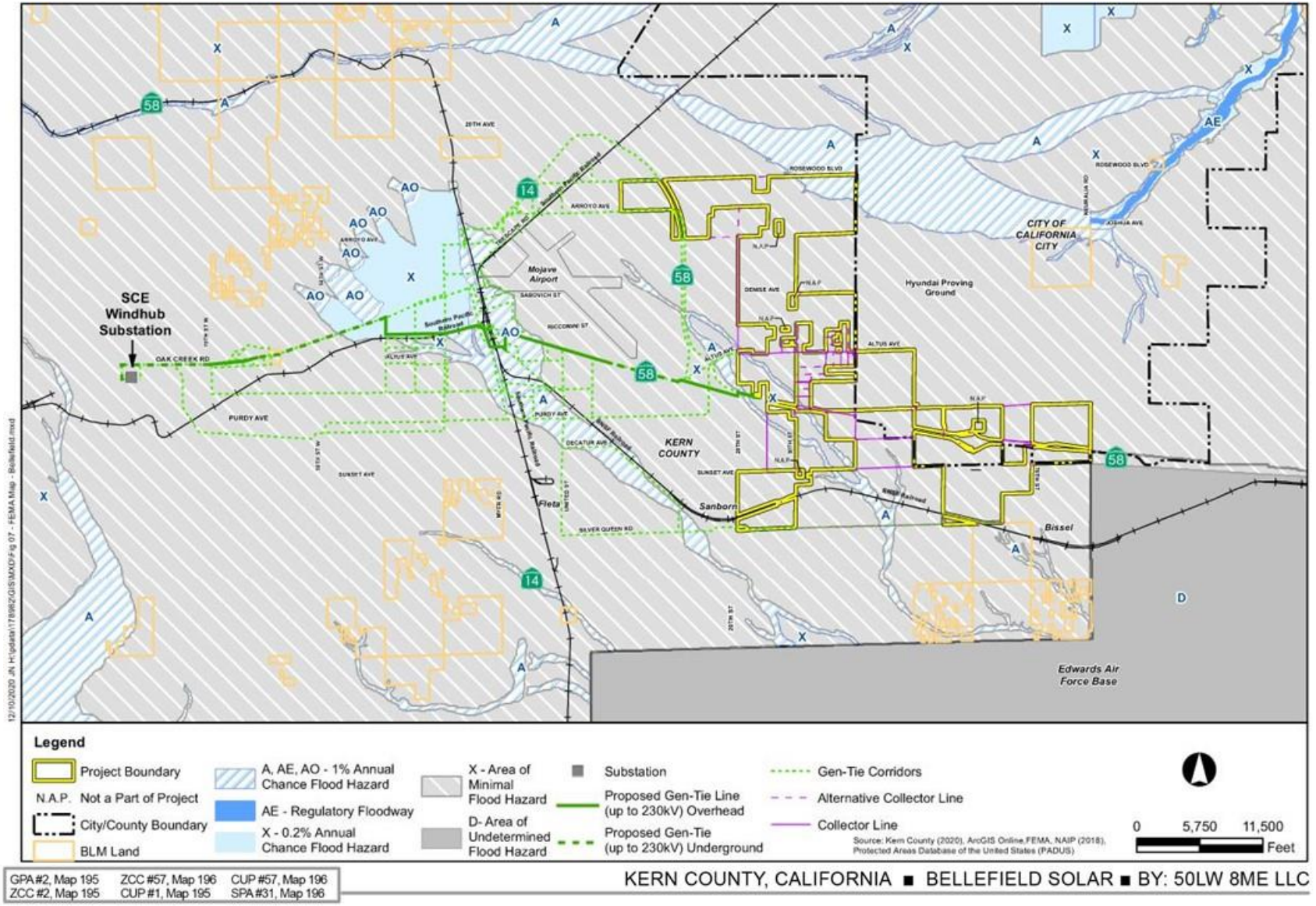
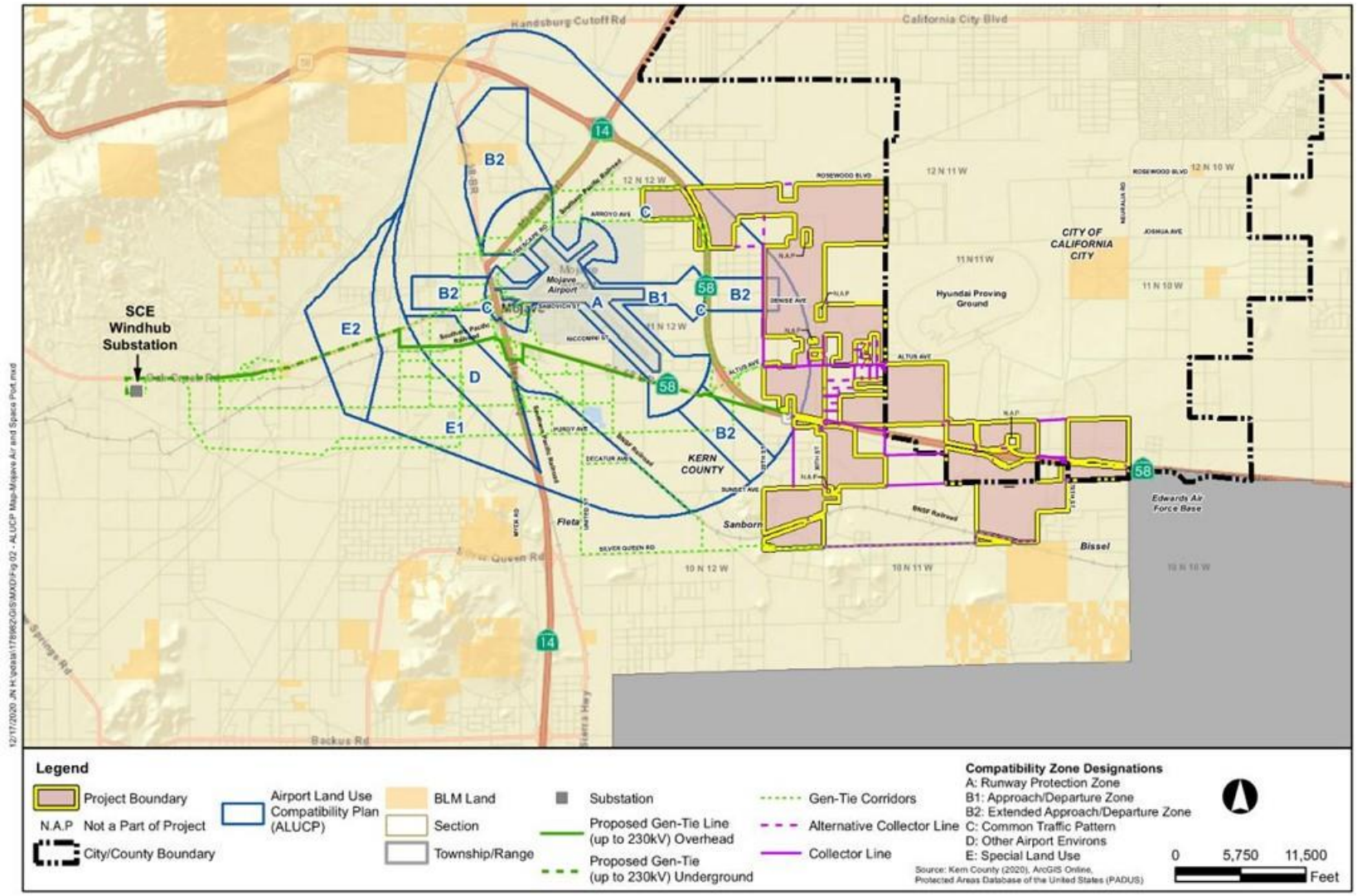


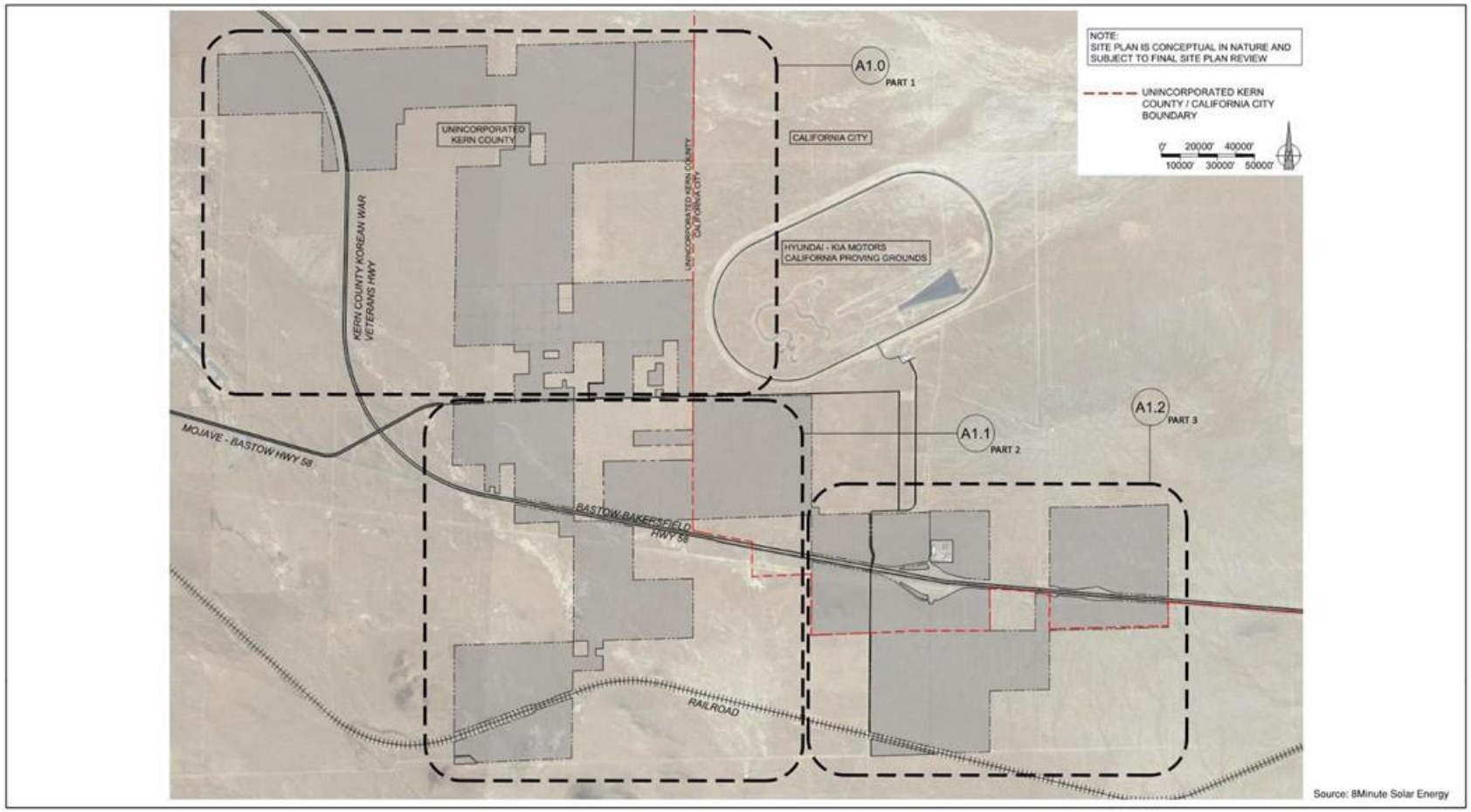
FIGURE 11
FEMA MAP



GPA #2, Map 195 ZCC #57, Map 196 CUP #57, Map 196
ZCC #2, Map 195 CUP #1, Map 195 SPA #31, Map 196

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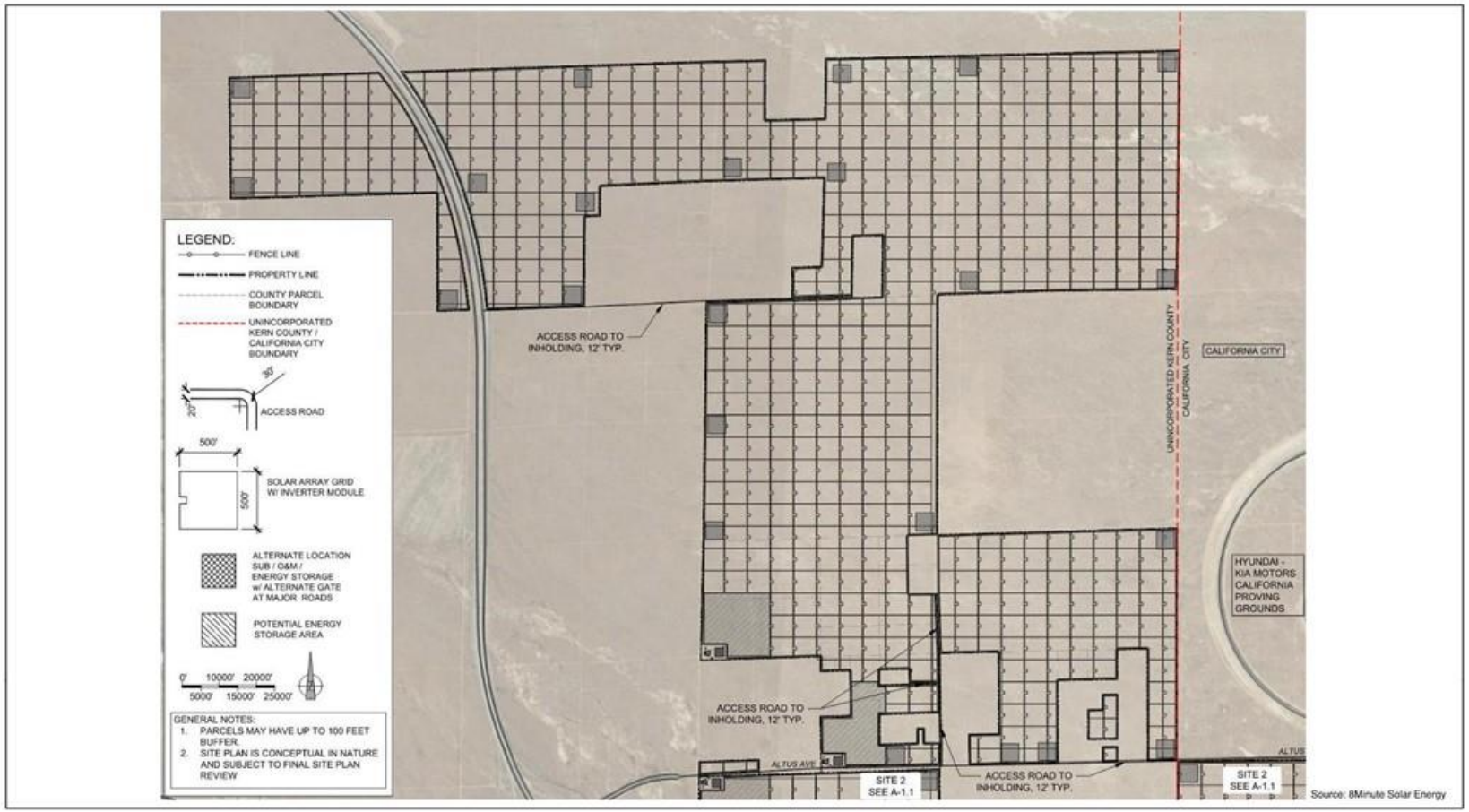
FIGURE 12
ALUCP DESIGNATIONS



GPA #2, Map 195 ZCC #57, Map 196 CUP #57, Map 196
ZCC #2, Map 195 CUP #1, Map 195 SPA #31, Map 196

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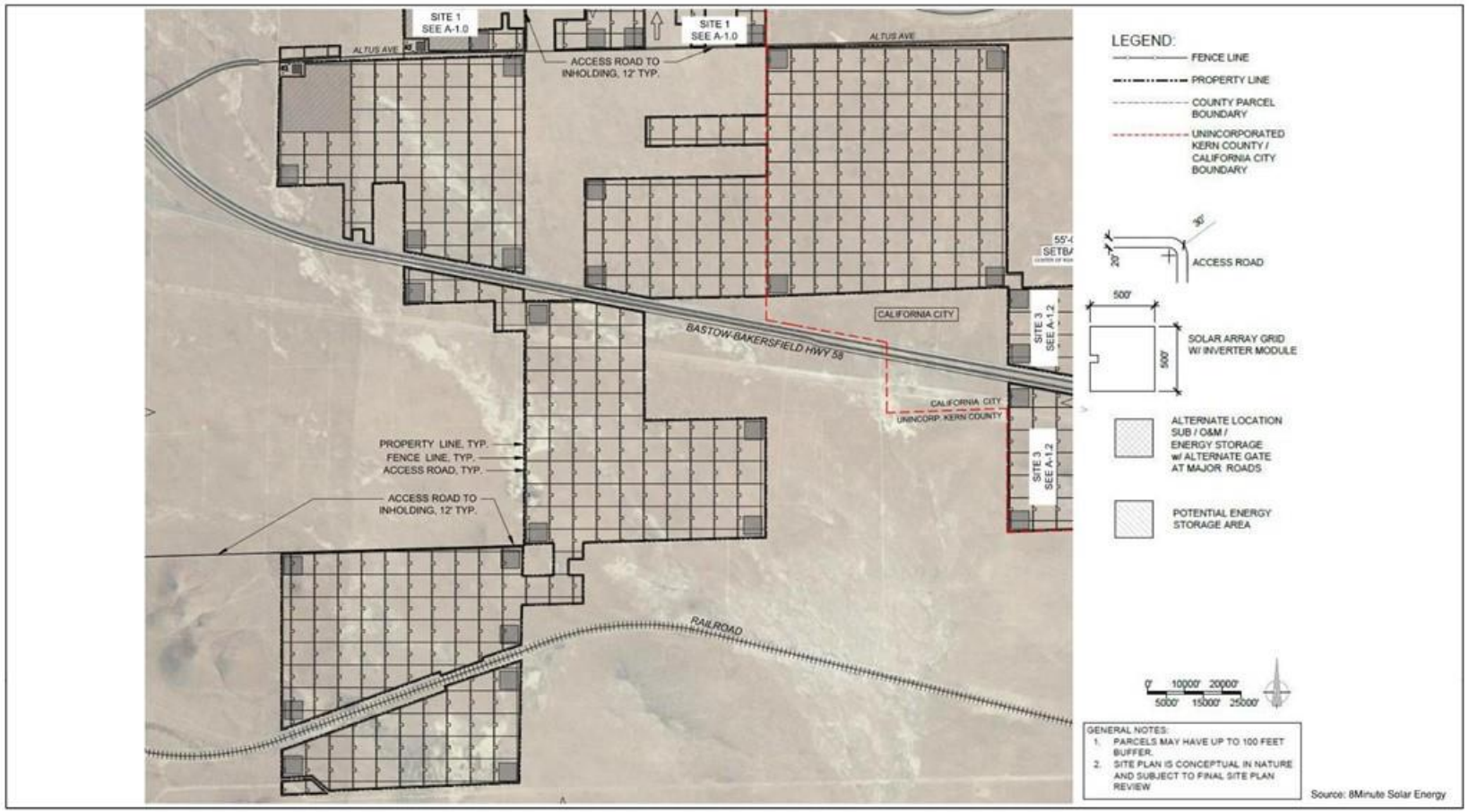
FIGURE 13A
OVERALL SITE PLAN



GPA #2, Map 195	ZCC #57, Map 196	CUP #57, Map 196
ZCC #2, Map 195	CUP #1, Map 195	SPA #31, Map 196

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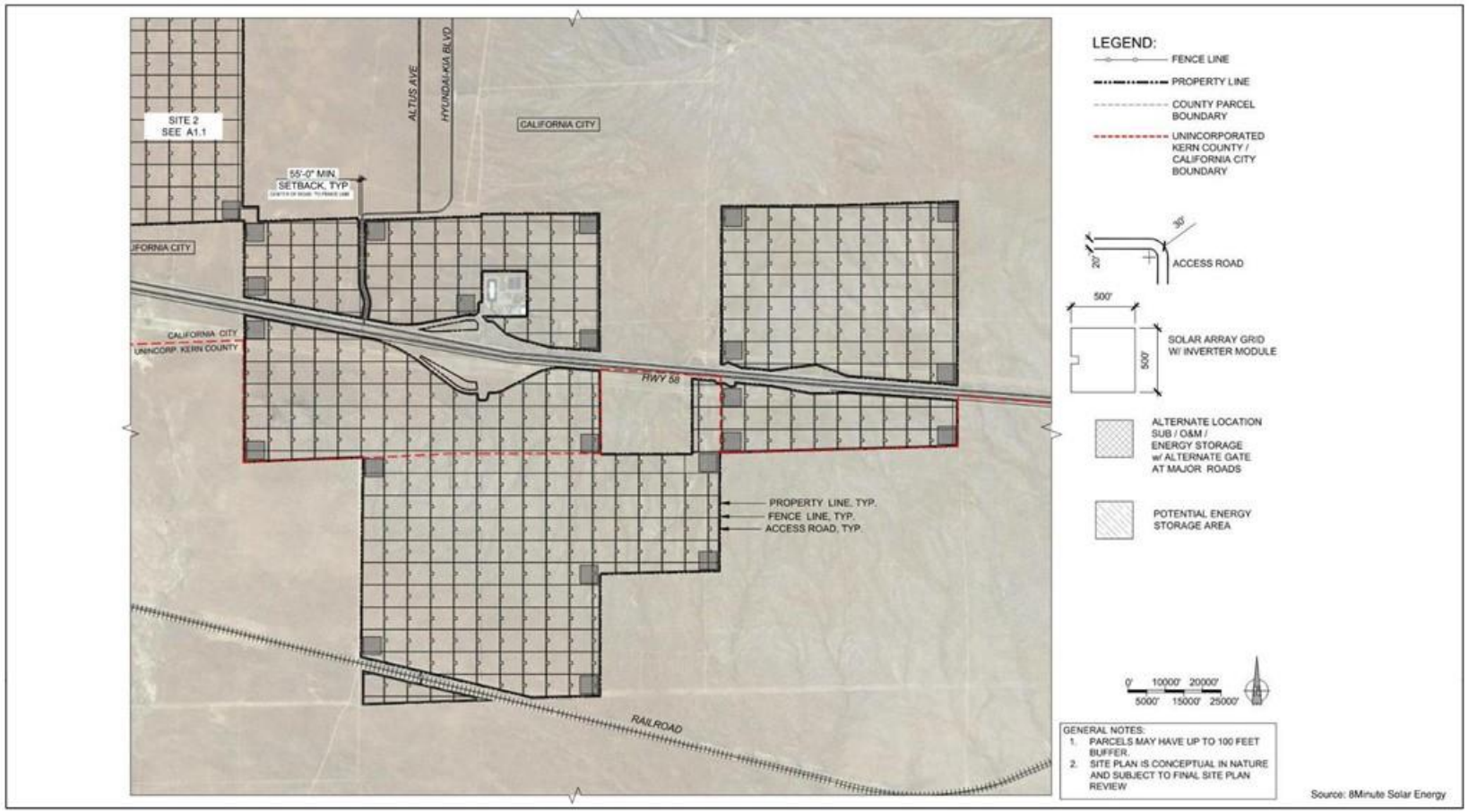
FIGURE 13B
PLAN VIEW – PART 1



GPA #2, Map 195	ZCC #57, Map 196	CUP #57, Map 196
ZCC #2, Map 195	CUP #1, Map 195	SPA #31, Map 196

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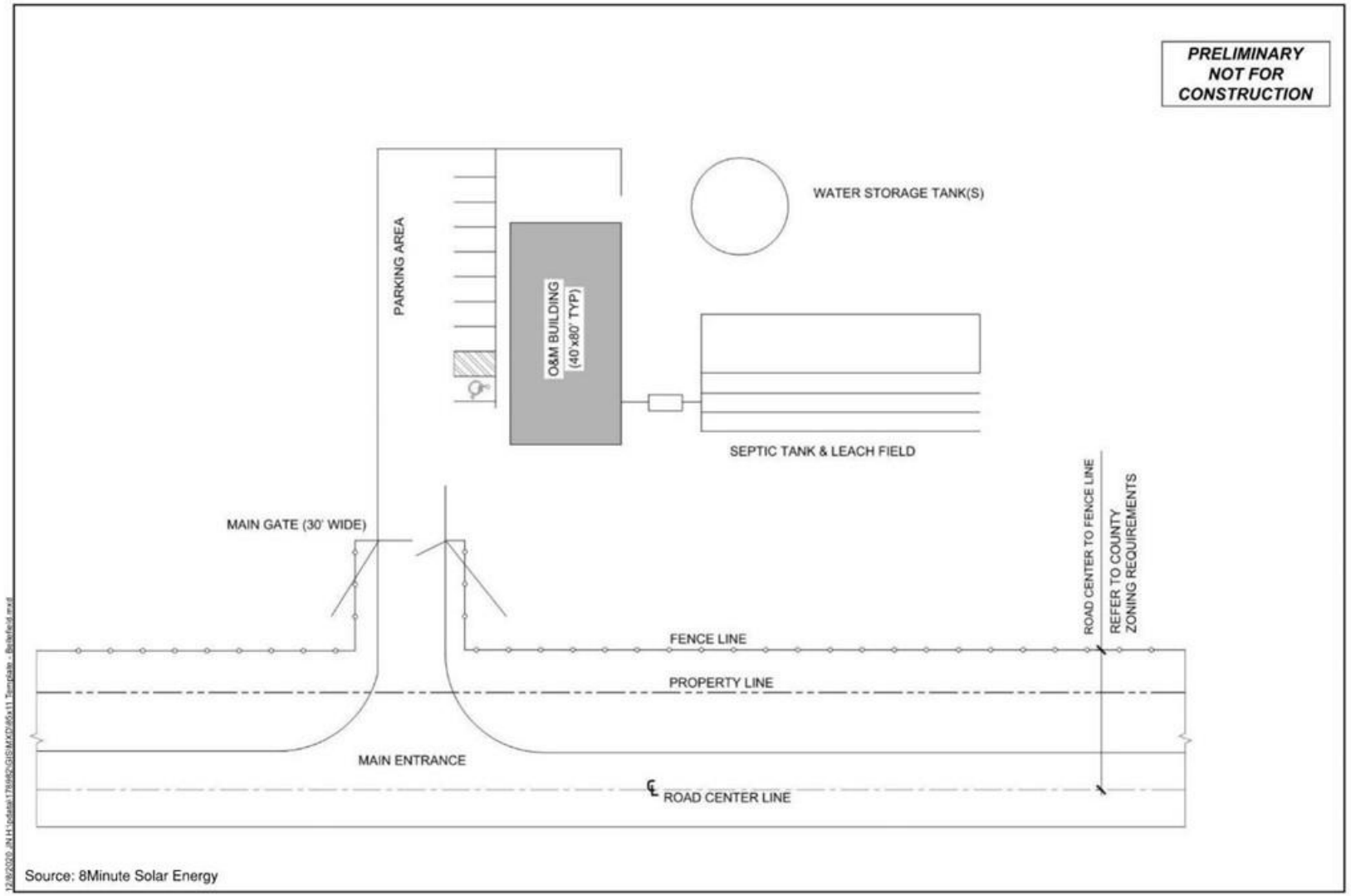
FIGURE 13C
PLAN VIEW - PART 2



GPA #2, Map 195	ZCC #57, Map 196	CUP #57, Map 196
ZCC #2, Map 195	CUP #1, Map 195	SPA #31, Map 196

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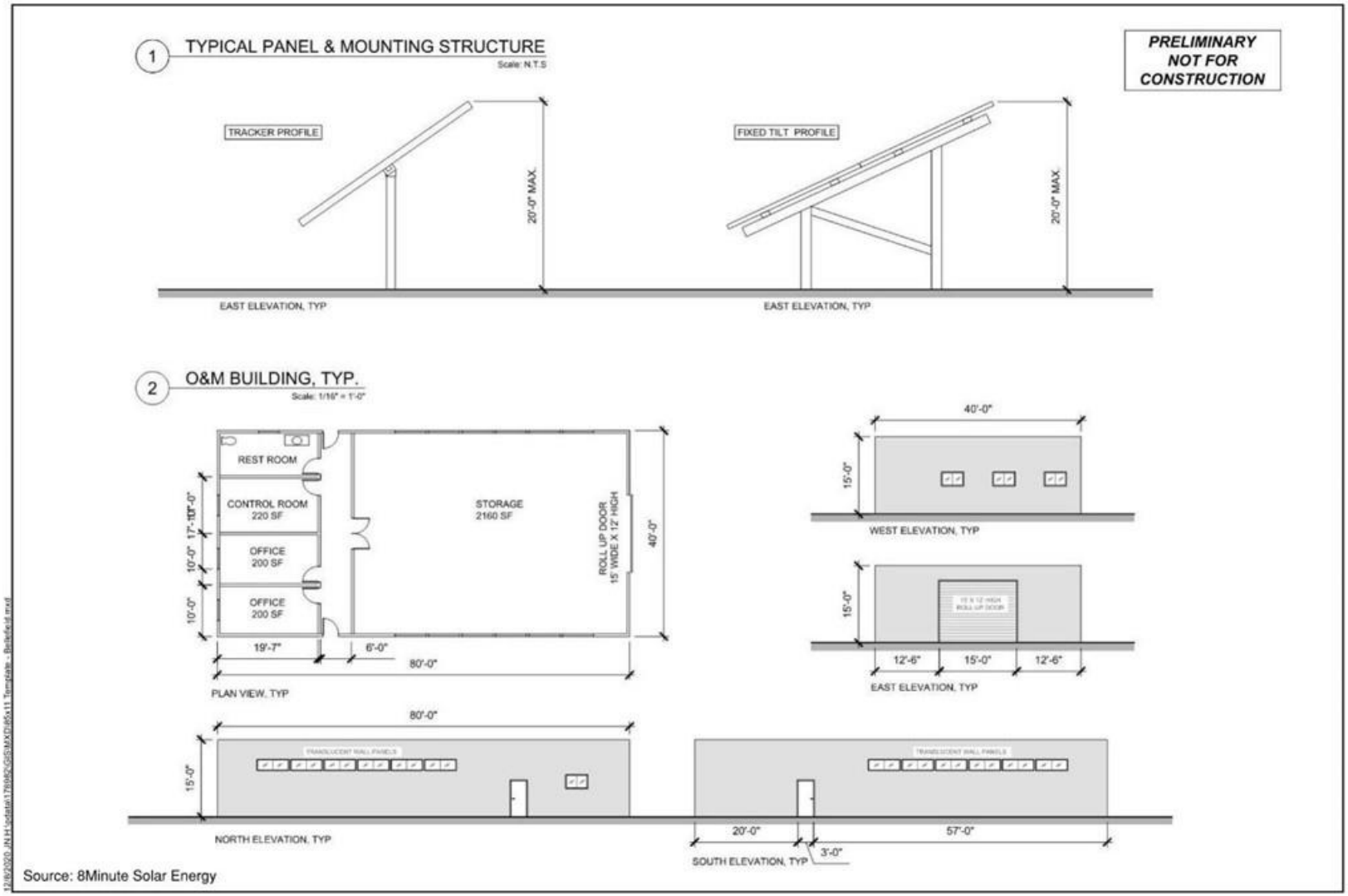
FIGURE 13D
PLAN VIEW – PART 3



GPA #2, Map 195 ZCC #57, Map 196 CUP #57, Map 196
ZCC #2, Map 195 CUP #1, Map 195 SPA #31, Map 196

KERN COUNTY, CALIFORNIA ■ BELLEFIELD SOLAR ■ BY: 50LW 8ME LLC

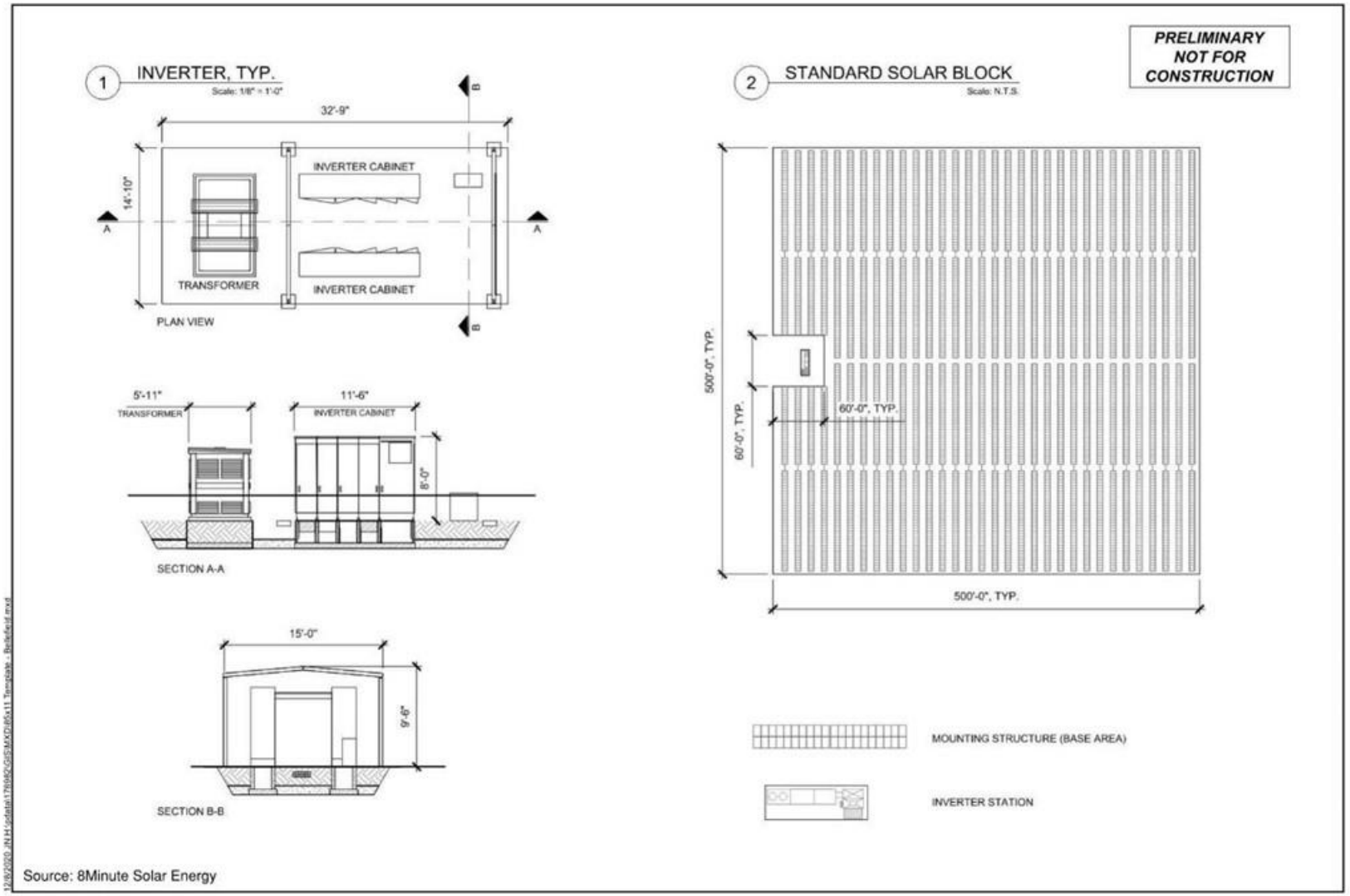
FIGURE 13E
CONCEPTUAL TYPICAL O&M SITE PLAN



GPA #2, Map 195	ZCC #57, Map 196	CUP #57, Map 196
ZCC #2, Map 195	CUP #1, Map 195	SPA #31, Map 196

KERN COUNTY, CALIFORNIA ■ BELLEFIELD SOLAR ■ BY: 50LW 8ME LLC

FIGURE 13F
PANEL TRACKER AND O & M BUILDING DETAILS



GPA#2, Map 195	ZCC#57, Map 196	CUP#57, Map 196
ZCC#2, Map 195	CUP#1, Map 195	SPA#31, Map 196

KERN COUNTY, CALIFORNIA ■ BELLEFIELD SOLAR ■ BY: 50LW 8ME LLC

FIGURE 13G
TYPICAL SOLAR BLOCK AND INVERTER DETAILS

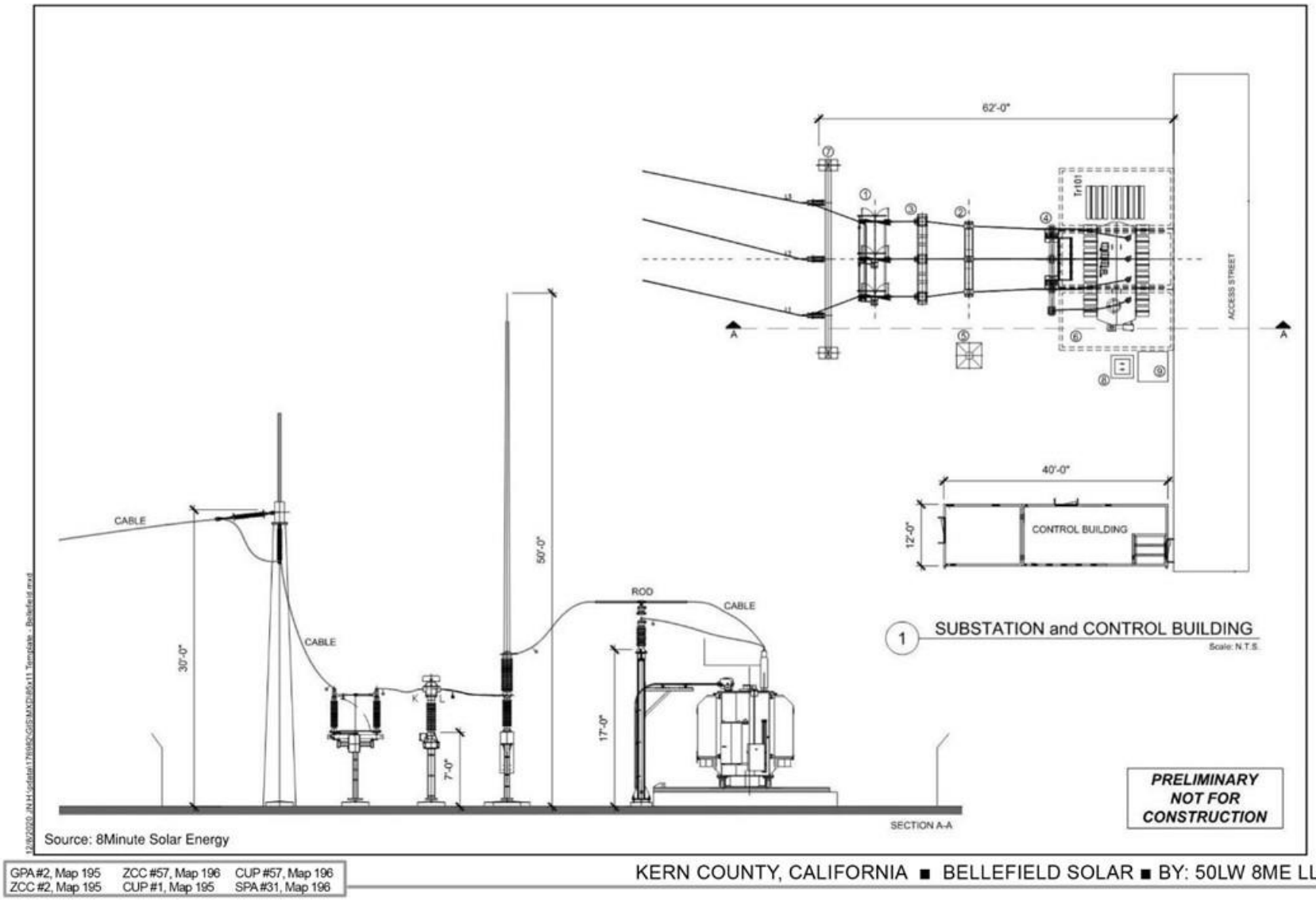


FIGURE 13H
TYPICAL SUBSTATION AND CONTROL ROOM DETAILS

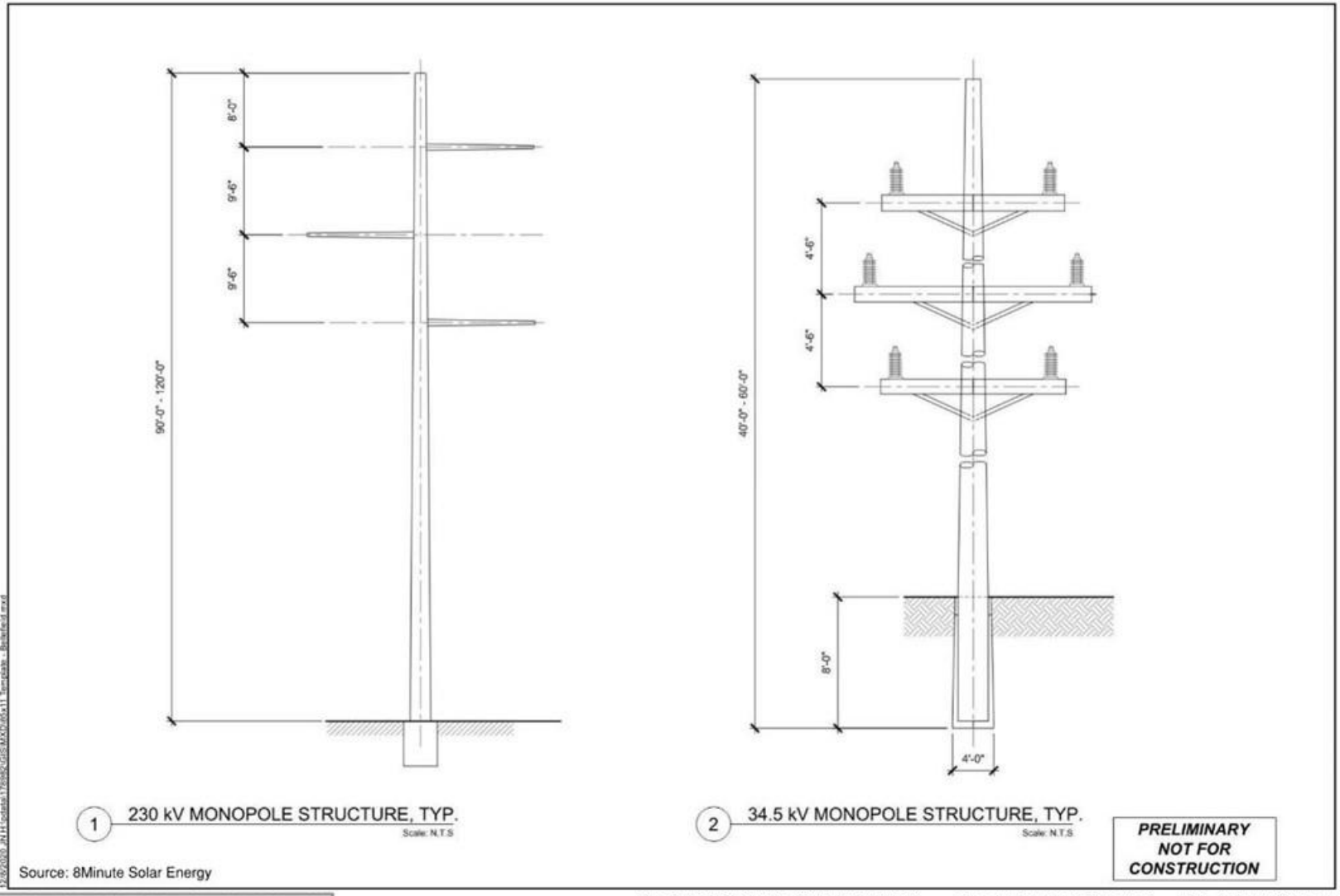


FIGURE 13I
TYPICAL MONOPOLE DETAILS



FIGURE 14
FUTURE ROAD RESERVATIONS TO BE DELETED

Surrounding Land Uses

Existing land uses in the surrounding area are primarily undeveloped. **Table 2**, *Existing On- and Off-site Land Use, General Plan and Specific Plan Map Code Designations, and Zoning*, identifies the project site and surrounding land uses. The nearest sensitive receptors are several isolated residences located approximately 1.2 miles south of the southwestern most project parcel in Kern County.

TABLE 2. EXISTING ON- AND OFF-SITE LAND USE, GENERAL PLAN AND SPECIFIC PLAN MAP CODE DESIGNATIONS, AND ZONING

Location	Existing Land Use	Existing General Plan and Specific Plan Map Code Designations	Existing Zoning
Kern County			
Project Site	Undeveloped	*Kern County General Plan:* 1.1 (State and Federal Lands) 8.5 (Resource Management, minimum 20-acre parcel size) 8.5/2.5 (Resource Management, minimum 20-acre parcel size/ Flood Hazard) *Mojave Specific Plan:* 7.1 (Light Industrial) 7.3 (Heavy Industrial)	A (Exclusive Agriculture) A-1 (Limited Agriculture) A-1 MH (Limited Agriculture, Mobile Home Combining) M-2 PD (Medium Industrial, Precise Development Combining) M-3 PD (Heavy Industrial, Precise Development Combining)
North	Undeveloped; California City; Hyundai Proving Ground	*Kern County General Plan:* 8.3 (Extensive Agriculture, min. 20-acre parcel size) 8.3 (Extensive Agriculture, min. 20-acre parcel size/Flood Hazard) 8.5 (Resource Management, min. 20-acre parcel size) 8.5/2.5 (Resource Management, min. 20-acre parcel size/Flood Hazard)	A (Exclusive Agriculture) A-1 (Limited Agriculture) A-1 MH (Limited Agriculture, Mobile home Combining) E(2 ½) MH (Estate 2.5 Acres, Mobile home Combining)
East	Hyundai Proving Ground, Undeveloped; Unincorporated community of North Edwards	*Kern County General Plan*: 1.1 (State or Federal Land) 1.2 (Incorporated Cities) 8.5 (Resource Management, min. 20-acre parcel)	A (Exclusive Agriculture) A-1 (Limited Agriculture) A-1 H (Limited Agriculture, Airport Approach Height Combining) M1 (Light Industrial)

TABLE 2, CONTINUED

Location	Existing Land Use	Existing General Plan and Specific Plan Map Code Designations	Existing Zoning
South	Edwards Air Force Base, Unincorporated communities of Sanborn, and Fleta	*Kern County General Plan*: 1.1 (State or Federal Land) 3.3 (Other Facilities) 5.7 (Minimum 5 Gross Acres/Unit) 8.5 (Resource Management, min. 20-acre parcel size) 8.5/2.4 (Resource Management, min. 20-acre parcel size/Steep Slope) 8.5/2.5 (Resource Management, min. 20-acre parcel size/Flood Hazard)	A-1 (Limited Agriculture)
West	Mojave Airport, Undeveloped, Unincorporated community of Mojave	*Kern County General Plan* 8.5 (Resource Management, min. 20-acre parcel size) 8.5/2.4 (Resource Management, min. 20-acre parcel size/Steep Slope) 8.5/2.5 (Resource Management, min. 20-acre parcel size/Flood Hazard) *Mojave Specific Plan*: 7.1 (Light Industrial) 7.1/2.5 (Light Industrial/Flood Hazard) 7.2 (Service Industrial) 7.3 (Heavy Industrial)	A (Exclusive Agriculture) A-1 (Limited Agriculture) A-1 H (Limited Agriculture, Airport Approach Height Combining) M-1 (Light Industrial) M-1 PD (Light Industrial, Precise Development Combining) M-1 PD H (Light Industrial, Precise Development, Airport Approach Height Combining) M-2 PD (Medium Industrial, Precise Development Combining) M-3 PD (Heavy Industrial, Precise Development Combining)
California City			
Project Site	Undeveloped	*California City General Plan*: O/RA (Controlled Development & Open Space)	O/RA (Open Space/Residential Agricultural)
North	Undeveloped; California City; Hyundai Proving Ground	*California City General Plan*: M1 (Light Industrial District	M1 (Light Industrial District)
East	Hyundai Proving Ground, Undeveloped	*California City General Plan*: M1 (Light Industrial District)	M1 (Light Industrial District)
South	Unincorporated Kern County (see above descriptions)		
West	Unincorporated Kern County (see above descriptions)		

1.3. Project Description

Project Overview

The Bellefield Solar Project by 50LW 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity on approximately 8,371 acres of privately-owned land. The proposed project's permanent facilities would include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities. Proposed site plans and typical operations and maintenance facilities are illustrated in **Figure 13A** to **Figure 13I**.

The proposed project consists of the following requests for local land use approvals:

- Kern County
    - General Plan Amendment #2, Map 195
        - From 1.1 (State or Federal Land) to 8.5 (Resource Management) for approximately 82.19 acres; and
        - Amendment to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.
    - Zone Change Case # 2, Map 195:
        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 5,291.55 acres; and
        - From A-1 MH (Limited Agriculture Mobile Home Combining) to A for approximately 146.71 acres.
    - Zone Change Case #57, Map 196
        - From M-3 PD to M-1 PD for approximately 477.39 acres; and
        - From M-2 PD to M-1 PD for approximately 141.43 acres.
    - Issuance of Conditional Use Permit #1, Map 195 to allow for the construction and operation of a 5,438.26-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance.
    - Issuance of Conditional Use Permit #57, Map 196 to allow for the construction and operation of a 830.87-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to

Section 19.12.030G, M-1 PD (Light Industrial, Precise Development) pursuant to Section 19.36.030G, and M-3 PD (Heavy Industrial, Precise Development) pursuant to Section 19.40.030G of the Kern County Zoning Ordinance.

- Specific Plan Amendment #31, Map 196
  - Amendment to the Circulation Element of the Mojave Specific Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries, as shown on Figure 14, *Future Road Reservations to be Deleted*.

- California City (Responsible Agency)
  - The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City is will require that the applicant acquire a Conditional Use Permit (CUP) from the City to allow for the construction and operation of a solar facility, in the O/RA (Open Space/Residential Agricultural) zone (CUP 19-03), of a 2,103.63-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 1,500 MW of alternating current power and 1,500 MW hours of storage capacity. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction (refer to **Figure 14**, *Future Road Reservations to be Deleted*). The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

Proposed Gen-Tie Route

Power generated by the project would be delivered via a 230 kV overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the SCE Windhub Substation. The gen-tie corridor lines will connect to SCE's Windhub Substation. The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet (**Figure 2**, *Aerial Photograph*). The collector lines are generally located within or adjacent to the Kern County and/or California City project parcels, while the gen-tie alternatives generally originate from the central portion of the project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes.

The power generated on the project site would assist the State in complying with the Renewables Portfolio Standard under Senate Bill 350, which requires that by December 31, 2030, 50 percent of all electricity sold in California shall be generated from renewable energy sources. The power generated on the project site would be sold to California investor-owned utilities, municipalities, community choice aggregators, or other purchasers in furtherance of the goals of the California Renewable Energy Portfolio Standard. The proposed project has an anticipated operational life of up to 35 years. At the end of the proposed project's operational term, the project proponent would determine whether the project site should be decommissioned and deconstructed or if it would seek an extension of its CUPs. If any portion of the project site is

decommissioned, it would be converted to other uses in accordance with the applicable land use regulations in effect at that time.

1.4. Project Facilities, Construction, and Operations

Project Facilities

The combined project facilities would include the following components, which are described in greater detail thereafter:

- PV Module Configuration
- Inverter Stations
- Energy Storage System
- Operations and Maintenance Building
- Substation(s)
- Generation-Transmission Line
- Water Storage Tank(s)
- Project Site Security and Fencing
- Project Site Lighting

Solar PV Module Configuration

The proposed project would utilize photovoltaic panels or modules (including but not limited to concentrated photovoltaic technology (CPV) or bi-facial technology which have similar rectangular shapes, sizes and thickness) on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). If the panels are configured for fixed-tilt, the panels would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. Maximum panel height is anticipated to be up to 20 feet high, depending on the mounting system selected and on County building codes. The foundations for the mounting structures can extend up to 10 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings. A light-colored ground cover or palliative may be used to increase electricity production. Final solar panel layout and spacing would be optimized for project area characteristics and the desired energy production profile. The conceptual site plan exhibits showing the proposed project facilities, including solar block and solar panel layout, O&M building, project substation, and electrical infrastructure are shown on **Figure 13A** to **Figure 13D**.

The solar array fields would be arranged in groups called “blocks” with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to alternating electrical current (AC) at the inverter stations. DC current produced at the blocks would be transmitted to the inverters via electrical cables/conductors. Internal access road would be provided (within each block) to facilitate maintenance work.

Collection, Inverter, and Transformer Stations

Photovoltaic energy is delivered via cable to inverter stations, generally located near the center of each block. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 7.5 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the vendor selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

Energy Storage System

The proposed project may include one or more Energy Storage Systems (ESS), located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, but possibly elsewhere onsite. Such large-scale ESSs would be up to 1,500 MW-AC in capacity and up to 50 acres in total area. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of standard International Organization for Standardization containers (approximately 40 feet in length by 8 feet in width by 8 feet in height) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of a dedicated structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on County and City building standards.

The ESS would be unmanned, remotely controlled containers and periodically inspected for maintenance purposes. The ESS would have a fire rating in conformance with Kern County, California City, and national ESS fire standard NFPA 855 and specialized fire suppression systems would be installed for each of the battery compartments, where required by NFPA 855 and UL9540A standards.

Onsite Meteorological Station

A solar meteorological station would be located on-site, the location of which would be determined at final project design. The meteorological station would include solar energy (irradiance) meters, in addition to an air temperature sensor and wind anemometer. It is anticipated that the maximum height of this equipment would be up to 20 feet.

Operations and Maintenance Facilities

The proposed project may include an O&M building(s) of approximately 40’ x 80’ in size, up to 15 feet high, with associated on-site parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

- Office
- Repair building/parts storage
- Control room
- Restroom
- Septic tank and leach field

Septic tank and leach field, roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in accordance with all California Accessibility Regulations.

As previously mentioned above, the proposed project may share O&M facilities with any future energy projects in the area and/or may be remotely operated. Any unused O&M areas on-site may be covered by solar panels.

Substation(s)

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more on-site substation(s) or switchyard(s) (collectively referred to as a "substation" herein). Generally the collectors would originate at each inverter and be "bundled" together as they approach the substation(s). Underground and/or overhead collector lines would cross Highway 58 in several locations, depending on the final substation location(s). Each substation may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, microwave transmission tower, and voltage switch gear. Each substation would occupy an area of approximately five acres, secured separately by an additional chain-link fence, and typically located along the perimeter of the project. The final location(s) would be determined before issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing approximately 10 feet tall. The building is either prefabricated concrete or steel housing with rooms for the voltage switch gear and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may alternatively be located at the O&M building(s).

Generation-Transmission Line

From the proposed project's substation(s), power would be transmitted to the SCE Windhub Substation via up to 230 kV overhead and/or underground generation-transmission (gen-tie) line(s). The proposed gen-tie alignments are shown on **Figure 3,** *Project Boundaries*. Generally, the gen-tie would be located within 500-feet of established road rights-of-way within a 100-foot wide corridor, although this corridor may be expanded based on final engineering. The overhead lines would be mounted on monopoles no higher than 100 feet tall as designated in Figure 19.08.160 of the Kern County Zoning Ordinance. Along Oak Creek Road, where compatible with Section 19.38.080 of the Kern County Zoning Ordinance, gen-tie support structures would be up to 199 feet tall; however, the majority of the structures are not expected to exceed 150-feet. Portions of the gen-tie line may be undergrounded to avoid conflict with operation of the Mojave Air and Space Port and allow the line to avoid conflicts with other existing infrastructure. Kern County and California City may accept Irrevocable Offers of Dedication, or grant a franchise, license, and/or encroachment agreement for portions of the gen-tie, while other portions would be sited within private easements.

Site Access

Construction and operation traffic would access the project site from SR 58, Altus Avenue, Silver Queen Road, 50th Street 55th Street, 140th Street, Hyundai-Kia Boulevard, and Sunset Avenue, depending on the portion of the project site to access. Driveways and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Any off-site roadway

improvements would be constructed in conformance with Caltrans and/or County and/or City code and regulations, as necessary and applicable.

Water Storage Tank(s)

One or more plastic or steel above-ground water storage tanks with a total capacity of up to 80,000 gallons (greater if required by Fire Department regulations) may be placed on-site near the O&M building(s). The storage tank(s) near the O&M building(s) would have the appropriate fire department connections to be used for fire suppression purposes.

Project Site Security and Fencing

The project site(s) would be enclosed within a chain-link fence, with barbed wire, measuring up to 8 feet in height (from finished grade). An intrusion alarm system comprised of sensor cables integrated into the perimeter fence, intrusion detection cabinets placed approximately every 1,500 feet along the perimeter fence, and an intrusions control unit, located either in the substation control room or at the O&M building, or similar technology, may be installed. Additionally, the proposed project may include additional security measures including, but not limited to, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, sensor lights, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the proposed project.

Controlled access gates would be maintained at the main entrances to the project site. Project access would be provided to offsite emergency response teams that respond in the event of an "after-hours" emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

Project Site Lighting

Proposed nighttime lighting on-site would be minimal and is anticipated to be installed at the access gates, substation(s), O&M building(s), and inverters to allow for access and emergency maintenance. Nighttime lighting would provide O&M personnel with illumination for both normal and emergency operating conditions. The minimum illumination needed to ensure worker safety and security on-site would be provided. All nighttime lighting installed would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties as required by Kern County Ordinance (Chapter 19.81) - Outdoor Lighting-Dark Skies requirements. Additionally, motion-sensitive cameras would be installed within the solar fields in proximity to the inverters for purposes of security.

Construction Activities

The construction period for the proposed project from site preparation through construction, testing, and commercial operation is expected to commence as early as Q4 2021 and would extend for approximately 18 to 24 months.

Construction of the proposed project would include the following activities:

- Site preparation
- Access and internal circulation roads
- Grading and earthwork

- Panel installation
- Concrete foundations
- Structural steel work
- Electrical/instrumentation work
- Collector line installation
- Stormwater management facilities
- Architecture and landscaping
- Gen-tie line(s)

Construction traffic would access the project site from SR-58, Altus Avenue, Silver Queen Road, 50th Street, 55th Street, 140th Street, Hyundai-Kia Boulevard, and Sunset Avenue. It is estimated that up to 1,000 workers per day (during peak construction periods) and as of yet undetermined number of large trucks per day would be required during construction of the proposed project. At this time, it has not been determined whether construction workers would commute individually to one or more parking areas within the project site or whether some form of a shuttle system to transport larger groups of workers to dedicated drop-off areas would be provided. All staging of equipment and personnel would occur within the project footprint.

Construction activities would comply with Kern County and California City noise ordinances. Heavy construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. If weekend work is required, construction will occur between 8:00 am and 9:00 pm. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Low-level noise activities may potentially occur between the hours of 10:00 pm and 7:00 am as long as the noise is below County and City noise standards. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies would be delivered to the project site by truck. Truck deliveries would normally occur during daylight hours; however, there could be offloading and/or transporting to the project site on weekends and during evening hours.

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

Construction Water Use

During construction, water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Total water usage during construction is not expected to exceed 900 acre-feet. Water demand would be the same during normal or dry years. It is anticipated that water would be obtained from new or existing on-site wells. Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is

used, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source

Temporary, portable water tanks may be placed on site to store water for construction purposes. If the Applicant determines that off-site water would be used, the Applicant would submit evidence of an agreement to provide sufficient water quantities from the proposed off-site water purveyor(s). Portable restroom facilities would be provided to the workers during construction.

Operations and Maintenance Activities

Once the Project is constructed, operations and maintenance would generally be limited to the following:

- Cleaning of PV panels
- Monitoring electricity generation
- Providing site security
- Facility maintenance - replacing or repairing inverters, wiring, PV modules, fences, roads, and gen-tie facilities

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

Work Force

It is expected that the Project would require an operational staff of up to 20 full-time employees. Typically, the majority of the staff would work during the day shift (sunrise to sunset) and the remainder during the night shifts and weekend. Each employee shift would consist of approximately 5 persons, stationed at the O & M Building. As noted earlier, it is possible that the Project would share O&M, substation, ESS, and/or transmission facilities with one or more nearby projects. In such a scenario, the projects would share personnel, thereby potentially reducing the Project's on-site staff.

Operational Water Demand

Water demand for panel washing and O&M domestic use is not expected to exceed 100 acre-feet per year. Water is anticipated to be obtained from on-site wells. If off-site water is trucked in, it would likely be obtained from a nearby well or from a commercial source. A small water treatment system with a footprint of up to 30 feet by 30 feet may be installed to provide deionized water for panel washing.

Project Features and Best Management Practices

The following sections describe standard project features and best management practices that would be applied during construction and long-term operation of the project to maintain safety and minimize or avoid environmental impacts.

Site Preparation, Earthwork and Construction Control Measures

The project site(s) would be cleared and graded as needed to allow for the installation of the solar arrays, energy storage facility, related infrastructure, access driveways, and temporary construction staging areas.

Sediment and erosion controls would be installed in accordance with an approved Storm Water Pollution Prevention Plan (SWPPP). Stabilized construction entrances and exits would also be installed at the project entrance driveways to ensure that potential for tracking of sediment onto adjacent public roadways is minimized.

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

Dust-minimizing techniques, such as maintaining natural vegetation where possible, use of mow-and-roll vegetation clearing, placement of wind control fencing, application of water, and/or application of dust suppressants would be implemented as needed. Project grading would be minimized to the extent feasible to reduce unnecessary soil movement that may result in dust generation. Earthworks scrapers, excavators, dozers, water trucks, paddlewheels, haul vehicles, and graders may all be used in site preparation. Access roads may be compacted, as required, to support construction and emergency vehicles. Certain access roads may also be surfaced with aggregate or decomposed granite in conformance with emergency access requirements. Any grading would be balanced on-site, with no need for the export or import of soils. Additionally, on-site trenching for the placement of underground electrical and communication lines would occur.

Noise-generating construction activities would be limited to construction hours allowed by the County's noise ordinance. All stationary construction equipment that may result in excessive noise or vibration levels would be operated away from sensitive noise receptors to the extent feasible. Construction activities would occur such that maximum noise levels at affected sensitive noise receptors (i.e., rural residential uses) would not exceed the County's adopted noise threshold levels.

Applicable local, state, and federal requirements and best management practices (BMPs) would be implemented during the construction phase. Consistent with the County zoning ordinance and with guidelines provided in the California Stormwater Quality Association's Construction Best Management Practice Handbook, BMPs would be implemented, including preparation of a SWPPP and a soil erosion and sedimentation control plan to reduce the potential for erosion and to minimize effects on stormwater quality. Stabilized construction entrances and exits would be installed at the entrances to each site to reduce the tracking of sediment onto adjacent public roadways.

Additionally, site preparation would occur in conformance with Eastern Kern Air Pollution Control District rules for dust control.

Waste and Hazardous Materials Management

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

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

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

Spill Prevention and Containment

During construction, above ground storage tanks will be used as temporary fueling stations. Temporary tanks will have double containment. Less than 55 gallons of hazardous materials would be stored on-site during operations. Spill prevention and containment for construction and operation of the proposed project will adhere to the Environmental Protection Agency's (EPA) guidance on Spill Prevention Control and Countermeasures (SPCC).

Wastewater/Septic System

During construction, portable toilets and washing stations will be used based on the number of employees onsite. These units will be regularly serviced. During operations, an on-site septic tank and leach field would be used at the O&M building to dispose of sanitary wastewater, designed to meet operation and maintenance guidelines required by local laws, ordinances, regulations, and standards.

Inert Solids

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

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers will be stored (in an approved storage facility/shed/structure) and disposed of as required by local and state regulations. Hazardous wastes exceeding threshold quantities (one 55-gallon drum) are not expected.

Health and Safety

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

The proposed project will have an Emergency Response Plan (ERP). The ERP will address potential emergencies including chemical releases, fires, and injuries. All employees will be provided with communication devices, cell phones, or walkie-talkies, to provide aid in the event of an emergency.

Decommissioning

Solar equipment typically has a lifespan of over 30 years. The proposed project expects to sell the renewable energy produced by the project under the terms of a long-term Power Purchase Agreement (PPA) with a utility or other power off taker. Upon completion of the PPA term, the project operator may, at its discretion, choose to sell power in the open market, enter into a subsequent PPA or decommission and remove the system and its components. Upon decommissioning, the solar facility could be converted to other uses in accordance with applicable land use regulations in effect at that time.

It is anticipated that, during project decommissioning, project structures that would not be needed for subsequent use would be removed from the project site. Above-ground equipment that may be removed would include module posts and support structures, on-site transmission poles that are not shared with third parties and the overhead collection system within the project site, inverters, substation(s), transformers, electrical wiring, equipment on the inverter pads, and related equipment and concrete pads.

Equipment would be de-energized prior to removal, salvaged (where possible), and shipped off-site to be recycled or disposed of at an appropriately licensed disposal facility. Once the solar modules are removed, the racks would be disassembled, and the structures supporting the racks would be removed. Site infrastructure would be removed, including fences, and concrete pads that may support the inverters, transformers and related equipment. The demolition debris and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried by standard construction equipment. The fencing and gates would be removed, and all materials would be recycled to the extent practical. Project roads would be restored to their pre-construction condition unless they may be used for subsequent land use. The area would be thoroughly cleaned and all debris removed. Materials would be recycled to the extent feasible, with the remainder disposed of in landfills in compliance with all applicable laws.

1.5. Project Objectives

The project objectives as identified by the project proponent are to:

- Construct and operate a solar energy facility of sufficient size and configuration to produce (up to) 1,500 MW of reliable electricity and energy storage in an economically feasible and commercially financeable manner that can be marketed to different power utility companies.
- Provide energy to the electric grid to meet increasing demand for in-state generation.
- Integrate operating facilities with other existing solar projects in the vicinity to maximize economies of scale.
- Assist the County in achieving the goal in the Energy Element of its General Plan to develop large scale solar energy development as a major energy source in the County.
- Site and design the project in an environmentally responsible manner consistent with current Kern County and City of California City guidelines.
- Promote economic development and bring regionally defined living-wage jobs to the region throughout the life of the proposed project.
- Support California's efforts to reduce greenhouse gas (GHG) emissions consistent with the timeline established in 2006 under California Assembly Bill 32, the Global Warming Solutions Act of 2006,

which requires the California Air Resources Board to reduce statewide emissions of GHGs to at least the 1990 emissions level by 2020. This timeline was updated in 2016 under SB 32, which requires that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit by 2030;

- Support California's aggressive RPS Program consistent with the timeline established by SB 100 (De León, also known as the "California Renewables Portfolio Standard Program: emissions of greenhouse gases") as approved by the California Legislature and signed by Governor Brown in September 2018, which established a 50 percent RPS goal by December 31, 2026, 60 percent by December 31, 2030, and a goal that 100 percent of electric retail sales to end-use customers be provided by renewable energy and zero-carbon resources by 2045.

1.6. Proposed Discretionary Actions/Required Approvals

The anticipated approvals needed for the project include changes in zone classification, adoption of conditional use permits, amendment to the Kern County General Plan land use designation, and amendments to the Circulation Elements of the Kern County General Plan, Mojave Specific Plan, and California City General Plan. Construction and operation of the proposed solar energy facility may require additional local, State, and federal entitlements; as well as discretionary and ministerial actions and approvals including, but not limited to, those listed below:

Kern County (Lead Agency)

- Consideration and certification of Final EIR
- Adoption of 15091 Findings of Fact and 15093 Statement of Overriding Considerations
- Adoption of proposed Mitigation Measure Monitoring Program
- Approval by the Kern County Board of Supervisors for proposed change in General Plan Designation
- Approval by the Kern County Board of Supervisors for proposed changes in zone classification
- Approval by the Kern County Board of Supervisors for proposed conditional use permits for the project site
- Approval by the Kern County Board of Supervisors for proposed General Plan Amendment and Specific Plan Amendment to the Circulation Element
- Kern County grading and building permits
- Kern County encroachment permits
- Kern County Franchise Agreements
- Kern County easements and Licenses
- Kern County public road(s) and easement(s) vacation(s) (if required)
- Kern County Fire Safety Plan

California City (Responsible Agency)

- Consideration of a previously certified Final EIR
- Adoption of 15091 Findings of Fact and 15093 Statement of Overriding Considerations
- Adoption of proposed Mitigation Measure Monitoring Program
- Approval by the Planning Commission for proposed changes in zone classification (if required)
- Approval by the Planning Commission for proposed conditional use permits for the project site
- California City grading and building permits
- California City Franchise Agreements/Business License
- California City encroachment permit
- California City public road(s) and easement(s) vacation(s) (if required)
- California City Fire Strategic Plan
- Development Agreement (if required)

Other Responsible Agency Approvals

- Federal Aviation Administration review
- U.S. Fish and Wildlife Service Habitat Conservation Plan (if required).
- Bureau of Land Management Right of Way Agreement for Limited Improvements for Access Roads and Gen-tie Line (if required).
- California Department of Fish and Wildlife (CDFW), Lake and Streambed Alteration Agreement or Incidental Take Permit or Habitat Conservation Plan (if required)
- State Water Resources Control Board, National Pollutant Discharge Elimination System Construction General Permit
- California Department of Transportation Right-of-Way Encroachment Permit, Permit for Transport of Oversized Loads, and scenic roadway eligibility requirements, if required
- Union Pacific, BSNF Rail Road Wireline Crossing Agreement
- Southern California Edison, Rights-of-Way Crossing Permits
- Los Angeles Department of Water and Power Crossing Agreement
- Eastern Kern County Air Pollution Control District, Authority to Construct/Permit to Operate/Fugitive Dust Control Plan

The preceding discretionary actions/approvals are potentially required and do not necessarily represent a comprehensive list of all possible discretionary permits/approvals required. Other additional permits or approvals from responsible agencies may be required for the proposed project.

2. Kern County Environmental Checklist Form

2.1. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "potentially significant impact" as indicated by the Kern County Environmental Checklist on the following pages.

☒ Aesthetics	☒ Agricultural and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology and Soils	☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials
☒ Hydrology and Water Quality	☒ Land Use and Planning	☐ Mineral Resources
☒ Noise	☐ Population and Housing	☒ Public Services
☐ Recreation	☒ Transportation and Traffic	☒ Tribal Cultural Resources
☒ Utilities/Service Systems	☒ Wildfire	☒ Mandatory Findings of Significance

2.2. Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

For RCQ

Signature

1-15-21

Date

Ronelle R. Candia

Printed Name

Kern County Planning

For

3. Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. Negative Declaration: "Less than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measure and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration, Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist where within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

    a. The significance criteria or threshold, if any, used to evaluate each question; and

    b. The mitigation measure identified, if any, to reduce the impact to a less-than–significant level.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

I. Aesthetics

Would the project:

a.	Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☒	☐	☐	☐
c.	In nonurbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from public accessible vantage points) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

RESPONSES:

(a) The aesthetic features of the existing visual environment in the project area are relatively uniform, with broad, dry, flat landscapes. The project site is generally surrounded by undeveloped desert land and industrial areas. According to the California Department of Transportation (Caltrans) California Scenic Highway Mapping System, State Route (SR) 58 is considered an eligible scenic highway between the communities of Mojave and Boron and SR 14 is considered an eligible scenic highway from its junction with SR 58 to its merge with SR 395 (Caltrans 2020). As shown in **Figure 1**, *Regional Vicinity Map*, portions of the project site are located along both sides of SR 58 and approximately 1.5 miles south east of the SR 58 junction with SR 14. There is a potential that the proposed project would substantially change views from SR 58, SR 14, and other public roads. This is considered a potentially significant impact and will be evaluated in the EIR.

(b) As described in (a), above, the closest eligible scenic highway is SR 58 between Mojave and Boron, as well as SR 14 from its junction with SR 58 to its merge with SR 395. The project site is located immediately adjacent to SR 58 and approximately 1.5 miles south east of the SR 58 junction with SR 14. Therefore, the proposed changes in the landscape could result in significant impacts to views from SR 58 and SR 14. Specifically, SR 58 divides the southern portion of the project site. There is a potential that the proposed project will be visible from SR 58 and SR 14. Further review is required to determine if there are scenic resources on site that could be eliminated or substantially altered. This is considered a potentially significant impact and will be evaluated in the EIR.

(c) Refer to Response (a), above, for a description of the existing landscape character. The proposed project is located in a non-urbanized area of unincorporated Kern County and the City of California City. The aesthetic features of the existing visual environment within the project boundary are relatively uniform, with natural desert vegetation. Outside of the project boundaries is a mix of undeveloped land, and industrial development. The project site is located along the portion of SR 58 that is identified as an eligible scenic highway and approximately 1.5 miles south east of the SR 58 junction with SR 14. There is a potential that the proposed project would substantially change views from SR 58, SR 14, and other public roads. Placement of PV solar panels and associated structures on the project site would substantially alter the undeveloped, open space character of the area. Travelers on adjacent roads would observe alterations to the existing landscape. Therefore, changes to the visual quality and character of the project site may be significant, and impacts will be further evaluated in the EIR.

(d) The project site is generally undeveloped desert land and does not generate a source of light or glare. The PV modules are designed to absorb sunlight to maximize electrical output; therefore, they are not expected to create significant reflective surfaces or the potential for glint/glare during the day. The proposed solar facility lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives and would be directed downward and shielded to focus any illumination on the desired areas only to minimize light trespass. All lighting at the proposed solar facility would be designed to meet Kern County Zoning Ordinance Chapter 19.81 - Outdoor Lighting - Dark Skies requirements. Additionally, the project would comply with the Dark Sky principles identified in the California City General Plan. These principles state that all exterior lighting shall be designed to point downward, exterior and security lighting shall be connected to a motion detector and/or timer, and exterior lighting shall be fully shielded. However, further analysis of the potential effects of the project's outdoor lighting fixtures and potential for day or night glare effects from project facilities will be provided in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
II.	**Agriculture and Forest Resources**				
	Would the project:				
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	☒
b.	Conflict with existing zoning for agricultural use or a Williamson Act Contract?	☒	☐	☐	☐
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d.	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
f.	Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15205(b)(3) Public Resources Code)?	☐	☐	☐	☒

RESPONSES:

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board.

(a) According to the California Department of Conservation (DOC), Division of Land Resource Protection's Important Farmland Maps, there are no agricultural lands designated Prime Farmland, Farmland of Statewide Importance, or Unique Farmland located within the project site. The project site is designated as nonagricultural and natural vegetation by the DOC (DOC 2018). There are no lands designated as important farmland located adjacent to or in the vicinity of the project site (DOC 2018). Therefore, construction and/or operation of the proposed project would not result in the conversion of designated Farmland to a nonagricultural use. No further evaluation is required in the EIR.

(b) According to the County of Kern's Interactive County Map (GIS Tool; Kern County 2020), the project site does not contain lands that are subject to Williamson Act contracts, either active on in nonrenewal. There are no lands under Williamson Act contracts adjacent to or in the vicinity of the project site. As such, there would be no impacts to Williamson Act lands.

The portion of the project site and part of the surrounding area in unincorporated Kern County includes land that is zoned as A (Exclusive Agriculture), A-1 (Limited Agriculture), and A-1 MH (Limited Agriculture – Mobile Home Combining) and land within California City is zoned as O/RA (Open Space/Residential/Agricultural). Solar facilities are considered a compatible use with the Kern County designations proposed by the project with a Conditional Use Permit. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. No active agricultural lands would be affected by the proposed project. If rezoning is required for the portion of the project within California City, impacts could be potentially significant. Impacts will be discussed further in the EIR.

(c) The project site is not situated on forest or timberland with areas that are currently under production. There is no land in the vicinity of the project site that is zoned as forest land, timberland, or lands zoned for timberland production. Therefore, there would be no impacts related to the rezoning of forest land, timberland, or timberland zoned for timberland production and no further analysis is warranted in the EIR.

(d) Refer to response (c) above. Implementation of the proposed project would not directly or indirectly result in the loss of forest land or conversion of forest land to non-forest use. No further evaluation is required in the EIR.

(e) As mentioned in response (a) above, the project site is not classified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, and there are no active farmlands located in the project vicinity. The proposed project would not have direct or indirect impacts to the existing environment that would affect agricultural uses. The project site is not designated as forest land and forest land or timberlands do not occur in the project vicinity. Therefore, the project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use. As such, there would be no conversion of forest land. No further evaluation is required in the EIR.

(f) The project site is not subject to an open space contract made pursuant to the California Land Conservation Act of 1965 or the Farmland Security Zone Contract. As stated above, the project site is not under a Williamson Act Contract, and no impacts are anticipated. The project would therefore

not result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15205(b)(3) Public Resources Code. No impact would occur and no further evaluation is required in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

III. Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a.	Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard? Specifically, would implementation of the project exceed any of the following adopted thresholds:				
	i. San Joaquin Valley Air Pollution Control District:				
	Operational and Area Sources Reactive organic gases (ROG): 10 tons per year.	☐	☐	☒	☐
	Oxides of nitrogen (NO_X): 10 tons per year.	☐	☐	☒	☐
	Particulate matter (PM_{10}): 15 tons per year.	☐	☐	☒	☐
	Stationary Sources - as Determined by District Rules Severe nonattainment: 25 tons per year.	☐	☐	☒	☐
	Extreme nonattainment: 10 tons per year.	☐	☐	☒	☐
	ii. Eastern Kern Air Pollution Control District.				
	Operational and Area Sources Reactive organic gases (ROG): 25 tons per year.	☒	☐	☐	☐
	Oxides of nitrogen (NO_X): 25 tons per year.	☒	☐	☐	☐
	Particulate matter (PM_{10}): 15 tons per year.	☒	☐	☐	☐
	Stationary Sources – as Determined by District Rules 25 tons per year.	☒	☐	☐	☐
c.	Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
d.	Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

RESPONSES:

(a) The project site is located entirely within the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD), in the Mojave Desert Air Basin (MDAB). The MDAB is designated as a nonattainment area for both the state and federal ozone standards and the state particulate matter (PM_{10}) standard. Project construction would generate emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X), both of which are known as ozone precursors, and PM_{10} that could result in significant impacts to air quality in the area.

EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (AQAP) (EKAPCD 2017). As the proposed project would generate gaseous emissions of ozone precursors (along with PM_{10}) during construction, the proposed project could potentially conflict with EKAPCD's Ozone AQAP or thresholds for emissions of other criteria pollutants. The fully built and operational project would not include any stationary sources of air pollutants and the regular employee commuting traffic would generate minor exhaust emissions. As such, no significant long-term air quality impacts are anticipated that could result in a conflict with the AQAP. Further analysis of the project's air quality impacts is warranted to determine whether the proposed project would conflict with or obstruct implementation of EKAPCD's applicable air quality plan for attainment and, if so, to determine the reasonable and feasible mitigation measures that could be imposed. These issues will be evaluated in the EIR.

(b) The proposed project is not located within the San Joaquin Valley Air Pollution Control District and, therefore, its adopted thresholds do not apply. However, as noted in Response (a) above, the project is located within the MDAB, which is designated as a nonattainment area for the state and federal ozone standards and the state PM_{10} standard. As such, the emissions of ozone precursors (ROG and NOx) and PM_{10} during construction and operation of the project could result in a cumulatively considerable net increase of these criteria pollutants in the MDAB. Thus, the project's contribution to cumulative air quality impacts in the MDAB could be potentially significant. The project's contribution of construction and operational emissions to the MDAB will be analyzed in the EIR.

(c) No sensitive receptors are located in the immediate vicinity of the project site. The nearest sensitive receptors are several isolated residences located approximately 1.2 miles south of the southwestern most project parcel (near the unincorporated community of Sanborn). The nearest sensitive receptors in the community of Mojave are residences approximately 2.5 miles from the western-most project parcel and the nearest receptors in California City are residences approximately 2.9 miles from the eastern-most project parcel. Sensitive receptors could be exposed to pollutant emissions during construction of the proposed project. The proposed project's construction-related activities would result in diesel exhaust emissions and dust (also known as PM_{10}) that could adversely affect air quality for the nearest sensitive receptors. The fully operational project would not include any stationary sources of air pollutant emissions and the small number of employees working a particular shift would generate low traffic volumes that would not result in significant levels of vehicular exhaust emissions. There would be less than significant concentrations of emissions from project operations, and a corresponding less than significant impact on the nearest sensitive receptors.

Additionally, exposure to Valley Fever and COVID-19 concerns from fugitive dust generated during construction is a potentially significant impact. There is the potential that cocci spores could be stirred up during excavation, grading, and earth-moving activities, exposing construction workers and sensitive receptors to these spores and thereby to the possibility of contracting Valley Fever and/or

exacerbate health concerns related to COVID-19. Thus, impact to sensitive receptors via pollutant concentrations is potentially significant and will be evaluated further in the EIR.

(d) The project would not have any stationary sources or equipment located on-site that would generate objectionable odors. During construction activities, only short-term, temporary odors from vehicle exhaust and construction equipment engines would occur. However, these odors would be temporary and would be dispersed rapidly. Therefore, project impacts are expected to be less than significant. Nonetheless, this issue will be further evaluated in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

IV. Biological Resources

Would the project:

a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f.	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

RESPONSES:

(a) The project site contains large areas of native vegetation on-site is typical of that found throughout the Mojave Desert. Kern County parcels and collector lines support seven and eight vegetation communities, respectively, of which three are California Native Plant Society (CNPS) sensitive natural communities. California City parcels and collector lines support seven and five vegetation communities, respectively, of which the same three are sensitive, which consist of Spinescale Scrub, Winterfat Scrubland, and Joshua Tree Woodland. The gen-tie corridor traverses through the various vegetation communities, including the sensitive communities of Spinescale Scrub and Joshua Tree Woodland. There is a potential for candidate, sensitive, or special-status plants and wildlife species

to be present onsite or in the proposed project vicinity. The findings of field surveys conducted to determine the presence of candidate, sensitive, or special-status plant and animal species will be included in the EIR. Native desert plants, such as the Joshua tree are protected under the California Desert Native Plant Act and California Endangered Species Act. Since the species is known to be present onsite, construction of the proposed project may directly or indirectly impact a protected species. Indirect impacts include dust and soil compaction leading to habitat degradation. Impacts to biological resources and sensitive plant communities are considered potentially significant and will be analyzed in the EIR.

(b) The project site contains large areas of undeveloped desert land with native vegetation. Field surveys for riparian or other sensitive natural communities, such as Joshua Tree woodlands, will be completed for the proposed project, and the results will be included in the EIR. Impacts to riparian or other sensitive natural communities are potentially significant and will be analyzed in the EIR.

(c) Potential federal or state-protected water-based resources such as streams and washes could be present on the project site and might be impacted by project construction activities. Field surveys will be conducted to determine whether the project site contains features that are protected under federal or state regulations will be conducted as part of the EIR. Impacts to protected wetlands would be considered potentially significant, if required. Further analysis will be included in the EIR.

(d) The project site and surrounding area may be used for land-based migration or dispersal by native wildlife species, such as migratory birds, (e.g., burrowing owl) and desert tortoise. There are no water bodies or water courses that could provide migratory habitat for fish or wildlife species. Project construction and operation could also remove foraging habitat. Lighting from the project site could potentially affect movement of wildlife around the project site. Impacts to migration of protected wildlife species are considered potentially significant and will be further evaluated in the EIR.

(e) Joshua trees (*Yucca brevifolia*) are protected under the California Desert Native Plants Act (CDNPA) and California Endangered Species Act (CESA), and have been documented within the project site both through review of available databases and via on-site surveys conducted for the proposed project by the project's consulting biologist. Kern County (County) administers the permit program for removal of any species covered by this state act. Specifically, the CDNPA prohibits the harvesting of native desert plants, including Joshua trees, or any parts thereof, except when a permit from the Kern County Agricultural Commissioner is obtained and a fee for removal and/or relocation is submitted. This is considered a potentially significant impact and will be evaluated in the EIR. Furthermore, the Open Space and Conservation Element of the California City General Plan includes the following policy:

- Encourage the preservation of Joshua trees, known wildflower displays, or other biologically sensitive flora determined during biological surveys.

Implementation of the proposed project has the potential to impact Joshua trees; therefore, this impact is potentially significant and will be further evaluated in the EIR.

(f) Further analysis is required to determine whether the project is be consistent with the Land Use, Open Space, and Conservation Elements of the Kern County General Plan, Mojave Specific Plan, and City of California City General Plan pertaining to preservation of sensitive plants, wildlife and habitat. The Project Area is located 10 miles southwest of the Desert Tortoise Research Natural Area (DTRNA). The DTRNA was established in 1974 and includes 39.5 square miles of desert habitat of

which a majority of the private land inholdings have been purchased by the Bureau of Land Management (BLM), by the California Department of Fish and Wildlife (CDFW), and by the Desert Tortoise Preserve Committee (DTPC), a 501(3)c non-profit organization (DTPC, 2019). The southern and eastern boundary of the DTRNA is shared with California City. In 1980 the BLM designated the DTRNA as an Area of Critical Environmental Concern (ACEC) and perimeter fencing was installed as well as a visitor's center. The project site is also located within the Desert Renewable Energy Conservation Plan (DRECP) Development Focus area, which means that the area is expected to support fewer sensitive status species than areas identified with conservation potential and is therefore more likely to be appropriate for renewable energy development. However, the DRECP only applies to public lands managed by the Bureau of Land Management and is not an adopted Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). The proposed project would be located on private land and therefore is not subject to the DRECP.

There are no other adopted conservation plans for protection of biological resources governing the project area. No impact would occur as the proposed project would not conflict with the provisions of an adopted habitat conservation plan. No further analysis in the EIR is warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
V. Cultural Resources					
Would the project:					
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
c.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

RESPONSES:

(a) The project site consists of undeveloped desert land. It is possible that surface or subsurface deposits of historic resources may occur somewhere on the project site, as there are established historic era settlements in this area, i.e., California City and Mojave. Development of the proposed project would require ground disturbance for grading, installation of the solar arrays, gen-tie line, and placement of underground electrical and communications lines. The proposed project could potentially impact historical resources. Such earth-disturbing activities could potentially impact historical resources. A cultural resources survey will be conducted for the proposed project as part of the EIR. Further evaluation in the EIR is warranted to identify potential impacts to historical resources and to formulate avoidance or mitigation measures, if applicable.

(b) As discussed under response (a) above, development of the proposed project would require ground disturbance for grading, installation of the solar arrays, gen-tie line, and placement of underground electrical and communications lines. The proposed project could potentially impact unknown archaeological resources during earth disturbing construction activities. A cultural resources survey will be conducted for the proposed project as part of the EIR. Further evaluation in the EIR is warranted to identify potential impacts to archaeological resources and to formulate avoidance or mitigation measures, if applicable.

(c) There is no evidence that the project site is located within an area likely to contain human remains, and discovery of human remains during earthmoving activities is not anticipated. Therefore, impacts to human remains are anticipated to be less than significant. However, this issue will be further evaluated in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
VI. Energy					
Would the project:					
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

RESPONSES:

(a) Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the sites where energy supply cannot be met via a hookup to the existing electricity grid.

Energy use associated with operation of the proposed project would be typical of a solar facility. Operation and maintenance facilities associated with the project would require electricity for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC), electronic equipment, machinery, appliances, security systems, etc. Electrical energy for operations would be provided by the solar energy produced and/or stored by the proposed project, or back fed by power obtained from SCE. Maintenance activities during operations, such as landscape maintenance, could involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with employee vehicle trips generated by the proposed project. Although there is no indication at this time that the project's energy consumption would involve wasteful or inefficient practices, this issue will be further evaluated in the EIR.

(b) Operation of the proposed project would lead to an overall increase in the County's renewable energy portfolio and would align with the stated General Plan policy to encourage the development of renewable energy within Kern County. This project would also align with and implement statewide objectives to expand the amount of electricity generated from renewable sources, such as SB 350, which requires that by December 31, 2030, 50 percent of all electricity sold in the state shall be generated from renewable energy sources. Impacts are considered to be beneficial. However, further discussion is warranted in the EIR, to provide a broader assessment of the project's beneficial effects in terms of implementing important State, County, and City objectives for renewable energy.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
VII. Geology and Soils				
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☒	☐	☐	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

RESPONSES:

(a)(i) According to the California Geologic Study's Alquist-Priolo Special Studies Fault Map, the project site is not located within a currently mapped Alquist-Priolo Special Studies Fault Zone (CGS 2020). The nearest fault is the Garlock (West) Fault that is located approximately 7.5 miles west of the project and the San Andreas Fault is over 30 miles southwest of the site (Stantec 2019). As such, a rupture of an on-site fault is not anticipated. Construction of the project would have no effect on potential movement along the Garlock Fault or any other regional fault systems. In addition, although the project does not include any habitable structures, construction of the project would be subject to all applicable ordinances of the Kern County Building Code (Chapter 17.08) and California City Building Code. Kern County and California City have adopted the California Building Standards Code (CBC), which imposes substantially the same seismic safety requirements as the International Building Code (IBC). Adherence to all applicable regulations would mitigate any potential impacts at the project site due to rupture along the Garlock Fault or other regional faults. Nonetheless, a geotechnical investigation will be conducted to confirm the absence of on-site fault indications, and further discussion will be provided in the EIR to explain how the project will be designed to align with applicable Kern County and California City regulations.

(a)(ii) Due to the location of active faults in the general region, strong seismic ground shaking could occur at the project site, resulting in damage to above and below ground structures and other site improvements, if not properly designed to withstand strong ground shaking. As discussed in (a)(i) above, adherence to applicable regulations would minimize the potential impacts associated with the proposed project. Although potential impacts are anticipated to be less than significant, further discussion in the EIR will be provided.

(a)(iii) Seismically induced liquefaction occurs when loose, water-saturated sediments of relatively low density are subjected to cyclic shaking that causes soils to lose strength or stiffness because of increased pore water pressure. Liquefaction generally occurs when the depth to groundwater is less than 50 feet. Groundwater data from an off-site well approximately 1.3 miles east of the site indicates that the depth to groundwater is approximately 133 feet below the ground surface (Stantec 2019). Thus, the potential for liquefaction at the surface is low. Furthermore, the project is not located within a current, mapped California Liquefaction Hazard Zone. Structures constructed as part of the project would be required by state law to be constructed in accordance with all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. Nonetheless, the potential for substantial adverse effects to the project due to seismic-related ground failure, including liquefaction, will be examined in the EIR. A geotechnical investigation will be conducted to determine the subsurface conditions and relevant soil properties at the project site to support that analysis.

(a)(iv) The project site is located in a relatively flat-lying plain, where landslides are not likely. Impacts related to landslides are not anticipated to occur or pose a hazard to the project or surrounding area. Further analysis of this issue is not warranted in the EIR.

(b) Grading and/or excavation would be required for solar panel array and some building foundations at the site, and some trenching would be required for the installation of underground cables and circuits. Project construction would have the potential to result in erosion, sedimentation, and discharge of construction debris from the site. Clearing of vegetation and grading activities, for example, could lead to exposed or stockpiled soils susceptible to peak storm water runoff flows and wind forces. The

compaction of soils by heavy equipment may minimally reduce the infiltration capacity of soils (exposed during construction) and increase runoff and erosion potential. The project proponent would be required to obtain coverage under the National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP), because the proposed project would disturb greater than one acre of land. In order to conform to the requirements of the CGP, a storm water pollution prevention plan (SWPPP) would need to be prepared that outlines specific best management practices (BMPs) to prevent construction pollutants, including eroded soils (such as topsoil), from moving off-site. Post construction BMPs would also be implemented to address any long-term effects involving soil erosion or loss of topsoil associated with operations and maintenance of the proposed project. Impacts are anticipated to be less than significant with implementation of the above requirements. However, this issue will be further evaluated in the EIR.

(c) The proposed project lies in a relatively flat-lying plain where landslides, lateral spreading, subsidence, liquefaction, and collapse are not expected to occur. Impacts related to geologic instability are not anticipated to occur or pose a hazard to the proposed project or surrounding area. However, this issue will be further analyzed in the EIR. Based on review of available groundwater data in the site vicinity, groundwater in the site vicinity is expected to be more than 50 feet below ground surface. Thus, the potential for liquefaction at the surface is low. Seismic settlement, lateral spreading and collapse are not expected to result in significant impacts. Furthermore, the structures would be subject to all applicable ordinances of the Kern County Building Code California City Building Code, as well as all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. Impacts are anticipated to be less than significant with implementation of the above requirements. However, these issues will be further evaluated in the EIR.

(d) Expansive soils are fine-grained soils (generally high plasticity clays) that can undergo a significant increase in volume with an increase in water content and a significant decrease in volume with a decrease in water content. Changes in the water content of a highly expansive soil can result in severe distress to structures constructed on or against the soil. A geotechnical investigation will be conducted to determine the subsurface conditions and relevant soil properties at the project site. The proposed project would be designed to comply with applicable building codes and structural improvement requirements to withstand the effects of expansive soils, if warranted. Impacts are anticipated to be less than significant; however, this issue will be further evaluated in the EIR.

(e) The project will include an O&M facility to serve O&M employees. This facility will include development of a septic tank and associated disposal field, the impacts of which are potentially significant. This issue will be further evaluated in the EIR.

(f) Kern County is rich in paleontological resources. If sensitive paleontological formations are located underground on the project site, ground disturbance could result in impacts to paleontological resources. A paleontological study will be conducted to determine the underlying formations and potential for fossil discoveries throughout the project site. This analysis will be provided in the EIR to identify potential impacts and to formulate avoidance or mitigation measures, if applicable.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
VIII. Greenhouse Gas Emissions					
Would the project:					
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b.	Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

RESPONSES:

(a) Greenhouse gas (GHG) emissions emitted by human activity are implicated in global climate change or global warming. The principal GHGs are CO_2, methane (CH_4), NO_X, ozone, water vapor, and fluorinated gases. The project's temporary construction activities, which would involve operation of heavy off-road equipment, on-road trucks (for deliveries and hauling), and construction worker commute trips, would generate GHGs. As a solar power generation facility, however, the proposed project would displace traditional sources of electricity production that involves combustion energy sources (e.g., burning coal, fuel oil, or natural gas). As such, the provision of solar energy by the proposed project would produce GHG-free electricity anticipated to offset GHGs otherwise generated by traditional fuel combustion sources. The project's GHG emissions generated during construction of the project and the potential GHG offsets resulting from operation of the project will be quantified in the EIR. Potential for significant environmental impacts will be examined through the project's consistency with GHG reduction plans, programs or regulations, as outlined in the next response.

(b) California has passed several bills and the governor has signed at least three executive orders regarding GHGs. Assembly Bill (AB) 32 (t Global Warming Solutions Act), was passed by the California legislature on August 31, 2006, and requires the state's global warming emissions to be reduced to 1990 levels by 2020. The reduction will be accomplished through an enforceable statewide cap on GHG emissions that was phased in starting in 2012.

In 2002, California established its Renewable Portfolio Standards (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent renewable energy by 2017. In 2006, under SB 107, the RPS Program codified the 20 percent goal. The RPS Program requires electric utilities and providers to increase procurement from eligible renewable energy resources by at least one percent of their retail sales annually until they reach 20 percent by 2017. On November 17, 2008, the governor signed Executive Order S-14-08, requiring California utilities to reach the 33 percent renewable goal by 2020. In 2015, SB 350 was enacted to increase the RPS to 50 percent and reduce greenhouse gas emissions by 40 percent by the year 2030.

The proposed project is intended to: (1) reduce importation of power from fossil fuel power plants and (2) contribute to a reduction in GHGs. Heavy equipment operation, truck deliveries, and construction worker commute trips associated with construction of the proposed project would

temporarily generate GHGs; however, operation of the project would offset GHGs generated by traditional sources of electricity. As such, project impacts are anticipated to be less than significant. Nonetheless, the project's potential GHG impacts and the potential GHG offsets resulting from operation of the project will be examined in the EIR, with respect to the objectives of statewide programs to reduce GHGs associated with energy generation.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
IX. Hazards and Hazardous Materials				
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. For a project located within the adopted Kern County Airport Land Use Compatibility Plan, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☒	☐	☐	☐
f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐
h. Would implementation of the project generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste? Specifically, would the project exceed the following qualitative threshold: The presence of domestic flies, mosquitoes, cockroaches, rodents, and/or any other vectors associated with the project is significant when the applicable enforcement agency determines that any of the vectors:				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
i. Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; and	☐	☐	☒	☐
ii. Are associated with design, layout, and management of project operations; and	☐	☐	☒	☐
iii. Disseminate widely from the property; and	☐	☐	☒	☐
iv. Cause detrimental effects on the public health or well-being of the majority of the surrounding population.	☐	☐	☒	☐

RESPONSES:

(a) During construction, the proposed project would include the transport of general construction materials (i.e., concrete, wood, metal, fuel, etc.) as well as materials necessary to construct the proposed PV arrays. Wastes to be generated during construction of the proposed project would also be non-hazardous, and would consist of cardboard, wood pallets, copper wire, scrap steel, common trash, and wood wire spools. Although field equipment used during construction activities could contain various hazardous materials (i.e., hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, etc.), these materials are not considered to be acutely hazardous and would be used in accordance with the manufacturers' specifications and all applicable regulations. In addition, hazardous fuels and lubricants used on field equipment would be subject to a Construction Waste Management Plan and, if required, a Spill Prevention, Containment and Countermeasure Plan. Impacts resulting from the transport, use or disposal of hazardous materials during construction of the proposed project would be less than significant; however, the EIR will include an evaluation of potential hazardous materials impacts.

The fully operating project would not involve the routine transport, use, or disposal of hazardous materials as defined by the Hazardous Materials Transportation Uniform Safety Act. Impacts resulting from the transport, use or disposal of hazardous materials during operation of the proposed project would be less than significant; however, the EIR will include an evaluation of potential hazardous materials impacts.

Project-related infrastructure would not generate hazardous emissions or be constructed of acutely hazardous materials or substances that could adversely impact the public, the environment, or on-site workers. The proposed project would be subject to all local, state, and federal laws pertaining to the use of hazardous materials on-site and would be subject to review by the Kern County Environmental Health Services Division and California City's Community Development Department. Through the review process, the project would be required to submit a complete list of all hazardous materials used on-site, how the materials would be transported, and in what form they would be used to maintain safety and prevent possible environmental contamination or worker exposure. During construction of the proposed project, Safety Data Sheets (SDS) for all applicable materials present at the site would be made readily available to on-site personnel.

The PV panels may include solid materials that are considered to be hazardous, such as cadmium telluride. The project would use the manufacturer's collection and recycling program to ensure the proper collection and recycling of PV panels, as needed. Solar panels are in a solid and non-leachable state; broken PV panels would not be a source of pollution to storm water. Dust palliative and herbicides, if used, may be transported to and stored at the project site. These materials would be stored in appropriate containers that would prevent their accidental release at the site.

SR 14 and SR 58 are designated routes for the transport of hazardous materials. These roadways are equipped to handle the transport of hazardous materials and both SR 14 and SR 58 would provide regional access to the project. Impacts resulting from the transport, use or disposal of hazardous materials during construction and operation of the proposed project are not expected to be significant; however, this will be evaluated further in the EIR.

(b) Construction and operation of the proposed project may include the accidental release of storage materials, such as cleaning fluids and petroleum products including lubricants, fuels, and solvents. Electrical transformer equipment that would be installed as part of the proposed project may include various hazardous substances, including polychlorinated biphenyls. The toxicity and potential release of these materials would depend on the quantity, type of storage container, safety protocols used on the site, location and/or proximity to schools and residences, frequency and duration of spills or storage leaks, and the reactivity of hazardous substances with other materials. In addition, the proposed project will include an Energy Storage Systems (ESS). The ESS would be composed of battery storage modules placed in multiple prefabricated enclosures or containers near the on-site substation(s). Potentials hazards associated with ESS include increased potential for electrical shock and chemical release associated with the batteries used.

The proposed project would be subject to all local, state, and federal laws pertaining to the use of hazardous materials onsite and would be subject to review by the Kern County Environmental Health Services Division and California City's Community Development Department. Through the review process, the project proponent would be required to submit a complete list of all materials used on-site, how the materials would be transported, and in what form they would be used. This would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. This would include submission of SDS for all applicable materials present at the site, and the SDS would be made readily available to on-site personnel. It is anticipated that adherence to regulations and standard protocols during the storage, transportation, and usage of any hazardous materials would avoid significant impacts. Nonetheless, potential impacts will be evaluated in the EIR.

(c) There are no existing or proposed schools located within one-quarter mile of the project site. The nearest schools in unincorporated Kern County are Mojave Elementary School and Mojave Jr/Sr High School, located east of the project site at 15800 and 15732 O Street, respectively, in the community of Mojave. Both schools are approximately 2.5 miles from the project site at the closest point. The closet school in California City is California City High School, at 8567 Raven Way in California City, is located approximately 6 miles northeast of the project site at the closest point. Furthermore, the fully functional solar project would not generate air emissions from any stationary sources, and occasional emissions from combustion engine powered maintenance machinery and automobile traffic from on-site workers would not result in hazardous emissions. Consequently, the project would not generate hazardous emissions or involve handling hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. No impacts are anticipated; therefore, further analysis of this issue is not warranted in the EIR.

(d) The project site is not identified in any of the California hazardous materials databases. Searches were completed for the subject parcels in the following hazardous materials lists: California Environmental Protection Agency's (CalEPA) Cortese List including the California Department of Toxic Substances and Control's EnviroStor (Envirostor 2020) database of hazardous substances release sites; and Geotracker, (Geotracker 2020) the California database of leaking underground storage tanks. Finally, as provided by CalEPA, there are no active Cease and Desist Orders or Clean Up and Abatement Orders for hazardous materials/facilities in the immediate project vicinity of the project site (CalEPA 2020). Therefore, no impacts are anticipated, and further analysis is not warranted in the EIR.

(e) The western portion of the solar facility site and the proposed gen-tie line(s) are located within an area covered by the Kern County Airport Land Use Compatibility Plan (ALUCP) for the Mojave Air and Space Port. The Mojave Air and Space Port is located approximately two miles west of the project site. Specifically, the project site is located in "Compatibility Zone B2 – Extended Approach/Departure Zone" (Assessor Parcel No. (APN) 235-024-41, 235-351-01, 428-010-02, -10, -11, 428-041-02, -03, -04, -05, -38, 428-042-02, -03, -04, -35, 428-052-15, -17, 428-053-16, and -18) and "Compatibility Zone C – Common Traffic Pattern" (APN No. 235-024-41, 235-351-01, -02, -03, -04, 235-081-09, -10, 235-082-15, -16, -17, -18, -19, -24, -25, 235-065-04, -05, -07, -17, -18, 235-353-11, -21, -22).

According to Table 2A – Compatibility Criteria of the Kern County ALUCP, Compatibility Zone B2 is subject to significant risk and noise, and Compatibility Zone C is subject to limited risk and frequent noise intrusion. However, the proposed project does not involve the development of noise-sensitive uses (i.e., residences) that would be substantially affected by excessive airport noise. The project would not introduce new permanent residents to the project area. The nature of operation of the solar facilities is not known to result in any operational issues or safety hazards to aircraft that would be a safety hazard to people or expose people to excessive noise. The project would be required to comply with the County's ALUCP and applicable FAA regulations regarding project approval to ensure that there is no conflict with airport operations and no safety hazards are presented. Further analysis of this issue will be discussed in the EIR.

(f) The project site is located in an area with several alternative access roads allowing access in the event of an emergency. As required by routine and standard construction specifications administered by Kern County and California City, emergency access would be maintained throughout construction, and appropriate detours would be provided in the event of potential road closures. Therefore, no significant impacts related to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan would occur.

The small size of the operational work force would not generate significant traffic volumes during an emergency evacuation scenario that could complicate area-wide emergency evacuation efforts. Driveways built to connect to existing local roads for direct site access would not affect designated emergency evacuation routes, as these are small local streets and the driveways would not conflict with potential evacuation routes for surrounding land uses. Proposed amendments to the County General Plan and Mojave Specific Plan Circulation Elements to remove section and mid-section line road reservations would not affect any existing roadways or any existing or planned evacuation routes. California City will determine what section and mid-section line road reservations to be preserved and what ones will be removed during the CUP process (Sec. 9-2-2501 of the California

City Municipal Code). Although impacts are anticipated to be less than significant, further analysis of this issue will be discussed in the EIR.

(g) According to the California Department of Forestry and Fire Protection (CalFire), Kern County Fire Hazards Severity Zone Maps for the Local Responsible Areas, the project site is classified as Local Responsibility Area (LRA) Moderate (Calfire 2020). Moderate zones are typically wildland supporting areas of low fire frequency and relatively modest fire behavior. The proposed project would comply with all applicable wildland fire management plans and policies established by CalFire, Kern County Fire Department, and California City Fire Department. Accordingly, the project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Nonetheless, potential impacts involving wildfires will be discussed in the EIR--please refer to the responses to the Checklist topic concerning Wildfire, later in this Initial Study.

(h) Project-related infrastructure is not expected to result in features or conditions that could potentially provide habitat for vectors such as mosquitoes, flies, cockroaches, or rodents. During construction and operation, workers would generate small quantities of solid waste (i.e., trash, food containers, etc.) that would be transported to and disposed of at approved disposal facilities. Project-related infrastructure is not expected to result in features or conditions (such as standing water, agricultural products, agricultural waste, or human waste) that would provide habitat for vectors such as mosquitoes, flies, cockroaches or rodents. Construction workers would generate only small quantities of solid waste (i.e. trash) that would be appropriately stored for permanent disposal offsite. Therefore, potential impacts would be negligible, and no further analysis is warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
X.	**Hydrology and Water Quality**				
	Would the project:				
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☒	☐	☐	☐
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☒	☐	☐	☐
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	i. result in substantial erosion or siltation on- or off-site;	☒	☐	☐	☐
	ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☒	☐	☐	☐
	iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☒	☐	☐	☐
	iv. impede or redirect flood flows?	☒	☐	☐	☐
d.	In flood hazard, tsunami, seiche zones, risk release of pollutants due to project inundation?	☒	☐	☐	☐
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

RESPONSES:

(a) The project site is within the Lahontan Regional Water Quality Control Board (RWQCB) jurisdiction. Project construction activities have the potential to result in erosion, sedimentation, and discharge of construction debris, and could result in the discharge of wastewater and urban runoff at the project site. If not properly managed, this wastewater could violate the water quality standards or

waste discharge requirements of the RWQCB, or otherwise degrade surface or ground water quality. It is anticipated that appropriate BMPs and compliance with applicable regulations, including the NPDES Construction General Permit, would reduce potential water quality impacts to a less than significant level. Soil stabilization measures would be used to prevent soil erosion caused by storm water runoff. The proposed project contractor(s) would apply for coverage under the state's General Construction Permit for stormwater discharges from construction activities and would prepare a SWPPP that would include implementation of BMP erosion-control measures to control stormwater runoff. Site-specific BMPs would be designed by the contractor in compliance with regulations and permit conditions. Potential water quality impacts resulting from the developed site conditions will require further analysis. No waste discharge permits are anticipated for this project. A comprehensive hydrology and water quality impact analysis will be included in the EIR. This issue will be further analyzed in the EIR.

(b) During construction, potable water would be brought to the site for drinking and domestic needs (lavatories, sinks, general maintenance, etc.). Non-potable water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 900 acre-feet over the 18-24 month construction phase. Water demand for panel washing and O&M domestic use is not expected to exceed 100 acre-feet per year. Water is anticipated to be obtained from on-site wells. If off-site water is used, it would likely be obtained from a nearby well of from a commercial source(s). A water supply assessment will be completed for the project to analyze potential impacts to groundwater. These impacts will be addressed further in the EIR.

(c)(i) Construction of the concrete pads for the switchyard, inverters, transformers, O&M building(s), etc., as well as foundational supports for panel installation, soil compaction, and any grading may alter the existing drainage pattern of the project site. At this preliminary stage of site design, the extent of on-site stormwater management facilities, such as detention ponds, has not yet been determined. This will be determined through further a hydrologic study, which will be prepared for the project in accordance with Kern County and California City requirements. Potentially significant impacts to existing drainage patterns and flooding conditions on the project site will be analyzed in the EIR.

(c)(ii) Construction and operational activities associated with the proposed project could result in an increase in the rate or amount of surface runoff and may potentially affect flooding conditions. A hydrologic study will be prepared for the project in accordance with Kern County and California City requirements, and potentially significant impacts will be analyzed in the EIR.

(c)(iii) During construction and following installation of the solar arrays, the vast majority of the site would remain as pervious surfaces. The design of the solar arrays is such that storm water infiltration would occur similar to existing conditions. There would be new impervious surfaces and compacted areas that could potentially increase the rate and amount of site runoff, and alter the composition of site runoff, compared to existing conditions; however, the project would not discharge any runoff into a municipal storm drainage facility or system. Further analysis of the project's proposed storm drainage improvements and change in surface hydrology is required in the EIR, to determine whether changes in site runoff in the developed condition could result in a substantial source of polluted runoff that is not properly managed. Potential impacts will be further discussed in the EIR.

(c)(iv) Based on a review of the FEMA's Flood Insurance Rate Maps, portions of the solar facility site and gen-tie line are mapped in 100-year (Zone A) floodplains. Zone A is defined as areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate

methodologies. Portions of the project site are designated by the Kern County General Plan as Map Code 2.5 (Flood Hazard Overlay). Map Code 2.5 identifies areas located within Special Flood Hazard Areas (Zone A). The proposed project would be reviewed by the Kern County Public Works Department and California City Building and Safety Department for adherence to all floodplain management standards. Further analysis is required to identify appropriate mitigation/design measures to reduce potentially significant impacts from potential flooding and additional review will be provided in the EIR.

(d) The project is not located near an ocean or enclosed body of water, and therefore would not be subject to inundation by seiche or tsunami. Mudflows are a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity, and are often triggered by heavy rainfall and soil that is not able to sufficiently drain or absorb water and the super-saturation results in soil and rock materials to become unstable and slide away. Due to the relatively flat topography of the project and surrounding area, the potential to be inundated by mudflow is considered remote.

Portions of the project site are designated by the Kern County General Plan as Map Code 2.5 (Flood Hazard Overlay). The project would be reviewed by the Kern County Public Works Department and California City Building and Safety Department for adherence to all applicable floodplain management standards. Further analysis is required in the EIR.

(e) Water for the proposed project is anticipated to be obtained from on-site wells. If off-site water is trucked in, it would likely be obtained from a nearby well or from a commercial source. A small water treatment system with a footprint of up to 30 feet by 30 feet may be installed to provide deionized water for panel washing.

The project site largely overlies the Fremont Valley Groundwater Basin in the southeastern portion of unincorporated Kern County, straddling SR 58 east of Mojave and just west and south of the Hyundai-Kia Proving Ground. Due to this location, the project may use groundwater from the Fremont Valley Groundwater Basin. Additionally, the project may use imported surface water purchased from a SWP wholesale contractor via a local retailer such as the California City Water Department (CCWD). California City also overlies the Fremont Valley Groundwater Basin and receives its water supply via the CCWD, which provides imported State Water Project water purchased from the Antelope Valley-East Kern Water Agency (AVEK) and locally produced groundwater resources from the Fremont Valley Groundwater Basin.

Supplies within the Fremont Valley Groundwater Basin are managed through implementation of an Integrated Regional Water Management Plan and Groundwater Management Plan, as well as ultimately a Groundwater Sustainability Plan, while supplies provided via AVEK are managed per an Urban Water Management Plan.

A water supply assessment will be completed for the project to analyze potential impacts related to conflicts with applicable groundwater management plans. Further analysis will be done regarding compliance with the RWQCB Basin Plan. This impact will be further analyzed in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XI. Land Use and Planning					
Would the project:					
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐

RESPONSES:

(a) The project site is located on undeveloped desert land. As shown on **Figure 3,** *Project Boundaries*, the proposed project is located on undeveloped land in Kern County and California City. The project site is distanced from any surrounding communities or development. The nearest sensitive receptors are residences located approximately 1.2 miles southwest of the project site, near the community of Sanborn. The nearest receptors in California City are residences located approximately 2.9 miles from the eastern-most project parcel. No new roadways or other linear elements are proposed that would have the potential to restrict existing access or movement within or otherwise physically divide the Fremont community or within California City. Further assessment of this issue, therefore, is not required.

(b) The project site consists of 90 parcels located in unincorporated Kern County and California City. The project includes 82 parcels within the unincorporated Kern County and 8 parcels within California City.

As shown on **Figure 5**, *Existing General Plan and Mojave Specific Plan Designations -- Kern County*, the project parcels located in unincorporated Kern County area designated by the Kern County General Plan as 8.5 (Resource Management, minimum 20 acre parcel size), and 8.5/2.5 (Resource Management, minimum 20 acre parcel size/ Flood Hazard) and by the Mojave Specific Plan as Map Code 7.1 (Light Industrial) and 7.3 (Heavy Industrial). As shown on **Figure 8**, *Existing Zoning Classifications-- Kern County*, the project parcels located in unincorporated Kern County have a zone classification of A (Exclusive Agriculture), A-1 (Limited Agriculture), A-1 MH (Limited Agriculture, Mobile Home Combining), M-2 PD (Medium Industrial, Precise Development Combining), and M-3 PD (Heavy Industrial, Precise Development Combining). One parcel (parcel with APN 235-024-14) within the project site has the existing Kern County General Plan Map Code 1.1, State or Federal Land; however, the property is privately-owned. The property map code will be changed to 8.5, Resource Management, as part of the proposed project action. Refer to **Figure 6,** *Proposed General Plan Designation – Kern County*.

As shown on **Figure 7**, *Existing General Plan Designations -- California City*, the project parcels located in California City are designated by the General Plan as O/RA (Controlled Development & Open Space. As shown on **Figure 9**, *Existing Zoning Classifications – California* City, the project

parcels located in California City have a zone classification of O/RA (Open Space/Residential Agricultural).

The project proponent has requested a change in County zone classifications from A-1, A-1 MH and M-2 PD to A, and M-1 PD; refer to **Figure 10**, *Proposed Zoning Classifications – Kern County.* According to Kern County Zoning Ordinance Sections 19.12.030G, 19.36.030G and 19.40.030G, solar energy electrical facilities are permitted within the A, M-1 PD, and M-3PD Zone Districts respectively, with the approval of a CUP. The project proponent is requesting a CUP to allow for the construction and operation of a solar facility and battery energy storage system. With approval of the zone change classification and CUP, the proposed solar project would be an allowable use within the A Zone District.

The project proponent is requesting a General Plan Amendment to amend the Circulation Elements of the Kern County General Plan and Mojave Specific Plan to remove various section and midsection road reservations and change the Kern County General Plan Land Use Designation from Map Code 1.1 (State or Federal Land) to 8.5 (Resource Management) for approximately 82.19 acres of the project area; refer to **Figure 6**, *Proposed General Plan Designation – Kern County.* The project proponent is also requesting a CUP from California City to allow for the construction and operation of a solar facility in the O/RA zone.

With approval of the requested CUPs, zone change classifications, General Plan Amendment, and Specific Plan Amendment, the proposed project would not have the potential to conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. At the end of the project's operational term, the project proponent would determine whether the project site should be decommissioned and deconstructed or if it would seek an extension of its CUPs. If any portion of the project site is decommissioned, it would be converted to other uses in accordance with the applicable land use regulations in effect at that time. Further assessment will be provided in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XII. Mineral Resources					
Would the project:					
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

RESPONSES:

(a) The project site is not designated as a mineral recovery area by the Kern County General Plan, nor is it identified as a mineral resource zone by CalGEM (DOC 1999). Furthermore, according to the Open Space and Conservation Element of the California City General Plan, there are no mineral resources within the California City General Planning Area. Construction and operation of the proposed project would not interfere with mineral extraction and processing and would not have significant impacts on future mineral development. Therefore, there would be no impact and no further analysis is warranted in the EIR.

(b) As mentioned previously, the project site is not located within a designated mineral and petroleum resource site within the Kern County General Plan. The project site is not located within the NR (Natural Resources) or PE (Petroleum Extraction) zoned districts. Furthermore, there are no mineral resources within the California City General Planning Area. Therefore, the installation of the solar facilities would not preclude future mineral resource development nor would it result in the loss of a locally important mineral resource recover site. There would be no impact and no further analysis is warranted in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XIII. Noise					
Would the project result in:					
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☒	☐	☐	☐
b.	Generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d.	For a project located within the vicinity of a private airstrip or Kern County Airport Land Use Compatibility Plan, would the project expose people residing or working in the project area to excessive noise levels?	☒	☐	☐	☐

RESPONSES:

(a) Land uses determined to be "sensitive" to noise as defined by the Kern County General Plan include residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches. The Kern County General Plan Noise Element sets a 65 dBA (A-weighted decibels) DayNight noise level (Ldn) limit on exterior noise levels for stationary sources (i.e., non-transportation) at sensitive receptors. California City limit on exterior noise levels is 50 dBA Leq, where Leq refers to single steady A-weighted noise level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Leq is typically summed over a one-hour period, from 7:00 a.m. to 10:00 p.m. and 45 dBA Leq from 10:00 p.m. to 7:00 a.m. for residential uses. Additionally, the Noise Element of the Mojave Specific Plan utilizes the adopted Kern County noise level standard of 65 dBA for exterior noise levels and 45 dBA for interior noise levels.

The nearest sensitive receptors are several isolated residences located approximately 1.2 miles south of the southwestern most project parcel (near the unincorporated community of Sanborn). The nearest sensitive receptors in Mojave are residences approximately 2.5 miles from the western-most project parcel and the nearest receptors in California City are residences approximately 2.9 miles from the eastern-most project parcel.

Noise associated with construction of the proposed project has the potential to affect nearby sensitive receptors. No substantial noise-generating equipment would be located at the project site during operations. Noise generated by the proposed project would occur primarily during the construction

phase; whereas as the long-term operation of the solar facility would be relatively quiet. No substantial noise-generating equipment would be located at the project site during operations and there would be minor traffic generating by on-site employees, who would work mainly indoors, within the O & M building. There would be periodic noise from routine outdoor maintenance activities and minor traffic from workers arriving/departing the site. The project proponent would be required to adhere to the provisions outlined in the Noise Control Ordinance in the Kern County Ordinance Code Section 8.36.020, General Plan Noise Element, and California City's Municipal Code. Potential noise impacts during project construction or operations will be further analyzed in the EIR.

(b) Ground borne vibration and ground borne noise could originate from the operation of heavy off-road equipment during the construction phase of the project. Erection of the solar arrays would include support structures that may potentially need to be driven into the soil using pneumatic techniques. The project would be expected to comply with all applicable requirements for long-term operation, as well as with measures to reduce excessive groundborne vibration and noise to ensure that the project would not expose persons or structures to excessive groundborne vibration. Further analysis of groundborne vibration and groundborne noise will be included in the EIR. The EIR will analyze whether the proposed project would generate ground borne vibration above established thresholds.

Operation of the proposed project is anticipated to emit minimal groundborne vibration and/or noise because operation activities primarily consist of low intensity activities such as routine maintenance, panel washing, and security patrols. The project would not include any activities or machinery that would induce ground vibrations or noise. Nonetheless, further analysis of groundborne vibration and groundborne noise during project operations will be included in the EIR. The analysis will address both Kern County and City of California City thresholds.

(c) Heavy equipment use during construction would cause a temporary or periodic increase in ambient noise levels. Temporary or periodic increases in ambient noise levels caused by construction activities could be reduced with the incorporation of mitigation measures. Project-related construction noise levels will be quantified and evaluated in the EIR.

Operation of the project would generate very little noise. The solar facility would use limited staff during operation. Traffic on the access road for the solar facility would be routine access and maintenance activities and would primarily consist of personal vehicles. Nevertheless, a noise analysis will be included in the EIR to determine the project's consistency with the applicable provisions of the Kern County General Plan Noise Element and Kern County Zoning Ordinance, Mojave Specific Plan, and Article 4, Noise and Vibration, of California City's Municipal Code. Thus, further analysis of ambient noise levels and the project's potential impact on those levels will be included in the EIR.

(d) The western portion of the solar facility site and the proposed gen-tie line(s) are located within an area covered by the Kern County ALUCP for the Mojave Air and Space Port, as shown on **Figure 12**, *ALUCP Designations*. The Mojave Air and Space Port is located approximately two miles west of the project site. Specifically, the project site is located in "Compatibility Zone B2 – Extended Approach/Departure Zone" (Assessor Parcel No. (APN) 235-024-41, 235-351-01, 428-010-02, -10, -11, 428-041-02, -03, -04, -05, -38, 428-042-02, -03, -04, -35, 428-052-15, -17, 428-053-16, and -18) and "Compatibility Zone C – Common Traffic Pattern" (APN No. 235-024-41, 235-351-01, -02, -03, -04, 235-081-09, -10, 235-082-15, -16, -17, -18, -19, -24, -25, 235-065-04, -05, -07, -17, -18,

235-353-11, -21, -22). According to Table 2A – Compatibility Criteria of the Kern County ALUCP, Compatibility Zone B2 is subject to significant noise levels and Compatibility Zone C is subject to frequent noise intrusion. Noise from occasional aircraft flyovers would not have a significant effect on the small workforce on-site, who would normally be working indoors, except when outdoor maintenance or repair activities are required. The proposed solar project would not generate any impacts that could worsen the levels of aircraft noise. However, further analysis of this issue will be provided in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XIV. Population and Housing

Would the project:

a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

RESPONSES:

(a) Although the proposed project would provide new employment consistent with the adopted Kern County General Plan, California City General Plan, and Mojave Specific Plan goals, plans, and policies, long-term employment opportunities would be minimal.

It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during construction of the proposed project. The entire construction process is estimated to take 18 to 24 months. Construction workers are expected to travel to the site from various local communities and locations throughout Southern California, and the number of workers expected to relocate to the surrounding area is not expected to be substantial. If temporary housing should be necessary, it is expected that accommodations would be available in the nearby communities of Mojave, California City, Rosamond, Tehachapi, or Lancaster. Therefore, the project is not anticipated to directly or indirectly induce the development of any new housing or businesses. During the operational phase, the project would have up to 20 full-time equivalent (FTE) personnel, who would commute to the site. Due to the small number of full-time employees, it is anticipated that the local housing stock would be adequate to accommodate operations personnel should they relocate to the area, without requiring the need for the construction of new housing. The project would not directly or indirectly induce substantial unplanned population growth and further analysis in the EIR is not warranted.

(b) The project site is currently undeveloped and does not contain any existing housing. The proposed project would therefore not displace any existing people or housing, necessitating the construction of replacement housing elsewhere. No further evaluation of this topic is required in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XV. Public Services

Would the project:

a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:				
i.	Fire protection?	☒	☐	☐	☐
ii.	Police protection?	☒	☐	☐	☐
iii.	Schools?	☐	☐	☐	☒
iv.	Parks?	☐	☐	☐	☒
v.	Other public facilities?	☐	☐	☐	☒

RESPONSES:

(a)(i) **Fire Protection.** The Kern County Fire Department and California City Fire Department provides fire suppression and emergency medical services to the project area. The portion of the project site located within unincorporated Kern County would be served by Station #14 located at 1773-1999 Mojave-Barstow Highway in Mojave. The portion of the project site located within California City would be served by Station #85, located at 20890 Hacienda Boulevard in California City. Given the location of the project in the rural environment and the fire departments' obligation to respond to construction site or structural fires in their jurisdiction, the project may have the potential to affect fire-fighting capacity, which might result in a need for additional firefighting personnel and facilities in the area. Therefore, the potential impact on fire services from construction and operation of the project is considered potentially significant and will be evaluated in the EIR.

(a)(ii) **Police Protection.** Law enforcement and public safety services in the project area are provided by the Kern County Sheriff's Department and California City Police Department. The portion of the project site located within unincorporated Kern County would be served by the Kern County Sheriff's Department - Mojave Substation located at 1771 Highway 58. The portion of the project site located within California City would be served by the station located at 21130 Hacienda Boulevard. The proposed project may attract vandals or other security risks, and construction activities could result in increases in traffic volumes along surrounding roads. On-site security would be provided and access would be limited to the areas surrounding the project site during construction and operation,

thereby minimizing the need for police surveillance. Nonetheless, the proposed project's impacts on sheriff services are potentially significant and will be evaluated in the EIR.

(a)(iii) **Schools.** During project construction, a relatively large number of construction workers would be required. It is expected that most of these workers would live in the broader region and commute to the project site from surrounding communities where their children are already enrolled in school and where their contribution to local taxes, including funds for schools, is assessed locally. The proposed project would not require employees or their children to relocate to the project area. Therefore, substantial temporary increases in population that would adversely affect local school populations are not expected. Likewise, the operational workforce is small (approximately 20 full-time positions) and not expected to generate a permanent increase in population that would impact school populations. Therefore, no significant impacts to schools are anticipated to occur and further analysis is not warranted in the EIR.

(a)(iv) **Parks.** The population increase that would be experienced during the construction phase of the proposed project would be temporary and limited to construction workers at the project site and would not result in additional demand for parks or other recreational facilities. The up to 20 full-time workers would not result in construction of numerous new housing units that could significantly increase the local population and related demand for public parkland. Therefore, no significant impacts to parks are anticipated to occur, and further analysis of this issue is not warranted in the EIR.

(a)(v) **Other Public Facilities.** Implementation of the proposed project may have impacts on the ability of the county to provide adequate county-wide comprehensive public facility services. Unlike other businesses in California, large scale solar has an exclusion from property taxes on their equipment. This property tax exclusion results in the project not providing the revenue needed to provide services and facilities for both the project and the communities that prevent decline of the physical neighborhoods in unincorporated Kern County. This is a direct impact from the project structure and the land if built with another type of land use would produce property tax revenue to provide necessary services and facilities and prevent physical decline of homes and businesses due to vacancy and inability for response for all services, including code enforcement to law enforcement, fire, roads and health and safety issues such as elderly care and child protection services. The cumulative impacts of this active solar tax exclusion over the life of the over 36,000 acres of projects has resulted in a loss to the General Fund over the last 10 years of over $103 million and deepened the on-going fiscal emergency of the county. Public policies in the Kern County General Plan and Mojave Specific Plan require development to address economic deficiencies in public services and facilities costs. Therefore, the proposed project's impacts on public facilities are potentially significant and will be evaluated in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XVI. Recreation

Would the project:

a.	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

RESPONSES:

(a) It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during construction of the proposed project. These workers would not have time to visit any local parks or recreation facilities during the workday. Further, few workers are expected to relocate to this area temporarily while the construction is underway and there would be little or no impact on local recreational resources after work hours.

Operation of the project would require employees for maintenance and monitoring activities, but they would likely be drawn from the local or sub-regional labor force and would commute from their existing permanent residences to the project site during those times. However, even if the maintenance/monitoring employees were hired from out of the area and relocated to eastern Kern County, the resulting addition of families to this area would be small in number and would not result in a substantial increase in the number of users at local parks. As a result, there would not be a detectable increase in the use of parks or other recreational facilities. Impacts would not occur, and further analysis is not warranted in the EIR.

(b) The proposed project does not include or require the construction of new or expansion of existing recreational facilities, and there are no recreational facilities on the project site that would be affected. No impact would result and no further analysis in the EIR is warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XVII. Transportation and Traffic					
Would the project:					
a.	Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☒	☐	☐	☐
b.	Conflict or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)?	☒	☐	☐	☐
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d.	Result in inadequate emergency access?	☐	☐	☒	☐

RESPONSES:

(a) The project proponent is requesting a General Plan Amendment to amend the Circulation Element of the Kern County General Plan and a Specific Plan Amendment to the Circulation Element of the Mojave Specific Plan to remove sections and midsection line road reservations; refer to Figure 14, *Future Road Reservations to be Deleted*. In addition, the project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction (**Figure 14**, Future Road Reservations to be Deleted*)*. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed (California City 2015). This would have no effect on the performance of the existing roadway network, since there are no existing roadways along any of these sections and midsection line road reservations.

There are no dedicated pedestrian or bicycle facilities in the immediate vicinity of the project site or along the surrounding roadways. Due to the rural nature of the project area, pedestrian and bicycle traffic is limited. The project is not located along an existing bus route and few bus stops exist on the roadways likely to be used during construction and operation. The project would not house residents or employees, and therefore, would not have characteristics that would influence alternative means of transportation. Therefore, impacts in this regard would be less than significant.

It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during the construction of the proposed project. An undetermined volume of large truck trips would also be generated, with varying numbers depending on the phase of construction. Further analysis in the EIR is required to determine whether construction traffic could disrupt normal traffic flows or otherwise conflict with the County's roadway performance policies and programs.

Once constructed, the solar facility would have up to 20 full-time employees, with daylight and overnight shifts. This equates to approximately 50 trips per day for the full facility based on an average trip rate of 2.5 trips per employee. It is anticipated that employees would drive themselves to/from the project site on a daily basis using local roadways that can accommodate such vehicle traffic. Ongoing maintenance and periodic repair are also anticipated to produce negligible results in terms of traffic impact. These potential impacts on the local roadway system from construction related vehicle trips and project's operational traffic on the area roadway system will be further evaluated in the EIR.

(b) CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of vehicular greenhouse gas emissions through creation of multimodal networks, and creation of a mix of land uses that can facilitate fewer and shorter vehicle trips. Vehicle miles traveled (VMT) is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person. Construction traffic would be temporary and would not permanently affect VMT characteristics in this part of Kern County or elsewhere. Long-term, operational traffic would be limited, with a small work force of approximately 20 full-time equivalent employees, translating into approximately 50 trips per day. It is not known where the employees would live or how long their commuting trips would be. According to technical guidance issued by the Office of Planning and Research, projects generating less than 110 or fewer daily vehicle trips may be presumed to have a less than significant impact involving VMT. Further analysis of the operational VMT characteristics of the project is required to determine whether the project is considered a "low-VMT" project due to small daily traffic volumes alone, or whether more extensive analysis is warranted. An assessment of the project's VMT characteristics will be provided in the EIR.

(c) The project proposes access from existing roads that currently provide access to the various parcels affected. During construction, especially during peak periods of heavy truck traffic and peak levels of construction workers, there is a potential for conflicts between construction traffic and normal traffic flows, especially at intersections where queuing could occur.

Beyond driveway and related access improvements, no off-site roadway improvements are required for the solar PV fields or for access along the gen-tie line. Proposed driveway connections to existing roadways are being evaluated and will be identified in the EIR. No new roadway design or features (i.e., sharp curves, dangerous intersections, or other hazardous features) would be required that could result in transportation-related hazards or safety concerns. All new driveways connecting to existing adjacent streets must be designed in accordance with the County and City street standards that assure safe ingress/egress. The project buildings and other structures would be set back from adjacent access roadways as required by the Kern County and California City Zoning Ordinance. Although impacts in this regard are anticipated to be less than significant, such conditions will be further analyzed in the EIR.

(d) The project site and vicinity are accessible via a number of existing roads, with alternative access roads allowing convenient access in the event of an emergency. Emergency vehicle access must be maintained at all times throughout construction activities, in accordance with the County's and City's routine/standard construction specifications. County and City building inspectors would conduct periodic site inspections to confirm there are adequate provisions in place to maintain emergency

access for fire, emergency medical and Sheriff response units. Further, construction activities would not be permitted to impede emergency access to any local roadways or surrounding properties.

Operations of the project would not adversely affect emergency access as the number of daily trips would have a minimal effect on traffic volumes and overrides of project site access gates for emergency access to the facility would be installed. Although no significant impacts related to emergency access are anticipated to occur, further analysis of this issue will be provided in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XVIII. Tribal Cultural Resources

Would the project:

a.	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
	i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register or historical resources as defined in Public Resources Code section 5020.1(k), or	☒	☐	☐	☐
	ii. A resource determined by the lead agency in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

RESPONSES:

(a)(i) and (a)(ii) The proposed project has the potential to impact presently unknown surface or subsurface tribal cultural resources during site clearance and earthmoving activities. A cultural survey will be conducted for the proposed project, which might identify indications of potential tribal cultural resources. All tribes with possible cultural affiliation and interest within the project area were notified pursuant to Assembly Bill 52 and consultation with the potentially affected tribes will occur, as appropriate, between the County, the City and the tribes. Further evaluation in the EIR is warranted to identify potential impacts to tribal cultural resources and to formulate avoidance or mitigation measures, if applicable.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XIX. Utilities and Service Systems					
Would the project:					
a.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☒	☐	☐	☐
c.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d.	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e.	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

RESPONSES:

(a) **Wastewater Facilities.** The project would generate a minimal volume of wastewater during construction. During construction activities, wastewater would be contained within portable toilet facilities and disposed of at an approved site. During operations, wastewater generated by the project would be disposed on-site by septic system associated with any O&M facilities. Soil suitability for a septic tank leach field and any related environmental impacts will be addressed in the response to the topic of Geology and Soils, threshold e). The proposed project would not require or result in the relocation or construction of new or expanded municipal wastewater facilities. Nonetheless, further analysis of impacts to wastewater facilities will be provided in the EIR.

Storm Water Facilities. The proposed project does not require expanded or new storm drainage facilities because the proposed solar facility would not generate a significant increase in the amount of impervious surfaces that would increase runoff during storm events. Water from solar panel washing would continue to percolate through the ground, as a majority of the surfaces within the

project site would remain pervious. Any storm drainage/detention facilities that may be required would be minor in scale and located within the project site. Potential impacts from such facilities will be addressed in the response to the topic of Hydrology and Water Quality, threshold c). Impacts are anticipated to be less than significant; however, further analysis in the EIR will be provided.

Water Facilities. The proposed project is not anticipated to result in a significant increase in water demand/use; however, water will be needed for solar panel washing and dust suppression. Water is anticipated to be obtained from on-site wells, which might require installation of a water treatment system. No municipal water supply or distribution infrastructure would be built or impacted. Potential impacts to groundwater resources resulting from on-site well production will be addressed in the response to the topic of Hydrology and Water Quality, threshold b). Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is trucked in, it would likely be obtained from a nearby well or from a commercial source. In that case, there would be no impact involving construction or relocation of any water infrastructure. Impacts would be potentially significant and further analysis in the EIR is warranted.

Power, Natural Gas, and Telecommunication Facilities. The proposed project would involve construction of a PV solar facility that would generate electrical energy that would be transmitted via new overhead or underground lines to the regional electrical energy supply grid. Analyses of various environmental effects associated with construction and operation of these facilities will be provided throughout the EIR, with respect to numerous topics. There may be on-site telecommunications facilities to facilitate collection and transmission of meteorological data and data regarding performance of the solar arrays. Impacts associated with construction of the telecommunications and transmission line facilities will be evaluated in the EIR. The proposed project would not use natural gas. The proposed project would not otherwise generate the demand for or require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities that would in turn, result in a significant impact to the environment. Impacts are considered to be less than significant; however, further analysis in the EIR will be provided.

(b) Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 900 acre-feet over the 18-24 month construction phase. During construction, potable water would be provided for drinking and domestic needs for construction workers. Water demand for panel washing and O&M domestic use is not expected to exceed 100 acre-feet per year. Water is anticipated to be obtained from on-site wells. If off-site water is trucked in, it would likely be obtained from a nearby well or from a commercial source. A water supply assessment will be completed for the project to analyze potential impacts to water supplies. This potentially significant impact will be addressed further in the EIR.

(c) As stated above, portable toilets would provide for wastewater disposal during project construction and no connection to a public system for wastewater treatment would be required. Due to the limited number of employees for project operations, the project would not generate a substantial amount of wastewater. The proposed project would include construction of an on-site septic system to serve each of the O&M facilities. All wastewater disposal for project operations would be handled on-site. Therefore, the project would not adversely affect any existing wastewater treatment facilities. Impacts would be less than significant and further analysis of this issue is not warranted in the EIR.

(d) The proposed project is not expected to generate a significant amount of waste that would exceed the capacity of local landfills. Materials brought to the project site would be used to construct facilities,

and few residual materials are expected. Non-hazardous construction refuse and solid waste would be either collected and recycled per the Construction Waste Management Plan or disposed of at a local Class III landfill, while any hazardous waste generated during construction would be disposed of at an approved off-site location. The closest Class III municipal landfill is the Mojave-Rosamond Sanitary Landfill, which is located approximately 2.5 miles from the project site. As of 2013, the Mojave Rosamond Recycling and Sanitary Landfill has a remining capacity of 76,310,297 cubic yards, with an anticipated closure date of 2123 (CalRecycle 2020). Although it is not anticipated that the amount of solid waste generated by the proposed project would exceed the capacity of local landfills needed to accommodate the waste, further analysis of this issue will be included in the EIR to ensure the project meets state and local waste reduction goals.

(e) The proposed project would generate solid waste during construction, operation, and decommissioning, thus requiring the consideration of waste reduction and recycling measures. The 1989 California Integrated Waste Management Act (AB 939) requires Kern County to attain specific waste diversion goals. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the proposed project design. The proposed project would be required to comply with the 1989 California Integrated Waste Management Act and the 1991 California Solid Waste Reuse and Recycling Access Act of 1991. Further analysis of the pertinent solid waste reduction and management regulations applicable to this project will be included in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XX. Wildfire				
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☒	☐	☐	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☒	☐	☐	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

RESPONSES:

(a) According to the Fire Hazard Severity Zones map published by the California Department of Forestry and Fire Protection (CalFire), the project site is not located within or near state responsibility areas or lands classified as very high fire hazard severity zones (VHFSZ). The nearest VHFSZ is located more than three miles away from the project site (CalFire 2020). The project site is classified as Local Responsibility Area (LRA) Moderate; thus, the potential for wildfire on the project site exists, but is not considered high and is not anticipated to physically impede the existing emergency response plans, emergency vehicle access, or emergency personnel access to the site (CalFire 2007). The project site is not identified for any purpose in an adopted emergency evacuation plan to address wildfires or other types of emergencies (Kern County 2012b). The project site is not located along an identified emergency evacuation route and roads reservations proposed to be abandoned are not identified in any adopted emergency evacuation plan pertaining to wildfire hazards. There are multiple existing local roadways adjacent to the project sites that lead to primary emergency evacuation routes, such as SR 58. In compliance with applicable Fire Code and Building Code requirements, construction and maintenance/operations managers and personnel would be trained in fire prevention and emergency response. Fire suppression equipment specific to construction would be maintained on the project site. Additionally, project construction and maintenance/operations would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of

flammable materials. Therefore, the project would not conflict with the implementation of, or physical interference with, an adopted emergency response plan or emergency evacuation plan and impacts would be less than significant. Nevertheless, further analysis will be conducted in the EIR.

(b) Slope and wind can influence the rate at which wildfire spreads. Given the project site's generally flat topography, the proposed project is not anticipated to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to sloping topography. Further analysis of prevailing winds is required to determine if there are periodic high winds that could influence the spreading and velocity of wildfires. Adherence to applicable regulations would reduce wildfire ignitions and prevent the spread of wildfires. The project proponent/operator would be required to develop and implement a Fire Safety Plan that contains notification procedures and emergency fire precautions consistent with the 2019 California Fire Code and Kern County Fire Code for use during construction, operation and decommissioning, However, as the project would have the potential to expose occupants (i.e., at the O&M facilities) to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire due to prevailing winds or other factors, further analysis will be conducted in the EIR.

(c) The proposed project involves the development of a solar energy generation and energy storage facility. The proposed project would include the construction of power transmission lines, inverters, roads, and an energy storage facility. The project site would be graded and vegetation would be removed as necessary which would reduce ignition sources. Due to the presence of electrical equipment and battery storage on site, the proposed project has the potential to exacerbate wildfire risk and will be further evaluated in the EIR.

(d) The project site is not considered to be a high risk area for landslides as it is relatively flat and is not anticipated to be subject to post-fire slope instability, or drainage changes that would expose people or structures to significant risks; therefore no further analysis will be conducted in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XXI. Mandatory Findings of Significance					
a.	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b.	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c.	Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

RESPONSES:

(a) The EIR's biological, cultural, and tribal cultural resources sections will discuss specific project impacts on plants and wildlife including avian species and impacts to cultural and tribal cultural resources. The document will also evaluate the project's contribution to cumulative biological, cultural and tribal cultural resources impacts and propose mitigation that will reduce the impacts to less than significant levels, where feasible.

(b) The project has the potential to contribute to cumulatively considerable construction impacts involving noise, air emissions, and traffic, if other planned/approved solar projects in the vicinity are under construction at the same time. The project could also contribute to cumulatively considerable permanent impacts involving aesthetics, air quality, biological resources, cultural resources, tribal cultural resources, greenhouse gas emissions, traffic, and wildfire. The EIR will evaluate the project's contribution to cumulative impacts in these and possibly other areas.

(c) The proposed project would not result in the long-term generation of any hazardous air emissions or noise sources that would adversely affect nearby sensitive receptors. The solar project would not include any kinds of industrial processes or equipment that would generate hazardous substances or

wastes that would threaten the well-being of people on or off-site. However, short-term construction activities could result in temporary increases in pollutant concentrations and potentially significant off-site noise impacts. Pollutants of primary concern commonly associated with construction-related activities include toxic air contaminants, gaseous emissions of criteria pollutants, and fugitive dust. Within the project area, the potential for increased occurrences of Valley Fever and exacerbated health issues related to COVID-19 is also of concern. Human health impacts from the short-term cumulative contribution to air quality impacts from project construction will be further evaluated in the EIR.

4. References

California Department of Conservation (DOC). 1999. Mineral Land Classification of Southeastern Kern County, California. Open File Report 99-15, Plate 2A. https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc.

_____2018. California Important Farmland: 1984-2018. https://maps.conservation.ca.gov/dlrp/ciftimeseries/.

California Department of Forestry and Fire Protection (CalFire). 2007. Kern County Fire Hazard Severity Zone Maps for the Local Responsible Areas. https://osfm.fire.ca.gov/media/6686/fhszl06_1_map15.pdf.

_____2020. GIS portal. https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414.

California Environmental Protection Agency's (CalEPA). 2020. Cortese List Data Resources. https://calepa.ca.gov/SiteCleanup/CorteseList/.

California Department of Toxic Substances and Control (DTSC). 2020. EnviroStor. https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=california+city+ca.

Caltrans (California Department of Transportation). 2020. Scenic Highways – List of Officially Designated State Scenic Highways. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

California Geologic Study (CGS), 2020. Alquist-Priolo Special Studies Fault Map. https://maps.conservation.ca.gov/cgs/EQZApp/app/

Cal Recycle. 2020. SWIS Facility Detail, Mojave-Rosamond Sanitary Landfill (15-AA-0058). https://www2.calrecycle.ca.gov/swfacilities/Directory/15-AA-0058.

City of California City, 2009. City of California City General Plan 2009-2028. https://www.californiacity-ca.gov/CC/index.php/planning/planning-publications

_____2015. Municipal Code. https://library.municode.com/ca/california_city/codes/code_of_ordinances.

Federal Emergency Management Agency (FEMA). Flood Insurance Rate Maps (FIRMs) 06029C3325E; 06029C3350E; 06029C3700E.

Kern County. 2009. Kern County General Plan. https://kernplanning.com/planning/planning-documents/general-plans-elements/

_____2012a. Kern County Airport Land Use Compatibility Plan. November 13, 2012. https://psbweb.co.kern.ca.us/planning/pdfs/ALUCP2012.pdf

_____2012b. Kern County Office of Emergency Services, California Multi Jurisdiction Hazard Mitigation Plan Comprehensive Update 2012.

_____2020. Interactive County Map (GIS Tool). https://www.kerncounty.com/government/gis-menu/interactive-county-map-gis-tool.

_____. 2020. Kern County, California Municipal Code. https://library.municode.com/ca/kern_county/codes/code_of_ordinances?nodeId=KECOCAMUCO.

State Water Resources Control Board (SWRCB). 2020. GeoTracker. https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=california+city+ca.

USGS (U.S. Geological Survey). 1973. California City North Quadrangle. California – Kern County. 7.5-Minute Series.

_____. 2018. Mojave Quadrangle. California – Kern County. 7.5-Minute Series.

A.2 Public Comments

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STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

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VICE CHAIRPERSON
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January 19, 2021

RECEIVED
JAN 27 2021
Kern County Planning &
Natural Resources Dep

Ronelle Candia
Kern County Planning and Natural Resources Department
2700 "M" Street Suite 100
Bakersfield, CA 93301

Re: 2021010168, Bellefield Solar Project by 50LW 8ME LLC, Kern County

Dear Ms. Candia:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

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

AB 52

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

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

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

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

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,



Nancy Gonzalez-Lopez
Cultural Resources Analyst

cc: State Clearinghouse

RECEIVED
JAN 27 2021
Kern County Planning &
Natural Resources Dept

Ronelle Candia

From: suhas babtiwale <sgbabtiwale@yahoo.com>
Sent: Thursday, January 21, 2021 4:33 PM
To: Ronelle Candia
Subject: IS / NOP- Bellfield Solar Project

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Dear Sir

I am pleased to see the Project in reference.

I have a lot APN # 235-360-02-00-3 .

I will be happy to look forward the project .

My e maim address is < sgbabtiwale@yahoo.com>

Office Memorandum

KERN COUNTY

To: Planning and Natural Resources Department
Ronelle Candia

Date: January 22, 2021

From: Public Works Department
Floodplain Management Section
Kevin Hamilton, by Brian Blase

Phone: (661) 862-5098
Email: BlaseB@kerncounty.com

Subject: Draft Environmental Impact Report
Bellefield Solar Project

Our section has reviewed the attached subject documents and has the following comments:

The runoff of storm water from the site will be increased due to the increase in impervious surface generated by the proposed development.

The subject property is subject to flooding.

Therefore, this section recommends the following be included as Conditions of Approval for this project:

The applicant shall provide a plan for the disposal of drainage waters originating on site and from adjacent road right-of-ways (if required), subject to approval of the Engineering, Surveying and Permit Services Department, per the Kern County Development Standards.

Associated flood hazard requirements will need to be incorporated into the design of this project per the Kern County Floodplain Management Ordinance.

Ronelle Candia

From: Yahoo Mail <kentwu2@yahoo.com>
Sent: Sunday, January 24, 2021 3:21 PM
To: Ronelle Candia
Subject: Bellefield Soar Project Concerns

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

To whom this may concern,

As the owners of property within 1000 feet of the project boundaries, we are concerned about the possibility of long term water contamination and draught impact due to the solar project facility. We are also concerned the possibility of devaluing our property. For these reasons, we will not be supportive of the project.

Sincerely yours,
Chie Huei Wu and Yu Jen Wu

Email: CandiaR@KernCounty.com

From: Ann Trussell <ann@anntrussell.com>
Sent: Monday, January 25, 2021 10:04 AM
To: Ronelle Candia <Candiar@kerncounty.com>
Cc: fulcomusic@aol.com
Subject: 235-353-13, 14, 18, 24

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Hi Ronelle,

I am a local Realtor and currently this property is in escrow. I am including the buyer in this email chain.

The sellers provided to the buyer the letter they received dated 1/15/21 from Kern County Planning and Natural Resources Department, Initial Study/Notice Bellefield Solar Project. The buyers have some questions they would like to ask but have not had success reaching anyone by telephone.

Seller and buyer would be opposed to this project as the property they own is zoned for residential/agricultural use. The maps that are provided in the letter are very difficult to read and it is not clear as to how far from these parcels the proposed project would be.

In the project description it states the project would be on 8,371 acres of privately owned land. Is this land that the company owns already or are they planning on purchasing separate parcels from land owners.

It also states they will take roads that property owners outside of the project would need to access their own privately owned land?

Sincerely,

Ann Trussell, REALTOR
GRI, ePro, SFR
CalDRE 01101515

HomeBased Realty
661-713-2358
www.anntrussell.com

Ronelle Candia

From: Joey Fulco <fulcomusic@aol.com>
Sent: Monday, January 25, 2021 1:54 PM
To: ann@anntrussell.com; Ronelle Candia
Subject: Re: 235-353-13, 14, 18, 24
Attachments: LAND 235-353-24.jpg

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Hi Ronelle,

Thank you for taking the time to speak with me this afternoon regarding **APN# 235-353-13, 14, 18, 24**. While I have not closed yet on the above mentioned properties, my main concern, as I'm sure you can understand, is road easement and legal road access. I believe the road directly in front of my first lot (APN#235-353-24), is called 20th Street. That is the road I am mainly concerned with. If that gets blocked or removed I will have zero access to my properties and be landlocked.

I would also like to offer some personal thoughts in this email for any and all consideration. I do realize you may be limited to what you can and cannot do to stop what I believe is not progress at all, but in my option a deficit to the community, splendor of the land, view, and the betterment of the commonwealth of Mojave and Cal-City in totality.

While I believe solar panels have their proper functionality, I also feel they are a huge deterrent and eyesore to any and all areas where other private properties may lie. I feel the city and/or the powers that be should consider that properties zoned as A-1and M-1 have so many more benefits to a community that should be considered. Understanding that the state has a clear agenda to neutralize and control resources as climate control and other concepts need to be addressed, we should also consider land value, the look and feel of our community, and of course our commerce which has been in a major decline in the past few years.

Can you imagine how great it would be if all the areas colored in pink on the map you sent me were more geared towards families? Recreation? Agricultural uses? Healthy family-style camping? Farmland? Pumpkin patches? Arboretum? I am not talking about track housing either… Last year I had the opportunity to perform at a private function in Bakersfield, and I was so impressed at how some of the farmland and scenery was notably positive and beautiful. It was clean, sculptured, and offered a sense of progress and newness that I was unaware of in Bakersfield. There was a romanticism that made me feel uplifted in a healthy and positive way.

While I strongly oppose the Bellefield Solar project in this area, I feel the California Environmental Quality Act would be seriously affected and tainted by more hideous solar panels. I have always felt that big companies look at the incomplete and small towns to throw their weight around to benefit their own agenda. I would love to see where these company heads live and see how many solar fields are in their immediate areas…

Bellefield Solar is a huge multi-million dollar company coming into a small town community that is in need of so many more fresh and progressive ideas. I feel I can offer many ideas as I have put my money where my mouth is. Please know that my children have also purchased another parcel in the immediate area (**APN# 428-232-21**). The more solar panels that go up, the lower property values goes down. Think if solar panel fields

happened where you live or in your community. Children and families should benefit and see colors, wonderful greeneries, splendid land views. Not gray and dismal solar panels.
Let's consider making Mojave and Cal-City all it can be. There are many wonderful people, businesses, schools, and churches that I'm sure feel the same way I do.

Please pass this email on to whomever you feel may be able to help in stopping this project, or who may care as I do…

Thank you in advance,
Joseph Fulco

PS: I have included a screen shot of the the KERN County Planning Departments photo where it shows 20th Street which is the road that gives me access to my properties.

-----Original Message-----
From: Ann Trussell <ann@anntrussell.com>
To: Ronelle Candia <Candiar@kerncounty.com>
Cc: fulcomusic@aol.com <fulcomusic@aol.com>
Sent: Mon, Jan 25, 2021 11:44 am
Subject: RE: 235-353-13, 14, 18, 24

Thank you Ronelle for your information.
So, by this map, they own all of that land already?

From: Ronelle Candia <Candiar@kerncounty.com>
Sent: Monday, January 25, 2021 11:42 AM
To: Ann Trussell <ann@anntrussell.com>
Cc: fulcomusic@aol.com
Subject: RE: 235-353-13, 14, 18, 24

Good Morning,

Please feel free to contact me at (661) 862-8997 and I would be happy to answer questions regarding the proposed Bellefield Solar Project.

I have attached a more detailed figure for your reference showing where the APNs listed below are with respect to the project boundary. Also, if you would like to read more regarding the overall project, the Notice of Preparation and Initial Study are located on the Department's website here: Notices of Preparation - Kern County Planning & Natural Resources Dept. (kernplanning.com).

Finally, please note that the Department is requiring the applicant to complete the highest level of environmental review as required by the California Environmental Quality Act. A complete and full Environmental Impact Report will be prepared for the project and the project will be heard by the Kern County Planning Commission and Kern County Board of Supervisors for consideration.

Please contact me with any other questions.

Thank you,
Ronelle

Ronelle R. Candia
Supervising Planner – Advanced Planning Division
Kern County Planning & Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301
Phone: 661.862.8997

23535324

20th

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DARRINGTON
RITA B

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DEPARTMENT OF TRANSPORTATION
DISTRICT 9
500 SOUTH MAIN STREET
BISHOP, CA 93514
PHONE (760) 872-0785
FAX (760) 872-0678
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

January 28, 2021

Ms. Ronelle Candia
Kern County Planning/Natural Resources Dept.
2700 M Street, Suite 100
Bakersfield, California 93301

File: Ker-58-var
NOP DEIR
SCH#: 2021010168

Bellefield Solar - Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR)

Dear Ms. Candia:

Thank you for giving the California Department of Transportation (Caltrans) District 9 the opportunity to comment during the NOP phase for the Bellefield Solar project, which would access State Route 58 in eastern Kern County and California City. We offer the following:

- The Project's proposed access points from SR 58 are all supposedly by existing roads (Checklist section XVII), but not all locations are clear from the Project Description narrative. Please provide us a map/aerial figure(s) that identify the state highway accesses, so we can determine feasibility. If feasible, these must be analyzed in the DEIR's construction traffic analysis for geometrics, queuing, etc. Auxiliary lanes, other widening or paving could be merited. Also, a construction phase Traffic Management Plan will likely be beneficial.

- No additional stormwater run-off is allowed onto State highway right-of-way (R/W). We look forward to reviewing the DEIR's Hydrology Report.

- Any Project security fence placed along SR 58 R/W should be on Project property at a sufficient distance from the R/W fence to allow for its maintenance from within Project property.

- It is difficult to tell from the map scale, but we assume that all connector lines are outside of state highway R/W. The document denotes gen-tie crossings of SR 58 and SR14; an encroachment permit will be required.

  Details regarding state highway gen-tie crossings may be found in Section 600 Utility Permits of the **Encroachment Permit Manual** at: https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/chapter-6-ada.pdf

The permit application may be found at:
https://dot.ca.gov/programs/traffic-operations/ep/applications

For permitting details, you may contact Stephen Winzenread, District 9 Permits Engineer, at (760) 872-5222.

We value our cooperative working relationship with Kern County regarding development impacts to the state transportation system. For any questions, feel free to contact me at (760) 872-0785 or at gayle.rosander@dot.ca.gov.

Sincerely,

Gayle J. Rosander

GAYLE J. ROSANDER
External Project Liaison

c: State Clearinghouse
Mark Reistetter, Caltrans D-9

Office Memorandum – Kern County

TO: RONELLE CANDIA, SUPERVISING PLANNER Date: February 1, 2021
Planning & Natural Resources Department

FROM: BRIAN R. BLACKLOCK, PLS
County Surveyor

By: Mark Braun, Engineering Technician III (661) 862-5051

SUBJECT: **Bellefield Solar Project by 50LW 8ME LLC (PP20403)**

I have reviewed the above noted project **INITIAL STUDY/NOTICE OF PREPARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT** and recommend the following conditions be placed on the Conditional Use Permits:

1. Prior to issuance of a building or grading permit: All survey monuments shall be tied out by a Licensed Land Surveyor. A corner record for each monument or record of survey shall be submitted to the County Surveyor for review and processing, per Section 8771 of the Professional Land Surveyor's (PLS) Act.

2. Prior to Final Inspection: All survey monuments that were destroyed during construction shall be re-set or have a suitable witness corner set. A post construction corner record for each monument re-set or a record of survey shall be submitted to the County Surveyor for processing, per Section 8771 of the Professional Land Surveyor's Act.

3. Upon completion of project: All survey monuments shall be accessible by a Licensed Land Surveyor or their representatives, with prior notice, per Section 8774 of the PLS Act and Civil Code 846.5 (a).

Thank you for the opportunity to review and comment on this project. Should you have any questions please contact me.

MOJAVE
AIR AND SPACE PORT

Ms. Ronelle Candia
Kern County Planning and Natural Resources Department
2700 “M” Street, Suite 100
Bakersfield, CA 93301

Re: Initial Study/Notice of Preparation (ISNOP) of Draft Environmental Impact Report (EIR) for the Bellefield Solar Project By 50LW 8ME LLC

Dear Ms. Candia:

The Mojave Air and Space Port (MASP) staff has reviewed the Initial Study/Notice of Preparation (IS/NOP) of an Environmental Impact Report (EIR) for the proposed Bellefield Solar Project (Project) by 50LW 8ME LLC (project proponent) on 8,371 acres of privately owned land. The project is located less than 2 miles east of MASP in southeastern Kern County. Based on available data presented in the IS/NOP, a corner of the proposed Project boundary would touch the northeast corner of the MASP property boundary, and the transmission line would abut the southern MASP boundary. Other Project components include the construction of:

- One 1,500-megawatt (MW) photovoltaic (PV) solar facility located on 90 parcels within unincorporated Kern County and the City of California City;
- An energy storage system;
- A 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) (gen-tie), which would originate from one or more on-site substation(s)/switchyard(s) and terminate at the Southern California Edison (SCE) Windhub Substation. The gen-tie lines generally originate from the central portion of the Project heading west around Mojave before reaching Oak Creek Road and SCE’s Windhub Substation;
- Collector lines within or adjacent to the Project parcels; and
- Permanent facilities including service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Based on the data provided in the IS/NOP, some Project components are adjacent to the MASP boundary, and several Project parcels are located within the Airport Influence Area (AIA) identified in the adopted Kern County Airport Land Use Compatibility Plan (ALUCP).

MOJAVE
AIR AND SPACE PORT

MASP staff identified the following topics that should be evaluated in the forthcoming EIR.

- **Glare.** The proposed project will include the installation of photovoltaic panels installed throughout the 8,371-acre Project site. Panels would be up to 20 feet high and installed on either a fixed-tilt system oriented toward the south or a tracker-mount system that would rotate to follow the sun over the course of the day. In the IS/NOP, the project proponent states that the project "does not generate a source of light or glare. The PV modules are designed to absorb sunlight to maximize electrical output; therefore, they are not expected to create significant reflective surfaces or the potential for glint/glare during the day." However, the project proponent does not address the potential for glint and glare from the panels that could affect aircraft. The project proponent must prepare a thorough glare analysis to identify whether the proposed project will produce glint and glare for pilots at MASP, submit the results of the analysis to the Federal Aviation Administration (FAA), and provide a discussion of the analytical results in the forthcoming EIR. To assist project proponents, the FAA prepared *Technical Guidance for Evaluating Selected Solar Technologies on Airports* (April 2018), which is available at: https://www.faa.gov/airports/environmental/policy_guidance/media/FAA-Airport-Solar-Guide-2018.pdf.

- **Obstructions to Navigable Airspace.** The IS/NOP identifies a general route for the proposed gen-tie lines and indicates that the heights of gen-tie towers can reach up to 200 feet above ground level. The project proponent also indicates that portions of the gen-tie line may be underground to avoid conflicts with MASP operations. Based on the general route identified, the overhead gen-tie lines have the potential to penetrate navigable airspace and affect aircraft operations at MASP. Staff strongly recommends that the portions of the gen-tie line within the AIA be placed underground to avoid conflicts with navigable airspace.

  Based on the location of the proposed Project, the project proponent will be required to undertake an airspace analysis in accordance with Title 14 of the Code of Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, to identify potential airspace conflicts. Based on the results, the developer should work with MASP to select and modify the route and pole locations and to consider obstruction lighting requirements to avoid and minimize potential conflicts. Early coordination with MHV staff is critical, as waiting until after the right-of-way has been acquired and grading or building permits have been sought reduces the flexibility necessary to avoid or minimize potential conflicts.

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AIR AND SPACE PORT

- **Land Use Compatibility.** Section XI, Land Use Planning, of the IS/NOP recognizes that the western portion of the project site and the proposed gen-tie line are located within areas covered by Zones B2 and C of the *Kern County Airport Land Use Compatibility Plan* (ALUCP). The IS/NOP states that the Project must be consistent with the County's ALUCP and comply with applicable FAA regulations, and further analysis will be included in the EIR. Since the proposed project is considered a major land use change that requires rezoning, it will be subject to an ALUCP consistency review prior to project approvals. Both the countywide policies presented in Chapters 1 through 3 of the ALUCP and airport-specific policies presented in Chapter 4 will apply to the proposed Project. MASP staff appreciates the project proponent's recognition of the ALUCP and looks forward to reviewing the analysis presented in the EIR.

- **Cumulative Impacts.** Numerous wind turbines and solar facilities are present in the MHV vicinity, and staff have recently reviewed environmental documents associated with other solar facilities: the Camino Solar Project, Sanborn Solar Project, Kudu Solar Farm, Eland 1 Solar Project, and the Edwards Air Force Base Solar Project. The cumulative effects of these projects and other past and proposed projects on MASP airspace must be considered in the forthcoming EIR.

MASP staff understands that Kern County seeks to develop new sources of renewable energy, and we look forward to working with the project proponent, and its representatives, to ensure that the potential project-related effects on aircraft operations can be clearly identified, evaluated, and avoided or minimized. Based upon the numerous utility projects underway in the MASP vicinity, the importance of the requested analyses cannot be underestimated.

The MASP staff at is happy to discuss its comments with you. If you have any questions or concerns, please call us at 661-824-2433 ext. 215.

Sincerely,

Floyd VanWey
Director of Planning
Mojave Air and Space Port

cc: Lorelei H. Oviatt, Director, Kern County Planning and Natural Resources Department

Office of the Fire Marshal
Kern County Fire Department

Fire Prevention
2820 M St. • Bakersfield, CA 93301 • www.kerncountyfire.org
Telephone 661-391-3310 • FAX 661-636-0466/67 • TTY Relay 800-735-2929

February 8, 2021

Kern County Planning and Natural Resources Department
2800 M St., Bakersfield, CA 93301
Attn.: Ronelle Candua

Re: Kern County Fire Department Comments Regarding Planning Department Project Draft EIR Bellefield Solar Project

To Whom It May Concern,

The Kern County Fire Department (KCFD), as the local fire authority, has received a request for comments regarding the Draft EIR for Bellefield Solar. Upon initial review, it has been determined that the applicant will need to contact Kern County Fire Department prior to applying for a build permit in order to determine plan review and inspection fees. The total Mega Watts and duration of the project will need to be provided. Additionally, all battery energy storage systems will require a separate permit from Kern County Fire.

A more detailed review and project comments will be conducted when the building permit is pulled and plans are submitted to KCFD.

Please feel free to call our Fire Prevention Office at 661-391-3310 with any questions.

Sincerely,
Michael Nicholas
Assistant Fire Marshal
Kern County Fire Department

slickforce
STUDIO

February 8, 2021

Kern County Planning and Natural Resources Department
Attn: Ronelle Candia
2700 'M' Street, Suite 100
Bakersfield, CA 93301

Dear Ms. Candia,

I am writing to express our concerns regarding the details of the Notice of Planning for the Bellefield Solar Project by 50LW 8ME LLC, of which our 350-acre parcel of land is adjacent.

Since 2008, we have rented our land to film productions who wish to photograph "raw, open desert" scenery. We have enjoyed working with the Kern County film office and Sheriff's Department in this regard. We take great pride in preserving the natural beauty of the landscape, often paying for trash clean-up and maintenance far beyond our property lines. The numerous production trucks and vehicles access our property from Hwy 58 via the 55 th St. road, currently the only direct road leading to our property.

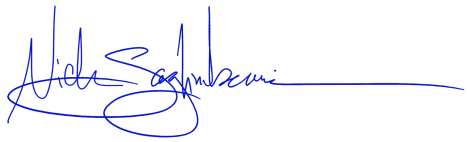
According to the Figure 5 Map (page 65), this road is set to be blocked by one of the project boundaries. We depend on direct freeway access to our land, as larger trucks cannot handle more circuitous pathways, nor roads that haven't been properly graded.

Furthermore, we are greatly concerned about the potential reflections from the countless solar panels that will be installed. This will make filming nearly impossible for our clients, affecting everything from landscape vista scenes to aerial drone photography, which we take great pains to permit properly through Kern County. This would be detrimental to our business.

Finally, there are numerous environmental concerns on our property and the surrounding area, most notably the abundance of protected desert tortoises and the ever-disappearing Joshua trees.

We appreciate you addressing these concerns during the planning process. Feel free to contact me if you have any questions or require additional information. Thank you for your consideration.

Sincerely,



Nick Saglimbeni
President & CEO
Slickforce Inc.

Ronelle Candia

From: Debra Secord <debrasecord@gmail.com>
Sent: Wednesday, February 10, 2021 10:13 AM
To: Ronelle Candia
Subject: Bellefield Solar Project

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Candia- I sent my questions/concerns below to the general planning office e-mail, but thought I should also send you a copy since the February 15th deadline for comments is fast approaching.

Any information you could provide would be appreciated. Thank you-
Debra Secord
(714)469-0254

> **From:** Debra Secord <debrasecord@gmail.com>
> **Date:** February 9, 2021 at 6:12:17 PM MST
> **To:** planning@kernplanning.com
> **Subject: Bellefield Solar Project**
>
> Hello- I received the notice that the Bellefield Solar Project will be adjacent to two quarter sections of property that I own: 244-421-01-00 and 244-411-01-00. These quarter sections are East of the area where Silver Queen Road ends. It looks like an "Alternative Collector Line" is planned directly along the northern property line of each quarter section. And a "Gen-Tie Corridor" runs along Silver Queen Road to the NW edge of the 244-421-01-00 property line. The EIR describes Gen-Tie lines as being either overhead or underground, but there is no indication I could find that shows whether the Gen-Tie line by my property will be above or below ground. Nor can I find a physical description of the Alternative Collector Line. What kinds of impact would these parts of the project have on the parcels I own? Will an easement be needed for the portion of the project running along the quarter sections I own?
>
> I am particularly concerned with the
> mention of Future Road Reservations being deleted. It looks from Figure 14, that my parcels would blocked from having any road access if the road reservations on both sides of the property are deleted.
> So how would the quarter sections be accessible?
> How will the project effect the overall value of the parcels?
>
> I left a phone message, but this e-mail states my concerns more clearly. I look forward to clarification of my concerns.
>
> Thanks- Debra Secord
> (714) 469-0254
>
> Sent from my iPhone

Olivia Naves

From: Walker, Kelley@CHP <KWalker@chp.ca.gov>
Sent: Thursday, February 11, 2021 10:10 AM
To: OPR State Clearinghouse
Cc: Enciso, Blanca@CHP; Williams, John A@CHP; CHP-801-Reporting
Subject: 063-BE-Environmental Document Review-SCH # 2021010168 -Due to Lead Agency by 02/16/2021

Good morning,

No impact to the Mojave Area's local operations and/or public safety by SCH# 2021010165 was identified.

Thank you,

Kelley Walker – Administrative Sergeant
California Highway Patrol – Mojave Area
1313 Highway 58
Mojave, CA 93501
(661) 823-5500 office
(661) 824-2455 fax

From: M.
To: Ronelle Candia
Subject: Initial Study/Bellefield Solar Project
Date: Sunday, February 14, 2021 9:36:06 AM

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Dear Ms Candia,
This email is regarding the Solar Project meeting and my concerns.
1) Environmental impact it has on the desert and it's community.
2) How this project will effect my property value (235-352-15-00-2) and the prospects of selling the land with the solar farm so close.
Thank for having my concerns be made known in the meeting.

Sincerely,
Mary-Anne Hernandez
323-573-4721

Dr. Ranajit (Ron) Sahu
Consultant
311 North Story Place
Alhambra, CA 91801
email: ronsahu@gmail.com
Phone: 702.683.5466

Date: February 14, 2021

Ms. Ronelle Candia
Supervising Planner
Kern County Planning and Natural Resources Department
2700 "M" Street, Suite I 00
Bakersfield, CA 9330 I
Submitted via emails to: CandiaR@kerncounty.com

Ref: Comments on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Bellefield Solar Project ("Project") by 50 LW 8 ME LLC

Dear Ms. Candia

I am submitting these timely comments on behalf of Pioneer Partners 2000 LLC, a long-time landowner in Mojave with excess of 400 acres proximate to the airport in the vicinity of this proposed Project. I attended the virtual meeting held on February 5, 2021 and asked a couple of questions. My contact information is as provided above. Please put my contact information on your distribution list to receive information and notifications about this Project.

I have reviewed the NOP and have the following requests.

1. The NOP provides a generic discussion of the generation ties ("gen-tie") which will transfer electricity from the Project to SCE's Windhub substation. I am requesting addition detail on the gen-tie configuration (above ground, below ground, voltages, etc.) for each and every such gen-tie, in the vicinity of Arroyo Avenue generally Northwest of the proposed Project.

2. The NOP states that the construction period for the proposed project from site preparation through construction, testing, and commercial operation is expected to commence as early as Q4 2021 and would extend for approximately 18 to 24 months. Is there a more detailed construction schedule for each of the different blocks? If so, please provide. If not, when will this be available?
3. How often would the PV panels be cleaned and what method(s) of cleaning would be used along with typical durations of cleaning for each block of PV panels? Please provide details on how any such cleaning activities may affect adjacent land owners before, during, and after each cleaning event.

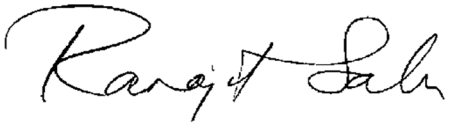
4. How often are the PV panels themselves expected to be replaced in a block?

5. Environmental factors that may be affected or not affected by the Project are discussed in Section 2 of the NOP. For each question in Section 2, as noted below, for which you have determined that the Project impact is not Potentially Significant, please provide any and all documentation, reports, calculations, or any other analyses that supports such determinations beyond what is noted in the discussion following each impact. This includes the following Environmental Factors and questions:

> (I) Aesthetics. Question (d). Please provide the basis for the statement that "The PV modules are designed to absorb sunlight to maximize electrical output; therefore, they are not expected to create significant reflective surfaces or the potential for glint/glare during the day." What do you mean by "significant" and what do you mean by "not expected"? Please clarify in detail.
>
> (III) Air Quality. Questions (b)(i), (d). Please provide the calculations supporting the emissions of reactive organic gases (ROGs), NOx, and PM10 and PM2.5 from the construction and operational phases of the Project which were used to make determinations under (b)(i). Please provide a list of all odor causing agents that may be used in the Project.
>
> (IX) Hazards and Hazardous Materials. It is not clear if or how the battery storage elements of the Project were analyzed for this potential impact including hazards during operation and disposal. Please clarify and provide additional detail on: (i) the battery chemistry that will be used in the Project; and (ii) the battery storage elements of the Project including storage as contemplated at each block as well as the central storage that may be used to support the entire Project. Please provide details on the stability/instability characteristics of the batteries that will be used, as a function of temperature and how any potential fires from such storage facilities will be mitigated.

We will likely have additional questions as more details become available. Thank you for providing the opportunity to comment on this Project. I look forward to hearing from you. My cell is 702.63.5466 or you may contact me via email at ronsahu@gmail.com

Thanks



Dr. Ranajit (Ron) Sahu, Ph.D, Certified Environmental Manager

Consultant

DESERT TORTOISE COUNCIL
4654 East Avenue S #257B
Palmdale, California 93552
www.deserttortoise.org
eac@deserttortoise.org

via email

February 15, 2021

Ronelle Candia, Supervising Planner
Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301-2323
candiar@kerncounty.com

Shawn Monk, Planning and Economic Development Administrator
California City Planning & Economic Development Administrator
21000 Hacienda Boulevard
California City, CA 93505
planning@californiacity-ca.gov

RE: Initial Study and Notice of Preparation of a Draft Environmental Impact Report for the Bellefield Solar Project, Kern County, California

Dear Ms. Candia and Mr. Monk,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

We appreciate this opportunity to provide comments on the above-referenced project, and continue to be concerned that Kern County did not contact the Council directly about this project, although we have often asked to be an Affected Interest for all projects in the county that may affect desert tortoises; rather, one of our members informed us of the project. Given the location of the proposed project in habitats likely occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with "Agassiz's desert tortoise"), our comments pertain to enhancing protection of this species during activities authorized by the County and City.

Project Description

50LW 8ME LLC (Project Proponent) is proposing to construct and operate the Bellefield Solar Project (Project), a photovoltaic (PV) solar facility and energy storage system. The utility-scale solar power Project would be capable of producing up to 1,500 megawatts (MW) of alternating current (AC) with up to 1,500 MW-hours (MWh) of energy storage capacity. Permanent facilities would include PV panels, numerous service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities. Transmission lines include a 230-kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the existing Southern California Edison (SCE) Windhub Substation located about 11 miles west of the west boundary of the solar generating facility. Although not described or numbered, the Notice stated the combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet.

The Proposed Project is located within portions of unincorporated Kern County and the west/southwest sides of the City of California City on 90 scattered parcels comprising approximately 8,371 acres of privately owned land. The power generation part of the facility is located east of the Mojave Airport, west of the Hyundai Proving Grounds, and north and south of State Route 58. Generally, the gen-tie line route would be an east-west route from the Project's on-site substation(s)/ switchyard(s) west across SR-58 and SR-14 to Oak Creek Road and the existing SCE Windhub Substation. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels.

Under the California Environmental Quality Act (CEQA) Kern County Planning and Natural Resources Department is the lead agency with the City of California City is a Responsible Agency (collectively Agencies).

Surveys for Special Status Species

Special status species are those plants and wildlife that, because of their recognized rarity or vulnerability to various causes of habitat degradation/loss or population decline, are recognized by government agencies as being under threat from human activities as well as natural causes; e.g., listed under the Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), policies of the California State resource agencies, organizations with acknowledged expertise, or policies adopted by local governmental agencies to meet local conservation objectives.

The Proposed Project is within the range of the Mojave desert tortoise (federally and state threatened, state candidate for endangered status), Mohave ground squirrel (*Xerospermophilus mohavensis* – state threatened), American badger (*Taxidea taxus* – species of special concern), western burrowing owl (*Athene cunicularia* – species of special concern), and desert kit fox (*Vulpes macrotis arsipus* – protected from any take under Title 14 California Code of Regulations § 460). The Proposed Project is likely within the range of other special status wildlife species and special status native plant populations and natural communities, such as Barstow woolly sunflower (*Eriophyllum mohavense*), which the Proponent is obligated to reveal and assess in pertinent environmental documents.

We request the Agencies implement focused surveys for these special status species in the Project Area (i.e., locations of the solar facility and transmission line route alternatives) using the appropriate methodologies for each taxa as specified by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) (formerly California Department of Fish and Game – CDFG):

Desert tortoise (USFWS 2019) and additional requirements by CDFW
Mohave ground squirrel (CDFW 2003, revised 2010)
Swainson's hawk (CDFW 2010)
American badger (Wearn and Glover-Kapfer 2017 – from CDFW website)
Desert kit fox (USFWS 2011a protocol for San Joaquin kit fox)
Burrowing owl (CDFW 2012)
Special status native plant populations and natural communities (i.e., Spinescale Scrub, Winterfat Scrubland, and Joshua Tree Woodland) (CDFG 2009, CDFW 2018).

Additionally, with the recent acceptance of a petition to list Joshua tree (*Yucca brevifolia*) as an endangered species by the California Fish and Game Commission, the Proponent is obligated to map and assess impacts to Joshua trees, if any, and to treat them as an endangered species until which time the Commission decides to list the species, or not, which is expected approximately October 2021. For now, this entails total avoidance; and, if listed as endangered or threatened, acquiring a Section 2081 incidental take permit from CDFW.

The results of these focused surveys should be reported in the Draft Environmental Impact Report (DEIR) and included in the impact analysis for these resource issues/topics.

Alternatives

The DEIR for the Proposed Project should include several viable alternatives that "achieve the fundamental objective of the project" (California Supreme Court 2008). The initial checklist provided eight objectives for the Proposed Project. The primary objective is to "construct and operate a solar energy facility of sufficient size and configuration to produce (up to) 1,500 MW of reliable electricity and energy storage in an economically feasible and commercially financeable manner that can be marketed to different power utility companies" (Kern County Planning & California City 2021).

Other objectives include compliance with California's efforts (and therefore local government's efforts) to increase renewable energy production and decrease greenhouse gas emissions. Generally, we support these objectives, especially the objective to "site and design the project in an environmentally responsible manner," As part of this objective, the Agencies should include placing energy production (Proposed Project) at a location close to the energy demand. If the Proposed Project is to provide electricity to the Los Angeles metropolitan area, the Proposed Project should be located in the Los Angeles metropolitan area. If the electricity generated is to be used in highly populated areas of Kern County (e.g., Bakersfield, Oildale, Delano, etc.), the Proposed Project should be located in/near these locations. If the Proposed Project is to provide electricity to the Mojave-California City area, the Proposed Project should be located in/near Mojave or California City. Please provide this information in the DEIR.

If the electricity generated is for the Mojave/California City area, we request that the alternatives analyzed include locations west and southwest of the Town of Mojave, where at least two solar facilities are located, near 110th Street SW and Champagne Avenue, with existing transmission lines located between them. These locations are outside the range of the Mohave ground squirrel, in areas where tortoises have been extirpated, and located near similar solar facilities with existing transmission line infrastructure.

When selecting the specific site for the Proposed Project, environmental impacts are minimized to the greatest extent when solar projects are placed in previously developed areas, especially when considering the direct, indirect, and cumulative impacts of such projects and the mitigation needed to offset these impacts. The Initial Study says, "the project site contains large areas of undeveloped desert land with native vegetation." Thus, areas previously used for agriculture (e.g., Antelope Valley in Los Angeles and Kern Counties) or developed areas in/near the Los Angeles Basin (e.g., rooftop solar in areas with square miles of commercial/industrial buildings) should be included as viable alternatives and evaluated to provide alternatives that avoid large areas of undeveloped desert land with native vegetation.

According to the Guidelines for Implementation of the California Environmental Quality Act (Title 14 section 15021), a public agency should not approve a project as proposed if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment. We request that these locations and other feasible alternative locations be analyzed in the DEIR.

The Initial Study includes drawings for monopole structures for 230 kV transmission line and 34.5 kV transmission line. We presume all connector and gen-tie lines will be constructed so common ravens (*Corvus corax*), a known predator of the tortoise, will not use them for nest or perch sites.

Environmental Setting

The information on the environmental setting should include all areas to be affected directly or indirectly by Proposed Project, not just the footprint of the Proposed Project.

The DEIR should provide current information on the status and trend of the Mojave desert tortoise in the Project Area (e.g., changes in abundance, density, habitat availability, and population/habitat connectivity), the nearest Tortoise Conservation Areas (TCAs) (i.e., Desert Tortoise Research Natural Area and Fremont-Kramer TCA), and in the Western Mojave Recovery Unit. The DEIR should provide status and trend information for the other species of special concern that occur in the Project Area.

For past data on the tortoise adjacent to the Proposed Project, we suggest referring to the Environmental Assessment and Habitat Conservation Plan for the Hyundai Automotive Test Course Facility (Sapphos Environmental 2004). The Proposed Project is located immediately west of the Hyundai Facility. Most of the live desert tortoises and active sign observed during the 2003 surveys of the 4,527-acre Hyundai project site were found in the west half of the property (i.e., adjacent to the Proposed Project). Nineteen adult and 1 juvenile desert tortoises and 43 active burrows were located plus other tortoise sign (Sapphos Environmental 2004).

Impact Analysis for Resource Issues/Topics
The following resource issues/topics should be analyzed in the DEIR with respect to the direct and indirect impacts of the Proposed Project to the Mojave desert tortoise and other special status species.

Vegetation and Soils: In addition to the direct long-term loss of soils and vegetation from construction activities, the DEIR should include an analysis of the indirect impacts to native vegetation and soils. These include the loss/degradation of cryptobiotic soil crusts, loss of native seed banks, generation of dust and its impacts to adjacent vegetation (i.e., ability of vegetation to survive, reproduce, and provide suitable forage habitat and cover for wildlife, including special status species). The proposed surface disturbance and increased use of existing and construction of new access roads causes/contributes to the transportation and spread of non-native invasive plant species (USFWS 1994, Brooks 1998). These non-native species outcompete native herbaceous vegetation needed by tortoises and other special status species for adequate nutrition and water balance (Brooks and Esque 2002, Morafka and Berry 2002). Non-native invasive annual plants provide inadequate nutrition and negative water balance for tortoises (Oftedal 2002). In addition, they provide a fuel source to carry fires in the Mojave Desert, increasing their size, intensity, and frequency (Brooks 2000) (see "Fire" below).

Special Status Species: Mojave desert tortoise – The DEIR should include an analysis of all direct and indirect impacts to the Mojave desert tortoise and its habitat from all aspects of the Proposed Project including unintended impacts (e.g., creation/use of access roads for Project purposes that are subsequently used by the public, etc.). This includes but is not limited to, habitat loss, fragmentation, and reduction in habitat quality; effects of roads from increased use and new road creation and use; introduction of and contribution to the proliferation and spread of invasive, non-native plant species and resulting impacts on tortoise nutrition and water balance; subsidizing tortoise predators, increased likelihood of wildfire and loss of tortoises/tortoise habitat; direct loss of tortoises from burial, crushed by vehicles/equipment, vandalism, and collecting; release of contaminants that may migrate to occupied tortoise habitat and adversely impact their health and reproduction, etc.

The Proposed Project is located near the western edge of the distribution of the Mojave desert tortoise and not in a Tortoise Conservation Area (TCA). However, it is within the Western Mojave Recovery Unit. The abundance and density of tortoises and the loss, degradation, and fragmentation of tortoise habitat in this recovery unit has decline substantially since the tortoise was listed (Allison and McLuckie 2018). In addition, adult tortoise densities are below the level needed to have a viable population (USFWS 1994) [please see Appendix A - Status of the Mojave Desert Tortoise (*Gopherus agassizii*)]. Consequently, any loss of tortoises/tortoise habitat unless fully mitigated only continues this declining trend in tortoise numbers and densities and the loss, fragmentation, and degradation of tortoise habitats.

Mohave ground squirrel – According to Sapphos (2004), trapping grids and directed surveys for the Mohave ground squirrel yielded two animals at the Hyundai Test Track Facility.

In the Desert Renewable Energy and Conservation Plan (BLM 2016, Appendix D, Figure D-18), there is a map that appears to show part of the Proposed Project overlapping a Mohave Ground Squirrel Important Area, specifically an expansion area for a key population center or core population located immediately to the east. This designation as an Important Area should be analyzed with respect to the future survival of this key population center/core population and include a viability analysis for this population and species. As mentioned above, focused trapping surveys should be performed, or presence assumed, and incidental take permits secured prior to ground disturbance.

Hazardous Materials: Potential hazards associated with energy storage system (i.e., batteries) include increased potential for electrical shock and chemical release associated with the batteries used. Please include the potential for explosion and fire, especially if batteries containing lithium are used, and their impacts on adjacent areas supporting special status species and their habitats.

The Initial Study mentions requiring a Construction Waste Management Plan and, if required, a Spill Prevention, Containment and Countermeasure Plan. Plans should be required for all materials potentially hazardous to the environment and include monitoring by a third party to ensure compliance. These plans should include a response plan to be implemented in the event there is an "escape" of toxic or hazardous materials and commitment to remediate and compensate for the direct, indirect, and temporal loss of the resource issue (e.g., impacts to Mojave desert tortoises/tortoise habitat) to fully offset the impacts and cleanup activities.

Fire: The Initial Study states that Kern County Fire Department and California City Fire Department would provide fire suppression and emergency medical services to the Proposed Project area. "The project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires." Historically wildfires in the Mojave desert were uncommon occurrences because of the sparseness of native vegetation to provide fuel to carry a fire. However, recent invasions by non-native annual grasses that have been exacerbated by roads and surface disturbance in the desert have changed this scenario in the Mojave Desert.

Tortoises are victims of natural and human-caused fires in the Mojave Desert. Morality and injury to tortoises from wildfires has been documented from open flame, hot ash, and smoke (McLuckie et al. 2007) along with long-term loss of habitat. Recurring fire can result in vegetation type conversion (Brooks and Matchett 2006) such that the habitat no longer provides the life requisites for the tortoise. The analysis on the impacts of fire should include an analysis of impacts to special status species and their habitats near the Proposed Project.

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Noise: The DEIR should analyze the impacts of noise during construction and decommissioning activities and for some types of operations and maintenance activities, as they relate to the tortoise and other special status wildlife species. Although there is limited data of the impacts of noise to the tortoise, it indicates that noise of certain amplitudes, energy frequencies, and duration/repetition adversely impacts the ability of tortoises to hear similar to humans and impacts their behavior (Miles 1953, Ruby et al. 1994, Bowles et al. 1999).

Surface Hydrology: A hydrologic study will be prepared for the project in accordance with Kern County and California City requirements. This study should include an analysis of how construction activities (e.g., grading, road construction and maintenance, etc.) will affect surface flow to areas downslope during rainfall events. Because the Project Area is relatively flat, a slight change in elevation from construction, decommissioning, or road maintenance activities may impede current surface flow patterns during precipitation events and deprive downslope areas of surface flow. This surface hydrology change may result in the reduction of habitat quality or loss of native vegetation needed by the tortoise and special status species.

Cumulative Impacts

The Council contends that although Proposed Project is not located within a TCA, it is within the Western Mojave Recovery Unit of the desert tortoise, and therefore provides value to tortoise survival and recovery. To recover the tortoise, the margin of safety for the species to withstand catastrophic events, and provide potential opportunities for continued evolution and adaptive change, the USFWS (2011b) considers "tortoise conservation areas to be the minimum baseline [emphasis added] within which to focus recovery efforts." Much of the land contained within existing TCAs is managed under multiple-use directives and has a declining status and trend. "Activities occurring on lands beyond the boundaries of existing tortoise conservation areas can affect tortoise populations, important linkages between tortoise conservation areas, and the effectiveness of conservation actions occurring within the conservation area boundaries" (USFWS 2011b). Consequently, if the Proposed Project is located within the distribution of the tortoise/in tortoise habitat, the Project Proponent should fully mitigate for the degraded/lost functions and values of the tortoise population/tortoise habitat from the direct, indirect, and cumulative impacts of the Proposed Project.

Mitigation

The DEIR should include the following mitigation plans for the Mojave desert tortoise and, as applicable, other species of special concern:

- Raven/Predator Management Plan
- Site plan for Soils and Hydrology
- Plant and Wildlife Species Conservation Measures Plan (for species of special concern located on the Project Site – including tortoise exclusion fencing)
- Tortoise Translocation Plan (following USFWS and CDFW requirements)
- Habitat Restoration Plan [for temporary long-term impacts (e.g., transmission line construction) and as part of decommissioning]
- Desert Kit Fox Management Plan
- Native Vegetation/Non-native Species Management Plan (including methods to be used (e.g., mechanical, chemical, etc.) and the impacts of those methods on special status species)
- Erosion, Dust Control, and Air Quality Plan (for impacts to vegetation adjacent to Project Site)
- Hazardous Materials Management Plan
- Fire Prevention Plan
- Fire Protection and Habitat Restoration Plan
- Road Effect Zone Management Plan (include tortoise exclusion fencing)
- Waste Management Plan
- Habitat Compensation and Management Plan (including an endowment and permanent conservation easement)
- Decommissioning Plan

For example, the Raven/Predator Management Plan should include actions that will be implemented to reduce/eliminate human subsidies for food, water, and sites for nesting, roosting, and perching to address local impacts (footprint of the Proposed Project). This includes buildings, fences, and other vertical structures associated with the Project Site, surface disturbance that injures/kills invertebrates/vertebrates and provides a subsidized short-term food source, and use of access roads that results in roadkill of wildlife that provides a longer term subsidized food source. In addition, the Raven/Predator Management Plan should include actions that eliminate the pooling of water on the ground or on rooftops.

The Habitat Restoration Plan should include the abiotic and biotic (e.g., cryptobiotic crust) components of soils as well as vegetation, seed bank, slope, and terrain.

All mitigation plans should include monitoring and adaptive management actions throughout the life of the Project (i.e., preconstruction, construction, operations and Maintenance, and decommissioning) to collect data on the effectiveness of each plan's implementation and enact changes promptly to accomplish each plan's goals.

The mitigation plans have a direct bearing on the extent of impacts to the Mojave desert tortoise, other species of special concern, and their habitats from implementation of the Proposed Project. Their inclusion in the DEIR is necessary as the purpose of CEQA is to:

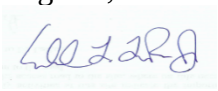
- Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved (California Natural Resources Agency 2018).

CEQA requires that the formulation of mitigation measures shall not be deferred until some future time (Title 14 Section 15126.4) (California Natural Resources Agency 2018). When included in the DEIR, these plans identify the ways that environmental damage can be avoided/ mitigated and the extent to which this mitigation would occur. In addition, these plans should include an analysis of the temporal loss of each resource issue/topic, and how the temporal loss will be mitigated.

We recommend that prior to any ground disturbance, the Authorized Biologist identify the nearest qualified veterinarian capable of treating and rehabilitating any injured tortoises, that any injured tortoises be transported immediately to that office, and that associated veterinary bills and care be paid by the Project Proponent.

We appreciate this opportunity to provide input and trust that our comments will help protect tortoises and other special status species during any authorized project activities. Herein, we ask that the Desert Tortoise Council continue to be identified as an Affected Interest for this and all other projects in the County and City that may affect desert tortoises, and that any subsequent environmental documentation for this particular project is provided to us at the contact information listed above. We also ask that you acknowledge receipt of this letter as soon as possible so we can be sure the appropriate parties have received our concerns.

Regards,



Edward L. LaRue, Jr., M.S.
Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson
cc: California State Clearinghouse, state.clearinghouse@opr.ca.gov

Literature Cited

Allison, L.J., and A.M. McLuckie. 2018. Population trends in Mojave desert tortoises (*Gopherus agassizii*). Herpetological Conservation and Biology 13(2):433-452.

Bowles, A.E., S. Eckert, L. Starke, E. Berg, L. Wolski, and J. Matesic, Jr. 1999. Effects of Flight Noise from Jet Aircrafts and Sonic Booms on Hearing, Behavior, Heart Rate, and Oxygen Consumption of Desert Tortoises (*Gopherus agassizii*). 157 pp.

Brooks, M.L. 1998. Alien annual grass distribution, abundance, and impact on desert tortoise habitat in the western Mojave Desert. Ph.D. Dissertation. University of California, Riverside.

Brooks, M.L. 2000. *Schismus arabicus/S. barbatus*. Pp 287-291 *in*: C. Bossard, M. Hoshovsky, and J. Randall (eds.), Invasive Plants of California's Wildlands. University of California Press.

Brooks, M. L., and T C. Esque. 2002. Alien plants and fire in desert tortoise (*Gopherus agassizii*) habitat of the Mojave and Colorado deserts. Chelonian Conservation Biology 4:330-340.

Brooks, M.L., and J.R. Matchett. 2006. Spatial and temporal patterns of wildfires in the Mojave Desert, 1980-2004. Journal of Arid Environments 67 Supplement:148-164.

[BLM] Bureau of Land Management. 2016. Desert Renewable Energy Conservation Plan Land Use Plan Amendment to the California Desert Conservation Area Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan. September 2016.

[CDFG] California Department of Fish and Game. 2003 (revised 2010). Mohave ground squirrel survey guidelines. Unpublished guidelines produced by CDFG. Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83975&inline

California Department of Fish and Game. 2009. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities. California Natural Resources Agency, Department of Fish and Wildlife, 24 November 2009. Sacramento, CA.

California Department of Fish and Game. 2010. Swainson's hawk survey protocols, impact avoidance, and minimization measures for renewable energy projects in the Antelope Valley of Los Angeles and Kern Counties, California. State of California, California Energy Commission and Department of Fish and Game, 2 June 2010. Sacramento, CA.

California Department of Fish and Game. 2012. Staff report on burrowing owl mitigation. March 7, 2012 memo replacing 1995 staff report, State of California Natural Resources Agency, Department of Fish and Game, Sacramento, CA.

California Department of Fish and Wildlife. 2018. Protocols for surveying and evaluating impacts to special status native plant populations and sensitive natural communities. March 20, 2018. Survey protocols for special status plants (ca.gov)

California Department of Fish and Wildlife. 2021. Special Vascular Plants, Bryophytes, and Lichens List. California Department of Fish and Wildlife. Biogeographic Data Branch, California Natural Diversity Database (CNDDB). January 2021. CDFW 2021 CNDDB_Special_Plants_List.pdf

California Natural Resources Agency. 2012. CEQA Guidelines, California Code of Regulations. Title 14 Sections 15000-15387.

California Natural Resources Agency. 2018. CEQA Guidelines. California Code of Regulations, Title 14, Sections 15000 to 15387 plus appendices. State of California.

California Supreme Court. 2008. Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings. In re Bay-Delta , 43 Cal. 4th 1143, 184 P.3d 709, 77 Cal. Rptr. 3d 578.

Kern County Planning & Natural Resources Department and California City. 2021. Initial Study Checklist – Bellefield Solar Project, January 2021.

McLuckie, A.M., M.R.M. Bennion, and R.A. Fridell. 2007. Tortoise Mortality within the Red Cliffs Desert Reserve Following the 2005 Wildfires. Publication Number 07-05. Utah Division of Wildlife Resources, Salt Lake City, UT.

Miles, L. E. 1953. The desert tortoise. Audubon Magazine. 55(4): 172-175.

Morafka, D.J., and Berry, K.H., 2002, Is *Gopherus agassizii* a desert-adapted tortoise, or an exaptive opportunist? Implications for tortoise conservation: Chelonian Conservation and Biology, v. 4, p. 263–287.

Oftedal, O.T., 2002. Nutritional ecology of the desert tortoise in the Mojave and Sonoran Deserts. *in* Van Devender, T.R., The Sonoran Desert Tortoise—Natural history, biology, and conservation: The University of Arizona Press, p. 194–241.

Ruby, D.E., J.R. Spotila, S.K. Martin, S.J. Kemp. 1994, Behavioral responses to barriers by desert tortoises—Implications for wildlife management. Herpetological Monographs 8: 144–160.

Sapphos Environmental. 2004. Environmental Assessment/Habitat Conservation Plan For Issuance of an Endangered Species Section 10(a)1(B) Permit for the Incidental Take of the Desert Tortoise (*Gopherus agassizii*). Prepared for Hyundai Motor America and City of California City for the Hyundai Automotive Test Course Facility. January 2004.

[USFWS] U.S. Fish and Wildlife Service. 1994. Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service. 2011a. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox prior to or during Ground Disturbance. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 9 pp.

U.S. Fish and Wildlife Service. 2011b. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

U.S. Fish and Wildlife Service. 2019. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). USFWS Desert Tortoise Recovery Office. Reno, NV.

Wearn, O.R. and P. Glover-Kapfer. 2017. Camera trapping for conservation: a guide to best practices. WWF Conservation Technology Series 1(1). WWF-UK, Woking, United Kingdom. CameraTraps-WWF-guidelines.pdf. From CDFW Survey and Monitoring Protocols and Guidelines – mammals https://wildlife.ca.gov/Conservation/Survey-Protocols#377281285-mammals

Appendix A
Status of the Mojave Desert Tortoise (*Gopherus agassizii*)

To assist the Agencies with their analysis of the direct, indirect, and cumulative impacts of the Proposed Project on the Mojave desert tortoise, we provide the following information on its status and trend.

The Desert Tortoise Council (Council) has serious concerns about direct, indirect, and cumulative sources of human mortality for the Mojave desert tortoise given the status and trend of the species range-wide, within each of the five recovery units, within the Tortoise Conservation Areas (TCAs) that comprise each recovery unit.

Densities of Adult Mojave Desert Tortoises: A few years after listing the Mojave desert tortoise under the Federal Endangered Species Act (FESA), the U.S. Fish and Wildlife Service (USFWS) published a Recovery Plan for the Mojave desert tortoise (USFWS 1994a). It contained a detailed population viability analysis. In this analysis, the minimum viable density of a Mojave desert tortoise population is 10 adult tortoises per mile^2 (3.9 adult tortoises per km^2). This assumed a male-female ratio of 1:1 (USFWS 1994a, page C25) and certain areas of habitat with most of these areas geographically linked by adjacent borders or corridors of suitable tortoise habitat. Populations of Mojave desert tortoises with densities below this density are in danger of extinction (USFWS 1994a, page 32). The revised recovery plan (USFWS 2011) designated five recovery units for the Mojave desert tortoise that are intended to conserve the genetic, behavioral, and morphological diversity necessary for the recovery of the entire listed species (Allison and McLuckie 2018).

Range-wide, densities of adult Mojave desert tortoises declined more than 32% between 2004 and 2014 (Table 1) (USFWS 2015). At the recovery unit level, between 2004 and 2014, densities of adult desert tortoises declined, on average, in every recovery unit except the Northeastern Mojave (Table 1). Adult densities in the Northeastern Mojave Recovery Unit increased 3.1% per year (SE = 4.3%), while the other four recovery units declined at different annual rates: Colorado Desert (4.5%, SE = 2.8%), Upper Virgin River (3.2%, SE = 2.0%), Eastern Mojave (11.2%, SE = 5.0%), and Western Mojave (7.1%, SE = 3.3%)(Allison and McLuckie 2018). However, the small area and low starting density of the tortoises in the Northeastern Mojave Recovery Unit (lowest density of all Recovery Units) resulted in a small overall increase in the number of adult tortoises by 2014 (Allison and McLuckie 2018). In contrast, the much larger areas of the Eastern Mojave, Western Mojave, and Colorado Desert recovery units, plus the higher estimated initial densities in these areas, explained much of the estimated total loss of adult tortoises since 2004 (Allison and McLuckie 2018).

At the population level, represented by tortoises in the TCAs, densities of 10 of 17 monitored populations of the Mojave desert tortoise declined from 26% to 64% and 11 have a density that is less than 3.9 adult tortoises per km^2 (USFWS 2015). The Fremont-Kramer population is near the Proposed Project and has a population below the minimum viable density, and an 11-year declining trend (–50.6%)(USFWS 2015).

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Population Data on Mojave Desert Tortoise: The Mojave desert tortoise was listed as threatened under the FESA in 1990. The listing was warranted because of ongoing population declines throughout the range of the tortoise from multiple human-caused activities. Since the listing, the status of the species has changed. Population numbers (abundance) and densities continue to decline substantially (please see Table 1).

Table 1. Summary of 10-year trend data for 5 Recovery Units and 17 Critical Habitat Units (CHU)/Tortoise Conservation Areas (TCA) for the Mojave desert tortoise, *Gopherus agassizii* (=Agassiz's desert tortoise). The table includes the area of each Recovery Unit and Critical Habitat Unit (CHU)/Tortoise Conservation Area (TCA), percent of total habitat for each Recovery Unit and Critical Habitat Unit/Tortoise Conservation Areas, density (number of breeding adults/km^2 and standard errors = SE), and the percent change in population density between 2004-2014. Populations below the viable level of 3.9 adults/km^2 (10 adults per mi^2) (assumes a 1:1 sex ratio) and showing a decline from 2004 to 2014 are in red (Allison and McLuckie 2018, USFWS 2015).

Recovery Unit Designated Critical Habitat Unit/Tortoise Conservation Area	Surveyed area (km^2)	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/km^2 (SE)	% 10-year change (2004–2014)
Western Mojave, CA	**6,294**	**24.51**	**2.8 (1.0)**	**–50.7 decline**
Fremont-Kramer	2,347	9.14	2.6 (1.0)	–50.6 decline
Ord-Rodman	852	3.32	3.6 (1.4)	–56.5 decline
Superior-Cronese	3,094	12.05	2.4 (0.9)	–61.5 decline
Colorado Desert, CA	**11,663**	**45.42**	**4.0 (1.4)**	**–36.25 decline**
Chocolate Mtn AGR, CA	713	2.78	7.2 (2.8)	–29.77 decline
Chuckwalla, CA	2,818	10.97	3.3 (1.3)	–37.43 decline
Chemehuevi, CA	3,763	14.65	2.8 (1.1)	–64.70 decline
Fenner, CA	1,782	6.94	4.8 (1.9)	–52.86 decline
Joshua Tree, CA	1,152	4.49	3.7 (1.5)	+178.62 increase
Pinto Mtn, CA	508	1.98	2.4 (1.0)	–60.30 decline
Piute Valley, NV	927	3.61	5.3 (2.1)	+162.36 increase
Northeastern Mojave	**4,160**	**16.2**	**4.5 (1.9)**	**+325.62 increase**
Beaver Dam Slope, NV, UT, AZ	750	2.92	6.2 (2.4)	+370.33 increase
Coyote Spring, NV	960	3.74	4.0 (1.6)	+ 265.06 increase
Gold Butte, NV & AZ	1,607	6.26	2.7 (1.0)	+ 384.37 increase
Mormon Mesa, NV	844	3.29	6.4 (2.5)	+ 217.80 increase
Eastern Mojave, NV & CA	**3,446**	**13.42**	**1.9 (0.7)**	**–67.26 decline**
El Dorado Valley, NV	999	3.89	1.5 (0.6)	–61.14 decline
Ivanpah, CA	2,447	9.53	2.3 (0.9)	–56.05 decline
Upper Virgin River	**115**	**0.45**	**15.3 (6.0)**	**–26.57 decline**
Red Cliffs Desert	115	0.45	15.3 (6.0)	–26.57 decline
Total amount of land	**25,678**	**100.00**		**–32.18 decline**

Density of Juvenile Mojave Desert Tortoises: Survey results indicate that the proportion of juvenile desert tortoises has been decreasing in all five recovery units since 2007 (Allison and McLuckie 2018). The probability of encountering a juvenile tortoise was consistently lowest in the Western Mojave Recovery Unit. Allison and McLuckie (2018) provided reasons for the decline in juvenile desert tortoises in all recovery units. These included decreased food availability for adult female tortoises resulting in reduced clutch size, decreased food availability resulting in increased mortality of juvenile tortoises, prey switching by coyotes from mammals to tortoises, and increased abundance of common ravens that typically prey on smaller desert tortoises.

Declining adult tortoise densities through 2014 have left the Western Mojave adult numbers at 49% (a 51% decline of their 2004 levels) (Allison and McLuckie 2018, USFWS 2015). Such steep declines in the density of adults are only sustainable if there are suitably large improvements in reproduction and juvenile growth and survival. However, the proportion of juveniles has not increased anywhere in the range of the Mojave desert tortoise since 2007, and in the Western Mojave Recovery Unit the proportion of juveniles in 2014 declined to 91% (a 9 % decline) of their representation since 2004 (Allison and McLuckie 2018).

Abundance of Mojave Desert Tortoises: Allison and McLuckie (2018) noted that because the area available to tortoises (i.e., tortoise habitat and linkage areas between habitats) is decreasing, trends in tortoise density no longer capture the magnitude of decreases in abundance. Hence, they reported on the change in abundance or numbers of the Mojave desert tortoise in each recovery unit (Table 2). They noted that these estimates in abundance are likely higher than actual numbers of tortoises, and the changes in abundance (i.e., decrease in numbers) are likely lower than actual numbers because of their habitat calculation method. They used area estimates that removed only impervious surfaces created by development as cities in the desert expanded. They did not consider degradation and loss of habitat from other sources, such as the recent expansion of military operations (753.4 km^2 so far on Fort Irwin and the Marine Corps Air Ground Combat Center), intense or large scale fires (e.g., 576.2 km^2 of critical habitat that burned in 2005), development of utility-scale solar facilities (as of 2015, 194 km^2 have been permitted) (USFWS 2016), or other sources of degradation or loss of habitat (e.g., recreation, mining, grazing, infrastructure, etc.). Thus, the declines in abundance of Mojave desert tortoise are likely greater than those reported in Table 2.

Habitat Availability: Data on population density or abundance does not indicate population viability. The area of protected habitat or reserves for the subject species is a crucial part of the viability analysis along with data on density, abundance, and other population parameters. In the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a), the analysis of population viability included population density and size of reserves (i.e., areas managed for the desert tortoise) and population numbers (abundance) and size of reserves. The USFWS Recovery Plan reported that as population densities for the Mojave desert tortoise decline, reserve sizes must increase, and as population numbers (abundance) for the Mojave desert tortoise decline, reserve sizes must increase (USFWS 1994a). In 1994, reserve design (USFWS 1994a) and designation of critical habitat (USFWS 1994b) were based on the population viability analysis from numbers

Table 2. Estimated change in abundance of adult Mojave desert tortoises in each recovery unit between 2004 and 2014 (Allison and McLuckie 2018). Decreases in abundance are in red.

Recovery Unit	Modeled Habitat (km^2)	2004 Abundance	2014 Abundance	Change in Abundance	Percent Change in Abundance
Western Mojave	23,139	131,540	64,871	-66,668	-51%
Colorado Desert	18,024	103,675	66,097	-37,578	-36%
Northeastern Mojave	10,664	12,610	46,701	34,091	270%
Eastern Mojave	16,061	75,342	24,664	-50,679	-67%
Upper Virgin River	613	13,226	10,010	-3,216	-24%
Total	**68,501**	**336,393**	**212,343**	**-124,050**	**-37%**

(abundance) and densities of populations of the Mojave desert tortoise in the early 1990s. Inherent in this analysis is that the lands be managed with reserve level protection (USFWS 1994a, page 36) or ecosystem protection as described in section 2(b) of the FESA, and that sources of mortality be reduced so recruitment exceeds mortality (that is, lambda > 1)(USFWS 1994a, page C46).

Habitat loss would also disrupt the prevailing population structure of this widely distributed species with geographically limited dispersal (isolation by distance; Murphy et al. 2007; Hagerty and Tracy 2010). Allison and McLuckie (2018) anticipate an additional impact of this habitat loss/degradation is decreasing resilience of local tortoise populations by reducing demographic connections to neighboring populations (Fahrig 2007). Military and commercial operations and infrastructure projects that reduce tortoise habitat in the desert are anticipated to continue (Allison and McLuckie 2018) as are other sources of habitat loss/degradation.

Allison and McLuckie (2018) reported that the life history of the Mojave desert tortoise puts it at greater risk from even slightly elevated adult mortality (Congdon et al. 1993; Doak et al. 1994), and recovery from population declines will require more than enhancing adult survivorship (Spencer et al. 2017). The negative population trends in most of the TCAs for the Mojave desert tortoise indicate that this species is on the path to extinction under current conditions (Allison and McLuckie 2018). They state that their results are a call to action to remove ongoing threats to tortoises from TCAs, and possibly to contemplate the role of human activities outside TCAs and their impact on tortoise populations inside them.

Densities, numbers, and habitat for the Mojave desert tortoise declined between 2004 and 2014. As reported in the population viability analysis, to improve the status of the Mojave desert tortoise, reserves (area of protected habitat) must be established and managed. When densities of tortoises decline, the area of protected habitat must increase. When the abundance of tortoises declines, the area of protected habitat must increase. We note that the Desert Tortoise (Mojave Population) Recovery Plan was released in 1994 and its report on population viability and reserve design was reiterated in the 2011 Revised Recovery Plan as needing to be updated with current population data (USFWS 2011, p. 83). With lower population densities and abundance, a revised population viability analysis would show the need for greater areas of habitat to receive

reserve level of management for the Mojave desert tortoise. In addition, we note that none of the recovery actions that are fundamental tenets of conservation biology has been implemented throughout most or all of the range of the Mojave desert tortoise.

Definition of an Endangered Species: In 2011, Murphy et al. stated that the "recognition of G. morafkai reduces the range of G. *agassizii* to occupying about 30% of its former range." Given this reduction in species distribution and numbers and the "…drastic population declines in G. *agassizii* during the past few decades, it might be endangered."

In 2018, Agassiz's desert tortoise was added to the list of the world's most endangered tortoises and freshwater turtles. It is in the top 50 species. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers Agassiz's desert tortoise to be Critically Endangered (Turtle Conservation Coalition 2018).

The IUCN places a taxon in the Critically Endangered category when the best available evidence indicates that it meets one or more of the criteria for Critically Endangered. These criteria are 1) population decline - a substantial (>80 percent) reduction in population size in the last 10 years; 2) geographic decline - a substantial reduction in extent of occurrence, area of occupancy, area/extent, or quality of habitat, and severe fragmentation of occurrences; 3) small population size with continued declines; 4) very small population size; and 5) analysis showing the probability of extinction in the wild is at least 50 percent within 10 years or three generations. In the FESA, Congress defined an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range…" Given the information on the status of the Mojave desert tortoise and the federal definition of an endangered species, the Council believes the status of the Mojave desert tortoise is that of an endangered species.

Literature Cited in Appendix A

Allison, L.J. and A.M. McLuckie. 2018. Population trends in Mojave desert tortoises (*Gopherus agassizii*). Herpetological Conservation and Biology 13(2):433–452.

Congdon, J.D., A.E. Dunham, and R.C. van Loeben Sels. 1993. Delayed sexual maturity and demographics of Blanding's Turtles (*Emydoidea blandingii*): implications for conservation and management of long-lived organisms. Conservation Biology 7:826–833.

Doak, D., P. Karieva, and B. Klepetka.1994. Modeling population viability for the Desert Tortoise in the Western Mojave. Ecological Applications 4:446–460.

Fahrig, L. 2007. Non-optimal animal movement in human-altered landscapes. Functional Ecology 21:1003–1015.

Hagerty, B.E., and C.R. Tracy. 2010. Defining population structure for the Mojave Desert Tortoise. Conservation Genetics 11:1795–1807.

Murphy, R.W., K.H. Berry, T. Edwards, and A.M. McLuckie. 2007. A genetic assessment of the recovery units for the Mojave population of the Desert Tortoise, *Gopherus agassizii*. Chelonian Conservation and Biology 6:229–251.

Murphy, R.W., K.H. Berry, T. Edwards, A.E. Leviton, A. Lathrop, and J. D. Riedle. 2011. The dazed and confused identity of Agassiz's land tortoise, *Gopherus agassizii* (Testudines, Testudinidae) with the description of a new species, and its consequences for conservation. ZooKeys 113: 39–71. doi: 10.3897/zookeys.113.1353.

Spencer, R.-J., J.U. Van Dyke, and M.B. Thompson. 2017. Critically evaluating best management practices for preventing freshwater turtle extinctions. Conservation Biology 31:1340–1349.

Turtle Conservation Coalition. 2018. Turtles in Trouble: The World's 25+ Most Endangered Tortoises and Freshwater Turtles. www.iucn-tftsg.org/trouble.

U.S. Fish and Wildlife Service (USFWS). 1994a. Desert tortoise (Mojave population) Recovery Plan. U.S. Fish and Wildlife Service, Region 1, Portland, Oregon. 73 pages plus appendices.

U.S. Fish and Wildlife Service. 1994b. Endangered and threatened wildlife and plants; determination of critical habitat for the Mojave population of the desert tortoise. Federal Register 55(26):5820-5866. Washington, D.C.

U.S. Fish and Wildlife Service. 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, California and Nevada Region, Sacramento, California.

U.S. Fish and Wildlife Service. 2015. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

U.S. Fish and Wildlife Service. 2016. Biological Opinion on the Proposed Land Use Plan Amendment under the Desert Renewable Energy Plan. Memorandum to Deputy State Director, Bureau of Land Management, Sacramento, California. Dated August 16. From Field Supervisor, Carlsbad Fish and Wildlife Office. Carlsbad, California. 203 pp.

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February 15, 2021 *submitted electronically*

Ronelle Candia, Supervising Planner
Kern County Planning and Natural Resources Department
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CandiaR@kerncounty.com

Subject: **Notice of Preparation of a Draft Environmental Impact Report**
The Bellefield Solar Project (Project), by 50LW 8ME LLC

Dear Ms Candia:

The Kern Audubon Society (KAS), an interested party, received a notice of availability concerning a Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) from the Kern County Planning and Natural Resources Department (County) for the above referenced Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Thank you for the opportunity to provide comments concerning the scope and content of the environmental analysis of the Project that may affect the diverse California wildlife within the Project's footprint and its cumulative impacts in the region.

The DEIR for the proposed 8,371 acre project located in portions of unicorporated Kern County and the City of California City should identify and evaluate potential adverse impacts to protected species that may utilize the disturbed and undeveloped Joshua tree and desert saltbush scrub areas proposed for the Project activities. These undeveloped areas have potential to support desert kit fox, American badger, Western burrowing owl, Swainson's hawk, loggerhead shrike, Mohave ground squirrel, and desert tortoise. The biological site evaluation should be performed by qualified biological consultants using the appropriate survey protocols as established by both state and federal wildlife agencies.

It is imperative that all biological surveys be performed during the appropriate time of year to discern species presence for this eco-region. This is especially true for the desert tortoise and Mohave ground squirrel. Presence/absence surveys for both desert tortoise and Mohave ground squirrel can be negatively influenced by seasonal drought conditions so it is imperative that surveys be performed during years exhibiting average winter precipitation. Biological consultants should evaluate the Project's potential to subsidize and support local raven populations that depredate the endangered desert tortoises of the Mojave Desert region. Ravens represent a major threat to long term tortoise recovery in the Mojave. The close proximity of the Desert Tortoise Preserve makes raven management a major concern. Due to the size of this Project and its proximity to other large solar developments cumulative impacts to sensitive biological resources requires more than a perfunctory analysis of said impacts. Of additional concern is the Project's location along the eastern edge of the Sierra flyway, a major migratory path for millions of migrating birds every year.

KAS appreciates the opportunity to comment on the NOP for the Bellefield Solar Project DEIR and to assist the County in identifying Project impacts on sensitive biological resources endemic to the Kern County Mojave Desert area.

Sincerely,

Franklin Bedard
Conservation Chair
Kern Audubon Society

California Program Office
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February 18, 2021

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City of California City Planning Department
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Attn: Shawn Monk, City Planner/Economic Development Administrator
Via email to: smonk@californiacity-ca.gov; planning@californiacity-ca.gov

Re: Comments on Notice of Preparation of an Environmental Impact Report and Initial Study for the proposed Bellefield Solar Project

Dear Ms. Candia and Mr. Monk:

Thank you for the opportunity to review and submit comments on the Notice of Preparation of an Environmental Impact Report and Initial Study (NOP/IS) for the proposed Bellefield Solar Project (Project), located approximately five-miles east of Mojave, California. This comment letter on the NOP/IS is submitted by Defenders of Wildlife (Defenders) on behalf of its 1.8 million members and supporters in the U.S., including 279,000 in California.

Defenders is a national conservation organization founded in 1947 and dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Brief Description of the Project: The Project is a proposed photovoltaic electricity generation and battery energy storage system capable of producing up to 1,500 MW and storing up to 1,500 MW-hours of electricity on approximately 8,371 acres of privately-owned land. Approximately 2,100 acres of the Project is located within the boundary of the City of California City. Separate conditional use permits for the project would be issued by Kern County and City of California City for portions of the project within their jurisdictions. Electricity generated by the Project would be delivered via a 230 kV overhead and/or underground electrical transmission line to the existing Windhub Substation owned by Southern California Edison (SCE). The Project has an anticipated operational life of 35 years.

Nearly all the land where the Project would be constructed, including the gen-tie line, is relatively undisturbed and supports numerous natural vegetation communities, three of which are identified as sensitive natural communities by the California Native Plant Society (CNPS), namely Spinescale Scrub, Winterfat Scrub, and Joshua Tree Woodland.

Our comments on the NOP/IS for the Project are focused on biological resources that would be affected by the Project:

1. Project impacts on biological resources: We are pleased the IS states that the Project would have potentially significant adverse impacts on five of six standard categories of biological resources, including candidate, sensitive, or special status species; riparian habitat or other sensitive natural community; state or federally protected wetlands; movement of native resident or migratory wildlife species, wildlife corridors and native wildlife nursery sites; conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

2. Native animal species, including threatened, endangered and candidates: The IS is deficient regarding native species on the Project area, as it states, "The project site and surrounding area may be used for **land-based migration or dispersal by native wildlife species** (emphasis added), such as migratory birds, (e.g., burrowing owl) and desert tortoise."

Although native species may indeed traverse Project area during dispersal events, it is also highly likely certain species reside there as seasonal and permanent residents. The latter include the threatened desert tortoise and Mohave ground squirrel because the Project area supports several natural vegetation communities typically occupied by these two threatened species.

Biological resource surveys were conducted in the vicinity of the Project for the now operational 4,500 acre Hyundai Motor America (Hyundai) automotive test course facility in 2002-2004 by biologists working for Sapphos Environmental. The Sapphos Environmental Assessment/Habitat Conservation Plan (EA/HCP) for the facility was completed in 2006 in support of incidental take permit applications submitted to the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (now Wildlife) (CDFW) by Hyundai. The federal incidental take

permit application was for the threatened desert tortoise, listed by the USFWS in 1990; and the state incidental take permit application was for the threatened desert tortoise and Mohave ground squirrel, listed by the state Fish and Game Commission in 1989 and 1971, respectively. Among conditions of the federal and state incidental take permits was compensating for the loss of desert tortoise habitat at a ratio of 1:1, and for the Mohave ground squirrel at a ratio of 2.3:1. Based on the results of biological field surveys, it was estimated that 30 desert tortoises and an unknown number of Mohave ground squirrels occupied the Hyundai project area.

Based on the occurrence of desert tortoises and Mohave ground squirrels at the Hyundai project area, we recommend that protocol surveys for these two species and approved by the federal and state wildlife agencies be performed on the Project area. Detailed information on the Mohave ground squirrel that can be used in preparation of the DEIS for the Project can be found in A Conservation Strategy for the Mohave Ground Squirrel published by the CDFW in 2019.[1]

We recommend that protocol surveys for rare plants, burrowing owl and desert kit fox also be performed on the Project area. The CDFW office in Fresno, California, should be contacted to obtain the latest survey protocols.

3. Native plant species/Joshua tree: The IS indicates western Joshua trees occur within the Project area, a species under consideration for listing as threatened or endangered under the California Endangered Species Act. The state Fish and Game Commission recently determined that listing the western Joshua tree may be warranted, which automatically gave the species interim protection as a Candidate for listing. At its meeting on September 22, 2020, the Fish and Game Commission adopted a Special Order regarding incidental take of western Joshua trees during the period of time is remains a Candidate for listing for certain solar energy projects in Kern and San Bernardino Counties, which included the Project. The Project is among those solar projects addressed in the Special Order.

The Fish and Game Commission specified that certain proposed solar projects may be granted incidental take permits for western Joshua trees. For the solar projects included in the list, the Special Order stated the project applicant must perform a census of all Joshua trees within a project area that meets the following requirements:

- The census shall be conducted by one or more qualified biologist(s), approved in advance in writing by the department, which approval shall not be unreasonably withheld or delayed.
- The census shall be conducted by walking transect surveys so that one hundred percent visual coverage of the project impact areas is achieved.
- For purposes of calculating the number of acres to be mitigated and for purposes of providing information for the department's status review, the census shall count and classify

[1] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=171301&inline

western Joshua trees by height into the following three categories: trees less than one meter in height; trees on meter or greater but less than five meters in height and trees five meters or greater in height.

Defenders recommends that staff involved in the Project permitting process from the county and California City, and the Project applicant's environmental consultant, contact the CDFW office in Fresno, California, to discuss the regulatory process allowing for the incidental take of western Joshua trees and for obtaining complete instructions for the report containing the Joshua tree census, and other mandatory requirements of the Special Order. Planning staff and the Project applicant should be aware that the Fish and Game Commission has specified in its Special Order that compensatory mitigation for loss of western Joshua trees is required at a ratio of 1.5:1 (acres protected to acres lost).

4. Impact avoidance, minimization and compensation: Due to the numerous special status species that are known to occur or have a high probability to occur on the project site and that would be adversely impacted by the Project, we recommend that the applicant be required to obtain recommended measures for impact avoidance, minimization and compensatory mitigation from the California Department of Fish and Game, Central Region, in Fresno, California [(559) 243-4005; reg4sec@wildlife.ca.gov]. Once those measures have been identified in writing, the applicant should submit them to the Kern County Planning and Natural Resources Department for inclusion in the DEIS and as stipulations if a notice to proceed or a project area grading permit is issued by the county.

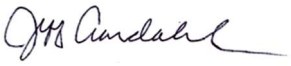
Under state law and regulation, including the California Environmental Quality Act, Public Resources Code and Fish and Game Code, the CDFW is the Trustee agency responsible for providing biological expertise to lead agencies during the California Environmental Quality Act process, which typically results in a formal comment letter including recommended actions designed to ensure compliance with state law and regulation governing native species.

Given the CDFW is California's Trustee agency for all native plants and animals, Kern County and the City of California City should rely on the expertise, findings and recommendations from the Department of Fish and Wildlife, and incorporate all recommended measures to avoid, minimize and compensate for significant adverse impacts to species and their habitats in final Environmental Impact Reports. Kern County and City of California City should refrain for substituting their opinions or the opinions of an applicant's environmental consultant, for those of the CDFW.

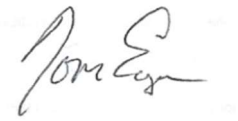
Conclusion: The Project is a very large scale conversion of relatively undisturbed natural vegetation communities and their associated native plants and animals to a solar electric generating facility. Numerous special status species are likely occupying the Project area, which will require incidental take permits issued by the CDFW. Kern County and City of California City should coordinate closely with CDFW managers and staff to ensure the Project is permitted and constructed in a

manner fully consistent with state laws and regulations governing native plants, animals and their habitats. Kern County and City of California City should seek cooperating agency status from the CDFW under provisions of the California Environmental Quality Act. Please contact either of us if can be of further assistance.

Sincerely,



Jeff Aardahl
California Representative
Defenders of Wildlife
jaardahl@defenders.org



Tom Egan
California Desert Representative
Defenders of Wildlife
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State of California – Natural Resources Agency
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GAVIN NEWSOM, Governor
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February 22, 2021

Ronelle Candia
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Bakersfield CA, 93301

Subject: Bellefield Solar Project by 50LW 8ME LLC (Project)
Notice of Preparation (NOP)
SCH No.: 2021010168

Dear Ms. Candia:

The California Department of Fish and Wildlife (CDFW) received an NOP from the Kern County Planning and Natural Resources Department for the above-referenced Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under Fish and Game Code.

While the comment period may have ended, CDFW would appreciate if you will still consider our comments.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statue for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id*., § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code may be required.

Fully Protected Species: CDFW has jurisdiction over fully protected species of birds, mammals, amphibians, reptiles, and fish, pursuant to Fish and Game Code sections 3511, 4700, 5050, and 5515. CDFW prohibits and cannot authorize take of any fully protected species.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include, sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

PROJECT DESCRIPTION SUMMARY

Proponent: 50LW 8ME LLC

Objective: The Bellefield Solar Project by 50LW 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500-megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity on approximately 8,371 acres of privately-owned land. The proposed project would be supported by a 230 kilovolt (kV) overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation. The combined linear distance of the gen-tie alternatives are 89.6 miles with a width of 200 feet. The collector lines are generally located within or adjacent to the Kern County and/or California City parcels, while the gen-tie alternatives generally originate from the central portion of the Project heading west around Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes. The proposed

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project's permanent facilities would include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Location: The Project site is approximately 8,371 acres of land within portions of unincorporated Kern county and the City of California City. It is East of the Mojave Airport, West of the Hyundai Proving Ground, and straddles the State Road 58.

COMMENTS AND RECOMMENDATIONS

CDFW offers the following comments and recommendations to assist the city of Kern County Planning and Natural Resources Department in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the CEQA document prepared for this Project.

There are special-status species that have been documented in the Project vicinity and may be present at individual Project sites in the Project area. These resources may need to be evaluated and addressed prior to any approvals that would allow ground-disturbing activities or land use changes.

CDFW is concerned regarding potential impacts to special-status species including, but not limited to, the State and Federally threatened desert tortoise (*Gopherus agassizii*); the State threatened Mojave ground squirrel (*Sterna antillarum browni*), and Swainson's Hawk (*Buteo swainsonii*), the State candidate for listing as threatened western Joshua tree (*Yucca brevifolia*), and the State species of special concern American badger (*Taxidea taxus*), northern legless lizard (*Anniella pulchra*), special status townsend's big-eared bat (*Corynorhinus townsendii*), LeConte's thrasher (*Toxostoma lecontei*), burrowing owl (*Athene cunicularia*), Tehachapi pocket mouse (*Perognathus alticola inexpectatus)* and loggerhead shrike (*Lanius ludovicianus*); as well as the desert kit fox (*Vulpes macrotis ssp. macrotis*), which is protected under California Code of Regulations (CCR), Title 14, Chapter 5, Section 460.

We recommend that the County require the Project proponent to conduct species-specific surveys according to acceptable protocols. The results of these surveys will help inform the County's EIR analysis of potential Project-related impacts to these species, as well as any additional species that also depend on desert scrub and western Joshua tree woodland habitats found on the Project site. The Department also recommends the County include a cumulative impacts analysis to determine how this Project along with recently approved or reasonably foreseeable projects in the vicinity with similar impacts will affect biological resources and impair connectivity. Our specific recommendations follow.

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I. Environmental Setting and Related Impact

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or the United States Fish and Wildlife Service (USFWS)?

COMMENT 1: Desert Tortoise

Issue: The Project site is within the range of desert tortoise and based on aerial imagery, appears to contain suitable habitat. Desert tortoise are most common in desert scrub, desert wash, and Joshua tree habitats (CDFW, 2018).

Specific impact: Potentially significant impacts that may result from Project-related activities include loss of foraging habitat, habitat degradation and fragmentation, burrow destruction, and direct mortality.

Evidence impact is potentially significant: Human impacts to desert tortoise include habitat conversion to agriculture and urban lands, degradation of habitat by off-highway vehicles (OHV), intentional killing of tortoises, and killing by cars and OHV (Doak, Kareiva, Kleptka, 1994). Habitat conversion to agriculture results in the loss of habitat and may lead to an increase in the predator raven population, drawdown of water table, introduction of pesticides and other toxic chemicals, and the potential introduction of invasive plants (Boarman, 2002). Project activities may result in the loss of potential desert tortoise habitat through conversion and may increase habitat fragmentation.

Recommended Potentially Feasible Mitigation Measure(s)
To evaluate potential Project-related impacts to desert tortoise, CDFW recommends conducting the following evaluation of the Project site and including the following measures in the EIR.

Recommended Mitigation Measure 1: Desert Tortoise Surveys

CDFW advises surveys for desert tortoise be conducted by a qualified wildlife biologist who understands and will follow the pre-project survey protocol as outlined in “Preparing for any action that may occur within the range of the Mojave Desert tortoise (*Gopherus agassizii*)” (USFWS, 2010) and has previous experience surveying for desert tortoise. The surveys must be conducted during the appropriate survey periods for the entire Project site, including the gen-tie line corridor and collection line between the two Project sites to determine the potential for desert tortoise use of the Project site and surrounding area. CDFW further recommends that survey results be submitted to both the Department and USFWS.

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Recommended Mitigation Measure 2: Desert Tortoise Take Authorization

If desert tortoise is found within the Project area during surveys or construction activities, consultation with CDFW is advised to discuss how to implement the Project and avoid take; or if avoidance is not feasible, to acquire an Incidental Take Permit (ITP) pursuant to Fish and Game Code section 2081 subdivision (b) prior to any vegetation- or ground-disturbing activities. Any take of desert tortoise without take authorization would be a violation of Fish and Game Code section 2080.

COMMENT 2: Mohave Ground Squirrel (MGS)

Issue: The Project site is within the range of MGS and based on aerial imagery, the Project site appears to contain suitable habitat for MGS.

Specific impact: Without appropriate avoidance and minimization measure for MGS, potential significant impacts associated with the Project's construction include burrow collapse, inadvertent entrapment, reduced reproductive success, and mortality of individuals.

Evidence impact is potentially significant: Major threats to MGS are drought, habitat destruction, habitat fragmentation, and habitat degradation (Gustafson, 1993). MGS is restricted to a small geographic range and the greatest habitat loss has occurred near desert towns including California City (Gustafson, 1993). Natural cycling is anticipated in MGS populations therefore the true indicators of the status of the species are the quantity, pattern of distribution, and quality of habitat (Gustafson, 1993). Project activities may result in the loss of potential MGS habitat through conversion and may increase habitat fragmentation.

Recommended Potentially Feasible Mitigation Measure(s)
To evaluate potential Project-related impacts to MGS, CDFW recommends conducting the following evaluation of the Project site and including the following measures in the EIR.

Recommended Mitigation Measure 3: MGS Surveys

CDFW recommends that a qualified biologist, with appropriate permits, conduct protocol surveys for MGS following the methods described in the "Mohave Ground Squirrel Survey Guidelines" (CDFG, 2003) during the appropriate survey season and that these surveys be conducted in areas of potential habitat, including marginal habitat covering the entire Project site, including the gen-tie line and collection line corridors. Because of the large size of the Project site, the Department recommends the Project applicant propose a surveying methodology that includes use of remote camera stations. CDFW recommends submittal of the proposed survey methodology to CDFW for review and

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approval prior to implementation, to avoid expenditure of funds on an inadequate survey effort. We also recommend that the results of these surveys be submitted to the Department for evaluation. Please note MGS surveys are valid for one year and should be conducted within a year of the start of ground-disturbing activities.

Recommended Mitigation Measure 4: MGS Avoidance

In order to implement full avoidance for MGS, CDFW recommends a 50-foot no disturbance buffer be employed around all burrows that could be used by MGS. Alternately, the Project proponent may choose to assume presence of MGS and obtain an ITP prior to initiating ground-disturbing activities.

Mitigation Measure 5: MGS Take Authorization

If MGS are found within the Project area during preconstruction surveys or construction activities, consultation with CDFW is recommended to discuss how to implement the Project and avoid take; or if avoidance is not feasible, to acquire an ITP pursuant to Fish and Game Code section 2081 subdivision (b) prior to any ground-disturbing activities. Any take of MGS without take authorization would be a violation of Fish and Game Code section 2080.

COMMENT 3: Swainson's Hawk (SWHA)

Issue: SWHA have the potential to forage within and near the Project site. Aerial imagery shows the presence of suitable foraging habitat for the species.

Specific impacts: Without appropriate avoidance and minimization measures for SWHA, potential significant impacts that may result from Project activities include loss of foraging habitat that would reduce nesting success (loss or reduced health or vigor of eggs or young), and direct mortality. Any take of SWHA without appropriate incidental take authorization would be a violation of Fish and Game Code.

Evidence impact is potentially significant: SWHA exhibit high nest-site fidelity year after year and lack of suitable nesting habitat in the San Joaquin Valley limits their local distribution and abundance (CDFW 2016). The Project as proposed will involve noise, groundwork, and movement of workers that could affect nests and has the potential to result in nest abandonment, significantly impacting local nesting SWHA.

Recommended Potentially Feasible Mitigation Measure(s)
Because suitable habitat for SWHA is present throughout the Project site, CDFW recommends conducting the following evaluation of the Project site and including the following measures in the EIR.

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Recommended Mitigation Measure 6: SWHA Surveys

To evaluate potential impacts, CDFW recommends that a qualified wildlife biologist conduct surveys as described in the Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California (2010) prior to project implementation. The survey protocol includes early season surveys to assist the project proponent in implementing necessary avoidance and minimization measures, and in identifying active nest sites prior to initiating ground-disturbing activities.

Recommended Mitigation Measure 7: No-disturbance Buffer

If ground disturbing activities are to take place during the normal bird breeding season (March 1 through September 15), CDFW recommends that additional pre activity surveys for active nests be conducted by a qualified biologist no more than 10 days prior to the start of Project implementation to ensure that no SWHA have begun nesting activities near the Project site. CDFW recommends a minimum no disturbance buffer of 0.5-mile be delineated around active nests until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

Recommended Mitigation Measure 8: SWHA Foraging Habitat

CDFW recommends compensation for the loss of SWHA foraging habitat to reduce impacts to SWHA foraging habitat to less than significant based on Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California (2010).

Recommended Mitigation Measure 9: SWHA Take Authorization

CDFW recommends that in the event an active SWHA nest is detected during surveys and the ½-mile no-disturbance buffer around the nest cannot feasibly be implemented, consultation with CDFW is warranted to discuss how to implement the project and avoid take. If take cannot be avoided, take authorization through the issuance of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

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COMMENT 4: Burrowing Owl (BUOW)

Issue: BUOW may occur near the Project site (CDFW 2021). BUOW inhabit open grassland or adjacent canal banks, ROWs, vacant lots, etc. containing small mammal burrows, a requisite habitat feature used by BUOW for nesting and cover.

Specific impact: Potentially significant direct impacts associated with subsequent activities include burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals.

Evidence impact is potentially significant: BUOW rely on burrow habitat year-round for their survival and reproduction. Habitat loss and degradation are considered the greatest threats to BUOW in California's Central Valley (Gervais et al. 2008). Therefore, subsequent ground-disturbing activities associated with the Project have the potential to significantly impact local BUOW populations. In addition, and as described in CDFW's "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), excluding and/or evicting BUOW from their burrows is considered a potentially significant impact under CEQA.

Recommended Potentially Feasible Mitigation Measure(s) (Regarding Environmental Setting and Related Impact)
To evaluate potential impacts to BUOW, CDFW recommends conducting the following evaluation of the Project site, incorporating the following mitigation measures into the EIR prepared for this Project, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 10: BUOW Surveys

CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the California Burrowing Owl Consortium's "Burrowing Owl Survey Protocol and Mitigation Guidelines" (CBOC 1993) and CDFW's Staff Report on Burrowing Owl Mitigation" (CDFG 2012). Specifically, CBOC and CDFW's Staff Report suggest three or more surveillance surveys conducted during daylight with each visit occurring at least three weeks apart during the peak breeding season (April 15 to July 15), when BUOW are most detectable. These surveys are to determine if there are more BUOW in addition to the December 2017 observation surveyed for the Project.

Recommended Mitigation Measure 11: BUOW Avoidance

CDFW recommends no-disturbance buffers, as outlined in the "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), be implemented prior to and during any

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ground-disturbing activities. Specifically, CDFW's Staff Report recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Recommended Mitigation Measure 12: BUOW Passive Relocation and Mitigation

If BUOW are found within these recommended buffers and avoidance is not possible, it is important to note that according to the Staff Report (CDFG 2012), exclusion is not a take avoidance, minimization, or mitigation method and is considered a potentially significant impact under CEQA. However, if necessary, CDFW recommends that burrow exclusion be conducted by qualified biologists and only during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty through non-invasive methods, such as surveillance. CDFW recommends replacement of occupied burrows with artificial burrows at a ratio of 1 burrow collapsed to 1 artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting BUOW. BUOW may attempt to colonize or re-colonize an area that will be impacted; thus, CDFW recommends ongoing surveillance, at a rate that is sufficient to detect BUOW if they return.

COMMENT 5: Special-Status Plant species

Issue: Plants listed pursuant to federal Endangered Species Act (FESA), CESA, and the Native Plant Protection Act, as well as other special-status plants such California Rare Plant Rank (CRPR) plant species have the potential to occur in and around the Project area (CDFW 2021). Based upon available aerial photography, western Joshua tree appears to occur within the Project site.

Specific impact: Without appropriate avoidance and minimization measures potential impacts to special-status plant species include inability to reproduce and direct mortality. Unauthorized take of species listed as threatened, endangered, or

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rare pursuant to CESA or the Native Plant Protection Act is a violation of Fish and Game Code.

Evidence impact would be significant: Special-status plant species plant species are threatened with habitat loss and habitat fragmentation resulting from development, vehicle and foot traffic, and introduction of non-native plant species (CNPS 2020), all of which may be unintended impacts of the Project. Therefore, impacts of the Project have the potential to significantly impact populations of the species mentioned above.

Recommended Potentially Feasible Mitigation Measure(s)
To evaluate potential impacts to special-status plants associated with the Project, CDFW recommends conducting the following evaluation of the Project area and including the following mitigation measures as conditions of Project approval in the Project's EIR.

Recommended Mitigation Measure 13: Special-Status Plant Habitat Assessment

CDFW recommends that a qualified botanist conduct a habitat assessment of individual Project sites well in advance of Project implementation, to determine if the Project area or its vicinity contains suitable habitat for special-status plant species.

Recommended Mitigation Measure 14: Focused Surveys

If suitable habitat is present, CDFW recommends that individual Project sites be surveyed for special-status plants by a qualified botanist following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities" (CDFW 2018). This protocol, which is intended to maximize detectability, includes identification of reference populations to facilitate the likelihood of field investigations occurring during the appropriate floristic period. In the absence of protocol-level surveys being performed, additional surveys may be necessary.

Recommended Mitigation Measure 15: Special-Status Plant Avoidance

CDFW recommends special-status plant species be avoided whenever possible by delineation and observing a no-disturbance buffer of at least 250 feet from the outer edge of the plant population(s) or specific habitat type(s) required by special-status plant species. If buffers cannot be maintained, then consultation with CDFW is warranted to determine appropriate minimization and mitigation measures for impacts to special-status plant species.

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Recommended Mitigation Measure 16: Special-Status Plant Take Authorization

As stated above, Joshua tree appears to occur on the Project site based upon available aerial photography. Therefore, consultation with CDFW is warranted to discuss take authorization. If another State-listed plant species is identified during botanical surveys, consultation with CDFW is warranted to determine if the Project can avoid take of that species. If take cannot be avoided, take authorization would need to occur through acquisition of an ITP from CDFW to comply with CESA and/or Fish and Game Code section 1900, and California Code of Regulations, title 14, section 786.9, subdivision (b).

COMMENT 6: Other Species of Special Concern

Issue: American badger, LeConte's thrasher, loggerhead shrike, northern legless lizard, Tehachapi pocket mouse, Townsend's big-eared bat have the potential to occur in the project vicinity. These species have been documented near the area and suitable habitat exists within the project area (CNDDB 2021).

Specific impact: Without appropriate avoidance and minimization measures for these special status species potentially significant impacts associated with the Project's activities could include site abandonment which may result in reduced health or vigor of eggs and/or young, and/or direct mortality.

Evidence impact is potentially significant: The Project area has the capacity to support the species and thus, subsequent ground-disturbing activities involved with the Project have the potential to impact the species.

Recommended Potentially Feasible Mitigation Measure(s)
To evaluate potential impacts to these special status species, CDFW recommends conducting the following evaluation of the Project site, incorporating the following mitigation measures into the EIR prepared for this Project, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 17: Species Specific Surveys

If suitable habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for each of these species and their requisite habitat features using the appropriate survey protocol to evaluate potential impacts resulting from Project-related activities.

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Recommended Mitigation Measure 18: Special-Status Species Avoidance

Avoidance whenever possible is encouraged via delineation however, a qualified biologist with the appropriate handling permit may relocate special status species out of the project area into a nearby area with suitable habitat.

Recommended Mitigation Measure 19: American Badger Avoidance

If suitable badger dens are present, avoidance whenever possible is encouraged via delineation and observation of a 50-foot no-disturbance buffer around dens until it is determined through non-invasive means that individuals occupying the den have dispersed.

Recommended Mitigation Measure 20: Bat Eviction Plan

Detection of special-status bat species warrants consultation with CDFW prior to any activity that may disturb bats. CDFW recommends submitting a Bat Eviction Plan to CDFW for written approval prior to project implementation, and that the Eviction Plan include details for excluding bats from the roost site, and a monitoring plan to ensure that all bats have exited the roost prior to the start of activity and will be unable to re-enter the roost until activity is completed. CDFW also recommends that Project or bat eviction activities be timed to avoid lactation and young-rearing.

II. Editorial Comments and/or Suggestions

Desert Kit Fox: Desert kit fox (*Vulpes macrotis arsipus*) is protected under the California Code of Regulations, Chapter 5, Section 460, which prohibits “take” of the species for any reason. CDFW recommends that the draft EIR include measures to help ensure the Project complies with this regulation and to avoid the take of desert kit fox. CDFW recommends the County require a qualified biologist conduct surveys following the methodology in the *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance*, which can be found at http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/kitfox_standard_rec_2011.pdf. While this survey methodology was developed specifically for the San Joaquin kit fox subspecies, it has been found to be effective in detecting dens of the desert fox subspecies as well. If any active or potential dens are found on the Project site, consultation with CDFW is warranted for guidance on take avoidance measures for the desert kit fox. CDFW also recommends all perimeter fencing be raised five to seven inches above ground level and knuckled under to allow desert kit fox movement into and out of the Project site.

Federally Listed Species: CDFW recommends consulting with the USFWS on potential impacts to federally listed species including, but not limited to, desert tortoise.

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Take under FESA is more broadly defined than CESA; take under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of any ground-disturbing activities.

Lake and Streambed Alteration: The Project contains features that may result in Project activities at individual Project sites being subject to CDFW's regulatory authority pursuant Fish and Game Code section 1600 et seq. Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may (a) substantially divert or obstruct the natural flow of any river, stream, or lake; (b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake; or (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. "Any river, stream, or lake" includes those that are ephemeral or intermittent, such as the unnamed stream within the Project site, as well as those that are perennial in nature.

For additional information on notification requirements, please contact our staff in the Lake and Streambed Alteration Program at (559) 243-4593. It is important to note, CDFW is required to comply with CEQA, as a Responsible Agency, when issuing a Lake or Streambed Alteration Agreement (LSAA). If inadequate, or no environmental review, has occurred, for the Project activities that are subject to notification under Fish and Game Code section 1602, CDFW will not be able to issue the Final LSAA until CEQA analysis for the project is complete. This may lead to considerable Project delays.

Nesting birds: CDFW encourages Project implementation at individual Project sites occur during the bird non-nesting season if suitable nesting bird habitat is present. However, if ground-disturbing activities must occur during the breeding season (February through mid-September), the Project's applicant is responsible for ensuring that implementation of the Project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above.

To evaluate Project-related impacts on nesting birds if suitable habitat is present, CDFW recommends that a qualified wildlife biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around the work site to identify nests and determine their status. A sufficient area means any area potentially affected by the Project. In addition to direct impacts (i.e. nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, CDFW recommends a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once construction begins, CDFW

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recommends a qualified biologist continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, CDFW recommends the work causing that change cease and CDFW consulted for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no disturbance buffers is possible when there is compelling biological or ecological reason to do so, such as when the construction area would be concealed from a nest site by topography. CDFW recommends that a qualified wildlife biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

If it is determined that the Project has the potential to impact biological resources, an assessment of filing fees will be necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

CDFW appreciates the opportunity to comment on the Project to assist the Kern County Planning and Natural Resources Department in identifying and mitigating the Project's impacts on biological resources.

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More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (https://www.wildlife.ca.gov/Conservation/Survey-Protocols). If you have any questions, please contact Jaime Marquez, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 243-4014, extension 291, or by electronic mail at Jaime.Marquez@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Julie Vance
FA83F09FE08945A...

Julie A. Vance
Regional Manager

Attachment

cc: United States Fish and Wildlife Service
2800 Cottage Way, Suite W-2605
Sacramento, California 95825

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LITERATURE CITED

Boarman, W. I., 2002. Threats to desert tortoise populations: a critical review of literature. U.S. Geological Survey Western Ecological Research Center, August 9, 2002.

California Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines. April 1993.

California Department of Fish and Game (CDFG). (2003). Mohave ground squirrel survey guidelines. California Department of Fish and Game.

California Department of Fish and Wildlife (CDFW), 2018. California Wildlife Habitat Relationship System, Desert Tortoise. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2659&inline=1. Accessed February 11, 2021.

CDFG. 2012. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game.

CDFW. 2016. Five Year Status Review for Swainson's Hawk (*Buteo swainsoni*). California Department of Fish and Wildlife. April 11, 2016.

CDFW, 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. California Department of Fish and Wildlife. March 20, 2018.

CDFW. 2021. Biogeographic Information and Observation System (BIOS). https://www.wildlife.ca.gov/Data/BIOS. Accessed February 11, 2021

California Energy Commission and CDFG, 2010. Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California. California Energy Commission and Department of Fish and game, June 2, 2010.

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org. Accessed February 11, 2021.

Gervais, J.A., D.D. Rosenberg, and L.A. Comrack. Burrowing Owl (*Athene cunicularia*) *in* Shuford, W.D. and T. Gardali, editors. 2008. California Bird Species of Special

DocuSign Envelope ID: 20E5D9B5-E965-45D4-AE17-9949B71ED6E7

Grinnell, J., and A. H. Miller. 1944. The Distribution of Birds of California. Pacific Coast Avifauna 27. Cooper Ornithological Club, Berkeley, CA, USA.

Gustafson, J., 1993. Report to the fish and game commission: a status review of the Mohave ground squirrel (*Spermophilus mohavensis*). California Department of Fish and Game, March 1993.

Monson, G. 1960. The nesting season. Southwest Regional Report, Audubon Field Notes 14:469.

USFWS. (2010). Preparing for any action that may occur within the range of the Mojave Desert tortoise (*Gopherus agassizii*). United States Fish and Wildlife Service.

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Attachment 1

MITIGATION MONITORING AND REPORTING PROGRAM (MMRP) FOR CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE RECOMMENDED MITIGATION MEASURES

PROJECT: Bellefield Solar
SCH No.: 2021010168

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
Before Disturbing Soil or Vegetation	
Mitigation Measure 1: Desert Tortoise Surveys	
Mitigation Measure 2: Desert Tortoise Take Authorization	
Mitigation Measure 3: MGS Surveys	
Mitigation Measure 5: MGS Take Authorization	
Mitigation Measure 6: SWHA Surveys	
Mitigation Measure 8: SWHA Foraging Habitat	
Mitigation Measure 9: SWHA Take Authorization	
Mitigation Measure 10: BUOW Surveys	
Mitigation Measure 12: BUOW Passive Relocation	
Mitigation Measure 13: Special-Status Plant Habitat Assessment	
Mitigation Measure 14: Focused Surveys	
Mitigation Measure 16: Special-Status Plant Take Authorization	
Mitigation Measure 17: Species Specific Surveys	
Mitigation Measure 20: Bat Eviction Plan	
During Construction	
Mitigation Measure 4: MGS Avoidance	
Mitigation Measure 7: No-Disturbance Buffer	
Mitigation Measure 11: BUOW Avoidance	
Mitigation Measure 15: Special-Status Plant Avoidance	
Mitigation Measure 18: Special-Status Species Avoidance	
Mitigation Measure 19: American Badger Avoidance	

From: Ben Melendez
To: Ronelle Candia
Subject: Comments of NOP of EIR for The Bellefield Solar Project by 50LW 8ME LLC
Date: Monday, March 15, 2021 2:49:37 PM

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Hi Candia,

Thank you for the opportunity to comment on this project. We have a few comments for your consideration:

In your letter dated January 15, 2021 on the 'Project Location' section it states that "Access to the site would be from Altus Ave, Arroyo Ave, Denise Ave, Sunset Ave, Silver Queen Road, and 20th, 30th, 50th and 70th Streets."

1. Parcel APN 235-132-16 of the project
AVEK owns one parcel APN 235-132-56 between the referenced parcel of the project and Silver Queen Rd. AVEK has a 36 in CML&C underground transmission pipeline running through this parcel.

2. Parcels APNs 235-102-02 and 235-221-01
AVEK owns three parcels APN 235-102-30, 235-102-29, and, 235-221-02 between the referenced parcels of the project and Silver Queen Rd. AVEK has a 33 in CML&C underground transmission pipeline running through these parcels.

Since these parcels owned by AVEK are between the Project property and Silver Queen Rd, we need to owner of the project to contact us as soon as possible to discuss the easement agreements needed to cross our property, and to provide a plan showing how they intend to protect the integrity of our pipes during construction and normal operations.

Any questions or concerns can be directed to me via email bmelendez@avek.org or by letter to the address 6500 W Ave N, Palmdale CA 93551.

Thank you for your attention to this matter,

Benjamin Melendez | Engineering Technician
Antelope Valley-East Kern Water Agency
AVEK.ORG

SUMMARY OF PROCEEDINGS

KERN COUNTY AGENCY SCOPING MEETING

Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, California

Microsoft Live Event
https://tinyurl.com/y5l8y2al

Date February 5, 2021

STAFF ATTENDANCE: Craig M. Murphy, Assistant Director
Katrina Slayton, Division Chief
Ronelle Candia, Supervising Planner
Jared Bradford, Planner I
Julie Williams, GIS Specialist

The virtual meeting convened at **1:30 p.m**. on the TEAMS application with Ms. Slayton outlining the purpose of the scoping meeting. Items were then discussed in order as identified on the agenda. In addition, a PowerPoint presentation was given of the project noted below:

NOTICE OF PREPARATION PROJECT:

Notice of Preparation:
Bellefield Solar Project by 50LW 8ME LLC (PP 20403)

Ms. Slayton introduced and described the proposed project, provided a brief history of the project and asked if there were any comments.

1. Dr. Ron Sahu, a consultant, submitted the following question into the record.
   - *What kind of storage is being used?*
   - Response from Ms. Slayton: *Battery storage is being used.*

2. Jerry Jackson, a member of the public, submitted the following question into the record.
   - *Is there a reason there are so many cut outs around Altus Avenue and 30th – why are they not proposing to use all of the land?*
   - Response from Ms. Slayton: *The applicant does not own all of that land.*

3. Dr. Ron Sahu, a consultant, submitted the following question into the record.
   - *Is the project subject to the California Energy Commission approvals?*
   - Response from Ms. Slayton: *No. This project is not subject to the California Energy Commission approvals.*

4. Matt Chavez, a member of the public, submitted the following question into the record.
   - *What about the property that is in the middle of the project?*
   - Response from Ms. Slayton: *The applicant does not own that land.*

5. An anonymous question was submitted into the record.
    - *Is there a way to determine what kind of reflections/light flare are generated by the solar panels? It would be detrimental to our property if sun reflections are blinding filmmakers on our land.*
    - Response from Ms. Slayton: *A glare study is being conducted for this project.*

6. Matt Chavez, a member of the public, submitted the following question into the record.
    - *Can property that is in the middle of the project be leased out?*
    - Response from Ms. Slayton: *Please give the APN to the Kern County Planning Department to give to the applicant.*

7. An anonymous question was submitted into the record.
    - *It appears that not all parcels in the area are being considered for the project, what is to become of those private parcels that would be surrounded by this project?*
    - Response from Ms. Slayton: *Please contact Ronelle Candia for specific concerns about these parcels.*

No other public comments were presented.

Public testimony closed at approximately 1:51 p.m.

Notes prepared by
Jared Bradford, Planner I

Appendix B
Aesthetics

B.1 Visual Resources Technical Report

B.2 Glare Study

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B.1 Visual Resources Technical Report

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Bellefield Solar Project

Visual Resources Technical Report

June 22, 2020

Prepared for:

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Appendix A: FHWA Visual Quality Rating Worksheets

Acronyms

AC	alternating current
Af	acre-feet
Afy	acre-feet per year
Amsl	above mean sea level
Applicant	50LW 8me LLC
CEQA	California Environmental Quality
CUP	Conditional Use Permit
DC	direct electrical current
ESS	energy storage system
FHWA	Federal Highway Administration
gen-tie	generation-tie
GPS	global positioning system
ISO	International Organization for Standardization
KOPs	Key Observation Points
kV	kilovolt
MW	megawatt
O&M	operations & maintenance
Project	50LW 8ME LLC Bellefield Solar Project
PV	photovoltaic
SCE	Southern California Edison
SR	State Route

1.0 INTRODUCTION

50LW 8me LLC (applicant) is seeking approval of Conditional Use Permits (CUPs) for the construction and operation of a up to 1,500-megawatt (MW) alternating current (AC) utility-scale solar farm with energy storage, known as the Bellefield Solar Project (Project) in unincorporated Kern County and California City, California. The applicant proposes to construct, own, and operate the Project and would secure CUPs from both Kern County and California City, along with permits from other relevant agencies as required by law.

This technical report evaluates potential effects on visual quality from development of the Project. Visual resources are elements of a natural or built environment with aesthetic value based on visual quality and character. They may be formally identified by local, state, or federal governments or recognized by other institutions and organizations. They may also be components of a natural or built environment that contribute to a memorable or distinct landscape. A visual resources technical report evaluates the potential effects on visual resources from a proposed project based on the project's physical characteristics and potential visibility and the degree to which the project could alter existing visual quality and/or visual character.

2.0 PROJECT DESCRIPTION

2.1 PROJECT INFORMATION

Applicant is seeking approval of conditional use permits (CUPs) for the construction of an up to 1,500-megawatt (MW) alternating electrical current (AC) utility-scale solar farm with an up to 1,500 megawatt-hour (MWh) Energy Storage System (ESS) known as Bellefield Solar Project (Project) in unincorporated Kern County and California City, California (Figure 1). The applicant proposes to construct, own, and operate the Project, and will secure CUPs from both Kern County and California City along with permits from other relevant agencies as required by law.

2.1.1 Project Site Information

The Project is comprised of 90 assessor's parcels (Project area) totaling approximately 8,371 gross acres. The Project includes 82 parcels totaling 6,269 gross acres within unincorporated Kern County and 8 assessor's parcels totaling approximately 2,102 gross acres within California City (Table 1). The permanent disturbance acreage associated with development of the solar facility and associated infrastructure (Project site) within the Project area would be less than the gross acreage of the Project area. The topography of the Project Area is relatively flat.

2.1.2 Location

The Project is located in portions of unincorporated Kern County and California City. The Project straddles State Route 58, east of Mojave and just west and south of the Hyundai-Kia Proving Ground.

Table 1: Bellefield Parcels

No.	Assessor's Parcel Number (APN)	Acres
California City		
1	235-061-02	658.81
2	235-101-45	304.04
3	235-101-46	103.66
4	235-101-47	154.85
5	235-101-48	151.16
6	235-101-49	464.68
7	235-101-51	262.88
8	235-282-22	2.55
	California City Total	**2,102.63**
Unincorporated Kern County		
9	235-022-01	657.12
10	235-024-01	123.44
11	235-024-14	82.19
12	235-024-15	79.93
13	235-024-17	63.64
14	235-024-40	10.57
15	235-024-41	654.99
16	235-024-42	40.98
17	235-024-43	41.45
18	235-064-01	332.71
19	235-064-12	41.38
20	235-064-25	41.40
21	235-064-26	41.39
22	235-064-27	41.39
23	235-064-28	41.36
24	235-064-29	77.86
25	235-065-04	15.49
26	235-065-05	0.98
27	235-065-07	1.49
28	235-065-17	33.48
29	235-065-18	442.64
30	235-081-03	10.19



No.	Assessor's Parcel Number (APN)	Acres
31	235-081-04	10.20
32	235-081-05	10.20
33	235-081-07	10.19
34	235-081-09	61.18
35	235-081-10	20.43
36	235-081-11	10.18
37	235-081-12	10.17
38	235-082-01	5.10
39	235-082-06	25.52
40	235-082-07	5.11
41	235-082-12	1.27
42	235-082-15	20.47
43	235-082-16	40.99
44	235-082-17	5.11
45	235-082-18	5.11
46	235-082-19	10.21
47	235-082-24	2.55
48	235-082-25	2.55
49	235-101-29	23.55
50	235-102-01	11.58
51	235-102-02	305.09
52	235-132-16	601.46
53	235-134-01	490.80
54	235-191-01	10.32
55	235-221-01	489.91
56	235-340-07	10.30
57	235-340-09	82.69
58	235-340-10	10.37
59	235-340-11	10.38
60	235-340-19	10.36
61	235-340-28	41.59
62	235-340-29	2.58
63	235-340-36	2.59
64	235-351-01	81.52
65	235-351-02	20.46



No.	Assessor's Parcel Number (APN)	Acres
66	235-351-03	20.45
67	235-351-04	40.86
68	235-353-11	5.15
69	235-353-21	2.57
70	235-353-22	2.57
71	235-410-02	10.15
72	235-410-04	8.04
73	235-410-06	10.07
74	428-010-02	171.11
75	428-010-03	170.94
76	428-010-10	42.60
77	428-010-11	263.76
78	428-041-02	20.51
79	428-041-03	20.55
80	428-041-04	20.60
81	428-041-05	5.21
82	428-041-38	15.68
83	428-042-02	20.43
84	428-042-03	20.48
85	428-042-04	20.53
86	428-042-35	7.35
87	428-052-15	4.31
88	428-052-17	7.20
89	428-053-16	10.19
90	428-053-18	9.35
	Unincorporated Kern County Total	**6,268.81**
	Total	**8,371.44**

2.2 DESCRIPTION OF PROPOSED PROJECT

The applicant proposes to develop a photovoltaic (PV) energy facility and ESS. Energy generated by the Project would be delivered from the Project site via an up to 230-kilovolt (kV) overhead and/or underground generation-tie line (gen-tie) originating from one or more onsite substation(s)/switchyard(s) and terminating at the Southern California Edison (SCE) Windhub Substation.

The Project may include operations & maintenance (O&M) buildings, substations, ESSs, and gen-tie facilities, as necessary, or it may share such facilities with other nearby Projects or with any future energy Projects in the area, and/or it may be remotely operated. Alternatively, if shared facilities are used, those areas designated in the application materials for O&M building, substation, and/or transmission facility may be occupied by solar panels.

Up to 20 full-time employees would operate the Project. Typically, most staff would work during the day shift (sunrise to sunset) and the remainder would work during the night shifts and weekends. If the Project shared O&M, substation, and/or transmission facilities with one or more nearby solar Projects, and/or became remotely operated, the Project's onsite staff could be reduced.

After the useful life of the Project, the panels would be disassembled from the mounting frames and the Project site would be restored to its pre-development condition.

2.2.1 PV Module Configuration

The Project would use PV panels or modules[1] on mounting frameworks to convert sunlight into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis using galvanized steel or aluminum). If the panels are configured for fixed tilt, the panels would be oriented toward the south. For tracking systems, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high depending on the mounting system used and on local building codes, they are expected to be between 6 and 8 feet high.

The foundations for the mounting structures can extend up to 10 feet below ground surface, depending on the mounting structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. Final solar panel layout and spacing would be optimized for site characteristics and the desired energy production profile.

2.2.2 Inverter Stations

Direct Current (DC) energy is delivered from the panels via cables to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy, which can be dispatched to the transmission system. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the supplier selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete-mounted pad.

[1] Including but not limited to concentrated photovoltaic technology

2.2.3 Energy Storage System

The Project may include one or more ESSs, located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, but possibly elsewhere onsite. Such large-scale ESSs would be up to 1,500 MWh in capacity and occupy up to 50 acres. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of International Organization for Standardization (ISO) standard containers (40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures but may also be housed in dedicated building(s) in compliance with applicable regulations. The maximum height of the structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power and/or purchase agreement requirements and on County building standards.

2.2.4 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more onsite substation(s) or switchyard(s) (collectively referred to as a substation herein). Each substation may contain several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, and voltage switch gear. Each substation would occupy an area of approximately 5 acres, secured separately by an additional chain-link fence, and typically located along the perimeter of the Project. The final location(s) would be determined before issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing 10 feet tall. The building would either be prefabricated concrete or steel housing with rooms for the voltage switch gear and metering equipment, a room for the station supply transformer, and a separate control technology room within which the main computer, intrusion detection system, and main distribution equipment would be housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at the O&M building(s) below.

2.2.5 Gen-tie Line

Power would be transmitted from the Project's substation(s) to SCE's Windhub Substation via an up to 230 kV overhead and/or underground gen-tie line. A franchise and/or encroachment agreement along Kern County and California City roads may ultimately be required for portions of the gen-tie.

2.2.6 Water Usage

Water demand for panel washing and O&M use is not expected to exceed 100 acre-feet per year (afy). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 900 acre-feet (af). Water is anticipated to be obtained from onsite wells or delivered via truck or pipeline from an offsite source(s). A small water treatment system with a footprint of up to 30 feet by 30 feet may be installed to provide deionized water for panel washing.

2.2.7 Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 80,000 gallons (greater if required by local regulations) may be placed on-site near the O&M building(s). The storage tank(s) near the O&M building(s) would have appropriate fire department connections to be used for fire suppression.

2.2.8 Operations and Maintenance Building

The Project may include an O&M building of approximately 40 feet long by 80 feet wide with associated onsite parking. The O&M building would be steel framed with metal siding and roof panels. The O&M building may include the following:

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

Roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

2.2.9 Project Site Security and Fencing

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet above finished grade. An intrusion alarm system would be integrated into the perimeter fence, with intrusion detection cabinets placed every 1,500 feet along the perimeter fence. An intrusion control unit or similar technology may be installed in the substation control room or at the O&M building. Additionally, the Project may include additional security measures including, but not limited to, low-voltage electrified fences with reflective warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and unauthorized activities.

Gates would be maintained at the main entrances to the Project to restrict access. Project access would be provided to offsite emergency responders in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

2.2.10 Project Lighting

Project lighting would be directed away from public rights-of-way and would be minimal. Lighting may include motion sensor lights for added security purposes. Lighting would be of the lowest intensity in compliance with any applicable regulations, measured at the property line after dark.



2.3 CONSTRUCTION ACTIVITIES

Site preparation, construction, and testing will be completed, and commercial operation is expected to commence as early as Q4 2021 and would extend for 18 to 24 months.

Construction would include the following:

- site preparation
- grading and earthwork
- concrete foundations
- structural steel work
- electrical/instrumentation work
- collector line installation
- architecture and landscaping

No roads would be affected except during construction. Construction traffic would access the site from Highway 58, Altus Avenue, Silver Queen Road, and 50th Street. Up to 1,000 workers per day would access the site during peak construction periods.

Heavy construction would occur between 6:00 AM and 5:00 PM, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may occur between 10:00 PM and 7:00 AM. Nighttime activities could include, but are not limited to, refueling equipment, staging materials, quality assurance and control, and commissioning.

Truck deliveries would normally occur during daylight. However, there would be offloading and/or transporting to the Project area on weekends and during evenings. Earth-moving is expected to be limited to the construction of the access roads, O&M building, substation, ESS(s), and any stormwater protection or storage (detention) facilities. Final grading may include revegetation with low growing grass or applying earth-binding materials to disturbed areas. In addition, a palliative with more reflective properties is being considered for use on the Project. Supplemental simulations are included in this report to provide a representation of its use.



2.4 WORK FORCE

Once the Project is constructed, maintenance would generally be limited to workers accomplishing the following:

1. Cleaning of PV panels
2. Monitoring electricity generation
3. Providing site security
4. Facility maintenance – replacing or repairing inverters, wiring, and PV modules

The project would require up to 20 full-time O&M employees. If the project uses shared O&M, substation, ESS, and/or transmission facilities with any future projects share personnel would reduce O&M staff.

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

3.0 EXISTING CONDITIONS

3.1 EXISTING SETTING

The Project is located along SR 58 in southeastern Kern County, approximately 60 miles southeast of the City of Bakersfield (Figure 1). The Project is in the southwestern Mojave Desert at the south end of the Fremont Valley and just north of the Antelope Valley. To the west, the Mojave Desert is bordered by the Tehachapi Mountains to the southwest and the Sierra Nevada Mountain Range to the northwest. This portion of Kern County includes the area designated as the Tehachapi Wind Resource Area and has been developed with numerous wind energy facilities. Regionally, development is sparse. The generally flat terrain is interspersed with low, undulating hills that are predominantly covered with desert scrub vegetation. Mojave and California City are the nearest communities and are located 3 miles southwest of the Project site along SR 58 and 5 miles northeast of the Project site off SR 14, respectively.

The Project site is flat with elevations ranging from 2,500 feet to 2,800 feet above mean sea level. The elevation generally increases east to west, toward the Tehachapi Mountains, which extend to heights of more than 7,000 feet. Because of the lack of development surrounding the Project site, potential viewers of the Project are mainly motorists travelling east/west on SR 58. Views of the area from along SR 58 are expansive and, outside of populated areas, generally characterized by the sparsely developed desert landscape that is bordered by topographical features. Low-profile scrub vegetation including creosote bushes and Joshua trees typical to this portion of the Mojave Desert, are widely visible. Transmission lines, transportation corridors, and solar energy facilities are discernable in the foreground (within 0.25 mile) and middleground (0.25 to 3-5 miles away) views throughout the area. Views to the west from the Project site are backdropped by the Tehachapi Mountains and Sierra Nevada Mountain Range. The Tehachapi's in particular are developed with wind energy facilities (see Character View 1 and Character View 2). Views to the east are backdropped by low undulating hills and more distant mountains.



The nearest residential neighborhood is 2 miles northeast of the Project in California City. This neighborhood is surrounded by elevated terrain and therefore views of the Project site are obscured. Farther away, land uses include industrial mining operations on Soledad Mountain 5 miles to the southwest, the Edwards Air Force Base 9 miles to the southeast, the Hyundai-Kia Motors California Proving Ground less than 1 mile to the northeast, and the Mojave Air and Space Port, 1.5 miles to the west. These land uses are at a similar or lower elevation than the Project site. Due to the topography and distance from the Project site, direct views from publicly accessible portions of these areas are intermittent or obscured.



Character View 1: View to the west from the westbound lane of SR 58. This location represents where motorists driving west on SR 58 would first encounter the Project. The Tehachapi Mountains are visible in the center-left of the view.



Character View 2: View to the west from the westbound lane of SR 58. Transmission lines and wind energy facilities are visible from SR 58. The Rio Grande solar facility, south of Mojave, is visible in the left side of the view.

3.2 REGULATORY SETTING

Visual resources identified in plans, policies, or other applicable regulations that could be affected by the Project are discussed below. This is not a complete list of every law, ordinance, regulation, or other standard related to the Project or Project site.

3.2.1 California Environmental Quality Act

The applicant is seeking approval for construction and operation of the Project. Both Kern County and California City are responsible for ensuring that projects within their jurisdiction meet the requirements of the California Environmental Quality (CEQA). Section 5.0 of this report includes a preliminary analysis of potential visual impacts from the Project in accordance with the CEQA Appendix G checklist.

3.2.2 California State Scenic Highway Program

The California Scenic Highway Program was created by the Legislature in 1963 and is managed by the Landscape Architecture Division of the California Department of Transportation. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. A highway may be designated scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon travelers' enjoyment of the view.

No Kern County highways are officially designated as California State Scenic Highways. However, the entire segment of SR 14, north of Mojave to the Inyo County line, is eligible for state scenic highway designation. The segment of SR 58 from Mojave to Boron is also eligible for state scenic highway designation (Caltrans 2019).

3.2.3 Kern County

Kern County General Plan

Scenic resources identified in the Kern County General Plan Land Use, Open Space and Conservation Element include roadways eligible for scenic highway designation and scenic parks and trails. State Route 58, which bisects the Project site, is classified as a county scenic road. The General Plan identifies SR 58 as a high desert route that passes through areas of broad vistas marked by an occasional desert butte. State Route 14, which is west of the Project, is also classified as a county scenic road. Kern County defines this as a "roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County," Scenic parks and trails include the Kern National Wildlife Refuge, Pacific Crest National Scenic Trail, Sequoia National Forest, and Los Padres National Forest (Kern County 2009a, 2009b). Of these scenic parks and trails, only the Pacific Crest National Scenic Trail is on the eastern side of the Sierra Nevada Mountain Range; it passes as close as 8 miles from the Project site.

3.2.4 California City

California City General Plan

The vision statement of the California City General Plan is to create a livable, viable, and visually attractive community through efficient and effective continued growth and sustainable development that will result in a model city within eastern Kern County. The California City General Plan included goals and policies related to aesthetics that would apply to the Project. These goals included those pertaining to new industrial development, and recommended that new development provide design features, such as screen walls, landscaping, and height, setback, and lighting restrictions between the boundaries of adjacent residential land use designations to reduce impacts on residents due to aesthetics and light and glare. The city's design/image policies would also be applicable to the Project and recommended that new development use drought-tolerant landscaping, minimize light and glare, and shield exterior lighting (California City 2009).

4.0 METHODS

A comparison of the Project site's existing conditions and the change to the landscape that would result from implementation of the Project is based on visual simulations. As a part of this process, Stantec visual resources specialists reviewed aerial imagery to identify where the Project could be visible from visually sensitive areas and selected preliminary viewpoints for site photography. Stantec conducted field surveys on August 20, 2019 to photo-document current visual conditions and views toward the Project site. A representative subset of photographed viewpoints was selected for use as Key Observation Points (KOPs), which collectively serve as the basis for this assessment. KOP selection was done in coordination with the applicant. Assessments of existing visual conditions were made based on professional judgment that considered sensitive receptors and sensitive viewing areas in the lands surrounding the Project site. The locations of the four KOPs in relation to the Project are presented on Figure 2. The view from KOP 4 was selected to evaluate an above-ground crossing of SR 58 by the gen-tie. Because the gen-tie route is not final, the simulation and evaluation are intended to be representative and the model assumes the largest transmission structures which could be used. In addition, supplemental views from KOP 1, KOP 2, KOP 2a, and KOP 3 are included to demonstrate the visual properties of a palliative being considered for the Project.

The view from each KOP was photographed using a 35-millimeter, 53-megapixel, full-frame, single lens reflex camera equipped with a 50-millimeter fixed focal length lens. This configuration is the industry-accepted standard for approximating the field of vision in a static view of the human eye. The camera positioning was determined with a sub-meter, differentially corrected global positioning system. The camera was positioned at eye-level for each photograph.

The site photos were used to generate a rendering of the existing conditions and a proposed visualization of the implemented Project. The visual simulations provide clear before-and-after images of the location, scale, and visual appearance of the features affected by and associated with the Project. The simulations were developed through an objective analytical and computer-modeling process and are accurate within the constraints of the available site and alternative data (3-dimensional computer model was created using a combination of AutoCAD files and geographic information system layers and exported to Autodesk's 3-dimensional Studio Max for production). Design data—consisting of engineering drawings, elevations, site and topographical contour plans, concept diagrams, and reference pictures—were used as a platform from which digital models were created. In cases where detailed design data were unavailable, more general descriptions about facilities and their locations were used to prepare the digital models.

Relying on observations during the site photography and the resulting images of views toward the Project site, visual resources specialists evaluated the visual quality of existing conditions for each KOP. Stantec used worksheets that focus on key concepts of the Federal Highway Administration (FHWA) Visual Impact Assessment for Highway Projects method (FHWA 2015). We assessed natural harmony, cultural order, overall coherence, and landscape composition and vividness for each view, assigning a visual quality rating ranging from "very low" to "very high" (Appendix A). We then re-assessed the simulated images showing the Project as it would be seen from each KOP. Stantec established a visual quality rating for each view showing proposed conditions. The difference in visual quality

rating for each view between existing and proposed conditions established the degree of contrast in visual quality from the Project. Potential sources of contrast related to visual character—described in terms of form, line, color, and texture—were also identified.



5.0 DESCRIPTION OF POTENTIAL VISUAL EFFECTS

This section describes views from each KOP, first under existing conditions, and then with the Project simulated. The visual simulations illustrate the location, scale, and conceptual appearance of the Project, as seen from each KOP. These visual simulations allow for comparison of pre-project and post-project conditions. KOP locations are shown in Figure 2. Existing and simulated images are included in Figure 3 through Figure 7. Worksheets showing the evaluation of visual quality contrast for each view are included in Appendix A.

5.1 KOP 1 – WESTBOUND STATE ROUTE 58

5.1.1 Existing View

KOP 1 is located along the westbound lane of SR 58, east of Mojave. The view from KOP 1 is to the west, toward the Project's solar arrays (Figure 3a). This viewpoint provides an elevated view of the Project site and represents the views of motorists driving west on SR 58, descending into the valley. Vehicles travel at high speeds on SR 58 and views of the landscape beyond the roadway corridor are accordingly intermittent. Views oriented down the roadway corridor, as is the view from KOP 1, are comparatively sustained.

The visual quality of this view is moderate. The view is characterized by the generally flat valley that is backdropped by the Tehachapi Mountains to the southwest and the southern end of the Sierra Nevada to the northwest. Beyond the SR 58 corridor and the transmission line visible in the foreground, the valley is mostly undeveloped with sparse creosote bushes and Joshua trees. The edge of the valley becomes more developed toward Mojave, which is visible along the valley floor 9 miles away. Disparate uses, including wind and solar energy facilities, clustered buildings, and the Mojave Air and Space Port are visible along the horizon and the mountain foothills. These uses appear at varying scales and orientations, yet appear as distinct areas within the landscape, adding a moderate sense of intactness to the view. The wind turbines along the mountain foothills are the most prominent human-made feature in the view and add some visual interest. However, their vertical form encroaches on the visibility of the nearby mountains. Other development is difficult to identify and appears as part of the interrelated landscape from this distance.

5.1.2 View with Project

Figure 3b shows the view from KOP 1 with the Project simulated. The visual quality of the view from KOP 1 with the Project would be reduced from moderate to moderately low. The Project would appear on both sides of the SR 58 corridor, relocating some of the Joshua trees visible outside of the highway corridor. The contrasting forms of the valley and mountain foothills would remain visible with the Project, but most of the land visible would appear as being developed. However, the Project would appear contained within the view's middleground and would relate in form and color to the existing solar facility in the distance. Intactness of the existing view would remain as the Project would be limited to the valley floor in the middleground, and the mountain foothills and existing development would remain visible. However, the visual character of the valley floor would become predominantly mechanized in appearance, with most of the lands in view dedicated to renewable energy development. Solar arrays would be of

visual interest and would be new, vivid components in the landscape. With addition of the Project, viewers approaching this area from the east would understand that they have entered a renewable energy zone in this part of the Mojave Desert.

Figure 3c shows the addition of the palliative material used to stabilize disturbed soils underneath the solar panels. Its lighter color would highlight the presence of the solar panels and would contrast with the color of the valley floor to a greater degree than would the simple grading shown in Figure 3b. Application of the palliative or light-colored gravel is indicative of changes in the visual landscape that would occur through the application of such ground coverings across the Project site.

5.2 KOP 2 – EASTBOUND STATE ROUTE 58

5.2.1 Existing View

KOP 2 is located along Bishop Drive, 4 miles northeast of Mojave. The view is to the southeast toward the Project and approximates views from motorists driving east on SR 58. Given the speed at which vehicles travel along SR 58, views of the landscape outside of the highway corridor are intermittent in this location.

The visual quality of the view from KOP 2 is moderate. The view is typical of views throughout the Mojave Desert, which includes a portion of the Fremont Valley that is backdropped by low undulating hills (Figure 4a). This portion of the Project vicinity is characterized visually by the flat terrain and desert scrub vegetation consisting mostly of creosote bushes. A few Joshua trees are also present but become indistinguishable in the middleground and background. The low-profile vegetation and terrain appear consistently throughout the view and therefore limits the degree of visual interest. What development is visible is concentrated in the center of the view, in the middleground and background, and consists of structures associated with the Hyundai-Kia Motors California Proving Grounds that is 5 miles away. Beyond the Proving Grounds, an access road leading to a communications tower is visible in the center of the view around 7 miles away. These existing features are evident, but they appear subordinate to the natural character of the vegetated desert landscape.

5.2.2 View with Project

Figure 4b shows the view from KOP 2 with the Project simulated. The visual quality of the view from KOP 2 with the Project would be reduced from moderate to moderately low. The Project would be highly visible to viewers along this stretch of SR 58. The low sloped hills and existing development would still be visible, but the solar panels would become the most dominant features in the view as they would occupy most of the valley floor. Views of utility-scale solar development are increasingly common throughout this part of the Mojave, but due to the Project's proximity to SR 58 it would contrast highly with the existing conditions. However, viewers would be travelling along SR 58 at high speeds and the Project would only extend along this part of SR 58 for approximately 1 mile. Therefore, the Project would be visible to viewers along this stretch of SR 58 for a short duration.

Figure 4c shows the addition of the palliative material with the Project. The addition of the palliative would contrast with the color of the valley floor to a greater degree than would the simple grading shown in Figure 4b. At this

distance, the palliative material or light-colored gravel would be an identifiable interruption in the valley floor. Its lighter color and smooth texture would be highly noticeable and would further draw attention to the Project.

5.3 KOP 2A – EASTBOUND STATE ROUTE 58 TO THE SOUTH-SOUTHEAST

5.3.1 Existing View

KOP 2a is located along Proteus Road, about 4 miles northeast of Mojave. The view from KOP 2a is to the south-southeast toward the Project and approximates views from motorists driving east on SR 58. Vehicles travel at high speeds on SR 58; therefore, views of the landscape outside of the highway corridor are short in duration at this location.

The visual quality of the view from KOP 2a is moderate. The view is typical of views from the SR 58 highway corridor, in which the flat valley floor is bordered by low hills (Figure 5a). Beyond the highway corridor, the valley is undeveloped and covered with desert scrub vegetation mostly consisting of creosote bushes. The low hills extend across the view with De Stanzo Hill visible in the left side of the view and Sanborn Hill in the center of the view. The low hills delineate the edge of the valley floor and draw viewer attention toward the mountains that are faintly detectable in the background. The transition between the valley floor and hillsides is also made apparent by the SR 58 corridor, which extends from the viewpoint into the middleground. The vehicles travelling along the highway somewhat decrease the overall coherence of the view; however, the highway corridor is contained within the valley and appears subordinate to the natural landscape features in the view.

5.3.2 View with Project

Figure 5b shows the view from KOP 2a with the Project simulated. The visual quality of the view would be reduced from moderate to moderately low with addition of the Project. With the Project, the solar panels would occupy the entire right half of the view. The Project would also be visible on the opposite side of the highway, though distance and vehicles within the roadway corridor would make it difficult to discern. At this proximity, the solar panels in the right half of the view would become the view's dominant features. They would obscure a portion of the distant skyline and appear in front of Sanborn Hill and portions of the low sloping hills. De Stanzo Hill would become a focal point of the view, as the linear paths of the project edge and the SR 58 corridor would collectively draw the viewer's attention toward the landform. Overall, the Project would alter the view and this portion of the landscape would become mechanized in appearance; however, the Project would be consistent with the visual character of the landscape as views of utility-scale solar is common throughout the Mojave Desert. Furthermore, the Project would be visible for a short duration as the solar panels would extend along this part of SR 58 for approximately 1 mile.

Figure 5c shows the addition of the palliative material with the Project. Like the view in Figure 4c, the light color and smooth surface of the palliative material would be identifiable from this distance and highlight the presence of the solar panels within the valley floor. The palliative material and light-colored gravel would contrast with the color of the valley floor to a greater degree than would the simple grading shown in Figure 5b.

5.4 KOP 3 – EASTBOUND STATE ROUTE 58 ON-RAMP AT ALTUS AVENUE

5.4.1 Existing View

KOP 3 is located along the shoulder of the eastbound SR 58 on-ramp at Altus Avenue. The view is to the south-southeast toward the southwestern corner of the Project site, around 4 miles away, and represents views of motorists travelling east on SR 58 from Mojave. Because vehicles at this location would have just turned on to the highway on-ramp, they travel at slower speeds than do vehicles already on the highway. Thus, views from KOP 3, while still intermittent, are slightly more sustained than those from the highway.

The visual quality of the view from KOP 3 is moderately high. As viewed from this elevated location, the south edge of the Fremont Valley appears dotted with scrub vegetation mostly consisting of creosote bushes (Figure 6a). In addition to the on-ramp visible in the immediate foreground, the primary human-made element within the valley floor is the telephone line extending across the view. The edge of the Fremont Valley is delineated by a series of small to medium sized, generally cone-shaped hills: De Stanzo Hill to the left, and Sanborn Hill to the right. The hills are relatively vivid and memorable features and create a focused view toward the faintly visible mountain range in the background. Overall, this view is characterized by the hills and distant mountains and their contrast with the valley floor. The two human-made corridors—the highway and the telephone line—appear contained within their linear spaces and beyond these features there is a clear transition from the valley floor to the more rugged desert environment.

5.4.2 View with Project

Figure 6b shows the view from KOP 3 with the Project simulated. The visual quality of the view from KOP 3 would remain moderately high with addition of the Project. The visual character of the view is based on the contrast between the edge of the valley, the prominent hills in the middleground, and the distant silhouetted mountain range. The solar panels would appear across the middleground, within the valley floor, replacing a portion of the relatively sparse vegetation. The Project would be partially obscured by Sanborn Hill, the most proximate hill visible in the right side of the view. Introduction of the Project in this landscape would alter views but would appear subordinate to the existing topography and not obstruct visibility of such features. As such, the visual character of the view would still be defined by the topography and the solar panels would add visual interest.

Figure 6c shows the addition of the palliative material with the Project. The Project would appear lighter in color with the addition of the palliative material; however, the Project is about 4 miles away and from this distance and the visual presence of the solar panels would not appear greater with the addition of the palliative material compared to the simple grading shown in Figure 6b.

5.5 KOP 4 – WESTBOUND STATE ROUTE 58 AT CONCEPTUAL GEN-TIE CROSSING

5.5.1 Existing View

KOP 4 is located along East Bishop Drive, southeast of Mojave. The viewpoint approximates views from motorists travelling on the westbound lane of SR 58 toward a conceptual crossing of the highway by the Project's gen-tie line (Figure 7a). Although vehicles travel at high speeds along SR 58, this view down the roadway corridor would be sustained, compared with the short-duration views toward areas outside of the highway corridor.

The visual quality of the view from KOP 4 is moderate. This view is typical of this portion of the Mojave, which consists of the built landscape set within the valley floor that is backdropped by the mountain foothills and ridgelines. This view also shows the extent of the current development within the Tehachapi Wind Resource Area. As such, wind turbines occupy only the left half of the view and appear to encroach on a portion of the visible mountains. The roadway corridor, including signage and fencing, and the wind turbines are the most prominent human-made features visible in this view. Airplanes stored at the Mojave Air and Space Port are also visible beyond the SR 58 overpass. The varying human-made features individually add visual interest to the view, but when combined the view's coherence is less-than-moderate.

5.5.2 View with Project

Figure 7b shows the view from KOP 4 with the conceptual gen-tie line simulated. The visual quality of the view from KOP 4 would be reduced from moderate to moderately low. As shown in this view, the gen-tie line would extend across lands east of SR 58, which are currently undeveloped. Views of the mountains to the northwest are currently unobstructed. The transmission structures would appear in front of the mountains and slightly obscure views to the northwest. Similar vertical structures are already present in the left side of the view, including wind turbines, roadway lighting, and fenceposts. Introduction of the interconnection would therefore enhance the view's degree of order by extending into the right side of the view. The Project would not alter the features that define the view's visual character but would be clearly visible and extend above the mountain skyline.

6.0 PRELIMINARY CEQA ANALYSIS

This technical report will inform the Project's eventual evaluation of potential environmental effects in order to satisfy CEQA. There are four CEQA criteria for Aesthetics. Each is presented here as a question, with preliminary assessments of impact to visual resources provided.

1. **Would the Project have a substantial adverse effect on a scenic vista?**

   Less Than Significant Impact. Scenic vistas are typically expansive views from elevated areas. They may or may not be part of a designated scenic overlook or other area providing a static vista view of a landscape. There are no designated scenic vistas in the Project vicinity. Views to the east and west from elevated portions of SR 58 are expansive and afford long-distance visibility under favorable weather conditions. As described above for the elevated view of the Project from KOP 1, the Project would be contained within the valley floor and views of the surrounding mountains and hillsides would remain visible. The Project would increase the amount of development within the valley floor; however, be set within a natural landscape that already contains existing wind and solar projects. Therefore, impacts to scenic vistas would be less than significant.

2. **Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

   Less Than Significant Impact. There are no officially designated state scenic highways in Kern County. The Project is bisected by SR 58, which is eligible for scenic highway designation (Caltrans 2019). The Project would involve removal of scrub vegetation mostly consisting of creosote bushes and relocation of Joshua trees, none of which are identified as scenic resources by either the Kern County or California City General Plans. The Project site is undeveloped and does not contain historic buildings. The Project would be placed within the valley floor and would not alter or grade the low sloped hillsides that traverse the Project area, including Sanborn Hill or De Stanzo Hill. As such, the Project would not substantially damage scenic resources within a state scenic highway and impacts would be less than significant.

3. **Would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?**

   Less Than Significant Impact. The Project is located in portions of unincorporated Kern County and California City. Development in this portion of the Mojave Desert is limited and therefore public views of the Project would be from motorists driving east/west on SR 58. The Project would be highly visible to motorists traveling this route, but such views would be of relatively short duration given the probability of the viewers being in moving vehicles traveling at high speeds. As shown in the view from KOP 1, elevated portions of SR 58 would provide motorists with a mostly unobstructed view of the Project. Publicly accessible



viewpoints from within the valley would provide motorists with close-in views of the Project. As shown in KOP 2 and KOP 2a, the Project would be highly visible in close-in views from along SR 58. The solar panels would be the most dominant features in the view and the natural features visible in the background would become partially obscured. However, close-in views of the Project would be for a short duration as motorists are travelling at relatively high speeds on SR 58. In more distant views, such as KOP 3, the solar panels would appear wholly within the valley floor and would not obstruct views of the natural features that contribute to this landscape. As shown in KOP 4, portions of the overhead gen-tie would obscure slight portions of views of the Sierra Nevada Mountain Range. Utility-scale solar facilities, transmission infrastructure, and other mechanized or industrial-appearing development are typical uses within this portion in the Mojave. Therefore, views of such facilities and infrastructure are not uncommon. The Project would appear consistent with these existing uses and would not substantially degrade the existing visual character or quality of public views. This impact would be less than significant.

Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. The Project would not include any source of substantial nighttime lighting. Any lighting required for safety and security within the Project area would be shielded and directed away from public rights-of-way. Lighting would be of the lowest intensity foot candle level in accordance with the Kern County and California City Municipal Codes. There currently is no source of substantial daytime glare within the Project site. The proposed Project would introduce a new potential source of glare from the reflective portions of the solar panel arrays. Solar panels are designed to absorb, not reflect, light; PV solar glass is often stippled with a light-trapping, photon-absorbent solar cell that reduces reflectance (Sunpower 2010). Further, modern PV panels reflect as little as 2 percent of incoming sunlight, with approximately the same reflectivity as a body of water (USDOE 2014). Incorporation of low-reflective materials would ensure reflectivity, and glint or glare associated with the Project would be minimized. Therefore, the proposed Project would not create a new source of substantial light or glare in the area that would affect day or nighttime views in the area and impacts would be less than significant.

7.0 CONCLUSIONS

The Bellefield Solar Project would result in the construction of solar arrays, a 230-kV interconnection, and associated structures on a currently undeveloped site within portions of unincorporated Kern County and California City. The Project would be highly visible and identifiable to motorists driving along the SR 58 corridor, placing structures in currently undeveloped portions of the desert valley. This portion of the landscape would become predominantly mechanized in appearance with addition of the Project. However, utility-scale solar and wind facilities, along with associated transmission infrastructure, are increasingly common in this portion of the Mojave Desert. While the Project would expand the portion of land in this part of the Mojave dedicated to renewable energy development, it would be consistent with the existing visual character of existing utility infrastructure, solar facilities, and other mechanized or industrial-appearing development in this region.

8.0 REFERENCES

California City. 2009. City of California City Final General Plan. Available at: <https://www.californiacity-ca.gov/CC/index.php/planning/planning-publications> Accessed October 2, 2019.

California Department of Transportation (Caltrans). 2019. California Scenic Highways. Available at <https://www.arcgis.com/home/item.html?id=f0259b1ad0fe4093a5604c9b838a486a> Accessed October 2, 2019.

Federal Highway Administration (FHWA). 2015. Guidelines for the Visual Impact Assessment of Highway Projects. (FHWA-HEP-15-029.)

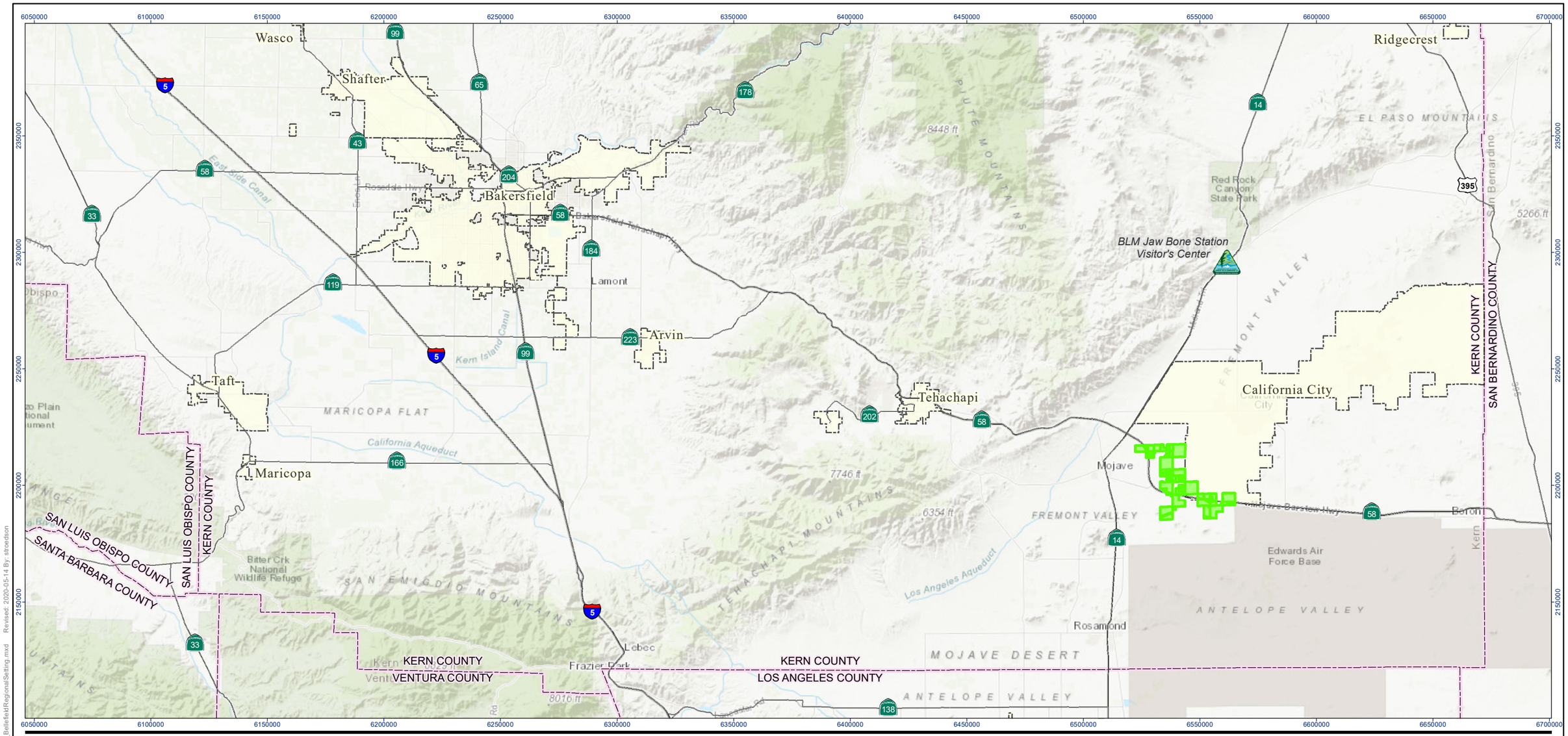
Kern County. 2009a. Kern County General Plan- Circulation Element. Available at: <https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf >. Accessed October 2, 2019.

_____. 2009b. Kern County General Plan – Land Use, Open Space, and Conservation Element. Available at: <https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp1LandUse.pdf>. Accessed October 2, 2019.

Sunpower. 2010. PV Systems: Low Levels of Glare and Reflectance vs. Surrounding Environment. Available online at https://us.sunpower.com/sites/sunpower/files/media-library/white-papers/wp-pv-systems-low-levels-glare-reflectance-vs-surrounding-environment.pdf. Accessed October 3, 2019.

U.S. Department of Energy (USDOE). 2014. Solar PV and Glare Fact Sheet. Available online at: <https://www.energy.gov/eere/solar/downloads/solar-pv-and-glare-factsheet.> Accessed October 3, 2019

FIGURES





Bellefield Solar Project Site
Incorporated City
County

0 8 16 Miles
(At original document size of 11x17)
1:506,880

N

Stantec

8MINUTE SOLAR ENERGY

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Project Location
SW of California City
Kern County, CA

Prepared by SET on 2020-05-14
TR by KJ on 2020-05-14
IR by CB on 2020-05-15

Client/Project
8 Minute Solar Energy
Bellefield Solar Project

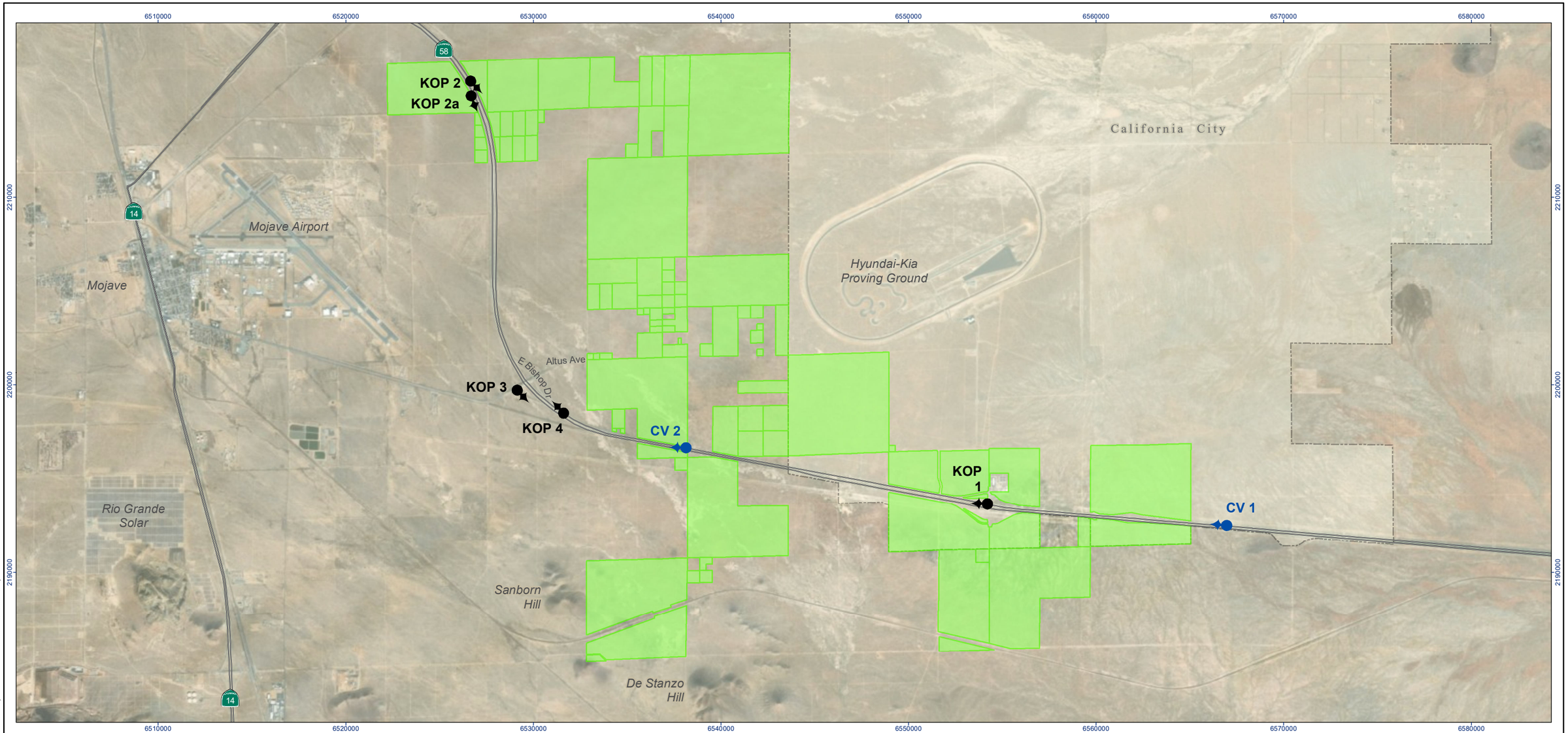
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Figure No.
1

Title
Bellefield Solar Project Location

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Key Observation Point (KOP)

Character View (CV)

Bellefield Solar Project

0 1 2 Miles

(At original document size of 11x17)
1:63,360

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Stantec

8MINUTE SOLAR ENERGY

Project Location
SW of California City
Kern County, CA

Prepared by SET on 2020-05-14
TR by KJ on 2020-05-14
IR by CB on 2020-05-15

Client/Project
8 Minute Solar Energy
Bellefield Solar Project

185704636_006

Figure No.
2

Title
Bellefield Solar Project Site and Key Observation Points

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Figure 3a: View to the west-northwest from KOP 1 along westbound State Route 58, east of Mojave. Mojave Air and Space Port is visible in the right half of the view.



Figure 3b: View from KOP 1 with the Project simulated.

Stantec

Figure 3
KOP 1-Westbound State Route 58
Bellefield Solar Project



Figure 3c: View from KOP 1 with the Project simulated and the palliative underneath the solar panels.

Stantec

Figure 3
KOP 1- Westbound State Route 58
Bellefield Solar Project



Figure 4a: View to the southeast from KOP 2 along State Route 58, northeast of Mojave. A communications tower beyond the Hyundai Kia Motors California Proving Grounds is visible in the center of the view, 7 miles away.



Figure 4b: View from KOP 2 with the Project simulated.

Stantec

Figure 4
KOP 2- Eastbound State Route 58
Bellefield Solar Project



Figure 4c: View from KOP 2 with the Project simulated and the palliative underneath the solar panels.

Stantec

Figure 4
KOP 2 - Eastbound State Route 58
Bellefield Solar Project



Figure 5a: View to the south-southeast from KOP 2a along State Route 58, northeast of Mojave. De Stanzo Hill and Sanborn Hill are visible in the left side and center of the view, respectively.



Figure 5b: View from KOP 2a with the Project simulated.

Stantec

Figure 5
KOP 2a- Eastbound State Route 58 to the south-southeast
Bellefield Solar Project



Figure 5c: View from KOP 2a with the Project simulated and the palliative underneath the solar panels.

Stantec

Figure 5
KOP 2a - Eastbound State Route 58 to the south-southeast
Bellefield Solar Project



Figure 6a: View to the south-southeast from KOP 3 along the shoulder of the eastbound State Route 58 on-ramp at Altus Ave. De Stanzo Hill and Sanborn Hill are visible in the left and right portions of the view.



Figure 6b: View from KOP 3 with the Project simulated.

Stantec

Figure 6
KOP 3 - Eastbound State Route 58 On-Ramp At Altus Avenue
Bellefield Solar Project



Figure 6c: View from KOP 3 with the Project simulated and the palliative underneath the solar panels.

Stantec

Figure 6
KOP 3- Eastbound State Route 58 On-Ramp At Altus Avenue
Bellefield Solar Project



Figure 7a: View to the northwest from KOP 4 along East Bishop Drive, approximating view from westbound State Route 58 toward a potential crossing of the highway by the Project's transmission interconnection line



Figure 7b: View from KOP 4 with the Project simulated.

Stantec

Figure 7
KOP 4-Westbound State Route 58 at Conceptual Gen-Tie Crossing
Bellefield Solar Project

APPENDIX A

FHWA Visual Quality Worksheets

Bellefield Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 1	Location: Westbound State Route 58	Photo Date: 20-Aug-19
Landscape Unit or Type:	NA	Viewer Type(s): Drivers/Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	WNW / Superior	
Viewpoint Description (Figure Caption):	View to the west-northwest from westbound State Route 58, east of Mojave. Mojave Air and Space Port is visible in the right half of the view.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Descent into valley area evident. Generally flat valley extends to far edge of middleground. Tehachapi Mtns and Sierra Nevada in bkgrnd.	Fore Mid Back	X X X	Buildings	Mojave Air and Space Port buildings visible in background. Mojave visible at edge of valley floor.	Fore Mid Back	 X
Water	NA	Fore Mid Back	 	Infrastructure	State Route 58 extends from viewpoint thorugh middleground and into background. Distribution / power lines do the same.	Fore Mid Back	X X X
Vegetation	Desert scrubland, mainly creosote and some Joshua trees, in foreground; present but indistinguishable in mid/background	Fore Mid Back	X X X	Structures	Solar panels visible in left background, wind turbines across entire background	Fore Mid Back	X X X
Animals	NA	Fore Mid Back	 	Artifacts / Art	NA	Fore Mid Back	
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore Mid Back	 	Motion	Many vehicles traveling at high speeds along highway. Occasional planes taking off / landing. Wind turbines when spinning.	Fore Mid Back	X X X

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Vegetated hillside in foreground gives way to a flat valley floor with Joshua trees visible but not prominent. Tehachapi Mountains, in left of view, form prominent backdrop to view, with western edge of valley floor clearly delineated. The Tehachapi's are to the south of the larger Sierra Nevada Mountain Range, which is visible extending to the north in the right side of the view.
Cultural Order	3	Disparate uses appearing in variety of scales and orientations: highway corridor and electrical lines extend from view into middleground; solar project appears as polygon in left of view, and Mojave Air & Space Port buildings as a cluster of irregular forms in right; vertical wind turbnes visible across view along mountain eastern slopes.
Overall Coherence	4	Land uses - wind / solar projects, populated areas / port, and corridors - appear somewhat compartmentalized, lending moderate sense of intactness to view. Mostly undeveloped middleground is evident. Ridgeline appears intact.
Landscape Composition and Vividness	3	Prominence of wind turbines at along mountain foothills are of visual interest, as are the Tehachapi Mountains. However, the turbines encroach on the visibility of the mountains, and multiple uses appear as distinct areas of development that are difficult to identify as part of an interrelated landscape from this distance.
Overall Visual Quality Score	3.5	Moderate.

With Project

KOP 1	Location: Westbound State Route 58	Date of Eval: 30-Sep-19
Landscape Unit or Type:	NA	Viewer Type(s): Drivers/Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	WNW / Superior	
Viewpoint Description (Figure Caption):	View from KOP 1 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Majority of flat valley lands covered by project. In views with panels oriented toward east, substantial change in color.	Fore Mid Back	 X 	Buildings	No change with project.	Fore Mid Back	
Water	NA	Fore Mid Back	 	Infrastructure	No change with project.	Fore Mid Back	
Vegetation	Some visible Joshua trees removed with project in place. Texture altered in middleground.	Fore Mid Back	 X 	Structures	Solar panels and inverters would occupy majority of view's middleground.	Fore Mid Back	 X
Animals	NA	Fore Mid Back	 	Artifacts / Art	NA	Fore Mid Back	
Atmospheric	Project does not affect atmospheric conditions observed	Fore Mid Back	 	Motion	No change with project.	Fore Mid Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	3	With the project in place, Joshua trees visible throughout the valley floor outside of the highway corridor would be removed. The contrasting forms of valley floor and hills / ridgelines would remain visible, but the majority of land visible would appear as being developed.
Cultural Order	3	With the project, the landscape would appear more intensively developed than at present. The Project would appear wholly contained within the view's middleground, however, and would relate in form and color to the existing solar project in the distance.
Overall Coherence	3	Intactness of existing view would remain, with project limited to valley floor in middleground. Mountains and air / space port would remain visible and identifiable, but overall view would become intensively mechanized visually offsetting undeveloped lands appearing in middleground as segmented polygons, not a mostly undivided swath of area.
Landscape Composition and Vividness	3	The visual character here would become overwhelingly mechanized in appearance, with the majority of the lands in view dedicated to renewable energy development. Solar arrays would be of visual interest and would be new, vivid components in the landscape. Viewers approaching this area from the east would understand they'd entered a wind/solar zone in this part of the Mojave.
Overall Visual Quality Score	3.0	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.

** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Bellefield Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 2	Location: Eastbound State Route 58	Photo Date: 20-Aug-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers/Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	SE / Level	
Viewpoint Description (Figure Caption):	View to the southeast from State Route 58, northeast of Mojave. A communications tower beyond the Hyundai KIA Motors California Proving Grounds is visible in the center of the view, seven miles away.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Flat portion of Fremont Valley in foreground and middle ground, with low hills as backdrop. Two-track path visible in immediate foreground.	Fore	X	Buildings	Cluster of buildings associated with Hyundai KIA Motors California Proving Grounds visible in center of view, just under 5 miles away.	Fore	
		Mid	X			Mid	X
		Back	X			Back	
Water	NA	Fore		Infrastructure	Communication tower visible in center of view, 7 miles away. Access road more visible than tower.	Fore	
		Mid				Mid	
		Back				Back	X
Vegetation	Desert scrubland, mainly creosote, in foreground; Joshua trees also present but indistinguishable in mid/background	Fore	X	Structures	NA	Fore	
		Mid	X			Mid	
		Back	X			Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore		Motion	None in views from highway corridor that don't include highway. Motion w/in highway corridor adjacent to view.	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	5	Mojave Desert valley floor with low hills as immediate backdrop and more distant mountains identifiable along distant horizon.
Cultural Order	4	Development is limited and limited to center of view, in middleground and background. Access road to communications tower is view's most visible human alteration to landscape.
Overall Coherence	4	This is a view of a desert environment that is typical of views throughout the Mojave Desert, though evident development is comparatively minimal.
Landscape Composition and Vividness	3	A vegetated desert landscape, with gradations of elevation and little of visual interest.
Overall Visual Quality Score	4.0	Moderate.

With Project

KOP 2	Location: Eastbound State Route 58	Date of Eval: 30-Sep-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers/Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	SE / Level	
Viewpoint Description (Figure Caption):	View from KOP 2 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	A substantial portion of the land visible in the foreground and middleground will be covered by the project.	Fore		Buildings	No change with project	Fore	
		Mid	X			Mid	
		Back				Back	
Water	NA	Fore		Infrastructure	No change with project	Fore	
		Mid				Mid	
		Back				Back	
Vegetation	Vegetation in the foreground and middleground would be replaced with solar panels.	Fore		Structures	The solar panels would extend across the view from the foreground to the middleground.	Fore	
		Mid	X			Mid	X
		Back				Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Project does not affect atmospheric conditions observed	Fore		Motion	No change with project	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	3	The vegetation in the foreground and middleground would be removed and replaced with solar panels.The solar panels would become the most dominant features in the view.
Cultural Order	3	Development is intensified with the project. The solar panels would extend across the view and occupy most of the valley floor.
Overall Coherence	3	Still typical of views throughout Fremont Valley, where utility-scale solar development is increasingly common; however, the presence of the project would intensify development in the undeveloped valley floor.
Landscape Composition and Vividness	2	Solar panels would add elements of visual interest. The low hills in the background would still be visible, but the solar panels would be highly visible along SR 58.
Overall Visual Quality Score	2.8	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.

** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Bellefield Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 2a	Location: Eastbound State Route 58 to the south-southeast	Photo Date: 20-Aug-19

Landscape Unit or Type: NA
Viewer Type(s): Drivers/Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior): SSE / Level
Viewpoint Description (Figure Caption): View to the south-southeast from State Route 58, northeast of Mojave. De Stanzo Hill and Sanborn Hill are visible in the left side and center of the view, respectively.

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Flat valley floor in foreground/ middleground. De Stanzo Hill in left of view; Sanborn Hill in center of view and more distant mountains detectable in the background.	Fore Mid Back	X X X	Buildings	NA	Fore Mid Back	
Water	NA	Fore Mid Back		Infrastructure	State Route 58 extends from viewpoint through middleground and into background.	Fore Mid Back	X X X
Vegetation	Desert scrubland, mainly creosote, in foreground and middleground; present but indistinguishable in background	Fore Mid Back	X X X	Structures	NA	Fore Mid Back	
Animals	NA	Fore Mid Back		Artifacts / Art	NA	Fore Mid Back	
Atmospheric	Clear conditions, but atmospheric haze evident in the background.	Fore Mid Back		Motion	Many vehicles travelling at high speeds along the highway.	Fore Mid Back	 X X

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Mojave Desert valley floor that is backdropped by low hills and the more distant mountains in the background. De Stanzo Hill is visible in the left side of the view and Sanborn Hill is visible in the center of the view.
Cultural Order	4	SR 58 extends from the viewpoint into the middleground and is contained within the valley floor.
Overall Coherence	4	This view is typical of views from SR 58, which consists of the vegetated valley floor that is bordered by low hills. The low hills delineate the edge of the valley floor. Vehicles travelling along SR 58 somewhat decreases the coherence of the view, but the highway is contained within the valley and appears subordinate to the natural landscape features.
Landscape Composition and Vividness	4	A vegetated desert landscape located along SR 58. The low hills vary in elevation and increase visual interest toward the mountains that are faintly detectable in the background.
Overall Visual Quality Score	4.0	Moderate.

With Project

KOP 2a	Location: Eastbound State Route 58 to the south-southeast	Date of Eval: 8-May-20

Landscape Unit or Type: NA
Viewer Type(s): Drivers/Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior): SSE / Level
Viewpoint Description (Figure Caption): View from KOP 2a with the Project simulated.

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	A substantial portion of the land visible in the foreground and middleground will be covered by the project.	Fore Mid Back	X X	Buildings	NA	Fore Mid Back	
Water	No change with project.	Fore Mid Back		Infrastructure	No change with project.	Fore Mid Back	
Vegetation	Slightly coarse texture of gray/green vegetation visible in distance replaced by smooth blue/black of solar panels.	Fore Mid Back	X X	Structures	Solar panels would occupy the right side of the view. Solar panels would also be slightly visible in the left side of the view.	Fore Mid Back	X X
Animals	NA	Fore Mid Back		Artifacts / Art	NA	Fore Mid Back	
Atmospheric	Project does not affect atmospheric conditions observed	Fore Mid Back		Motion	No change with project.	Fore Mid Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	2	The vegetation in the right half of the view would be removed and replaced with solar panels. The solar panels would extend above the skyline and obscure views of Sanborn Hill and portions of the low hills. Views of De Stanzo Hill would remain. The solar panels would become the most dominant features.
Cultural Order	3	The project would appear in front of Sanborn Hill and portions of the low hills, which are currenlty unobstructed in the view. The Project would also limit views of the SR 58 corridor, which extends around the bend.
Overall Coherence	3	The addition of the solar panels would change the appearance of the undeveloped valley floor and would interrupt views of the low sloped hills in the right side of the view. Solar panels in the left side of the view would be slightly detectable, but due to the distance would not be discernable features.
Landscape Composition and Vividness	3	The solar panels would add visual interest to the view, but would appear more dominant than the landscape features. The path of the solar panels and SR 58 corridor would draw the viewer's attention toward De Stanzo Hill, which would become the view's focal point.
Overall Visual Quality Score	2.8	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Bellefield Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 3	Location: Eastbound State Route 58 On-Ramp at Altus Avenue	Photo Date: 20-Aug-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers / Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	SSE / Superior	
Viewpoint Description (Figure Caption):	View to the south-southeast from the shoulder of the eastbound State Route 58 on-ramp at Altus Ave. De Stanzo Hill and Sanborn Hill are visible in the left and right portions of the view, respectively.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Valley floor appears in front of prominent local hills (De Stanzo Hill in left of view; Sanborn Hill in right). More distant mountains detectable.	Fore / Mid / Back	X / X / X	Buildings	NA	Fore / Mid / Back	/ /
Water	NA	Fore / Mid / Back	/ /	Infrastructure	Highway on-ramp in immediate corridor; telephone line aligned with local road in foreground.	Fore / Mid / Back	X / /
Vegetation	Desert scrubland, mainly creosote, in foreground; present but indistinguishable in mid/background.	Fore / Mid / Back	X / X / X	Structures	NA	Fore / Mid / Back	/ /
Animals	NA	Fore / Mid / Back	/ /	Artifacts / Art	NA	Fore / Mid / Back	/ /
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore / Mid / Back	/ /	Motion	vehicles when present	Fore / Mid / Back	X / /

VISUAL QUALITY

	Score**	Notes
Natural Harmony	5	The edge of the Fremont Valley is delineated by a series of small to medium sized, generally cone-shaped hills. The two main hills in the view, De Stanzo Hill and Sanborn Hill, create a focused view, drawing viewers' eyes toward the faintly visible mountain range visible between the two closer hills. Vegetation appears uniform.
Cultural Order	4	Beyond the on-ramp in the immediate foreground, the primary human-made element in the view is the telephone line extending across the view, parallel to the local road.
Overall Coherence	5	This view is characterized by the hills and distant mountains and their contrast with the valley floor. The two human-made corridors - the highway and the telephone line - appear contained within their linear spaces and beyond these is a clear transition from valley to more rugged desert environment.
Landscape Composition and Vividness	5	Hills and mountains are relatively vivid and memorable features within the scene.
Overall Visual Quality Score	4.8	Moderately High.

With Project

KOP 3	Location: Eastbound State Route 58 On-Ramp at Altus Avenue	Date of Eval: 30-Sep-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers / Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	SSE / Superior	
Viewpoint Description (Figure Caption):	View from KOP 3 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	A substantial portion of the land visible in the middleground will be covered by the project.	Fore / Mid / Back	/ X /	Buildings	NA	Fore / Mid / Back	/ /
Water	NA	Fore / Mid / Back	/ /	Infrastructure	No change with project.	Fore / Mid / Back	/ /
Vegetation	Vegetation relatively sparse in area covered by project.	Fore / Mid / Back	/ X /	Structures	Solar arrays would appear as a collective, singular polygon across the middleground.	Fore / Mid / Back	/ X /
Animals	NA	Fore / Mid / Back	/ /	Artifacts / Art	NA	Fore / Mid / Back	/ /
Atmospheric	Project does not affect atmospheric conditions observed.	Fore / Mid / Back	/ /	Motion	No change with project.	Fore / Mid / Back	/ /

VISUAL QUALITY

	Score**	Notes
Natural Harmony	5	The existing natural harmony is based on the contrast between the edge of the valley, the prominent hills in the middleground and the distant silhouetted mountain range. The Project would appear beyond the most proximate hill, would be subordinate to existing topography, and not obstruct visibilty of such features.
Cultural Order	4	The additional built feature would appear from this location as a single polygon and be partially obscured by terrain.
Overall Coherence	4	Introduction of a block of solar panels to this landscape, even at a point that is recessed and partially obscured in views from this location alters the view.
Landscape Composition and Vividness	5	The visual character would still be defined by topography in views; the solar panels may be of visual interest.
Overall Visual Quality Score	4.5	Moderately High.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Bellefield Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 4	Location: Westbound State Route 58 at Conceptual Gen-Tie Crossing	Photo Date: 20-Aug-19

Landscape Unit or Type: NA
Viewer Type(s): Drivers / Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior): NW / Inferior
Viewpoint Description (Figure Caption): View to northwest from East Bishop Drive, approximating view from westbound State Route 58 toward a potential crossing of the highway by the project's transmission interconnection line.

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Edge of valley defined by Sierra Nevada foothills.	Fore	X	Buildings	NA	Fore	
		Mid	X			Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	Roadway corridor, including signage and overpass.	Fore	X
		Mid				Mid	
		Back				Back	
Vegetation	Desert scrubland, mainly creosote, in foreground; present but indistinguishable in mid/background	Fore	X	Structures	Wind turbines, in left half of view.	Fore	X
		Mid	X			Mid	
		Back	X			Back	
Animals	NA	Fore		Artifacts / Art	Mothballed or stored airplanes at Mojave Air and Space Port visible through underpass in view.	Fore	
		Mid				Mid	X
		Back				Back	
Atmospheric	Clear conditions.	Fore		Motion	Highway vehicles, flights from Mojave Air and Space Port.	Fore	X
		Mid				Mid	X
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Sierra Nevada mountains appear close to viewer here, thus increasing their dominance in the view. Mountains less obsturcted / occupied by wind turbines in this views.
Cultural Order	3	This scene is typical of this portion of the Mojave, but also shows the boundary of the current development within the Tehachapi Wind Resource Area. As such, the visible wind turbines occupy only half of the view and appear to encroach on the segment of the Sierra Nevada in view. Roadway corridor, including signage and fences, is dominant. Airplane storage noticeable in center of view.
Overall Coherence	3	Inherently less-than-moderate coherence in view that encompasses utility-scale power generation / transmission, a freeway corridor, air transport, and eastern front of Sierra Nevada. Component pieces, while individually of visual interest, do not add up to a coherent whole.
Landscape Composition and Vividness	4	Turbines and planes, in particular, are of visual interest. They appear within a natural landscape that appears in a logical progression from valley floor to foothills / mountains, and a built landscape including other disparate parts.
Overall Visual Quality Score	3.5	Moderate.

With Project

KOP 4	Location: Westbound State Route 58 at Conceptual Gen-Tie Crossing	Date of Eval: 30-Sep-19

Landscape Unit or Type: NA
Viewer Type(s): Drivers / Travelers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior): NW / Inferior
Viewpoint Description (Figure Caption): View from KOP 4 with the Project simulated. This is a representative simulation showing the effects of a potentail gen-tie crossing. The Project's interconnection route has not yet been determined.

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Slight, vertical sections of the Sierra Nevada foothills would be obscured by the 230-kV poles.	Fore		Buildings	No change with project.	Fore	
		Mid				Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	New poles would appear across the foreground and within a broader landscape that includes similar forms: turbines, posts, lights…	Fore	X
		Mid				Mid	
		Back				Back	
Vegetation	No change with project.	Fore		Structures	No change with project.	Fore	
		Mid				Mid	
		Back				Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Project does not affect atmospheric conditions observed	Fore		Motion	No change with project.	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Project would not affect visual resources, but would place transmission structures in front of mountains in views.
Cultural Order	2	The interconnection would appear to extend across the lands north and east of the highway, which are currently undeveloped, and in front of the mountains to the northwest, which are currently unobstructed in views.
Overall Coherence	3	The addition of the interconnection structures and conductor would extend into the right side of the view what already exists in the left side of the view: vertical structures aligned in some degree of order.
Landscape Composition and Vividness	3	Structures would be clearly visible and would appear, from this locaiton, to extend above the mountain skyline.
Overall Visual Quality Score	3.0	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

B.2 Glare Study

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Glare Analysis Report for the Bellefield Solar Project

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1 PROJECT DESCRIPTION

1.1 Report Purpose and Scope

The purpose of this Glare Analysis Report (report) is to assess the potential glare impacts associated with implementation of the proposed Bellefield Solar Project (project). The study was conducted per the Federal Aviation Administration's recommended procedures described in the *Technical Guidance for Evaluating Selected Solar Technologies on Airports* (FAA 2018) and the geometric glare modeling software utilized adheres to interim Federal Aviation Administration policy regarding solar energy system projects on federally obligated airports (78 FR 63276–63279).

This Glare Analysis Report includes an introduction to the photovoltaic (PV) technologies proposed to be implemented on the Project and their potential to result in glare. Section 1, Project Description, provides a description of the project, the project location, and describes the environmental setting. Section 2, Glare Impacts, describes the methodology used to perform the glare analysis and provides a summary of the analysis results. Section 3, References Cited, includes a list of the references cited in this report, and Section 4, Document Preparers, includes a list of those involved in the preparation of this report. The complete detailed glare report generated by the modeling software is included in Appendix A, Modeling Results.

1.2 Regional and Local Setting

1.2.1 Regional Location

The project is located in southeastern Kern County, at the western edge of the Antelope Valley, directly east of the community of Mojave and at the southern end of the City of California City.

Figure 1, Project Location, shows the project location and surrounding municipalities, including the City of California City, and the communities of Mojave and Rosamond in unincorporated Kern County. Comprised of several adjacent or attached sites totaling approximately 8,371 acres in size, of which 2,104 acres falls within the City of California City. The northern portion of the project is about 1 mile east of the Mojave Air and Space Port, 5 miles southwest of the California City Municipal Airport, and about 7 miles west of the nearest runways associated with Edwards Air Force Base. The Burlington Northern Santa Fe (BNSF) Railway runs through the southern edge of the project boundary.

1.2.2 Project Setting

The project site is located on the northwestern end of the Antelope Valley. Topography across the project site is relatively flat as the site is south of the Tehachapi Mountains on lands that

gradually slope downward from the northwest to the southeast. Desert vegetation dominates the region. The major north-south roadways in the region is State Route (SR) 14, a four-lane highway. SR 58 roughly bisects the project running north/south at the northern end of the project and travelling east/west at the southeastern end of the project. See Figure 1. The project site is located approximately 45 miles east of I-5 and 16 miles north of SR 138. The project area is primarily accessible by exiting SR 58.

1.2.3 Project Site Conditions and Surrounding Land Uses

The project site is located in an area of low population density and scattered vacant land and is traversed by a network of dirt roads. However, the site is directly east of the unincorporated community of Mojave, which had a population of 4,238 at the 2010 census. The project site consists of undeveloped lands, comprised of privately owned parcels.

Land usages in the project area consist of a mix of agricultural grazing, undeveloped land, scattered single-family residences, and several approved or proposed large-scale solar facilities (RE Gaskell West Solar, RE Garland Solar, RE Astoria Solar, Antelope Valley Solar, Rosamond Solar, Kingbird Solar, and Sanborn Solar). Forest, parkland, and preserve areas are also located in the project site vicinity and include the Tomo-Kahni State Historic Park (approximately 7 miles to the northwest); the Angeles National Forest (approximately 29 miles southwest); the Desert Pines Wildlife Sanctuary and the Arthur B. Ripley Desert Woodland State Park (approximately 25 miles to the southwest); and the Antelope Valley California Poppy Reserve (approximately 23 miles to the southwest). The Pacific Crest National Scenic Trail (commonly known as the Pacific Crest Trail or PCT) passes approximately 7 miles northwest of the project site.

1.2.4 Regulations and Regulatory Requirements

1.2.4.1 Federal

Federal Aviation Administration

In order to understand and model glare in accordance with FAA standards, Sandia National Laboratories developed the Solar Glare Hazard Analysis Tool (SGHAT). With SGHAT, standardized safety metrics define the anticipated glare intensity that would cause unwanted visual impacts to Air Traffic Control towers and airplane pilots. Glare intensity is described according to potential for after-image and is illustrated on the FAA's Solar Glare Ocular Hazard Plot. Low potential for after-image is referred to as "green" glare and potential for after-image is referred to as "yellow" glare. "Red" glare is representative of glare conditions with potential for permanent eye damage. While use of SGHAT or the publicly available and licensed SGHAT application ForgeSolar is required to demonstrate compliance with the standards for measuring ocular impact

stated above for any proposed solar energy system located on a federally-obligated airport, the FAA has not established a formal policy for ocular impact assessments for non-airport solar facilities. Still, SGHAT and ForgeSolar are industry standard tools for assessing potential glare impacts associated with new solar facilities.

SGHAT and ForgeSolar are also able to evaluate the potential of a particular PV array to produce glare intensity, predicting when and where glare would occur from a proposed PV array at discrete observation points (i.e. from the Air Traffic Control Tower, runway approach, or fixed receptor location). In instances where glare may be a concern, the tools can prescribe minor adjustments to the tilt, direction, and location of the panels to alleviate issues.

While the project is not located on a federally-obligated airport and is not required to do so by Kern County, Dudek staff utilized the industry standard ForgeSolar 3D geometric glare analysis software tool to disclose potential glare impacts associated with operation of the project.

1.2.4.2 State

California Environmental Quality Act (CEQA)

CEQA requires an analysis of aesthetic impacts when an agency or individual proposes an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. In Appendix G, Environmental Checklist Form, the 2021 CEQA Statute and Guidelines contains the follow impact threshold related to glare:

- Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Other than the CEQA Guidelines, there are no state regulations pertaining to potential glare effects associated with the operation of solar facilities.

1.2.4.3 Local

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

The following policy and implementation measure pertain to glare generated by new discretionary projects in Kern County:

- 1.10.7 Light and Glare (Policy 47): Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

- Implementation Measure AA: The County shall utilize *CEQA Guidelines* and the provisions of the Zoning Ordinance to minimize the impacts of light and glare on adjacent properties and in rural undeveloped areas.

Chapter 19.81, Dark Skies Ordinance (Outdoor Lighting)

There are no local glare regulations that are applicable to the project. The Kern County Dark Skies Ordinance (Chapter 19.81 of the Kern County Zoning Ordinance) addresses glare; however, regulations and development standards are specific to outdoor lighting and signage. There are no development standards in the Kern County Dark Skies Ordinance that pertain specifically to solar facilities.

1.3 Proposed Project Description

Project Characteristics

The project is a proposed photovoltaic solar facility and energy storage system capable of producing up to 1,500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 1,500 MW-hour (MWh) energy storage capacity. Located on approximately 8,371 acres of privately-owned land, the proposed project's permanent facilities would (in addition to photovoltaic arrays) include service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities. The generalized site layout for the proposed project is shown on Figure 2, Project Site Layout.

Power generated by the project would be delivered via a new 230 kV overhead and/or underground electrical transmission line(s) originating from one or more on-site substation(s)/switchyard(s) and terminating at the existing SCE Windhub Substation. The combined linear distance of the gen-tie is 89.6 miles with a width of 200 feet. While collector lines would be generally located within or adjacent to the Kern County and/or California City project parcels, the gen-tie generally originates from the central portion of the project heading west towards Mojave, before reaching Oak Creek Road and SCE's Windhub Substation. The project may require the acquisition of up to 200 feet of privately-owned land, abutting the Oak Creek Road right-of-way for gen-tie routing purposes.

This Glare Analysis Report considers the impacts of the PV solar arrays and their potential to generate glare. The project includes other components that do not have potential for significant glare and are therefore not analyzed in this report. These components include, but are not be limited to:

- Inverter Stations

- Energy Storage System
- Operations and Maintenance Building
- Substation(s)
- Generation-Transmission Line
- Water Storage Tank(s)
- Project Site Security and Fencing
- Project Site Lighting

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2 GLARE IMPACTS

2.1 General Concepts of Solar Technologies and Glare

The project would involve the installation of photovoltaic panels to convert the sun's light into electrical energy. To increase the efficiency of this conversion process, designers of solar systems strive to maximize the amount of solar energy that can be absorbed by solar cells. This work towards increasing efficiency has the added benefit of reducing the amount of light that reflects off of the surface of the solar panels. Reflected light can cause glint (a quick reflection) and glare (reflection that lasts for a longer duration), which can create hazards for pilots, air-traffic control personnel, motorists, and other potential receptors. For the purpose of this Glare Analysis Report, any light reflected off of the solar panels is referred to as 'glare.'

There are several key design considerations that can reduce glare from solar panels. One of the main factors of reflectance is the position of the PV modules relative to the sun. A panel that has been designed to absorb 90% of the sunlight that directly meets the face of the panels (perpendicular to the sun's rays) may have that absorption significantly reduced if the panel is not directly facing the sun (ForgeSolar 2019). Because the sun tracks across the sky over the course of a day, fixed-mount stationary panels can only maximize its efficiency for a few minutes out of the day when the sunlight is directly perpendicular to the face of the panel. To maximize the amount of solar energy generated from the solar array, some PV systems employ tracking mechanisms that would adjust to track the sun's trajectory as it crosses the sky. Figure 3, Comparison of Photovoltaic Tracking Systems, provides an illustrative example of fixed-mount panel system, single-axis tracking system, and dual-axis tracking system.

In addition to panel orientation, the materials used in the panel construction play an important role in reducing glare and maximizing efficiency. Different glass textures can be used to reflect light beams into the solar array and anti-reflective coatings can be added to the glass to further reduce reflectivity at high incidence angles (the angle at which the light hits the solar array).

The project is anticipated to employ a single-axis tracking system, as illustrated by the middle panel system in Figure 3. The axis of rotation would be aligned north-south with a maximum tracking angle of 50°. The surface of the panels would be constructed out of smooth glass and would include an anti-reflective coating, as further described in Section 2.2.3.

Glare can result in visual hazards and temporary loss of vision. The hazard level of glare depends on the ocular impact to the observer. Generally, an ocular impact is calculated as a function of the incidence angle and the intensity of the light. For the purpose of this Glare Analysis Report, an ocular impact is classified in one of three categories as follows:

- Green: Low potential for the glare to cause an after-image (also known as flash blindness)
- Yellow: Potential to cause a temporary after-image
- Red: Potential to cause retinal burn and permanent eye damage

2.2 Methodology

In order to determine where and when glare might occur as a result of the proposed project, Dudek staff utilized a multi-step process that included a combination of spatial analysis, 3D geometric modeling, and aerial imagery interpolation. Because of the project's close proximity to the Mojave Air and Space Port (MASP) (located approximately 1 mile to the west of the project), the California City Municipal Airport, and the existence of multiple highways in the immediate vicinity of the project site, a 5-mile-radius study area was determined to be necessary for this analysis, as shown on Figure 1. The locations of the MASP and California City Municipal Airport are identified on Figure 1.

Dudek performed a visibility analysis on the surrounding terrain within the study area to determine where the project is most visible. Based on the visibility analysis, Dudek determined the location of potential receptors within the study area. All runway approach paths and air traffic control towers associated with MASP were included in this analysis regardless of visibility or distance. A geometric glare analysis was then conducted for the identified potential receptors to determine a worst-case scenario of where and when glare might be encountered (see section 2.2.4 for known modeling limitations). Upon completion of the geometric analysis, Dudek reviewed the results for potential glare hazards.

To account for the large project area and to increase the reliability of the modeling results, the project site was broken up into 10 separate analysis groups (see Figure 2), which were further broken into panel sections averaging about 20 acres in size. A full visibility and glare analysis were performed on each analysis group.

2.2.1 Visibility Analysis

The first step in pinpointing potential receptor locations was to determine where the project is most visible on the surrounding landscape. This is an important step because the geometric glare analysis software described in Section 2.2.3 does not take into consideration the terrain between

the observer and the reflective surfaces associated with the project. Without this step, there would be potential for a false positive glare impact on an observer that, in reality, could not possibly see the project due to intervening terrain.

Figure 4A through 4J, Visibility Analysis, shows the results of the visibility analysis performed by Dudek staff. Terrain within the study area is colored based on the percentage of the project visible from that location. Locations on the map colored red, can view most of the proposed solar arrays within each analysis group. Areas in blue have their view of the arrays mostly obscured by terrain. This visibility analysis only utilized existing terrain models, and did not take into consideration existing and proposed structures or vegetation.

2.2.2 Potential Receptor Identification

Using the visibility analysis results in conjunction with aerial imagery, road centerline data, land use data, and flight path information, Dudek staff selected potential receptors based on their distance from the project, orientation to the project, and the percentage of the project visible from the receptor's location. To keep the geometric processing time within reasonable limits, only receptors that were either close to the project or able to see most of the project from their location were selected for the analysis. Potential receptors to the south of the project that were not within close proximity were also excluded due to the fact that, at the latitude of the project, most of the glare resulting from the project would be reflected to the north, east, and west of the project. Figures 4A through 4J, show the locations of analyzed receptors as well as the modeled array locations. Figure 5, Air Traffic Receptor Locations, shows the locations of receptor routes associated with airport approach paths. Modeled array extents were subdivided into smaller portions to increase the accuracy of the modeling software. The numbers assigned to each array on Figures 4A through 4J correspond the array identifiers in Appendix A. Each modeled receptor type shown on Figures 4 and 5 are described below and receptor's precise modeling parameters can be found in Appendix A:

- Air Traffic Control Tower (ATCT) Observation Point – Two control towers were considered for this analysis; the currently operating tower located on the southeast side of MASP, adjacent to runway 30 and 26, and the non-operational historic control tower located south of runway 8. Control tower heights were estimated based on aerial imagery. See Appendix A for the precise heights used in the modeling.
- Dwelling Observation Point – Analysis included existing residential dwellings that were located adjacent to the project or within direct line of sight of most of the solar array. Because modeling every dwelling would not be feasible, Dudek staff selected representative dwellings from the neighborhoods surrounding the site.

- Airport Flight Path Observation Route – Eight flight path observation routes were selected to simulate an aircraft following a straight-line approach toward each runway at MASP and California City Municipal Airport. Flight path routes utilize glide slope and elevation parameters, as well as cockpit visibility angles. Modeled flight approaches extended out two miles from each runway threshold.
- Highway/Road Observation Route – Thirty-one Highway/Road observation routes were selected based on visibility, distance to the project site, and level of traffic expected on the roadways. To keep the number of receptor routes below the allowed limit by the geometric modeling software, Dudek staff selected routes that would be representative of each road type and road direction of travel within view of the project. Because of the project's location in the northern hemisphere, roads to the east, west, and north of the project were preferred in the selection process because of their higher likelihood of receiving glare (depending on distance).
- Railroad Observation Route – Five railroad routes were selected based on their proximity and visibility from the project site.

Table 1 shows the number of receptor points/routes modeled categorized by receptor type.

Table 1
Receptor Counts

Receptor Type	Count
Airport Flight Paths	8
Air Traffic Control Towers (ATCT)	2
Observation Points (Dwellings)	5
Observation Routes (Roads and Highways)	31
Railroads	5

2.2.3 Geometric Glare Analysis

Dudek staff utilized an industry standard 3D geometric glare analysis software tool developed by Sandia National Laboratories and licensed by ForgeSolar. By inputting the solar panel locations and characteristics, as well as the locations and elevations of the receptors, the software was able to simulate the sun's progression across the sky over the course of a year and model the potential glare caused by the proposed solar arrays. If glare is detected, the software is able to quantify the level of ocular impact hazard (green, yellow, or red) as well as pinpoint the exact time of year the glare would occur. This analysis was automatically performed for every minute of the calendar year, for each analysis group, and for each potential receptor defined in the model.

In order to ensure model accuracy, Dudek staff consulted the Project Applicant to obtain the precise characteristics of the proposed solar array system. Data gathered included the physical location, orientation, build material (including the presence of anti-reflective coatings), tilt angle, and tracking technology. All of these characteristics were entered into the modeling software as described in Table 2.

Table 2
Solar Array Model Inputs

Solar Array Characteristics	Proposed Project Configuration
Tracking method	Single-axis
Module surface material	Smooth glass with anti-reflective coating
Orientation of tracking axis	North–south
Maximum tracking angle	52°
Resting angle (when sun leaves maximum tracking angle)	10°

As described in Table 2, the proposed project is anticipated to utilize a single-axis tracking system. This tracking system would be oriented running north–south with the panel faces rotating from east to west. The system would be able to track the sun's progression across the sky, within the system's 104° range of motion (52° to the east and 52° to the west). When the sun is not within the 104° range of motion, the panels would backtrack and rest at 10°.

2.2.4 Known Limitations of the Geometric Analysis

The following known limitations in the modeling software have potential to exaggerate the level of predicted glare shown in the section 2.2.5, Analysis Results. Because of this, the results detailed in section 2.2.5 should be considered worst case scenario results.

- The geometric modeling software does not allow for a precise modeling of the backtracking strategy employed by the project's solar tracking system. The modeling software sets the resting angle of the solar panels to 10° at the instant the sun travels outside of the maximum tracking angle. In reality, the panels will slowly track back to 10° as the sun nears the horizon. The sudden backtracking as modeled in the geometric analysis maximizes the angle of incidence during the early morning and late afternoon hours, exaggerating the glare at those times.

- The visibility analysis and geometric modeling software does not consider existing vegetation or structures that might obscure the view of the panels from the receptor

locations. This might result in glare at receptors that are, in reality, unable to clearly see the panels.

2.2.5 Analysis Results

Dudek has determined that, according to the results of the geometric analysis, the proposed project could result in glare in the "Green" and "Yellow" ocular impact categories to only one receptor, the approach path at MASP Runway 22. No other receptors received glare in our analysis.

As detailed in Table 3, Glare Results for MASP Runway 22, the approach path for Runway 22 will experience glare in the "Yellow" ocular impact category for nearly one and a half hours per day in the late afternoons of the winter months, and nearly an hour per day during the late afternoon of the spring and fall months. Glare in the less sever "Green" ocular impact category is predicted to be experienced by Runway 22 in the fall and winter months, ranging from 18 minutes per day in October to 81 minutes per day in December.

All of the glare experienced by MASP Runway 22 is generated by portions of Analysis Group A on the west side of Highway 58. The precise durations of glare for each receptor and modeled panel sections can be found in Appendix A.

2.2.6 Comparison of Results to Other Sources of Glare

Figure 6, Comparison of Results to Other Sources of Glare, shows samples of results from the analysis compared to the following three other sources of glare:

- Hazard due to viewing unfiltered sun (ForgeSolar, 2019)
- Fixed tilt photovoltaic system under conservative assumptions (Riley, 2011)
- Smooth water body under conservative assumptions (Riley, 2011)

In Figure 6, purple dots are shown to represent the maximum predicted glare from one sample panel section in each analysis group at which glare was predicted. The sample panel sections were selected if they were predicted to cause the longest duration of glare in the "Green" or "Yellow" ocular impact category for that analysis group. The graph indicates that the glare produced by the project will not result in more ocular impact than either a fixed-tilt photovoltaic system or a smooth water body under conservative assumptions and significantly less impact than the hazards posed due to viewing the unfiltered sun.

Table 3
Glare Results for MASP Runway 22

Month	Ocular Impact	Time of Day				
		Early Morning	*Late Morning*	*Mid-Day*	*Early Afternoon*	*Late Afternoon*
		Sunrise to 9AM	*9AM to 11AM*	*11AM to 1PM*	*1PM to 3PM*	*3PM to Sunset*
		Range of Minutes Per Day				
January	Yellow	0	0	0	0	75 - 101
	Green	0	31 - 74	0	0	1*
February	Yellow	0	0	0	0	57 - 75
	Green	0	1 - 29	0	0	1*
March	Yellow	0	0	0	0	49 - 56
	Green	0	0	0	0	1*
April	Yellow	0	0	0	0	1 - 49
	Green	0	0	0	0	1*
May	Yellow	0	0	0	0	1*
	Green	0	0	0	0	0
June	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
July	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
August	Yellow	0	0	0	0	2 - 49
	Green	0	0	0	0	0
September	Yellow	0	0	0	0	49 - 52
	Green	0	0	0	0	1*
October	Yellow	0	0	0	0	52 - 68
	Green	1 - 4	1 - 18	0	0	1*
November	Yellow	0	0	0	0	69 - 94
	Green	0	18 - 63	0	0	1*
December	Yellow	0	0	0	1 - 5	95 - 101
	Green	0	64 - 81	0	0	0

**Maximum and minimum values are equal.*

3 REFERENCES CITED

78 FR 63276–63279. Notice of interim policy: "Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports." October 23, 2013.

FAA (Federal Aviation Administration). 2013. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. Version 1.1. Washington, DC: FAA, Office of Airports, Office of Airport Planning and Programming. April 2018.

ForgeSolar (ForgeSolar: PV Planning & Glare Analysis). 2019. "ForgeSolar Help." Website. https://www.forgesolar.com/help/.

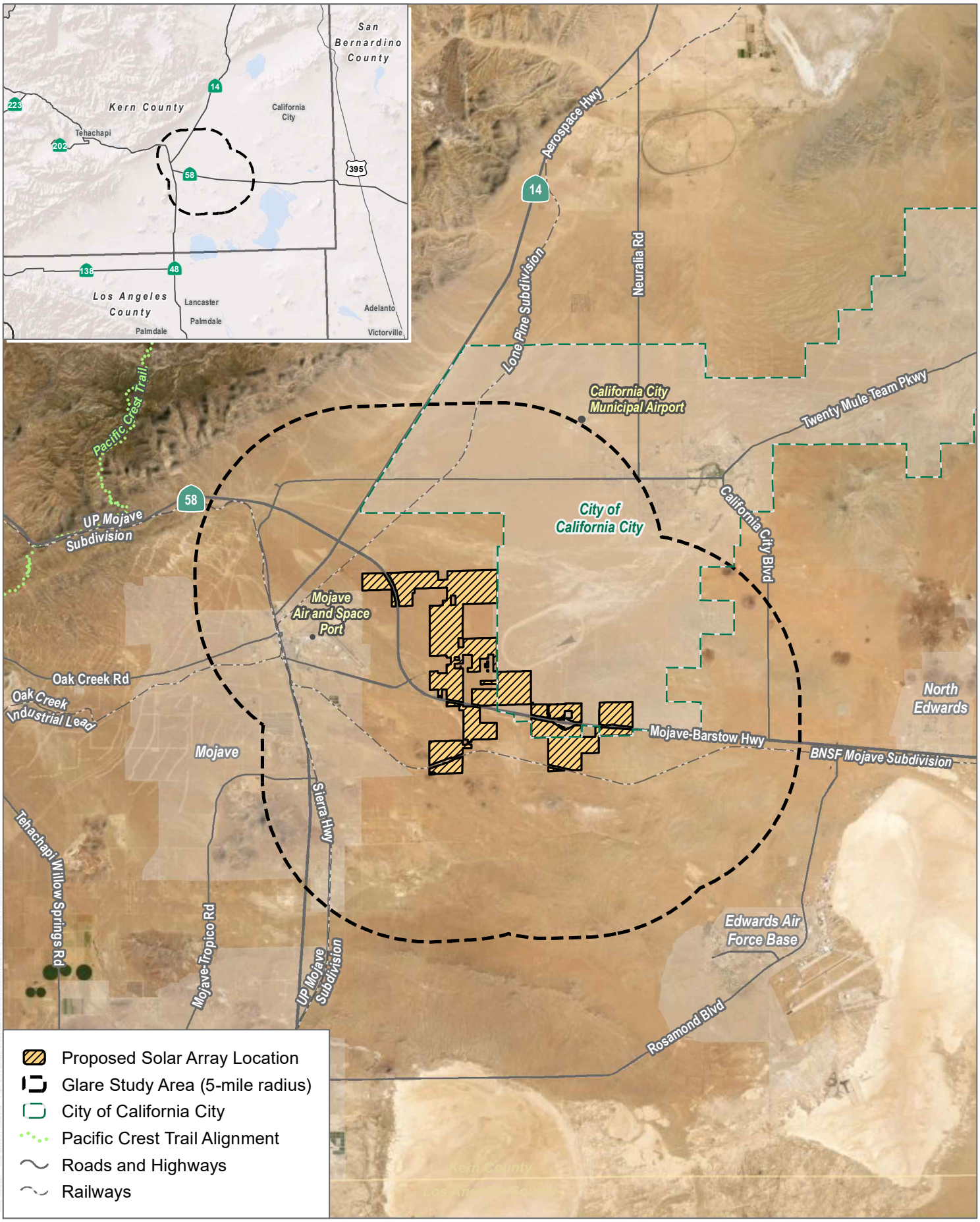
Riley, Evan, and Scott Olson. "A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems." *International Scholarly Research Network,* vol. 2011, no. 651857, December 11, 2011.

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4 DOCUMENT PREPARERS

This Glare Analysis Report was prepared by Christopher Starbird and Joshua Saunders. Formatting was provided by David Mueller.

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SOURCE: Esri, Digital Globe 2019, Open Street Map 2019

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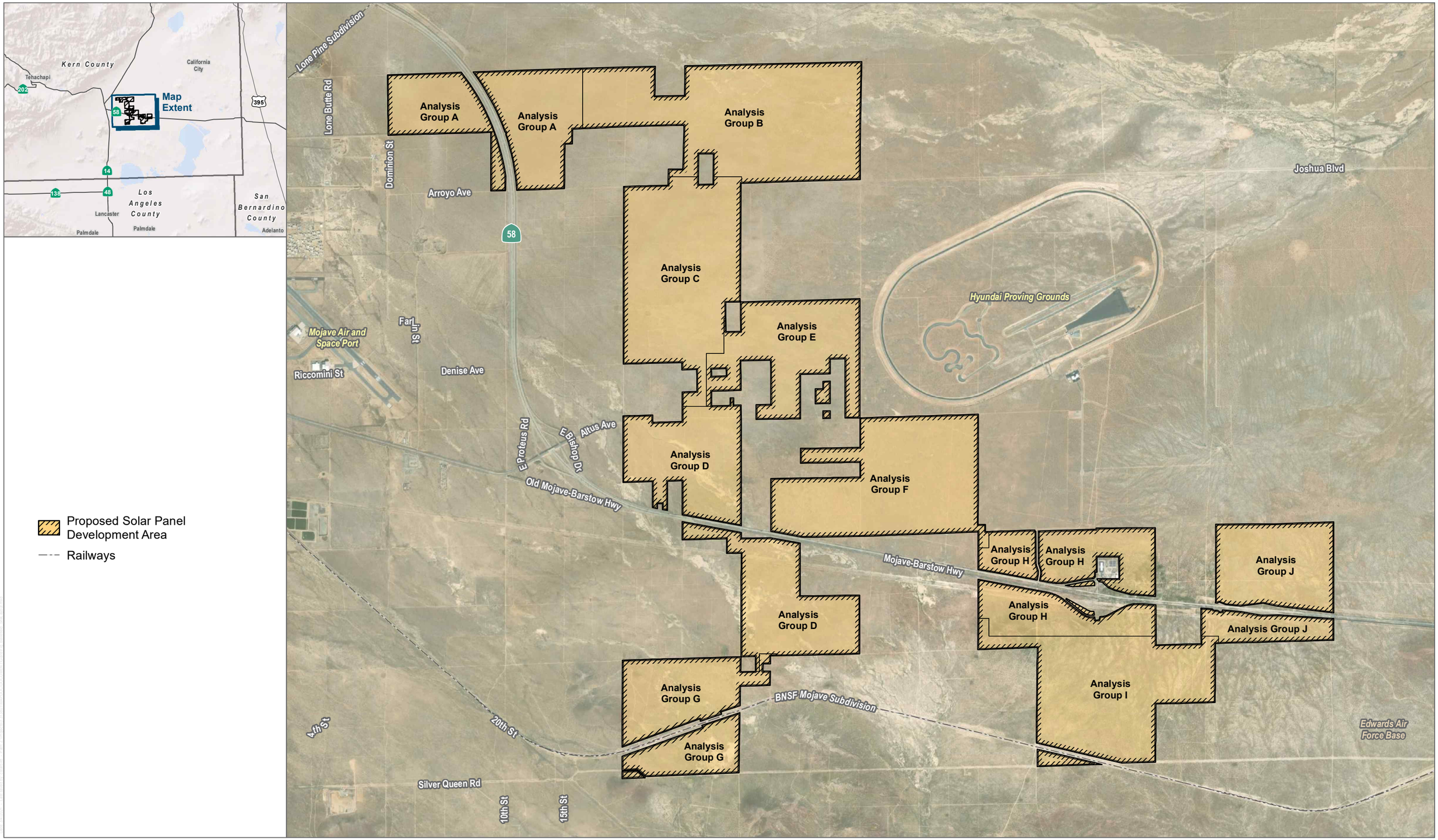
0 1.75 3.5 Miles

FIGURE 1

Project Location and Study Area

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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0 2,000 4,000 Feet

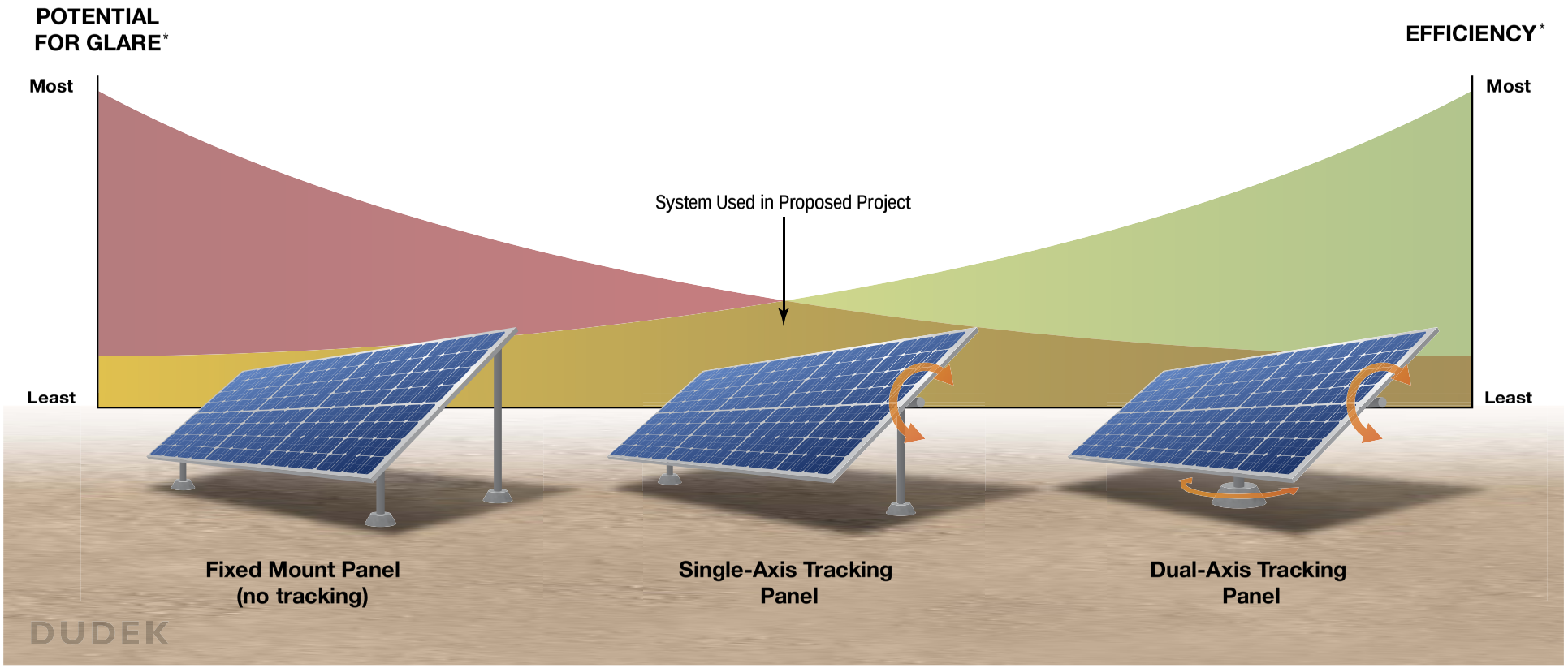
FIGURE 2

Project Site Layout

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** Efficiency and glare relationships represented in this graphic have been exaggerated and are for illustrative purposes only.*

SOURCE: DUDEK 2021

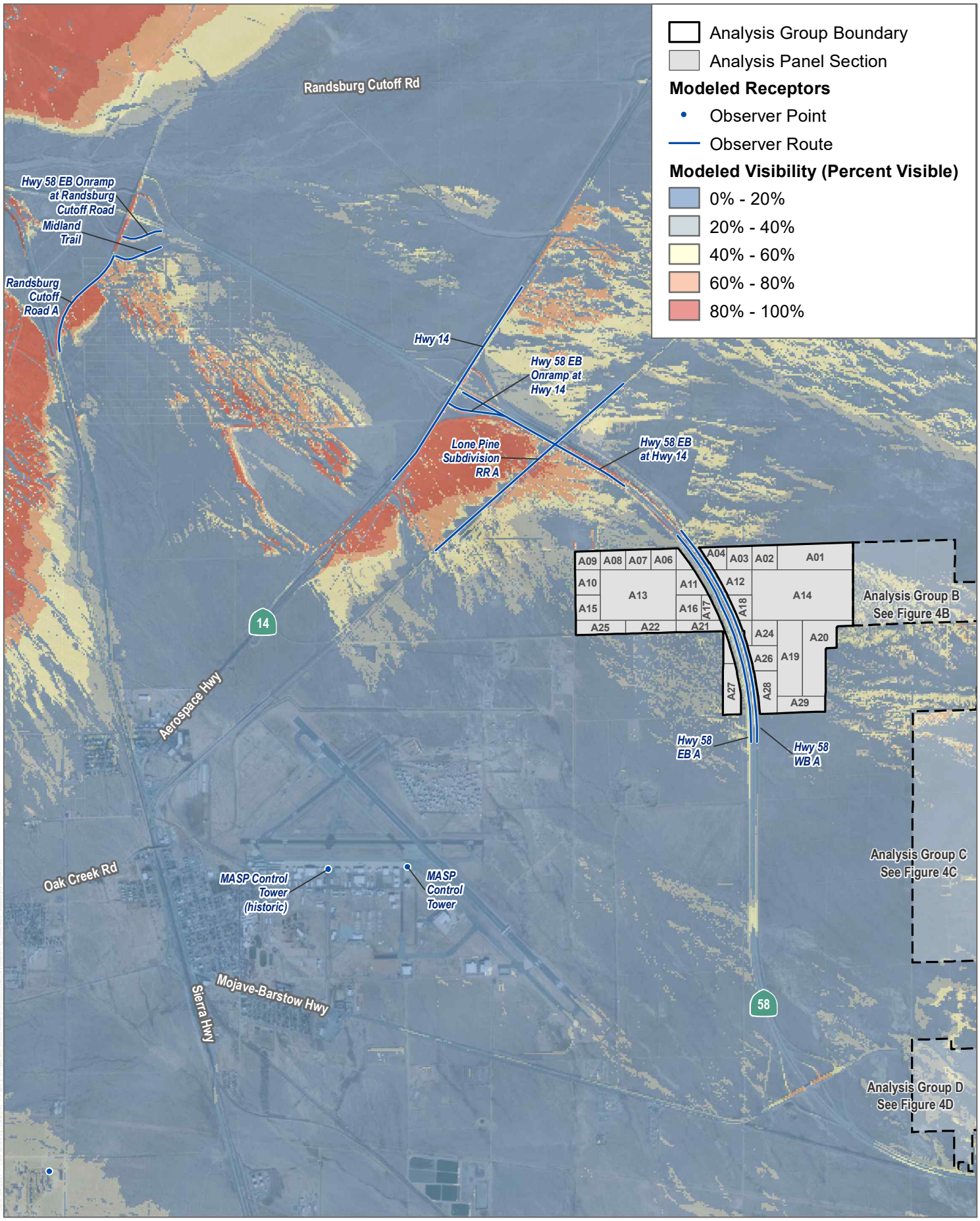
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FIGURE 3

Comparison of Photovoltaic Tracking Systems

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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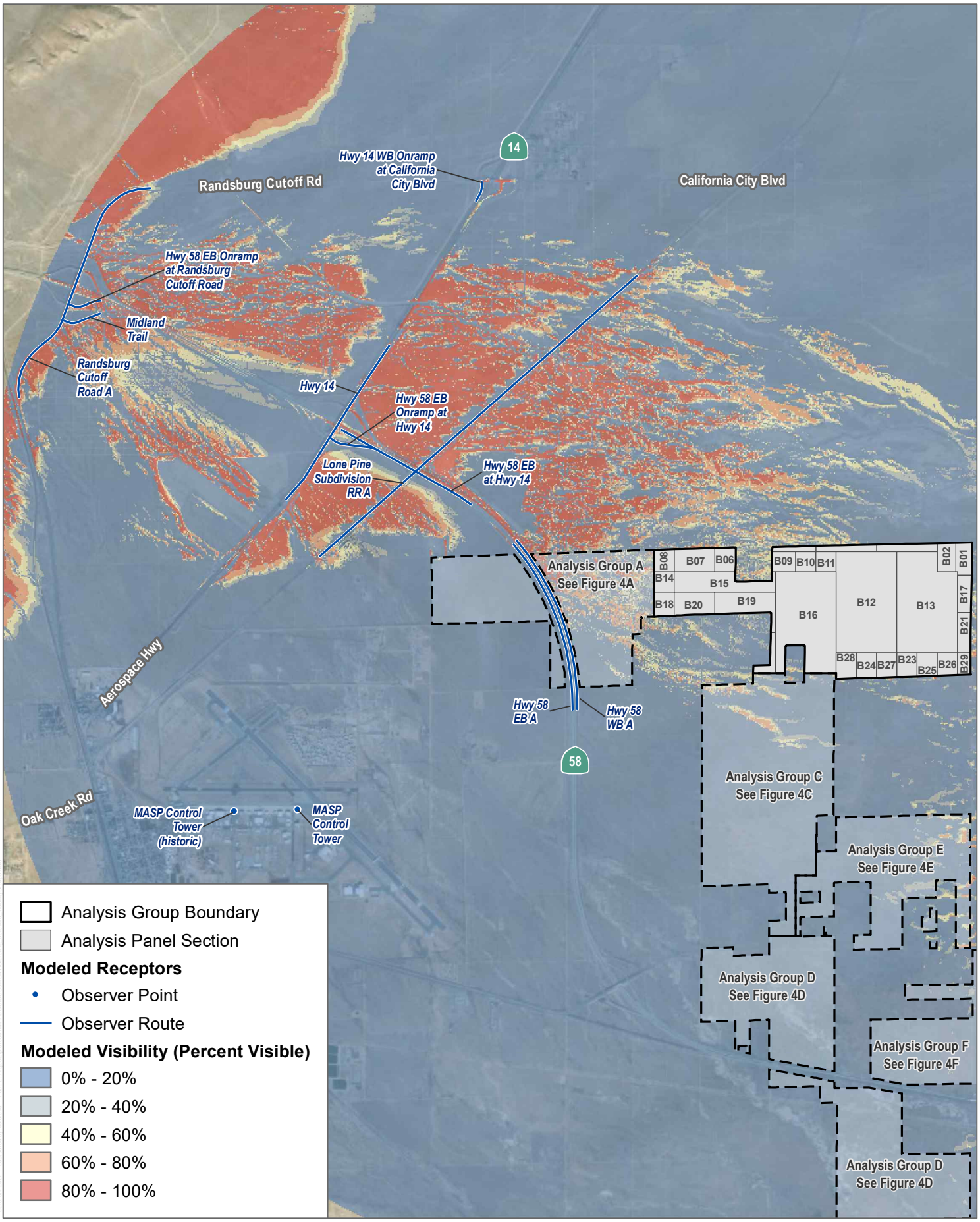
0 2,000 4,000 Feet

FIGURE 4A

Visibility Analysis and Modeled Receptor Locations - Analysis Group A

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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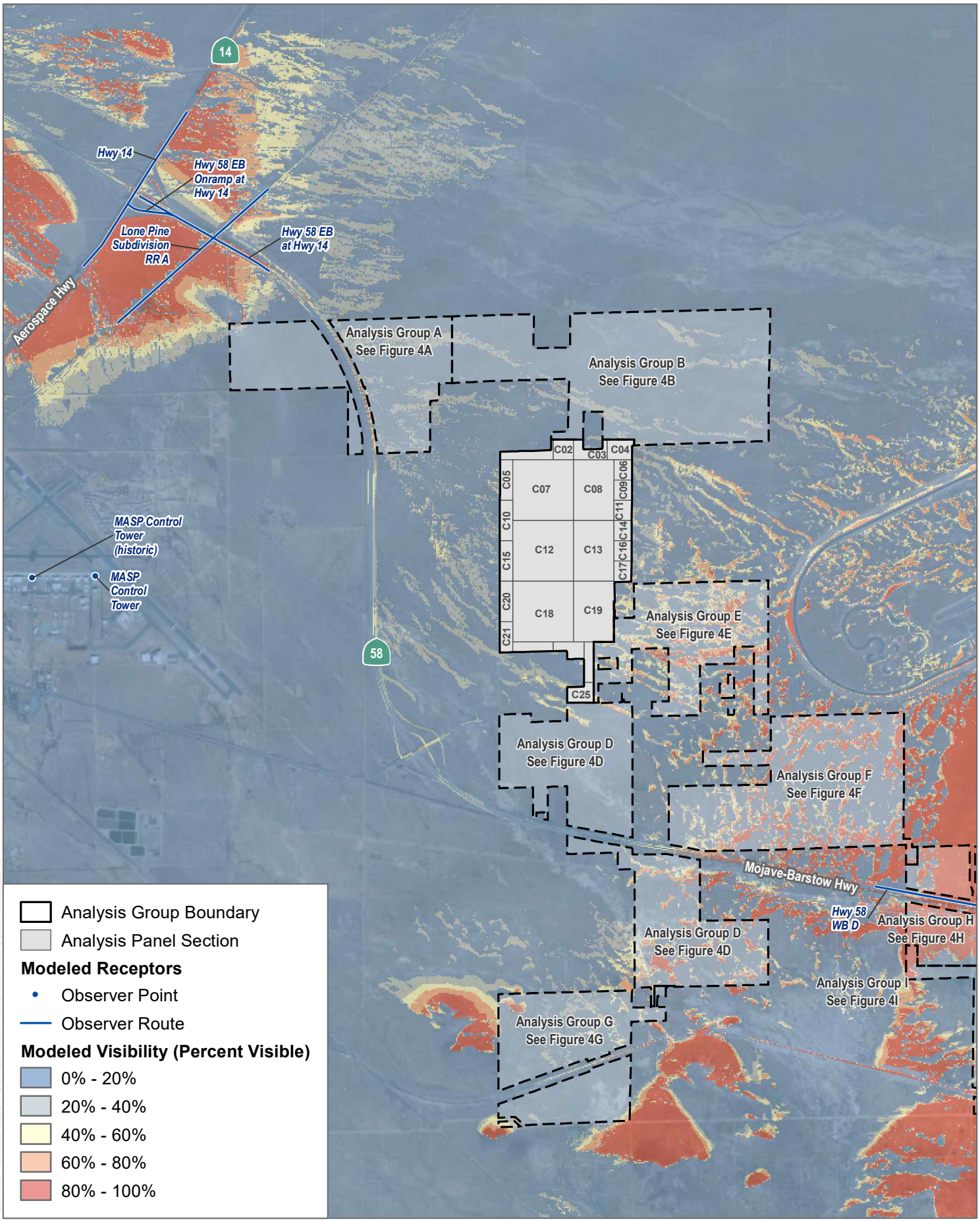
0 2,500 5,000 Feet

FIGURE 4B

Visibility Analysis and Modeled Receptor Locations - Analysis Group B

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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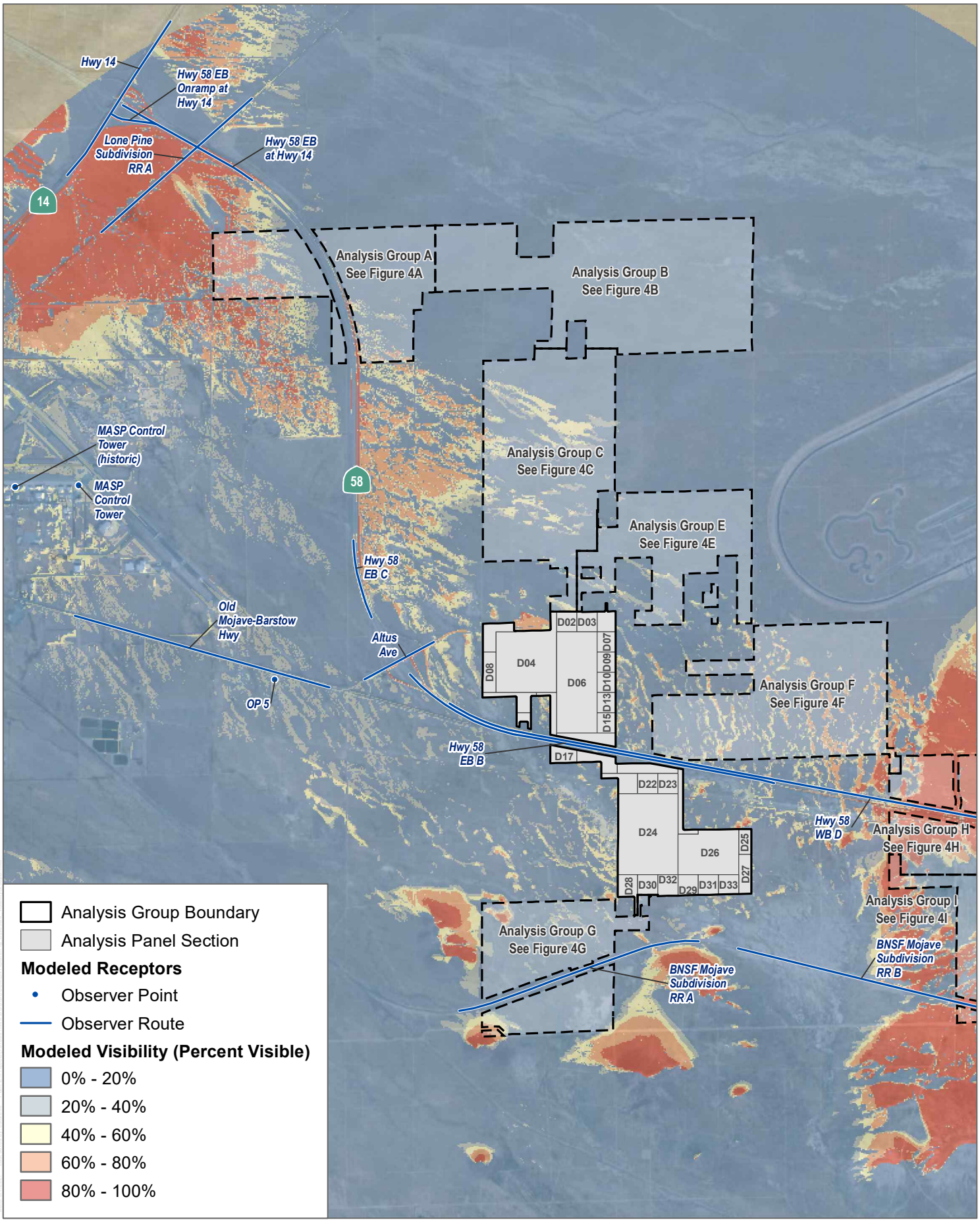
0 2,500 5,000 Feet

FIGURE 4C

Visibility Analysis and Modeled Receptor Locations - Analysis Group C

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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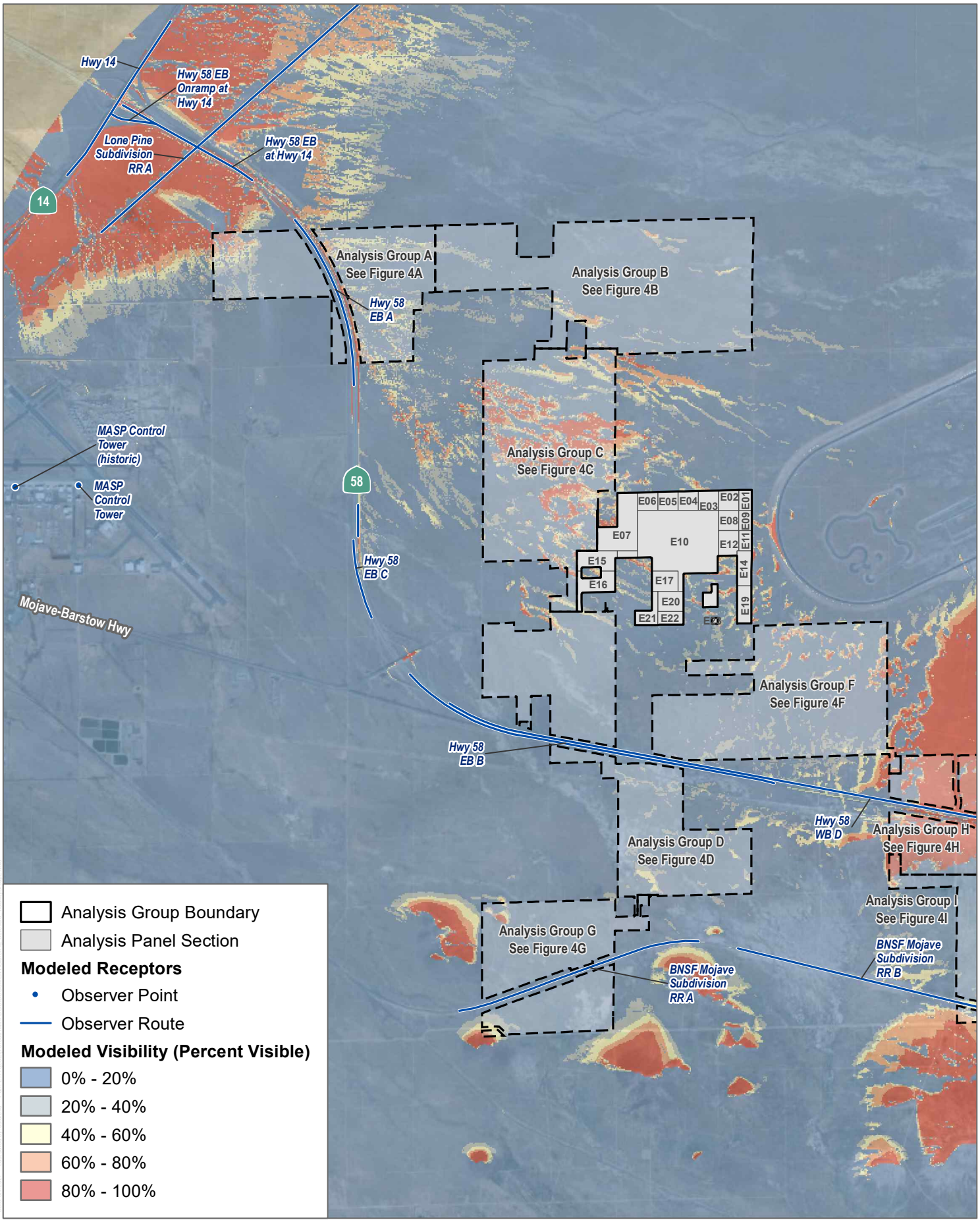
0 2,500 5,000 Feet

FIGURE 4D

Visibility Analysis and Modeled Receptor Locations - Analysis Group D

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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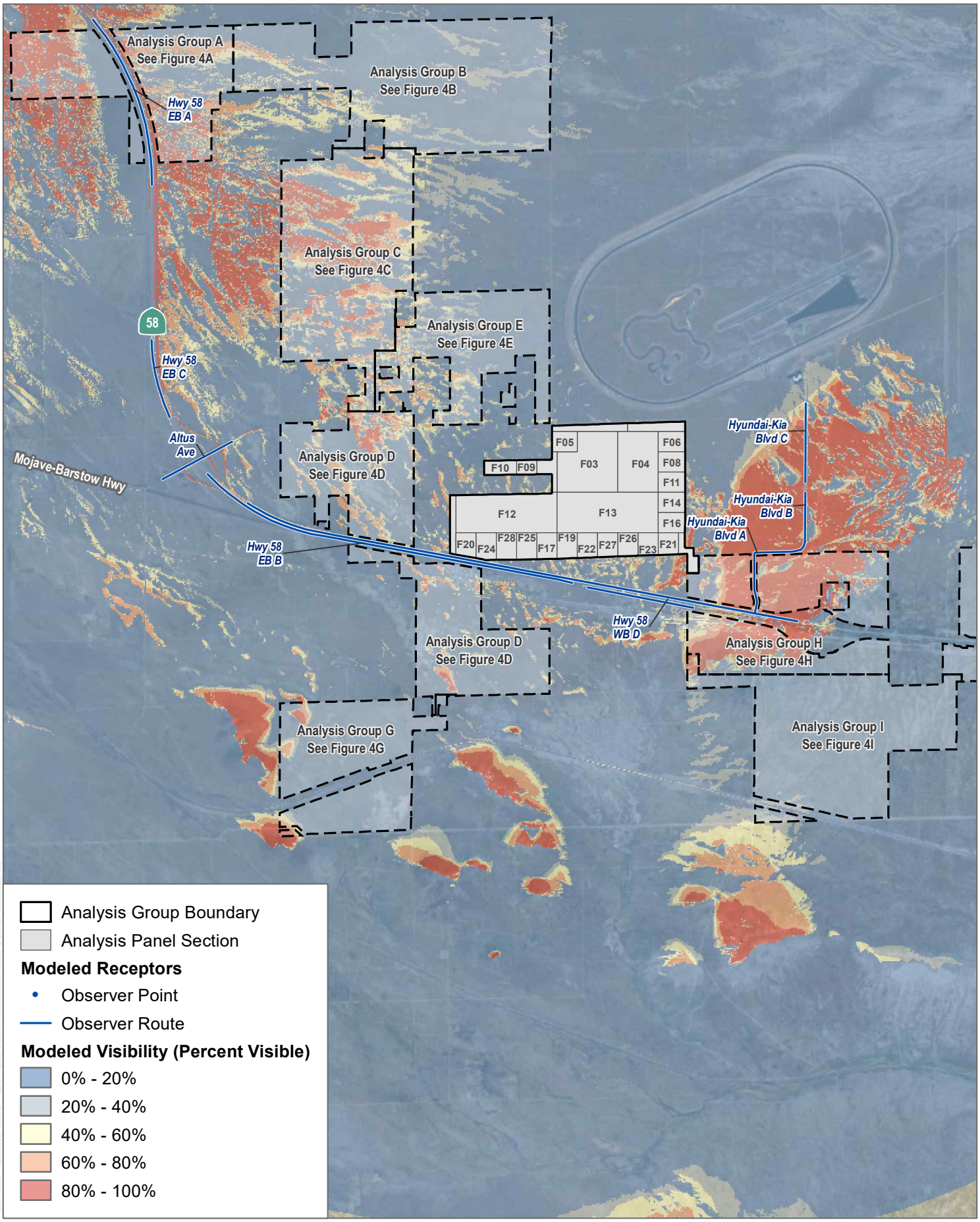
0 2,500 5,000 Feet

FIGURE 4E

Visibility Analysis and Modeled Receptor Locations - Analysis Group E

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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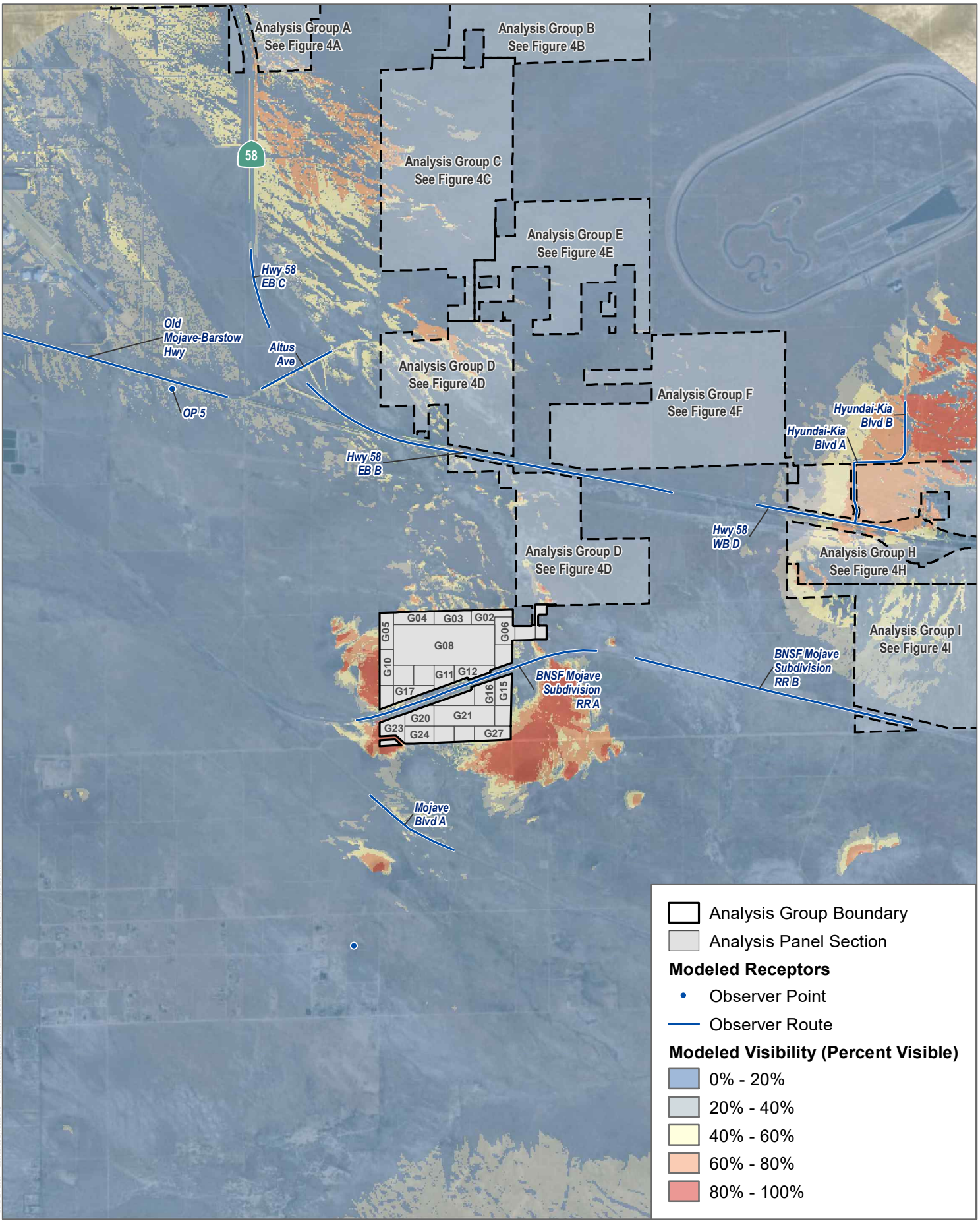
0 2,500 5,000 Feet

FIGURE 4F

Visibility Analysis and Modeled Receptor Locations - Analysis Group F

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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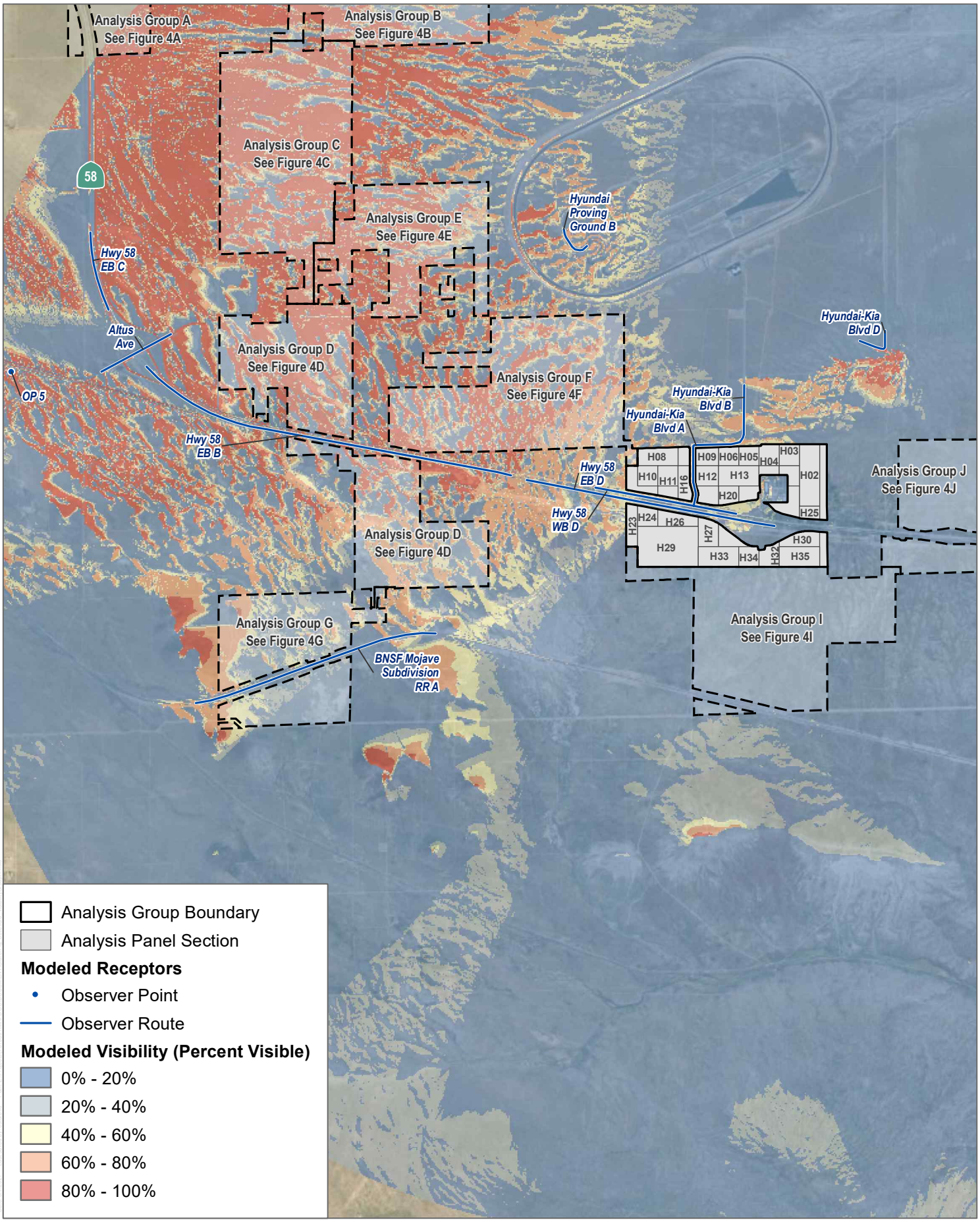
0 2,500 5,000 Feet

FIGURE 4G

Visibility Analysis and Modeled Receptor Locations - Analysis Group G

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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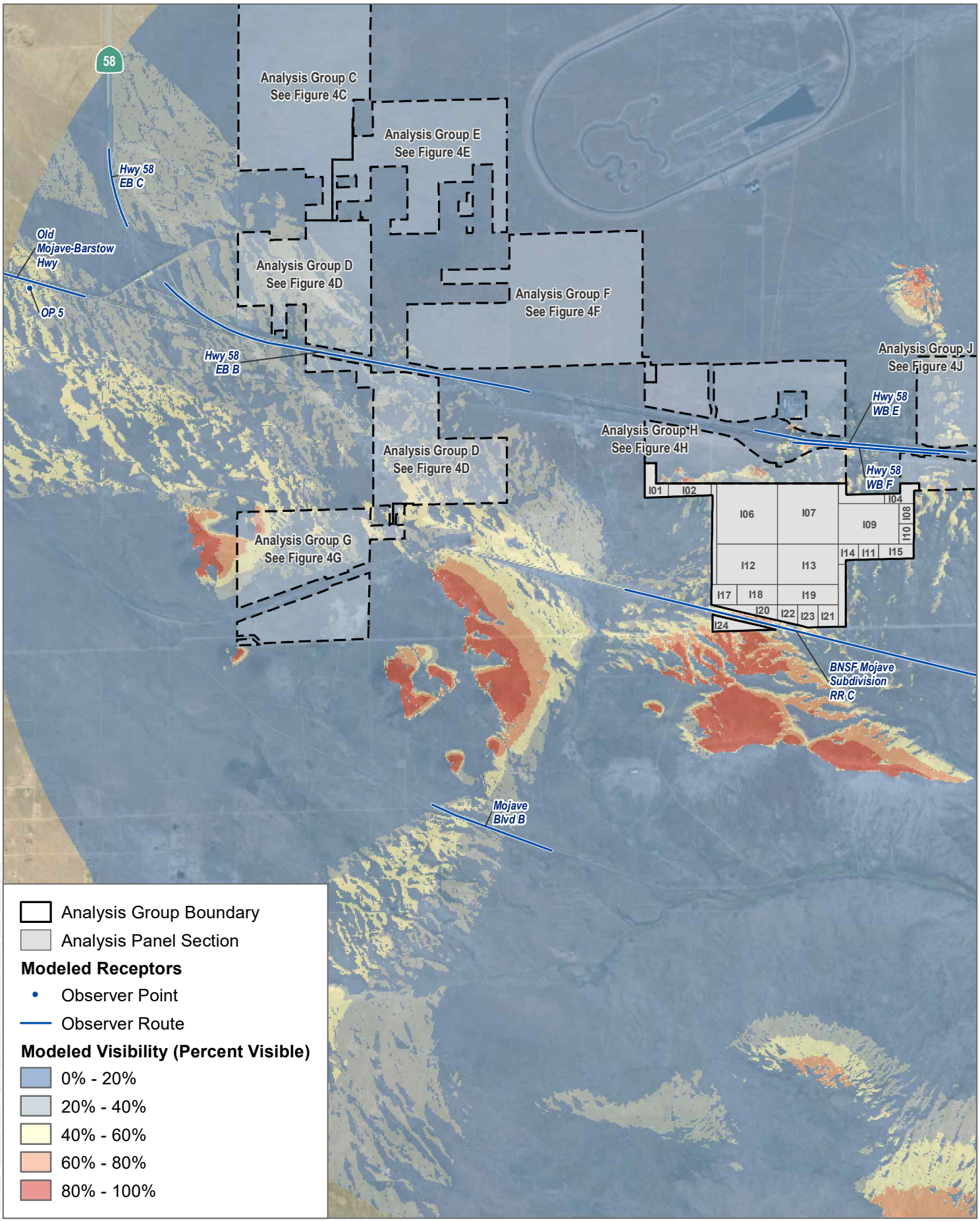
0 2,500 5,000 Feet

FIGURE 4H

Visibility Analysis and Modeled Receptor Locations - Analysis Group H

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

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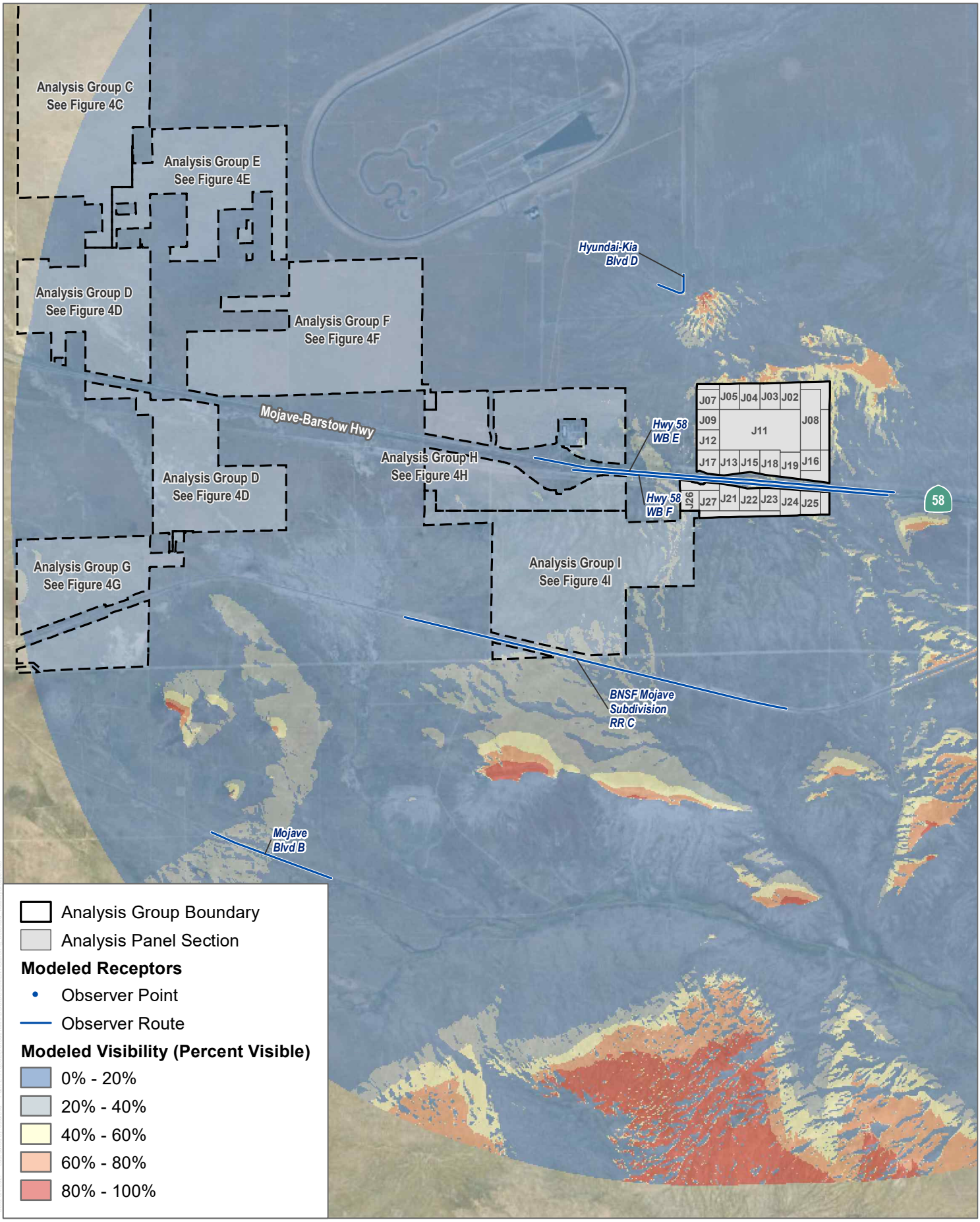
0 2,500 5,000 Feet

FIGURE 4I

Visibility Analysis and Modeled Receptor Locations - Analysis Group I

Bellefield Solar

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SOURCE: Esri and Digital Globe, Open Street Map 2019

DUDEK

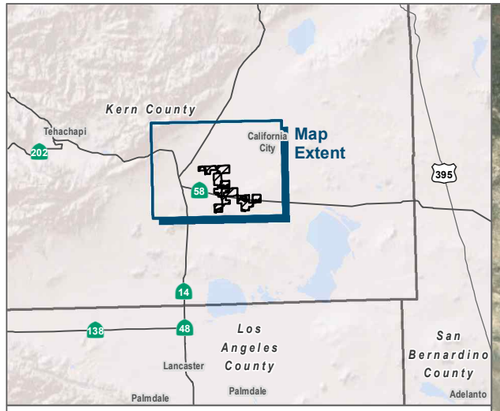
0 2,500 5,000 Feet

FIGURE 4J

Visibility Analysis and Modeled Receptor Locations - Analysis Group J

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Proposed Solar Panel Development Area

Flight Path Receptor Route

Railways

SOURCE: Esri and Digital Globe, Open Street Map 2019

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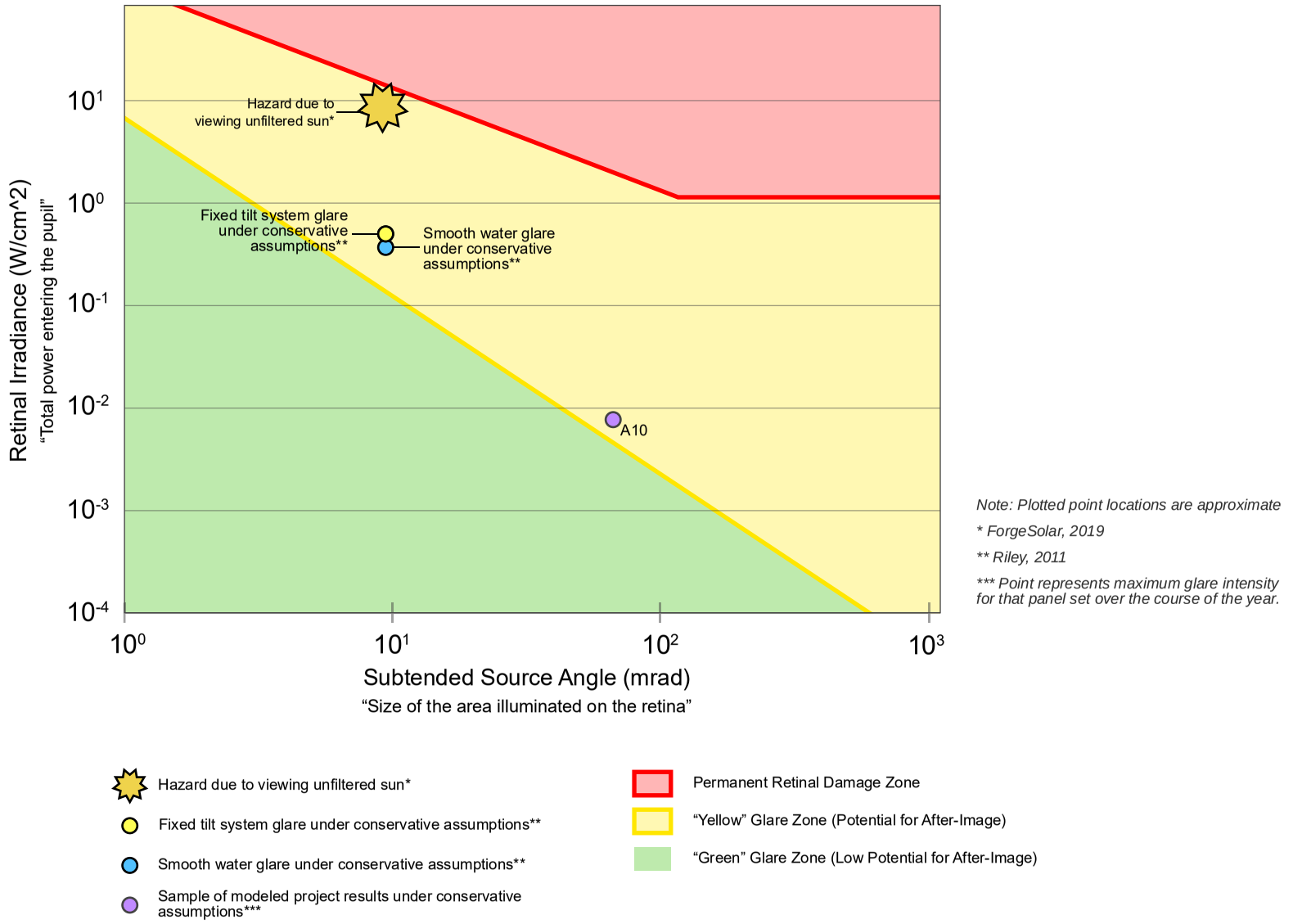
0 3,550 7,100 Feet

FIGURE 5

Air Traffic Receptor Locations

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SOURCE: DUDEK 2021

FIGURE 6

Comparison of Results to Other Sources of Glare

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APPENDIX A-1

Modeling Results for Analysis Group A

Bellefield Solar Project

Bellefield Solar Analysis Group A Rest at 10

Created April 27, 2021
Updated May 3, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53003.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results

Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
A01	SA tracking	SA tracking	0	0	-
A02	SA tracking	SA tracking	0	0	-
A03	SA tracking	SA tracking	0	0	-
A04	SA tracking	SA tracking	0	0	-
A05	SA tracking	SA tracking	0	0	-
A06	SA tracking	SA tracking	0	0	-
A07	SA tracking	SA tracking	0	0	-
A08	SA tracking	SA tracking	1,983	11,977	-
A09	SA tracking	SA tracking	300	9,119	-
A10	SA tracking	SA tracking	3,275	12,695	-
A11	SA tracking	SA tracking	0	0	-
A12	SA tracking	SA tracking	0	0	-
A13	SA tracking	SA tracking	5,374	8,014	-
A14	SA tracking	SA tracking	0	0	-
A15	SA tracking	SA tracking	5,941	6,429	-
A16	SA tracking	SA tracking	0	0	-
A17	SA tracking	SA tracking	0	0	-
A18	SA tracking	SA tracking	0	0	-
A19	SA tracking	SA tracking	0	0	-
A20	SA tracking	SA tracking	0	0	-
A21	SA tracking	SA tracking	0	0	-
A22	SA tracking	SA tracking	0	0	-
A23	SA tracking	SA tracking	0	0	-
A24	SA tracking	SA tracking	0	0	-
A25	SA tracking	SA tracking	0	0	-
A26	SA tracking	SA tracking	0	0	-
A27	SA tracking	SA tracking	0	0	-
A28	SA tracking	SA tracking	0	0	-
A29	SA tracking	SA tracking	0	0	-

Component Data

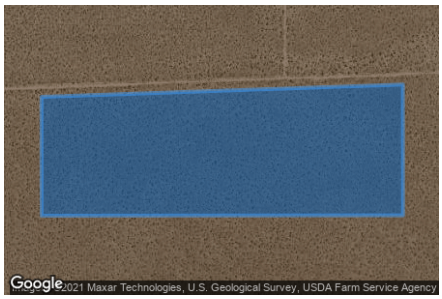
PV Array(s)

Total PV footprint area: 649.2 acres

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

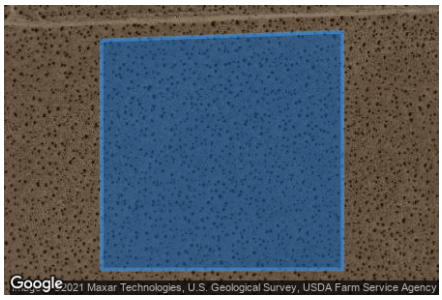
Name: A01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 45.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082894	-118.110421	2729.61	4.00	2733.61
2	35.085051	-118.110424	2731.44	4.00	2735.44
3	35.085276	-118.102402	2706.38	4.00	2710.38
4	35.082901	-118.102399	2705.65	4.00	2709.65
5	35.082894	-118.110421	2729.61	4.00	2733.61



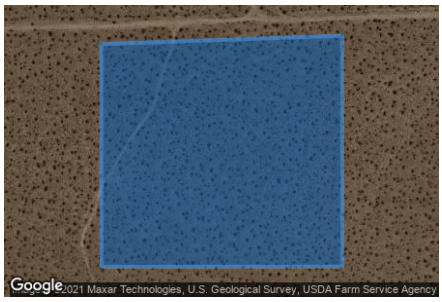
Name: A02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082894	-118.110421	2729.61	4.00	2733.61
2	35.082892	-118.113095	2739.31	4.00	2743.32
3	35.084973	-118.113098	2739.39	4.00	2743.39
4	35.085051	-118.110424	2731.44	4.00	2735.44
5	35.082894	-118.110421	2729.61	4.00	2733.61



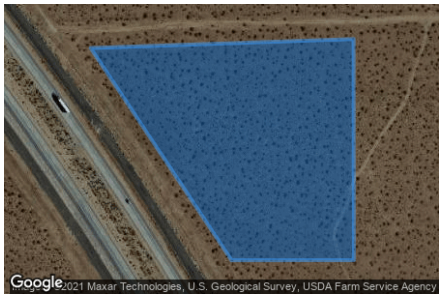
Name: A03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082892	-118.113095	2739.31	4.00	2743.32
2	35.082889	-118.115769	2747.52	4.00	2751.52
3	35.084897	-118.115772	2749.09	4.00	2753.09
4	35.084973	-118.113098	2739.39	4.00	2743.39
5	35.082892	-118.113095	2739.31	4.00	2743.32



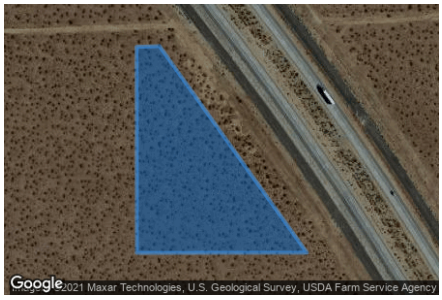
Name: A04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082889	-118.115769	2747.52	4.00	2751.52
2	35.082888	-118.117126	2752.44	4.00	2756.44
3	35.084816	-118.118690	2758.99	4.00	2762.99
4	35.084897	-118.115772	2749.09	4.00	2753.09
5	35.082889	-118.115769	2747.52	4.00	2751.52



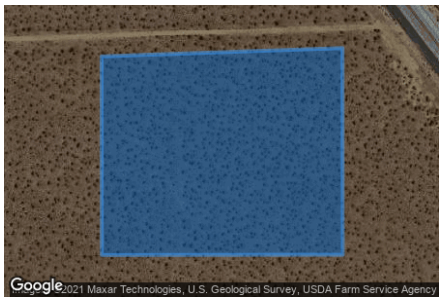
Name: A05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 5.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082886	-118.119231	2757.88	4.00	2761.88
2	35.082884	-118.121117	2764.29	4.00	2768.29
3	35.084748	-118.121120	2766.85	4.00	2770.85
4	35.084755	-118.120866	2766.43	4.00	2770.43
5	35.082886	-118.119231	2757.88	4.00	2761.88



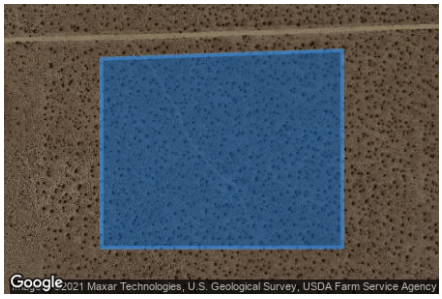
Name: A06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082884	-118.121117	2764.29	4.00	2768.29
2	35.082881	-118.123791	2772.36	4.00	2776.36
3	35.084672	-118.123793	2775.65	4.00	2779.65
4	35.084748	-118.121120	2766.85	4.00	2770.85
5	35.082884	-118.121117	2764.29	4.00	2768.29



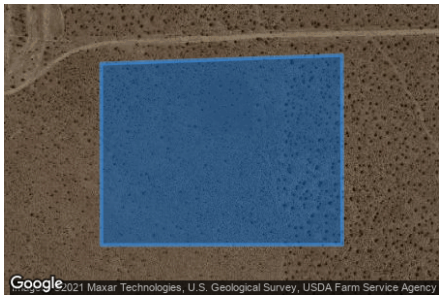
Name: A07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082881	-118.123791	2772.36	4.00	2776.36
2	35.082879	-118.126465	2781.68	4.00	2785.68
3	35.084595	-118.126467	2784.72	4.00	2788.72
4	35.084672	-118.123793	2775.65	4.00	2779.65
5	35.082881	-118.123791	2772.36	4.00	2776.36



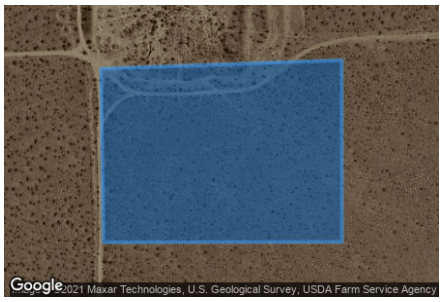
Name: A08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082879	-118.126465	2781.68	4.00	2785.68
2	35.082876	-118.129139	2789.56	4.00	2793.56
3	35.084517	-118.129141	2793.38	4.00	2797.38
4	35.084595	-118.126467	2784.72	4.00	2788.72
5	35.082879	-118.126465	2781.68	4.00	2785.68



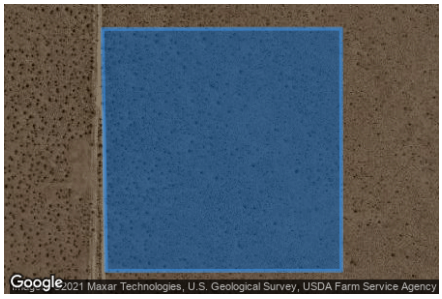
Name: A09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082876	-118.129139	2789.56	4.00	2793.56
2	35.082873	-118.131787	2796.29	4.00	2800.29
3	35.084439	-118.131815	2801.07	4.00	2805.07
4	35.084517	-118.129141	2793.38	4.00	2797.38
5	35.082876	-118.129139	2789.56	4.00	2793.56



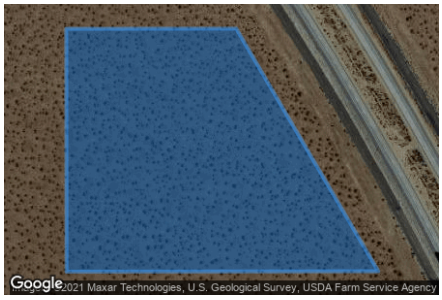
Name: A10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.080678	-118.129135	2782.97	4.00	2786.97
2	35.080675	-118.131748	2788.48	4.00	2792.48
3	35.082873	-118.131787	2796.29	4.00	2800.29
4	35.082876	-118.129139	2789.56	4.00	2793.56
5	35.080678	-118.129135	2782.97	4.00	2786.97



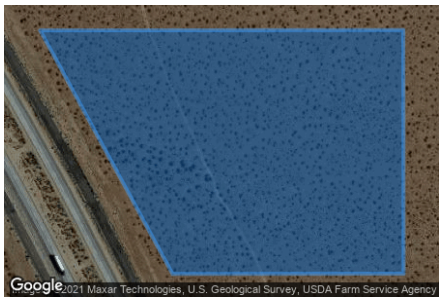
Name: A11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.080689	-118.118440	2751.11	4.00	2755.11
2	35.080686	-118.121114	2761.12	4.00	2765.12
3	35.082884	-118.121117	2764.29	4.00	2768.29
4	35.082886	-118.119231	2757.88	4.00	2761.88
5	35.080689	-118.117654	2748.59	4.00	2752.59
6	35.080689	-118.118440	2751.11	4.00	2755.11



Name: A12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

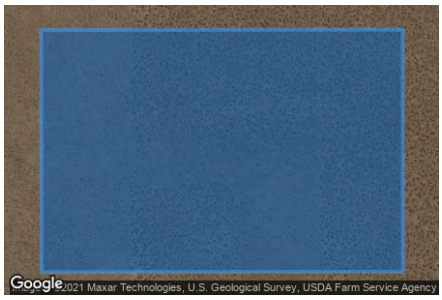
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.080694	-118.113092	2735.46	4.00	2739.46
2	35.080691	-118.115657	2743.73	4.00	2747.73
3	35.082888	-118.117126	2752.44	4.00	2756.44
4	35.082889	-118.115769	2747.52	4.00	2751.52
5	35.082892	-118.113095	2739.31	4.00	2743.32
6	35.080694	-118.113092	2735.46	4.00	2739.46



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: A13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 83.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078482	-118.126458	2770.41	4.00	2774.41
2	35.078480	-118.129132	2776.48	4.00	2780.48
3	35.080678	-118.129135	2782.97	4.00	2786.97
4	35.082876	-118.129139	2789.56	4.00	2793.56
5	35.082879	-118.126465	2781.68	4.00	2785.68
6	35.082881	-118.123791	2772.36	4.00	2776.36
7	35.082884	-118.121117	2764.29	4.00	2768.29
8	35.080686	-118.121114	2761.12	4.00	2765.12
9	35.078488	-118.121110	2756.49	4.00	2760.49
10	35.078482	-118.126458	2770.41	4.00	2774.41



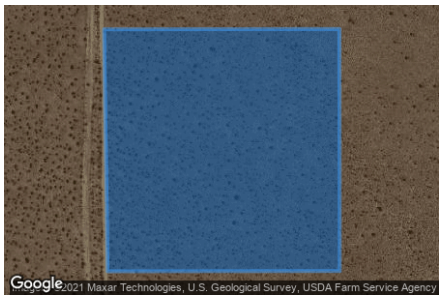
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: A14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 111.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078498	-118.110415	2726.76	4.00	2730.76
2	35.078496	-118.113089	2735.48	4.00	2739.48
3	35.080694	-118.113092	2735.46	4.00	2739.46
4	35.082892	-118.113095	2739.31	4.00	2743.32
5	35.082894	-118.110421	2729.61	4.00	2733.61
6	35.082901	-118.102399	2705.65	4.00	2709.65
7	35.080703	-118.102396	2701.60	4.00	2705.60
8	35.078505	-118.102394	2701.03	4.00	2705.03
9	35.078500	-118.107741	2718.57	4.00	2722.57
10	35.078498	-118.110415	2726.76	4.00	2730.76

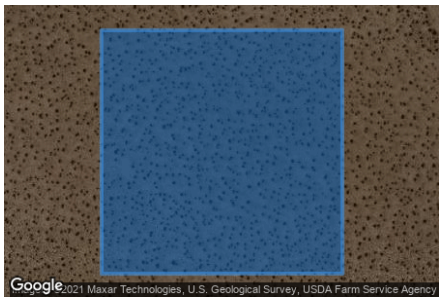
Name: A15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078480	-118.129132	2776.48	4.00	2780.48
2	35.078477	-118.131709	2781.28	4.00	2785.28
3	35.080675	-118.131748	2788.48	4.00	2792.48
4	35.080678	-118.129135	2782.97	4.00	2786.97
5	35.078480	-118.129132	2776.48	4.00	2780.48

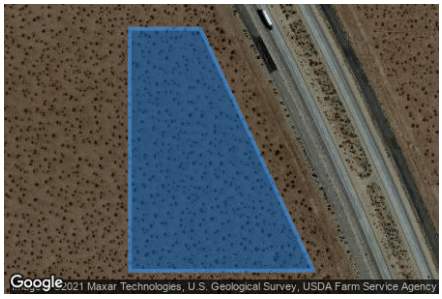
Name: A16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078490	-118.118437	2750.53	4.00	2754.53
2	35.078488	-118.121110	2756.49	4.00	2760.49
3	35.080686	-118.121114	2761.12	4.00	2765.12
4	35.080689	-118.118440	2751.11	4.00	2755.11
5	35.078490	-118.118437	2750.53	4.00	2754.53



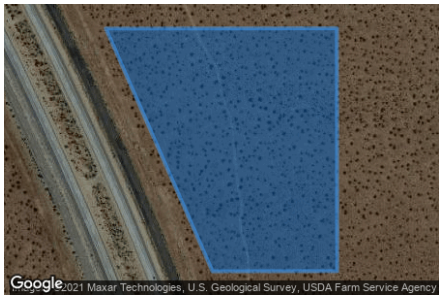
Name: A17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 7.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078492	-118.116396	2744.39	4.00	2748.39
2	35.078490	-118.118437	2750.53	4.00	2754.53
3	35.080689	-118.118440	2751.11	4.00	2755.11
4	35.080689	-118.117654	2748.59	4.00	2752.59
5	35.078492	-118.116396	2744.39	4.00	2748.39



Name: A18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078496	-118.113089	2735.48	4.00	2739.48
2	35.078494	-118.114473	2739.23	4.00	2743.23
3	35.080691	-118.115657	2743.73	4.00	2747.73
4	35.080694	-118.113092	2735.46	4.00	2739.46
5	35.078496	-118.113089	2735.48	4.00	2739.48



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: A19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 38.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

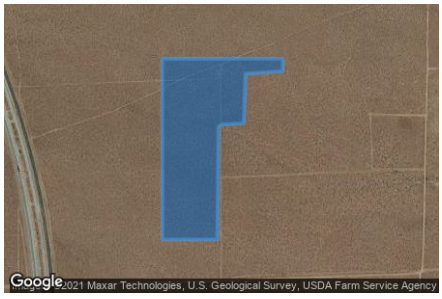
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071906	-118.107733	2711.94	4.00	2715.94
2	35.071904	-118.110406	2716.82	4.00	2720.82
3	35.074102	-118.110409	2721.37	4.00	2725.37
4	35.076300	-118.110412	2724.48	4.00	2728.48
5	35.078498	-118.110415	2726.76	4.00	2730.76
6	35.078500	-118.107741	2718.57	4.00	2722.57
7	35.071906	-118.107733	2711.94	4.00	2715.94



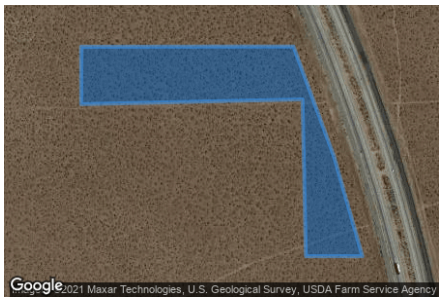
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: A20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 49.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071908	-118.105292	2703.47	4.00	2707.47
2	35.071906	-118.107733	2711.94	4.00	2715.94
3	35.078500	-118.107741	2718.57	4.00	2722.57
4	35.078505	-118.102394	2701.03	4.00	2705.03
5	35.078047	-118.102393	2700.75	4.00	2704.75
6	35.077956	-118.104043	2706.28	4.00	2710.28
7	35.076140	-118.104121	2705.11	4.00	2709.11
8	35.076104	-118.105109	2708.08	4.00	2712.08
9	35.076017	-118.105242	2708.34	4.00	2712.34
10	35.071908	-118.105292	2703.47	4.00	2707.47

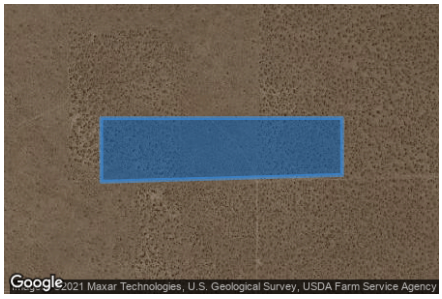


Name: A21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



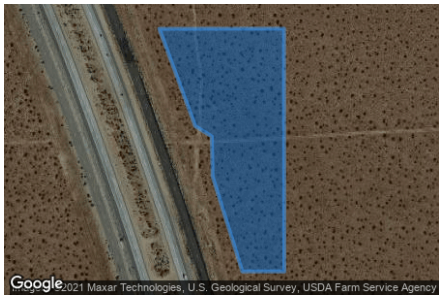
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.076496	-118.115492	2738.92	4.00	2742.92
2	35.074710	-118.114867	2733.22	4.00	2737.22
3	35.074708	-118.116122	2736.13	4.00	2740.13
4	35.077538	-118.116197	2743.09	4.00	2747.09
5	35.077451	-118.121109	2755.20	4.00	2759.20
6	35.078488	-118.121110	2756.49	4.00	2760.49
7	35.078490	-118.118437	2750.53	4.00	2754.53
8	35.078492	-118.116396	2744.39	4.00	2748.39
9	35.076496	-118.115492	2738.92	4.00	2742.92

Name: A22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.077329	-118.126456	2766.62	4.00	2770.62
2	35.078482	-118.126458	2770.41	4.00	2774.41
3	35.078488	-118.121110	2756.49	4.00	2760.49
4	35.077451	-118.121109	2755.20	4.00	2759.20
5	35.077329	-118.126456	2766.62	4.00	2770.62

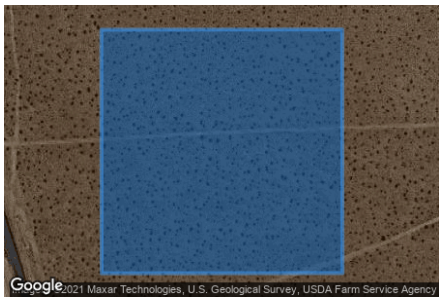
Name: A23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 4.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.076297	-118.113086	2732.19	4.00	2736.19
2	35.076297	-118.113551	2733.05	4.00	2737.05
3	35.077157	-118.113882	2736.66	4.00	2740.66
4	35.077520	-118.113891	2736.27	4.00	2740.27
5	35.077612	-118.114074	2737.24	4.00	2741.24
6	35.078494	-118.114473	2739.23	4.00	2743.23
7	35.078496	-118.113089	2735.48	4.00	2739.48
8	35.076297	-118.113086	2732.19	4.00	2736.19

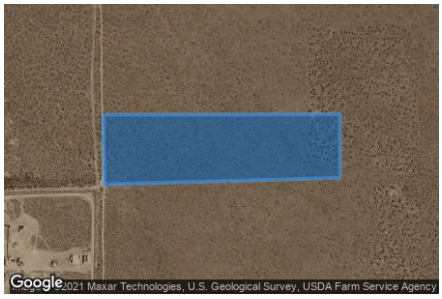
Name: A24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.076300	-118.110412	2724.48	4.00	2728.48
2	35.076297	-118.113086	2732.19	4.00	2736.19
3	35.078496	-118.113089	2735.48	4.00	2739.48
4	35.078498	-118.110415	2726.76	4.00	2730.76
5	35.076300	-118.110412	2724.48	4.00	2728.48



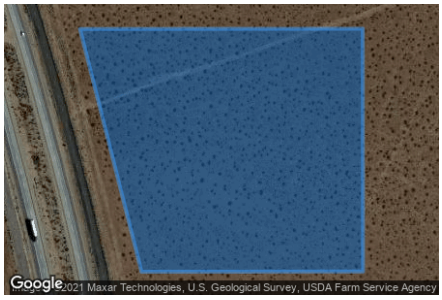
Name: A25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.077209	-118.131686	2776.76	4.00	2780.76
2	35.078477	-118.131709	2781.28	4.00	2785.28
3	35.078480	-118.129132	2776.48	4.00	2780.48
4	35.078482	-118.126458	2770.41	4.00	2774.41
5	35.077329	-118.126456	2766.62	4.00	2770.62
6	35.077209	-118.131686	2776.76	4.00	2780.76



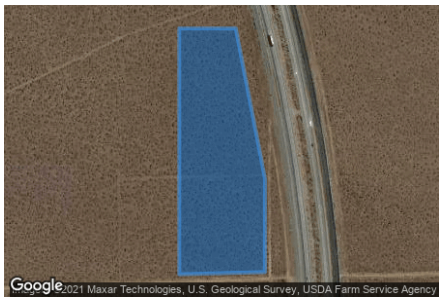
Name: A26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.074102	-118.110409	2721.37	4.00	2725.37
2	35.074100	-118.112869	2727.36	4.00	2731.36
3	35.076297	-118.113551	2733.05	4.00	2737.05
4	35.076297	-118.113086	2732.19	4.00	2736.19
5	35.076300	-118.110412	2724.48	4.00	2728.48
6	35.074102	-118.110409	2721.37	4.00	2725.37



Name: A27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.074708	-118.116122	2736.13	4.00	2740.13
2	35.074710	-118.114867	2733.22	4.00	2737.22
3	35.071999	-118.114219	2725.70	4.00	2729.70
4	35.070313	-118.114220	2720.99	4.00	2724.99
5	35.070272	-118.116120	2726.31	4.00	2730.31
6	35.074708	-118.116122	2736.13	4.00	2740.13



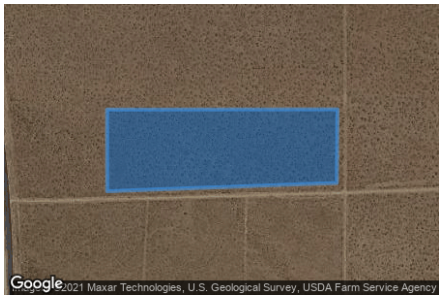
Name: A28
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.070371	-118.112212	2717.81	4.00	2721.81
2	35.074100	-118.112869	2727.36	4.00	2731.36
3	35.074102	-118.110409	2721.37	4.00	2725.37
4	35.071904	-118.110406	2716.82	4.00	2720.82
5	35.070425	-118.110404	2713.97	4.00	2717.97
6	35.070371	-118.112212	2717.81	4.00	2721.81



Name: A29
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.070425	-118.110404	2713.97	4.00	2717.97
2	35.071904	-118.110406	2716.82	4.00	2720.82
3	35.071906	-118.107733	2711.94	4.00	2715.94
4	35.071908	-118.105292	2703.47	4.00	2707.47
5	35.070575	-118.105306	2702.87	4.00	2706.87
6	35.070425	-118.110404	2713.97	4.00	2717.97



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



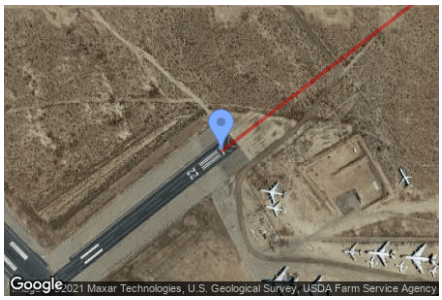
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



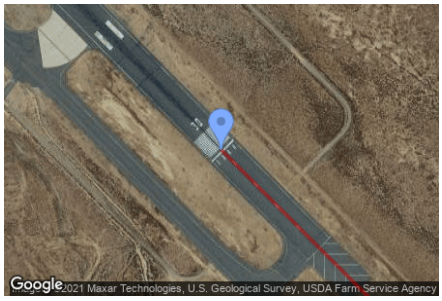
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Hwy 14
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.090709	-118.151069	2916.31	6.00	2922.31
2	35.093025	-118.148665	2920.98	6.00	2926.98
3	35.101619	-118.142092	2920.32	6.00	2926.32
4	35.107444	-118.137459	2888.01	6.00	2894.01

Name: Hwy 58 EB A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085864	-118.120959	2771.29	6.00	2777.29
2	35.084730	-118.119878	2766.72	6.00	2772.72
3	35.083967	-118.119181	2763.60	6.00	2769.60
4	35.082881	-118.118309	2759.18	6.00	2765.18
5	35.081899	-118.117599	2755.36	6.00	2761.36
6	35.080898	-118.116925	2751.92	6.00	2757.92
7	35.079887	-118.116355	2749.14	6.00	2755.14
8	35.078638	-118.115645	2746.29	6.00	2752.29
9	35.077179	-118.114947	2742.45	6.00	2748.45
10	35.075796	-118.114434	2738.52	6.00	2744.52
11	35.074509	-118.113991	2734.75	6.00	2740.75
12	35.072858	-118.113618	2730.27	6.00	2736.27
13	35.070913	-118.113290	2724.81	6.00	2730.81
14	35.069646	-118.113184	2721.32	6.00	2727.32
15	35.067917	-118.113138	2716.52	6.00	2722.52

Name: Hwy 58 EB at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.098293	-118.143699	2908.58	6.00	2914.58
2	35.091527	-118.129062	2828.32	6.00	2834.32
3	35.091055	-118.128121	2818.47	6.00	2824.47
4	35.090170	-118.126588	2801.60	6.00	2807.60

Name: Hwy 58 EB Onramp at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.097298	-118.145097	2941.24	6.00	2947.24
2	35.096969	-118.144452	2934.52	6.00	2940.52
3	35.096770	-118.143808	2929.08	6.00	2935.08
4	35.096600	-118.142136	2905.45	6.00	2911.46
5	35.096402	-118.140064	2880.34	6.00	2886.34
6	35.096231	-118.139332	2876.69	6.00	2882.69

Name: Hwy 58 EB Onramp at Randsburg Cutoff Road
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.111809	-118.179693	3164.46	6.00	3170.47
2	35.111610	-118.178944	3158.38	6.00	3164.38
3	35.111611	-118.178369	3152.26	6.00	3158.26
4	35.111755	-118.177708	3143.05	6.00	3149.05
5	35.112042	-118.176872	3128.59	6.00	3134.59
6	35.112229	-118.176246	3118.22	6.00	3124.22
7	35.112287	-118.175636	3110.78	6.00	3116.78

Name: Hwy 58 WB A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.067927	-118.112509	2716.48	6.00	2722.48
2	35.069196	-118.112545	2720.51	6.00	2726.51
3	35.070322	-118.112628	2723.53	6.00	2729.53
4	35.071400	-118.112745	2726.58	6.00	2732.58
5	35.072630	-118.112933	2729.98	6.00	2735.98
6	35.073689	-118.113166	2732.56	6.00	2738.56
7	35.074976	-118.113493	2735.76	6.00	2741.76
8	35.076560	-118.114029	2739.97	6.00	2745.97
9	35.077799	-118.114541	2743.13	6.00	2749.13
10	35.079010	-118.115123	2746.97	6.00	2752.97
11	35.081051	-118.116310	2751.90	6.00	2757.90
12	35.082900	-118.117601	2758.45	6.00	2764.45
13	35.084797	-118.119135	2764.91	6.00	2770.91
14	35.086284	-118.120588	2771.66	6.00	2777.66

Name: Lone Pine Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.084537	-118.146560	2855.76	14.00	2869.76
2	35.099060	-118.126678	2812.38	14.00	2826.38

Name: Midland Trail
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.110105	-118.180438	3149.13	6.00	3155.13
2	35.109834	-118.179497	3141.88	6.00	3147.88
3	35.109806	-118.179114	3138.33	6.00	3144.33
4	35.109893	-118.178661	3134.94	6.00	3140.94
5	35.110223	-118.177704	3125.52	6.00	3131.52
6	35.110885	-118.175686	3107.02	6.00	3113.02

Name: Randsburg Cutoff Road A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.101799	-118.186365	3113.29	6.00	3119.29
2	35.102634	-118.186468	3122.59	6.00	3128.59
3	35.103707	-118.186369	3134.56	6.00	3140.56
4	35.104745	-118.186008	3146.12	6.00	3152.12
5	35.105760	-118.185372	3153.87	6.00	3159.87
6	35.106536	-118.184561	3154.93	6.00	3160.93
7	35.107361	-118.183489	3152.31	6.00	3158.31
8	35.108245	-118.182200	3147.29	6.00	3153.29
9	35.108770	-118.181606	3144.95	6.00	3150.95
10	35.109463	-118.181027	3145.26	6.00	3151.26
11	35.110107	-118.180666	3147.97	6.00	3153.97

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	35.030458	-118.187244	2764.34	6.00	2770.34
OP 2	35.062083	-118.193217	2878.06	6.00	2884.06
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
A01	SA tracking	SA tracking	0	0	-	-
A02	SA tracking	SA tracking	0	0	-	-
A03	SA tracking	SA tracking	0	0	-	-
A04	SA tracking	SA tracking	0	0	-	-
A05	SA tracking	SA tracking	0	0	-	-
A06	SA tracking	SA tracking	0	0	-	-
A07	SA tracking	SA tracking	0	0	-	-
A08	SA tracking	SA tracking	1,983	11,977	-	
A09	SA tracking	SA tracking	300	9,119	-	
A10	SA tracking	SA tracking	3,275	12,695	-	
A11	SA tracking	SA tracking	0	0	-	-
A12	SA tracking	SA tracking	0	0	-	-
A13	SA tracking	SA tracking	5,374	8,014	-	
A14	SA tracking	SA tracking	0	0	-	-
A15	SA tracking	SA tracking	5,941	6,429	-	
A16	SA tracking	SA tracking	0	0	-	-
A17	SA tracking	SA tracking	0	0	-	-
A18	SA tracking	SA tracking	0	0	-	-
A19	SA tracking	SA tracking	0	0	-	-
A20	SA tracking	SA tracking	0	0	-	-
A21	SA tracking	SA tracking	0	0	-	-
A22	SA tracking	SA tracking	0	0	-	-
A23	SA tracking	SA tracking	0	0	-	-
A24	SA tracking	SA tracking	0	0	-	-
A25	SA tracking	SA tracking	0	0	-	-
A26	SA tracking	SA tracking	0	0	-	-
A27	SA tracking	SA tracking	0	0	-	-
A28	SA tracking	SA tracking	0	0	-	-
A29	SA tracking	SA tracking	0	0	-	-

Distinct glare per month

Excludes overlapping glare from PV array for multiple receptors at matching time(s)

PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
a08 (green)	456	304	0	0	0	0	0	0	0	117	474	632
a08 (yellow)	2328	1753	1030	0	0	0	0	0	420	1801	2140	2505
a09 (green)	0	59	88	2	0	0	0	0	37	114	0	0
a09 (yellow)	576	1268	1502	1122	1	0	0	617	1448	1528	779	278
a10 (green)	1046	118	0	0	0	0	0	0	0	21	724	1366
a10 (yellow)	2391	1645	1343	27	0	0	0	0	785	1690	2141	2673
a13 (green)	1586	275	0	0	0	0	0	0	0	99	1129	2285
a13 (yellow)	2692	212	0	0	0	0	0	0	0	0	1967	3143
a15 (green)	1758	277	0	0	0	0	0	0	0	99	1218	2589
a15 (yellow)	1986	280	0	0	0	0	0	0	0	53	1447	2663

PV & Receptor Analysis Results

Results for each PV array and receptor

A01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A08 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	1983	11977
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0

Route: Randsburg Cutoff Road A	0	0

A08 - Receptor (L71 24)

No glare found

A08 - Receptor (L71 6)

No glare found

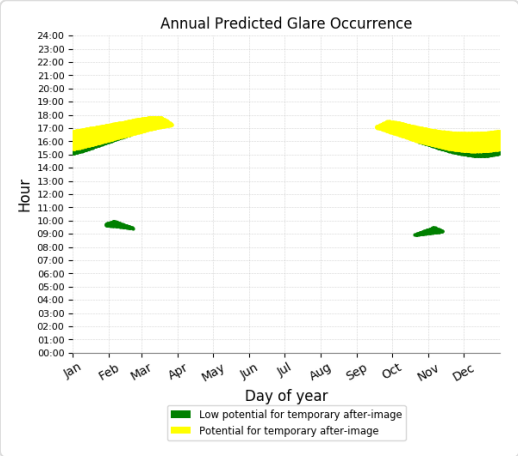
A08 - Receptor (MASP 12)

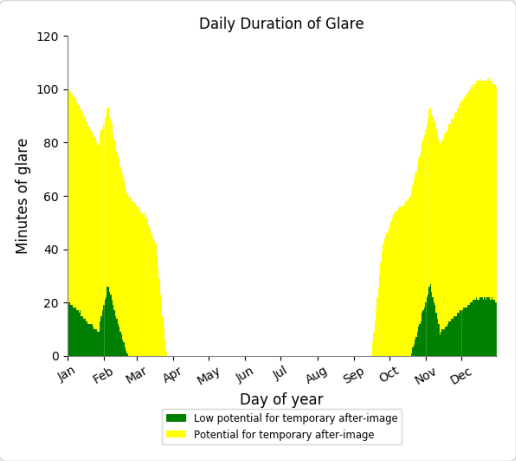
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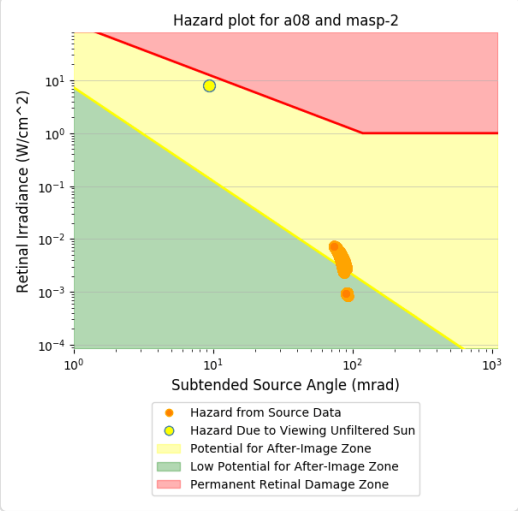
A08 - Receptor (MASP 22)

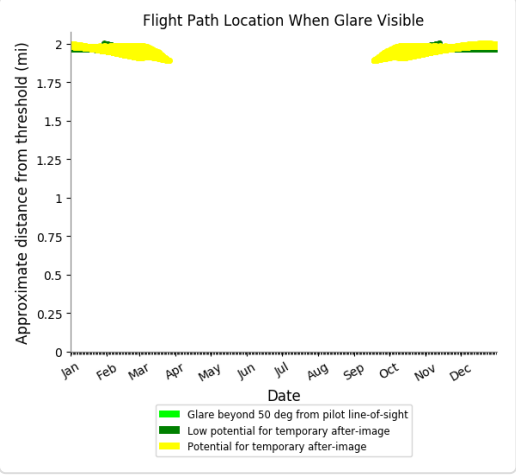
PV array is expected to produce the following glare for observers on this flight path:

- 1,983 minutes of "green" glare with low potential to cause temporary after-image.
- 11,977 minutes of "yellow" glare with potential to cause temporary after-image.









A08 - Receptor (MASP 26)

No glare found

A08 - Receptor (MASP 30)

No glare found

A08 - Receptor (MASP 4)

No glare found

A08 - Receptor (MASP 8)

No glare found

A08 - OP Receptor (OP 1)

No glare found

A08 - OP Receptor (OP 2)

No glare found

A08 - OP Receptor (5-ATCT)

No glare found

A08 - OP Receptor (6-ATCT)

No glare found

A08 - Route Receptor (Hwy 14)

No glare found

A08 - Route Receptor (Hwy 58 EB A)

No glare found

A08 - Route Receptor (Hwy 58 EB at Hwy 14)

No glare found

A08 - Route Receptor (Hwy 58 EB Onramp at Hwy 14)

No glare found

A08 - Route Receptor (Hwy 58 EB Onramp at Randsburg Cutoff Road)

No glare found

A08 - Route Receptor (Hwy 58 WB A)

No glare found

A08 - Route Receptor (Lone Pine Subdivision RR A)

No glare found

A08 - Route Receptor (Midland Trail)

No glare found

A08 - Route Receptor (Randsburg Cutoff Road A)

No glare found

A09 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	300	9119

FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

A09 - Receptor (L71 24)

No glare found

A09 - Receptor (L71 6)

No glare found

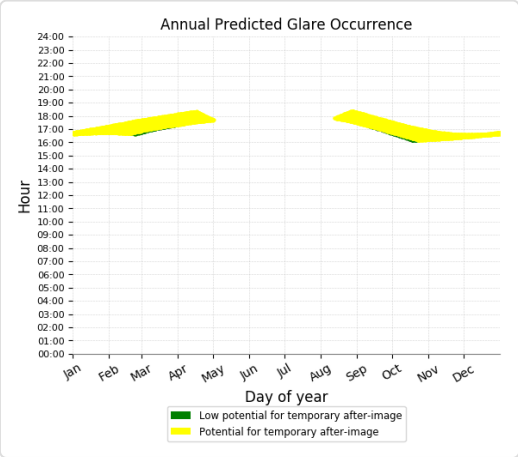
A09 - Receptor (MASP 12)

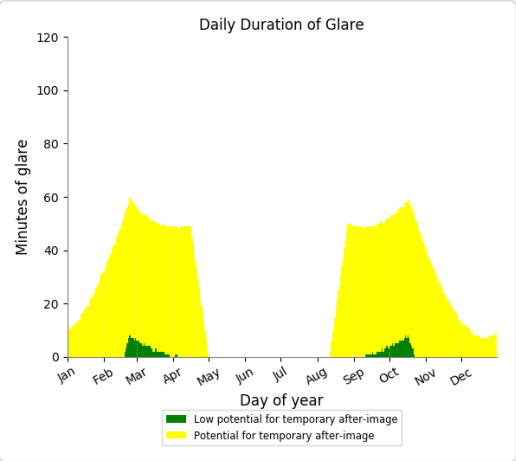
No glare found

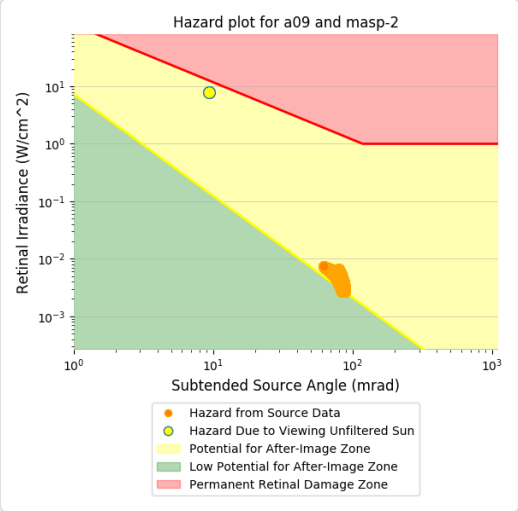
A09 - Receptor (MASP 22)

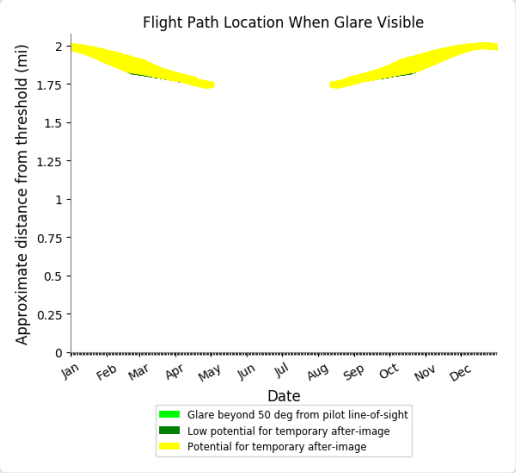
PV array is expected to produce the following glare for observers on this flight path:

- 300 minutes of "green" glare with low potential to cause temporary after-image.
- 9,119 minutes of "yellow" glare with potential to cause temporary after-image.









A09 - Receptor (MASP 26)

No glare found

A09 - Receptor (MASP 30)

No glare found

A09 - Receptor (MASP 4)

No glare found

A09 - Receptor (MASP 8)

No glare found

A09 - OP Receptor (OP 1)

No glare found

A09 - OP Receptor (OP 2)

No glare found

A09 - OP Receptor (5-ATCT)

No glare found

A09 - OP Receptor (6-ATCT)

No glare found

A09 - Route Receptor (Hwy 14)

No glare found

A09 - Route Receptor (Hwy 58 EB A)

No glare found

A09 - Route Receptor (Hwy 58 EB at Hwy 14)

No glare found

A09 - Route Receptor (Hwy 58 EB Onramp at Hwy 14)

No glare found

A09 - Route Receptor (Hwy 58 EB Onramp at Randsburg Cutoff Road)

No glare found

A09 - Route Receptor (Hwy 58 WB A)

No glare found

A09 - Route Receptor (Lone Pine Subdivision RR A)

No glare found

A09 - Route Receptor (Midland Trail)

No glare found

A09 - Route Receptor (Randsburg Cutoff Road A)

No glare found

A10 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	3275	12695
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0

Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

A10 - Receptor (L71 24)

No glare found

A10 - Receptor (L71 6)

No glare found

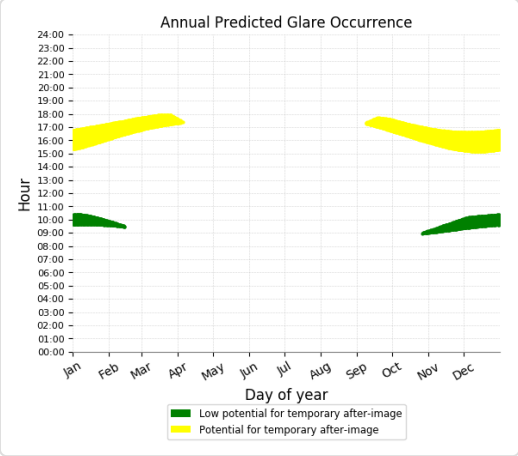
A10 - Receptor (MASP 12)

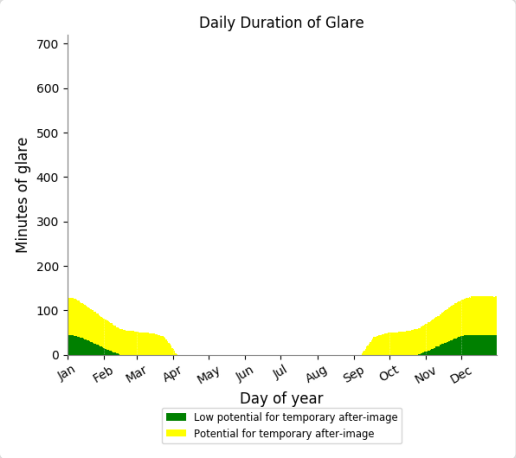
No glare found

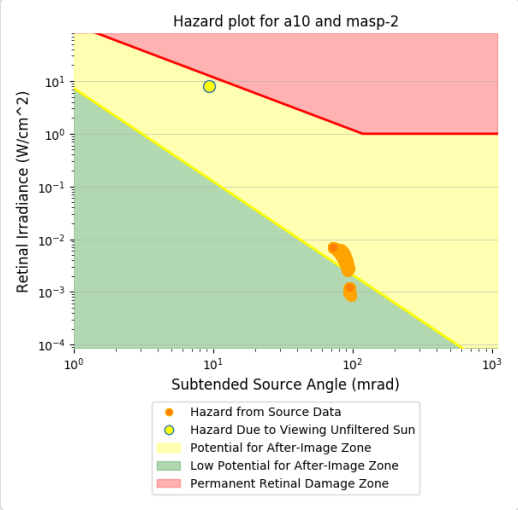
A10 - Receptor (MASP 22)

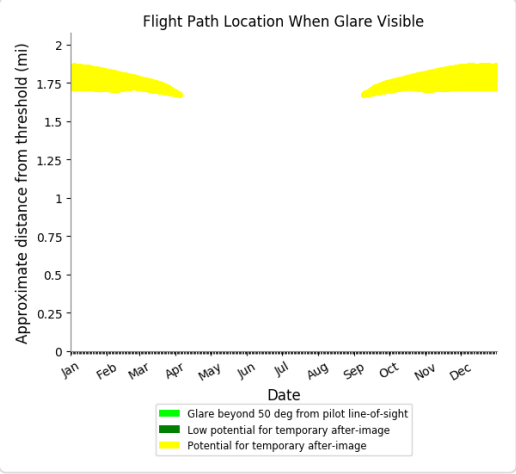
PV array is expected to produce the following glare for observers on this flight path:

- 3,275 minutes of "green" glare with low potential to cause temporary after-image.
- 12,695 minutes of "yellow" glare with potential to cause temporary after-image.









A10 - Receptor (MASP 26)

No glare found

A10 - Receptor (MASP 30)
No glare found

A10 - Receptor (MASP 4)
No glare found

A10 - Receptor (MASP 8)
No glare found

A10 - OP Receptor (OP 1)
No glare found

A10 - OP Receptor (OP 2)
No glare found

A10 - OP Receptor (5-ATCT)
No glare found

A10 - OP Receptor (6-ATCT)
No glare found

A10 - Route Receptor (Hwy 14)
No glare found

A10 - Route Receptor (Hwy 58 EB A)
No glare found

A10 - Route Receptor (Hwy 58 EB at Hwy 14)
No glare found

A10 - Route Receptor (Hwy 58 EB Onramp at Hwy 14)
No glare found

A10 - Route Receptor (Hwy 58 EB Onramp at Randsburg Cutoff Road)
No glare found

A10 - Route Receptor (Hwy 58 WB A)
No glare found

A10 - Route Receptor (Lone Pine Subdivision RR A)
No glare found

A10 - Route Receptor (Midland Trail)
No glare found

A10 - Route Receptor (Randsburg Cutoff Road A)
No glare found

A11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A13 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	5374	8014
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0

Route: Randsburg Cutoff Road A	0	0

A13 - Receptor (L71 24)

No glare found

A13 - Receptor (L71 6)

No glare found

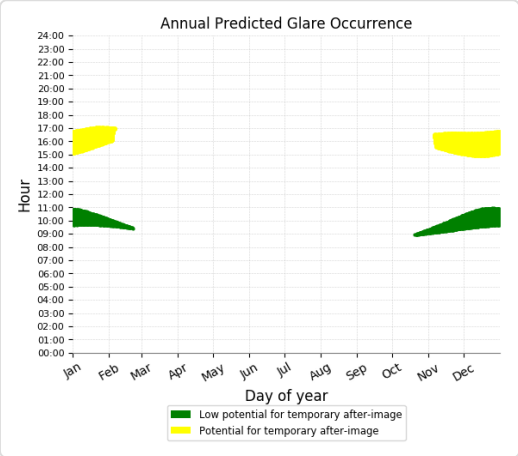
A13 - Receptor (MASP 12)

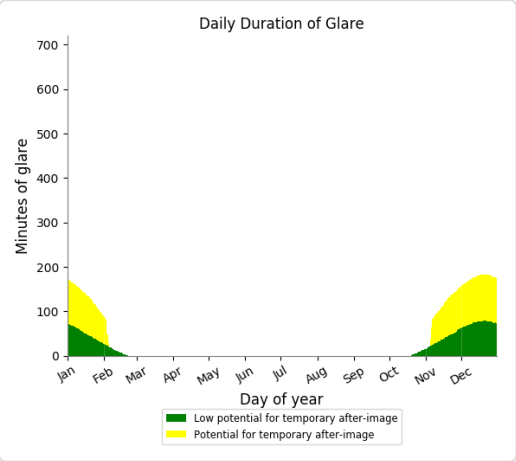
No glare found

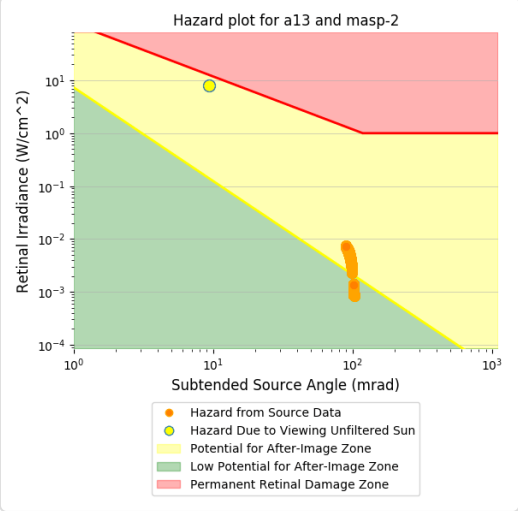
A13 - Receptor (MASP 22)

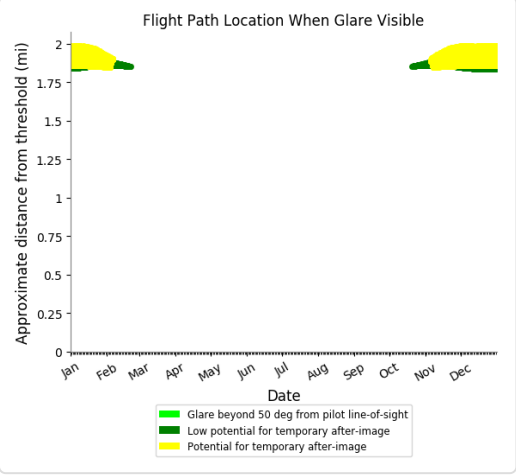
PV array is expected to produce the following glare for observers on this flight path:

- 5,374 minutes of "green" glare with low potential to cause temporary after-image.
- 8,014 minutes of "yellow" glare with potential to cause temporary after-image.









A13 - Receptor (MASP 26)

No glare found

A13 - Receptor (MASP 30)

No glare found

A13 - Receptor (MASP 4)
No glare found

A13 - Receptor (MASP 8)
No glare found

A13 - OP Receptor (OP 1)
No glare found

A13 - OP Receptor (OP 2)
No glare found

A13 - OP Receptor (5-ATCT)
No glare found

A13 - OP Receptor (6-ATCT)
No glare found

A13 - Route Receptor (Hwy 14)
No glare found

A13 - Route Receptor (Hwy 58 EB A)
No glare found

A13 - Route Receptor (Hwy 58 EB at Hwy 14)
No glare found

A13 - Route Receptor (Hwy 58 EB Onramp at Hwy 14)
No glare found

A13 - Route Receptor (Hwy 58 EB Onramp at Randsburg Cutoff Road)
No glare found

A13 - Route Receptor (Hwy 58 WB A)
No glare found

A13 - Route Receptor (Lone Pine Subdivision RR A)
No glare found

A13 - Route Receptor (Midland Trail)
No glare found

A13 - Route Receptor (Randsburg Cutoff Road A)
No glare found

A14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A15 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	5941	6429
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0

Route: Randsburg Cutoff Road A	0	0

A15 - Receptor (L71 24)

No glare found

A15 - Receptor (L71 6)

No glare found

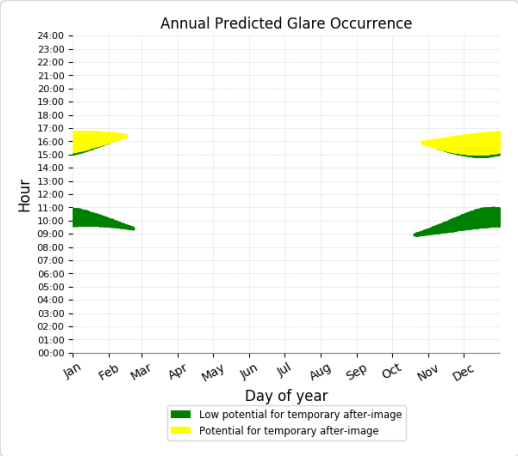
A15 - Receptor (MASP 12)

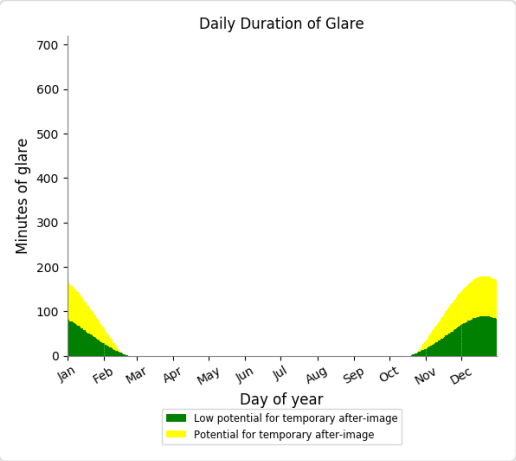
No glare found

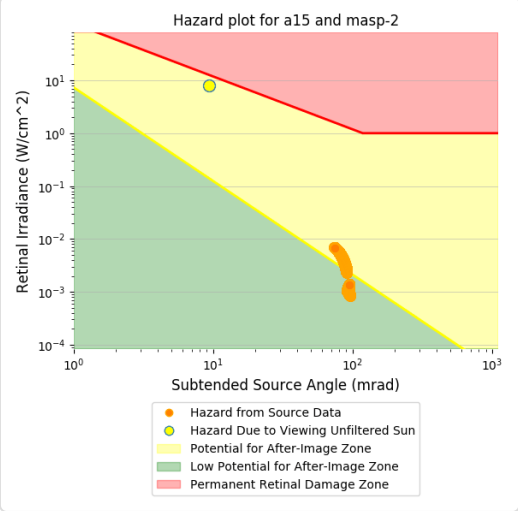
A15 - Receptor (MASP 22)

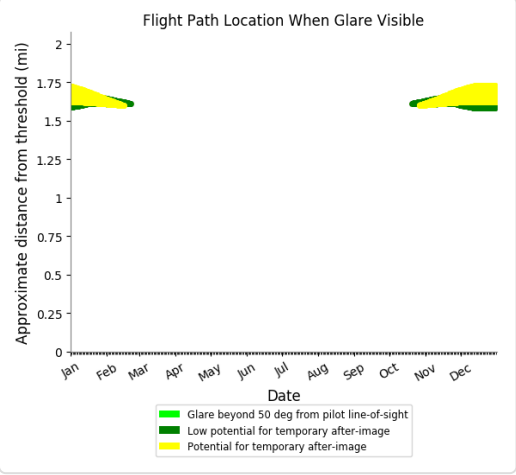
PV array is expected to produce the following glare for observers on this flight path:

- 5,941 minutes of "green" glare with low potential to cause temporary after-image.
- 6,429 minutes of "yellow" glare with potential to cause temporary after-image.









A15 - Receptor (MASP 26)

No glare found

A15 - Receptor (MASP 30)

No glare found

A15 - Receptor (MASP 4)
No glare found

A15 - Receptor (MASP 8)
No glare found

A15 - OP Receptor (OP 1)
No glare found

A15 - OP Receptor (OP 2)
No glare found

A15 - OP Receptor (5-ATCT)
No glare found

A15 - OP Receptor (6-ATCT)
No glare found

A15 - Route Receptor (Hwy 14)
No glare found

A15 - Route Receptor (Hwy 58 EB A)
No glare found

A15 - Route Receptor (Hwy 58 EB at Hwy 14)
No glare found

A15 - Route Receptor (Hwy 58 EB Onramp at Hwy 14)
No glare found

A15 - Route Receptor (Hwy 58 EB Onramp at Randsburg Cutoff Road)
No glare found

A15 - Route Receptor (Hwy 58 WB A)
No glare found

A15 - Route Receptor (Lone Pine Subdivision RR A)
No glare found

A15 - Route Receptor (Midland Trail)
No glare found

A15 - Route Receptor (Randsburg Cutoff Road A)
No glare found

A16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

A29 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-2

Modeling Results for Analysis Group B

Bellefield Solar Project

Bellefield Solar Analysis Group B Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53111.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
B01	SA tracking	SA tracking	0	0	-
B02	SA tracking	SA tracking	0	0	-
B03	SA tracking	SA tracking	0	0	-
B04	SA tracking	SA tracking	0	0	-
B05	SA tracking	SA tracking	0	0	-
B06	SA tracking	SA tracking	0	0	-
B07	SA tracking	SA tracking	0	0	-
B08	SA tracking	SA tracking	0	0	-
B09	SA tracking	SA tracking	0	0	-
B10	SA tracking	SA tracking	0	0	-
B11	SA tracking	SA tracking	0	0	-
B12	SA tracking	SA tracking	0	0	-
B13	SA tracking	SA tracking	0	0	-
B14	SA tracking	SA tracking	0	0	-
B15	SA tracking	SA tracking	0	0	-
B16	SA tracking	SA tracking	0	0	-
B17	SA tracking	SA tracking	0	0	-
B18	SA tracking	SA tracking	0	0	-
B19	SA tracking	SA tracking	0	0	-
B20	SA tracking	SA tracking	0	0	-
B21	SA tracking	SA tracking	0	0	-
B22	SA tracking	SA tracking	0	0	-
B23	SA tracking	SA tracking	0	0	-
B24	SA tracking	SA tracking	0	0	-
B25	SA tracking	SA tracking	0	0	-
B26	SA tracking	SA tracking	0	0	-
B27	SA tracking	SA tracking	0	0	-
B28	SA tracking	SA tracking	0	0	-
B29	SA tracking	SA tracking	0	0	-

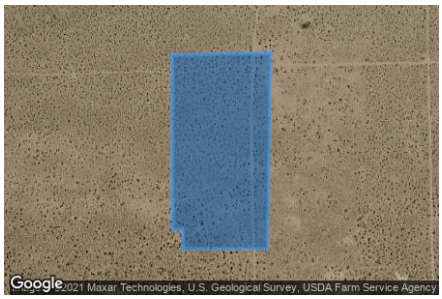
Component Data

PV Array(s)

Total PV footprint area: 1,108.6 acres

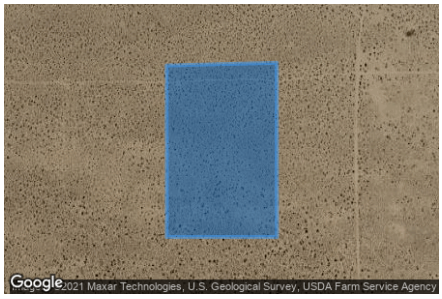
Name: B01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082571	-118.060408	2592.92	4.00	2596.92
2	35.082571	-118.062289	2598.81	4.00	2602.81
3	35.082928	-118.062289	2599.36	4.00	2603.36
4	35.082928	-118.062521	2599.91	4.00	2603.91
5	35.086092	-118.062523	2598.79	4.00	2602.79
6	35.086136	-118.060334	2594.74	4.00	2598.74
7	35.082571	-118.060408	2592.92	4.00	2596.92



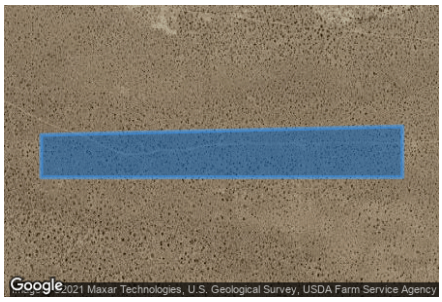
Name: B02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082928	-118.062521	2599.91	4.00	2603.91
2	35.082927	-118.064963	2604.94	4.00	2608.94
3	35.085125	-118.064965	2605.13	4.00	2609.13
4	35.086043	-118.064966	2605.86	4.00	2609.86
5	35.086092	-118.062523	2598.79	4.00	2602.79
6	35.082928	-118.062521	2599.91	4.00	2603.91



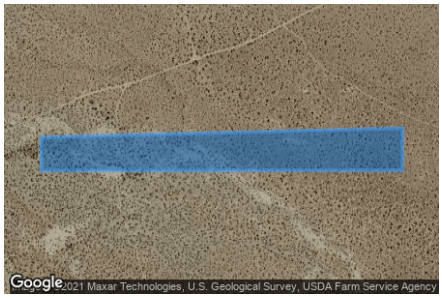
Name: B03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085122	-118.070313	2618.37	4.00	2622.37
2	35.085120	-118.072987	2624.53	4.00	2628.53
3	35.085887	-118.072988	2626.38	4.00	2630.39
4	35.086043	-118.064966	2605.86	4.00	2609.86
5	35.085125	-118.064965	2605.13	4.00	2609.13
6	35.085122	-118.070313	2618.37	4.00	2622.37



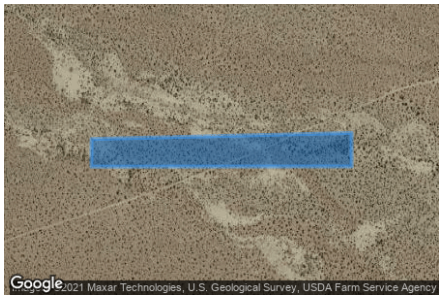
Name: B04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085117	-118.078335	2632.96	4.00	2636.96
2	35.085115	-118.081009	2641.11	4.00	2645.11
3	35.085720	-118.081010	2640.76	4.00	2644.76
4	35.085887	-118.072988	2626.38	4.00	2630.39
5	35.085120	-118.072987	2624.53	4.00	2628.53
6	35.085117	-118.078335	2632.96	4.00	2636.96



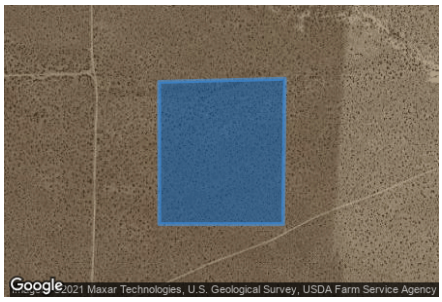
Name: B05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 7.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085113	-118.083683	2647.92	4.00	2651.92
2	35.085111	-118.086785	2656.23	4.00	2660.23
3	35.085611	-118.086781	2656.00	4.00	2660.00
4	35.085720	-118.081010	2640.76	4.00	2644.76
5	35.085115	-118.081009	2641.11	4.00	2645.11
6	35.085113	-118.083683	2647.92	4.00	2651.92



Name: B06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

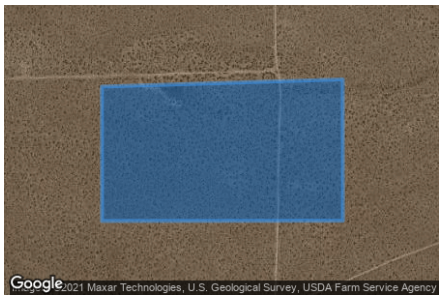
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082907	-118.094377	2679.99	4.00	2683.99
2	35.085475	-118.094380	2679.41	4.00	2683.41
3	35.085532	-118.091589	2669.63	4.00	2673.63
4	35.082910	-118.091627	2673.24	4.00	2677.24
5	35.082907	-118.094377	2679.99	4.00	2683.99



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

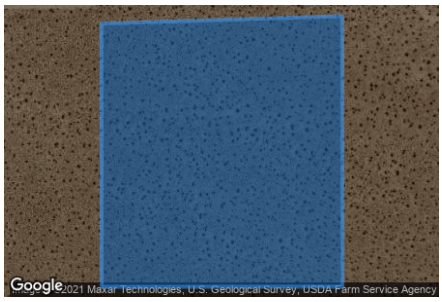
Name: B07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 33.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082903	-118.099725	2698.04	4.00	2702.04
2	35.085343	-118.099728	2697.55	4.00	2701.55
3	35.085475	-118.094380	2679.41	4.00	2683.41
4	35.082907	-118.094377	2679.99	4.00	2683.99
5	35.082903	-118.099725	2698.04	4.00	2702.04



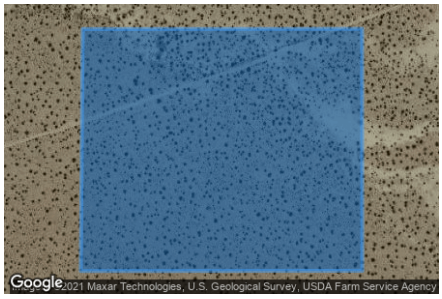
Name: B08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082903	-118.099725	2698.04	4.00	2702.04
2	35.082901	-118.102399	2705.65	4.00	2709.65
3	35.085276	-118.102402	2706.38	4.00	2710.38
4	35.085343	-118.099728	2697.55	4.00	2701.55
5	35.082903	-118.099725	2698.04	4.00	2702.04



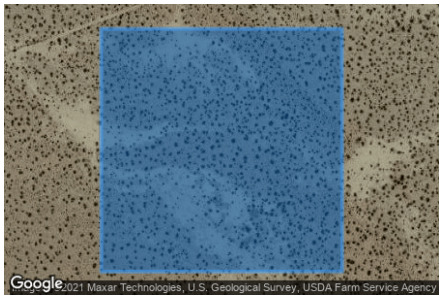
Name: B09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085111	-118.086785	2656.23	4.00	2660.23
2	35.085113	-118.083683	2647.92	4.00	2651.92
3	35.082915	-118.083681	2645.34	4.00	2649.34
4	35.082913	-118.086355	2655.03	4.00	2659.03
5	35.082913	-118.086806	2656.32	4.00	2660.32
6	35.085111	-118.086785	2656.23	4.00	2660.23



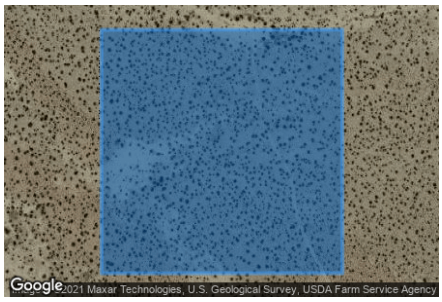
Name: B10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082917	-118.081007	2639.58	4.00	2643.58
2	35.082915	-118.083681	2645.34	4.00	2649.34
3	35.085113	-118.083683	2647.92	4.00	2651.92
4	35.085115	-118.081009	2641.11	4.00	2645.11
5	35.082917	-118.081007	2639.58	4.00	2643.58



Name: B11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

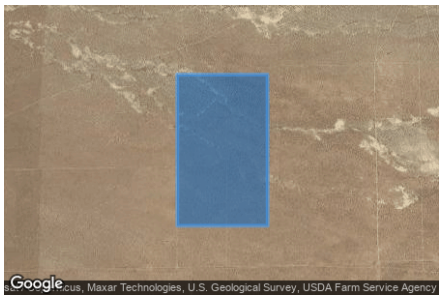
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082919	-118.078333	2632.84	4.00	2636.84
2	35.082917	-118.081007	2639.58	4.00	2643.58
3	35.085115	-118.081009	2641.11	4.00	2645.11
4	35.085117	-118.078335	2632.96	4.00	2636.96
5	35.082919	-118.078333	2632.84	4.00	2636.84



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

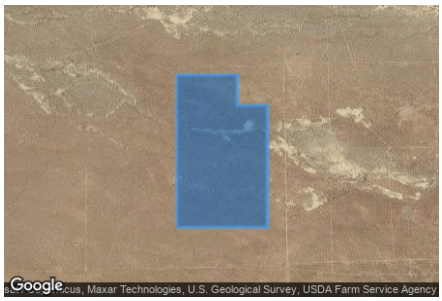
Name: B12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 198.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.074128	-118.075651	2625.98	4.00	2629.98
2	35.074127	-118.078325	2631.92	4.00	2635.92
3	35.082919	-118.078333	2632.84	4.00	2636.84
4	35.085117	-118.078335	2632.96	4.00	2636.96
5	35.085120	-118.072987	2624.53	4.00	2628.53
6	35.085122	-118.070313	2618.37	4.00	2622.37
7	35.074132	-118.070304	2608.98	4.00	2612.98
8	35.074130	-118.072978	2618.80	4.00	2622.80
9	35.074128	-118.075651	2625.98	4.00	2629.98



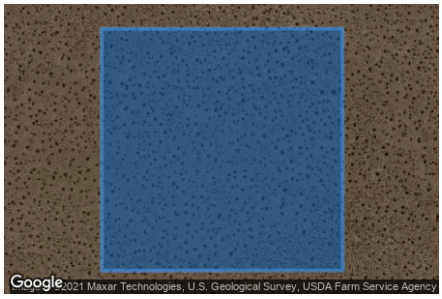
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: B13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 193.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085125	-118.064965	2605.13	4.00	2609.13
2	35.082927	-118.064963	2604.94	4.00	2608.94
3	35.082928	-118.062289	2599.36	4.00	2603.36
4	35.080730	-118.062288	2600.17	4.00	2604.17
5	35.078532	-118.062286	2591.02	4.00	2595.02
6	35.074136	-118.062283	2592.45	4.00	2596.45
7	35.074134	-118.064957	2595.86	4.00	2599.86
8	35.074133	-118.067630	2598.98	4.00	2602.98
9	35.074132	-118.070304	2608.98	4.00	2612.98
10	35.085122	-118.070313	2618.37	4.00	2622.37
11	35.085125	-118.064965	2605.13	4.00	2609.13

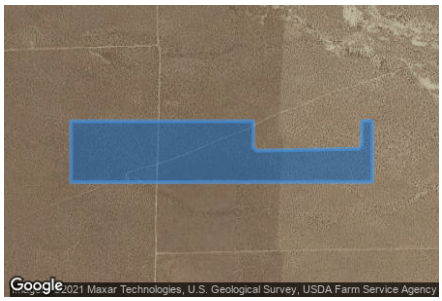
Name: B14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.080705	-118.099722	2693.68	4.00	2697.68
2	35.080703	-118.102396	2701.60	4.00	2705.60
3	35.082901	-118.102399	2705.65	4.00	2709.65
4	35.082903	-118.099725	2698.04	4.00	2702.04
5	35.080705	-118.099722	2693.68	4.00	2697.68

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

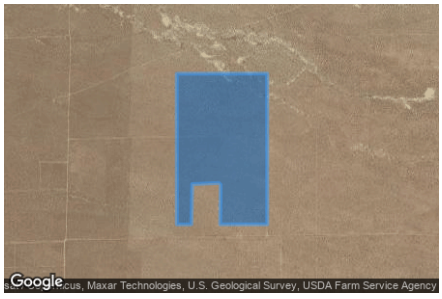
Name: B15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 59.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.080705	-118.099722	2693.68	4.00	2697.68
2	35.082903	-118.099725	2698.04	4.00	2702.04
3	35.082907	-118.094377	2679.99	4.00	2683.99
4	35.082910	-118.091627	2673.24	4.00	2677.24
5	35.081964	-118.091643	2673.03	4.00	2677.03
6	35.081844	-118.091477	2672.69	4.00	2676.69
7	35.081911	-118.086940	2657.01	4.00	2661.01
8	35.082029	-118.086820	2655.95	4.00	2659.95
9	35.082913	-118.086806	2656.32	4.00	2660.32
10	35.082913	-118.086355	2655.03	4.00	2659.03
11	35.080715	-118.086353	2656.59	4.00	2660.59
12	35.080709	-118.094375	2680.98	4.00	2684.98
13	35.080705	-118.099722	2693.68	4.00	2697.68

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

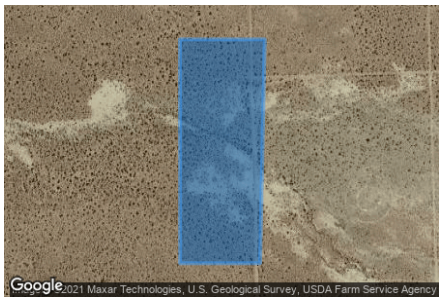
Name: B16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 195.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.074127	-118.078325	2631.92	4.00	2635.92
2	35.071929	-118.078323	2630.65	4.00	2634.65
3	35.071927	-118.080997	2636.36	4.00	2640.36
4	35.071926	-118.082500	2641.52	4.00	2645.52
5	35.074814	-118.082461	2644.16	4.00	2648.16
6	35.074947	-118.082629	2644.82	4.00	2648.82
7	35.074859	-118.084983	2648.82	4.00	2652.82
8	35.071924	-118.085059	2645.64	4.00	2649.64
9	35.071923	-118.086344	2649.18	4.00	2653.18
10	35.076319	-118.086348	2656.07	4.00	2660.07
11	35.080715	-118.086353	2656.59	4.00	2660.59
12	35.082913	-118.086355	2655.03	4.00	2659.03
13	35.082915	-118.083681	2645.34	4.00	2649.34
14	35.082917	-118.081007	2639.58	4.00	2643.58
15	35.082919	-118.078333	2632.84	4.00	2636.84
16	35.074127	-118.078325	2631.92	4.00	2635.92

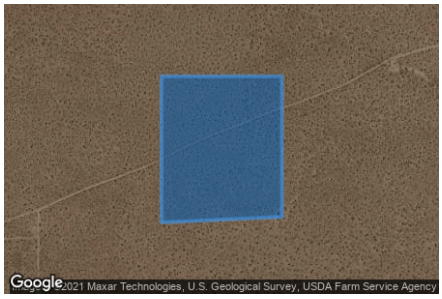
Name: B17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.082571	-118.062289	2598.81	4.00	2602.81
2	35.082571	-118.060408	2592.92	4.00	2596.92
3	35.078533	-118.060510	2588.66	4.00	2592.66
4	35.078532	-118.062286	2591.02	4.00	2595.02
5	35.080730	-118.062288	2600.17	4.00	2604.17
6	35.082571	-118.062289	2598.81	4.00	2602.81



Name: B18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

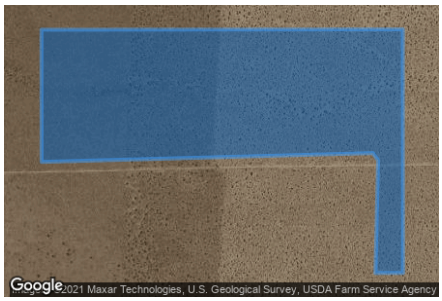
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078147	-118.099719	2693.30	4.00	2697.30
2	35.078047	-118.102393	2700.75	4.00	2704.75
3	35.078505	-118.102394	2701.03	4.00	2705.03
4	35.080703	-118.102396	2701.60	4.00	2705.60
5	35.080705	-118.099722	2693.68	4.00	2697.68
6	35.078147	-118.099719	2693.30	4.00	2697.30



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: B19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 49.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.076319	-118.086348	2656.07	4.00	2660.07
2	35.076319	-118.086961	2657.53	4.00	2661.53
3	35.078354	-118.086901	2659.96	4.00	2663.96
4	35.078482	-118.087017	2660.20	4.00	2664.20
5	35.078323	-118.094372	2678.10	4.00	2682.10
6	35.080709	-118.094375	2680.98	4.00	2684.98
7	35.080715	-118.086353	2656.59	4.00	2660.59
8	35.076319	-118.086348	2656.07	4.00	2660.07



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

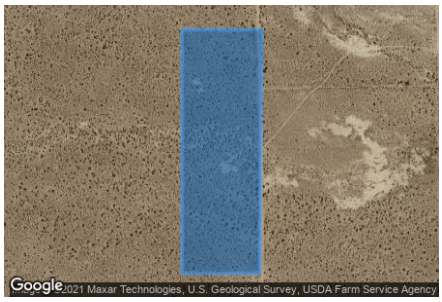
Name: B20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 33.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.078147	-118.099719	2693.30	4.00	2697.30
2	35.080705	-118.099722	2693.68	4.00	2697.68
3	35.080709	-118.094375	2680.98	4.00	2684.98
4	35.078323	-118.094372	2678.10	4.00	2682.10
5	35.078147	-118.099719	2693.30	4.00	2697.30



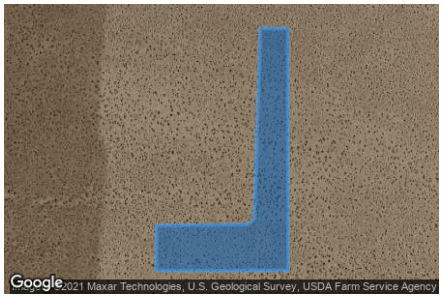
Name: B21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.074137	-118.060562	2588.11	4.00	2592.11
2	35.074136	-118.062283	2592.45	4.00	2596.45
3	35.078532	-118.062286	2591.02	4.00	2595.02
4	35.078533	-118.060510	2588.66	4.00	2592.66
5	35.074137	-118.060562	2588.11	4.00	2592.11



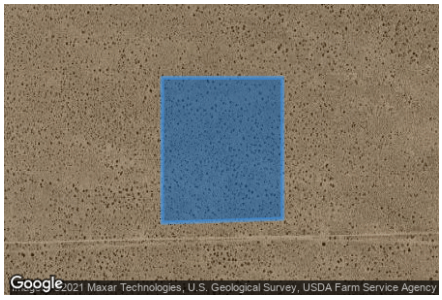
Name: B22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071921	-118.089017	2657.58	4.00	2661.58
2	35.071921	-118.089276	2658.66	4.00	2662.66
3	35.072738	-118.089262	2657.76	4.00	2661.76
4	35.072763	-118.087246	2652.52	4.00	2656.52
5	35.072846	-118.087101	2651.52	4.00	2655.52
6	35.076319	-118.086961	2657.53	4.00	2661.53
7	35.076319	-118.086348	2656.07	4.00	2660.07
8	35.071923	-118.086344	2649.18	4.00	2653.18
9	35.071921	-118.089017	2657.58	4.00	2661.58



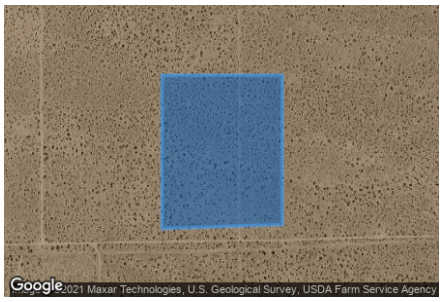
Name: B23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071503	-118.070302	2609.80	4.00	2613.80
2	35.074132	-118.070304	2608.98	4.00	2612.98
3	35.074133	-118.067630	2598.98	4.00	2602.98
4	35.071575	-118.067628	2603.35	4.00	2607.35
5	35.071503	-118.070302	2609.80	4.00	2613.80



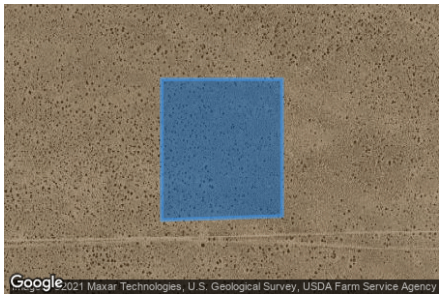
Name: B24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071432	-118.072975	2616.94	4.00	2620.94
2	35.071360	-118.075649	2623.09	4.00	2627.09
3	35.074128	-118.075651	2625.98	4.00	2629.98
4	35.074130	-118.072978	2618.80	4.00	2622.80
5	35.071432	-118.072975	2616.94	4.00	2620.94



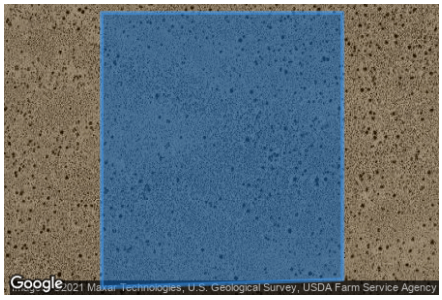
Name: B25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071647	-118.064955	2594.74	4.00	2598.74
2	35.071575	-118.067628	2603.35	4.00	2607.35
3	35.074133	-118.067630	2598.98	4.00	2602.98
4	35.074134	-118.064957	2595.86	4.00	2599.86
5	35.071647	-118.064955	2594.74	4.00	2598.74



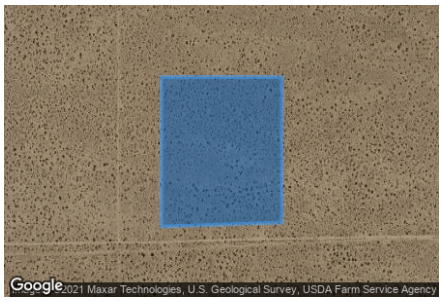
Name: B26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071719	-118.062281	2587.65	4.00	2591.65
2	35.071647	-118.064955	2594.74	4.00	2598.74
3	35.074134	-118.064957	2595.86	4.00	2599.86
4	35.074136	-118.062283	2592.45	4.00	2596.45
5	35.071719	-118.062281	2587.65	4.00	2591.65



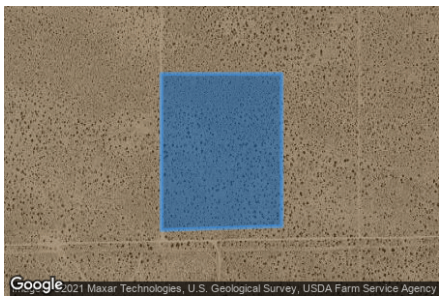
Name: B27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071503	-118.070302	2609.80	4.00	2613.80
2	35.071432	-118.072975	2616.94	4.00	2620.94
3	35.074130	-118.072978	2618.80	4.00	2622.80
4	35.074132	-118.070304	2608.98	4.00	2612.98
5	35.071503	-118.070302	2609.80	4.00	2613.80



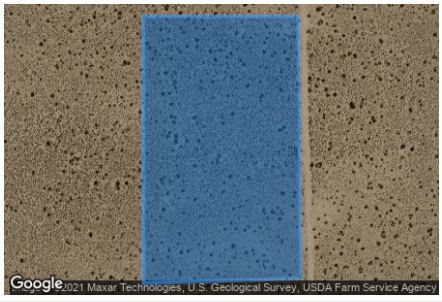
Name: B28
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071360	-118.075649	2623.09	4.00	2627.09
2	35.071288	-118.078322	2630.38	4.00	2634.38
3	35.071929	-118.078323	2630.65	4.00	2634.65
4	35.074127	-118.078325	2631.92	4.00	2635.92
5	35.074128	-118.075651	2625.98	4.00	2629.98
6	35.071360	-118.075649	2623.09	4.00	2627.09



Name: B29
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.071766	-118.060533	2583.17	4.00	2587.17
2	35.071719	-118.062281	2587.65	4.00	2591.65
3	35.074136	-118.062283	2592.45	4.00	2596.45
4	35.074137	-118.060562	2588.11	4.00	2592.11
5	35.071766	-118.060533	2583.17	4.00	2587.17



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



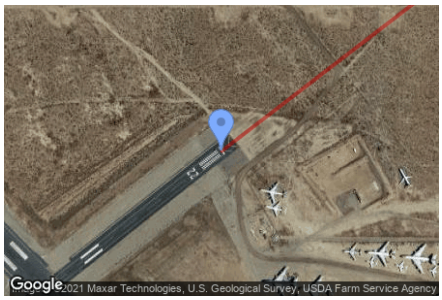
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



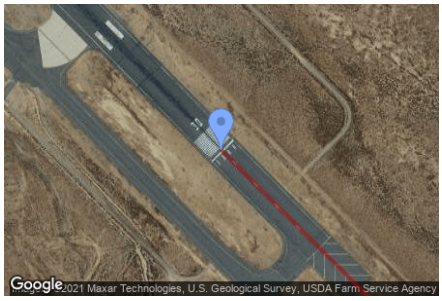
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



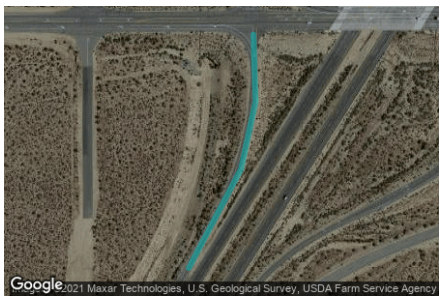
Route Receptor(s)

Name: Hwy 14
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.090709	-118.151069	2916.31	6.00	2922.31
2	35.093025	-118.148665	2920.98	6.00	2926.98
3	35.101619	-118.142092	2920.32	6.00	2926.32
4	35.107444	-118.137459	2888.01	6.00	2894.01

Name: Hwy 14 WB Onramp at California City Blvd
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.125287	-118.125241	2846.53	6.00	2852.53
2	35.124677	-118.125217	2841.86	6.00	2847.86
3	35.124066	-118.125379	2837.41	6.00	2843.41
4	35.123169	-118.125958	2836.53	6.00	2842.53

Name: Hwy 58 EB A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085864	-118.120959	2771.29	6.00	2777.29
2	35.084730	-118.119878	2766.72	6.00	2772.72
3	35.083967	-118.119181	2763.60	6.00	2769.60
4	35.082881	-118.118309	2759.18	6.00	2765.18
5	35.081899	-118.117599	2755.36	6.00	2761.36
6	35.080898	-118.116925	2751.92	6.00	2757.92
7	35.079887	-118.116355	2749.14	6.00	2755.14
8	35.078638	-118.115645	2746.29	6.00	2752.29
9	35.077179	-118.114947	2742.45	6.00	2748.45
10	35.075796	-118.114434	2738.52	6.00	2744.52
11	35.074509	-118.113991	2734.75	6.00	2740.75
12	35.072858	-118.113618	2730.27	6.00	2736.27
13	35.070913	-118.113290	2724.81	6.00	2730.81
14	35.069646	-118.113184	2721.32	6.00	2727.32
15	35.067917	-118.113138	2716.52	6.00	2722.52

Name: Hwy 58 EB at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.098293	-118.143699	2908.58	6.00	2914.58
2	35.091527	-118.129062	2828.32	6.00	2834.32
3	35.091055	-118.128121	2818.47	6.00	2824.47
4	35.090170	-118.126588	2801.60	6.00	2807.60

Name: Hwy 58 EB Onramp at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.097298	-118.145097	2941.24	6.00	2947.24
2	35.096969	-118.144452	2934.52	6.00	2940.52
3	35.096770	-118.143808	2929.08	6.00	2935.08
4	35.096600	-118.142136	2905.45	6.00	2911.46
5	35.096402	-118.140064	2880.34	6.00	2886.34
6	35.096231	-118.139332	2876.69	6.00	2882.69

Name: Hwy 58 EB Onramp at Randsburg Cutoff Road
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.111809	-118.179693	3164.46	6.00	3170.47
2	35.111610	-118.178944	3158.38	6.00	3164.38
3	35.111611	-118.178369	3152.26	6.00	3158.26
4	35.111755	-118.177708	3143.05	6.00	3149.05
5	35.112042	-118.176872	3128.59	6.00	3134.59
6	35.112229	-118.176246	3118.22	6.00	3124.22
7	35.112287	-118.175636	3110.78	6.00	3116.78

Name: Hwy 58 WB A
Route type One-way
View angle: 50.0 deg



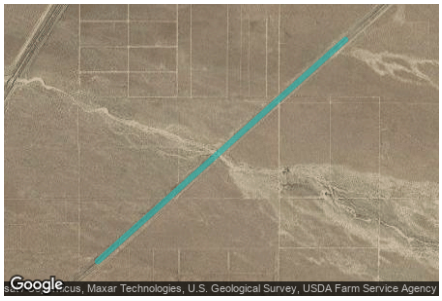
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.067927	-118.112509	2716.48	6.00	2722.48
2	35.069196	-118.112545	2720.51	6.00	2726.51
3	35.070322	-118.112628	2723.53	6.00	2729.53
4	35.071400	-118.112745	2726.58	6.00	2732.58
5	35.072630	-118.112933	2729.98	6.00	2735.98
6	35.073689	-118.113166	2732.56	6.00	2738.56
7	35.074976	-118.113493	2735.76	6.00	2741.76
8	35.076560	-118.114029	2739.97	6.00	2745.97
9	35.077799	-118.114541	2743.13	6.00	2749.13
10	35.079010	-118.115123	2746.97	6.00	2752.97
11	35.081051	-118.116310	2751.90	6.00	2757.90
12	35.082900	-118.117601	2758.45	6.00	2764.45
13	35.084797	-118.119135	2764.91	6.00	2770.91
14	35.086284	-118.120588	2771.66	6.00	2777.66

Name: Lone Pine Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.084537	-118.146560	2855.76	14.00	2869.76
2	35.099060	-118.126678	2812.38	14.00	2826.38

Name: Lone Pine Subdivision RR B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.099060	-118.126678	2812.38	14.00	2826.38
2	35.115057	-118.104680	2749.57	14.00	2763.57

Name: Midland Trail
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.110105	-118.180438	3149.13	6.00	3155.13
2	35.109834	-118.179497	3141.88	6.00	3147.88
3	35.109806	-118.179114	3138.33	6.00	3144.33
4	35.109893	-118.178661	3134.94	6.00	3140.94
5	35.110223	-118.177704	3125.52	6.00	3131.52
6	35.110885	-118.175686	3107.02	6.00	3113.02

Name: Randsburg Cutoff Road A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.101799	-118.186365	3113.29	6.00	3119.29
2	35.102634	-118.186468	3122.59	6.00	3128.59
3	35.103707	-118.186369	3134.56	6.00	3140.56
4	35.104745	-118.186008	3146.12	6.00	3152.12
5	35.105760	-118.185372	3153.87	6.00	3159.87
6	35.106536	-118.184561	3154.93	6.00	3160.93
7	35.107361	-118.183489	3152.31	6.00	3158.31
8	35.108245	-118.182200	3147.29	6.00	3153.29
9	35.108770	-118.181606	3144.95	6.00	3150.95
10	35.109463	-118.181027	3145.26	6.00	3151.26
11	35.110107	-118.180666	3147.97	6.00	3153.97

Name: Randsburg Cutoff Road B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.124502	-118.169064	3059.07	6.00	3065.07
2	35.124381	-118.170544	3074.14	6.00	3080.14
3	35.124117	-118.171908	3088.91	6.00	3094.91
4	35.123734	-118.172865	3099.50	6.00	3105.50
5	35.123256	-118.173677	3108.33	6.00	3114.33
6	35.122563	-118.174634	3117.78	6.00	3123.78
7	35.121775	-118.175300	3121.62	6.00	3127.62
8	35.120581	-118.175965	3128.01	6.00	3134.01
9	35.110107	-118.180666	3147.97	6.00	3153.97

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
B01	SA tracking	SA tracking	0	0	-	-
B02	SA tracking	SA tracking	0	0	-	-
B03	SA tracking	SA tracking	0	0	-	-
B04	SA tracking	SA tracking	0	0	-	-
B05	SA tracking	SA tracking	0	0	-	-
B06	SA tracking	SA tracking	0	0	-	-
B07	SA tracking	SA tracking	0	0	-	-
B08	SA tracking	SA tracking	0	0	-	-
B09	SA tracking	SA tracking	0	0	-	-
B10	SA tracking	SA tracking	0	0	-	-
B11	SA tracking	SA tracking	0	0	-	-
B12	SA tracking	SA tracking	0	0	-	-
B13	SA tracking	SA tracking	0	0	-	-
B14	SA tracking	SA tracking	0	0	-	-
B15	SA tracking	SA tracking	0	0	-	-
B16	SA tracking	SA tracking	0	0	-	-
B17	SA tracking	SA tracking	0	0	-	-
B18	SA tracking	SA tracking	0	0	-	-
B19	SA tracking	SA tracking	0	0	-	-
B20	SA tracking	SA tracking	0	0	-	-
B21	SA tracking	SA tracking	0	0	-	-
B22	SA tracking	SA tracking	0	0	-	-
B23	SA tracking	SA tracking	0	0	-	-
B24	SA tracking	SA tracking	0	0	-	-
B25	SA tracking	SA tracking	0	0	-	-
B26	SA tracking	SA tracking	0	0	-	-
B27	SA tracking	SA tracking	0	0	-	-
B28	SA tracking	SA tracking	0	0	-	-
B29	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

B01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

B29 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 14 WB Onramp at California City Blvd	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Randsburg Cutoff Road	0	0
Route: Hwy 58 WB A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0
Route: Midland Trail	0	0
Route: Randsburg Cutoff Road A	0	0
Route: Randsburg Cutoff Road B	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-3

Modeling Results for Analysis Group C

Bellefield Solar Project

Bellefield Solar Analysis Group C Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53112.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

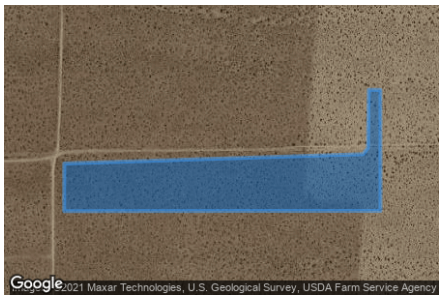
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
C01	SA tracking	SA tracking	0	0	-
C02	SA tracking	SA tracking	0	0	-
C03	SA tracking	SA tracking	0	0	-
C04	SA tracking	SA tracking	0	0	-
C05	SA tracking	SA tracking	0	0	-
C06	SA tracking	SA tracking	0	0	-
C07	SA tracking	SA tracking	0	0	-
C08	SA tracking	SA tracking	0	0	-
C09	SA tracking	SA tracking	0	0	-
C10	SA tracking	SA tracking	0	0	-
C11	SA tracking	SA tracking	0	0	-
C12	SA tracking	SA tracking	0	0	-
C13	SA tracking	SA tracking	0	0	-
C14	SA tracking	SA tracking	0	0	-
C15	SA tracking	SA tracking	0	0	-
C16	SA tracking	SA tracking	0	0	-
C17	SA tracking	SA tracking	0	0	-
C18	SA tracking	SA tracking	0	0	-
C19	SA tracking	SA tracking	0	0	-
C20	SA tracking	SA tracking	0	0	-
C21	SA tracking	SA tracking	0	0	-
C22	SA tracking	SA tracking	0	0	-
C23	SA tracking	SA tracking	0	0	-
C24	SA tracking	SA tracking	0	0	-
C25	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

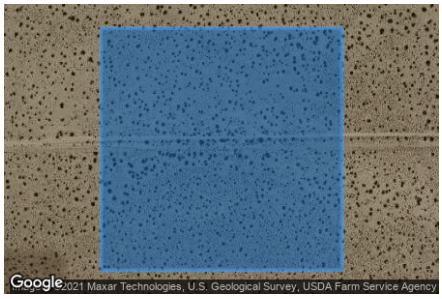
Total PV footprint area: 888.6 acres

Name: C01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



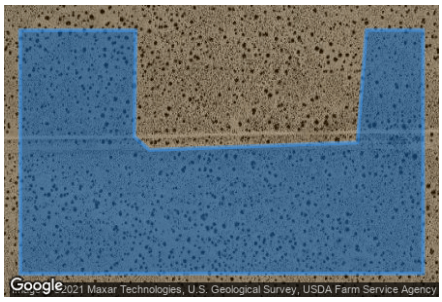
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.069719	-118.094362	2673.82	4.00	2677.82
2	35.069718	-118.096038	2677.32	4.00	2681.32
3	35.070582	-118.096036	2677.92	4.00	2681.92
4	35.070754	-118.089398	2659.86	4.00	2663.86
5	35.070869	-118.089295	2659.72	4.00	2663.72
6	35.071921	-118.089276	2658.66	4.00	2662.66
7	35.071921	-118.089017	2657.58	4.00	2661.58
8	35.069723	-118.089015	2658.39	4.00	2662.39
9	35.069719	-118.094362	2673.82	4.00	2677.82

Name: C02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



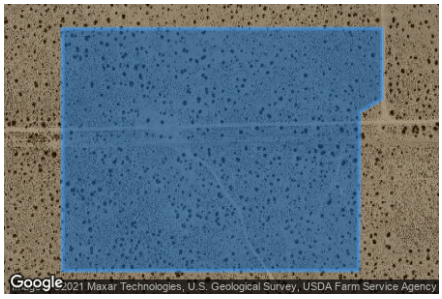
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.069725	-118.086341	2649.66	4.00	2653.66
2	35.069723	-118.089015	2658.39	4.00	2662.39
3	35.071921	-118.089017	2657.58	4.00	2661.58
4	35.071923	-118.086344	2649.18	4.00	2653.18
5	35.069725	-118.086341	2649.66	4.00	2653.66

Name: C03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



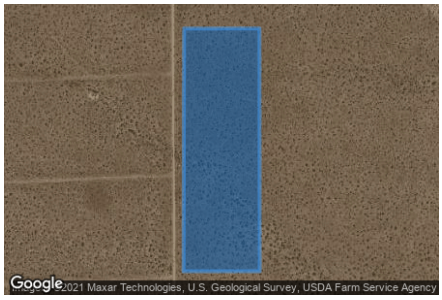
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.069728	-118.081867	2636.03	4.00	2640.03
2	35.069727	-118.083668	2639.84	4.00	2643.84
3	35.069725	-118.086341	2649.66	4.00	2653.66
4	35.071923	-118.086344	2649.18	4.00	2653.18
5	35.071924	-118.085059	2645.64	4.00	2649.64
6	35.070964	-118.085073	2647.71	4.00	2651.71
7	35.070843	-118.084907	2645.88	4.00	2649.89
8	35.070910	-118.082598	2639.61	4.00	2643.61
9	35.071926	-118.082500	2641.52	4.00	2645.52
10	35.071926	-118.081869	2639.81	4.00	2643.81
11	35.069728	-118.081867	2636.03	4.00	2640.03

Name: C04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.069729	-118.080994	2633.78	4.00	2637.78
2	35.069728	-118.081867	2636.03	4.00	2640.03
3	35.071926	-118.081869	2639.81	4.00	2643.81
4	35.071927	-118.080997	2636.36	4.00	2640.36
5	35.071929	-118.078323	2630.65	4.00	2634.65
6	35.071288	-118.078322	2630.38	4.00	2634.38
7	35.071168	-118.078572	2629.80	4.00	2633.80
8	35.069730	-118.078583	2627.90	4.00	2631.90
9	35.069729	-118.080994	2633.78	4.00	2637.78

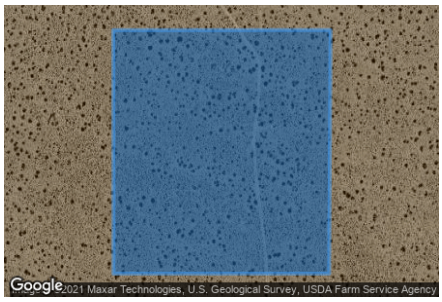
Name: C05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.065323	-118.094357	2666.13	4.00	2670.13
2	35.065322	-118.096048	2672.66	4.00	2676.66
3	35.069718	-118.096038	2677.32	4.00	2681.32
4	35.069719	-118.094362	2673.82	4.00	2677.82
5	35.065323	-118.094357	2666.13	4.00	2670.13

Name: C06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

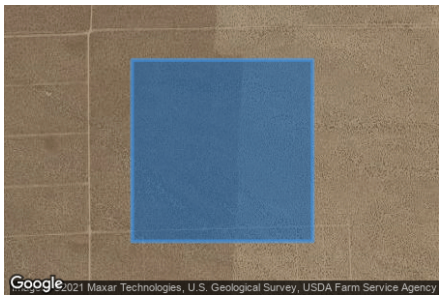
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.067532	-118.078599	2622.84	4.00	2626.84
2	35.067531	-118.080992	2631.79	4.00	2635.79
3	35.069729	-118.080994	2633.78	4.00	2637.78
4	35.069730	-118.078583	2627.90	4.00	2631.90
5	35.067532	-118.078599	2622.84	4.00	2626.84



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

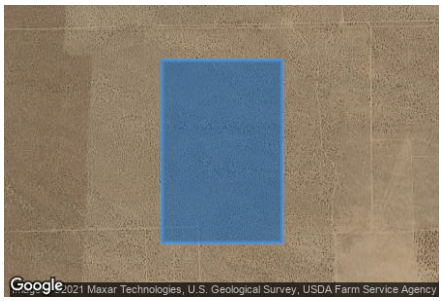
Name: C07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 121.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.063125	-118.094355	2662.91	4.00	2666.91
2	35.065323	-118.094357	2666.13	4.00	2670.13
3	35.069719	-118.094362	2673.82	4.00	2677.82
4	35.069723	-118.089015	2658.39	4.00	2662.39
5	35.069725	-118.086341	2649.66	4.00	2653.66
6	35.063131	-118.086335	2641.10	4.00	2645.10
7	35.063125	-118.094355	2662.91	4.00	2666.91



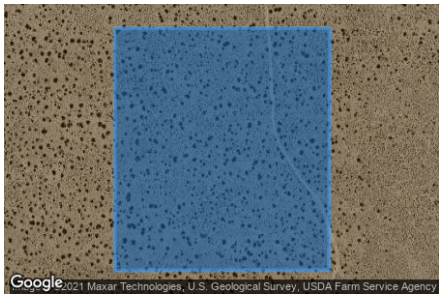
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: C08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 79.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.063131	-118.086335	2641.10	4.00	2645.10
2	35.069725	-118.086341	2649.66	4.00	2653.66
3	35.069727	-118.083668	2639.84	4.00	2643.84
4	35.069729	-118.080994	2633.78	4.00	2637.78
5	35.067531	-118.080992	2631.79	4.00	2635.79
6	35.065333	-118.080990	2627.85	4.00	2631.85
7	35.063135	-118.080988	2626.42	4.00	2630.42
8	35.063131	-118.086335	2641.10	4.00	2645.10

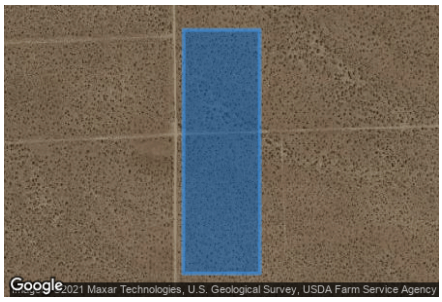
Name: C09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.065334	-118.078614	2619.35	4.00	2623.35
2	35.065333	-118.080990	2627.85	4.00	2631.85
3	35.067531	-118.080992	2631.79	4.00	2635.79
4	35.067532	-118.078599	2622.84	4.00	2626.84
5	35.065334	-118.078614	2619.35	4.00	2623.35

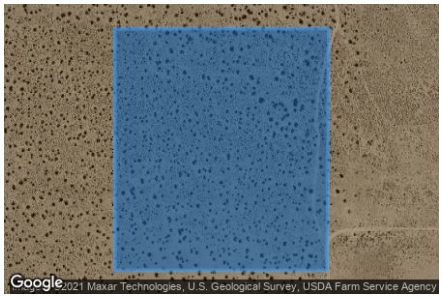
Name: C10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.060927	-118.094352	2658.37	4.00	2662.37
2	35.060926	-118.096056	2659.97	4.00	2663.97
3	35.065322	-118.096048	2672.66	4.00	2676.66
4	35.065323	-118.094357	2666.13	4.00	2670.13
5	35.063125	-118.094355	2662.91	4.00	2666.91
6	35.060927	-118.094352	2658.37	4.00	2662.37



Name: C11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

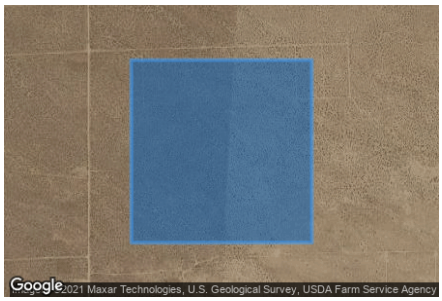
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.063136	-118.078630	2620.54	4.00	2624.54
2	35.063135	-118.080988	2626.42	4.00	2630.42
3	35.065333	-118.080990	2627.85	4.00	2631.85
4	35.065334	-118.078614	2619.35	4.00	2623.35
5	35.063136	-118.078630	2620.54	4.00	2624.54



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: C12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 119.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.056531	-118.094347	2647.67	4.00	2651.67
2	35.060927	-118.094352	2658.37	4.00	2662.37
3	35.063125	-118.094355	2662.91	4.00	2666.91
4	35.063131	-118.086335	2641.10	4.00	2645.10
5	35.056537	-118.086328	2630.65	4.00	2634.65
6	35.056531	-118.094347	2647.67	4.00	2651.67



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

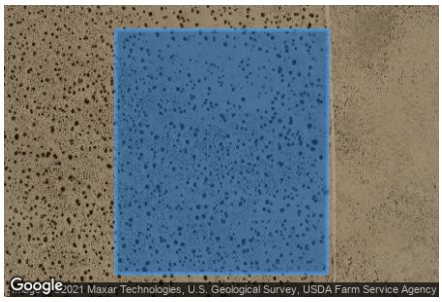
Name: C13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 76.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.056537	-118.086328	2630.65	4.00	2634.65
2	35.063131	-118.086335	2641.10	4.00	2645.10
3	35.063135	-118.080988	2626.42	4.00	2630.42
4	35.060937	-118.080986	2621.82	4.00	2625.82
5	35.058739	-118.080984	2617.14	4.00	2621.14
6	35.056540	-118.080981	2616.28	4.00	2620.28
7	35.056537	-118.086328	2630.65	4.00	2634.65



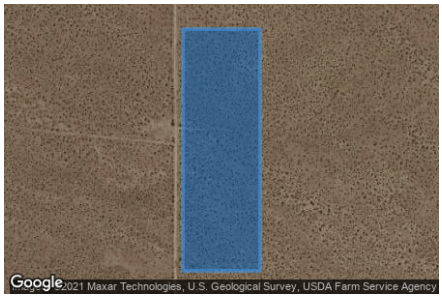
Name: C14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.060938	-118.078645	2613.99	4.00	2617.99
2	35.060937	-118.080986	2621.82	4.00	2625.82
3	35.063135	-118.080988	2626.42	4.00	2630.42
4	35.063136	-118.078630	2620.54	4.00	2624.54
5	35.060938	-118.078645	2613.99	4.00	2617.99



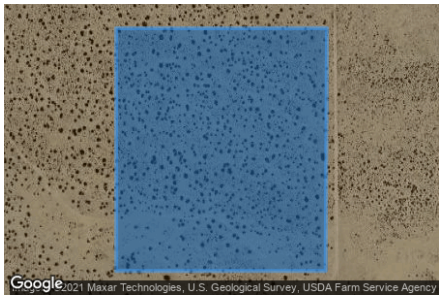
Name: C15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.056531	-118.094347	2647.67	4.00	2651.67
2	35.056530	-118.096061	2649.31	4.00	2653.31
3	35.060926	-118.096056	2659.97	4.00	2663.97
4	35.060927	-118.094352	2658.37	4.00	2662.37
5	35.056531	-118.094347	2647.67	4.00	2651.67



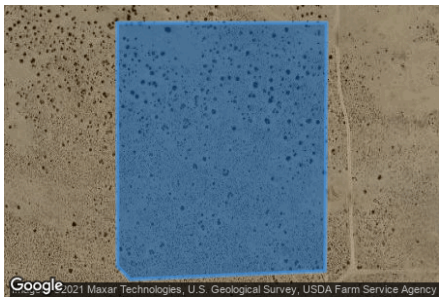
Name: C16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.058740	-118.078660	2611.72	4.00	2615.72
2	35.058739	-118.080984	2617.14	4.00	2621.14
3	35.060937	-118.080986	2621.82	4.00	2625.82
4	35.060938	-118.078645	2613.99	4.00	2617.99
5	35.058740	-118.078660	2611.72	4.00	2615.72



Name: C17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

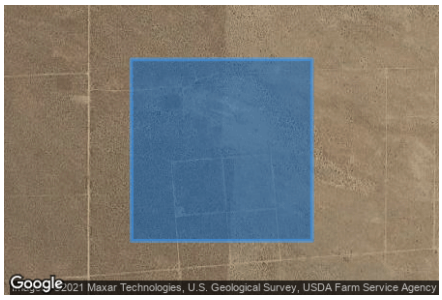
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.056422	-118.080837	2615.86	4.00	2619.86
2	35.056540	-118.080981	2616.28	4.00	2620.28
3	35.058739	-118.080984	2617.14	4.00	2621.14
4	35.058740	-118.078660	2611.72	4.00	2615.72
5	35.056500	-118.078675	2609.94	4.00	2613.94
6	35.056422	-118.080837	2615.86	4.00	2619.86



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: C18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 115.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.049937	-118.094339	2630.05	4.00	2634.05
2	35.052135	-118.094342	2632.89	4.00	2636.89
3	35.056531	-118.094347	2647.67	4.00	2651.67
4	35.056537	-118.086328	2630.65	4.00	2634.65
5	35.049943	-118.086321	2615.31	4.00	2619.31
6	35.049941	-118.088994	2621.06	4.00	2625.06
7	35.049937	-118.094339	2630.05	4.00	2634.05



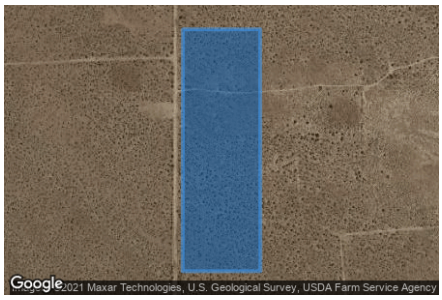
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: C19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 85.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.049945	-118.083648	2611.58	4.00	2615.58
2	35.049943	-118.086321	2615.31	4.00	2619.31
3	35.056537	-118.086328	2630.65	4.00	2634.65
4	35.056540	-118.080981	2616.28	4.00	2620.28
5	35.056422	-118.080837	2615.86	4.00	2619.86
6	35.054342	-118.080877	2610.68	4.00	2614.68
7	35.054342	-118.080979	2610.91	4.00	2614.91
8	35.049946	-118.080975	2605.81	4.00	2609.81
9	35.049945	-118.083648	2611.58	4.00	2615.58

Name: C20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.052135	-118.094342	2632.89	4.00	2636.89
2	35.052133	-118.096069	2636.39	4.00	2640.39
3	35.056530	-118.096061	2649.31	4.00	2653.31
4	35.056531	-118.094347	2647.67	4.00	2651.67
5	35.052135	-118.094342	2632.89	4.00	2636.89

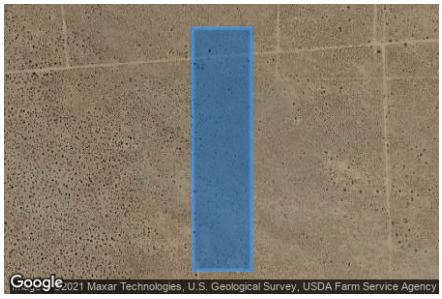
Name: C21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.048760	-118.096075	2630.64	4.00	2634.64
2	35.052133	-118.096069	2636.39	4.00	2640.39
3	35.052135	-118.094342	2632.89	4.00	2636.89
4	35.049937	-118.094339	2630.05	4.00	2634.05
5	35.048801	-118.094338	2628.46	4.00	2632.46
6	35.048760	-118.096075	2630.64	4.00	2634.64



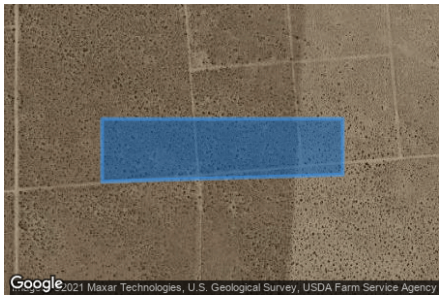
Name: C22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.045548	-118.083643	2603.55	4.00	2607.55
2	35.045548	-118.084924	2605.22	4.00	2609.22
3	35.047746	-118.084940	2613.49	4.00	2617.49
4	35.049944	-118.084942	2613.43	4.00	2617.43
5	35.049945	-118.083648	2611.58	4.00	2615.58
6	35.047746	-118.083646	2609.00	4.00	2613.00
7	35.045548	-118.083643	2603.55	4.00	2607.55

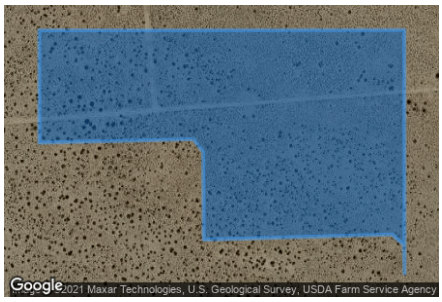


Name: C23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.048801	-118.094338	2628.46	4.00	2632.46
2	35.049937	-118.094339	2630.05	4.00	2634.05
3	35.049941	-118.088994	2621.06	4.00	2625.06
4	35.048927	-118.088993	2621.14	4.00	2625.14
5	35.048801	-118.094338	2628.46	4.00	2632.46

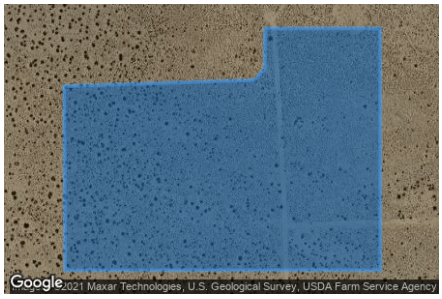


Name: C24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.047746	-118.084940	2613.49	4.00	2617.49
2	35.048006	-118.084949	2612.19	4.00	2616.19
3	35.048098	-118.085079	2612.29	4.00	2616.29
4	35.048051	-118.087169	2614.21	4.00	2618.21
5	35.048843	-118.087174	2617.78	4.00	2621.78
6	35.048957	-118.087284	2618.57	4.00	2622.57
7	35.048927	-118.088993	2621.14	4.00	2625.14
8	35.049941	-118.088994	2621.06	4.00	2625.06
9	35.049943	-118.086321	2615.31	4.00	2619.31
10	35.049944	-118.084942	2613.43	4.00	2617.43
11	35.047746	-118.084940	2613.49	4.00	2617.49

Name: C25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.045548	-118.083643	2603.55	4.00	2607.55
2	35.043350	-118.083641	2604.51	4.00	2608.51
3	35.043348	-118.086314	2607.40	4.00	2611.40
4	35.043348	-118.087142	2611.08	4.00	2615.08
5	35.045022	-118.087152	2613.86	4.00	2617.86
6	35.045078	-118.085043	2604.89	4.00	2608.89
7	35.045182	-118.084926	2604.65	4.00	2608.65
8	35.045548	-118.084924	2605.22	4.00	2609.22
9	35.045548	-118.083643	2603.55	4.00	2607.55

2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



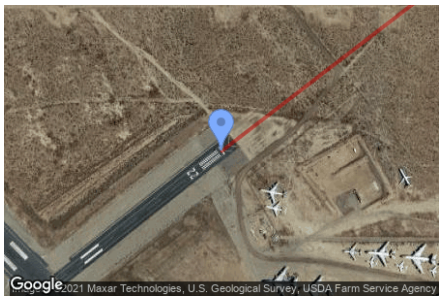
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



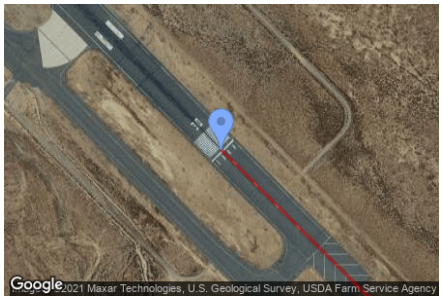
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Hwy 14
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.090709	-118.151069	2916.31	6.00	2922.31
2	35.093025	-118.148665	2920.98	6.00	2926.98
3	35.101619	-118.142092	2920.32	6.00	2926.32
4	35.107444	-118.137459	2888.01	6.00	2894.01

Name: Hwy 58 EB at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.098293	-118.143699	2908.58	6.00	2914.58
2	35.091527	-118.129062	2828.32	6.00	2834.32
3	35.091055	-118.128121	2818.47	6.00	2824.47
4	35.090170	-118.126588	2801.60	6.00	2807.60

Name: Hwy 58 EB Onramp at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.097298	-118.145097	2941.24	6.00	2947.24
2	35.096969	-118.144452	2934.52	6.00	2940.52
3	35.096770	-118.143808	2929.08	6.00	2935.08
4	35.096600	-118.142136	2905.45	6.00	2911.46
5	35.096402	-118.140064	2880.34	6.00	2886.34
6	35.096231	-118.139332	2876.69	6.00	2882.69

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035709	-118.026799	2605.43	6.00	2611.43
2	35.044276	-118.026756	2565.40	6.00	2571.40

Name: Hyundai Proving Ground A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.062853	-118.015497	2510.48	6.00	2516.48
2	35.063694	-118.015751	2509.85	6.00	2515.85
3	35.064684	-118.016179	2509.80	6.00	2515.80
4	35.065548	-118.016701	2510.69	6.00	2516.69
5	35.066353	-118.017318	2510.09	6.00	2516.09
6	35.067182	-118.018123	2510.65	6.00	2516.65
7	35.067981	-118.019081	2514.13	6.00	2520.13
8	35.068577	-118.020031	2514.00	6.00	2520.00
9	35.069149	-118.021177	2515.91	6.00	2521.91
10	35.069656	-118.022511	2517.86	6.00	2523.86
11	35.069995	-118.023947	2520.00	6.00	2526.00

Name: Lone Pine Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.084537	-118.146560	2855.76	14.00	2869.76
2	35.099060	-118.126678	2812.38	14.00	2826.38

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 3	35.047052	-118.028392	2545.84	6.00	2551.84
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
C01	SA tracking	SA tracking	0	0	-	-
C02	SA tracking	SA tracking	0	0	-	-
C03	SA tracking	SA tracking	0	0	-	-
C04	SA tracking	SA tracking	0	0	-	-
C05	SA tracking	SA tracking	0	0	-	-
C06	SA tracking	SA tracking	0	0	-	-
C07	SA tracking	SA tracking	0	0	-	-
C08	SA tracking	SA tracking	0	0	-	-
C09	SA tracking	SA tracking	0	0	-	-
C10	SA tracking	SA tracking	0	0	-	-
C11	SA tracking	SA tracking	0	0	-	-
C12	SA tracking	SA tracking	0	0	-	-
C13	SA tracking	SA tracking	0	0	-	-
C14	SA tracking	SA tracking	0	0	-	-
C15	SA tracking	SA tracking	0	0	-	-
C16	SA tracking	SA tracking	0	0	-	-
C17	SA tracking	SA tracking	0	0	-	-
C18	SA tracking	SA tracking	0	0	-	-
C19	SA tracking	SA tracking	0	0	-	-
C20	SA tracking	SA tracking	0	0	-	-
C21	SA tracking	SA tracking	0	0	-	-
C22	SA tracking	SA tracking	0	0	-	-
C23	SA tracking	SA tracking	0	0	-	-
C24	SA tracking	SA tracking	0	0	-	-
C25	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

C01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

C25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-4

Modeling Results for Analysis Group D

Bellefield Solar Project

Bellefield Solar Analysis Group D Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53115.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

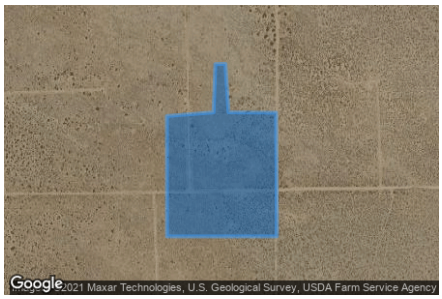
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
D01	SA tracking	SA tracking	0	0	-
D02	SA tracking	SA tracking	0	0	-
D03	SA tracking	SA tracking	0	0	-
D04	SA tracking	SA tracking	0	0	-
D05	SA tracking	SA tracking	0	0	-
D06	SA tracking	SA tracking	0	0	-
D07	SA tracking	SA tracking	0	0	-
D08	SA tracking	SA tracking	0	0	-
D09	SA tracking	SA tracking	0	0	-
D10	SA tracking	SA tracking	0	0	-
D11	SA tracking	SA tracking	0	0	-
D12	SA tracking	SA tracking	0	0	-
D13	SA tracking	SA tracking	0	0	-
D14	SA tracking	SA tracking	0	0	-
D15	SA tracking	SA tracking	0	0	-
D16	SA tracking	SA tracking	0	0	-
D17	SA tracking	SA tracking	0	0	-
D18	SA tracking	SA tracking	0	0	-
D19	SA tracking	SA tracking	0	0	-
D20	SA tracking	SA tracking	0	0	-
D21	SA tracking	SA tracking	0	0	-
D22	SA tracking	SA tracking	0	0	-
D23	SA tracking	SA tracking	0	0	-
D24	SA tracking	SA tracking	0	0	-
D25	SA tracking	SA tracking	0	0	-
D26	SA tracking	SA tracking	0	0	-
D27	SA tracking	SA tracking	0	0	-
D28	SA tracking	SA tracking	0	0	-
D29	SA tracking	SA tracking	0	0	-
D30	SA tracking	SA tracking	0	0	-
D31	SA tracking	SA tracking	0	0	-
D32	SA tracking	SA tracking	0	0	-
D33	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

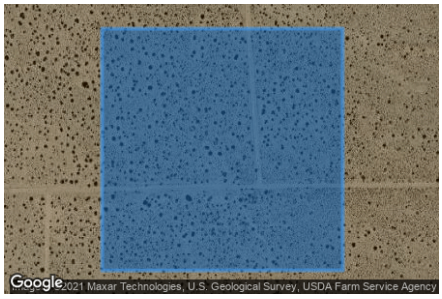
Total PV footprint area: 932.9 acres

Name: D01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.043403	-118.078545	2589.96	4.00	2593.96
2	35.041156	-118.078527	2587.21	4.00	2591.21
3	35.041154	-118.080966	2593.49	4.00	2597.49
4	35.043342	-118.080968	2595.71	4.00	2599.71
5	35.043409	-118.079931	2595.04	4.00	2599.04
6	35.044285	-118.079894	2594.38	4.00	2598.38
7	35.044291	-118.079670	2593.62	4.00	2597.62
8	35.043409	-118.079600	2594.64	4.00	2598.64
9	35.043403	-118.078545	2589.96	4.00	2593.96

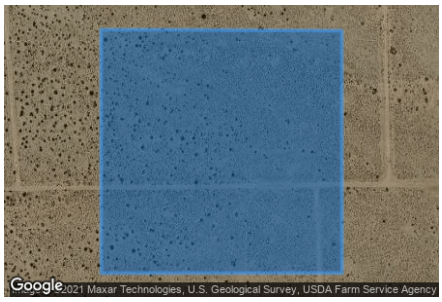
Name: D02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041152	-118.083639	2600.02	4.00	2604.02
2	35.041150	-118.086312	2607.36	4.00	2611.36
3	35.043348	-118.086314	2607.40	4.00	2611.40
4	35.043350	-118.083641	2604.51	4.00	2608.51
5	35.041152	-118.083639	2600.02	4.00	2604.02

Name: D03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.043342	-118.080968	2595.71	4.00	2599.71
2	35.041154	-118.080966	2593.49	4.00	2597.49
3	35.041152	-118.083639	2600.02	4.00	2604.02
4	35.043350	-118.083641	2604.51	4.00	2608.51
5	35.043351	-118.082979	2603.61	4.00	2607.61
6	35.043342	-118.080968	2595.71	4.00	2599.71



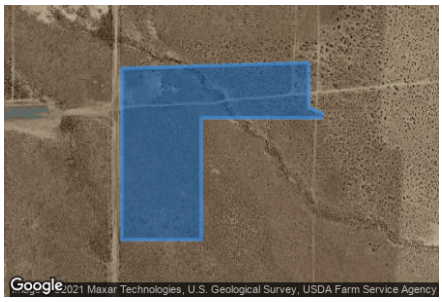
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: D04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 133.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034550	-118.094322	2596.56	4.00	2600.56
2	35.038946	-118.094327	2608.83	4.00	2612.83
3	35.041144	-118.094329	2612.68	4.00	2616.68
4	35.041147	-118.091657	2613.64	4.00	2617.64
5	35.041232	-118.091657	2613.55	4.00	2617.55
6	35.041363	-118.087215	2606.57	4.00	2610.57
7	35.043348	-118.087142	2611.08	4.00	2615.08
8	35.043348	-118.086314	2607.40	4.00	2611.40
9	35.041150	-118.086312	2607.36	4.00	2611.36
10	35.039207	-118.086310	2598.33	4.00	2602.33
11	35.038952	-118.086309	2596.62	4.00	2600.62
12	35.034556	-118.086305	2582.75	4.00	2586.75
13	35.034554	-118.088977	2593.33	4.00	2597.33
14	35.034550	-118.094322	2596.56	4.00	2600.56



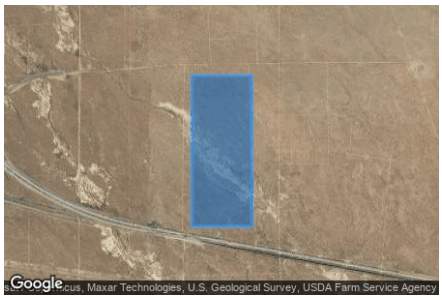
Name: D05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041232	-118.091657	2613.55	4.00	2617.55
2	35.041147	-118.091657	2613.64	4.00	2617.64
3	35.041144	-118.094329	2612.68	4.00	2616.68
4	35.038946	-118.094327	2608.83	4.00	2612.83
5	35.038945	-118.096092	2608.03	4.00	2612.03
6	35.042038	-118.096088	2617.02	4.00	2621.02
7	35.042144	-118.091946	2615.74	4.00	2619.74
8	35.041331	-118.091939	2614.35	4.00	2618.35
9	35.041232	-118.091657	2613.55	4.00	2617.55

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

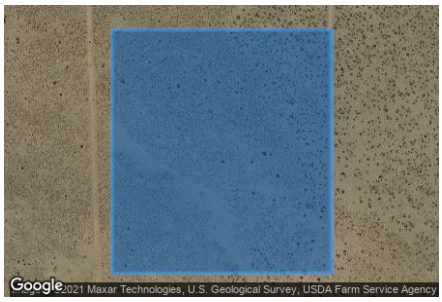
Name: D06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 127.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.030160	-118.086300	2579.03	4.00	2583.03
2	35.034556	-118.086305	2582.75	4.00	2586.75
3	35.038952	-118.086309	2596.62	4.00	2600.62
4	35.041150	-118.086312	2607.36	4.00	2611.36
5	35.041152	-118.083639	2600.02	4.00	2604.02
6	35.041154	-118.080966	2593.49	4.00	2597.49
7	35.038956	-118.080964	2588.70	4.00	2592.70
8	35.036758	-118.080962	2580.17	4.00	2584.18
9	35.034560	-118.080960	2579.57	4.00	2583.57
10	35.032362	-118.080958	2573.66	4.00	2577.66
11	35.030164	-118.080956	2570.64	4.00	2574.64
12	35.030160	-118.086300	2579.03	4.00	2583.03

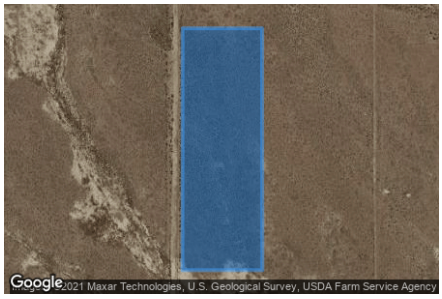
Name: D07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.038958	-118.078525	2586.67	4.00	2590.67
2	35.038956	-118.080964	2588.70	4.00	2592.70
3	35.041154	-118.080966	2593.49	4.00	2597.49
4	35.041156	-118.078527	2587.21	4.00	2591.21
5	35.038958	-118.078525	2586.67	4.00	2590.67



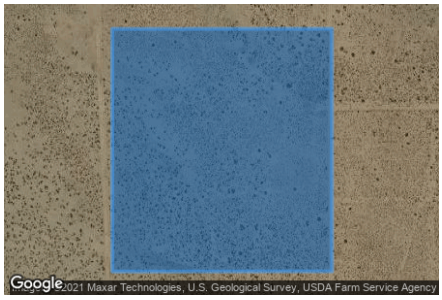
Name: D08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034550	-118.094322	2596.56	4.00	2600.56
2	35.034549	-118.096096	2599.04	4.00	2603.04
3	35.038945	-118.096092	2608.03	4.00	2612.03
4	35.038946	-118.094327	2608.83	4.00	2612.83
5	35.034550	-118.094322	2596.56	4.00	2600.56



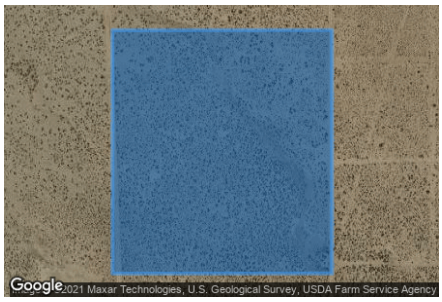
Name: D09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036760	-118.078524	2580.98	4.00	2584.98
2	35.036758	-118.080962	2580.17	4.00	2584.18
3	35.038956	-118.080964	2588.70	4.00	2592.70
4	35.038958	-118.078525	2586.67	4.00	2590.67
5	35.036760	-118.078524	2580.98	4.00	2584.98



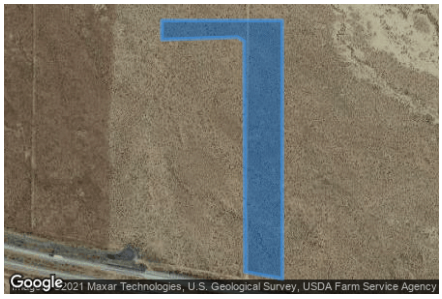
Name: D10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034561	-118.078523	2571.31	4.00	2575.31
2	35.034560	-118.080960	2579.57	4.00	2583.57
3	35.036758	-118.080962	2580.17	4.00	2584.18
4	35.036760	-118.078524	2580.98	4.00	2584.98
5	35.034561	-118.078523	2571.31	4.00	2575.31



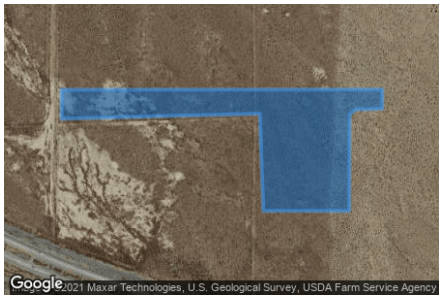
Name: D11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034556	-118.086305	2582.75	4.00	2586.75
2	35.030160	-118.086300	2579.03	4.00	2583.03
3	35.029860	-118.086300	2580.28	4.00	2584.28
4	35.029986	-118.087133	2583.67	4.00	2587.67
5	35.034176	-118.087151	2587.82	4.00	2591.82
6	35.034250	-118.087297	2588.38	4.00	2592.39
7	35.034207	-118.088977	2592.69	4.00	2596.69
8	35.034554	-118.088977	2593.33	4.00	2597.33
9	35.034556	-118.086305	2582.75	4.00	2586.75



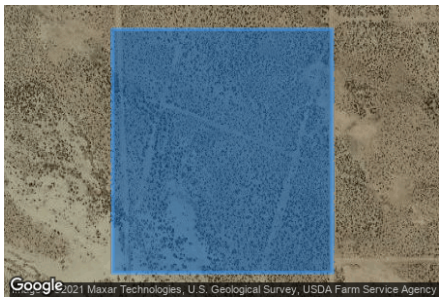
Name: D12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034097	-118.089699	2592.88	4.00	2596.88
2	35.032356	-118.089709	2589.05	4.00	2593.05
3	35.032354	-118.091617	2589.13	4.00	2593.13
4	35.034115	-118.091696	2593.80	4.00	2597.80
5	35.034023	-118.096096	2598.07	4.00	2602.07
6	35.034549	-118.096096	2599.04	4.00	2603.04
7	35.034550	-118.094322	2596.56	4.00	2600.56
8	35.034554	-118.088977	2593.33	4.00	2597.33
9	35.034207	-118.088977	2592.69	4.00	2596.69
10	35.034190	-118.089570	2592.63	4.00	2596.63
11	35.034097	-118.089699	2592.88	4.00	2596.88



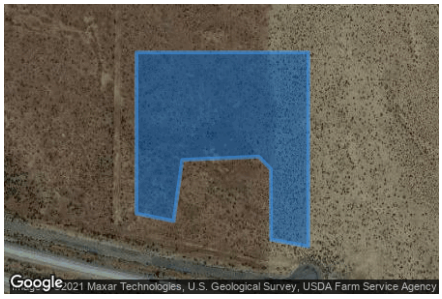
Name: D13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.032363	-118.078521	2570.02	4.00	2574.02
2	35.032362	-118.080958	2573.66	4.00	2577.66
3	35.034560	-118.080960	2579.57	4.00	2583.57
4	35.034561	-118.078523	2571.31	4.00	2575.31
5	35.032363	-118.078521	2570.02	4.00	2574.02



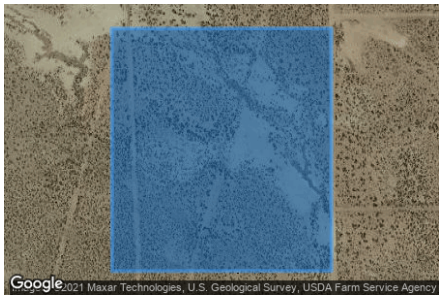
Name: D14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 6.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.032354	-118.091617	2589.13	4.00	2593.13
2	35.032356	-118.089709	2589.05	4.00	2593.05
3	35.030591	-118.089710	2583.46	4.00	2587.46
4	35.030654	-118.090123	2584.42	4.00	2588.42
5	35.031291	-118.090125	2585.75	4.00	2589.75
6	35.031407	-118.090258	2584.95	4.00	2588.95
7	35.031377	-118.091108	2585.15	4.00	2589.15
8	35.030821	-118.091205	2587.76	4.00	2591.76
9	35.030891	-118.091618	2588.06	4.00	2592.06
10	35.032354	-118.091617	2589.13	4.00	2593.13



Name: D15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.030165	-118.078520	2570.12	4.00	2574.12
2	35.030164	-118.080956	2570.64	4.00	2574.64
3	35.032362	-118.080958	2573.66	4.00	2577.66
4	35.032363	-118.078521	2570.02	4.00	2574.02
5	35.030165	-118.078520	2570.12	4.00	2574.12



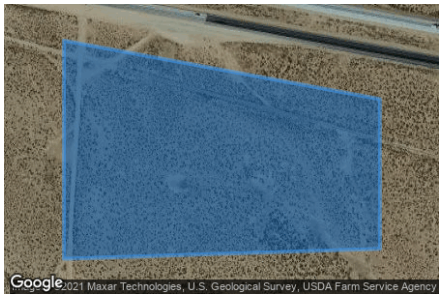
Name: D16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.028679	-118.078519	2566.79	4.00	2570.79
2	35.029860	-118.086300	2580.28	4.00	2584.28
3	35.030160	-118.086300	2579.03	4.00	2583.03
4	35.030164	-118.080956	2570.64	4.00	2574.64
5	35.030165	-118.078520	2570.12	4.00	2574.12
6	35.028679	-118.078519	2566.79	4.00	2570.79



Name: D17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.026885	-118.087133	2574.48	4.00	2578.48
2	35.028869	-118.087133	2580.09	4.00	2584.09
3	35.028337	-118.083626	2570.58	4.00	2574.58
4	35.027964	-118.083626	2570.56	4.00	2574.56
5	35.026976	-118.083625	2576.03	4.00	2580.03
6	35.026885	-118.087133	2574.48	4.00	2578.48



Name: D18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027561	-118.078518	2566.73	4.00	2570.73
2	35.026939	-118.078512	2565.61	4.00	2569.61
3	35.026838	-118.078280	2565.17	4.00	2569.17
4	35.025769	-118.078279	2570.19	4.00	2574.19
5	35.025768	-118.080419	2564.82	4.00	2568.82
6	35.026926	-118.080419	2572.06	4.00	2576.06
7	35.027041	-118.080515	2572.07	4.00	2576.07
8	35.026976	-118.083625	2576.03	4.00	2580.03
9	35.027964	-118.083626	2570.56	4.00	2574.56
10	35.028337	-118.083626	2570.58	4.00	2574.58
11	35.027561	-118.078518	2566.73	4.00	2570.73



Name: D19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025771	-118.075607	2560.36	4.00	2564.36
2	35.025769	-118.078279	2570.19	4.00	2574.19
3	35.026838	-118.078280	2565.17	4.00	2569.17
4	35.026896	-118.073960	2561.19	4.00	2565.19
5	35.026354	-118.070263	2557.14	4.00	2561.14
6	35.025774	-118.070263	2557.68	4.00	2561.68
7	35.025773	-118.072935	2559.30	4.00	2563.30
8	35.025771	-118.075607	2560.36	4.00	2564.36

Name: D20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019687	-118.067586	2550.23	4.00	2554.23
2	35.019181	-118.067585	2547.98	4.00	2551.98
3	35.019180	-118.070257	2553.96	4.00	2557.96
4	35.023576	-118.070261	2560.61	4.00	2564.61
5	35.025774	-118.070263	2557.68	4.00	2561.68
6	35.026354	-118.070263	2557.14	4.00	2561.14
7	35.026255	-118.069593	2556.19	4.00	2560.19
8	35.019764	-118.069572	2550.67	4.00	2554.67
9	35.019669	-118.069422	2550.35	4.00	2554.35
10	35.019687	-118.067586	2550.23	4.00	2554.23

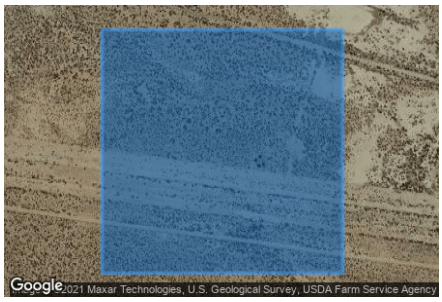
Name: D21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025771	-118.075607	2560.36	4.00	2564.36
2	35.023573	-118.075605	2559.63	4.00	2563.63
3	35.023571	-118.078190	2568.03	4.00	2572.03
4	35.025215	-118.078226	2563.18	4.00	2567.18
5	35.025211	-118.080419	2564.30	4.00	2568.30
6	35.025768	-118.080419	2564.82	4.00	2568.82
7	35.025769	-118.078279	2570.19	4.00	2574.19
8	35.025771	-118.075607	2560.36	4.00	2564.36

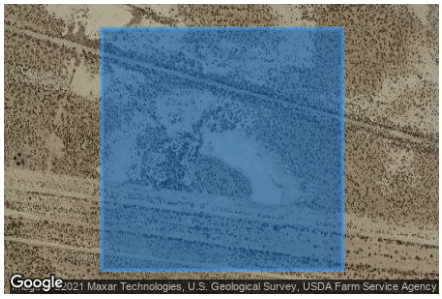
Name: D22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023575	-118.072933	2560.78	4.00	2564.78
2	35.023573	-118.075605	2559.63	4.00	2563.63
3	35.025771	-118.075607	2560.36	4.00	2564.36
4	35.025773	-118.072935	2559.30	4.00	2563.30
5	35.023575	-118.072933	2560.78	4.00	2564.78



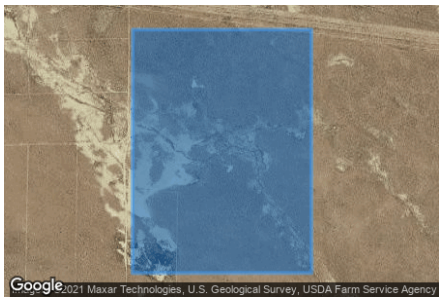
Name: D23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023576	-118.070261	2560.61	4.00	2564.61
2	35.023575	-118.072933	2560.78	4.00	2564.78
3	35.025773	-118.072935	2559.30	4.00	2563.30
4	35.025774	-118.070263	2557.68	4.00	2561.68
5	35.023576	-118.070261	2560.61	4.00	2564.61



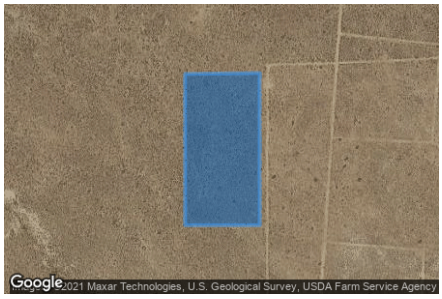
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: D24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 159.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014781	-118.075597	2560.74	4.00	2564.74
2	35.014779	-118.078205	2556.26	4.00	2560.26
3	35.023571	-118.078190	2568.03	4.00	2572.03
4	35.023573	-118.075605	2559.63	4.00	2563.63
5	35.023575	-118.072933	2560.78	4.00	2564.78
6	35.023576	-118.070261	2560.61	4.00	2564.61
7	35.019180	-118.070257	2553.96	4.00	2557.96
8	35.014784	-118.070253	2547.39	4.00	2551.39
9	35.014782	-118.072925	2553.96	4.00	2557.96
10	35.014781	-118.075597	2560.74	4.00	2564.74

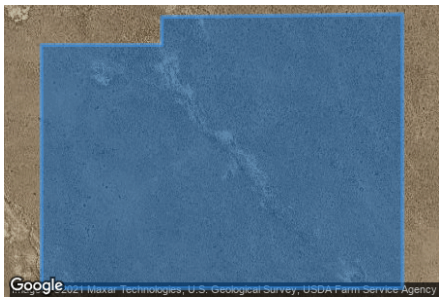
Name: D25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.016987	-118.060583	2544.06	4.00	2548.06
2	35.016986	-118.062240	2542.21	4.00	2546.21
3	35.019738	-118.062242	2551.44	4.00	2555.45
4	35.019754	-118.060584	2548.82	4.00	2552.82
5	35.016987	-118.060583	2544.06	4.00	2548.06

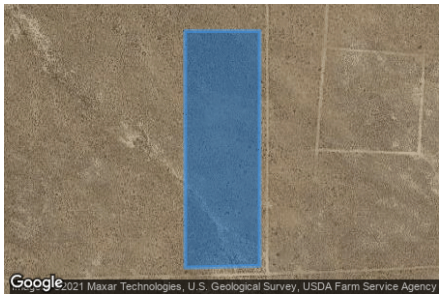
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: D26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 87.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014785	-118.067582	2546.27	4.00	2550.27
2	35.014784	-118.070253	2547.39	4.00	2551.39
3	35.019180	-118.070257	2553.96	4.00	2557.96
4	35.019181	-118.067585	2547.98	4.00	2551.98
5	35.019687	-118.067586	2550.23	4.00	2554.23
6	35.019738	-118.062242	2551.44	4.00	2555.45
7	35.016986	-118.062240	2542.21	4.00	2546.21
8	35.014788	-118.062238	2540.62	4.00	2544.62
9	35.014787	-118.064910	2541.36	4.00	2545.36
10	35.014785	-118.067582	2546.27	4.00	2550.27

Name: D27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



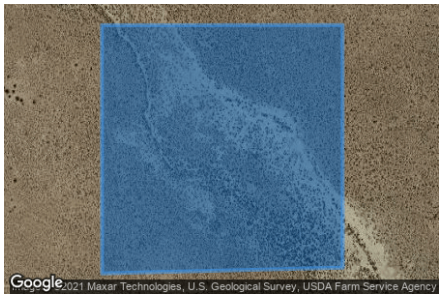
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012716	-118.060583	2536.88	4.00	2540.88
2	35.012684	-118.062237	2540.12	4.00	2544.12
3	35.014788	-118.062238	2540.62	4.00	2544.62
4	35.016986	-118.062240	2542.21	4.00	2546.21
5	35.016987	-118.060583	2544.06	4.00	2548.06
6	35.012716	-118.060583	2536.88	4.00	2540.88

Name: D28
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



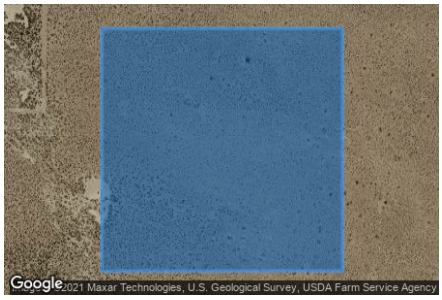
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012583	-118.075595	2554.36	4.00	2558.36
2	35.010384	-118.075593	2551.67	4.00	2555.67
3	35.010384	-118.076022	2550.14	4.00	2554.14
4	35.012366	-118.076065	2554.59	4.00	2558.59
5	35.012373	-118.078208	2555.04	4.00	2559.04
6	35.014779	-118.078205	2556.26	4.00	2560.26
7	35.014781	-118.075597	2560.74	4.00	2564.74
8	35.012583	-118.075595	2554.36	4.00	2558.36

Name: D29
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012528	-118.070252	2545.28	4.00	2549.28
2	35.014784	-118.070253	2547.39	4.00	2551.39
3	35.014785	-118.067582	2546.27	4.00	2550.27
4	35.012580	-118.067580	2541.19	4.00	2545.19
5	35.012528	-118.070252	2545.28	4.00	2549.28

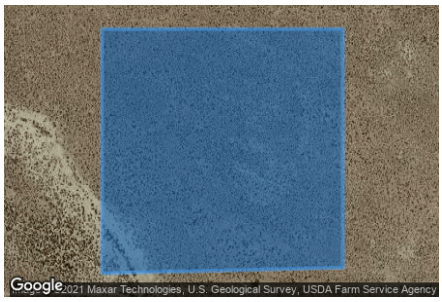
Name: D30
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012584	-118.072923	2551.99	4.00	2555.99
2	35.012583	-118.075595	2554.36	4.00	2558.36
3	35.014781	-118.075597	2560.74	4.00	2564.74
4	35.014782	-118.072925	2553.96	4.00	2557.96
5	35.012584	-118.072923	2551.99	4.00	2555.99

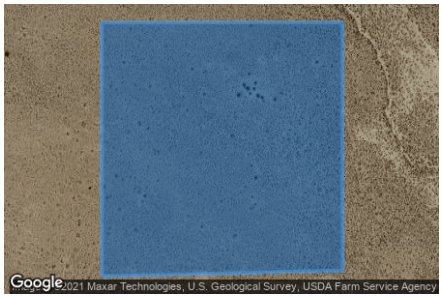
Name: D31
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012580	-118.067580	2541.19	4.00	2545.19
2	35.014785	-118.067582	2546.27	4.00	2550.27
3	35.014787	-118.064910	2541.36	4.00	2545.36
4	35.012631	-118.064908	2540.10	4.00	2544.10
5	35.012580	-118.067580	2541.19	4.00	2545.19



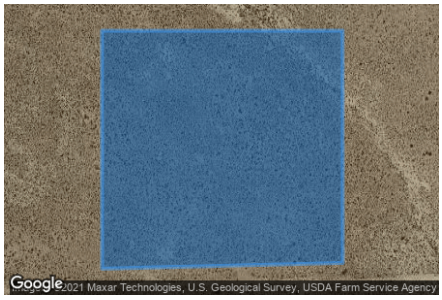
Name: D32
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012475	-118.072923	2551.40	4.00	2555.40
2	35.012584	-118.072923	2551.99	4.00	2555.99
3	35.014782	-118.072925	2553.96	4.00	2557.96
4	35.014784	-118.070253	2547.39	4.00	2551.39
5	35.012528	-118.070252	2545.28	4.00	2549.28
6	35.012475	-118.072923	2551.40	4.00	2555.40



Name: D33
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012684	-118.062237	2540.12	4.00	2544.12
2	35.012631	-118.064908	2540.10	4.00	2544.10
3	35.014787	-118.064910	2541.36	4.00	2545.36
4	35.014788	-118.062238	2540.62	4.00	2544.62
5	35.012684	-118.062237	2540.12	4.00	2544.12



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



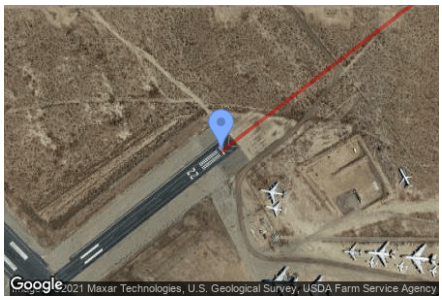
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



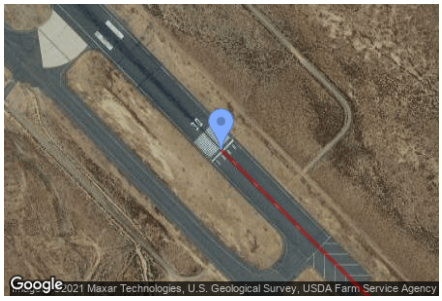
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Altus Ave
Route type Two-way
View angle: 50.0 deg



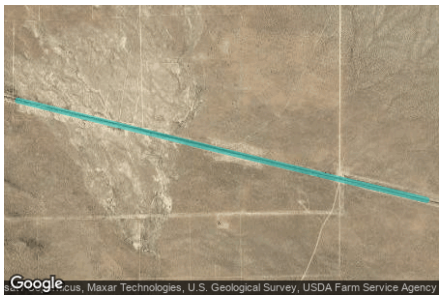
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035986	-118.111692	2629.82	6.00	2635.82
2	35.040039	-118.102534	2623.11	6.00	2629.11

Name: BNSF Mojave Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.000001	-118.099157	2566.93	14.00	2580.93
2	35.000270	-118.097232	2563.71	14.00	2577.71
3	35.000825	-118.094937	2558.87	14.00	2572.87
4	35.002374	-118.089606	2554.70	14.00	2568.70
5	35.003139	-118.087172	2550.18	14.00	2564.19
6	35.005071	-118.080727	2547.87	14.00	2561.87
7	35.006811	-118.074722	2549.15	14.00	2563.15
8	35.007079	-118.073517	2550.33	14.00	2564.33
9	35.007443	-118.071384	2545.87	14.00	2559.87
10	35.007596	-118.069320	2544.77	14.00	2558.77
11	35.007559	-118.067534	2543.09	14.00	2557.09

Name: BNSF Mojave Subdivision RR B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999545	-118.026063	2550.88	14.00	2564.88
2	35.001045	-118.033744	2543.80	14.00	2557.80
3	35.003260	-118.044934	2530.98	14.00	2544.98
4	35.006782	-118.062358	2534.76	14.00	2548.76

Name: Hwy 14
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.090709	-118.151069	2916.31	6.00	2922.31
2	35.093025	-118.148665	2920.98	6.00	2926.98
3	35.101619	-118.142092	2920.32	6.00	2926.32
4	35.107444	-118.137459	2888.01	6.00	2894.01

Name: Hwy 58 EB at Hwy 14
Route type One-way
View angle: 50.0 deg



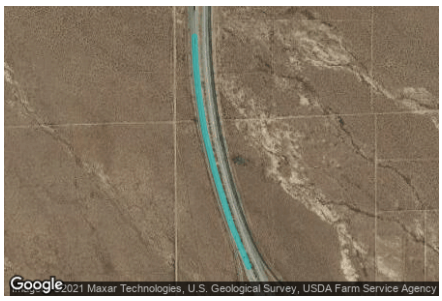
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.098293	-118.143699	2908.58	6.00	2914.58
2	35.091527	-118.129062	2828.32	6.00	2834.32
3	35.091055	-118.128121	2818.47	6.00	2824.47
4	35.090170	-118.126588	2801.60	6.00	2807.60

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 EB Onramp at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.097298	-118.145097	2941.24	6.00	2947.24
2	35.096969	-118.144452	2934.52	6.00	2940.52
3	35.096770	-118.143808	2929.08	6.00	2935.08
4	35.096600	-118.142136	2905.45	6.00	2911.46
5	35.096402	-118.140064	2880.34	6.00	2886.34
6	35.096231	-118.139332	2876.69	6.00	2882.69

Name: Hwy 58 WB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023407	-118.046428	2546.43	6.00	2552.43
2	35.026336	-118.065497	2554.36	6.00	2560.36
3	35.028009	-118.076470	2565.97	6.00	2571.97
4	35.029890	-118.088882	2584.80	6.00	2590.80
5	35.030555	-118.092733	2590.46	6.00	2596.46
6	35.031087	-118.094845	2594.84	6.00	2600.84
7	35.031506	-118.096098	2596.83	6.00	2602.83
8	35.032115	-118.097838	2600.83	6.00	2606.83
9	35.033010	-118.099742	2604.56	6.00	2610.56
10	35.033353	-118.100438	2606.68	6.00	2612.68

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034563	-118.026787	2612.40	6.00	2618.40
2	35.029201	-118.026855	2610.54	6.00	2616.54

Name: Hyundai-Kia Blvd C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035709	-118.026799	2605.43	6.00	2611.43
2	35.044276	-118.026756	2565.40	6.00	2571.40

Name: Lone Pine Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.084537	-118.146560	2855.76	14.00	2869.76
2	35.099060	-118.126678	2812.38	14.00	2826.38

Name: Old Mojave-Barstow Hwy
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.042860	-118.149944	2707.25	6.00	2713.25
2	35.035074	-118.116322	2631.79	6.00	2637.79

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 3	35.047052	-118.028392	2545.84	6.00	2551.84
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68
OP 7	35.035917	-118.123537	2644.02	0.00	2644.02

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
D01	SA tracking	SA tracking	0	0	-	-
D02	SA tracking	SA tracking	0	0	-	-
D03	SA tracking	SA tracking	0	0	-	-
D04	SA tracking	SA tracking	0	0	-	-
D05	SA tracking	SA tracking	0	0	-	-
D06	SA tracking	SA tracking	0	0	-	-
D07	SA tracking	SA tracking	0	0	-	-
D08	SA tracking	SA tracking	0	0	-	-
D09	SA tracking	SA tracking	0	0	-	-
D10	SA tracking	SA tracking	0	0	-	-
D11	SA tracking	SA tracking	0	0	-	-
D12	SA tracking	SA tracking	0	0	-	-
D13	SA tracking	SA tracking	0	0	-	-
D14	SA tracking	SA tracking	0	0	-	-
D15	SA tracking	SA tracking	0	0	-	-
D16	SA tracking	SA tracking	0	0	-	-
D17	SA tracking	SA tracking	0	0	-	-
D18	SA tracking	SA tracking	0	0	-	-
D19	SA tracking	SA tracking	0	0	-	-
D20	SA tracking	SA tracking	0	0	-	-
D21	SA tracking	SA tracking	0	0	-	-
D22	SA tracking	SA tracking	0	0	-	-
D23	SA tracking	SA tracking	0	0	-	-
D24	SA tracking	SA tracking	0	0	-	-
D25	SA tracking	SA tracking	0	0	-	-
D26	SA tracking	SA tracking	0	0	-	-
D27	SA tracking	SA tracking	0	0	-	-
D28	SA tracking	SA tracking	0	0	-	-
D29	SA tracking	SA tracking	0	0	-	-
D30	SA tracking	SA tracking	0	0	-	-
D31	SA tracking	SA tracking	0	0	-	-
D32	SA tracking	SA tracking	0	0	-	-
D33	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

D01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D29 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D30 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D31 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D32 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

D33 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 3	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-5

Modeling Results for Analysis Group E

Bellefield Solar Project

Bellefield Solar Analysis Group E Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53116.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
E01	SA tracking	SA tracking	0	0	-
E02	SA tracking	SA tracking	0	0	-
E03	SA tracking	SA tracking	0	0	-
E04	SA tracking	SA tracking	0	0	-
E05	SA tracking	SA tracking	0	0	-
E06	SA tracking	SA tracking	0	0	-
E07	SA tracking	SA tracking	0	0	-
E08	SA tracking	SA tracking	0	0	-
E09	SA tracking	SA tracking	0	0	-
E10	SA tracking	SA tracking	0	0	-
E11	SA tracking	SA tracking	0	0	-
E12	SA tracking	SA tracking	0	0	-
E13	SA tracking	SA tracking	0	0	-
E14	SA tracking	SA tracking	0	0	-
E15	SA tracking	SA tracking	0	0	-
E16	SA tracking	SA tracking	0	0	-
E17	SA tracking	SA tracking	0	0	-
E18	SA tracking	SA tracking	0	0	-
E19	SA tracking	SA tracking	0	0	-
E20	SA tracking	SA tracking	0	0	-
E21	SA tracking	SA tracking	0	0	-
E22	SA tracking	SA tracking	0	0	-
E23	SA tracking	SA tracking	0	0	-

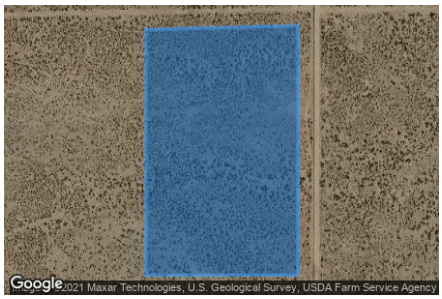
Component Data

PV Array(s)

Total PV footprint area: 529.3 acres

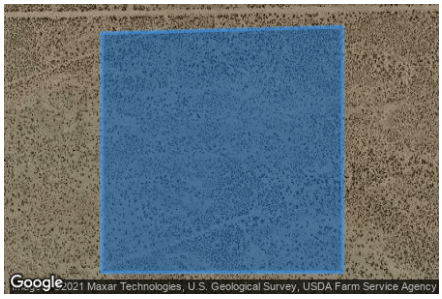
Name: E01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054354	-118.060577	2573.72	4.00	2577.72
2	35.054353	-118.062268	2578.09	4.00	2582.09
3	35.056586	-118.062270	2573.75	4.00	2577.75
4	35.056623	-118.060576	2569.89	4.00	2573.89
5	35.054354	-118.060577	2573.72	4.00	2577.72



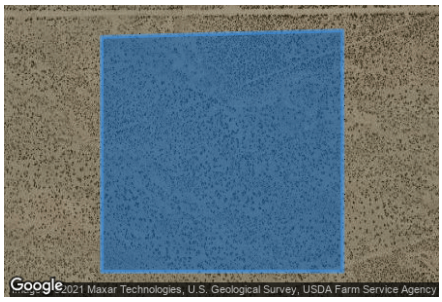
Name: E02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054353	-118.062268	2578.09	4.00	2582.09
2	35.054352	-118.064941	2582.82	4.00	2586.82
3	35.056527	-118.064943	2583.66	4.00	2587.66
4	35.056586	-118.062270	2573.75	4.00	2577.75
5	35.054353	-118.062268	2578.09	4.00	2582.09



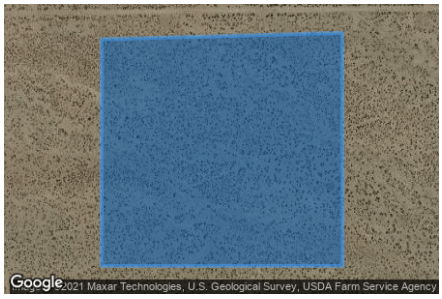
Name: E03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054352	-118.064941	2582.82	4.00	2586.82
2	35.054351	-118.067614	2585.13	4.00	2589.13
3	35.056468	-118.067616	2587.15	4.00	2591.15
4	35.056527	-118.064943	2583.66	4.00	2587.66
5	35.054352	-118.064941	2582.82	4.00	2586.82



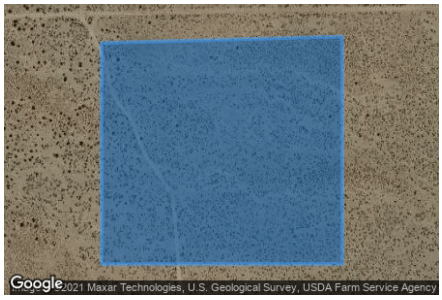
Name: E04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054351	-118.067614	2585.13	4.00	2589.13
2	35.054349	-118.070287	2589.90	4.00	2593.90
3	35.056409	-118.070289	2594.11	4.00	2598.11
4	35.056468	-118.067616	2587.15	4.00	2591.15
5	35.054351	-118.067614	2585.13	4.00	2589.13



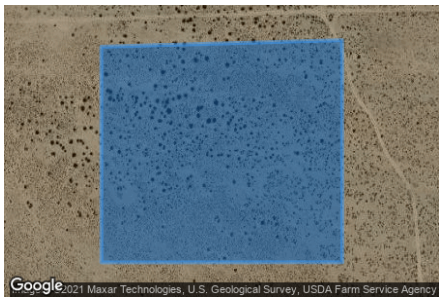
Name: E05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054349	-118.070287	2589.90	4.00	2593.90
2	35.054347	-118.072960	2594.20	4.00	2598.20
3	35.056351	-118.072962	2597.05	4.00	2601.05
4	35.056409	-118.070289	2594.11	4.00	2598.11
5	35.054349	-118.070287	2589.90	4.00	2593.90



Name: E06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

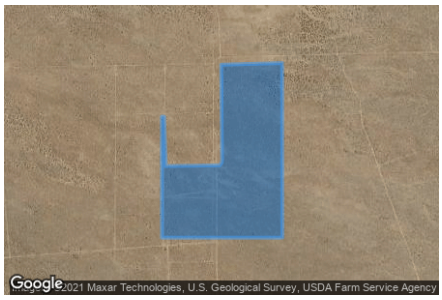
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054347	-118.072960	2594.20	4.00	2598.20
2	35.054346	-118.075633	2598.78	4.00	2602.78
3	35.056292	-118.075635	2602.44	4.00	2606.44
4	35.056351	-118.072962	2597.05	4.00	2601.05
5	35.054347	-118.072960	2594.20	4.00	2598.20



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

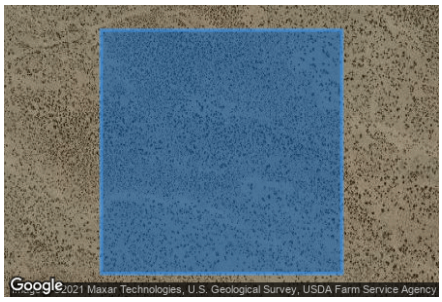
Name: E07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 59.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.054346	-118.075633	2598.78	4.00	2602.78
2	35.049950	-118.075629	2594.93	4.00	2598.93
3	35.049948	-118.078302	2603.11	4.00	2607.11
4	35.049946	-118.080975	2605.81	4.00	2609.81
5	35.054342	-118.080979	2610.91	4.00	2614.91
6	35.054342	-118.080877	2610.68	4.00	2614.68
7	35.052548	-118.080804	2611.38	4.00	2615.38
8	35.052576	-118.078405	2604.89	4.00	2608.89
9	35.052699	-118.078306	2605.42	4.00	2609.42
10	35.056232	-118.078341	2608.56	4.00	2612.56
11	35.056292	-118.075635	2602.44	4.00	2606.44
12	35.054346	-118.075633	2598.78	4.00	2602.78



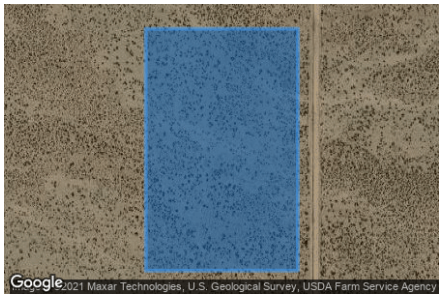
Name: E08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.052155	-118.062266	2577.69	4.00	2581.69
2	35.052154	-118.064939	2580.14	4.00	2584.15
3	35.054352	-118.064941	2582.82	4.00	2586.82
4	35.054353	-118.062268	2578.09	4.00	2582.09
5	35.052155	-118.062266	2577.69	4.00	2581.69



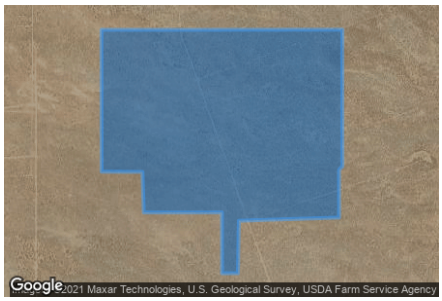
Name: E09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.052156	-118.060578	2571.68	4.00	2575.68
2	35.052155	-118.062266	2577.69	4.00	2581.69
3	35.054353	-118.062268	2578.09	4.00	2582.09
4	35.054354	-118.060577	2573.72	4.00	2577.72
5	35.052156	-118.060578	2571.68	4.00	2575.68



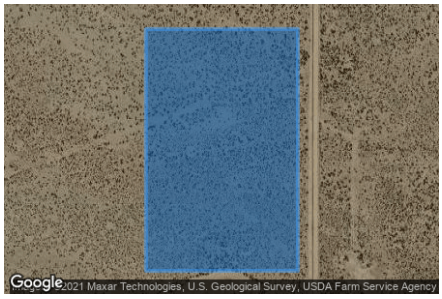
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: E10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 172.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



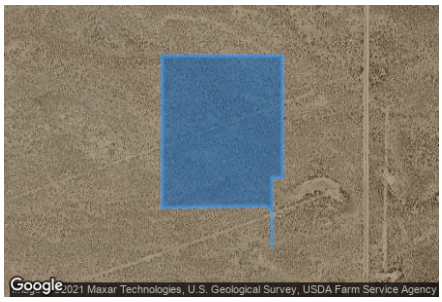
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.047569	-118.065082	2579.56	4.00	2583.56
2	35.047456	-118.069534	2586.69	4.00	2590.69
3	35.045557	-118.069575	2581.74	4.00	2585.74
4	35.045557	-118.070280	2583.17	4.00	2587.17
5	35.047755	-118.070281	2586.53	4.00	2590.53
6	35.047753	-118.073753	2594.91	4.00	2598.92
7	35.049218	-118.073814	2590.53	4.00	2594.54
8	35.049225	-118.075628	2596.58	4.00	2600.58
9	35.049950	-118.075629	2594.93	4.00	2598.93
10	35.054346	-118.075633	2598.78	4.00	2602.78
11	35.054347	-118.072960	2594.20	4.00	2598.20
12	35.054349	-118.070287	2589.90	4.00	2593.90
13	35.054351	-118.067614	2585.13	4.00	2589.13
14	35.054352	-118.064941	2582.82	4.00	2586.82
15	35.052154	-118.064939	2580.14	4.00	2584.15
16	35.049417	-118.064937	2576.61	4.00	2580.61
17	35.049290	-118.065085	2577.39	4.00	2581.39
18	35.047569	-118.065082	2579.56	4.00	2583.56

Name: E11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



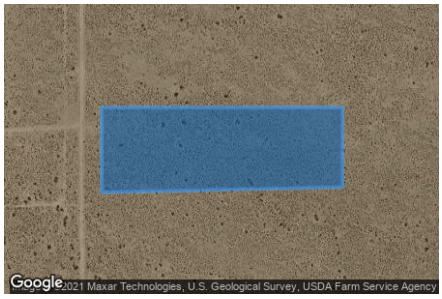
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.049958	-118.060580	2572.39	4.00	2576.40
2	35.049957	-118.062265	2572.68	4.00	2576.68
3	35.052155	-118.062266	2577.69	4.00	2581.69
4	35.052156	-118.060578	2571.68	4.00	2575.68
5	35.049958	-118.060580	2572.39	4.00	2576.40

Name: E12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.049957	-118.062499	2572.89	4.00	2576.89
2	35.048693	-118.062498	2573.45	4.00	2577.45
3	35.049338	-118.062500	2572.78	4.00	2576.78
4	35.049450	-118.062609	2572.52	4.00	2576.52
5	35.049417	-118.064937	2576.61	4.00	2580.61
6	35.052154	-118.064939	2580.14	4.00	2584.15
7	35.052155	-118.062266	2577.69	4.00	2581.69
8	35.049957	-118.062265	2572.68	4.00	2576.68
9	35.049957	-118.062499	2572.89	4.00	2576.89

Name: E13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 5.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.049225	-118.075628	2596.58	4.00	2600.58
2	35.049177	-118.078301	2600.82	4.00	2604.82
3	35.049948	-118.078302	2603.11	4.00	2607.11
4	35.049950	-118.075629	2594.93	4.00	2598.93
5	35.049225	-118.075628	2596.58	4.00	2600.58

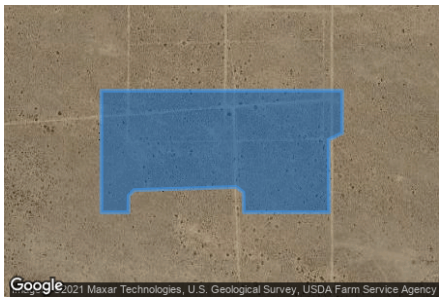
Name: E14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.048693	-118.062498	2573.45	4.00	2577.45
2	35.049957	-118.062499	2572.89	4.00	2576.89
3	35.049957	-118.062265	2572.68	4.00	2576.68
4	35.049958	-118.060580	2572.39	4.00	2576.40
5	35.046154	-118.060581	2569.21	4.00	2573.21
6	35.046155	-118.062496	2571.62	4.00	2575.62
7	35.048693	-118.062498	2573.45	4.00	2577.45

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

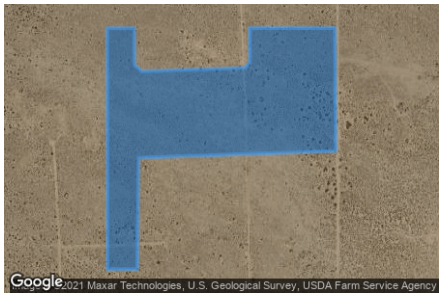
Name: E15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 25.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.047750	-118.078590	2598.13	4.00	2602.13
2	35.047749	-118.080484	2602.98	4.00	2606.98
3	35.048109	-118.080494	2602.83	4.00	2606.83
4	35.048206	-118.080654	2602.60	4.00	2606.60
5	35.048150	-118.082919	2608.01	4.00	2612.01
6	35.048051	-118.083042	2608.26	4.00	2612.26
7	35.047747	-118.083046	2607.93	4.00	2611.93
8	35.047746	-118.083646	2609.00	4.00	2613.00
9	35.049945	-118.083648	2611.58	4.00	2615.58
10	35.049946	-118.080975	2605.81	4.00	2609.81
11	35.049948	-118.078302	2603.11	4.00	2607.11
12	35.049177	-118.078301	2600.82	4.00	2604.82
13	35.049059	-118.078601	2599.86	4.00	2603.86
14	35.047750	-118.078590	2598.13	4.00	2602.13

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

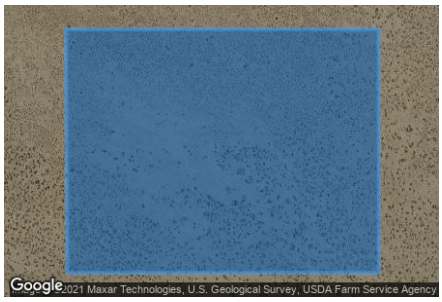
Name: E16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 27.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.047747	-118.083046	2607.93	4.00	2611.93
2	35.047075	-118.083038	2608.07	4.00	2612.07
3	35.046962	-118.082874	2607.65	4.00	2611.65
4	35.047025	-118.080583	2603.21	4.00	2607.21
5	35.047139	-118.080479	2603.75	4.00	2607.75
6	35.047749	-118.080484	2602.98	4.00	2606.98
7	35.047750	-118.078590	2598.13	4.00	2602.13
8	35.045509	-118.078567	2597.80	4.00	2601.80
9	35.045383	-118.082945	2601.31	4.00	2605.31
10	35.043351	-118.082979	2603.61	4.00	2607.61
11	35.043350	-118.083641	2604.51	4.00	2608.51
12	35.045548	-118.083643	2603.55	4.00	2607.55
13	35.047746	-118.083646	2609.00	4.00	2613.00
14	35.047747	-118.083046	2607.93	4.00	2611.93

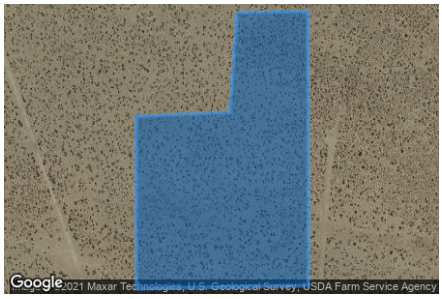
Name: E17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.045557	-118.070280	2583.17	4.00	2587.17
2	35.045555	-118.072952	2586.32	4.00	2590.32
3	35.045555	-118.073737	2587.00	4.00	2591.00
4	35.047753	-118.073753	2594.91	4.00	2598.92
5	35.047755	-118.070281	2586.53	4.00	2590.53
6	35.045557	-118.070280	2583.17	4.00	2587.17



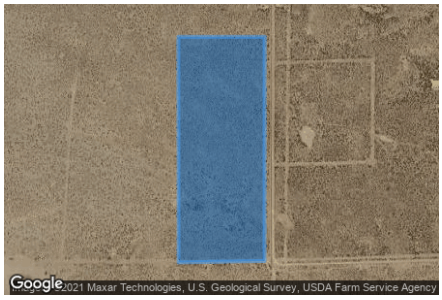
Name: E18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.043863	-118.066033	2576.56	4.00	2580.56
2	35.043849	-118.066986	2579.05	4.00	2583.05
3	35.045418	-118.066992	2577.73	4.00	2581.73
4	35.045453	-118.065949	2578.24	4.00	2582.24
5	35.046359	-118.065870	2577.34	4.00	2581.34
6	35.046372	-118.065080	2577.38	4.00	2581.38
7	35.043878	-118.065074	2574.13	4.00	2578.13
8	35.043863	-118.066033	2576.56	4.00	2580.56



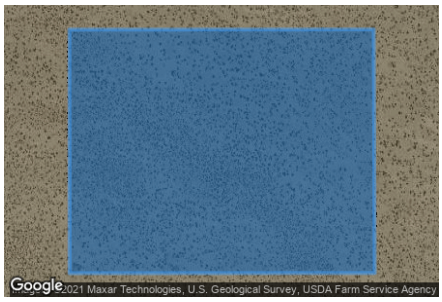
Name: E19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.046154	-118.060581	2569.21	4.00	2573.21
2	35.042094	-118.060583	2570.19	4.00	2574.19
3	35.042068	-118.062492	2571.04	4.00	2575.04
4	35.046155	-118.062496	2571.62	4.00	2575.62
5	35.046154	-118.060581	2569.21	4.00	2573.21



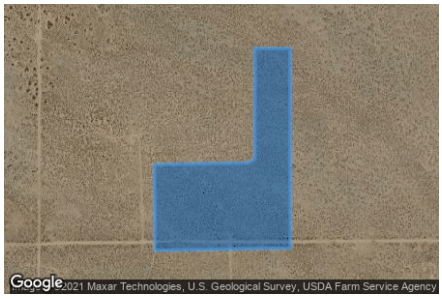
Name: E20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.043357	-118.072950	2586.00	4.00	2590.00
2	35.045555	-118.072952	2586.32	4.00	2590.32
3	35.045557	-118.070280	2583.17	4.00	2587.17
4	35.045557	-118.069575	2581.74	4.00	2585.74
5	35.043359	-118.069564	2579.74	4.00	2583.74
6	35.043357	-118.072950	2586.00	4.00	2590.00



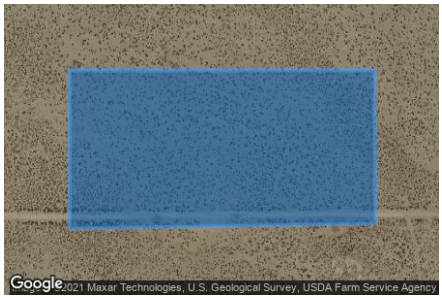
Name: E21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041884	-118.075952	2585.39	4.00	2589.39
2	35.043443	-118.075966	2587.14	4.00	2591.14
3	35.043473	-118.073880	2585.38	4.00	2589.38
4	35.043550	-118.073739	2585.76	4.00	2589.76
5	35.045555	-118.073737	2587.00	4.00	2591.00
6	35.045555	-118.072952	2586.32	4.00	2590.32
7	35.043357	-118.072950	2586.00	4.00	2590.00
8	35.041924	-118.072949	2582.35	4.00	2586.35
9	35.041884	-118.075952	2585.39	4.00	2589.39



Name: E22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041924	-118.072949	2582.35	4.00	2586.35
2	35.043357	-118.072950	2586.00	4.00	2590.00
3	35.043359	-118.069564	2579.74	4.00	2583.74
4	35.041970	-118.069558	2577.30	4.00	2581.30
5	35.041924	-118.072949	2582.35	4.00	2586.35



Name: E23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 1.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.042032	-118.065070	2573.88	4.00	2577.88
2	35.042021	-118.065858	2572.99	4.00	2576.99
3	35.042669	-118.065860	2574.59	4.00	2578.59
4	35.042680	-118.065072	2573.41	4.00	2577.41
5	35.042032	-118.065070	2573.88	4.00	2577.88

2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



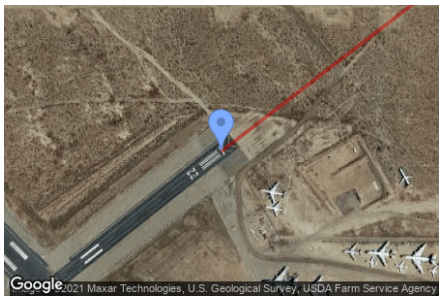
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



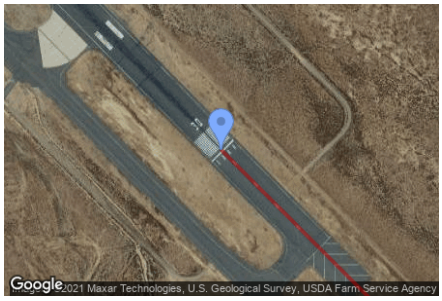
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



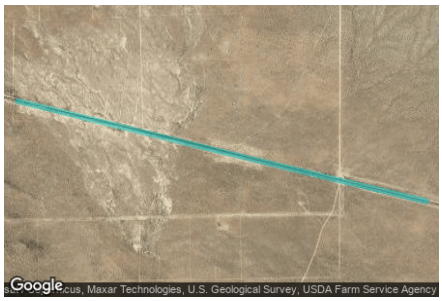
Route Receptor(s)

Name: BNSF Mojave Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.000001	-118.099157	2566.93	14.00	2580.93
2	35.000270	-118.097232	2563.71	14.00	2577.71
3	35.000825	-118.094937	2558.87	14.00	2572.87
4	35.002374	-118.089606	2554.70	14.00	2568.70
5	35.003139	-118.087172	2550.18	14.00	2564.19
6	35.005071	-118.080727	2547.87	14.00	2561.87
7	35.006811	-118.074722	2549.15	14.00	2563.15
8	35.007079	-118.073517	2550.33	14.00	2564.33
9	35.007443	-118.071384	2545.87	14.00	2559.87
10	35.007596	-118.069320	2544.77	14.00	2558.77
11	35.007559	-118.067534	2543.09	14.00	2557.09

Name: BNSF Mojave Subdivision RR B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999545	-118.026063	2550.88	14.00	2564.88
2	35.001045	-118.033744	2543.80	14.00	2557.80
3	35.003260	-118.044934	2530.98	14.00	2544.98
4	35.006782	-118.062358	2534.76	14.00	2548.76

Name: Hwy 14
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.090709	-118.151069	2916.31	6.00	2922.31
2	35.093025	-118.148665	2920.98	6.00	2926.98
3	35.101619	-118.142092	2920.32	6.00	2926.32
4	35.107444	-118.137459	2888.01	6.00	2894.01

Name: Hwy 58 EB A
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085864	-118.120959	2771.29	6.00	2777.29
2	35.084730	-118.119878	2766.72	6.00	2772.72
3	35.083967	-118.119181	2763.60	6.00	2769.60
4	35.082881	-118.118309	2759.18	6.00	2765.18
5	35.081899	-118.117599	2755.36	6.00	2761.36
6	35.080898	-118.116925	2751.92	6.00	2757.92
7	35.079887	-118.116355	2749.14	6.00	2755.14
8	35.078638	-118.115645	2746.29	6.00	2752.29
9	35.077179	-118.114947	2742.45	6.00	2748.45
10	35.075796	-118.114434	2738.52	6.00	2744.52
11	35.074509	-118.113991	2734.75	6.00	2740.75
12	35.072858	-118.113618	2730.27	6.00	2736.27
13	35.070913	-118.113290	2724.81	6.00	2730.81
14	35.069646	-118.113184	2721.32	6.00	2727.32
15	35.067917	-118.113138	2716.52	6.00	2722.52

Name: Hwy 58 EB at Hwy 14
Route type One-way
View angle: 50.0 deg



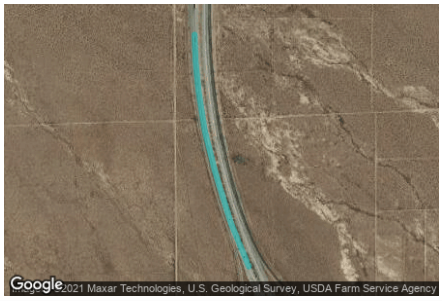
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.098293	-118.143699	2908.58	6.00	2914.58
2	35.091527	-118.129062	2828.32	6.00	2834.32
3	35.091055	-118.128121	2818.47	6.00	2824.47
4	35.090170	-118.126588	2801.60	6.00	2807.60

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 EB Onramp at Hwy 14
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.097298	-118.145097	2941.24	6.00	2947.24
2	35.096969	-118.144452	2934.52	6.00	2940.52
3	35.096770	-118.143808	2929.08	6.00	2935.08
4	35.096600	-118.142136	2905.45	6.00	2911.46
5	35.096402	-118.140064	2880.34	6.00	2886.34
6	35.096231	-118.139332	2876.69	6.00	2882.69

Name: Hwy 58 WB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023407	-118.046428	2546.43	6.00	2552.43
2	35.026336	-118.065497	2554.36	6.00	2560.36
3	35.028009	-118.076470	2565.97	6.00	2571.97
4	35.029890	-118.088882	2584.80	6.00	2590.80
5	35.030555	-118.092733	2590.46	6.00	2596.46
6	35.031087	-118.094845	2594.84	6.00	2600.84
7	35.031506	-118.096098	2596.83	6.00	2602.83
8	35.032115	-118.097838	2600.83	6.00	2606.83
9	35.033010	-118.099742	2604.56	6.00	2610.56
10	35.033353	-118.100438	2606.68	6.00	2612.68

Name: Hwy 58 WB C
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051553	-118.112563	2679.05	6.00	2685.05
2	35.054916	-118.112568	2677.38	6.00	2683.38

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034563	-118.026787	2612.40	6.00	2618.40
2	35.029201	-118.026855	2610.54	6.00	2616.54

Name: Hyundai-Kia Blvd C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035709	-118.026799	2605.43	6.00	2611.43
2	35.044276	-118.026756	2565.40	6.00	2571.40

Name: Hyundai Proving Ground A
Route type Two-way
View angle: 50.0 deg



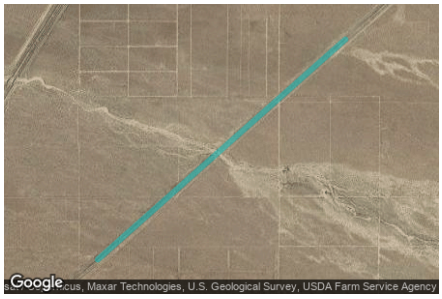
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.062853	-118.015497	2510.48	6.00	2516.48
2	35.063694	-118.015751	2509.85	6.00	2515.85
3	35.064684	-118.016179	2509.80	6.00	2515.80
4	35.065548	-118.016701	2510.69	6.00	2516.69
5	35.066353	-118.017318	2510.09	6.00	2516.09
6	35.067182	-118.018123	2510.65	6.00	2516.65
7	35.067981	-118.019081	2514.13	6.00	2520.13
8	35.068577	-118.020031	2514.00	6.00	2520.00
9	35.069149	-118.021177	2515.91	6.00	2521.91
10	35.069656	-118.022511	2517.86	6.00	2523.86
11	35.069995	-118.023947	2520.00	6.00	2526.00

Name: Lone Pine Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.084537	-118.146560	2855.76	14.00	2869.76
2	35.099060	-118.126678	2812.38	14.00	2826.38

Name: Lone Pine Subdivision RR B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.099060	-118.126678	2812.38	14.00	2826.38
2	35.115057	-118.104680	2749.57	14.00	2763.57

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
E01	SA tracking	SA tracking	0	0	-	-
E02	SA tracking	SA tracking	0	0	-	-
E03	SA tracking	SA tracking	0	0	-	-
E04	SA tracking	SA tracking	0	0	-	-
E05	SA tracking	SA tracking	0	0	-	-
E06	SA tracking	SA tracking	0	0	-	-
E07	SA tracking	SA tracking	0	0	-	-
E08	SA tracking	SA tracking	0	0	-	-
E09	SA tracking	SA tracking	0	0	-	-
E10	SA tracking	SA tracking	0	0	-	-
E11	SA tracking	SA tracking	0	0	-	-
E12	SA tracking	SA tracking	0	0	-	-
E13	SA tracking	SA tracking	0	0	-	-
E14	SA tracking	SA tracking	0	0	-	-
E15	SA tracking	SA tracking	0	0	-	-
E16	SA tracking	SA tracking	0	0	-	-
E17	SA tracking	SA tracking	0	0	-	-
E18	SA tracking	SA tracking	0	0	-	-
E19	SA tracking	SA tracking	0	0	-	-
E20	SA tracking	SA tracking	0	0	-	-
E21	SA tracking	SA tracking	0	0	-	-
E22	SA tracking	SA tracking	0	0	-	-
E23	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

E01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

E23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 14	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB at Hwy 14	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB Onramp at Hwy 14	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0
Route: Hyundai Proving Ground A	0	0
Route: Lone Pine Subdivision RR A	0	0
Route: Lone Pine Subdivision RR B	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-6

Modeling Results for Analysis Group F

Bellefield Solar Project

Bellefield Solar Analysis Group F Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53117.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
F01	SA tracking	SA tracking	0	0	-
F02	SA tracking	SA tracking	0	0	-
F03	SA tracking	SA tracking	0	0	-
F04	SA tracking	SA tracking	0	0	-
F05	SA tracking	SA tracking	0	0	-
F06	SA tracking	SA tracking	0	0	-
F07	SA tracking	SA tracking	0	0	-
F08	SA tracking	SA tracking	0	0	-
F09	SA tracking	SA tracking	0	0	-
F10	SA tracking	SA tracking	0	0	-
F11	SA tracking	SA tracking	0	0	-
F12	SA tracking	SA tracking	0	0	-
F13	SA tracking	SA tracking	0	0	-
F14	SA tracking	SA tracking	0	0	-
F15	SA tracking	SA tracking	0	0	-
F16	SA tracking	SA tracking	0	0	-
F17	SA tracking	SA tracking	0	0	-
F18	SA tracking	SA tracking	0	0	-
F19	SA tracking	SA tracking	0	0	-
F20	SA tracking	SA tracking	0	0	-
F21	SA tracking	SA tracking	0	0	-
F22	SA tracking	SA tracking	0	0	-
F23	SA tracking	SA tracking	0	0	-
F24	SA tracking	SA tracking	0	0	-
F25	SA tracking	SA tracking	0	0	-
F26	SA tracking	SA tracking	0	0	-
F27	SA tracking	SA tracking	0	0	-
F28	SA tracking	SA tracking	0	0	-

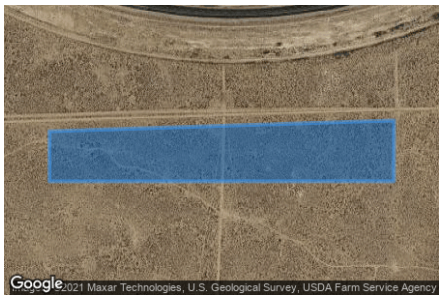
Component Data

PV Array(s)

Total PV footprint area: 845.5 acres

Name: F01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041171	-118.048895	2555.16	4.00	2559.16
2	35.041171	-118.050296	2557.77	4.00	2561.77
3	35.042082	-118.050296	2558.43	4.00	2562.43
4	35.042278	-118.042645	2547.21	4.00	2551.21
5	35.041173	-118.042648	2548.89	4.00	2552.89
6	35.041172	-118.046222	2556.95	4.00	2560.95
7	35.041171	-118.048895	2555.16	4.00	2559.16



Name: F02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

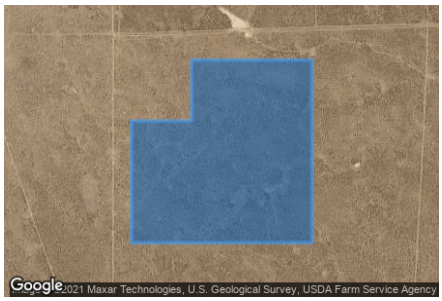
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.041166	-118.060249	2567.88	4.00	2571.88
2	35.041826	-118.060249	2568.71	4.00	2572.71
3	35.042082	-118.050296	2558.43	4.00	2562.43
4	35.041171	-118.050296	2557.77	4.00	2561.77
5	35.041170	-118.051568	2559.14	4.00	2563.14
6	35.041168	-118.056913	2567.40	4.00	2571.40
7	35.041166	-118.060249	2567.88	4.00	2571.88



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: F03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 117.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

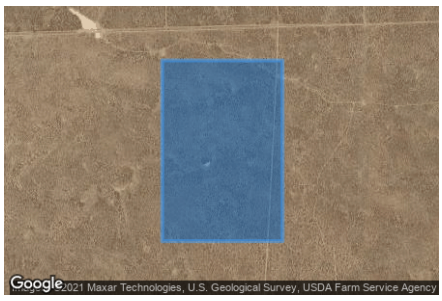
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034572	-118.059581	2557.62	4.00	2561.62
2	35.038968	-118.059584	2564.33	4.00	2568.33
3	35.038970	-118.056911	2565.74	4.00	2569.74
4	35.041168	-118.056913	2567.40	4.00	2571.40
5	35.041170	-118.051568	2559.14	4.00	2563.14
6	35.034576	-118.051563	2553.38	4.00	2557.38
7	35.034572	-118.059581	2557.62	4.00	2561.62



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

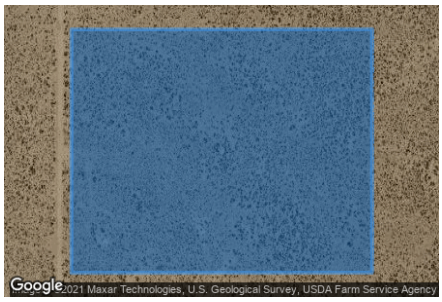
Name: F04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 79.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034576	-118.051563	2553.38	4.00	2557.38
2	35.041170	-118.051568	2559.14	4.00	2563.14
3	35.041171	-118.048895	2555.16	4.00	2559.16
4	35.041172	-118.046222	2556.95	4.00	2560.95
5	35.038974	-118.046221	2557.09	4.00	2561.09
6	35.036776	-118.046220	2550.77	4.00	2554.77
7	35.034578	-118.046219	2552.39	4.00	2556.39
8	35.034576	-118.051563	2553.38	4.00	2557.38



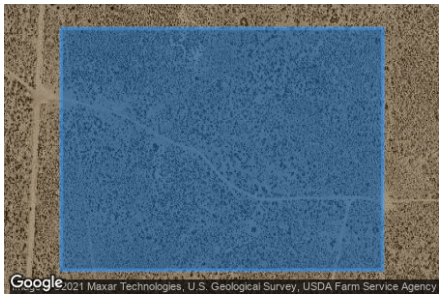
Name: F05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.038968	-118.059584	2564.33	4.00	2568.33
2	35.038968	-118.060249	2565.62	4.00	2569.62
3	35.041166	-118.060249	2567.88	4.00	2571.88
4	35.041168	-118.056913	2567.40	4.00	2571.40
5	35.038970	-118.056911	2565.74	4.00	2569.74
6	35.038968	-118.059584	2564.33	4.00	2568.33



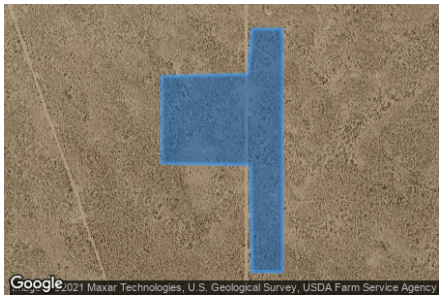
Name: F06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.038974	-118.046221	2557.09	4.00	2561.09
2	35.041172	-118.046222	2556.95	4.00	2560.95
3	35.041173	-118.042648	2548.89	4.00	2552.89
4	35.038975	-118.042655	2553.56	4.00	2557.56
5	35.038974	-118.046221	2557.09	4.00	2561.09



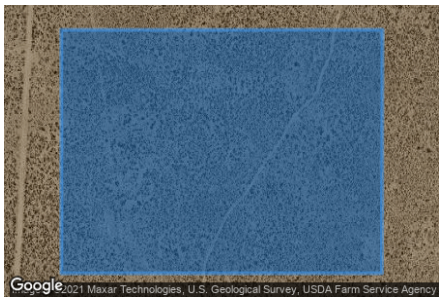
Name: F07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034572	-118.059581	2557.62	4.00	2561.62
2	35.034572	-118.060250	2557.09	4.00	2561.09
3	35.036513	-118.060289	2562.59	4.00	2566.59
4	35.036538	-118.062255	2561.27	4.00	2565.27
5	35.038107	-118.062256	2564.90	4.00	2568.90
6	35.038147	-118.060340	2562.07	4.00	2566.07
7	35.038968	-118.060249	2565.62	4.00	2569.62
8	35.038968	-118.059584	2564.33	4.00	2568.33
9	35.034572	-118.059581	2557.62	4.00	2561.62



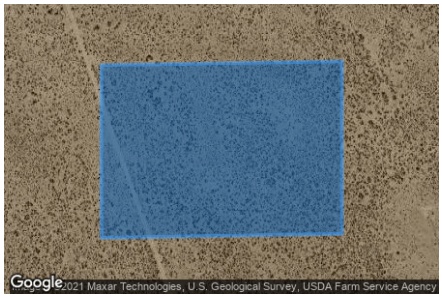
Name: F08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036776	-118.046220	2550.77	4.00	2554.77
2	35.038974	-118.046221	2557.09	4.00	2561.09
3	35.038975	-118.042655	2553.56	4.00	2557.56
4	35.036777	-118.042662	2558.81	4.00	2562.81
5	35.036776	-118.046220	2550.77	4.00	2554.77



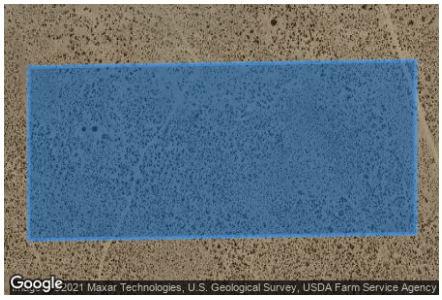
Name: F09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036502	-118.064927	2563.97	4.00	2567.97
2	35.038071	-118.064928	2567.65	4.00	2571.65
3	35.038107	-118.062256	2564.90	4.00	2568.90
4	35.036538	-118.062255	2561.27	4.00	2565.27
5	35.036502	-118.064927	2563.97	4.00	2567.97



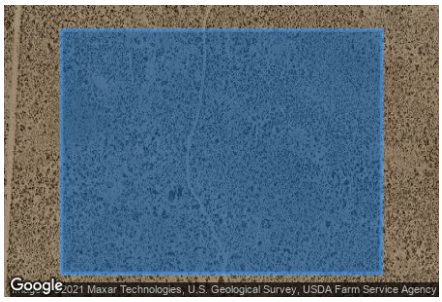
Name: F10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036445	-118.069223	2567.19	4.00	2571.19
2	35.038013	-118.069223	2572.61	4.00	2576.61
3	35.038071	-118.064928	2567.65	4.00	2571.65
4	35.036502	-118.064927	2563.97	4.00	2567.97
5	35.036445	-118.069223	2567.19	4.00	2571.19



Name: F11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

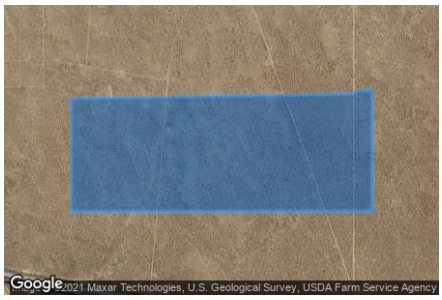
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034578	-118.046219	2552.39	4.00	2556.39
2	35.036776	-118.046220	2550.77	4.00	2554.77
3	35.036777	-118.042662	2558.81	4.00	2562.81
4	35.034579	-118.042669	2555.29	4.00	2559.29
5	35.034578	-118.046219	2552.39	4.00	2556.39



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

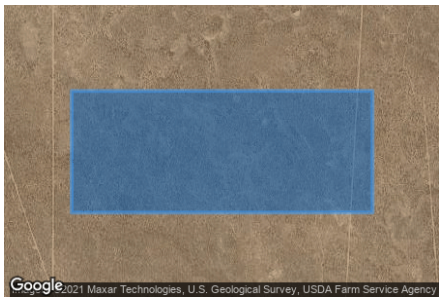
Name: F12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 115.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.030170	-118.070267	2561.08	4.00	2565.08
2	35.030169	-118.072939	2562.38	4.00	2566.38
3	35.034278	-118.072942	2566.27	4.00	2570.27
4	35.034443	-118.060411	2558.23	4.00	2562.23
5	35.034572	-118.060250	2557.09	4.00	2561.09
6	35.034572	-118.059581	2557.62	4.00	2561.62
7	35.030176	-118.059577	2552.69	4.00	2556.69
8	35.030175	-118.062250	2555.64	4.00	2559.64
9	35.030173	-118.064922	2556.80	4.00	2560.80
10	35.030172	-118.067594	2556.22	4.00	2560.22
11	35.030170	-118.070267	2561.08	4.00	2565.08



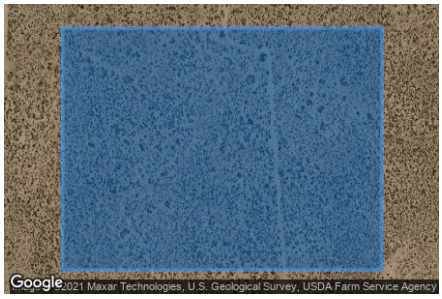
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: F13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 125.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.030177	-118.056905	2551.15	4.00	2555.15
2	35.030176	-118.059577	2552.69	4.00	2556.69
3	35.034572	-118.059581	2557.62	4.00	2561.62
4	35.034576	-118.051563	2553.38	4.00	2557.38
5	35.034578	-118.046219	2552.39	4.00	2556.39
6	35.032380	-118.046217	2548.72	4.00	2552.72
7	35.030182	-118.046216	2546.62	4.00	2550.62
8	35.030181	-118.048888	2545.51	4.00	2549.51
9	35.030180	-118.051561	2546.94	4.00	2550.94
10	35.030178	-118.054233	2549.20	4.00	2553.20
11	35.030177	-118.056905	2551.15	4.00	2555.15

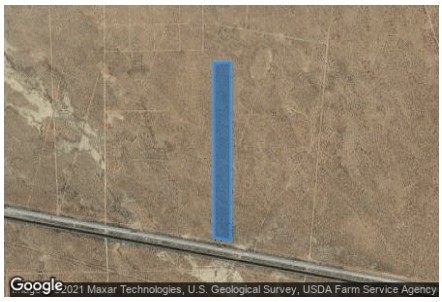
Name: F14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.032380	-118.046217	2548.72	4.00	2552.72
2	35.034578	-118.046219	2552.39	4.00	2556.39
3	35.034579	-118.042669	2555.29	4.00	2559.29
4	35.032381	-118.042675	2548.18	4.00	2552.18
5	35.032380	-118.046217	2548.72	4.00	2552.72

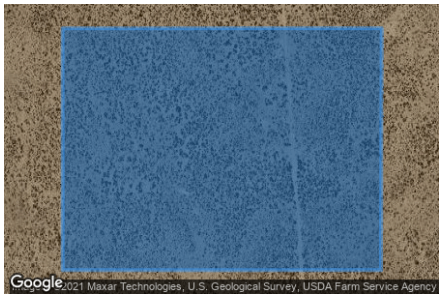
Name: F15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027826	-118.072937	2560.49	4.00	2564.49
2	35.027943	-118.073703	2561.28	4.00	2565.28
3	35.034268	-118.073705	2566.68	4.00	2570.68
4	35.034278	-118.072942	2566.27	4.00	2570.27
5	35.030169	-118.072939	2562.38	4.00	2566.38
6	35.027826	-118.072937	2560.49	4.00	2564.49



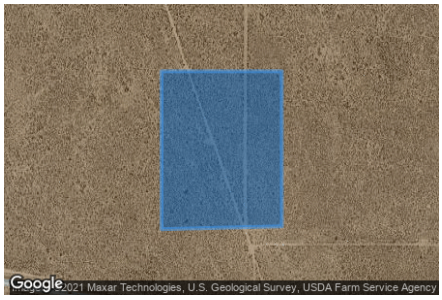
Name: F16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.030183	-118.043544	2548.22	4.00	2552.22
2	35.030182	-118.046216	2546.62	4.00	2550.62
3	35.032380	-118.046217	2548.72	4.00	2552.72
4	35.032381	-118.042675	2548.18	4.00	2552.18
5	35.030183	-118.042683	2547.65	4.00	2551.65
6	35.030183	-118.043544	2548.22	4.00	2552.22



Name: F17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027314	-118.062248	2551.48	4.00	2555.48
2	35.030175	-118.062250	2555.64	4.00	2559.64
3	35.030176	-118.059577	2552.69	4.00	2556.69
4	35.027365	-118.059575	2549.74	4.00	2553.74
5	35.027314	-118.062248	2551.48	4.00	2555.48

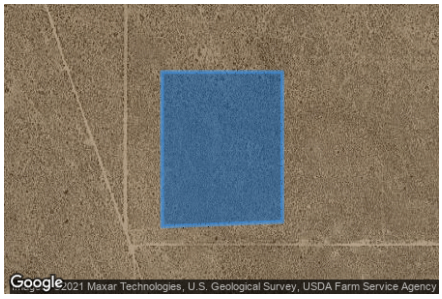


Name: F18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.028567	-118.041567	2555.71	4.00	2559.71
2	35.027731	-118.041540	2557.94	4.00	2561.94
3	35.027683	-118.040870	2554.81	4.00	2558.81
4	35.025788	-118.040869	2557.29	4.00	2561.29
5	35.025787	-118.042360	2557.87	4.00	2561.87
6	35.027833	-118.042373	2555.01	4.00	2559.01
7	35.027912	-118.042516	2553.47	4.00	2557.47
8	35.027879	-118.043543	2551.05	4.00	2555.05
9	35.030183	-118.043544	2548.22	4.00	2552.22
10	35.030183	-118.042683	2547.65	4.00	2551.65
11	35.028618	-118.042664	2550.30	4.00	2554.30
12	35.028567	-118.041567	2555.71	4.00	2559.71

Name: F19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027365	-118.059575	2549.74	4.00	2553.74
2	35.030176	-118.059577	2552.69	4.00	2556.69
3	35.030177	-118.056905	2551.15	4.00	2555.15
4	35.027451	-118.056903	2548.84	4.00	2552.84
5	35.027365	-118.059575	2549.74	4.00	2553.74

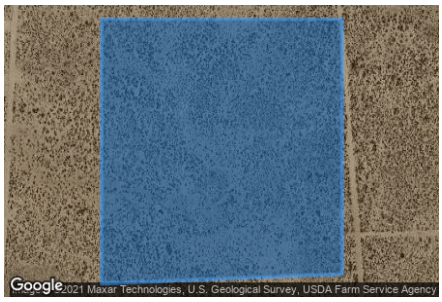
Name: F20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027418	-118.070264	2557.33	4.00	2561.33
2	35.027826	-118.072937	2560.49	4.00	2564.49
3	35.030169	-118.072939	2562.38	4.00	2566.38
4	35.030170	-118.070267	2561.08	4.00	2565.08
5	35.027418	-118.070264	2557.33	4.00	2561.33

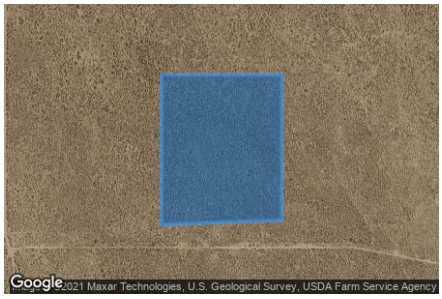
Name: F21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027794	-118.046215	2548.04	4.00	2552.04
2	35.030182	-118.046216	2546.62	4.00	2550.62
3	35.030183	-118.043544	2548.22	4.00	2552.22
4	35.027879	-118.043543	2551.05	4.00	2555.05
5	35.027794	-118.046215	2548.04	4.00	2552.04



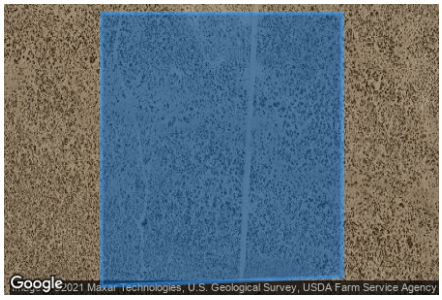
Name: F22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027451	-118.056903	2548.84	4.00	2552.84
2	35.030177	-118.056905	2551.15	4.00	2555.15
3	35.030178	-118.054233	2549.20	4.00	2553.20
4	35.027536	-118.054231	2546.64	4.00	2550.64
5	35.027451	-118.056903	2548.84	4.00	2552.84



Name: F23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027708	-118.048887	2545.05	4.00	2549.05
2	35.030181	-118.048888	2545.51	4.00	2549.51
3	35.030182	-118.046216	2546.62	4.00	2550.62
4	35.027794	-118.046215	2548.04	4.00	2552.04
5	35.027708	-118.048887	2545.05	4.00	2549.05



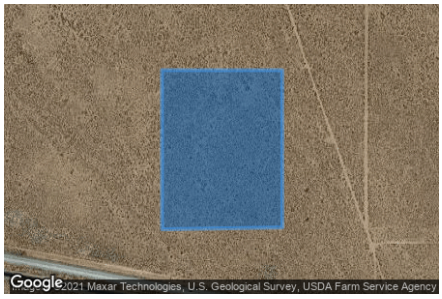
Name: F24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027246	-118.067592	2554.82	4.00	2558.82
2	35.027228	-118.069015	2555.94	4.00	2559.94
3	35.027418	-118.070264	2557.33	4.00	2561.33
4	35.030170	-118.070267	2561.08	4.00	2565.08
5	35.030172	-118.067594	2556.22	4.00	2560.22
6	35.027246	-118.067592	2554.82	4.00	2558.82



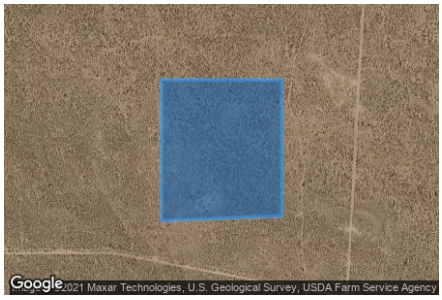
Name: F25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027280	-118.064920	2553.14	4.00	2557.14
2	35.030173	-118.064922	2556.80	4.00	2560.80
3	35.030175	-118.062250	2555.64	4.00	2559.64
4	35.027314	-118.062248	2551.48	4.00	2555.48
5	35.027280	-118.064920	2553.14	4.00	2557.14



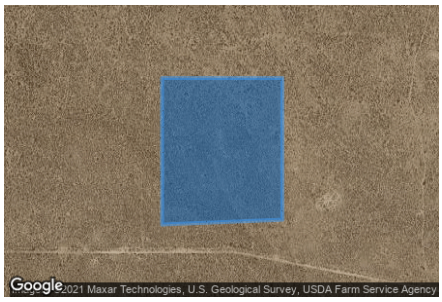
Name: F26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027622	-118.051559	2544.39	4.00	2548.39
2	35.030180	-118.051561	2546.94	4.00	2550.94
3	35.030181	-118.048888	2545.51	4.00	2549.51
4	35.027708	-118.048887	2545.05	4.00	2549.05
5	35.027622	-118.051559	2544.39	4.00	2548.39



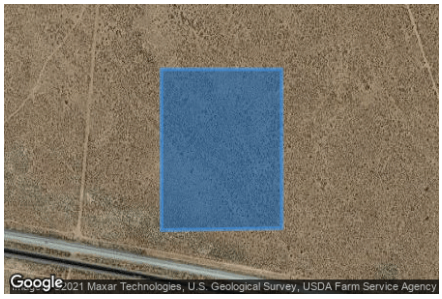
Name: F27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027536	-118.054231	2546.64	4.00	2550.64
2	35.030178	-118.054233	2549.20	4.00	2553.20
3	35.030180	-118.051561	2546.94	4.00	2550.94
4	35.027622	-118.051559	2544.39	4.00	2548.39
5	35.027536	-118.054231	2546.64	4.00	2550.64



Name: F28
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027246	-118.067592	2554.82	4.00	2558.82
2	35.030172	-118.067594	2556.22	4.00	2560.22
3	35.030173	-118.064922	2556.80	4.00	2560.80
4	35.027280	-118.064920	2553.14	4.00	2557.14
5	35.027246	-118.067592	2554.82	4.00	2558.82



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



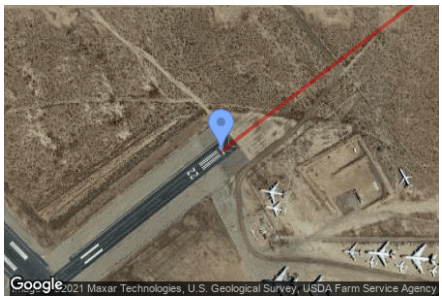
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



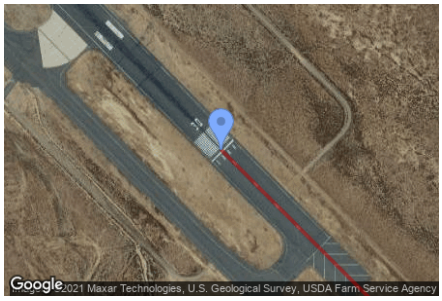
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Altus Ave
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035986	-118.111692	2629.82	6.00	2635.82
2	35.040039	-118.102534	2623.11	6.00	2629.11

Name: Hwy 58 EB A
Route type One-way
View angle: 50.0 deg



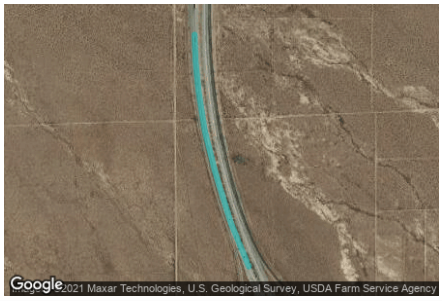
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.085864	-118.120959	2771.29	6.00	2777.29
2	35.084730	-118.119878	2766.72	6.00	2772.72
3	35.083967	-118.119181	2763.60	6.00	2769.60
4	35.082881	-118.118309	2759.18	6.00	2765.18
5	35.081899	-118.117599	2755.36	6.00	2761.36
6	35.080898	-118.116925	2751.92	6.00	2757.92
7	35.079887	-118.116355	2749.14	6.00	2755.14
8	35.078638	-118.115645	2746.29	6.00	2752.29
9	35.077179	-118.114947	2742.45	6.00	2748.45
10	35.075796	-118.114434	2738.52	6.00	2744.52
11	35.074509	-118.113991	2734.75	6.00	2740.75
12	35.072858	-118.113618	2730.27	6.00	2736.27
13	35.070913	-118.113290	2724.81	6.00	2730.81
14	35.069646	-118.113184	2721.32	6.00	2727.32
15	35.067917	-118.113138	2716.52	6.00	2722.52

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 EB D
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.024251	-118.055488	2546.82	6.00	2552.82
2	35.024042	-118.054258	2546.15	6.00	2552.15
3	35.022062	-118.041593	2551.75	6.00	2557.75

Name: Hwy 58 WB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023407	-118.046428	2546.43	6.00	2552.43
2	35.026336	-118.065497	2554.36	6.00	2560.36
3	35.028009	-118.076470	2565.97	6.00	2571.97
4	35.029890	-118.088882	2584.80	6.00	2590.80
5	35.030555	-118.092733	2590.46	6.00	2596.46
6	35.031087	-118.094845	2594.84	6.00	2600.84
7	35.031506	-118.096098	2596.83	6.00	2602.83
8	35.032115	-118.097838	2600.83	6.00	2606.83
9	35.033010	-118.099742	2604.56	6.00	2610.56
10	35.033353	-118.100438	2606.68	6.00	2612.68

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.029201	-118.026855	2610.54	6.00	2616.54
2	35.028888	-118.026929	2610.03	6.00	2616.04
3	35.028668	-118.027092	2609.59	6.00	2615.59
4	35.028392	-118.027358	2608.84	6.00	2614.84
5	35.028258	-118.027718	2608.37	6.00	2614.37
6	35.028143	-118.028495	2604.67	6.00	2610.67
7	35.028037	-118.033285	2583.48	6.00	2589.48
8	35.028008	-118.033459	2583.10	6.00	2589.10
9	35.027903	-118.033528	2582.45	6.00	2588.45
10	35.027360	-118.033540	2581.97	6.00	2587.97
11	35.023963	-118.033527	2579.87	6.00	2585.87
12	35.023839	-118.033480	2579.76	6.00	2585.76
13	35.022819	-118.033167	2580.76	6.00	2586.76
14	35.022494	-118.033201	2581.06	6.00	2587.06
15	35.021429	-118.033440	2582.92	6.00	2588.92

Name: Hyundai-Kia Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034563	-118.026787	2612.40	6.00	2618.40
2	35.029201	-118.026855	2610.54	6.00	2616.54

Name: Hyundai-Kia Blvd C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035709	-118.026799	2605.43	6.00	2611.43
2	35.044276	-118.026756	2565.40	6.00	2571.40

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
F01	SA tracking	SA tracking	0	0	-	-
F02	SA tracking	SA tracking	0	0	-	-
F03	SA tracking	SA tracking	0	0	-	-
F04	SA tracking	SA tracking	0	0	-	-
F05	SA tracking	SA tracking	0	0	-	-
F06	SA tracking	SA tracking	0	0	-	-
F07	SA tracking	SA tracking	0	0	-	-
F08	SA tracking	SA tracking	0	0	-	-
F09	SA tracking	SA tracking	0	0	-	-
F10	SA tracking	SA tracking	0	0	-	-
F11	SA tracking	SA tracking	0	0	-	-
F12	SA tracking	SA tracking	0	0	-	-
F13	SA tracking	SA tracking	0	0	-	-
F14	SA tracking	SA tracking	0	0	-	-
F15	SA tracking	SA tracking	0	0	-	-
F16	SA tracking	SA tracking	0	0	-	-
F17	SA tracking	SA tracking	0	0	-	-
F18	SA tracking	SA tracking	0	0	-	-
F19	SA tracking	SA tracking	0	0	-	-
F20	SA tracking	SA tracking	0	0	-	-
F21	SA tracking	SA tracking	0	0	-	-
F22	SA tracking	SA tracking	0	0	-	-
F23	SA tracking	SA tracking	0	0	-	-
F24	SA tracking	SA tracking	0	0	-	-
F25	SA tracking	SA tracking	0	0	-	-
F26	SA tracking	SA tracking	0	0	-	-
F27	SA tracking	SA tracking	0	0	-	-
F28	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

F01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

F28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
Route: Altus Ave	0	0
Route: Hwy 58 EB A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 WB B	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd C	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-7

Modeling Results for Analysis Group G

Bellefield Solar Project

Bellefield Solar Analysis Group G Rest at 10 2

Created May 3, 2021
Updated May 3, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53168.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

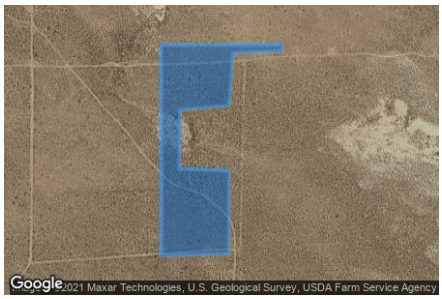
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
G01	SA tracking	SA tracking	0	0	-
G02	SA tracking	SA tracking	0	0	-
G03	SA tracking	SA tracking	0	0	-
G04	SA tracking	SA tracking	0	0	-
G05	SA tracking	SA tracking	0	0	-
G06	SA tracking	SA tracking	0	0	-
G07	SA tracking	SA tracking	0	0	-
G08	SA tracking	SA tracking	0	0	-
G09	SA tracking	SA tracking	0	0	-
G10	SA tracking	SA tracking	0	0	-
G11	SA tracking	SA tracking	0	0	-
G12	SA tracking	SA tracking	0	0	-
G13	SA tracking	SA tracking	0	0	-
G14	SA tracking	SA tracking	0	0	-
G15	SA tracking	SA tracking	0	0	-
G16	SA tracking	SA tracking	0	0	-
G17	SA tracking	SA tracking	0	0	-
G18	SA tracking	SA tracking	0	0	-
G19	SA tracking	SA tracking	0	0	-
G20	SA tracking	SA tracking	0	0	-
G21	SA tracking	SA tracking	0	0	-
G22	SA tracking	SA tracking	0	0	-
G23	SA tracking	SA tracking	0	0	-
G24	SA tracking	SA tracking	0	0	-
G25	SA tracking	SA tracking	0	0	-
G26	SA tracking	SA tracking	0	0	-
G27	SA tracking	SA tracking	0	0	-
G28	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

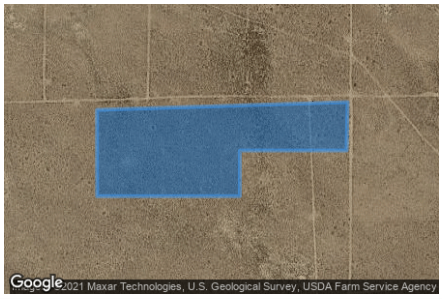
Total PV footprint area: 551.9 acres

Name: G01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.010294	-118.074095	2549.15	4.00	2553.15
2	35.008793	-118.074103	2548.21	4.00	2552.21
3	35.008759	-118.075591	2547.73	4.00	2551.73
4	35.010384	-118.075593	2551.67	4.00	2555.67
5	35.012583	-118.075595	2554.36	4.00	2558.36
6	35.012584	-118.072923	2551.99	4.00	2555.99
7	35.012475	-118.072923	2551.40	4.00	2555.40
8	35.012437	-118.074010	2557.74	4.00	2561.74
9	35.011486	-118.074092	2550.25	4.00	2554.25
10	35.011406	-118.075182	2550.18	4.00	2554.18
11	35.010331	-118.075203	2550.89	4.00	2554.89
12	35.010294	-118.074095	2549.15	4.00	2553.15

Name: G02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.011211	-118.078565	2555.97	4.00	2559.97
2	35.011210	-118.080937	2555.17	4.00	2559.17
3	35.010381	-118.080936	2552.98	4.00	2556.98
4	35.010379	-118.083608	2553.70	4.00	2557.70
5	35.010379	-118.084106	2554.60	4.00	2558.60
6	35.011949	-118.084107	2555.29	4.00	2559.29
7	35.012090	-118.078545	2556.72	4.00	2560.72
8	35.011211	-118.078565	2555.97	4.00	2559.97

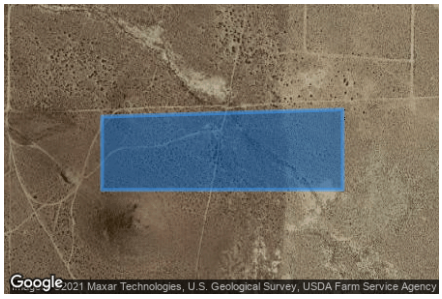
Name: G03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.010379	-118.084106	2554.60	4.00	2558.60
2	35.010377	-118.086279	2555.84	4.00	2559.84
3	35.010375	-118.088951	2556.43	4.00	2560.43
4	35.011834	-118.088953	2558.98	4.00	2562.98
5	35.011949	-118.084107	2555.29	4.00	2559.29
6	35.010379	-118.084106	2554.60	4.00	2558.60



Name: G04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.010371	-118.094294	2602.80	4.00	2606.80
2	35.011702	-118.094296	2581.46	4.00	2585.46
3	35.011834	-118.088953	2558.98	4.00	2562.98
4	35.010375	-118.088951	2556.43	4.00	2560.43
5	35.010371	-118.094294	2602.80	4.00	2606.80

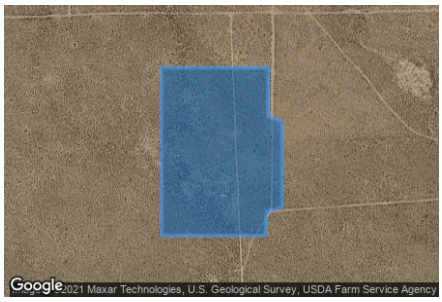


Name: G05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.007647	-118.094291	2567.71	4.00	2571.71
2	35.007645	-118.096160	2589.67	4.00	2593.67
3	35.011644	-118.096153	2577.01	4.00	2581.01
4	35.011702	-118.094296	2581.46	4.00	2585.46
5	35.010371	-118.094294	2602.80	4.00	2606.80
6	35.008173	-118.094292	2568.25	4.00	2572.25
7	35.007647	-118.094291	2567.71	4.00	2571.71

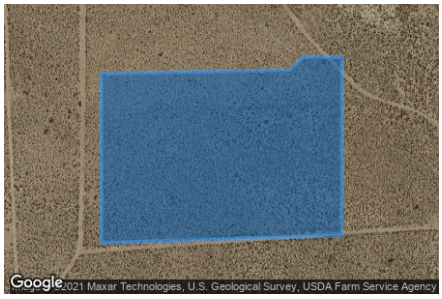


Name: G06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.010232	-118.078264	2551.13	4.00	2555.13
2	35.008693	-118.078263	2550.58	4.00	2554.58
3	35.008621	-118.078603	2549.95	4.00	2553.95
4	35.008184	-118.078635	2548.40	4.00	2552.40
5	35.008183	-118.080934	2550.83	4.00	2554.83
6	35.010381	-118.080936	2552.98	4.00	2556.98
7	35.011210	-118.080937	2555.17	4.00	2559.17
8	35.011211	-118.078565	2555.97	4.00	2559.97
9	35.010334	-118.078580	2551.48	4.00	2555.48
10	35.010232	-118.078264	2551.13	4.00	2555.13

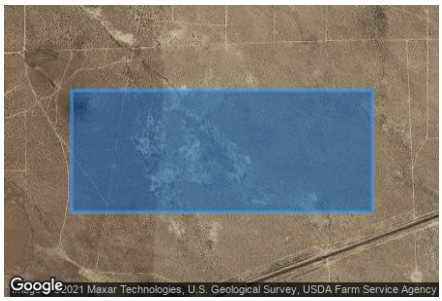
Name: G07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.008759	-118.075591	2547.73	4.00	2551.73
2	35.008693	-118.078263	2550.58	4.00	2554.58
3	35.010232	-118.078264	2551.13	4.00	2555.13
4	35.010265	-118.076173	2549.62	4.00	2553.62
5	35.010384	-118.076022	2550.14	4.00	2554.14
6	35.010384	-118.075593	2551.67	4.00	2555.67
7	35.008759	-118.075591	2547.73	4.00	2551.73

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: G08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 133.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.005977	-118.091618	2550.94	4.00	2554.94
2	35.005975	-118.094289	2561.85	4.00	2565.85
3	35.008173	-118.094292	2568.25	4.00	2572.25
4	35.010371	-118.094294	2602.80	4.00	2606.80
5	35.010375	-118.088951	2556.43	4.00	2560.43
6	35.010377	-118.086279	2555.84	4.00	2559.84
7	35.010379	-118.083608	2553.70	4.00	2557.70
8	35.010381	-118.080936	2552.98	4.00	2556.98
9	35.008183	-118.080934	2550.83	4.00	2554.83
10	35.005985	-118.080932	2548.36	4.00	2552.36
11	35.005981	-118.086275	2550.10	4.00	2554.10
12	35.005979	-118.088946	2549.83	4.00	2553.83
13	35.005977	-118.091618	2550.94	4.00	2554.94

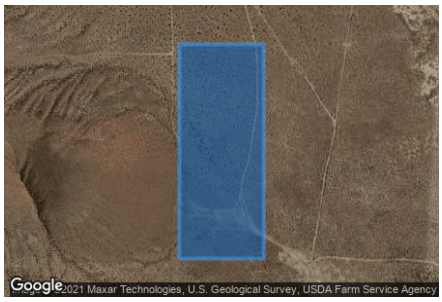
Name: G09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.005626	-118.080932	2547.09	4.00	2551.09
2	35.005985	-118.080932	2548.36	4.00	2552.36
3	35.008183	-118.080934	2550.83	4.00	2554.83
4	35.008184	-118.078635	2548.40	4.00	2552.40
5	35.006244	-118.078681	2545.90	4.00	2549.90
6	35.005626	-118.080932	2547.09	4.00	2551.09

Name: G10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.007645	-118.096160	2589.67	4.00	2593.67
2	35.007647	-118.094291	2567.71	4.00	2571.71
3	35.005975	-118.094289	2561.85	4.00	2565.85
4	35.003777	-118.094287	2550.09	4.00	2554.09
5	35.003776	-118.096165	2562.64	4.00	2566.64
6	35.007645	-118.096160	2589.67	4.00	2593.67



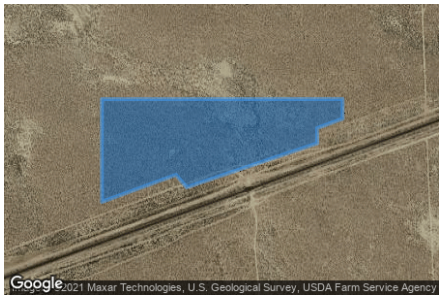
Name: G11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003319	-118.088944	2545.96	4.00	2549.96
2	35.003781	-118.088944	2549.61	4.00	2553.61
3	35.005979	-118.088946	2549.83	4.00	2553.83
4	35.005981	-118.086275	2550.10	4.00	2554.10
5	35.004120	-118.086273	2548.70	4.00	2552.70
6	35.003319	-118.088944	2545.96	4.00	2549.96



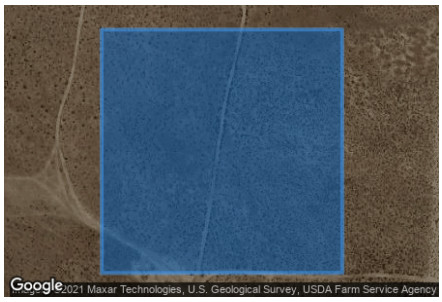
Name: G12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.005181	-118.081493	2548.29	4.00	2552.29
2	35.004384	-118.084391	2546.82	4.00	2550.82
3	35.004610	-118.084629	2547.10	4.00	2551.10
4	35.004120	-118.086273	2548.70	4.00	2552.70
5	35.005981	-118.086275	2550.10	4.00	2554.10
6	35.005985	-118.080932	2548.36	4.00	2552.36
7	35.005626	-118.080932	2547.09	4.00	2551.09
8	35.005455	-118.081499	2548.38	4.00	2552.38
9	35.005181	-118.081493	2548.29	4.00	2552.29



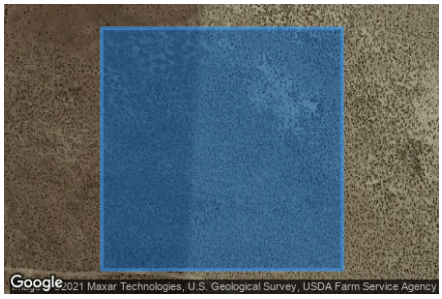
Name: G13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003779	-118.091615	2547.56	4.00	2551.56
2	35.003777	-118.094287	2550.09	4.00	2554.09
3	35.005975	-118.094289	2561.85	4.00	2565.85
4	35.005977	-118.091618	2550.94	4.00	2554.94
5	35.003779	-118.091615	2547.56	4.00	2551.56



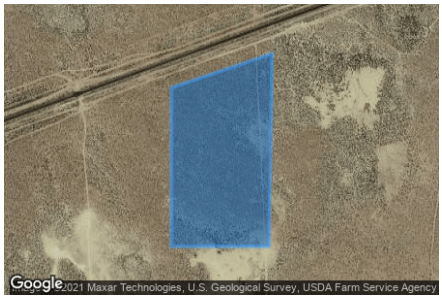
Name: G14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003781	-118.088944	2549.61	4.00	2553.61
2	35.003779	-118.091615	2547.56	4.00	2551.56
3	35.005977	-118.091618	2550.94	4.00	2554.94
4	35.005979	-118.088946	2549.83	4.00	2553.83
5	35.003781	-118.088944	2549.61	4.00	2553.61



Name: G15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001590	-118.078766	2540.65	4.00	2544.65
2	35.001589	-118.080928	2543.45	4.00	2547.45
3	35.004464	-118.080930	2546.75	4.00	2550.75
4	35.005082	-118.078696	2543.49	4.00	2547.49
5	35.001590	-118.078766	2540.65	4.00	2544.65



Name: G16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001589	-118.080928	2543.45	4.00	2547.45
2	35.001587	-118.083599	2540.99	4.00	2545.00
3	35.003726	-118.083601	2545.41	4.00	2549.41
4	35.004464	-118.080930	2546.75	4.00	2550.75
5	35.001589	-118.080928	2543.45	4.00	2547.45



Name: G17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001719	-118.094284	2551.47	4.00	2555.47
2	35.003777	-118.094287	2550.09	4.00	2554.09
3	35.003779	-118.091615	2547.56	4.00	2551.56
4	35.003781	-118.088944	2549.61	4.00	2553.61
5	35.003319	-118.088944	2545.96	4.00	2549.96
6	35.001719	-118.094284	2551.47	4.00	2555.47



Name: G18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001156	-118.096162	2556.88	4.00	2560.88
2	35.003776	-118.096165	2562.64	4.00	2566.64
3	35.003777	-118.094287	2550.09	4.00	2554.09
4	35.001719	-118.094284	2551.47	4.00	2555.47
5	35.001156	-118.096162	2556.88	4.00	2560.88

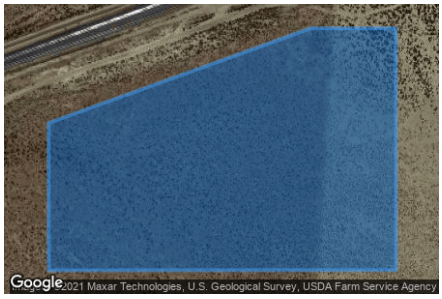


Name: G19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001583	-118.088942	2543.76	4.00	2547.76
2	35.001582	-118.089887	2544.19	4.00	2548.19
3	35.003285	-118.084135	2545.78	4.00	2549.78
4	35.003396	-118.084032	2545.07	4.00	2549.07
5	35.003591	-118.084090	2545.82	4.00	2549.82
6	35.003726	-118.083601	2545.41	4.00	2549.41
7	35.001587	-118.083599	2540.99	4.00	2545.00
8	35.001583	-118.088942	2543.76	4.00	2547.76

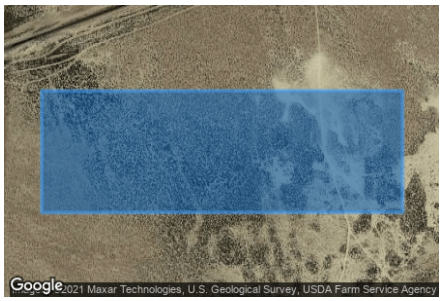
Name: G20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999382	-118.092794	2554.31	4.00	2558.31
2	35.000721	-118.092796	2550.71	4.00	2554.71
3	35.001582	-118.089887	2544.19	4.00	2548.19
4	35.001583	-118.088942	2543.76	4.00	2547.76
5	34.999385	-118.088939	2544.07	4.00	2548.07
6	34.999382	-118.092794	2554.31	4.00	2558.31

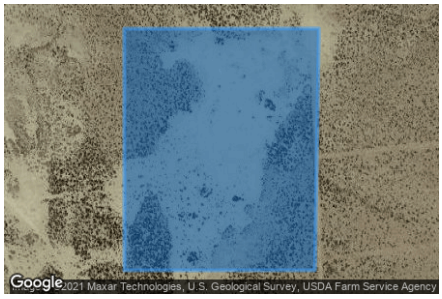
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: G21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 37.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999387	-118.086268	2541.25	4.00	2545.26
2	34.999385	-118.088939	2544.07	4.00	2548.07
3	35.001583	-118.088942	2543.76	4.00	2547.76
4	35.001587	-118.083599	2540.99	4.00	2545.00
5	35.001589	-118.080928	2543.45	4.00	2547.45
6	34.999391	-118.080925	2540.75	4.00	2544.75
7	34.999389	-118.083597	2540.55	4.00	2544.55
8	34.999387	-118.086268	2541.25	4.00	2545.26

Name: G22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999392	-118.078810	2542.52	4.00	2546.52
2	34.999391	-118.080925	2540.75	4.00	2544.75
3	35.001589	-118.080928	2543.45	4.00	2547.45
4	35.001590	-118.078766	2540.65	4.00	2544.65
5	34.999392	-118.078810	2542.52	4.00	2546.52

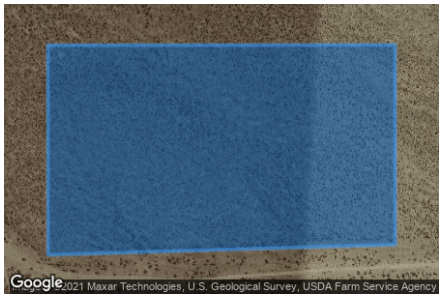
Name: G23
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997474	-118.092792	2557.16	4.00	2561.16
2	34.998311	-118.093975	2566.82	4.00	2570.82
3	34.998220	-118.096158	2588.08	4.00	2592.08
4	34.999725	-118.096160	2566.24	4.00	2570.24
5	35.000721	-118.092796	2550.71	4.00	2554.71
6	34.997474	-118.092792	2557.16	4.00	2561.16



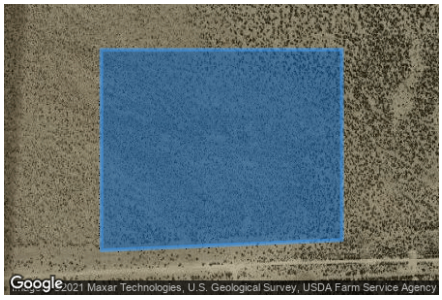
Name: G24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997474	-118.092792	2557.16	4.00	2561.16
2	34.999382	-118.092794	2554.31	4.00	2558.31
3	34.999385	-118.088939	2544.07	4.00	2548.07
4	34.997567	-118.088937	2543.09	4.00	2547.09
5	34.997474	-118.092792	2557.16	4.00	2561.16



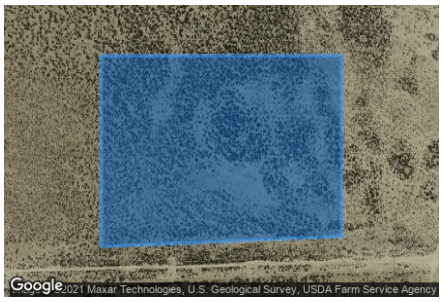
Name: G25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997661	-118.086266	2540.64	4.00	2544.64
2	34.997567	-118.088937	2543.09	4.00	2547.09
3	34.999385	-118.088939	2544.07	4.00	2548.07
4	34.999387	-118.086268	2541.25	4.00	2545.26
5	34.997661	-118.086266	2540.64	4.00	2544.64



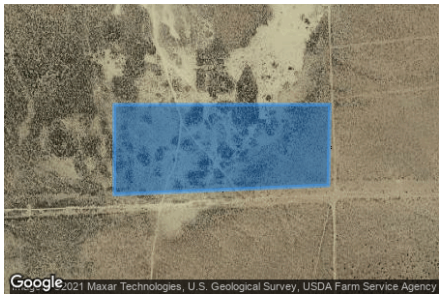
Name: G26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997755	-118.083595	2540.44	4.00	2544.44
2	34.997661	-118.086266	2540.64	4.00	2544.64
3	34.999387	-118.086268	2541.25	4.00	2545.26
4	34.999389	-118.083597	2540.55	4.00	2544.55
5	34.997755	-118.083595	2540.44	4.00	2544.44



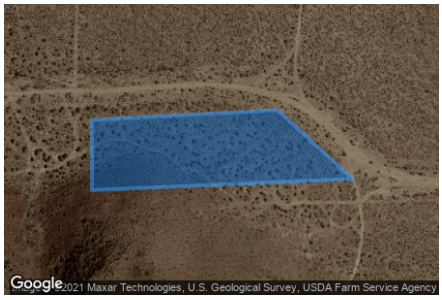
Name: G27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997755	-118.083595	2540.44	4.00	2544.44
2	34.999389	-118.083597	2540.55	4.00	2544.55
3	34.999391	-118.080925	2540.75	4.00	2544.75
4	34.999392	-118.078810	2542.52	4.00	2546.52
5	34.997921	-118.078840	2548.41	4.00	2552.41
6	34.997755	-118.083595	2540.44	4.00	2544.44



Name: G28
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 5.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 3.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.997248	-118.094279	2585.55	4.00	2589.55
2	34.997181	-118.096157	2640.45	4.00	2644.45
3	34.997818	-118.096158	2599.72	4.00	2603.72
4	34.997907	-118.094097	2573.27	4.00	2577.27
5	34.997284	-118.093263	2563.15	4.00	2567.15
6	34.997248	-118.094279	2585.55	4.00	2589.55



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



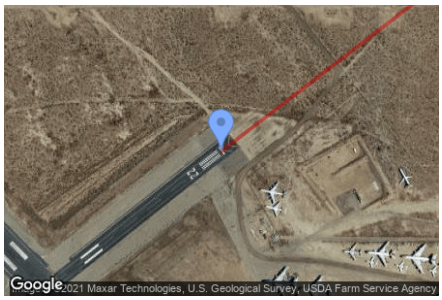
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



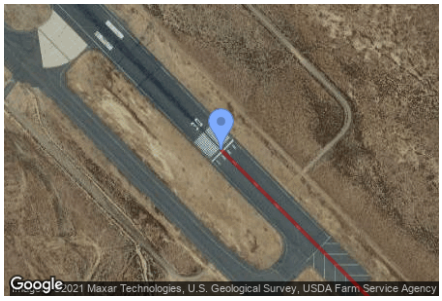
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Altus Ave
Route type Two-way
View angle: 50.0 deg



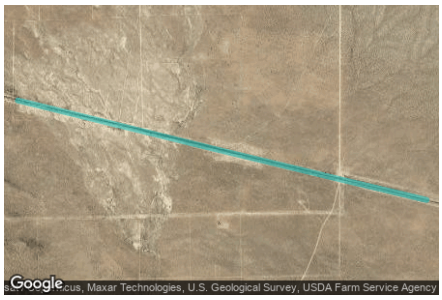
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035986	-118.111692	2629.82	6.00	2635.82
2	35.040039	-118.102534	2623.11	6.00	2629.11

Name: BNSF Mojave Subdivision RR A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.000001	-118.099157	2566.93	14.00	2580.93
2	35.000270	-118.097232	2563.71	14.00	2577.71
3	35.000825	-118.094937	2558.87	14.00	2572.87
4	35.002374	-118.089606	2554.70	14.00	2568.70
5	35.003139	-118.087172	2550.18	14.00	2564.19
6	35.005071	-118.080727	2547.87	14.00	2561.87
7	35.006811	-118.074722	2549.15	14.00	2563.15
8	35.007079	-118.073517	2550.33	14.00	2564.33
9	35.007443	-118.071384	2545.87	14.00	2559.87
10	35.007596	-118.069320	2544.77	14.00	2558.77
11	35.007559	-118.067534	2543.09	14.00	2557.09

Name: BNSF Mojave Subdivision RR B
Route type One-way
View angle: 50.0 deg



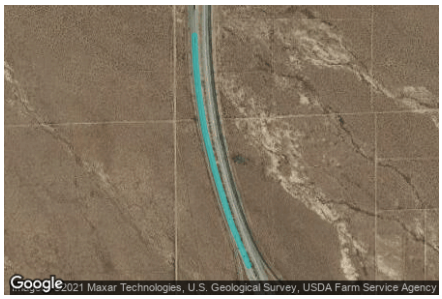
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999545	-118.026063	2550.88	14.00	2564.88
2	35.001045	-118.033744	2543.80	14.00	2557.80
3	35.003260	-118.044934	2530.98	14.00	2544.98
4	35.006782	-118.062358	2534.76	14.00	2548.76

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd A
Route type Two-way
View angle: 50.0 deg



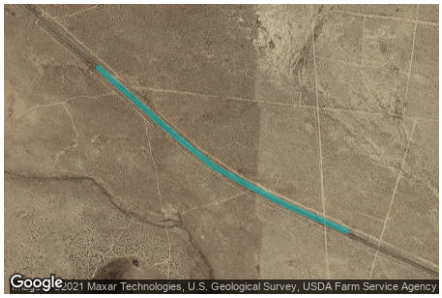
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.029201	-118.026855	2610.54	6.00	2616.54
2	35.028888	-118.026929	2610.03	6.00	2616.04
3	35.028668	-118.027092	2609.59	6.00	2615.59
4	35.028392	-118.027358	2608.84	6.00	2614.84
5	35.028258	-118.027718	2608.37	6.00	2614.37
6	35.028143	-118.028495	2604.67	6.00	2610.67
7	35.028037	-118.033285	2583.48	6.00	2589.48
8	35.028008	-118.033459	2583.10	6.00	2589.10
9	35.027903	-118.033528	2582.45	6.00	2588.45
10	35.027360	-118.033540	2581.97	6.00	2587.97
11	35.023963	-118.033527	2579.87	6.00	2585.87
12	35.023839	-118.033480	2579.76	6.00	2585.76
13	35.022819	-118.033167	2580.76	6.00	2586.76
14	35.022494	-118.033201	2581.06	6.00	2587.06
15	35.021429	-118.033440	2582.92	6.00	2588.92

Name: Hyundai-Kia Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034563	-118.026787	2612.40	6.00	2618.40
2	35.029201	-118.026855	2610.54	6.00	2616.54

Name: Mojave Blvd A
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.991834	-118.097354	2549.90	6.00	2555.90
2	34.989654	-118.094352	2543.66	6.00	2549.66
3	34.988224	-118.092220	2539.32	6.00	2545.32
4	34.986867	-118.089089	2532.46	6.00	2538.46
5	34.985903	-118.086349	2525.15	6.00	2531.15

Name: Old Mojave-Barstow Hwy
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.042860	-118.149944	2707.25	6.00	2713.25
2	35.035074	-118.116322	2631.79	6.00	2637.79

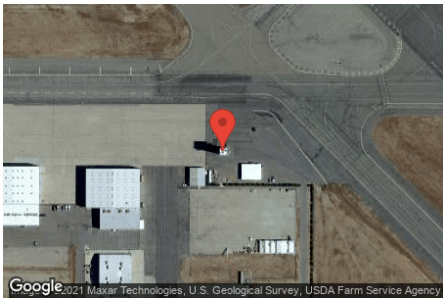
Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 4	34.975460	-118.099454	2526.85	6.00	2532.85
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68
OP 7	35.035917	-118.123537	2644.02	0.00	2644.02

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
G01	SA tracking	SA tracking	0	0	-	-
G02	SA tracking	SA tracking	0	0	-	-
G03	SA tracking	SA tracking	0	0	-	-
G04	SA tracking	SA tracking	0	0	-	-
G05	SA tracking	SA tracking	0	0	-	-
G06	SA tracking	SA tracking	0	0	-	-
G07	SA tracking	SA tracking	0	0	-	-
G08	SA tracking	SA tracking	0	0	-	-
G09	SA tracking	SA tracking	0	0	-	-
G10	SA tracking	SA tracking	0	0	-	-
G11	SA tracking	SA tracking	0	0	-	-
G12	SA tracking	SA tracking	0	0	-	-
G13	SA tracking	SA tracking	0	0	-	-
G14	SA tracking	SA tracking	0	0	-	-
G15	SA tracking	SA tracking	0	0	-	-
G16	SA tracking	SA tracking	0	0	-	-
G17	SA tracking	SA tracking	0	0	-	-
G18	SA tracking	SA tracking	0	0	-	-
G19	SA tracking	SA tracking	0	0	-	-
G20	SA tracking	SA tracking	0	0	-	-
G21	SA tracking	SA tracking	0	0	-	-
G22	SA tracking	SA tracking	0	0	-	-
G23	SA tracking	SA tracking	0	0	-	-
G24	SA tracking	SA tracking	0	0	-	-
G25	SA tracking	SA tracking	0	0	-	-
G26	SA tracking	SA tracking	0	0	-	-
G27	SA tracking	SA tracking	0	0	-	-
G28	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

G01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

G28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: OP 4	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: BNSF Mojave Subdivision RR B	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Mojave Blvd A	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-8

Modeling Results for Analysis Group H

Bellefield Solar Project

Bellefield Solar Analysis Group H Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53119.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
H01	SA tracking	SA tracking	0	0	-
H02	SA tracking	SA tracking	0	0	-
H03	SA tracking	SA tracking	0	0	-
H04	SA tracking	SA tracking	0	0	-
H05	SA tracking	SA tracking	0	0	-
H06	SA tracking	SA tracking	0	0	-
H07	SA tracking	SA tracking	0	0	-
H08	SA tracking	SA tracking	0	0	-
H09	SA tracking	SA tracking	0	0	-
H10	SA tracking	SA tracking	0	0	-
H11	SA tracking	SA tracking	0	0	-
H12	SA tracking	SA tracking	0	0	-
H13	SA tracking	SA tracking	0	0	-
H14	SA tracking	SA tracking	0	0	-
H15	SA tracking	SA tracking	0	0	-
H16	SA tracking	SA tracking	0	0	-
H17	SA tracking	SA tracking	0	0	-
H18	SA tracking	SA tracking	0	0	-
H19	SA tracking	SA tracking	0	0	-
H20	SA tracking	SA tracking	0	0	-
H21	SA tracking	SA tracking	0	0	-
H22	SA tracking	SA tracking	0	0	-
H23	SA tracking	SA tracking	0	0	-
H24	SA tracking	SA tracking	0	0	-
H25	SA tracking	SA tracking	0	0	-
H26	SA tracking	SA tracking	0	0	-
H27	SA tracking	SA tracking	0	0	-
H28	SA tracking	SA tracking	0	0	-
H29	SA tracking	SA tracking	0	0	-
H30	SA tracking	SA tracking	0	0	-
H31	SA tracking	SA tracking	0	0	-
H32	SA tracking	SA tracking	0	0	-
H33	SA tracking	SA tracking	0	0	-
H34	SA tracking	SA tracking	0	0	-
H35	SA tracking	SA tracking	0	0	-

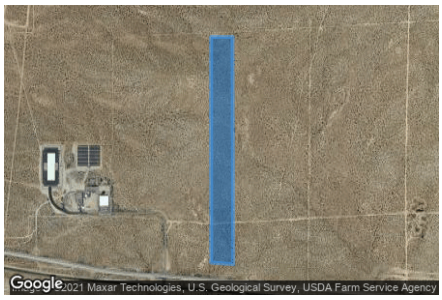
Component Data

PV Array(s)

Total PV footprint area: 635.2 acres

Name: H01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

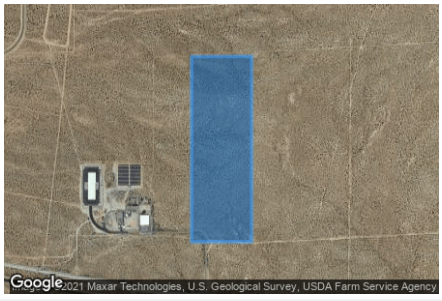
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019889	-118.015838	2659.17	4.00	2663.17
2	35.019948	-118.016819	2654.97	4.00	2658.97
3	35.021397	-118.016819	2666.29	4.00	2670.29
4	35.028150	-118.016821	2683.36	4.00	2687.36
5	35.028153	-118.015869	2685.78	4.00	2689.78
6	35.019889	-118.015838	2659.17	4.00	2663.17



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

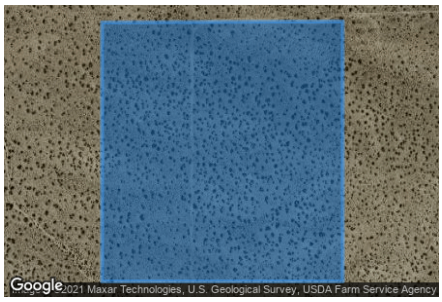
Name: H02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 39.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021397	-118.016819	2666.29	4.00	2670.29
2	35.021397	-118.019491	2665.71	4.00	2669.71
3	35.023595	-118.019492	2676.49	4.00	2680.49
4	35.025793	-118.019492	2669.40	4.00	2673.40
5	35.028140	-118.019493	2665.44	4.00	2669.44
6	35.028150	-118.016821	2683.36	4.00	2687.36
7	35.021397	-118.016819	2666.29	4.00	2670.29



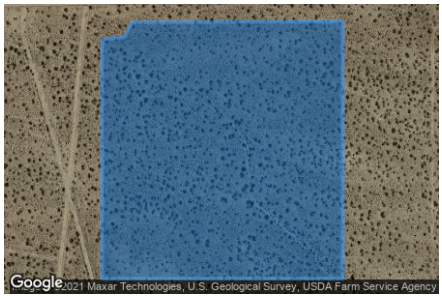
Name: H03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025793	-118.019492	2669.40	4.00	2673.40
2	35.025792	-118.022165	2644.28	4.00	2648.28
3	35.028131	-118.022165	2643.98	4.00	2647.98
4	35.028140	-118.019493	2665.44	4.00	2669.44
5	35.025793	-118.019492	2669.40	4.00	2673.40



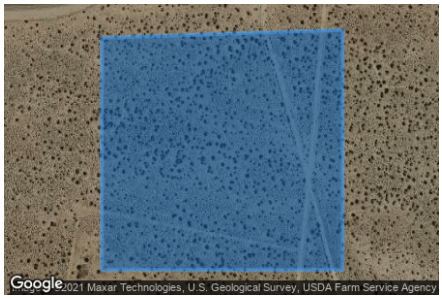
Name: H04
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025792	-118.022165	2644.28	4.00	2648.28
2	35.025792	-118.024837	2629.86	4.00	2633.86
3	35.027965	-118.024837	2621.09	4.00	2625.09
4	35.027988	-118.024588	2622.75	4.00	2626.75
5	35.028122	-118.024504	2623.34	4.00	2627.34
6	35.028131	-118.022165	2643.98	4.00	2647.98
7	35.025792	-118.022165	2644.28	4.00	2648.28



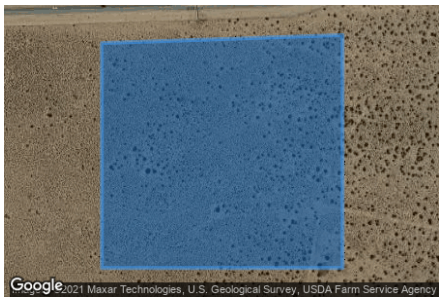
Name: H05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025792	-118.024837	2629.86	4.00	2633.86
2	35.025791	-118.027509	2612.07	4.00	2616.07
3	35.027893	-118.027510	2608.31	4.00	2612.31
4	35.027965	-118.024837	2621.09	4.00	2625.09
5	35.025792	-118.024837	2629.86	4.00	2633.86



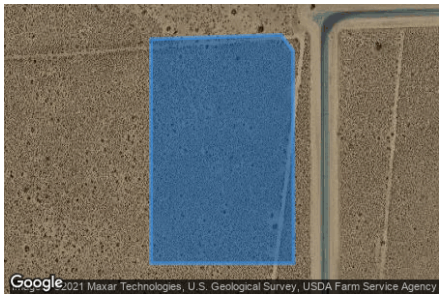
Name: H06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025791	-118.027509	2612.07	4.00	2616.07
2	35.025791	-118.030181	2595.13	4.00	2599.13
3	35.027821	-118.030182	2595.24	4.00	2599.24
4	35.027893	-118.027510	2608.31	4.00	2612.31
5	35.025791	-118.027509	2612.07	4.00	2616.07



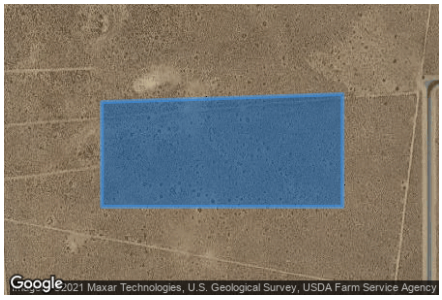
Name: H07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 8.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025790	-118.033942	2578.64	4.00	2582.64
2	35.025789	-118.035525	2570.99	4.00	2575.00
3	35.027827	-118.035526	2574.33	4.00	2578.33
4	35.027866	-118.034082	2580.04	4.00	2584.04
5	35.027722	-118.033948	2580.64	4.00	2584.64
6	35.025790	-118.033942	2578.64	4.00	2582.64



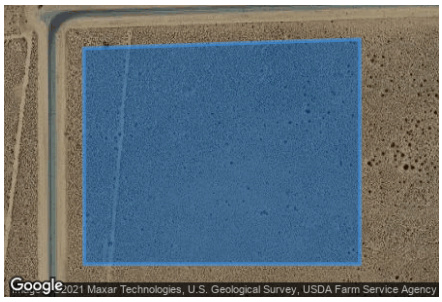
Name: H08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 23.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025788	-118.038197	2560.14	4.00	2564.14
2	35.025788	-118.040869	2557.29	4.00	2561.29
3	35.027683	-118.040870	2554.81	4.00	2558.81
4	35.027827	-118.035526	2574.33	4.00	2578.33
5	35.025789	-118.035525	2570.99	4.00	2575.00
6	35.025788	-118.038197	2560.14	4.00	2564.14



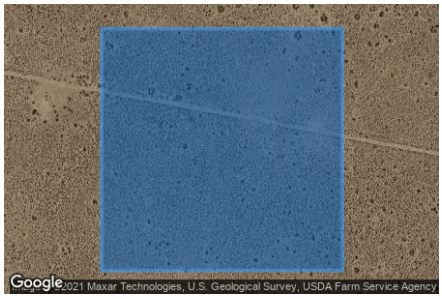
Name: H09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025790	-118.033241	2580.35	4.00	2584.35
2	35.027737	-118.033247	2583.34	4.00	2587.34
3	35.027821	-118.030182	2595.24	4.00	2599.24
4	35.025791	-118.030181	2595.13	4.00	2599.13
5	35.025790	-118.033241	2580.35	4.00	2584.35



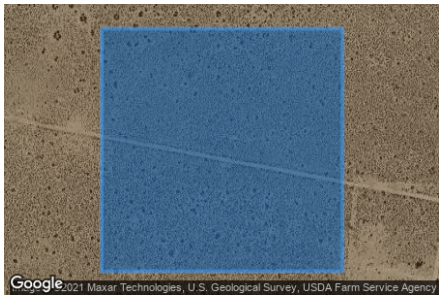
Name: H10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023590	-118.038196	2559.79	4.00	2563.79
2	35.023589	-118.040868	2554.32	4.00	2558.32
3	35.025788	-118.040869	2557.29	4.00	2561.29
4	35.025788	-118.038197	2560.14	4.00	2564.14
5	35.023590	-118.038196	2559.79	4.00	2563.79



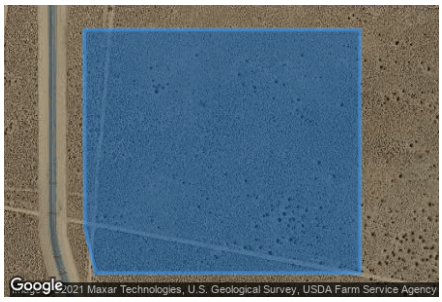
Name: H11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023591	-118.035524	2570.53	4.00	2574.53
2	35.023590	-118.038196	2559.79	4.00	2563.79
3	35.025788	-118.038197	2560.14	4.00	2564.14
4	35.025789	-118.035525	2570.99	4.00	2575.00
5	35.023591	-118.035524	2570.53	4.00	2574.53



Name: H12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023592	-118.033116	2581.36	4.00	2585.36
2	35.023999	-118.033235	2581.57	4.00	2585.57
3	35.025790	-118.033241	2580.35	4.00	2584.35
4	35.025791	-118.030181	2595.13	4.00	2599.13
5	35.023593	-118.030180	2594.51	4.00	2598.51
6	35.023592	-118.033116	2581.36	4.00	2585.36



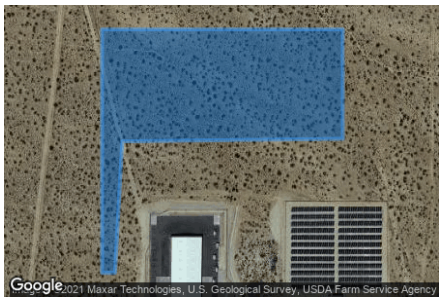
Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: H13
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 26.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023593	-118.027508	2619.05	4.00	2623.05
2	35.023593	-118.030180	2594.51	4.00	2598.51
3	35.025791	-118.030181	2595.13	4.00	2599.13
4	35.025791	-118.027509	2612.07	4.00	2616.07
5	35.025792	-118.024837	2629.86	4.00	2633.86
6	35.023594	-118.024836	2654.17	4.00	2658.17
7	35.023593	-118.027508	2619.05	4.00	2623.05

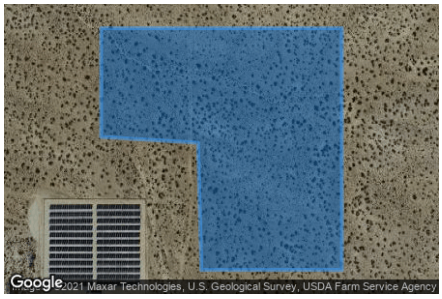


Name: H14
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 7.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.024804	-118.022164	2656.02	4.00	2660.02
2	35.024781	-118.024612	2641.01	4.00	2645.01
3	35.023594	-118.024693	2654.54	4.00	2658.54
4	35.023594	-118.024836	2654.17	4.00	2658.17
5	35.025792	-118.024837	2629.86	4.00	2633.86
6	35.025792	-118.022165	2644.28	4.00	2648.28
7	35.024804	-118.022164	2656.02	4.00	2660.02

Name: H15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023595	-118.019492	2676.49	4.00	2680.49
2	35.023594	-118.021052	2671.81	4.00	2675.81
3	35.024751	-118.021088	2657.82	4.00	2661.82
4	35.024804	-118.022164	2656.02	4.00	2660.02
5	35.025792	-118.022165	2644.28	4.00	2648.28
6	35.025793	-118.019492	2669.40	4.00	2673.40
7	35.023595	-118.019492	2676.49	4.00	2680.49

Name: H16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



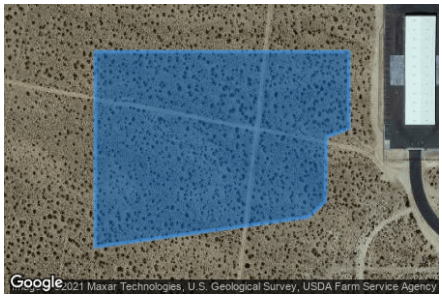
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021911	-118.033720	2580.08	4.00	2584.08
2	35.022180	-118.035524	2573.00	4.00	2577.00
3	35.023591	-118.035524	2570.53	4.00	2574.53
4	35.025789	-118.035525	2570.99	4.00	2575.00
5	35.025790	-118.033942	2578.64	4.00	2582.64
6	35.023887	-118.033929	2578.61	4.00	2582.61
7	35.022751	-118.033566	2580.21	4.00	2584.21
8	35.021911	-118.033720	2580.08	4.00	2584.08

Name: H17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



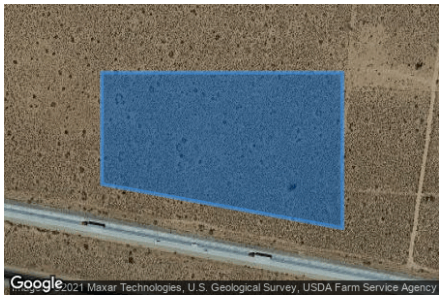
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025788	-118.040869	2557.29	4.00	2561.29
2	35.023589	-118.040868	2554.32	4.00	2558.32
3	35.023590	-118.038196	2559.79	4.00	2563.79
4	35.022579	-118.038196	2560.57	4.00	2564.57
5	35.023202	-118.042364	2548.74	4.00	2552.74
6	35.025787	-118.042360	2557.87	4.00	2561.87
7	35.025788	-118.040869	2557.29	4.00	2561.29

Name: H18
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021817	-118.027508	2620.06	4.00	2624.06
2	35.023593	-118.027508	2619.05	4.00	2623.05
3	35.023594	-118.024836	2654.17	4.00	2658.17
4	35.023594	-118.024693	2654.54	4.00	2658.54
5	35.022897	-118.024691	2658.29	4.00	2662.29
6	35.022817	-118.024942	2656.42	4.00	2660.42
7	35.022228	-118.024954	2658.90	4.00	2662.90
8	35.022089	-118.025145	2657.18	4.00	2661.18
9	35.021817	-118.027508	2620.06	4.00	2624.06

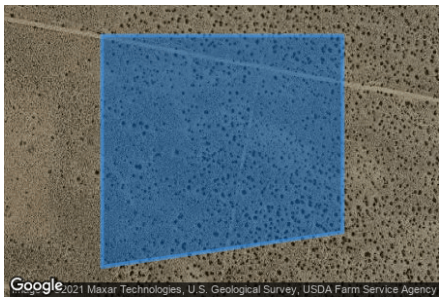
Name: H19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 8.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.022180	-118.035524	2573.00	4.00	2577.00
2	35.022579	-118.038196	2560.57	4.00	2564.57
3	35.023590	-118.038196	2559.79	4.00	2563.79
4	35.023591	-118.035524	2570.53	4.00	2574.53
5	35.022180	-118.035524	2573.00	4.00	2577.00

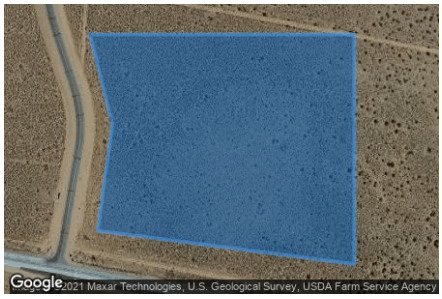
Name: H20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021817	-118.027508	2620.06	4.00	2624.06
2	35.021504	-118.030179	2597.13	4.00	2601.13
3	35.023593	-118.030180	2594.51	4.00	2598.51
4	35.023593	-118.027508	2619.05	4.00	2623.05
5	35.021817	-118.027508	2620.06	4.00	2624.06



Name: H21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021807	-118.033030	2582.43	4.00	2586.43
2	35.022774	-118.032865	2582.70	4.00	2586.70
3	35.023592	-118.033116	2581.36	4.00	2585.36
4	35.023593	-118.030180	2594.51	4.00	2598.51
5	35.021504	-118.030179	2597.13	4.00	2601.13
6	35.021807	-118.033030	2582.43	4.00	2586.43



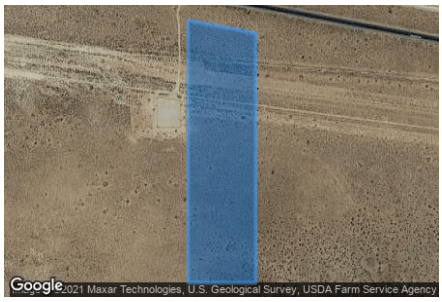
Name: H22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021397	-118.019491	2665.71	4.00	2669.71
2	35.020118	-118.019491	2656.05	4.00	2660.05
3	35.020609	-118.021766	2665.87	4.00	2669.87
4	35.020930	-118.022692	2671.57	4.00	2675.57
5	35.021640	-118.023632	2664.66	4.00	2668.66
6	35.021806	-118.024221	2664.52	4.00	2668.52
7	35.021834	-118.021121	2669.46	4.00	2673.46
8	35.023594	-118.021052	2671.81	4.00	2675.81
9	35.023595	-118.019492	2676.49	4.00	2680.49
10	35.021397	-118.019491	2665.71	4.00	2669.71



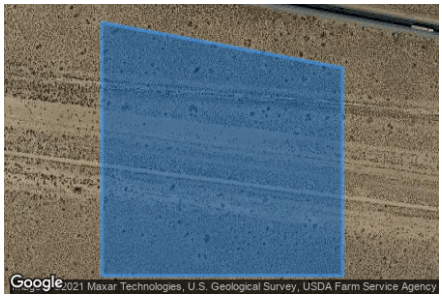
Name: H23
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.016995	-118.040865	2583.60	4.00	2587.60
2	35.016995	-118.042365	2556.19	4.00	2560.19
3	35.021727	-118.042367	2548.02	4.00	2552.02
4	35.021496	-118.040867	2551.42	4.00	2555.42
5	35.019193	-118.040866	2550.97	4.00	2554.97
6	35.016995	-118.040865	2583.60	4.00	2587.60



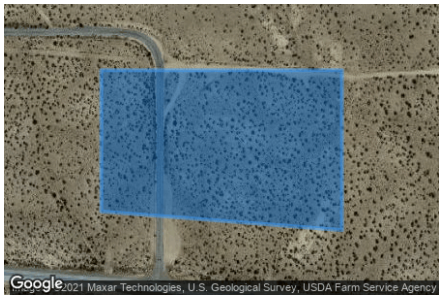
Name: H24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019194	-118.038194	2562.05	4.00	2566.05
2	35.019193	-118.040866	2550.97	4.00	2554.97
3	35.021496	-118.040867	2551.42	4.00	2555.42
4	35.021083	-118.038195	2560.84	4.00	2564.84
5	35.019194	-118.038194	2562.05	4.00	2566.05



Name: H25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019948	-118.016819	2654.97	4.00	2658.97
2	35.020118	-118.019491	2656.05	4.00	2660.05
3	35.021397	-118.019491	2665.71	4.00	2669.71
4	35.021397	-118.016819	2666.29	4.00	2670.29
5	35.019948	-118.016819	2654.97	4.00	2658.97



Name: H26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019194	-118.038194	2562.05	4.00	2566.05
2	35.021083	-118.038195	2560.84	4.00	2564.84
3	35.020258	-118.032851	2585.91	4.00	2589.91
4	35.019196	-118.032850	2590.25	4.00	2594.25
5	35.019194	-118.038194	2562.05	4.00	2566.05



Name: H27
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.016998	-118.030178	2616.70	4.00	2620.70
2	35.016998	-118.032850	2602.07	4.00	2606.07
3	35.019196	-118.032850	2590.25	4.00	2594.25
4	35.020258	-118.032851	2585.91	4.00	2589.91
5	35.019985	-118.031365	2594.76	4.00	2598.76
6	35.019534	-118.030179	2604.49	4.00	2608.49
7	35.016998	-118.030178	2616.70	4.00	2620.70



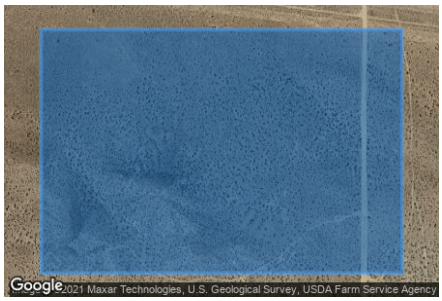
Name: H28
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017000	-118.025017	2631.46	4.00	2635.46
2	35.016999	-118.027506	2640.40	4.00	2644.40
3	35.016998	-118.030178	2616.70	4.00	2620.70
4	35.019534	-118.030179	2604.49	4.00	2608.49
5	35.017369	-118.026661	2634.22	4.00	2638.22
6	35.017114	-118.025942	2631.80	4.00	2635.80
7	35.017000	-118.025017	2631.46	4.00	2635.46



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: H29
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 80.2 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014798	-118.038192	2604.51	4.00	2608.51
2	35.014797	-118.040864	2584.07	4.00	2588.07
3	35.016995	-118.040865	2583.60	4.00	2587.60
4	35.019193	-118.040866	2550.97	4.00	2554.97
5	35.019194	-118.038194	2562.05	4.00	2566.05
6	35.019196	-118.032850	2590.25	4.00	2594.25
7	35.016998	-118.032850	2602.07	4.00	2606.07
8	35.014800	-118.032849	2595.86	4.00	2599.86
9	35.014799	-118.035520	2604.07	4.00	2608.07
10	35.014798	-118.038192	2604.51	4.00	2608.51

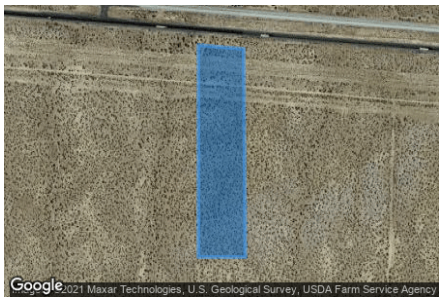
Name: H30
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017000	-118.022162	2637.97	4.00	2641.97
2	35.017611	-118.022162	2643.09	4.00	2647.09
3	35.018351	-118.020393	2648.33	4.00	2652.33
4	35.018609	-118.019460	2646.07	4.00	2650.07
5	35.018721	-118.018300	2648.72	4.00	2652.72
6	35.018635	-118.016819	2652.80	4.00	2656.80
7	35.017001	-118.016819	2642.83	4.00	2646.83
8	35.017000	-118.022162	2637.97	4.00	2641.97

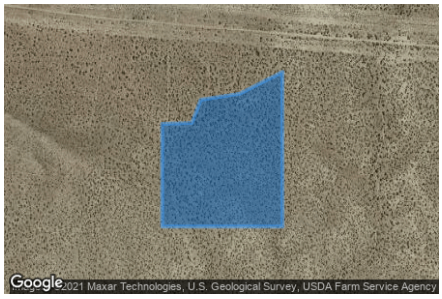
Name: H31
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 9.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014803	-118.015774	2636.45	4.00	2640.45
2	35.014803	-118.016818	2630.42	4.00	2634.42
3	35.017001	-118.016819	2642.83	4.00	2646.83
4	35.018635	-118.016819	2652.80	4.00	2656.80
5	35.018565	-118.015812	2664.81	4.00	2668.81
6	35.014803	-118.015774	2636.45	4.00	2640.45



Name: H32
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

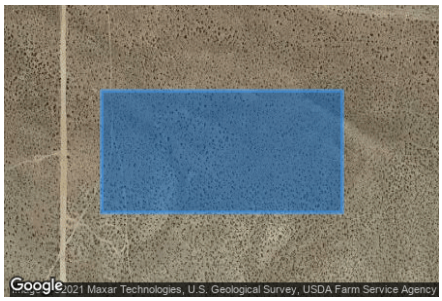
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017000	-118.022162	2637.97	4.00	2641.97
2	35.014802	-118.022162	2622.64	4.00	2626.64
3	35.014801	-118.024833	2620.67	4.00	2624.67
4	35.016668	-118.024834	2627.29	4.00	2631.29
5	35.016685	-118.024174	2627.05	4.00	2631.05
6	35.017106	-118.023977	2631.56	4.00	2635.56
7	35.017216	-118.023108	2634.08	4.00	2638.08
8	35.017611	-118.022162	2643.09	4.00	2647.09
9	35.017000	-118.022162	2637.97	4.00	2641.97



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

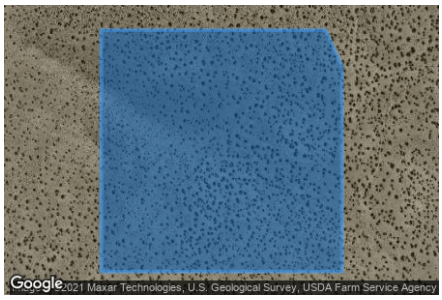
Name: H33
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 27.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014800	-118.032849	2595.86	4.00	2599.86
2	35.016998	-118.032850	2602.07	4.00	2606.07
3	35.016998	-118.030178	2616.70	4.00	2620.70
4	35.016999	-118.027506	2640.40	4.00	2644.40
5	35.014801	-118.027505	2615.51	4.00	2619.51
6	35.014800	-118.032849	2595.86	4.00	2599.86



Name: H34
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

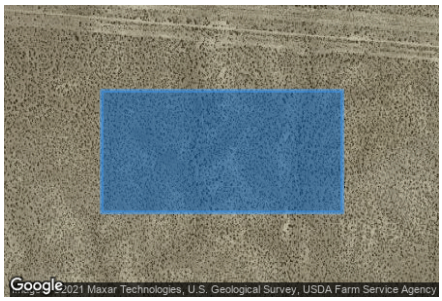
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.016668	-118.024834	2627.29	4.00	2631.29
2	35.014801	-118.024833	2620.67	4.00	2624.67
3	35.014801	-118.027505	2615.51	4.00	2619.51
4	35.016999	-118.027506	2640.40	4.00	2644.40
5	35.017000	-118.025017	2631.46	4.00	2635.46
6	35.016668	-118.024834	2627.29	4.00	2631.29



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: H35
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 29.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014802	-118.022162	2622.64	4.00	2626.64
2	35.017000	-118.022162	2637.97	4.00	2641.97
3	35.017001	-118.016819	2642.83	4.00	2646.83
4	35.014803	-118.016818	2630.42	4.00	2634.42
5	35.014802	-118.022162	2622.64	4.00	2626.64



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



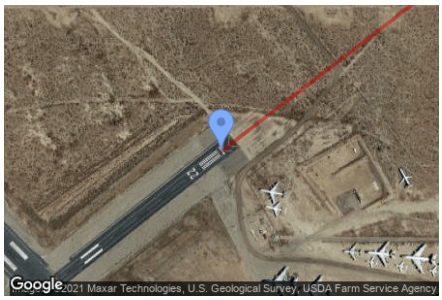
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



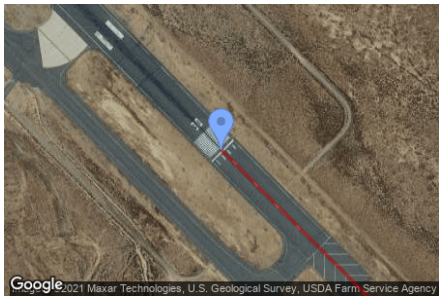
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: Altus Ave
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.035986	-118.111692	2629.82	6.00	2635.82
2	35.040039	-118.102534	2623.11	6.00	2629.11

Name: BNSF Mojave Subdivision RR A
Route type Two-way
View angle: 50.0 deg



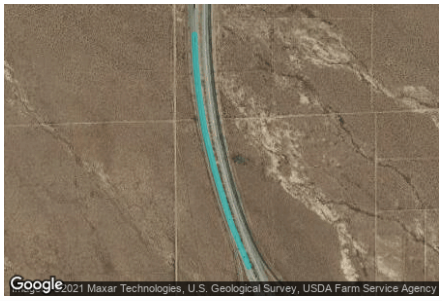
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.000001	-118.099157	2566.93	14.00	2580.93
2	35.000270	-118.097232	2563.71	14.00	2577.71
3	35.000825	-118.094937	2558.87	14.00	2572.87
4	35.002374	-118.089606	2554.70	14.00	2568.70
5	35.003139	-118.087172	2550.18	14.00	2564.19
6	35.005071	-118.080727	2547.87	14.00	2561.87
7	35.006811	-118.074722	2549.15	14.00	2563.15
8	35.007079	-118.073517	2550.33	14.00	2564.33
9	35.007443	-118.071384	2545.87	14.00	2559.87
10	35.007596	-118.069320	2544.77	14.00	2558.77
11	35.007559	-118.067534	2543.09	14.00	2557.09

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 EB D
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.024251	-118.055488	2546.82	6.00	2552.82
2	35.024042	-118.054258	2546.15	6.00	2552.15
3	35.022062	-118.041593	2551.75	6.00	2557.75

Name: Hwy 58 EB E
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.022062	-118.041593	2551.75	6.00	2557.75
2	35.019561	-118.025286	2641.08	6.00	2647.08
3	35.019263	-118.022749	2653.48	6.00	2659.48

Name: Hwy 58 WB D
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.020571	-118.027816	2620.15	6.00	2626.16
2	35.023407	-118.046428	2546.43	6.00	2552.43

Name: Hyundai-Kia Blvd A
Route type Two-way
View angle: 50.0 deg



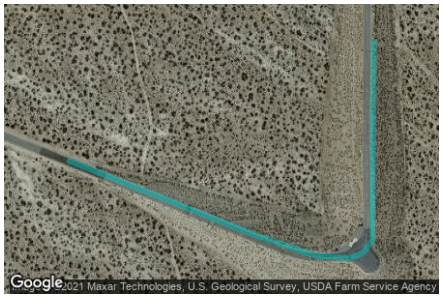
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.029201	-118.026855	2610.54	6.00	2616.54
2	35.028888	-118.026929	2610.03	6.00	2616.04
3	35.028668	-118.027092	2609.59	6.00	2615.59
4	35.028392	-118.027358	2608.84	6.00	2614.84
5	35.028258	-118.027718	2608.37	6.00	2614.37
6	35.028143	-118.028495	2604.67	6.00	2610.67
7	35.028037	-118.033285	2583.48	6.00	2589.48
8	35.028008	-118.033459	2583.10	6.00	2589.10
9	35.027903	-118.033528	2582.45	6.00	2588.45
10	35.027360	-118.033540	2581.97	6.00	2587.97
11	35.023963	-118.033527	2579.87	6.00	2585.87
12	35.023839	-118.033480	2579.76	6.00	2585.76
13	35.022819	-118.033167	2580.76	6.00	2586.76
14	35.022494	-118.033201	2581.06	6.00	2587.06
15	35.021429	-118.033440	2582.92	6.00	2588.92

Name: Hyundai-Kia Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.034563	-118.026787	2612.40	6.00	2618.40
2	35.029201	-118.026855	2610.54	6.00	2616.54

Name: Hyundai-Kia Blvd D
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.040464	-118.008163	2786.84	6.00	2792.84
2	35.038663	-118.008178	2827.90	6.00	2833.90
3	35.038544	-118.008279	2828.46	6.00	2834.46
4	35.038496	-118.008424	2827.77	6.00	2833.77
5	35.038520	-118.008816	2824.63	6.00	2830.63
6	35.038711	-118.009497	2804.79	6.00	2810.79
7	35.039378	-118.011542	2735.01	6.00	2741.01

Name: Hyundai Proving Ground B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051485	-118.050624	2555.91	6.00	2561.91
2	35.050998	-118.050520	2555.28	6.00	2561.28
3	35.050612	-118.050363	2555.21	6.00	2561.21
4	35.049553	-118.049509	2553.99	6.00	2559.99
5	35.049296	-118.049109	2553.59	6.00	2559.59
6	35.049210	-118.048517	2553.00	6.00	2559.00
7	35.049268	-118.048117	2552.76	6.00	2558.76
8	35.049640	-118.047543	2551.47	6.00	2557.47

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68
OP 7	35.035917	-118.123537	2644.02	0.00	2644.02

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
H01	SA tracking	SA tracking	0	0	-	-
H02	SA tracking	SA tracking	0	0	-	-
H03	SA tracking	SA tracking	0	0	-	-
H04	SA tracking	SA tracking	0	0	-	-
H05	SA tracking	SA tracking	0	0	-	-
H06	SA tracking	SA tracking	0	0	-	-
H07	SA tracking	SA tracking	0	0	-	-
H08	SA tracking	SA tracking	0	0	-	-
H09	SA tracking	SA tracking	0	0	-	-
H10	SA tracking	SA tracking	0	0	-	-
H11	SA tracking	SA tracking	0	0	-	-
H12	SA tracking	SA tracking	0	0	-	-
H13	SA tracking	SA tracking	0	0	-	-
H14	SA tracking	SA tracking	0	0	-	-
H15	SA tracking	SA tracking	0	0	-	-
H16	SA tracking	SA tracking	0	0	-	-
H17	SA tracking	SA tracking	0	0	-	-
H18	SA tracking	SA tracking	0	0	-	-
H19	SA tracking	SA tracking	0	0	-	-
H20	SA tracking	SA tracking	0	0	-	-
H21	SA tracking	SA tracking	0	0	-	-
H22	SA tracking	SA tracking	0	0	-	-
H23	SA tracking	SA tracking	0	0	-	-
H24	SA tracking	SA tracking	0	0	-	-
H25	SA tracking	SA tracking	0	0	-	-
H26	SA tracking	SA tracking	0	0	-	-
H27	SA tracking	SA tracking	0	0	-	-
H28	SA tracking	SA tracking	0	0	-	-
H29	SA tracking	SA tracking	0	0	-	-
H30	SA tracking	SA tracking	0	0	-	-
H31	SA tracking	SA tracking	0	0	-	-
H32	SA tracking	SA tracking	0	0	-	-
H33	SA tracking	SA tracking	0	0	-	-
H34	SA tracking	SA tracking	0	0	-	-
H35	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

H01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H29 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H30 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H31 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H32 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H33 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H34 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

H35 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: Altus Ave	0	0
Route: BNSF Mojave Subdivision RR A	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 EB D	0	0
Route: Hwy 58 EB E	0	0
Route: Hwy 58 WB D	0	0
Route: Hyundai-Kia Blvd A	0	0
Route: Hyundai-Kia Blvd B	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Hyundai Proving Ground B	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-9

Modeling Results for Analysis Group I

Bellefield Solar Project

Bellefield Solar Analysis Group I Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53120.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
I01	SA tracking	SA tracking	0	0	-
I02	SA tracking	SA tracking	0	0	-
I03	SA tracking	SA tracking	0	0	-
I04	SA tracking	SA tracking	0	0	-
I05	SA tracking	SA tracking	0	0	-
I06	SA tracking	SA tracking	0	0	-
I07	SA tracking	SA tracking	0	0	-
I08	SA tracking	SA tracking	0	0	-
I09	SA tracking	SA tracking	0	0	-
I10	SA tracking	SA tracking	0	0	-
I11	SA tracking	SA tracking	0	0	-
I12	SA tracking	SA tracking	0	0	-
I13	SA tracking	SA tracking	0	0	-
I14	SA tracking	SA tracking	0	0	-
I15	SA tracking	SA tracking	0	0	-
I16	SA tracking	SA tracking	0	0	-
I17	SA tracking	SA tracking	0	0	-
I18	SA tracking	SA tracking	0	0	-
I19	SA tracking	SA tracking	0	0	-
I20	SA tracking	SA tracking	0	0	-
I21	SA tracking	SA tracking	0	0	-
I22	SA tracking	SA tracking	0	0	-
I23	SA tracking	SA tracking	0	0	-
I24	SA tracking	SA tracking	0	0	-

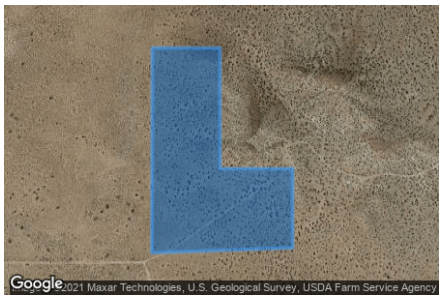
Component Data

PV Array(s)

Total PV footprint area: 807.1 acres

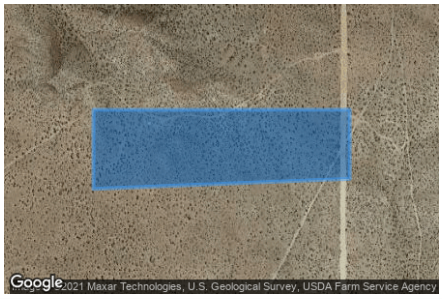
Name: I01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 2.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 20.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014798	-118.039255	2617.61	4.00	2621.61
2	35.013359	-118.039254	2576.21	4.00	2580.21
3	35.013270	-118.042382	2544.98	4.00	2548.98
4	35.016995	-118.042365	2556.19	4.00	2560.19
5	35.016995	-118.040865	2583.60	4.00	2587.60
6	35.014797	-118.040864	2584.07	4.00	2588.07
7	35.014798	-118.039255	2617.61	4.00	2621.61

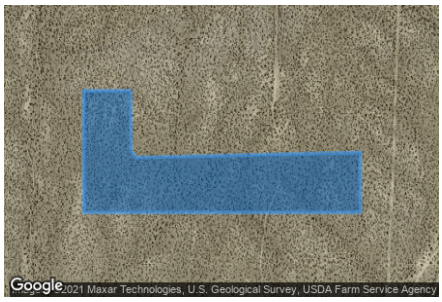


Name: I02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 2.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.013542	-118.033564	2593.49	4.00	2597.49
2	35.013359	-118.039254	2576.21	4.00	2580.21
3	35.014798	-118.039255	2617.61	4.00	2621.61
4	35.014798	-118.038192	2604.51	4.00	2608.51
5	35.014799	-118.035520	2604.07	4.00	2608.07
6	35.014799	-118.033565	2597.26	4.00	2601.26
7	35.013542	-118.033564	2593.49	4.00	2597.49

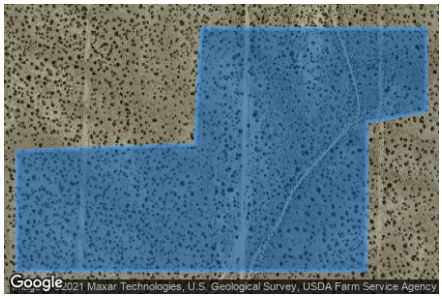


Name: I03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.013692	-118.010673	2629.59	4.00	2633.59
2	35.012605	-118.010672	2620.22	4.00	2624.22
3	35.012605	-118.011474	2619.62	4.00	2623.62
4	35.012605	-118.016818	2616.64	4.00	2620.64
5	35.014803	-118.016818	2630.42	4.00	2634.42
6	35.014803	-118.015774	2636.45	4.00	2640.45
7	35.013718	-118.015763	2624.32	4.00	2628.32
8	35.013597	-118.015640	2622.79	4.00	2626.79
9	35.013692	-118.010673	2629.59	4.00	2633.59

Name: I04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.012605	-118.010672	2620.22	4.00	2624.22
2	35.013692	-118.010673	2629.59	4.00	2633.59
3	35.013751	-118.008696	2621.09	4.00	2625.09
4	35.014804	-118.008626	2630.38	4.00	2634.38
5	35.014804	-118.006131	2631.62	4.00	2635.62
6	35.014055	-118.006131	2632.52	4.00	2636.52
7	35.013955	-118.006790	2627.60	4.00	2631.60
8	35.012606	-118.006804	2623.76	4.00	2627.76
9	35.012606	-118.008803	2614.04	4.00	2618.04
10	35.012605	-118.010672	2620.22	4.00	2624.22

Name: I05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

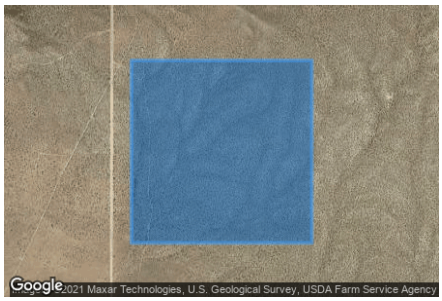


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003809	-118.032844	2548.17	4.00	2552.17
2	35.003809	-118.033533	2547.30	4.00	2551.30
3	35.013405	-118.033390	2590.99	4.00	2594.99
4	35.013542	-118.033564	2593.49	4.00	2597.49
5	35.014799	-118.033565	2597.26	4.00	2601.26
6	35.014800	-118.032849	2595.86	4.00	2599.86
7	35.013468	-118.032848	2583.86	4.00	2587.86
8	35.012601	-118.032848	2580.92	4.00	2584.92
9	35.008205	-118.032846	2557.18	4.00	2561.18
10	35.003809	-118.032844	2548.17	4.00	2552.17

Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: I06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 120.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

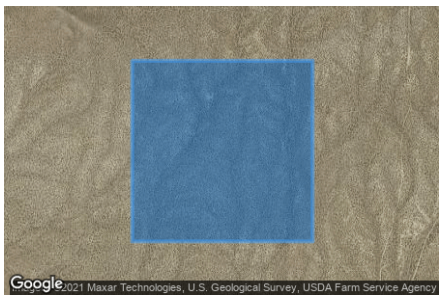
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.008205	-118.032846	2557.18	4.00	2561.18
2	35.012601	-118.032848	2580.92	4.00	2584.92
3	35.014800	-118.032849	2595.86	4.00	2599.86
4	35.014801	-118.027505	2615.51	4.00	2619.51
5	35.014801	-118.024833	2620.67	4.00	2624.67
6	35.008207	-118.024831	2584.15	4.00	2588.15
7	35.008205	-118.032846	2557.18	4.00	2561.18



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

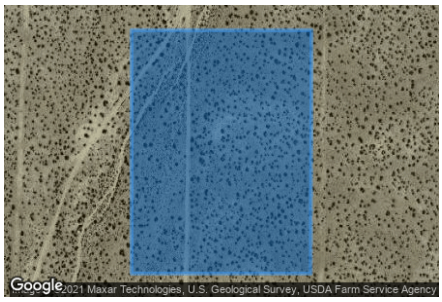
Name: I07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 124.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.008207	-118.024831	2584.15	4.00	2588.15
2	35.014801	-118.024833	2620.67	4.00	2624.67
3	35.014802	-118.022162	2622.64	4.00	2626.64
4	35.014803	-118.016818	2630.42	4.00	2634.42
5	35.012605	-118.016818	2616.64	4.00	2620.64
6	35.008209	-118.016817	2591.03	4.00	2595.03
7	35.008207	-118.024831	2584.15	4.00	2588.15



Name: I08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

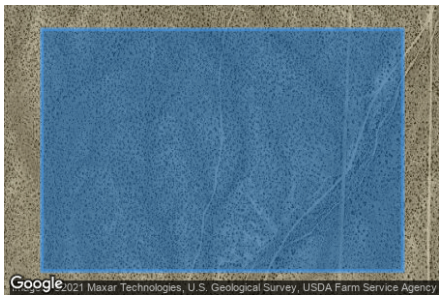
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.010408	-118.006812	2613.84	4.00	2617.84
2	35.010408	-118.008802	2602.75	4.00	2606.75
3	35.012606	-118.008803	2614.04	4.00	2618.04
4	35.012606	-118.006804	2623.76	4.00	2627.76
5	35.010408	-118.006812	2613.84	4.00	2617.84



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

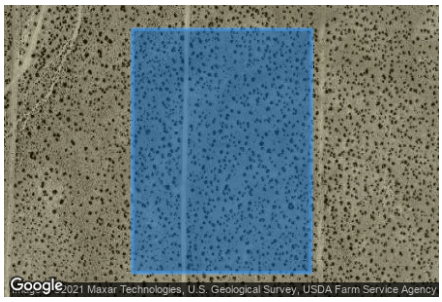
Name: I09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 79.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.008209	-118.014145	2589.81	4.00	2593.81
2	35.008209	-118.016817	2591.03	4.00	2595.03
3	35.012605	-118.016818	2616.64	4.00	2620.64
4	35.012605	-118.011474	2619.62	4.00	2623.62
5	35.012606	-118.008803	2614.04	4.00	2618.04
6	35.010408	-118.008802	2602.75	4.00	2606.75
7	35.008209	-118.008802	2595.22	4.00	2599.22
8	35.008209	-118.011474	2589.37	4.00	2593.37
9	35.008209	-118.014145	2589.81	4.00	2593.81



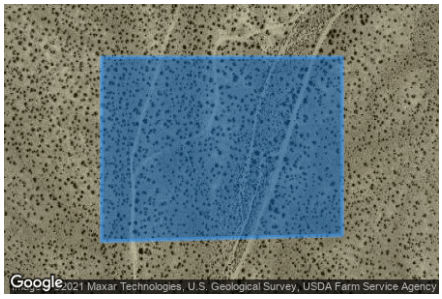
Name: I10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 10.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.008210	-118.006823	2598.18	4.00	2602.18
2	35.008209	-118.008802	2595.22	4.00	2599.22
3	35.010408	-118.008802	2602.75	4.00	2606.75
4	35.010408	-118.006812	2613.84	4.00	2617.84
5	35.008210	-118.006823	2598.18	4.00	2602.18



Name: I11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

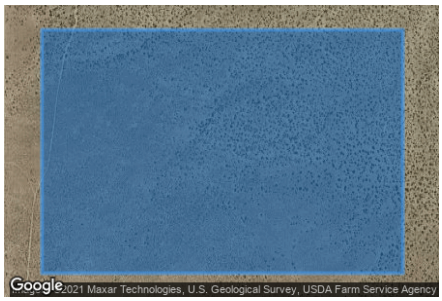
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.006591	-118.011473	2587.47	4.00	2591.47
2	35.006536	-118.014145	2578.97	4.00	2582.97
3	35.008209	-118.014145	2589.81	4.00	2593.81
4	35.008209	-118.011474	2589.37	4.00	2593.37
5	35.006591	-118.011473	2587.47	4.00	2591.47



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: I12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 79.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

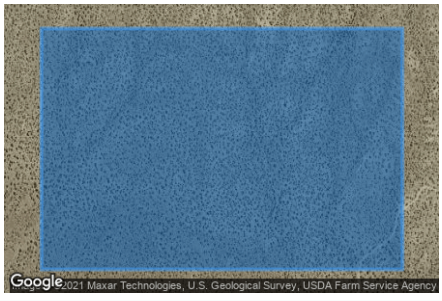
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003810	-118.030173	2553.80	4.00	2557.80
2	35.003809	-118.032844	2548.17	4.00	2552.17
3	35.008205	-118.032846	2557.18	4.00	2561.18
4	35.008207	-118.024831	2584.15	4.00	2588.15
5	35.003811	-118.024830	2566.31	4.00	2570.31
6	35.003810	-118.030173	2553.80	4.00	2557.80



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

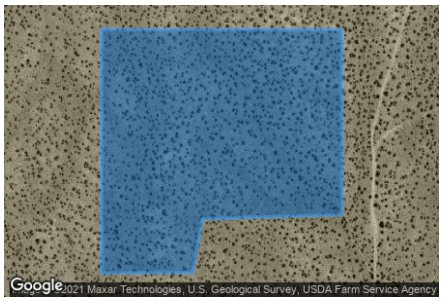
Name: I13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 83.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003811	-118.024830	2566.31	4.00	2570.31
2	35.008207	-118.024831	2584.15	4.00	2588.15
3	35.008209	-118.016817	2591.03	4.00	2595.03
4	35.006011	-118.016816	2578.64	4.00	2582.64
5	35.003812	-118.016816	2567.60	4.00	2571.60
6	35.003811	-118.024830	2566.31	4.00	2570.31



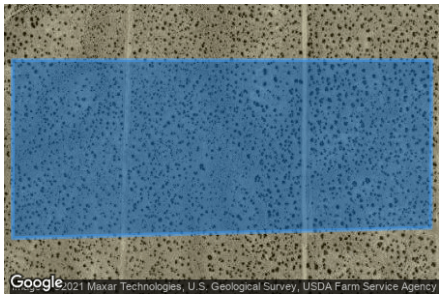
Name: I14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.006536	-118.014145	2578.97	4.00	2582.97
2	35.006497	-118.015696	2585.49	4.00	2589.49
3	35.006011	-118.015804	2584.19	4.00	2588.19
4	35.006011	-118.016816	2578.64	4.00	2582.64
5	35.008209	-118.016817	2591.03	4.00	2595.03
6	35.008209	-118.014145	2589.81	4.00	2593.81
7	35.006536	-118.014145	2578.97	4.00	2582.97



Name: I15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.006591	-118.011473	2587.47	4.00	2591.47
2	35.008209	-118.011474	2589.37	4.00	2593.37
3	35.008209	-118.008802	2595.22	4.00	2599.22
4	35.008210	-118.006823	2598.18	4.00	2602.18
5	35.006685	-118.006832	2594.09	4.00	2598.09
6	35.006591	-118.011473	2587.47	4.00	2591.47



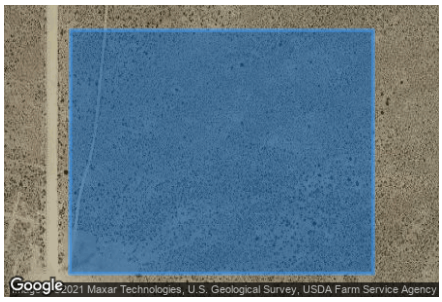
Name: I16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999269	-118.015820	2548.29	4.00	2552.29
2	34.999248	-118.016815	2549.88	4.00	2553.88
3	35.001614	-118.016815	2560.03	4.00	2564.03
4	35.003812	-118.016816	2567.60	4.00	2571.60
5	35.006011	-118.016816	2578.64	4.00	2582.64
6	35.006011	-118.015804	2584.19	4.00	2588.19
7	34.999269	-118.015820	2548.29	4.00	2552.29



Name: I17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001612	-118.030172	2548.66	4.00	2552.66
2	35.001611	-118.033541	2538.31	4.00	2542.31
3	35.003809	-118.033533	2547.30	4.00	2551.30
4	35.003809	-118.032844	2548.17	4.00	2552.17
5	35.003810	-118.030173	2553.80	4.00	2557.80
6	35.001612	-118.030172	2548.66	4.00	2552.66



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

Name: I18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 29.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

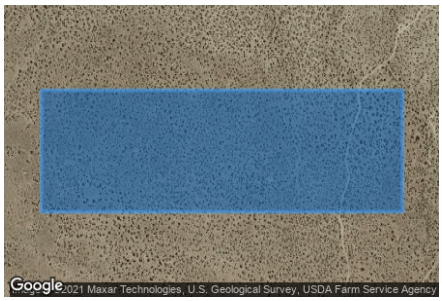
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001612	-118.030172	2548.66	4.00	2552.66
2	35.003810	-118.030173	2553.80	4.00	2557.80
3	35.003811	-118.024830	2566.31	4.00	2570.31
4	35.001613	-118.024829	2560.76	4.00	2564.76
5	35.001612	-118.030172	2548.66	4.00	2552.66



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

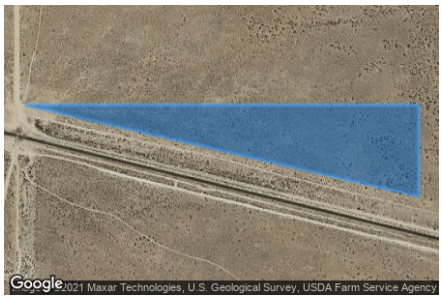
Name: I19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 33.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001613	-118.022158	2559.59	4.00	2563.59
2	35.001613	-118.024829	2560.76	4.00	2564.76
3	35.003811	-118.024830	2566.31	4.00	2570.31
4	35.003812	-118.016816	2567.60	4.00	2571.60
5	35.001614	-118.016815	2560.03	4.00	2564.03
6	35.001614	-118.019487	2560.07	4.00	2564.07
7	35.001613	-118.022158	2559.59	4.00	2563.59



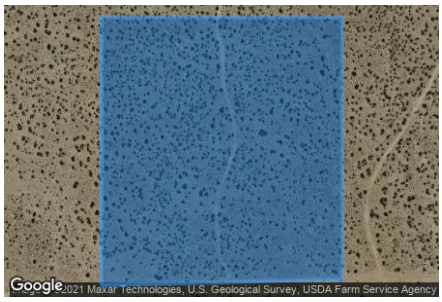
Name: I20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.001613	-118.024829	2560.76	4.00	2564.76
2	34.999951	-118.024829	2556.48	4.00	2560.48
3	35.001611	-118.033541	2538.31	4.00	2542.31
4	35.001612	-118.030172	2548.66	4.00	2552.66
5	35.001613	-118.024829	2560.76	4.00	2564.76



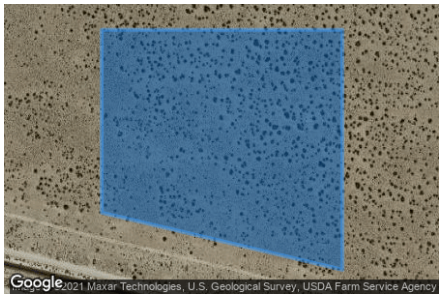
Name: I21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999248	-118.016815	2549.88	4.00	2553.88
2	34.999193	-118.019486	2547.75	4.00	2551.75
3	35.001614	-118.019487	2560.07	4.00	2564.07
4	35.001614	-118.016815	2560.03	4.00	2564.03
5	34.999248	-118.016815	2549.88	4.00	2553.88



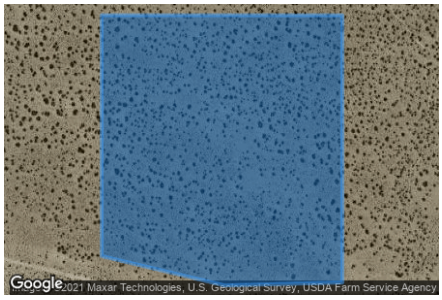
Name: I22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 12.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999432	-118.022158	2554.39	4.00	2558.39
2	34.999951	-118.024829	2556.48	4.00	2560.48
3	35.001613	-118.024829	2560.76	4.00	2564.76
4	35.001613	-118.022158	2559.59	4.00	2563.59
5	34.999432	-118.022158	2554.39	4.00	2558.39

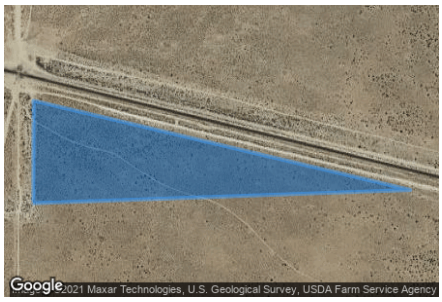


Name: I23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.999193	-118.019486	2547.75	4.00	2551.75
2	34.999166	-118.020793	2552.17	4.00	2556.17
3	34.999432	-118.022158	2554.39	4.00	2558.39
4	35.001613	-118.022158	2559.59	4.00	2563.59
5	35.001614	-118.019487	2560.07	4.00	2564.07
6	34.999193	-118.019486	2547.75	4.00	2551.75



Name: I24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.998728	-118.032842	2549.44	4.00	2553.44
2	34.998712	-118.033402	2547.47	4.00	2551.47
3	35.000563	-118.033395	2540.71	4.00	2544.71
4	34.998951	-118.025034	2553.42	4.00	2557.42
5	34.998728	-118.032842	2549.44	4.00	2553.44

2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



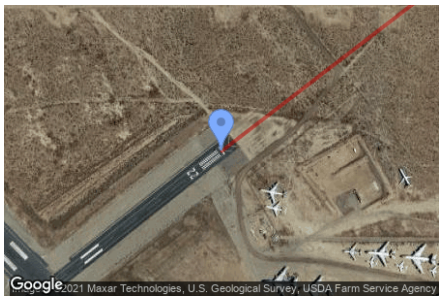
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



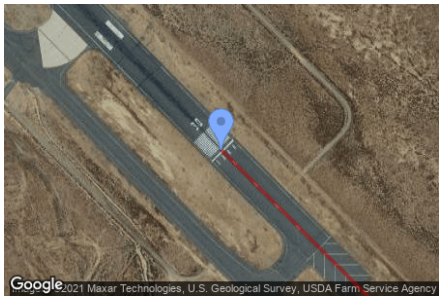
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



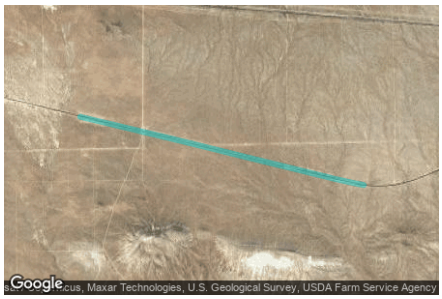
Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



Route Receptor(s)

Name: BNSF Mojave Subdivision RR C
Route type Two-way
View angle: 50.0 deg



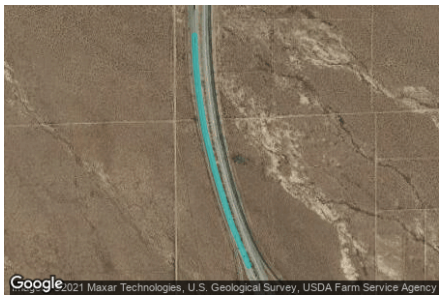
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003260	-118.044934	2530.98	14.00	2544.98
2	34.999545	-118.026063	2550.88	14.00	2564.88
3	34.997164	-118.014327	2544.62	14.00	2558.62
4	34.994231	-117.999763	2534.35	14.00	2548.35
5	34.993623	-117.996371	2532.43	14.00	2546.43
6	34.993337	-117.994589	2533.08	14.00	2547.08

Name: Hwy 58 EB B
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.036513	-118.105719	2622.31	6.00	2628.32
2	35.035297	-118.104221	2619.07	6.00	2625.07
3	35.034383	-118.102915	2615.12	6.00	2621.12
4	35.033211	-118.101000	2609.60	6.00	2615.60
5	35.032497	-118.099590	2605.78	6.00	2611.78
6	35.031511	-118.097309	2600.96	6.00	2606.96
7	35.030954	-118.095656	2597.80	6.00	2603.80
8	35.030431	-118.093858	2594.41	6.00	2600.41
9	35.030041	-118.092025	2590.86	6.00	2596.86
10	35.029747	-118.090053	2586.60	6.00	2592.60
11	35.028617	-118.082489	2576.24	6.00	2582.24
12	35.027344	-118.074149	2564.40	6.00	2570.40
13	35.026241	-118.066900	2556.43	6.00	2562.43
14	35.025395	-118.061228	2551.04	6.00	2557.04
15	35.025100	-118.059383	2549.39	6.00	2555.39
16	35.024739	-118.057574	2547.93	6.00	2553.93

Name: Hwy 58 EB C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.051079	-118.113170	2678.95	6.00	2684.95
2	35.050106	-118.113123	2674.56	6.00	2680.56
3	35.049047	-118.112993	2669.94	6.00	2675.95
4	35.047588	-118.112713	2663.50	6.00	2669.50
5	35.046100	-118.112247	2656.90	6.00	2662.90
6	35.044259	-118.111548	2649.77	6.00	2655.77
7	35.042705	-118.110758	2643.68	6.00	2649.68

Name: Hwy 58 WB E
Route type One-way
View angle: 50.0 deg



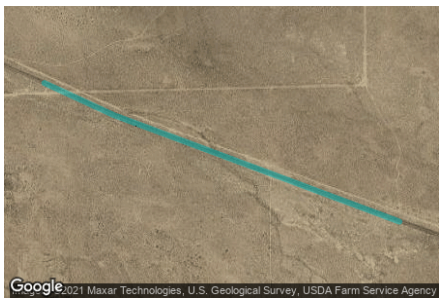
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018192	-117.999931	2673.24	6.00	2679.24
2	35.018502	-118.005555	2649.25	6.00	2655.25
3	35.018954	-118.012223	2665.92	6.00	2671.92
4	35.019549	-118.021211	2661.05	6.00	2667.05
5	35.020571	-118.027816	2620.15	6.00	2626.16

Name: Hwy 58 WB F
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019263	-118.022749	2653.48	6.00	2659.48
2	35.019025	-118.019268	2655.74	6.00	2661.74
3	35.018311	-118.007758	2652.47	6.00	2658.47
4	35.018025	-118.003410	2653.23	6.00	2659.23

Name: Mojave Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.979919	-118.070404	2502.42	6.00	2508.42
2	34.978757	-118.067320	2497.02	6.00	2503.02
3	34.974909	-118.054637	2478.57	6.00	2484.57

Name: Old Mojave-Barstow Hwy
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.042860	-118.149944	2707.25	6.00	2713.25
2	35.035074	-118.116322	2631.79	6.00	2637.79

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68
OP 7	35.035917	-118.123537	2644.02	0.00	2644.02

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
I01	SA tracking	SA tracking	0	0	-	-
I02	SA tracking	SA tracking	0	0	-	-
I03	SA tracking	SA tracking	0	0	-	-
I04	SA tracking	SA tracking	0	0	-	-
I05	SA tracking	SA tracking	0	0	-	-
I06	SA tracking	SA tracking	0	0	-	-
I07	SA tracking	SA tracking	0	0	-	-
I08	SA tracking	SA tracking	0	0	-	-
I09	SA tracking	SA tracking	0	0	-	-
I10	SA tracking	SA tracking	0	0	-	-
I11	SA tracking	SA tracking	0	0	-	-
I12	SA tracking	SA tracking	0	0	-	-
I13	SA tracking	SA tracking	0	0	-	-
I14	SA tracking	SA tracking	0	0	-	-
I15	SA tracking	SA tracking	0	0	-	-
I16	SA tracking	SA tracking	0	0	-	-
I17	SA tracking	SA tracking	0	0	-	-
I18	SA tracking	SA tracking	0	0	-	-
I19	SA tracking	SA tracking	0	0	-	-
I20	SA tracking	SA tracking	0	0	-	-
I21	SA tracking	SA tracking	0	0	-	-
I22	SA tracking	SA tracking	0	0	-	-
I23	SA tracking	SA tracking	0	0	-	-
I24	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

I01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

I24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB B	0	0
Route: Hwy 58 EB C	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Mojave Blvd B	0	0
Route: Old Mojave-Barstow Hwy	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX A-10

Modeling Results for Analysis Group J

Bellefield Solar Project

Bellefield Solar Analysis Group J Rest at 10

Created April 30, 2021
Updated April 30, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 53123.8908

Project type V1
Project status: active

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:

- Observation point: **Version 1**
- 2-Mile Flight Path: **Version 1**
- Route: **Version 1**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
J01	SA tracking	SA tracking	0	0	-
J02	SA tracking	SA tracking	0	0	-
J03	SA tracking	SA tracking	0	0	-
J04	SA tracking	SA tracking	0	0	-
J05	SA tracking	SA tracking	0	0	-
J06	SA tracking	SA tracking	0	0	-
J07	SA tracking	SA tracking	0	0	-
J08	SA tracking	SA tracking	0	0	-
J09	SA tracking	SA tracking	0	0	-
J10	SA tracking	SA tracking	0	0	-
J11	SA tracking	SA tracking	0	0	-
J12	SA tracking	SA tracking	0	0	-
J13	SA tracking	SA tracking	0	0	-
J14	SA tracking	SA tracking	0	0	-
J15	SA tracking	SA tracking	0	0	-
J16	SA tracking	SA tracking	0	0	-
J17	SA tracking	SA tracking	0	0	-
J18	SA tracking	SA tracking	0	0	-
J19	SA tracking	SA tracking	0	0	-
J20	SA tracking	SA tracking	0	0	-
J21	SA tracking	SA tracking	0	0	-
J22	SA tracking	SA tracking	0	0	-
J23	SA tracking	SA tracking	0	0	-
J24	SA tracking	SA tracking	0	0	-
J25	SA tracking	SA tracking	0	0	-
J26	SA tracking	SA tracking	0	0	-
J27	SA tracking	SA tracking	0	0	-
J28	SA tracking	SA tracking	0	0	-
J29	SA tracking	SA tracking	0	0	-

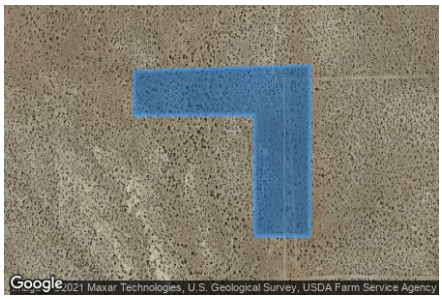
Component Data

PV Array(s)

Total PV footprint area: 567.8 acres

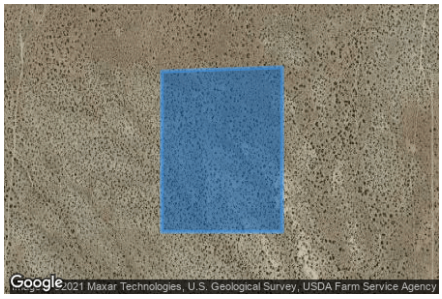
Name: J01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-117.988885	2680.51	4.00	2684.51
2	35.025794	-117.990099	2676.98	4.00	2680.98
3	35.027992	-117.990099	2694.28	4.00	2698.28
4	35.027992	-117.992771	2693.99	4.00	2697.99
5	35.028786	-117.992771	2696.89	4.00	2700.89
6	35.028889	-117.988878	2701.46	4.00	2705.46
7	35.025794	-117.988885	2680.51	4.00	2684.51



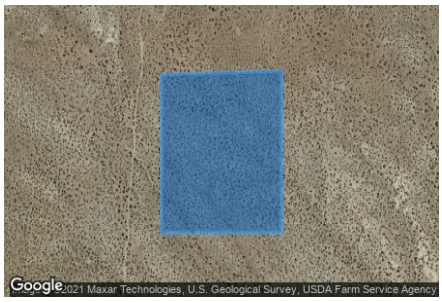
Name: J02
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-117.992771	2677.25	4.00	2681.25
2	35.025794	-117.995443	2691.98	4.00	2695.98
3	35.028709	-117.995443	2707.98	4.00	2711.98
4	35.028786	-117.992771	2696.89	4.00	2700.89
5	35.027992	-117.992771	2693.99	4.00	2697.99
6	35.025794	-117.992771	2677.25	4.00	2681.25



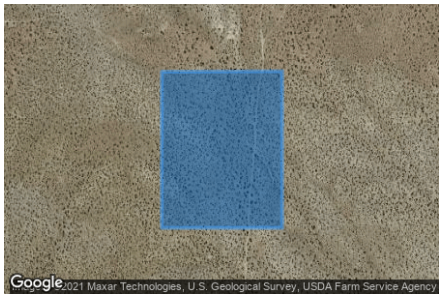
Name: J03
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-117.995443	2691.98	4.00	2695.98
2	35.025794	-117.998115	2697.79	4.00	2701.79
3	35.028644	-117.998115	2725.71	4.00	2729.71
4	35.028709	-117.995443	2707.98	4.00	2711.98
5	35.025794	-117.995443	2691.98	4.00	2695.98



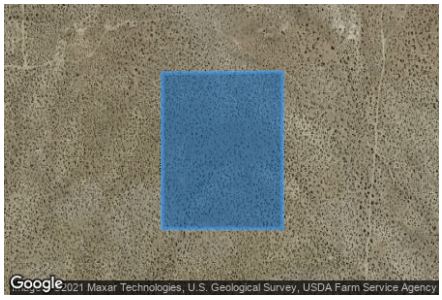
Name: J04
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 19.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-117.998115	2697.79	4.00	2701.79
2	35.025794	-118.000788	2706.59	4.00	2710.59
3	35.028632	-118.000788	2725.74	4.00	2729.74
4	35.028644	-117.998115	2725.71	4.00	2729.71
5	35.025794	-117.998115	2697.79	4.00	2701.79



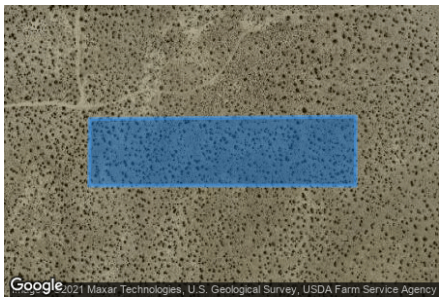
Name: J05
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-118.000788	2706.59	4.00	2710.59
2	35.025794	-118.003460	2709.40	4.00	2713.40
3	35.027992	-118.003460	2723.50	4.00	2727.50
4	35.028616	-118.003460	2731.07	4.00	2735.07
5	35.028632	-118.000788	2725.74	4.00	2729.74
6	35.025794	-118.000788	2706.59	4.00	2710.59



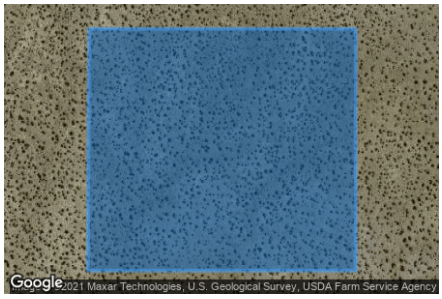
Name: J06
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 2.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 4.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.027992	-118.006419	2716.94	4.00	2720.94
2	35.028594	-118.006413	2722.89	4.00	2726.89
3	35.028616	-118.003460	2731.07	4.00	2735.07
4	35.027992	-118.003460	2723.50	4.00	2727.50
5	35.027992	-118.006419	2716.94	4.00	2720.94



Name: J07
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

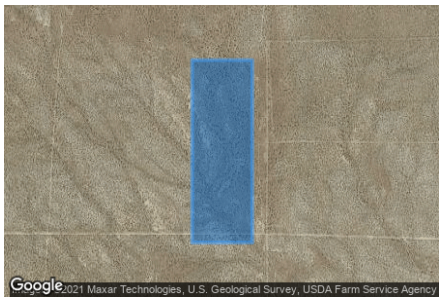
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.025794	-118.006433	2697.61	4.00	2701.61
2	35.027992	-118.006419	2716.94	4.00	2720.94
3	35.027992	-118.003460	2723.50	4.00	2727.50
4	35.025794	-118.003460	2709.40	4.00	2713.40
5	35.025794	-118.006433	2697.61	4.00	2701.61



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

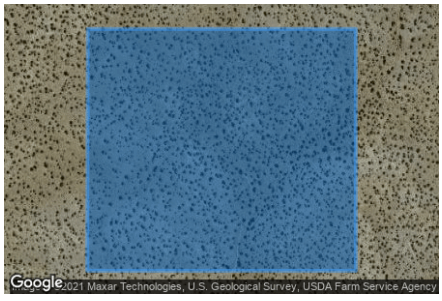
Name: J08
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 40.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021398	-117.990100	2643.48	4.00	2647.48
2	35.021398	-117.992772	2661.49	4.00	2665.49
3	35.025794	-117.992771	2677.25	4.00	2681.25
4	35.027992	-117.992771	2693.99	4.00	2697.99
5	35.027992	-117.990099	2694.28	4.00	2698.28
6	35.025794	-117.990099	2676.98	4.00	2680.98
7	35.021398	-117.990100	2643.48	4.00	2647.48



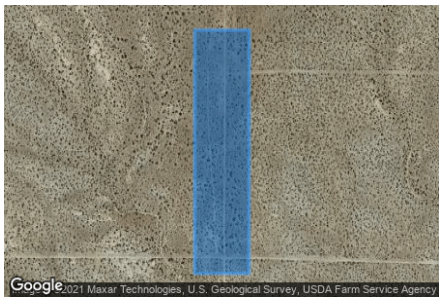
Name: J09
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.023596	-118.006440	2687.63	4.00	2691.63
2	35.025794	-118.006433	2697.61	4.00	2701.61
3	35.025794	-118.003460	2709.40	4.00	2713.40
4	35.023596	-118.003460	2691.18	4.00	2695.18
5	35.023596	-118.006440	2687.63	4.00	2691.63



Name: J10
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.3 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

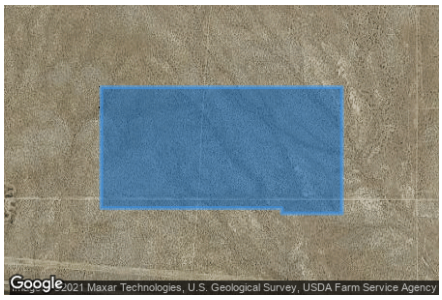
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021398	-117.988895	2647.87	4.00	2651.87
2	35.021398	-117.990100	2643.48	4.00	2647.48
3	35.025794	-117.990099	2676.98	4.00	2680.98
4	35.025794	-117.988885	2680.51	4.00	2684.51
5	35.021398	-117.988895	2647.87	4.00	2651.87



Note: PV array encompasses a large surface area (greater than 25 acres). Accuracy of path receptor glare analysis may be affected by footprint size. Additional analyses of array sub-sections may provide more information on expected glare.

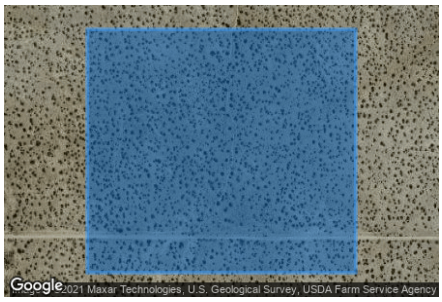
Name: J11
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 109.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021398	-117.992772	2661.49	4.00	2665.49
2	35.021206	-117.992772	2658.92	4.00	2662.92
3	35.021206	-117.995444	2669.61	4.00	2673.61
4	35.021398	-117.995444	2671.45	4.00	2675.45
5	35.021398	-117.998116	2675.94	4.00	2679.94
6	35.021398	-118.000788	2682.44	4.00	2686.44
7	35.021398	-118.003460	2672.38	4.00	2676.38
8	35.023596	-118.003460	2691.18	4.00	2695.18
9	35.025794	-118.003460	2709.40	4.00	2713.40
10	35.025794	-118.000788	2706.59	4.00	2710.59
11	35.025794	-117.998115	2697.79	4.00	2701.79
12	35.025794	-117.995443	2691.98	4.00	2695.98
13	35.025794	-117.992771	2677.25	4.00	2681.25
14	35.021398	-117.992772	2661.49	4.00	2665.49



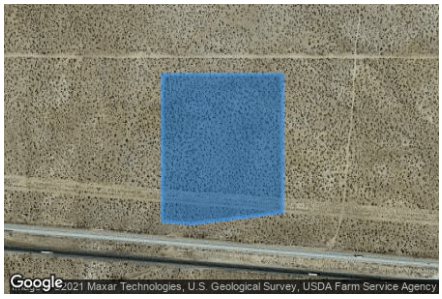
Name: J12
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021398	-118.006439	2666.68	4.00	2670.68
2	35.023596	-118.006440	2687.63	4.00	2691.63
3	35.023596	-118.003460	2691.18	4.00	2695.18
4	35.021398	-118.003460	2672.38	4.00	2676.38
5	35.021398	-118.006439	2666.68	4.00	2670.68



Name: J13
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018894	-118.000788	2668.36	4.00	2672.36
2	35.018683	-118.002829	2658.99	4.00	2662.99
3	35.018732	-118.003459	2658.09	4.00	2662.09
4	35.021398	-118.003460	2672.38	4.00	2676.38
5	35.021398	-118.000788	2682.44	4.00	2686.44
6	35.018894	-118.000788	2668.36	4.00	2672.36



Name: J14
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017857	-117.988905	2630.30	4.00	2634.30
2	35.018245	-117.992772	2650.13	4.00	2654.13
3	35.019200	-117.992772	2656.25	4.00	2660.25
4	35.019200	-117.990100	2643.70	4.00	2647.70
5	35.021398	-117.990100	2643.48	4.00	2647.48
6	35.021398	-117.988895	2647.87	4.00	2651.87
7	35.017857	-117.988905	2630.30	4.00	2634.30



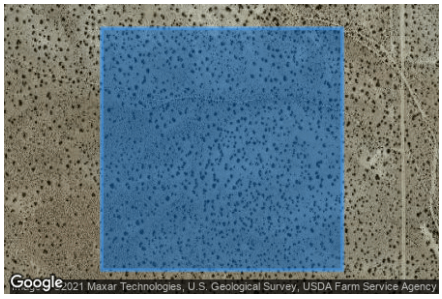
Name: J15
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018832	-117.998116	2666.59	4.00	2670.59
2	35.019036	-117.999397	2677.85	4.00	2681.85
3	35.018894	-118.000788	2668.36	4.00	2672.36
4	35.021398	-118.000788	2682.44	4.00	2686.44
5	35.021398	-117.998116	2675.94	4.00	2679.94
6	35.018832	-117.998116	2666.59	4.00	2670.59



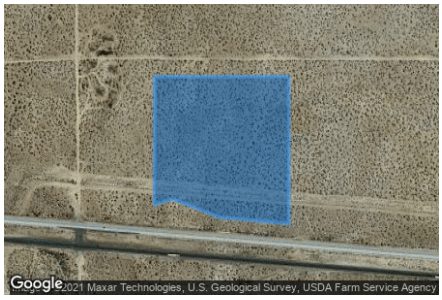
Name: J16
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019200	-117.990100	2643.70	4.00	2647.70
2	35.019200	-117.992772	2656.25	4.00	2660.25
3	35.021398	-117.992772	2661.49	4.00	2665.49
4	35.021398	-117.990100	2643.48	4.00	2647.48
5	35.019200	-117.990100	2643.70	4.00	2647.70



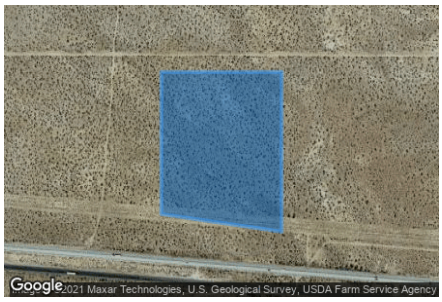
Name: J17
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 18.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018732	-118.003459	2658.09	4.00	2662.09
2	35.018850	-118.005000	2651.82	4.00	2655.82
3	35.019182	-118.006054	2648.98	4.00	2652.98
4	35.019074	-118.006445	2647.62	4.00	2651.62
5	35.021398	-118.006439	2666.68	4.00	2670.68
6	35.021398	-118.003460	2672.38	4.00	2676.38
7	35.018732	-118.003459	2658.09	4.00	2662.09



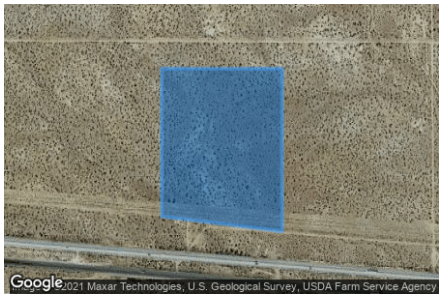
Name: J18
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019200	-117.995444	2656.15	4.00	2660.15
2	35.018514	-117.995444	2652.72	4.00	2656.72
3	35.018832	-117.998116	2666.59	4.00	2670.59
4	35.021398	-117.998116	2675.94	4.00	2679.94
5	35.021398	-117.995444	2671.45	4.00	2675.45
6	35.019200	-117.995444	2656.15	4.00	2660.15



Name: J19
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.021206	-117.995444	2669.61	4.00	2673.61
2	35.021206	-117.992772	2658.92	4.00	2662.92
3	35.019200	-117.992772	2656.25	4.00	2660.25
4	35.018245	-117.992772	2650.13	4.00	2654.13
5	35.018514	-117.995444	2652.72	4.00	2656.72
6	35.019200	-117.995444	2656.15	4.00	2660.15
7	35.021206	-117.995444	2669.61	4.00	2673.61



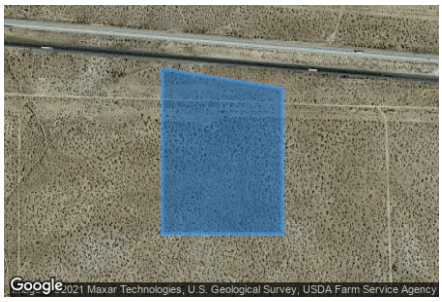
Name: J20
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 11.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017721	-118.005497	2644.60	4.00	2648.60
2	35.017935	-118.005403	2643.56	4.00	2647.56
3	35.017780	-118.003459	2651.17	4.00	2655.17
4	35.017002	-118.003459	2655.07	4.00	2659.07
5	35.017002	-118.006131	2635.94	4.00	2639.94
6	35.017002	-118.008644	2639.97	4.00	2643.97
7	35.018148	-118.008656	2646.61	4.00	2650.61
8	35.018058	-118.007162	2642.08	4.00	2646.08
9	35.017923	-118.006974	2640.23	4.00	2644.23
10	35.017869	-118.006343	2640.84	4.00	2644.84
11	35.017697	-118.005948	2644.96	4.00	2648.96
12	35.017721	-118.005497	2644.60	4.00	2648.60



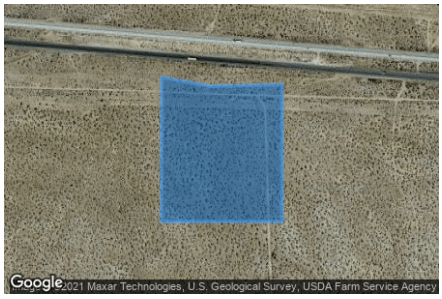
Name: J21
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 17.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014804	-118.000787	2655.98	4.00	2659.98
2	35.014804	-118.003459	2654.41	4.00	2658.41
3	35.017002	-118.003459	2655.07	4.00	2659.07
4	35.017780	-118.003459	2651.17	4.00	2655.17
5	35.017425	-118.000788	2668.72	4.00	2672.72
6	35.014804	-118.000787	2655.98	4.00	2659.98



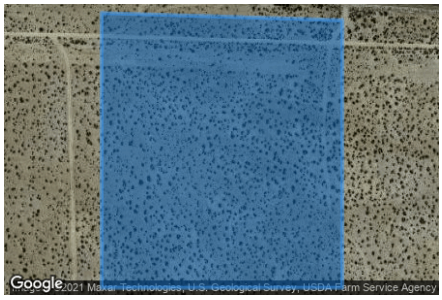
Name: J22
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.017294	-117.998116	2666.93	4.00	2670.93
2	35.014804	-117.998116	2650.79	4.00	2654.79
3	35.014804	-118.000787	2655.98	4.00	2659.98
4	35.017425	-118.000788	2668.72	4.00	2672.72
5	35.017263	-117.999729	2671.66	4.00	2675.66
6	35.017294	-117.998116	2666.93	4.00	2670.93



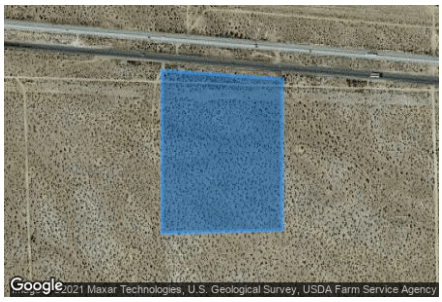
Name: J23
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014804	-117.995444	2645.70	4.00	2649.70
2	35.014804	-117.998116	2650.79	4.00	2654.79
3	35.017294	-117.998116	2666.93	4.00	2670.93
4	35.017229	-117.995444	2649.45	4.00	2653.46
5	35.014804	-117.995444	2645.70	4.00	2649.70



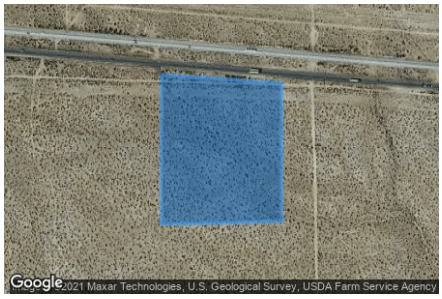
Name: J24
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014287	-117.995444	2640.58	4.00	2644.58
2	35.014804	-117.995444	2645.70	4.00	2649.70
3	35.017229	-117.995444	2649.45	4.00	2653.46
4	35.017072	-117.992772	2637.43	4.00	2641.43
5	35.014346	-117.992772	2636.16	4.00	2640.16
6	35.014287	-117.995444	2640.58	4.00	2644.58



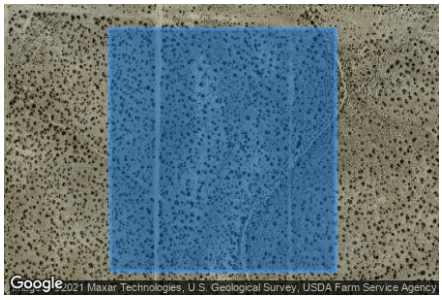
Name: J25
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 16.4 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014346	-117.992772	2636.16	4.00	2640.16
2	35.017072	-117.992772	2637.43	4.00	2641.43
3	35.016916	-117.990100	2635.38	4.00	2639.38
4	35.014804	-117.990100	2618.91	4.00	2622.91
5	35.014404	-117.990100	2621.31	4.00	2625.31
6	35.014346	-117.992772	2636.16	4.00	2640.16



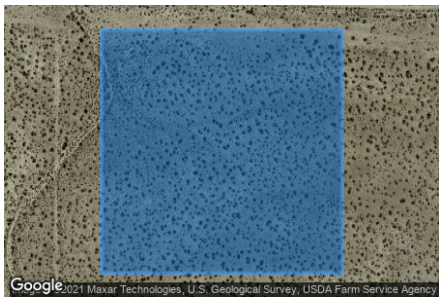
Name: J26
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014804	-118.006131	2631.62	4.00	2635.62
2	35.014804	-118.008626	2630.38	4.00	2634.38
3	35.017002	-118.008644	2639.97	4.00	2643.97
4	35.017002	-118.006131	2635.94	4.00	2639.94
5	35.014804	-118.006131	2631.62	4.00	2635.62



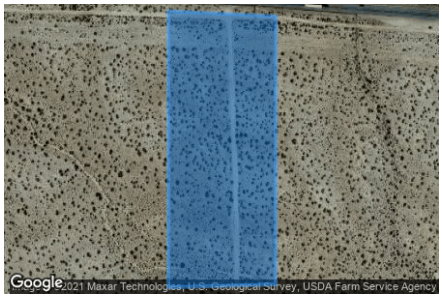
Name: J27
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.7 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014804	-118.003459	2654.41	4.00	2658.41
2	35.014804	-118.006131	2631.62	4.00	2635.62
3	35.017002	-118.006131	2635.94	4.00	2639.94
4	35.017002	-118.003459	2655.07	4.00	2659.07
5	35.014804	-118.003459	2654.41	4.00	2658.41



Name: J28
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 6.9 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014431	-117.988910	2613.12	4.00	2617.12
2	35.014404	-117.990100	2621.31	4.00	2625.31
3	35.014804	-117.990100	2618.91	4.00	2622.91
4	35.016916	-117.990100	2635.38	4.00	2639.38
5	35.016870	-117.988907	2625.92	4.00	2629.92
6	35.014431	-117.988910	2613.12	4.00	2617.12



Name: J29
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 1.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 13.6 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.014055	-118.006131	2632.52	4.00	2636.52
2	35.014804	-118.006131	2631.62	4.00	2635.62
3	35.014804	-118.003459	2654.41	4.00	2658.41
4	35.014804	-118.000787	2655.98	4.00	2659.98
5	35.014804	-117.998116	2650.79	4.00	2654.79
6	35.014804	-117.995444	2645.70	4.00	2649.70
7	35.014287	-117.995444	2640.58	4.00	2644.58
8	35.014055	-118.006131	2632.52	4.00	2636.52



2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15



Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



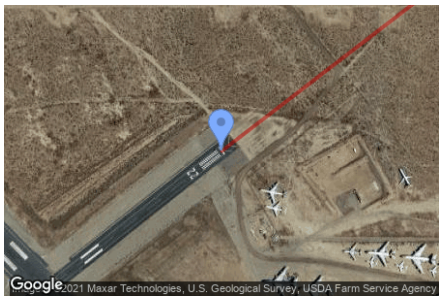
Name: MASP 12
Description: None
Threshold height : 50 ft
Direction: 135.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067997	-118.159056	2793.14	50.00	2843.14
2-mile point	35.088637	-118.183823	3014.95	381.62	3396.57



Name: MASP 22
Description: None
Threshold height : 50 ft
Direction: 232.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.067800	-118.151866	2779.04	50.00	2829.04
2-mile point	35.085397	-118.123804	2778.24	604.23	3382.47



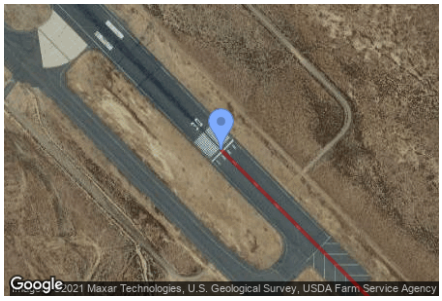
Name: MASP 26
Description: None
Threshold height : 50 ft
Direction: 270.2 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059183	-118.142549	2730.93	50.00	2780.94
2-mile point	35.059102	-118.107186	2677.53	656.93	3334.46



Name: MASP 30
Description: None
Threshold height : 50 ft
Direction: 314.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.046580	-118.133135	2681.13	50.00	2731.13
2-mile point	35.026204	-118.108051	2594.83	689.73	3284.56



Name: MASP 4
Description: None
Threshold height : 50 ft
Direction: 51.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059748	-118.164297	2777.94	50.00	2827.94
2-mile point	35.041580	-118.191806	2773.04	608.33	3381.37



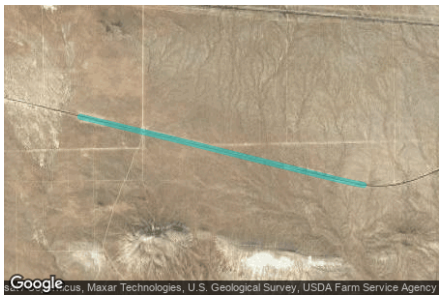
Name: MASP 8
Description: None
Threshold height : 50 ft
Direction: 90.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.059242	-118.166076	2778.64	50.00	2828.64
2-mile point	35.059272	-118.201439	2921.24	460.82	3382.07



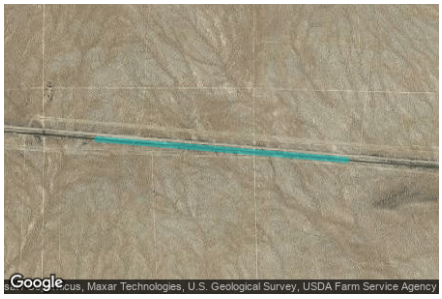
Route Receptor(s)

Name: BNSF Mojave Subdivision RR C
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.003260	-118.044934	2530.98	14.00	2544.98
2	34.999545	-118.026063	2550.88	14.00	2564.88
3	34.997164	-118.014327	2544.62	14.00	2558.62
4	34.994231	-117.999763	2534.35	14.00	2548.35
5	34.993623	-117.996371	2532.43	14.00	2546.43
6	34.993337	-117.994589	2533.08	14.00	2547.08

Name: Hwy 58 EB F
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018025	-118.003410	2653.23	6.00	2659.23
2	35.016514	-117.981218	2601.10	6.00	2607.10

Name: Hwy 58 WB E
Route type One-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.018192	-117.999931	2673.24	6.00	2679.24
2	35.018502	-118.005555	2649.25	6.00	2655.25
3	35.018954	-118.012223	2665.92	6.00	2671.92
4	35.019549	-118.021211	2661.05	6.00	2667.05
5	35.020571	-118.027816	2620.15	6.00	2626.16

Name: Hwy 58 WB F
Route type One-way
View angle: 50.0 deg



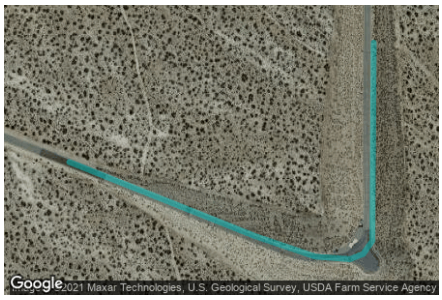
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.019263	-118.022749	2653.48	6.00	2659.48
2	35.019025	-118.019268	2655.74	6.00	2661.74
3	35.018311	-118.007758	2652.47	6.00	2658.47
4	35.018025	-118.003410	2653.23	6.00	2659.23

Name: Hwy 58 WB G
Route type Two-way
View angle: 50.0 deg



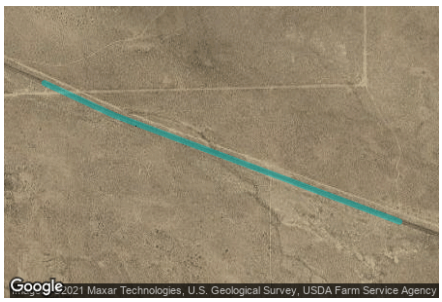
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.016838	-117.980412	2602.89	6.00	2608.89
2	35.018192	-117.999931	2673.24	6.00	2679.24

Name: Hyundai-Kia Blvd D
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.040464	-118.008163	2786.84	6.00	2792.84
2	35.038663	-118.008178	2827.90	6.00	2833.90
3	35.038544	-118.008279	2828.46	6.00	2834.46
4	35.038496	-118.008424	2827.77	6.00	2833.77
5	35.038520	-118.008816	2824.63	6.00	2830.63
6	35.038711	-118.009497	2804.79	6.00	2810.79
7	35.039378	-118.011542	2735.01	6.00	2741.01

Name: Mojave Blvd B
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.979919	-118.070404	2502.42	6.00	2508.42
2	34.978757	-118.067320	2497.02	6.00	2503.02
3	34.974909	-118.054637	2478.57	6.00	2484.57

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
5-ATCT	35.056808	-118.157829	2762.18	50.00	2812.18
6-ATCT	35.057003	-118.149449	2746.67	130.01	2876.68
OP 7	35.035917	-118.123537	2644.02	0.00	2644.02

5-ATCT map image



6-ATCT map image



Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
J01	SA tracking	SA tracking	0	0	-	-
J02	SA tracking	SA tracking	0	0	-	-
J03	SA tracking	SA tracking	0	0	-	-
J04	SA tracking	SA tracking	0	0	-	-
J05	SA tracking	SA tracking	0	0	-	-
J06	SA tracking	SA tracking	0	0	-	-
J07	SA tracking	SA tracking	0	0	-	-
J08	SA tracking	SA tracking	0	0	-	-
J09	SA tracking	SA tracking	0	0	-	-
J10	SA tracking	SA tracking	0	0	-	-
J11	SA tracking	SA tracking	0	0	-	-
J12	SA tracking	SA tracking	0	0	-	-
J13	SA tracking	SA tracking	0	0	-	-
J14	SA tracking	SA tracking	0	0	-	-
J15	SA tracking	SA tracking	0	0	-	-
J16	SA tracking	SA tracking	0	0	-	-
J17	SA tracking	SA tracking	0	0	-	-
J18	SA tracking	SA tracking	0	0	-	-
J19	SA tracking	SA tracking	0	0	-	-
J20	SA tracking	SA tracking	0	0	-	-
J21	SA tracking	SA tracking	0	0	-	-
J22	SA tracking	SA tracking	0	0	-	-
J23	SA tracking	SA tracking	0	0	-	-
J24	SA tracking	SA tracking	0	0	-	-
J25	SA tracking	SA tracking	0	0	-	-
J26	SA tracking	SA tracking	0	0	-	-
J27	SA tracking	SA tracking	0	0	-	-
J28	SA tracking	SA tracking	0	0	-	-
J29	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

J01 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J02 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J03 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J04 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J05 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J06 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J07 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J08 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J09 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J10 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J11 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J14 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J15 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J17 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J18 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J19 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J20 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J21 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J22 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J23 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J24 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J25 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J26 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J27 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J28 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

J29 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
FP: MASP 12	0	0
FP: MASP 22	0	0
FP: MASP 26	0	0
FP: MASP 30	0	0
FP: MASP 4	0	0
FP: MASP 8	0	0
OP: 5-ATCT	0	0
OP: 6-ATCT	0	0
OP: OP 7	0	0
Route: BNSF Mojave Subdivision RR C	0	0
Route: Hwy 58 EB F	0	0
Route: Hwy 58 WB E	0	0
Route: Hwy 58 WB F	0	0
Route: Hwy 58 WB G	0	0
Route: Hyundai-Kia Blvd D	0	0
Route: Mojave Blvd B	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for larg PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, nc discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Appendix C
Air Quality and Greenhouse Gases

C.1 Air Quality and Greenhouse Gas Technical Report

C.2 Amicus Curiae Brief, Friant Ranch, SJVUAPCD

C.3 Amicus Curiae Brief, Friant Ranch, SCAQMD

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C.1 Air Quality and Greenhouse Gas Technical Report

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Bellefield Solar Farm Project

Air Quality and Greenhouse Gas Study

prepared for

8minute Solar Energy, LLC
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February 2021

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1 Project Description

1.1 Introduction

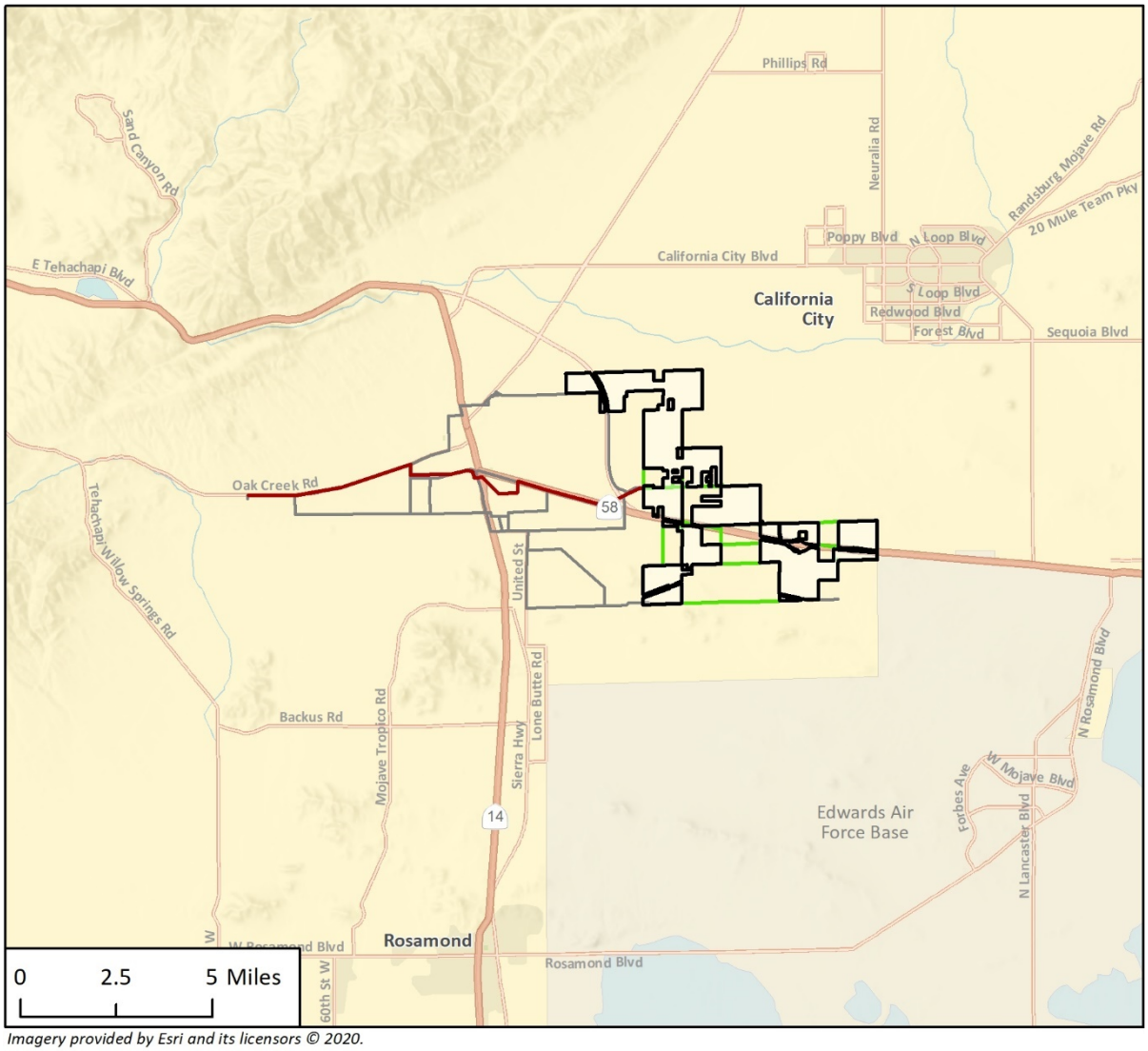
This study analyzes the air quality, greenhouse gas (GHG) emissions, and potential health risk impacts of the proposed Bellefield Solar Farm Project (Project) located in unincorporated Kern County and within California City. Rincon Consultants, Inc. (Rincon) prepared this study under contract to 8minute Solar Energy, LLC for use by Kern County. The purpose of this study is to analyze the Project's air quality, GHG, and health risk impacts related to both temporary construction activity and long-term operation of the Project.

1.2 Project Site and Description

The Project site is located in portions of unincorporated Kern County, near the community of Mojave, and in California City. This site is a relatively flat desert landscape. The Project site straddles State Route (SR) 58, east of Mojave and just west and south of the Hyundai-Kia Proving Ground. The Project site includes 80 parcels totaling 6,122 gross acres in unincorporated Kern County and 8 parcels totaling approximately 2,102 gross acres in California City. This Project description is abbreviated, focusing on elements of the proposed solar facility that are most relevant for the air quality, health risk, and greenhouse gas analysis. On the parcels, the Project would use solar photovoltaic (PV) panels or modules on mounting frameworks to convert sunlight directly into electricity. This electricity would be delivered from the panels to inverter stations, where the electricity would be converted from direct current (DC) to alternating current (AC). Each parcel may also include an operations and maintenance (O&M) building, substations, energy storage systems (ESS), and/or transmission facilities, as necessary. In addition to the solar PV sites, the Project would include a gen-tie corridor to deliver power from the solar facility to the electrical grid. This corridor would run to the SCE Windhub Substation via up to 230 kV overhead and/or underground electrical transmissions lines. Figure 1 and Figure 2 show the regional location and immediate vicinity of the Project site, respectively.

This Project description is abbreviated, focusing on elements of the proposed solar facility that are most relevant for the air quality, health risk, and greenhouse gas analysis. On the parcels, the Project would use solar photovoltaic (PV) panels or modules on mounting frameworks to convert sunlight directly into electricity. This electricity would be delivered from the panels to inverter stations, where the electricity would be converted from direct current (DC) to alternating current (AC). Each parcel may also include an operations and maintenance (O&M) building, substations, energy storage systems (ESS), and/or transmission facilities, as necessary. In addition to the solar PV sites, the Project would include a gen-tie corridor to deliver power from the solar facility to the electrical grid. This corridor would run to the SCE Windhub Substation via up to 230 kV overhead and/or underground electrical transmissions lines.

Figure 1 Regional Location



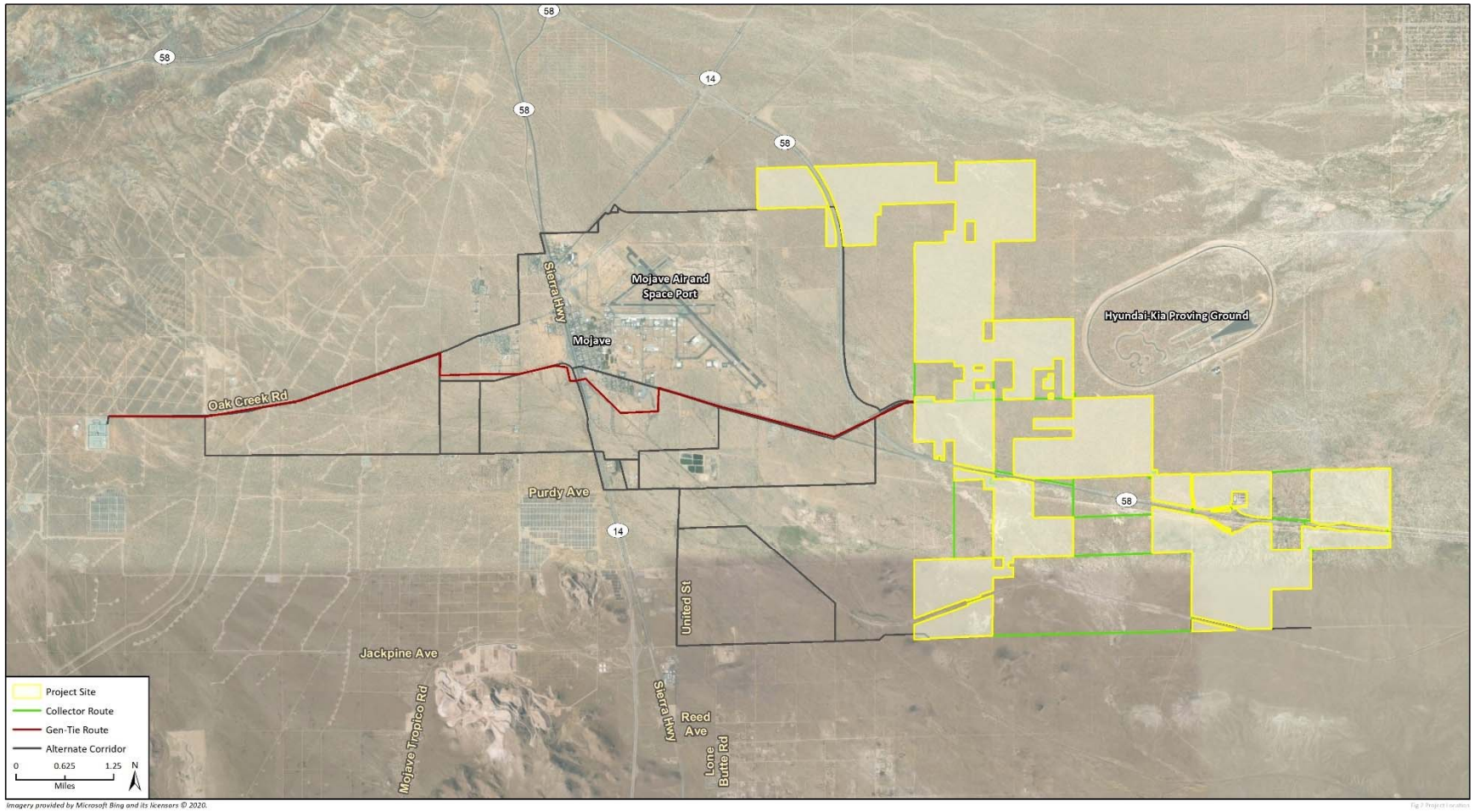
Imagery provided by Esri and its licensors © 2020.

Project Location
Collector Route
Gen-Tie Route
Alternate Corridor

N



Figure 2 Project Location



1.3 Construction Activities

Construction of all Project components would occur over approximately 18 to 24 months beginning as early as the fourth quarter of 2021 (i.e., October 1, 2021). Construction of the Project would include the following types of activities[1]:

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

Each parcel may be constructed simultaneously and phases of construction would overlap.

Table 1 shows the assumed construction schedule, number of workdays, and overlapping phases that were used in the following analysis.

Table 1 Overall Project Construction Schedule

Phase	Work Days	Month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Phase 1	218																								
Phase 2	250																								
Phase 3	250																								
Phase 4	292																								
Phase 5	334																								

Note: Construction schedule assumptions are based on previous Solar Project experience, such that the number of days per phase were proportionally scaled up based on in an overall increase in schedule and acreage.

Construction traffic would access the Project site from Highway 58, Altus Avenue, Silver Queen Road, and 50th Street. It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during the construction of the Project. On-road traffic would consist of employee and vendor vehicle trips. The number of vehicle trips would vary by month depending on the construction activities.

Heavy construction is expected to occur between 6:00 a.m. and 5:00 p.m., Monday through Friday. Additional hours may be necessary to make-up schedule deficiencies or to complete critical

[1] This list of types of construction activities is presented without respect to the construction schedule shown in Table 1 and is provided as an example of the type of work that will be conducted. For example, Phase 1 would include activities such as site preparation, grading and earth work; Phase 2 would include activities such as concrete foundations; Phase 3 would include activities such as trenching and collector line installation; Phase 4 would include activities such as structural steel work; Phase 5 would include activities such as electrical/instrumentation work. Additional activities not listed above such as material delivery would also occur during various phases of construction.

construction activities. Some activities may continue 24 hours per day, seven days per week. Nighttime activities could include, but are not limited to, equipment refueling, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies would be delivered to the Project site by truck. Truck deliveries would normally occur during daylight hours. However, there could be offloading and/or transporting of materials to the Project site on weekends and during evening hours.

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

1.4 Operational Activities

Once completed, the Project would generally be limited to the following maintenance activities:

- Cleaning PV panels
- Monitoring electricity generation
- Providing site security
- Maintaining the facility: replacing or repairing inverters, wiring, and PV modules

The Project would operate continuously, seven days a week, until the anticipated repowering or decommissioning of the Project in 30 to 40 years. It is expected that the Project would require an operational staff of up to 20 full-time employees. The Project may share an O&M, a substation, and/or transmission facilities with one or more nearby energy Projects, which would reduce the proposed Project's on-site operational staff. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

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2 Air Quality

2.1 Background

2.1.1 Environmental Setting

a. Local Climate and Meteorology

A portion of the Project site is in unincorporated Kern County near the community of Mojave and a portion of the Project is located in California City. The Project site is situated in the Mojave Desert portion of the Mojave Desert Air Basin (MDAB). The MDAB is disconnected from the southern California coastal and central California valley regions by the Tehachapi Mountains to the west and by the San Gabriel Mountains to the south. The mountains in the lower region generally reach heights of 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB come from the west and southwest, and are due to a combination of the proximity of MDAB to coastal and central regions and the location of the Sierra Nevada Mountains to the north that prevent air from passing through. The Eastern Kern Air Pollution Control District (EKAPCD) has jurisdiction over air quality management in the Mojave Desert portion of Kern County. The EKAPCD jurisdiction spans the northeastern corner of the MDAB and encompasses the eastern portion of Kern County, including the incorporated cities of Mojave and California City.

During summer, the MDAB is normally influenced by the Pacific subtropical high cell off the coast that prevents cloud formation and encourages daytime solar heating. Cold air masses moving south from Canada and Alaska do not generally influence the MDAB because the frontal systems are weak and diffuse before they reach the desert. Therefore, desert moisture comes in the form of warm, moist, unstable air masses from the south and the MDAB averages three to seven inches of rain annually. Thus, it is classified as a dry-hot desert climate where temperatures can be in excess of 95 degrees Fahrenheit for 60 to 70 days per year with almost no precipitation (EKAPCD 2017).

b. Air Pollutants of Concern

The United States Environmental Protection Agency (USEPA) has identified criteria air pollutants that are a threat to public health and welfare. These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare standards. Criteria pollutants that are a concern in the Air Basin are described below.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving precursor organic compounds (POC) and nitrogen oxides (NO_X). POC and NO_X are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of POC and NO_X under the influence of wind and sunlight. Ozone concentrations tend to be

higher in the late spring, summer, and fall, when the long sunny days combine with summertime temperature inversions[2] to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. Exposure to elevated ozone concentrations can cause eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is an air quality pollutant of concern because it acts as a respiratory irritant. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_X. A precursor to ozone formation, NO_X is produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO_X emitted from fuel combustion is in the form of nitric oxide (NO) and NO_2. NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high pollution days, especially in conjunction with high ozone levels.

Carbon Monoxide

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease.

Particulate Matter

Particulates less than 10 microns in diameter (PM_{10}) and less than 2.5 microns in diameter ($PM_{2.5}$) can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. According to a study by the California Air Resources Board (CARB), exposure to ambient $PM_{2.5}$ can be associated with approximately 7,300 to 11,000 annual premature deaths statewide (CARB 2010). Particulates also can damage materials and reduce visibility. Research has indicated that there are associations between increased levels of ambient particulate matter and increased adverse respiratory health. For PM_{10}, there are associations between particulate levels and decreased pulmonary function, increased number of asthma attacks, increased asthma

[2] Inversions occur when warm air sits over cooler air, trapping the cooler air at elevations near or above ground level. When these inversions occur in the Basin they trap pollutants from dispersing vertically while the mountains surrounding the San Joaquin Valley trap the pollutants from dispersing horizontally.

medication usage, increased emergency room visits, and hospital admissions for respiratory illness, and increased daily mortality (CARB 2004).

Other Criteria Pollutants

Sulfur dioxide (SO_2) is a combustion product of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (both PM_{10} and $PM_{2.5}$) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Lead has a range of adverse neurotoxic health effects and was formerly released into the atmosphere primarily via the combustion of leaded gasoline. The use of leaded gasoline ceased in the United States after 1995, resulting in decreasing levels of atmospheric lead. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of ozone are referred to and regulated as reactive organic gases (ROG). Sources of ROGs include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint. The primary health effects of ROGs result from the formation of ozone and its related health effects.

c. Toxic Air Contaminants

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TAC) are another group of pollutants of concern. Assembly Bill 1807 (AB 1807) sets forth a procedure for the identification and control of TACs in California. CARB defines a TAC as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health. Because no safe levels of TACs can be determined, there are no ambient air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. Although construction activity is short-lived, it may increase TAC concentrations in the short term at nearby sensitive receptors. A common source of TAC emissions during construction activities is diesel particulate matter (DPM) due to the operation of diesel-powered equipment and heavy-duty trucks. Because DPM is the primary contaminant of concern for construction of the Project and would be the TAC emitted in the largest quantity, health risks were assessed as they relate to DPM exposure.

Diesel Particulate Matter

Diesel engine fuel combustion forms an important fraction of the particulate matter emission inventory, as particulates in diesel emissions are very small and readily respirable. The particles have hundreds of chemicals adsorbed onto their surfaces, including many known or suspected mutagens and carcinogens. The Office of Environmental Health Hazard Assessment (OEHHA) reviewed and evaluated the potential for diesel exhaust to affect human health, and the associated scientific uncertainties (CARB 1998). Based on the available scientific evidence, it was determined that a level of DPM exposure has not been identified, below which no carcinogenic effects are anticipated. The Scientific Review Panel that approved the OEHHA report determined that, based on studies to date, 3×10^{-4} micrograms per cubic meter ($\mu g/m^3$) is a reasonable estimate of the unit risk for DPM. This means that a person exposed to a DPM concentration of 1 $\mu g/m^3$ continuously over the course of a lifetime has a 3 per 10,000 chance (or 300 in one million chance) of contracting cancer due to this exposure. In 2000, the statewide estimated average concentration of diesel PM was 1.26 $\mu g/m^3$ for indoor and outdoor ambient air. If DPM concentrations remained the same, about 380 excess cancers per one million population could be expected (CARB 2000). Therefore, CARB has determined that these particulate emissions are a TAC.

DPM emissions are estimated to be responsible for about 70 percent of the total ambient statewide air toxics risk. DPM can also be responsible for elevated localized or near-source exposures ("hot-spots"). Depending on the activity and nearness to receptors, these potential risks are as high as 1,500 per million or more (CARB 2000). CARB staff have conducted risk characterization scenarios to determine the potential excess cancer risks involved when individuals are near various sources of diesel engine emissions, ranging from school buses to high volume freeways. The purpose of the risk characterization was to estimate, through air dispersion modeling, the cancer risk associated with typical diesel-fueled engine or vehicle activities based on modeled PM concentration at the point of maximum impact. The study included various sources of DPM emissions, including idling school buses, truck stops, low- and high-volume freeways, and other sources. High-volume freeways (20,000 or more trucks per day) were estimated to cause 800-1,700 per million potential excess cases of cancers, while low-volume freeways (2,000 or fewer trucks per day) were estimated to cause about 100-200 per million potential excess cases of cancers statewide (CARB 2000).

Valley Fever

Valley Fever or coccidioidomycosis is caused locally by the microscopic fungus *Coccidioides immitis (C. immitis)*. The *Coccidioides* fungus resides in the soil in southwestern United States, northern Mexico, and parts of Central and South America. All of Kern County is in the endemic area although the incident rate for Valley Fever in Kern County within the MDAB is less than the incident rate in Kern County within the San Joaquin Valley Air Basin, where the highest incidence rate within California occurs. Infection occurs when the spores of the fungus become airborne and are inhaled. The fungal spores become airborne when contaminated soil is disturbed by human activities, such as construction and agricultural activities, and natural phenomenons, such as wind storms, dust storms, and earthquakes. About 60 percent of infected persons have no symptoms. The remainder develop flu-like symptoms that can last for a month and tiredness that can sometimes last for longer than a few weeks. A small percentage of infected persons (<1 percent) can develop disseminated disease that spreads outside the lungs to the brain, bone, and skin. Without proper treatment, Valley Fever can lead to severe pneumonia, meningitis, and even death. Symptoms may appear between one to four weeks after exposure (Los Angeles County Health Department 2004).

Diagnosis of Valley Fever is conducted through a sample of blood, other body fluid, or biopsy of affected tissue. Valley Fever is treatable with anti-fungal medicines and is not contagious. Once recovered from the disease, the individual is protected against further infection. Persons at highest risk from exposure are those with compromised immune systems, such as those with human immunodeficiency virus (HIV) and those with chronic pulmonary disease. Farmers, construction workers, and others who engage in activities that disturb the soil are at highest risk for Valley Fever. Infants, pregnant women, diabetics, people of African, Asian, Latino, or Filipino descent, and the elderly may be at increased risk for disseminated disease. Historically, people at risk for infection are individuals not already immune to the disease and whose jobs involve extensive contact with soil dust, such as construction or agricultural workers and archeologists (Los Angeles County Health Department 2004).

During drought years, the number of organisms competing with *C. immitis* decreases, and *the C. immitis* remains alive but dormant. When rain finally occurs, the arthrocondia germinate and multiply more than usual because of a decreased number of other competing organisms. Later, the soil dries out in the summer and fall, and the fungi can become airborne and potentially infectious (Kirkland and Fierey 1996).

d. Existing Ambient Air Quality

The EKAPCD operates three air quality monitoring station in the MDAB. The purpose of the monitoring stations is to measure ambient concentrations of pollutants and determine whether ambient air quality meets the California and federal standards. The nearest monitoring station is located in Mojave at 923 Poole Station, approximately 3 miles west of the edge of the Project site. Table 2 indicates the number of days that each of the standards was exceeded at the Mojave-923 Poole Street monitoring station. Because NO_2 data not available from the Poole monitoring station, data for NO_2 has been taken from the next closest available monitoring station, the Lancaster-43301 Division Street monitoring station, located approximately 23 miles south of the project site. Because monitoring is not generally conducted for pollutants that are no longer likely to exceed ambient air quality standards, there is no recent monitoring data available for CO or SO_2. Additionally, there was no monitoring data available for hydrogen sulfide, vinyl chloride, or other toxic air contaminants in Kern County or any nearby counties. The data collected at the station indicates that the state and federal eight-hour ozone standards have been exceeded on at least 35 days each year from 2016 to 2018; state ozone worst hour standards were exceeded one to eight times each year from 2016 to 2018; the PM_{10} worst 24 hours state standard was exceeded 10 to 19 times each year from 2016-2018; the PM_{10} annual average state standard was exceeded in 2016; and the $PM_{2.5}$ standard was exceeded twice in 2018. No other federal or state standards were exceeded at this monitoring station.

Table 2 Ambient Air Quality at the Monitoring Station[1]

Pollutant	2016	2017	2018
Ozone, O_3			
8 Hour Ozone (ppm), 8-Hr Maximum	0.093	0.085	0.094
Number of Days of State exceedances (>0.070)	52	35	53
Number of days of Federal exceedances (>0.070)	52	35	53
Ozone (ppm), Worst Hour	0.104	0.097	0.111
Number of days above State standard (>0.09 ppm)	2	1	8
Number of days above Federal standard (>0.112 ppm)	0	0	0
Respirable Particulate Matter, PM_{10}			
Particulate Matter 10 microns, μg/m^3, Worst 24 Hours	139.2	93.4	93.1
Number of days above State standard (>50 μg/m^3)	18	10	19
Number of days above Federal standard (>150 μg/m^3)	0	0	0
Particulate Matter 10 microns, μg/m^3, Annual Average	23.8	*	*
Exceedance of State standard (>20 μg/m^3)	Yes	*	*
Fine Particulate Matter, $PM_{2.5}$			
Particulate Matter <2.5 microns, μg/m^3, Worst 24 Hours	25.7	26.9	39.0
Number of days above Federal standard (>35 μg/m^3)	0	0	2
Particulate Matter <2.5 microns, μg/m^3, Annual Average	7.4	5.5	7.1
Exceedance of State/Federal standard (>12 μg/m^3)	No	No	No
Carbon Monoxide, CO[2]			
Carbon monoxide (ppm), Worst Hour	ND	ND	ND

Pollutant	2016	2017	2018
Carbon monoxide (ppm), 8-Hr Maximum	ND	ND	ND
Nitrogen Dioxide, NO_2[3]			
Nitrogen Dioxide (ppb), Worst Hour	48	46	47
Number of days above State standard (>180 ppb)	0	0	0
Number of days above Federal standard (>100 ppb)	0	0	0
Nitrogen Dioxide (ppb), Annual Average	8	*	8
Exceedance of State standard (>30 ppb)	No	No	No
Exceedance of Federal standard (>53 ppb)	No	No	No
Sulfur Dioxide, SO_2[2]			
Sulfur Dioxide (ppm), Worst Hour	ND	ND	ND
Sulfur Dioxide (ppm), Worst 24 Hours	ND	ND	ND

[1] Mojave-923 Poole Street monitoring station

[2] Because monitoring is not generally conducted for pollutants that are no longer likely to exceed ambient air quality standards, there is no recent monitoring data available for CO or SO_2.

[3] Because NO_2 is not monitored at the 923 Poole Street monitoring station, data for NO2 has been taken from the next closest available monitoring station, the Lancaster-43301 Division Street monitoring station.* Means there was insufficient data available to determine the value

Source: CARB 2020

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include preexisting health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirmed are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods, with greater associated exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system. Ambient air quality standards were established to represent the levels of air quality considered sufficient, with a margin of safety, to protect public health and welfare. Standards are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases.

The Project parcels are generally located in an isolated area, away from sensitive receivers. The sensitive receptors with the highest potential to be affected by the Project include residential land uses located in the nearby communities of Mojave and California City. The nearest residence in Mojave are approximately 2.0 miles (10,560 feet) from the nearest Project parcel and the nearest residences in California City are approximately 2.9 miles (15,300 feet) from the eastern-most Project parcel. Kern County land near the Project site is mostly vacant and undeveloped; several isolated residences are located approximately 1.2 miles (6,550 feet) south of the southwestern-most Project parcel (near the

unincorporated community of Actis). This residence is the nearest identified sensitive receptor to the Project site. The gen-tie routes generally follow established roads or highways, which are alongside residences. As such, some of the proposed routes for the gen-tie corridor would run adjacent to sensitive receptors in Mojave, such as single-family residences. At its closest point, the gen-tie route on the north side of SR 58 and east of Myer Road may be located as close as 25 feet north of residences along Barstow Road in Mojave. These sensitive receptors are over 3.5 miles west of the primary Project site where the majority of emissions will be generated.

2.1.2 Regulatory Setting

a. Federal and State Criteria Air Pollutants

The federal and state governments have established ambient air quality standards for the protection of public health. The USEPA is the federal agency designated to administer air quality regulation, while the CARB is the state equivalent in the California Environmental Protection Agency (CalEPA). County-level Air Pollution Control Districts (APCD) provide local management of air quality. CARB has established air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. CARB has established 14 air basins statewide.

The USEPA has set primary national ambient air quality standards (NAAQS) for ozone CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb. Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established health-based California ambient air quality standards (CAAQS) for these and other pollutants, some of which are more stringent than the federal standards. Table 3 lists the current federal and state standards for regulated pollutants.

Table 3 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standards	California Standard
Ozone	1-Hour	–	0.09 ppm
	8-Hour	0.070 ppm	0.070 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.053 ppm	0.030 ppm
	1-Hour	0.100 ppm	0.18 ppm
Sulfur Dioxide	Annual	0.030 ppm	–
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	0.075 ppm	0.25 ppm
PM_{10}	Annual	–	20 µg/m^3
	24-Hour	150 µg/m^3	50 µg/m^3
PM_{25}	Annual	12 µg/m^3	12 µg/m^3
	24-Hour	35 µg/m^3	–
Lead	30-Day Average	–	1.5 µg/m^3
	3-Month Average	0.15 µg/m^3	–

ppm = parts per million

µg/m^3 = micrograms per cubic meter

Source: Ambient Air Quality Standards (CARB 2016)

The MDAB in the EKAPCD has been designated as serious nonattainment for the federal O_3 standards, nonattainment for the state eight-hour O_3 standard, nonattainment for the state one-hour O_3 standard, and the state PM_{10} standard. This area is unclassified or in attainment of the federal and state standards for CO; the federal standard for PM_{10}; and the federal and state standards for $PM_{2.5}$. The MDAB within the EKAPCD is in attainment for all other federal and state standards (EKAPCD 2017).

b. Regional

Eastern Kern Air Pollution Control District

The EKAPCD is primarily responsible for regulating and enforcing rules and regulations related to air pollution within its jurisdictional boundaries. Applicable rules and polices are as follows:

Regulation II – Permits. List D addresses permit applications involving a TAC and provides risk management guidance for EKAPCD to determine compliance with EKAPCD Rules 419 and 423, parts of Regulation IV, Section 41700 and Division 26, Part 6 of the California Health and Safety Code, CARB's toxic air contaminant control program, and Title III of the 1990 Federal Clean Air Act Amendments. Health risk shall be determined following the most current California Air Pollution

Control Officer's Association (CAPCOA) *Air Toxics Hot Spots Program Risk Assessment Guidelines* (OEHHA 2015).

Rule 401 – Visible Emissions: Addresses discharge of visible emissions from any single source into the atmosphere. A violation is a discharge for a period or periods aggregating more than 3 minutes in any one hour which is:

a. As dark or darker in shade designated as No. 1 on the Ringelmann Chart, as published by the United State Bureau of Mines, or
b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A or 20 percent opacity.

Rule 402 – Fugitive Dust: Addresses significant manmade dust sources from large operations, defined as "any active operation, including vehicle movement on unpaved roadways, on property involving in excess 10 contiguous acres of disturbed surface area, or any earth-moving activity exceeding a daily volume of 7,700 cubic meters (10,000 cubic yards), or relocating more than 2,500 cubic yards, per day, of bulk materials at least three days per year". Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and man-made conditions resulting in wind erosion, and contains the following requirements:

1. A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source, excluding unpaved roadways.
2. A person shall utilize one or more Reasonably Available Control Measures to minimize fugitive dust emissions from each source type that is part of any active operation, including unpaved roadways.
3. A person shall not cause or allow downwind PM_{10} ambient concentrations to increase more than 50 micrograms per cubic meter above downwind concentrations as determined by simultaneous upwind and downwind sampling utilizing high-volume particulate matter samplers, or other USEPA-approved equivalent method(s).
4. No person shall conduct a large operation without either: (1) conducting on-site PM_{10} air quality monitoring and associated recordkeeping; or (2) filing for and obtaining an approved fugitive dust emission control plan.

Additionally, pursuant to Rule 402 an owner or operator of a Large Operation will be required to submit a Fugitive Dust Control Plan to the APCD prior to the start of any earthmoving activity. The Project shall not commence until the APCD has approved or conditionally approved the Plan.

Rule 419 – Nuisance: A person shall not discharge from any source whatsoever such quantities of contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.

Rule 423 – National Emission Standards for Hazardous Air Pollutants and Source Categories (NESHAPS): All sources of hazardous air pollution shall comply with applicable standards, criteria and requirements set forth therein of provisions of Title 40, Chapter I, Parts 61 and 63, Code of Federal Regulations.

EKAPCD has also determined that commercial solar power plants generate fugitive dust emission in eastern Kern County and, therefore, in accordance with Rule 201 (Permits Required) and 210.1 (New and Modified Stationary Source Review), commercial solar facilities are required to obtain a district air permit. EKAPCD requests that each facility installs upwind and downwind particulate matter air monitoring to assist solar facility operators in showing and maintaining compliance with EKAPCD rules and regulations

Air Quality Management Plan

As required by the federal and state Clean Air Act, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the standards have been achieved. Jurisdictions of nonattainment areas also are required to prepare an air quality management plan (AQMP) that includes strategies for achieving attainment. The EKAPCD has adopted an attainment plan (*2017 Ozone Attainment Plan for 2008 Federal 75 ppb 8-hour Ozone Standard [EKAPCD Ozone Plan]*) for ozone pursuant to the Federal Clean Air Act, which serves as the District's Air Quality Management Plan (EKAPCD 2017). The *EKAPCD Ozone Plan* provided an update to the EKAPCD's *1994 Ozone Attainment Demonstration (Attainment Plan)* and established a goal of being in attainment for the eight-hour NAAQS for ozone by the "Serious" classification deadline of December 31, 2020. The *EKAPCD Ozone Plan* includes planning all required elements, emissions reductions, and control measures necessary to demonstrate attainment with the 2008, eight-hour Ozone NAAQS by 2020.

Particulate matter ($PM_{2.5}$ and PM_{10}) attainment strategies for NAAQS in Eastern Kern County have been subdivided into three areas: the Indian Wells Valley (IWV) area, the Kern River/Cummings Valley (KR/CV) area, and the remainder of the EKAPCD's jurisdiction, which includes the Project site. The IWV and KR/CV zones are considered separate planning areas for $PM_{2.5}$ and PM_{10} and have their own attainment strategies. The remainder of the EKAPCD area, where the Project is located, is designated unclassified/attainment for the NAAQS for $PM_{2.5}$ and PM_{10} standards. Therefore, the Project site is not under the jurisdiction of any $PM_{2.5}$ or PM_{10} attainment plans. Air quality impacts are controlled locally through and provisions of EKAPCD, the Kern County General Plan, and the Kern County Code of Building Regulations.

c. Local

Kern County

Kern County has established a series of goals, policies, and implementation measures in the Kern County General Plan located in the Land Use, Open Space and Conservation Element to ensure the County can accommodate anticipated future growth and development and maintain a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services (Kern County 2009). Applicable policies related to air quality are as follows:

> **Policy 18:** The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

Policy 19: In considering discretionary Projects for which an Environmental Impact Report must be prepared pursuant to the CEQA, the appropriate decision-making body, as part of its deliberations, will ensure that:

a. All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and
b. The benefits of the proposed Project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the CEQA.

Policy 20: The County shall include fugitive dust control measures as a requirement for discretionary Projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the EKCAPCD on ministerial permits.

Policy 21: The County shall support air districts efforts to reduce PM_{10} and $PM_{2.5}$ emissions.

The County also recommends preparation of a health risk assessment (HRA) analyzing acute, chronic and carcinogenic health risks of pollutants, including TACs that would be emitted during the Project operations, as part of an Air Quality Assessment. The HRA shall evaluate the risks of Air Quality Assessment pollutants such as diesel exhaust and any other pollutants emitted by the Project that have been identified as acute, chronic, or carcinogenic substances by OEHHA (Kern County 2006).

Implementation Measures

The following air quality implementation measures established in the Kern County General Plan apply to the Project:

G. Discretionary development Projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including, but not limited to:
    a. Minimizing idling time
    b. Electric overnight plug-ins

H. Discretionary Projects may use one or more of the following to reduce air quality effects:
    a. Pave dirt roads within the development
    b. Pave outside storage areas
    c. Provide additional low VOC producing trees on landscape plans
    d. Use of alternative fuel fleet vehicles or hybrid vehicles
    e. Use of emission control devices on diesel equipment

2.2 Air Quality Impact Analysis

2.2.1 Methodology and Significance Thresholds

Methodology

Methodology for Calculating Emissions

Construction and operational emissions were estimated from several emissions models and associated spreadsheet calculations, depending on the source type and data availability. The primary emissions models used included CARB's on-road vehicle emission factor model (EMFAC2017) and the off-road diesel equipment emissions analysis and inventory (OFFROAD2017). Emission factors were also obtained from the USEPA AP-42 *Compilation of Air Pollutant Emissions Factors* (USEPA 2006). Short-term and annual emissions were estimated using appropriate emission factors, the number of pieces of equipment, daily operating hours, and the associated schedules. Refer to Appendix AQGHG for details on equipment fleet, hours of operation, vehicle miles traveled, construction schedule, and other assumptions used. The following construction and operational sources and activities were analyzed for emissions:

- On-site construction equipment exhaust emissions (all criteria pollutants) – based on EMFAC2017 and OFFROAD2017 emission factors and estimated equipment schedules
- On-site construction equipment fugitive dust emissions (PM_{10} and $PM_{2.5}$) – based on USEPA AP-42 emission factors and estimated equipment schedules
- On-site and off-site haul truck (includes delivery, freight, and dump/water trucks) exhaust emissions (all criteria pollutants) – based on EMFAC2017 and estimated vehicle miles traveled
- On-site and off-site entrained fugitive dust emissions for paved and unpaved road travel – based on AP-42 methodology and estimated vehicle miles traveled
- Worker vehicle emissions for trips to and from the site – based on EMFAC2017 and estimated vehicle miles traveled
- Worker vehicle entrained fugitive dust emissions for paved roads – based on AP-42 methodology and estimated vehicle miles traveled

The EMFAC2017 model was used to develop carbon dioxide (CO_2) and methane (CH_4) emission estimates. The California Climate Action Registry, January 2016, was used for on-road emissions of CH_4 and N_2O. These emissions results were used to calculate carbon dioxide equivalent (CO_2e).

Trip generation rates for employees and vendors were provided by the applicant and are presented in Appendix AQGHG. It was assumed that one-third of vendor vehicles would be medium-heavy duty trucks and two-thirds would be heavy-heavy duty trucks. Similarly, it was assumed that 73 percent of the worker commute vehicles were light-duty automobiles and the remaining 27 percent were light-duty trucks. Percentages were derived from the distribution of vehicle miles travelled in the Countywide fleet mix from EMFAC2017.

As previously mentioned in Section 1.3, *Construction Activities*, construction at some of the parcels that make up the Project may occur simultaneously and phases of construction would overlap. Overall Project emissions were apportioned to each parcel based on the parcel acreage compared with the Project gross acreage. To provide a conservative analysis, it was assumed that construction activities

would occur at each parcel simultaneously. Construction emissions associated with the Project are discussed below.

Methodology for Determining Health Risk Impacts

Health risk impacts associated with TACs are generally from long-term exposure. Typical sources of TACs include industrial processes such as petroleum refining operations, commercial operations such as gasoline stations and dry cleaners, and diesel exhaust. Health impacts from TAC emissions during the operational phase of the Project are not expected because on-site routine maintenance and periodic PV panel washing, and off-site employee-commute trips would not be a substantial source of ongoing TAC emissions. However, the use of large-scale off-road diesel equipment during Project construction would result in a short-term increase of TAC emissions. DPM would be the TAC emitted in the largest quantity during construction and is the primary contaminant of concern for the Project, thus health risks were assessed as they relate to DPM exposure.

The significance threshold for health risks differs from that used for criteria pollutants in that no specific air quality standards have been established for DPM emissions or many other TACs. Instead, significance thresholds are determined based on an analysis of the number of excess health risks relative to a chosen risk level. Health effects from carcinogenic air toxics usually are described in terms of cancer risk. Non-carcinogenic hazards include chronic and acute effects. Acute effects are due to short-term exposure, while chronic effects are due to long-term exposure to a substance. For chronic and acute risks, the hazard index is calculated as the summation of the hazard quotients for all chemicals to which an individual would be exposed.

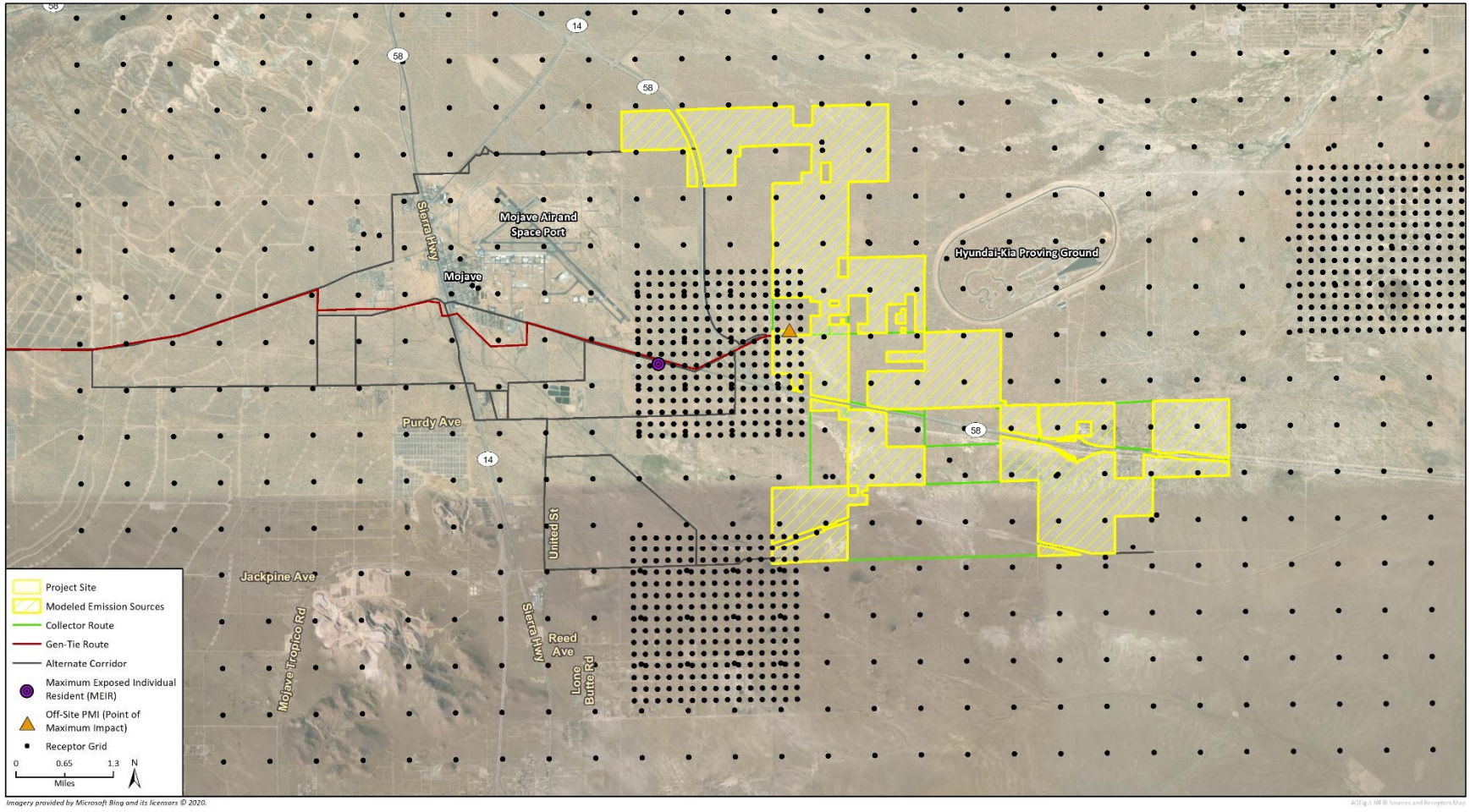
Average concentrations of DPM at the highest exposed existing receptor were used to estimate potential chronic and carcinogenic health risk. DPM does not have an acute health impact and therefore an acute health risk evaluation is not included in this analysis. The health risk calculations were based on standardized equations contained in the current Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015). Toxicity values for the pollutants of concern were acquired from the OEHHA *Air Toxics Hot Spots Program Risk Assessment Guidelines* and *Inhalation RELs*[3] as of April 2019 (OEHHA 2015). The carcinogenic health risk equations follow a dose response relationship where the dosage is averaged over a particular timeframe. To provide a conservative analysis, the timeframes for construction and decommissioning activities were assumed to be equivalent. Additionally, exposure duration was not adjusted for time at home to provide a conservative analysis. Because exposure would only occur during construction, the exposure frequency was adjusted to the maximum days construction would occur per year, 260 days. To assess the reasonable worst-case scenario, it was assumed that an individual could be exposed to construction emissions as a child and decommissioning emissions as an adult. Therefore, health risk was evaluated based on an exposure duration of 24 months for construction and 48 months for construction and decommissioning. Per OEHHA guidance, the averaging period of 70-year lifetime was used for all health risk evaluations. Children are more affected by DPM emissions than adults because of the relatively greater amount of air that they breathe on a daily basis compared to their body weight; therefore, the breathing rate by age was included in the modeled health risk.

The air dispersion modeling for the HRA was performed using the USEPA AERMOD dispersion model, within CARB Hot Spots Analysis and Reporting Program Version 2 (HARP 2) version 19121. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a

[3] OEHHA Reference Exposure Levels (RELs) are updated regularly at www.oehha.ca.gov/air/Allrels.html

factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. For this analysis, AERMOD ready metrological data spanning a five-year period from the Mojave Airport (Station ID: 3183), which was pre-processed with AERMET, Version 18081, was obtained from CARB. The meteorological station is approximately three miles from the western edge of the Project site. Emission rates were assumed to vary by the hour and the day; therefore, hourly average emissions rates were limited to the hours of 6:00 a.m. to 5:00 p.m. Monday through Friday. The model was run to obtain the maximum one-hour and average concentration across the anticipated construction period (i.e., 2021, 2022, and 2023). In addition to the identified nearby sensitive receptors, three Cartesian grids encompassing the nearest identified sensitive receptors spaced at 250-meter intervals with a square area of 3,500 meters by 3,500 meters were used to evaluate the Project's potential health impact and validate that the defined sensitive receptors captured the highest off-site resident exposure. An extra coarse grid spaced at 1,000-meter intervals with an area of 32,000 by 27,000 meters (or 32 by 17 kilometers) from the centroid of the project site were also included in the HRA for the purpose of capturing zone of impact isopleths. Figure 3 shows the Cartesian grids and sensitive receptors in relation to the Project site.

Figure 3 Sensitive Receptor Locations



The total PM_{10} exhaust emissions for all on-site diesel equipment and on-site mobile emissions for the entire construction period were divided by the construction working days to determine the maximum hourly emission rate (lbs/hour). AERMOD was used to determine the non-pollutant specific concentration at receptor points by source using a unit emission rate of 1 g/sec -m^2. The non-pollutant specific concentration was then multiplied by the actual pollutant specific emission rates (i.e., annual average in lbs/yr and maximum hourly in lbs/hour) to determine the cumulative source ground level pollutant specific concentration (GLC) at each receptor subsequently used to determine cancer and non-cancer health impacts using HARP 2 version 19121.[4] Chronic, acute, and carcinogenic health risk were further refined by age bin based on the USEPA (2005) guidance on the use of early life exposure adjustment factors (*Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*, EPA/630/R-003F) and standardized dose algorithms contained in the current OEHHA guidance. Note that the estimated concentration is not a specific prediction of the actual concentrations that would occur at any one point or any specific time over the course of the construction period. Actual concentrations are dependent on many variables, particularly the number and type of equipment working at specific distances during time periods of adverse meteorology. Various activities would occur at different parcels throughout the Project site. Equipment would be close to adjacent receptors for a limited period of time and then several miles from the same receptor at other times. Each parcel was input to AERMOD as an area source where construction emissions were apportioned to each parcel based on its percentage of the Project's gross acreage. Emissions from construction trucks and equipment on-site were assigned a release height of 3.1 meters, which is the approximate average height of the exhaust port for the range of equipment used on-site plus the vendor vehicles accessing the site.[5] Health risk for the Project was evaluated assuming that construction on each parcel occurs simultaneously. As previously mentioned, only the risk associated with construction and decommissioning activities was assessed because operational emissions would not be a substantial source of TAC emissions (Appendix HRA).

Significance Criteria

The EKAPCD recommends the following daily quantitative regional significance thresholds for long-term Project operation in the western portion of the MDAB (EKAPCD 1999):

- 137 lbs per day of NO_X
- 137 lbs per day of ROG

Additionally, the EKAPCD has determined that a Project would not have a significant impact on air quality if its operation:

- Emits less than the offset trigger levels set forth in Subsection III.B.3 of EKAPCD's Rule 210.1 established for stationary sources (from all Project sources subject to EKAPCD Rule 201, New and Modified Source Review Rule). Under Rule 210.1, the following trigger levels are established:
    - 25 tons per year of NO_X
    - 25 tons per year of VOCs

[4] See Appendix Model for GLC period files used to calculate health risk.

[5] To account for the range of release heights on-site, the average release height was weighted by emission levels by equipment/vehicle type. Manufacturer specifications for construction equipment similar to that used in the analysis had release heights that ranged from 1.5 to 4.5 meters. Heavy-duty vehicle's release height is approximately 3.4 meters (SBCAPCD 2020).

  - 27 tons per year of SO_X
  - 15 tons per year of PM_{10}
- Does not cause or contribute to an exceedance of NAAQS or CAAQS
- Does not exceed the District health risk public notification thresholds adopted by the EKCAPCD Board.
- Is consistent with adopted federal and state Air Quality Management Plans.

For health risk management, the EKAPCD has established the following criteria for land use Projects subject to EKAPCD Regulation II (Permits List and Criteria) and Rule 208.2 (Criteria for Finding no Significant Environmental Impact):

1. Cancer health risk shall be considered insignificant if the expected increase in cancer risk is less than 20 in one million, or
2. Noncancer health risk is considered insignificant if the expected increase in chronic hazard index is less than or equal to 1, or
3. Noncancer health risk is considered insignificant if the expected increase in acute hazard index is less than or equal to 1

The Kern County Planning Department has developed the following thresholds of significance for operation and construction (Kern County Planning Department 2006):

- 25 tons per year of NO_X
- 25 tons per year of ROG
- 15 tons per year of PM_{10}

The Board of Supervisors adopted these annual thresholds, which were designed to help in determining cumulative air quality impacts.

2.2.2 Project Impacts

Construction Impacts

Construction of the Bellefield Solar Project would require approximately 18-24 months of continuous activity involving several overlapping phases. To provide for a realistic estimate, construction was assumed to last for 24 months for the purposes of this analysis. Refer to Section 1.3, *Construction Activities*, for phasing specifics related to the Project construction schedule. Construction of the Project would generate air pollutant emissions from entrained dust, off-road equipment use, and vehicle emissions. Off-site emissions would be generated by construction worker daily commute trips and heavy-duty diesel haul and vendor truck trips. Construction emissions would vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. A vast majority of construction activities and associated emissions would be generated at the primary Project site for the preparation and construction of the solar PV sites which involves construction activities such as those previously discussed in Section 1.3 *Construction Activities*. Construction of the gen-tie is incorporated into the provided construction schedule and equipment mix[6]. Construction of the gen-tie would involve linear development such that construction at any given

[6] Construction of the gen-tie line would involve the use of construction equipment such as described in Phase 4 (mechanical installation) and Phase 5 (electrical installation) listed in Appendix AQGHG.

point along the gen-tie route would occur for a brief period of time. Therefore, emissions associated with the gen-tie are incorporated directly into the impacts associated with construction of the Project.

As shown in Table 4, concurrent construction at all parcels would generate 16.8 tons/year and exceed the fugitive dust (PM_{10}) threshold of 15 tons/year in the second year (2022) of construction. This exceedance of the PM_{10} threshold is largely due fugitive dust generated from off-road construction activity. Because construction of the Project would disturb over 10 contiguous acres of surface area, implementation of Recommendation AQ-1 would be required to be compliant with to be EKAPCD's rules and regulation, such as Rule 201 (Permits Required) and Rule 402 (Fugitive Dust). Implementation of standard dust control measures (Recommendation AQ-1), such as watering, would reduce PM_{10} emissions to approximately 13.9 tons per year in the second year of construction and would not exceed EKAPCD or County fugitive dust thresholds. No other criteria pollutant threshold would be exceeded during construction.

Table 4 Construction Emissions for Project Site

		Unmitigated Emissions (tons per phase)[2]						With Water Control[3]	
Emission Type	**Source**	**ROG**	**NO_X**	**SO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10} (tons)**	**$PM_{2.5}$ (tons)**
2021									
Exhaust	Off-Road Construction Equipment	0.3	2.6	<0.1	2.6	0.1	0.1	0.1	0.1
	On-Road Vehicles	0.2	0.3	<0.1	1.1	<0.1	<0.1	<0.1	<0.1
Fugitive Dust[1]	Off-Road Construction Activity	–	–	–	–	1.5	0.2	0.8	0.1
	On-Road Vehicles (resuspended)	–	–	–	–	1.9	0.3	1.8	0.3
Total		**0.5**	**2.9**	**<0.1**	**3.7**	**3.5**	**0.6**	**2.8**	**0.5**
Threshold		25	25	27	N/A	15	N/A	15	N/A
Exceed Threshold?		No	No	No	N/A	No	N/A	No	N/A
2022									
Exhaust	Off-Road Construction Equipment	2.4	22.5	<0.1	23.3	1.0	0.9	1.0	0.9
	On-Road Vehicles	0.9	1.1	<0.1	4.8	0.2	0.1	0.2	0.1
Fugitive Dust[1]	Off-Road Construction Activity	–	–	–	–	7.3	0.8	4.7	0.5
	On-Road Vehicles (resuspended)	–	–	–	–	8.2	1.2	8.0	1.2
Total		**3.4**	**23.6**	**0.1**	**28.1**	**16.8**	**3.0**	**13.9**	**2.7**
Threshold		25	25	27	N/A	15	N/A	15	N/A
Exceed Threshold?		No	No	No	N/A	Yes	No	No	N/A
2023									
Exhaust	Off-Road Construction Equipment	0.7	6.2	<0.1	6.6	0.3	0.3	0.3	0.3
	On-Road Vehicles	0.6	0.6	<0.1	2.9	0.1	0.1	0.1	0.1
Fugitive Dust[1]	Off-Road Construction Activity	–	–	–	–	1.5	0.2	1.0	0.1
	On-Road Vehicles (resuspended)	–	–	–	–	5.0	0.7	4.8	0.7
Total		**1.3**	**6.8**	**<0.1**	**9.6**	**6.9**	**1.2**	**6.2**	**1.1**

Threshold	25	25	27	N/A	15	N/A	15	N/A
Exceed Threshold?	No	No	No	N/A	No	No	No	N/A

Rounded values used; columns may not add up correctly. Subtotal equals the sum of all exhaust and fugitive dust emissions from off-road construction equipment and on-road vehicles. See Appendix AQGHG for calculations. N/A = no threshold

[1] Fugitive dust describes particulate matter that is emitted into the air due to earth moving activities or that has been re-suspended.

[2] Emissions by construction year are based on an estimated construction schedule and construction starting on October 1, 2021.

[3.] With implementation of Recommendation AQ-1

Health Impacts of CO

Exposure to high concentrations of CO can result in dizziness, fatigue, chest pain, headaches, and impairment of central nervous system functions. EKAPCD is currently classified as in attainment or unclassified for CO; however, there is a potential for the formation of microscale CO "hotspots" to occur immediately around points of congested traffic. A project's indirect CO emissions would be significant if they contribute to a violation of the State standards for CO (9.0 parts per million (ppm) averaged over 8 hours and 20 ppm over 1 hour). Hotspots can form during periods of poor atmospheric ventilation, when traffic is composed of many vehicles cold-started and operating at pollution-inefficient speeds, and/or Project when high levels of traffic congestion result in substantial engine idling. CO hotspots are of particular concern in densely populated metropolitan areas where buildings impede dispersion of pollutants from an intersection. The EKAPCD does not encompass any metropolitan areas and as such has not developed a screening methodology to determine if CO thresholds would be exceeded. To provide context, the Bay Area Air Quality Management District (BAAQMD) CO screening methodology considers potential CO hotspots to occur at intersections that exceed 44,000 vehicles per hour or intersections that exceed 24,000 vehicles per hours where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass) (BAAQMD 2017). Vehicle trips generated by Project construction activities are estimated by traffic volumes provided in the Aratina Solar Project Traffic Impact Analysis (EPD Solutions, Inc. 2019), a similar project in the region. On-road traffic would consist of employee and vendor vehicle trips. The number of vehicle trips would vary by month depending on the construction activities. The highest construction trip generation for that Project was found to be during the overlap of concrete foundations, structural steel work, and electrical/instrumentation work. The Aratina Solar Project also assumed up to 1,000 workers during peak construction periods; which would occur during the overlap of concrete foundations, structural steel work, and electrical/instrumentation work. Construction traffic for the Project site is expected to access the sites via one or more of the following roadways: SR-58, Altus Avenue, Silver Queen Road and 50th Street. It is assumed that only gen-tie corridor related construction trips would occur on Mojave streets (Route 58 Business, Holt Street, Oak Creek Road, and Arroyo Avenue), as construction on the Project parcels is located in an area where trips through Mojave would not be necessary.

Of these roads, SR-58 experiences the greatest volume of existing traffic, with an average of 16,500 daily trips based on estimates of existing vehicle trips collected by Kern Council of Governments in 2017, and from Caltrans traffic counts taken in 2017 for SR 58 (Kern Council of Governments 2019). During peak project construction there would be 2,110 project-related daily trips which could increase the daily traffic volume on SR-58 would up to 18,610 vehicles. The other local roads used during construction would experience a significantly lower daily traffic volume of 902 (Holt St.) to 2,633 (SR 58 Business) vehicles per day.

Even at the high end of the daily traffic volume (i.e., 18,610) vehicle trips could not result in a CO hotspot due to the small magnitude of emission sources and the low emission rates that occur due to catalytic converters. Additionally, the Project site is located in a rural flat area where air dispersion is not impeded by buildings or nearby terrain; therefore, CO emissions generated would disperse rapidly and construction traffic would not generate CO hotpots.

Valley Fever

Construction activities that include ground disturbance can result in fugitive dust, which can cause fungus *Coccidioides* spores to become airborne if they are present in the soil. These spores can cause Valley Fever. Workers who disturb soil where fungal spores are found, whether by digging, operating

earthmoving equipment, driving vehicles, or by working in dusty, wind-blown areas, are more likely to breathe in spores and become infected. It is not a contagious disease and secondary infections are rare. Furthermore, according to the Kern County Public Health Services Department (KCPHSD) the desert region of Kern County where the Project is located has a lower incidence rate compared to other regions of the county (KCPHSD 2019). However, construction activities associated with the Project would include ground-disturbing activities that could result in an increased potential for exposure of surrounding residents and on-site workers to airborne spores, if they are present. Thus, the potential for increased exposure and contraction of Valley Fever would be potentially significant. The Project parcels, where the vast majority of earth-moving activities will occur, are located in an isolated area where the nearest isolated residences are approximately 1.2 miles away. As such, implementation of Recommendation AQ-1 would reduce the generation of dust from earth-moving activities during construction such that the Project would not add significantly to the existing exposure levels of people in the area to Valley Fever. Recommendation AQ-2 would require the inclusion of additional control measures within the Fugitive Dust Control Plan to further minimize on-site personnel and public exposure to Valley Fever. Recommendation AQ-2 would reduce the transfer of dust potentially containing Valley Fever spores off-site, ensure on-site workers take proper precautions to avoid Valley Fever exposure, and ensure distribution of information to all on-site workers and visitors about Valley Fever. As such, implementation of Recommendation AQ-1 and AQ-2 would reduce the potential risk of surrounding residents and on-site worker exposure to Valley Fever.

Project Decommissioning

As stated in Section 1.4, *Operational Activities*, at the end of the Project's useful life (anticipated to be 30 to 40 years), the solar facility would be repowered or decommissioned. The PV arrays and supporting equipment largely sit on the surface of the land, and removal of the arrays would cause minimal alteration from its natural state, nor would extensive ground-disturbing activities be required. Any other activities required for deconstruction of the on-site facilities would require similar types and levels of equipment as those used during the construction phase. As such, decommissioning activities at the Project site would generate PM_{10} emissions that exceed the annual threshold. However as previously discussed, implementation of Recommendation AQ-1 would be required to be compliant with EKAPCD regulations and rules. Implementation of Recommendation AQ-1 would reduce fugitive dust emissions generated during decommission activities such that the 15 tons/year threshold would not be exceeded. No other criteria air pollutant (ROG, NO_X, or SO_X) thresholds would be exceeded during decommissioning regardless of whether decommissioning of all parcels occurred consecutively or simultaneously.

The Project applicant would be required to develop a Decommissioning Plan for review and approval by the Kern County Planning and Community Development Department. All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and be conducted in accordance with all applicable federal, state, and county regulations.

Long-term Regional Impacts

Air Quality Management Plan Consistency

Construction, operation and maintenance, and decommissioning of the Project would result in emissions of criteria pollutants, including ozone precursors, such as ROG and NO_X as well as particulate matter. The EKAPCD has prepared air quality attainment plans to achieve federal ozone standards, the most recent of which is the *2017 Ozone Attainment Plan for the 2008 Federal 75 ppb 8-Hour Ozone Standard*. The EKAPCD is unclassifiable/in attainment for CO, PM_{10}, $PM_{2.5}$ lead, and the one-hour ozone

NAAQS standards so there are no attainment plans for those pollutants. As previously mentioned, $PM_{2.5}$ and PM_{10} attainment strategies in Eastern Kern County are subdivided into the IWV area, the KR/CV area, and the rest of the EKAPCD area. The Project site is not located in either the IWV or KR/CV area and is in the unclassified/attainment area of the EKAPCD. Therefore, the Project site is not under jurisdiction of any $PM_{2.5}$ or PM_{10} attainment plans.

Although the Project is located in an area that is attainment for NAAQs standards, the area is considered in nonattainment for the CAAQS for 1-hr ozone, 8-hr ozone and PM_{10}. Air quality impacts are further controlled locally through and provisions of EKAPCD, the Kern County General Plan, and the Kern County Code of Building Regulations. The EKAPCD has determined that Projects with emissions above the thresholds of significance for criteria pollutants would conflict with/obstruct implementation of the EKAPCD's air quality plan (EKAPCD 2006). As discussed above under construction impacts, emissions of ozone precursors ROG and NO_X would not exceed the Project-level significance thresholds and therefore would not conflict with implementation of existing air quality plans. PM_{10} emissions would exceed the 15 tons per year EKAPCD threshold during the second year of construction. However, because construction of the Project would disturb over 10 contiguous acres of surface area, implementation of Recommendation AQ-1 would be required to be compliant with to be EKAPCD's rules and regulation, such as Rule 201 (Permits Required) and Rule 402 (Fugitive Dust). Implementation of Recommendation AQ-1 would reduce PM_{10} emissions such that PM_{10} would not exceed EKAPCD or County fugitive dust thresholds and therefore would not conflict with the EKAPCD's air quality plan.

Operational Air Pollutant Emissions

Table 5 summarizes estimated emissions associated with operation of the Project. As discussed in Section 1.4, *Operational Activities*, the Project could require of up to 20 full-time employees. It is possible that the Project would share an O&M, substation, and/or transmission facilities with one or more nearby solar Projects. Sharing of personnel with nearby solar Projects could reduce the Project's on-site operational staff. However, it was conservatively assumed that the Project would require individual operations and maintenance staff. As shown in Table 5, unmitigated operations emissions from the Project would not exceed Kern County annual operational thresholds or EKAPCD daily operational thresholds for any criteria pollutant.

Table 5 Estimated Operational Emissions

Emission Type	Source	Emissions (tons per year)					
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Exhaust	On Road and On-Site Vehicles	<0.1	0.1	<0.1	0.1	<0.1	<0.1
Fugitive Dust	Maintenance Vehicles	–	–	–	–	1.6	0.2
Total (tons/year)		**<0.1**	**0.1**	**<0.1**	**<0.1**	**1.6**	
Kern County Threshold		25	25	N/A	27	15	N/A
Exceed Threshold?		No	No	N/A	No	No	N/A
Total Daily Operations[1] (lbs/day)		***0.1***	***0.6***	***<0.1***	***1.0***	***13.2***	***1.4***
EKAPCD Operational Threshold		137	137	N/A	N/A	N/A	N/A
Exceed Threshold?		No	No	N/A	N/A	N/A	N/A

Rounded values used; columns may not add up correctly. Subtotal equals the sum of all exhaust and fugitive dust emissions from on-road and on-site vehicles. See Appendix AQGHG for calculations. N/A = no threshold

[1]Annualized at 244 working days per year

Health Risk Assessment

As a result of the California Supreme Court decision for *Sierra Club vs. County of Fresno* (*Friant Ranch L.P.*), the resultant human health impacts from the project's short-term construction and long-term operational air emissions should be analyzed. The following sections assess the health impacts from construction and long-term operation.

Health Impacts of Construction TACs

As described in Section 1.3, *Construction Activities*, Project components at all parcels and the gen-tie corridor would be constructed over a period of 18 to 24 months. Construction of the solar facility would require use of heavy-duty construction equipment and diesel trucks which would emit DPM. As previously mentioned, construction and associated emissions related to the gen-tie are incorporated into the provided construction schedule and equipment mix. Therefore, emissions associated with the gen-tie are already incorporated into the impacts associated with the Project site. Figure 3 shows the receptor grids used to model health risk, the receptor grid point of maximum impact (PMI) off-site, and the maximum exposed individual resident (MEIR).

The worst-case scenario[7] where construction at all parcels and gen-tie corridor would occur simultaneously was assessed to provide the most conservative health risk assessment. The highest off-site modeled average DPM concentration of 2.52E-03 micrograms per cubic meter (µg/m^3) and PMI within the receptor grids would occur approximately 1.0 miles northeast of SR-58 along the northern edge of parcel 235-065-18. The Project MEIR was determined to be approximately 1.5 miles west of the western edge of the main Project site located along SR-58. DPM at the MEIR for the Project was 4.83E-04 µg/m^3. Refer to Figure 3 for the location of the PMI and MEIR in reference to the Project site. The carcinogenic and chronic health risks at the PMI and MEIR are contained in Table 6 (refer to Appendix HRA for detailed health risk estimates). As shown therein, excess cancer risk and chronic risk associated with Project construction and decommissioning would not exceed the risk criteria at the receptor grid PMI or the MEIR even if construction occurred at all parcels simultaneously.

[7] Although construction may occur at some parcels simultaneously, not all parcels will undergo simultaneous construction. Assuming simultaneous construction of all parcels provides the worst possible scenario thus providing the most conservative health risk assessment.

Table 6 Health Risks Associated with Diesel Particulate Emissions during Construction and Decommissioning of Project

	Carcinogenic Risk per Million by Age Group						Chronic Risk Hazard Quotient
	3rd Trimester	0-2 Years	2-16 Years	16-30 Years	16-70 Years	Risk Sum[2]	
Construction Emissions (24 months)							
Maximum Risk [1]	0.01	0.16	0.03	<0.01	<0.01	0.17	<0.01
Risk Criteria	**20 in one million**						**1.0**
Exceed Criteria?	No	No	No	No	No	No	No
Construction and Deconstruction Emissions (48 months in a 70-year lifetime)							
Maximum Risk [1]	0.01	0.16	0.07	0.01	0.01	0.20	<0.01
Risk Criteria	**20 in one million**						**1.0**
Exceed Criteria?	No	No	No	No	No	No	No

[1] Maximum average DPM concentration equals 4.83E-04 µg/m^3 at nearest existing residence.

[2]Summed risk is based on the anticipated exposure duration due to the project and represents the maximum risk anticipated based on the risk across the most impacted age bins. Summed risk for construction includes the summation of risk at the 3rd trimester and risk from 0-2 years spanning a total of 24 months of exposure. Summed risk for construction and decommissioning includes summation of risk at the third trimester, from 0-2 years of age, and a fraction of 2-16 years spanning a total of 48 months of exposure.

Gen-Tie

The gen-tie could be located on the path of route alternatives shown in Figure 2. The gen-tie routes generally follow established roads or highways, which are alongside residences. At its closest point, the gen-tie route on the north side of SR 58 and east of Myer Road may be located as close as 25 feet north of residences along Barstow Road in Mojave. These sensitive receptors are over 3.5 miles west of the primary Project site where the majority of emissions will be generated. Chronic and carcinogenic health risk associated with DPM exposure is dependent on DPM concentration, proximity of sources to receptors, and duration of exposure. Construction of the gen-tie would involve linear development such that construction at any given point along the gen-tie route would occur for a brief period of time. As such, sensitive receptors near the gen-tie would be exposed to a temporary increase in DPM emissions from gen-tie construction for as long as construction of the nearest section of the gen-tie were occurring. Further, the construction and associated emissions related to the gen-tie are a small fraction of the overall construction emissions occurring during Project construction. Because of this and the short duration of DPM exposure due to gen-tie construction at any given location, the excess cancer risk and chronic risks associated with the gen-tie corridor would be negligible.

Operational Analysis

Health Impacts of Operational TACs

As previously discussed, health impacts due to DPM are largely related to construction equipment exhaust. Because limited construction equipment would be in use during operational activities and the estimated PM_{10} emissions (i.e., DPM equivalent) related to exhaust emissions (Table 5) are minimal, health impacts from operational activities would be less than significant.

Health Impacts of CO

Vehicle trips generated by Project operational activities are estimated by traffic volumes provided in the Aratina Solar Project Traffic Impact Analysis, a similar project in the region, which listed 22 trips for 5 employees (EPD Solutions, Inc. 2019) or 4.4 trips per employee. As discussed in Section 1, *Project Description*, the Project would have a total of 20 full-time employees once operational; therefore, Project operation is estimated to generate 88 trips per day. This number of employees would generate a negligible increase in traffic. Therefore, no CO hotspots would be created during Project operation.

Odors

Substantial objectionable odors are normally associated with agriculture, wastewater treatment, industrial uses, or landfills. The Project would involve the construction, operation and maintenance, and decommissioning of a solar energy facility and associated infrastructure that do not produce objectionable odors. During construction activities, only short-term, temporary odors from vehicle exhaust and construction equipment engines would occur. Construction-related odors would disperse and dissipate and would not cause substantial odors at the closest sensitive receptors (adjacent residences). In addition, construction-related odors would be short-term and would cease upon completion of construction. Operation of the Project would not emit any odorous compounds.

Cumulative Impacts

The Kern County's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* require the following three steps for estimating the potential significance of cumulative impacts:

1. Evaluate localized impacts
2. Evaluate consistency with existing air quality plans
3. Summarize CARB air basin emissions

Localized Impacts

The contribution of a Project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future Projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis. Cumulative impacts from the Bellefield Solar Project, when considered with nearby, reasonably foreseeable planned solar Projects, would occur only during Project construction since the Projects operation emissions are expected to be negligible. A cumulative Project list was not provided for the Bellefield Solar Project. Based on the Kern County publicly provided information regarding Renewable Projects occurring within the County, there are 8 projects located within a six-mile radius of the Project site (Kern County 2014). One has been withdrawn/terminated, two are currently in operation, two have been approved, and three are being processed. Operational projects were not included in the cumulative analysis; these include RE Rio Grande and RE Colombia Three.[8] It was conservatively assumed that construction with the proposed projects would overlap. Cumulative construction emissions associated with the construction of these projects is included in Table 7.

[8] Operational status obtained from Recurrent Energy website (recurrentenergy.com/portfolio/)

Table 7 Cumulative Construction Emissions

	Annual Criteria Pollutant Emissions (tons per year)					
	ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Proposed Project[1]	3.4	23.6	0.1	28.1	16.8	3
Solar Projects within a 6-Mile Radius[2]						
Monte Vista Solar Array, 126 MW, 1,040 acres	Data Not Available					
RE Columbia One, 20 MW, 165 acres[3] RE Columbia Two, 20 MW, 132 acres[3]	2.0	13.0	0.0	7.7	29.9	4.2
RE Columbia Two (Addendum), 40 MW, 476 acres[4]	0.8	5.6	0.0	3.4	11.6	1.7
FRV Mojave Solar Project, 20 MW, 174 acres	Data Not Available					
Total Cumulative Emissions	***6.2***	***42.3***	***0.1***	***39.2***	***58.3***	***8.9***
EKAPCD Threshold	25	25	27	N/A	15	N/A
Exceed Threshold?	No	Yes	N/A	N/A	Yes	N/A

N/A = no threshold

1. Worst year annual emissions are presented without implementation of Recommendation AQ-1.

2. Emissions for nearby solar projects based on publicly available documentation (https://kernplanning.com/environmental-doc/re-distributed-solar-projects/); worst year annual emissions included without implementation of mitigation measures

3. RE Columbia One, Two and Three were analyzed together in EIR, therefore presented data conservatively includes all sites although RE Columbia Three is currently in operation.

4. Data provided is for only the Columbia Two expansion construction emissions.

A shown in Table 7, if the Project and all solar projects within a 6-mile radius of the Project are built concurrently, the emission levels would exceed EKAPCD's significance threshold for NOx and PM_{10}. Kern County has determined that the EKAPCD's project-level threshold apply for cumulative impacts and are defined, for the purposes of determining cumulative effects, as the baseline for "considerable". As such, assuming a worst-case scenario that the construction for all projects overlap with one another and the proposed Project, the localized effect of NO_x and PM_{10} emissions would be cumulatively considerable. However, the construction emissions would occur temporarily. Further, due to disturbance of over 10 contiguous acres of surface area, all projects listed in Table 7 would be required to be compliant with EKAPCD's rules and regulation, such as Rule 201 (Permits Required) and Rule 402 (Fugitive Dust).

The Project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. The Project along does not exceed EKAPCD thresholds for ROG, NO_X, or SO_X. While the Project would contribute to an increase in PM_{10} during construction if construction of the Project at each parcel occurred simultaneously, with implementation of Recommendation AQ-1, the Project's incremental contribution of PM_{10} would be reduced and would not exceed the EKAPCD threshold.

As shown in Table 8, the cumulative operational emission generated during concurrent operation of the Project and projects within 6 miles of the project site would not exceed EKAPCD's thresholds. Additionally, the operation of the Project as a renewable energy source would indirectly cause the replacement of fossil fuel energy production facilities and thereby displace criteria pollutants created by existing power generation sources and could result in a cumulative net benefit related to air quality in the region. During operation, the Project does not exceed EKAPCD's project-level thresholds. Therefore, the Projects' incremental contribution to long-term criteria pollutants in the region would not be cumulatively considerable.

Table 8 Cumulative Operation Emissions

	Annual Criteria Pollutant Emissions (tons per year)					
	ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Proposed Project[1]	<0.1	0.1	<0.1	<0.1	1.6	0.2
Solar Projects within a 6-Mile Radius[2]						
Monte Vista Solar Array, 126 MW, 1,040 acres	Data Not Available					
RE Columbia One, 20 MW, 165 acres[3] RE Columbia Two, 20 MW, 132 acres[3]	<0.1	<0.1	<0.1	<0.1	0.3	<0.1
RE Columbia Two (Addendum), 40 MW, 476 acres[4]	Data Not Available					
FRV Mojave Solar Project, 20 MW, 174 acres	Data Not Available					
Total Cumulative Emissions	***<0.1***	***<0.1***	***<0.1***	***<0.1***	***1.9***	***0.2***
EKAPCD Threshold	25	25	27	N/A	15	N/A
Exceed Threshold?	No	No	N/A	N/A	No	N/A

N/A = no threshold

1. Annual Project operation emissions are presented without implementation of Recommendation AQ-1.

2. Emissions for nearby solar projects based on publicly available documentation (https://kernplanning.com/environmental-doc/re-distributed-solar-projects/).

3. RE Columbia One, Two and Three were analyzed together in EIR, therefore presented data conservatively includes all sites although RE Columbia Three is currently in operation.

4. Data provided is for only the Columbia Two expansion construction emissions; operational data for the expansion was not available.

Operation Localized Health Impacts from Regional Emissions (Friant Ranch Case)

Impacts of criteria pollutant emissions are evaluated on a regional level with current environmental models designed for such analysis. Current environmental science models are not designed to be able to convert specific project emission levels of criteria pollutants emitted in a particular area to a localized human health impact. As such, a qualitative discussion of the adverse health effect resulting from the project level criteria pollutants is all that can be feasibly provided at this time.

As previously discussed, the criteria air pollutant standards developed by the state are based on levels of air quality that are deemed necessary, with an adequate margin of safety, to protect public health. The EKAPCD and Kern County have established quantitative daily and annual thresholds for criteria pollutant emissions to enforce and meet these standards on a regional level. As such, projects that do not exceed EKAPCD's daily operational significance thresholds and meet EKAPCD's land use criteria for project operation would not have a significant impact on regional air quality and likewise resulting human health impacts related to criteria pollutants would be less than significant. As discussed in ***Error! Reference source not found.***, criteria pollutant emissions generated from operations at the project sites would not exceed EKAPCD thresholds for any criteria pollutant either at individual sites or combined emissions for the project as a whole. Emissions of ozone precursors ROG and NO_X would not exceed the project-level significance thresholds. Further criteria pollutant emissions generated from project operation would be below the EKAPCD significance threshold by an order of magnitude or more. As such, it is not expected that operation of the project would result in a substantial increase in criteria pollutant concentration regionally or locally. Therefore, related health effects would be less than significant.

Consistency with Existing Air Quality Plans

The Kern Council of Governments (KCOG) Regional Conformity Analysis Determination demonstrates that the regional transportation expenditure plans in the Kern County portion of the Mojave Desert air quality planning area will not hinder the efforts set out in CARB's State Implementation Plan (SIP) for the area's nonattainment pollutant (ozone). The analysis uses an adopted regional growth forecast governed by both the adopted KCOG *Policy and Procedure Manual* and a Memorandum of Understanding between the City of Bakersfield, County of Kern, and KCOG.

As shown in Table 5, operation of the Project would not generate emissions exceeding any established EKAPCD emissions thresholds. The Project site is would be staffed by 20 operations personnel during normal weekday working hours. It is anticipated that these employees would be drawn from the existing Kern County population. Thus, the Project would not generate population, households, or substantial employment for any of the traffic analysis zones used to determine conformity. Therefore, the Project would be consistent with the adopted growth forecast and would be in conformance with the KCOG Regional Conformity Analysis Determination. Additionally, as discussed above, the Project would not conflict with or obstruct implementation of the EKAPCD's air quality plan.

CARB Air Basin Emissions

CARB maintains the inventory of air emissions in California. Emissions (i.e., ROG, NO_X, and PM_{10}) data for all of MDAB and the Kern County subset of the MDAB was obtained from the CARB Emissions Inventory database. Per the County's guidelines for the cumulative impact assessment, a Project's potential contribution cumulative impacts should be assessed using the same significance criteria as those used for Project construction and operation. Additionally, Project emissions should be compared to the air basin's current emissions inventory and projected emissions inventory. Emissions data for 2012 estimated annual average emissions and 2025 Projected annual emissions for the Kern County portion of the MDAB and for the entire MDAB are presented in Table 9 and Table 10, respectively. Relative portions of emissions from stationary sources, area-wide sources, and mobile sources compared with the total inventory are included in the tables.

Table 9 Emissions Inventory in Kern County Portion of MDAB

	2012 Emissions (Tons/Year)			2025 Emissions (Tons/Year)		
Inventory Segment	**ROG**	**NO_X**	**PM_{10}**	**ROG**	**NO_X**	**PM_{10}**
Total Emissions	4,179	12,760	5,767	3,522	10,841	5,990
Percent Stationary Source	11%	51%	18%	14%	75%	22%
Percent Area-wide Sources	21%	2%	60%	28%	2%	59%
Percent Mobile Sources	68%	48%	22%	58%	23%	19%
Total Stationary Source Emissions	434	6,482	1,029	500	8,110	1,288
Total Area-wide Source Emissions	898	197	3,468	982	215	3,537
Total Mobile Source Emissions	2,847	6,081	1,270	2,040	2,515	1,164

Table 10 Emissions Inventory in MDAB

	2012 Emissions (Tons/Year)			2025 Emissions (Tons/Year)		
Inventory Segment	ROG	NO_X	PM_{10}	ROG	NO_X	PM_{10}
Total Emission	24,313	64,273	48,425	18,491	46,267	56,429
Percent Stationary Source	24%	34%	44%	43%	66%	43%
Percent Area-wide Sources	23%	1%	49%	20%	2%	52%
Percent Mobile Sources	53%	65%	7%	37%	33%	5%
Total Stationary Source Emissions	5,873	22,024	21,228	7,964	30,459	24,218
Total Area-wide Source Emissions	5,490	785	23,988	3,643	715	29,675
Total Mobile Source Emissions	12,950	41,464	3,208	6,884	15,093	2,537

Table 11 compares emissions generated by the Project and the 2025 Projected annual emissions for the Kern County portion of the MDAB as well as the MDAB as a whole.

Table 11 Emissions Inventory within MDAB

	2025 Emissions (Tons/Year)		
Inventory Segment	ROG	NO_X	PM_{10}
Project	5.1	33.3	28.8
Kern County portion of MDAB	3,522	10,841	5,990
MDAB	18,491	46,267	56,429
Project Percent of Kern County portion of MDAB	0.15%	0.31%	0.48%
Percent of MDAB	0.03%	0.07%	0.05%

Note: Emissions for the Project include annualized construction emissions from 2021-2023 with implementation of recommendation AQ-1 and operational emissions.

As previously discussed and shown in Table 4 and Table 5, the Project's construction nor operational emissions would not exceed EKAPCD or the County's significance threshold with the implementation of recommendation AQ-1. Further, as shown in Table 11, the Project's contribution to regional air pollutant emissions in Kern County and the MDAB would be minimal and thus not cumulatively considerable in terms of county and region-wide emissions. Compliance with applicable EKAPCD rules requiring emissions controls, such as Rule 402 (Fugitive Dust), and implementation of Recommendation AQ-1 would further reduce construction emissions and the regional contribution to the cumulative impact during the construction period would be minimal. Additionally, because operational emissions would not result in significant emissions of ozone, for which the EKAPCD and surrounding air districts of the San Joaquin Valley and MDAB are in nonattainment, the Project would not contribute to a long-term cumulative increase in criteria pollutants. Furthermore, the Project would introduce a non-fossil fuel-based energy source to the region thus providing a positive benefit to regional air quality. Thus, Project construction, decommissioning, and operations and maintenance would not result in a cumulatively considerable increase in emissions of nonattainment pollutants.

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3 Greenhouse Gases

3.1 Background

This section analyzes GHG emissions associated with the Project and potential impacts related to climate change.

3.1.1 Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. According to the United Nations Intergovernmental Panel on Climate Change (IPCC), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC 2014).

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFC) and perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHG because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

Both natural processes and human activities emit GHGs. $CO_2$and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Observations of CO_2 concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC Projections. The recently observed increases in CH_4 and N_2O concentrations are smaller than those assumed in the scenarios of previous assessments. Each IPCC assessment has used new Projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (USEPA 2018a). Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHG absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. CO_2

has a 100-year GWP of one. By contrast, CH_4 has a GWP of 28, meaning its global warming effect is 28 times greater than CO_2 on a molecule per molecule basis (IPCC 2014).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (CalEPA 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

3.1.2 Greenhouse Gas Emissions Inventory

Worldwide anthropogenic emissions of GHG were approximately 46,000 million metric tons (MMT or gigatonne) of CO_2e in 2010 (IPCC 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, CO_2 was the most abundant accounting for 76 percent of total 2010 emissions. CH_4 emissions accounted for 16 percent of the 2010 total, while N_2O and fluorinated gases account for 6 and 2 percent, respectively (IPCC 2014).

Total United States GHG emissions were 6,511.3 million metric tons (MMT or gigatonnes) of CO_2e in 2016 (USEPA 2018b). Total United States emissions have increased by 2.4 percent since 1990; emissions decreased by 1.9 percent from 2015 to 2016 (USEPA 2018b). The decrease from 2014 to 2015 was a result of multiple factors, including: (1) substitution from coal to natural gas and other non-fossil energy sources in the electric power sector and (2) warmer winter conditions in 2016 resulting in a decreased demand for heating fuel in the residential and commercial sectors (USEPA 2018b). Since 1990, U.S. emissions have increased at an average annual rate of 0.1 percent. In 2015, the industrial and transportation end-use sectors accounted for 29 percent each of GHG emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 15 percent and 16 percent of CO_2e emissions, respectively (USEPA 2018b).

Based on CARB's California Greenhouse Gas Inventory for 2000-2018, California produced 425 MMT of CO_2e in 2018 (CARB 2020). Transportation is the largest source of GHGs in California, contributing 40 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 21 percent of the state's GHG emissions, and electric power accounted for approximately 15 percent (CARB 2020). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. In 2016, statewide GHG emissions dropped below the 2020 GHG Limit required by the California Global Warming Solutions Act (Assembly Bill 32), discussed in further detail below. California's GHG emissions have remained below the 2020 GHG Limit since 2016.

3.1.3 Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air, land, and water temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when

described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT, as well as sea surface temperatures, has increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

According to the CalEPA's 2010 Climate Action Team Biennial Report, potential impacts of climate change in California may include decreased snow pack, sea level rise, and increase in extreme heat days per year, high ground-level O_3 days, large forest fires, and drought (CalEPA 2010). Below is a summary of some of the potential impacts that could be experienced in California because of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in many areas of California. Climate change may increase the concentration of ground-level O_3, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (CEC 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varied hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1 degree Fahrenheit, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many southern California cities have experienced their lowest recorded annual precipitation twice in the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; California Climate Change Center [CCCC] 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not understood well. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR Projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to *The Impacts of Sea-Level Rise on the California Coast*

prepared by the CCCC (CCCC 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880. Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report predicts a mean sea–level rise of 11-38 inches by 2100 (IPCC 2013). This prediction is more than 50 percent higher than earlier Projections of 7 to 23 inches, when comparing the same emissions scenarios and periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to saltwater intrusion. In addition, increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the local and global levels. Increasing concentrations of GHGs are likely to accelerate the rate and severity of climate change impacts. Scientists Project that the average global surface temperature could rise by 1.0-4.5 degrees Fahrenheit in the next 50 years, and 2.2-10 degrees Fahrenheit during the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

3.1.4 Regulatory Setting

Federal

USEPA "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held that the United States Environmental Protection Agency (USEPA) has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act (CAA). The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. In 2012, the USEPA

issued a Final Rule that establishes the GHG permitting thresholds that determine when federal CAA permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In 2014, the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA* (134 S. Ct. 2427 [2014]) held that USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

State

The legal framework for GHG emission reduction in California is built upon executive orders, legislation, and regulations. The major components of California's climate change initiative are summarized below.

California Advanced Clean Cars Program

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, USEPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles beginning with the 2009 model year. Pavley I regulates model years from 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, when the rules will be implemented fully, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

Executive Order S-3-05

In 2005, the governor issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (California Environmental Protection Agency [CalEPA] 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These strategies could be implemented by various state agencies to ensure the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light-duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, and so on. In April 2015, the governor issued EO B-30-15, calling for a new target of 40 percent below 1990 levels by 2030.

Assembly Bill 32 and the California Climate Change Scoping Plan

Assembly Bill (AB) 32 outlines California's major initiative for reducing GHG emissions; called the "California Global Warming Solutions Act of 2006," AB 32 was signed into law in 2006 and codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHGs to meet the 2020 deadline. In

addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. CARB approved the Scoping Plan on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan have been adopted (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines CARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 statewide goals. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the state's longer-term GHG reduction strategies with other state policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (CARB 2014).

The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill (SB) 32, discussed below, and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the state, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes (CARB 2017b).

Senate Bill 97

SB 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The updated GHG emission reduction targets take effective October 1, 2018.

Senate Bill 32

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping

Plan does not provide Project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017b). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (regional, sub-regional, county, or city level), but not for specific individual Projects because they include all emissions sectors in the state.

Senate Bill 350

Adopted on October 7, 2015, SB 350 supports the reduction of GHG emissions from the electricity sector through a number of measures, including requiring electricity providers to achieve a 50 percent renewables portfolio standard by 2030, a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by retail customers by 2030.

Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

The bill also requires the California Department of Resources Recycling and Recovery (CalRecycle), in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

Senate Bill 1368

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by the Governor in September 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission (CEC) also was required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC. The Solar Facility meets the criteria of a renewable energy generation facility as defined in Chapter 8.6 of Division 15 of the Public Resources Code and therefore is determined by rule to comply with the GHG Emission Performance Standards requirements of SB 1368.

Renewable Portfolio Standards

The State's Renewables Portfolio Standard (RPS) was established in 2002 via SB 1078, which required 20 percent of the state's energy portfolio to be supplied by renewable sources such as solar, wind, hydroelectricity, geothermal, and bioenergy by 2017. RPS goals have been accelerated over time to require the state's energy portfolio to be supplied by renewable sources in increasingly higher percentages. Since SB X1-2 was signed in 2011, the RPS target has required all electricity retailers in the state, including investor-owned utilities, such as Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E), to procure 33 percent of their energy sales from

renewable sources by the end of 2020 (CPUC 2018a). SB 350, passed in 2015, directs California utilities to further increase the amount of renewable energy to be delivered to customers to 50 percent by 2050. Collectively, PG&E, SCE, and SDG&E met the 33 percent goal in 2016 and are forecasted to reach 50 percent in 2020 (CPUC 2018b).

Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. This further supports the reduction of GHG emissions from the electricity sector.

Executive Order B-55-18

On September 10, 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

CARB Resolution 07-54

CARB Resolution 07-54 establishes 25,000 metric tons of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold was just over 0.005 percent of California's total inventory of GHG emissions for 2004.

17 California Code of Regulations Section 95350 et seq.

The purpose of this regulation is to achieve GHG emission reductions by reducing SF_6 emissions from gas-insulated switchgear. Owners of such switchgear must not exceed maximum allowable annual emissions rates, reduced each year until 2020, after which annual emissions must not exceed 1.0 percent. Owners must regularly inventory gas-insulated switchgear equipment, measure quantities of SF_6, and maintain records of these for at least three years. Additionally, by June 1 each year, owners also must submit an annual report to CARB's Executive Officer for emissions that occurred during the previous calendar year.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

3.2 Greenhouse Gas Impact Analysis

3.2.1 Methodology and Significance Thresholds

a. Methodology

Construction and Operational Emissions

Construction of the solar Project would generate temporary GHG emissions primarily from the use of on-site construction equipment, vehicles transporting construction workers to and from the Project site, and heavy-duty trucks used to export earth materials off-site. Site preparation and grading typically generate the greatest amount of emissions from grading equipment and soil hauling. Operational activities of the Project would generate GHG emissions primarily from operation of maintenance equipment on-site and vehicles transporting employees to and from the Project site. Emissions associated with decommissioning the Project were conservatively assumed to be equivalent to construction of the Project give the type of equipment required for decommissioning. The analysis relied on CARB's on-road vehicle emission factor model (EMFAC2017), CARB's 2017 Off-Road Equipment Inventory Model (OFFROAD2017), and emission factors obtained from the USEPA AP-42 *Compilation of Air Pollutant Emissions Factors* (as amended). Short-term and annual Project emissions were estimated based on equipment and construction schedule assumptions developed from similar solar Projects and using appropriate emission factors. The Association of Environmental Professionals (AEP) recommends that total construction GHG emissions resulting from a Project be amortized over the Project's estimated lifetime and added to GHG emissions (AEP 2010). As discussed in Section 1.4, *Operational Activities*, up to 20 employees may be required during scheduled operation and maintenance activities. However, it is possible that the Project would share personnel with nearby solar facilities thus reducing the Project's on-site operational staff. To provide a conservative estimate, off-site emissions were based on the maximum number of employees that would be traveling to the site in a single day to perform maintenance activities if the Project required its own personnel (i.e., 20 total employees). Refer to Section 1, *Project Description*, and Appendix AQGHG for details on equipment fleet, hours of operation, vehicle miles traveled, and other assumptions used in this analysis.

Indirect GHG Emissions Associated with Water Use

The use of water in California can involve substantial energy consumption, depending on the source of the water and the use location relative to the source. Major portions of the state rely on imported water from the State Water Project (California Aqueduct), the Central Valley Project, the Colorado River Aqueduct, the All-American Canal, and similar large-scale water distribution systems. Moving water across the state involves considerable energy consumption for pumping and delivering the water to the use location. The use of groundwater can involve substantial energy consumption to pump water from deep aquifers. In addition to the energy consumption associated with wholesale water supply, energy is consumed during local treatment for potable use and for local delivery. Most of the energy associated with water supply is provided by electricity, which is generated from a variety of sources, including fossil-fueled power plants that produce GHGs. Consequentially, the use of water for dust control and grading compaction during construction and photovoltaic panel washing during operations results in indirect GHG emissions.

As described in Section 1, *Project Description*, the Project may require water during construction for dust suppression. During operation the Project would require water for solar PV panel washing and facilities at the O&M buildings. Based on the energy factors in CPUC's *Embedded Energy in Water*

Studies (CPUC 2010a) and assuming minimal treatment and delivery, it was estimated that each acre-foot of water requires 650 kilowatt-hours of electricity for Project site delivery. The amount of GHG emissions associated with the 650 kilowatt-hours was based on the emissions profile for Southern California Edison (SCE) provided in the California Emissions Estimator Model (CalEEMod) (CAPCOA 2017).

Displaced Emissions

Operation of the Project would create renewable energy over the planned 30- to 40-year Project lifetime. This energy would displace GHG emissions that would otherwise be produced by existing power generation resources, including coal and natural gas/other non-renewables. The Project would deliver up to 1,500 MW of electricity to the point of interconnect at peak sun exposure. Annual energy generation or renewable energy generation in megawatt hours (MWh) was estimated based on solar radiation at the Project site, annual operational time, and maximum capacity of 1,500 MW.[9] Refer to Appendix AQGHG for detailed calculations related to the Project's annual energy generation and associated displacement of emissions. The Project is assumed to displace a fraction of existing current annual power generated by fossil-fuels. Displaced GHG emissions were estimated assuming that generated solar energy would displace energy generated from fossil fuels in the California market and does not include the approximate 30 percent of the California electricity generated by non-combustion sources (CEC 2018a). It should be noted that the Project may also charge a battery from additional MW generated during the middle of the day. Discharging the battery at night would extend the amount of time the Project could deliver electricity to the point of interconnect thereby further increasing the displacement of emissions.

b. Significance Thresholds

The majority of individual Projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a Project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a Project are limited. The issue of climate change typically involves an analysis of whether a Project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual Project are significant when viewed in connection with the effects of past Projects, other current Projects, and probable future Projects (CEQA Guidelines, Section 15064[h][1]).

For future Projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, consistency with a regional GHG reduction plan, or consistency with statewide regulations adopted to reduce GHG emissions. A Project may not have an impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (14 Cal. Code Regs. §15064[h][3]). According to the CEQA Guidelines, Projects can tier off of a qualified GHG reduction plan, which allows for Project-level evaluation of GHG emissions through the comparison of the Project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. The AEP considers this approach in its white paper, "Beyond Newhall and 2020," to be the most defensible approach presently available to determine the significance of a Project's GHG emissions (AEP 2016).

[9] Photovoltaic cell capacity is rated in terms of mega or kilowatts and indicates the amount of instantaneous power produced when operating at peak sun exposure. Total amount of electricity produced in measured in watt-hours and is dependent on operational time. Operational time of a solar panel is defined by the amount of time that the photovoltaic cells are actively converting solar energy into power, which depends on solar radiation. Solar radiation is the measure of energy emitted from the sun and varies daily depending on the time of day, season, local landscape, and geography.

Kern County General Plan

Kern County has established a series of goals, policies, and implementation measures in the Kern County General Plan located in the Energy Element to encourage safe and orderly commercial solar development (Kern County 2009). Applicable policies related to the Project are as follows:

> **Policy 1:** The County shall encourage domestic and commercial solar energy uses to conserve fossil fuels and improve air quality.
>
> **Policy 2:** The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

The Kern County Planning and Natural Resources Department has requested an allocation for the preparation of a Climate Change Action Plan (CCAP) for the County General Plan. Kern County has not developed a quantified threshold of significance for GHG emissions, but a Project found to contribute to a net decrease in GHG emissions and found to be consistent with the adopted CARB 2017 Scoping Plan is presumed to have a less than significant GHG impact.

Eastern Kern Air Pollution Control District

In March 2012, EKAPCD adopted an addendum to its CEQA Guidelines to address Project-specific GHG impacts and determine CEQA significance for GHG Emissions when EKAPCD is the CEQA lead agency. In these circumstances, a Project would have a less than significant impact if it meets one of the following conditions:

1. GHG emissions are less than 25,000 tons per year (tpy).
2. The Project demonstrates to EKAPCD that it is in compliance with state GHG reduction plan such as AB 32 or future federal GHG reduction plan if it is more stringent than state plan.
3. Project GHG emissions will be mitigated to a less than significant impact if GHGs can be reduced by at least 20% below Business-As-usual (BAU) through implementation of one or more of the following strategies:
    a. Compliance with a Best Performance Standard (BPS) as set forth in Section IV of EKAPCD CEQA GHG Policy
    b. Compliance with GHG Offset as detailed din Section VI of the EKAPCD CEQA GHG Policy
    c. Compliance with an Alternative GHG Reduction Strategy as discussed in Section VII of the EKAPCD CEQA GHG Policy

As such, Project-generated emissions were compared to the applicable EKAPCD adopted GHG threshold of 25,000 metric tons per year.

3.2.2 Project Impacts

a. GHG Emissions

The Project would generate GHG emissions directly and indirectly during construction, routine operational and maintenance activities, and decommissioning activities. The majority of emissions from the Project would be generated during construction and decommissioning activities. Table 12 presents total estimated emissions from construction activities from on-site and off-site emission sources. The estimated total GHG emissions during Project construction would be approximately 7,866 MT CO_2e

over the 24-month construction period. It was conservatively assumed that decommissioning of the Project would use the same type and amount of equipment in a similar schedule to construction, therefore decommissioning of the Project was estimated to generate an equivalent amount of emissions as construction. This is a conservative estimate because on-road vehicles and off-site equipment would continue to improve in fuel efficiency have increasingly reduced emissions, as such decommissioning emissions in 30 years[10] would likely be substantially lower than construction emissions. Estimated construction and decommissioning emissions related to the Project amortized over 30 years, the anticipated Project lifetime, would be approximately 524 MT CO_2e per year. Additional details on calculations can be found in Appendix AQGHG.

Table 12 Estimated Construction Emissions of Greenhouse Gases

		Emissions Source (MT CO_2e)				
Year	Location	Off-Road	On-site Mobile	Off-site Mobile	Indirect GHG Emissions from Water Use	Total (MT CO_2e)
2021		433	3.9	292	23	753
2022		3,853	15.3	1,264	93	5,225
2023		1,051	8.8	758	70	1,888
Total Construction		**5,337**	**27.9**	**2,314**	**187**	**7,866**
Construction and Decommissioning		10,674	56	4,628	374	15,731
Amortized Emissions (30-year life)		356	2	154	12	524

Note: Numbers have been rounded to nearest metric tons

Table 13 summarizes operational emissions associated with the Project. Operation and maintenance of the Project would generate GHG emissions largely through motor vehicle trips to and from the Project site; on-site maintenance activities involving portable equipment and maintenance vehicles; and energy use associated with water consumption. As shown in Table 13, the Project is estimated to emit 83 MT CO_2e per year during operation. Indirect emissions from water use on-site account for approximately 50 percent of operational emissions. The total construction and decommissioning GHG emissions, amortized over 30 years, was added to the annual estimated operational emissions to estimate annual GHG emissions generated by the Project. As shown in Table 13, the Project would emit 608 MT CO_2e per year, throughout the operational life of the Project (assumed 30 years).

However, the construction and operation of new renewable energy facilities would offset GHG emissions by replacing fossil-fueled power plants. The Project would generate approximately 3,696 gigawatt-hours (GWh) of solar-generated electricity each year that would be added to the power grid and be used in place of electricity generated by fossil-fuel sources. Based on the Project's Projected annual electricity generation and the GHG emissions generated due to fossil-fuel combustion to generate the same level of electricity, the Project has the potential to displace 795,348 MT CO_2e per year. Therefore, the net generation of annual GHG emissions would be -794,740 MT CO_2e, as shown in Table 13. As such, the Project would not exceed any regional GHG thresholds and would be consistent with state GHG reduction plans such as AB 32 and SB 32. Further, the Project would result in an overall lifetime reduction estimated at 23,842,210(i.e. 794,740* 30 yrs = 23,842,210) MT CO_2e and would therefore be regionally beneficial.

[10] Although the Project would be constructed to last up to 40 years, the Project construction-generated emissions were amortized over 30 years to provide a conservative estimate.

Table 13 Estimated Annual Operational Greenhouse Gas Emissions

Location	Emissions Source (MT CO_2e)				Total (MT CO_2e)
	Off-Road	On-site Mobile	Off-site Mobile	Indirect GHG Emissions from Water Use	
Operation	<0.1	20	22	42	83
Amortized Construction and Decommissioning Emissions	356	2	154	12	524
Annual Total	**356**	**22**	**176**	**54**	**608**
Annual Displaced GHG Emissions (MT/year)					**795,348**
Net Annual GHG Emissions (MT/year)					**-794,740**

Note: Numbers have been rounded to nearest metric tons

The proposed on-site substations may feature circuit breakers that contain SF_6 gas, used as an insulator and an arc suppressor in the breakers. SF_6 is inert and non-toxic and is encapsulated in the breaker assembly. SF_6 is a GHG with substantial global warming potential because of its chemical nature and long residency time within the atmosphere. However, under normal conditions, it would be completely contained in the equipment and SF_6 would be released only in the unlikely event of a failure, leak, or crack in the circuit breaker housing. New circuit breaker designs have been developed to minimize the potential for leakage, compared to that of past designs, and the amount of SF_6 that could be released by the solar facility equipment would be minimal.

b. Consistency with GHG Reduction Plans and Policies

Statewide goals to reduce GHG emissions to 1990 levels by 2020 and 40 percent below 1990 levels by 2030 have been established in AB 32 and SB 32, respectively. The AB 32 Scoping Plan adopted by CARB provided a framework for achieving AB 32 goals where a series of technologically feasible and cost-effective measures to reduce GHG emissions were outlined. The strategies have been further expanded upon as part of the *2017 Climate Change Scoping Plan Update* to achieve SB 32 goals.

Both the AB 32 Scoping Plan and SB 32 Scoping Plan update have included implementation of the RPS as an individual strategy. As discussed in Section 3.1.1, *Regulatory Setting*, SB 100 accelerated the state's RPS Program by increasing California's procurement of electricity from renewable sources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. The Project would generate approximately 3,696 GWh of electricity each year or approximately 110,869 GWh over the Project's 30-year lifetime. This additional solar-generated energy would be added to the power grid and used in place of electricity generated by fossil-fuel sources, and thus would directly support energy goals under SB 100 and would be consistent with the 2017 Scoping Plan Update. Replacement of fossil-fuel sources with renewable solar energy would also displace GHG emissions, ultimately off-setting any GHG emissions produced by construction, decommissioning, and operation of the Project. Additionally, the Project would not exceed EKAPCD's 25,000 MT CO_2e project threshold and would be consistent with the County's General Plan Resource goals to encourage solar development to conserve fossil fuels and improve air quality (Kern County 2009). Given that Kern County has not yet adopted a GHG-reduction plan, there are not other measures or polices applicable to the proposed Project. The Project would be consistent with state and regional plans to reduce GHG emissions and be consistent with the *2017 Climate Change Scoping Plan Update*.

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4 Recommendations

Construction of the Project would temporarily generate PM_{10} emissions and Recommendation AQ-1 is necessary to comply with EKAPCD's rules and regulations related to permitting for a commercial solar power plant, including Rule 201 (Permits Required), Rule 210.1 (New and Modified Stationary Review, NSR) and Rule 402 (Fugitive Dust). Further, due to earthmoving activities associated with construction of the Project there is an increased potential for exposure of nearby residents and on-site workers to Valley Fever airborne spores, if they are present. Recommendation AQ-2 would reduce health risks associated with the potential exposure to Valley Fever spores. The following recommendations would reduce air quality impacts from the Project's construction activities.

AQ-1 Further Reduction of PM_{10} Emissions during Construction, Decommissioning, and Operation, and Maintenance

Develop a fugitive dust control plan (Plan) for the proposed Project. The Plan should address short-term construction, long-term operational, and decommissioning activities. The Plan should be endorsed by the EKAPCD prior to the start of any earthmoving activity. The Plan should include all EKAPCD-recommended measures, including but not limited to, the following:

a) Speed for all on-site construction vehicles shall not exceed 15 miles per hour (mph) on any unpaved surface on the construction site. Signs identifying construction vehicle speed limits shall be posted along on-site roadways, at the site entrance/exit, and along unpaved site access roads.

b) All on-site unpaved roads and off-site unpaved Project site access road(s) shall be effectively stabilized from dust emissions using water or EKAPCD-approved dust suppressants/palliatives, sufficient to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. If water is used, watering shall occur at a minimum of three times daily, sufficient to keep soil moist along actively used roadways. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys), Reclaimed (non-potable) water shall be used to the extent available.

c) Reduce and/or phase the amount of the disturbed area (e.g., grading, excavation) where possible.

d) All disturbed areas shall be sufficiently watered or stabilized by EKAPCD-approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 mph, or as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (non-potable) water shall be used to the extent available.

e) All clearing, grading, earth moving, and excavation activities will cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

f) All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an EKAPCD-approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.

g) All active and inactive disturbed surface areas shall be compacted, where feasible.

h) Equipment and vehicle access to disturbed areas shall be limited.

i) Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.

j) Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by tarps, hydro-mulch, woodchips, or other materials sufficient to minimize wind-blown dust.

k) Water shall be applied prior to and during the demolition of on-site structures, sufficient to minimize wind-blown dust.

l) Where required by the fire department, weed control will be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and covered with mulch.

m) All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least two feet of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

n) Gravel pads, grizzly strips, or other material track-out control methods approved for use by the EKAPCD shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

o) Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air, and/or use rocks/grates at the Project entry points, when necessary, to remove soil deposits and to minimize the track-out/deposition of soil onto nearby paved roadways.

p) Paved road surfaces located adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

q) Portable equipment with 50 horsepower or greater used during construction activities (e.g., portable generators, concrete batch plant) will require California statewide portable equipment registration (issued by CARB) or an EKAPCD permit.

r) The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures, as necessary, to minimize the off-site transport of dust and to ensure compliance with identified fugitive dust control measures. Their duty hours shall include holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the EKAPCD Compliance Division prior to the start of any grading, earthwork, or demolition.

s) Signs shall be posted at the Project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of Project construction to residential land uses located within1,000 feet of the Project site. The signs and written notifications shall include the following information: (a) Project name; (b) anticipated construction schedule(s); and (c) telephone number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

t) The designated construction monitor will document and immediately notify EKAPCD of any air quality complaints received. If necessary, the applicant and/or contractor will coordinate with

EKAPCD to identify any additional feasible measures and/or strategies to implement to address public complaints.

AQ-2 Minimize Personnel and Public Exposure to Valley Fever

Including the following in the Fugitive Dust Control Plan to be prepared for this Project as discussed in Recommendation AQ-2:

a) Equipment, vehicles, and other items shall be cleaned thoroughly of dust before they are moved off site to other work locations.

b) Wherever possible, grading and trenching work shall be phased so that earth-moving equipment works well ahead or down-wind of workers on the ground.

c) The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d) In the event that a water truck runs out of water before dust is dampened sufficiently, ground workers exposed to dust are to leave the area until a full truck resumes water spraying.

e) All heavy-duty earth-moving vehicles shall be closed-cab and equipped with a High Efficiency Particulate Arrestance (HEPA) filtered air system.

f) Workers shall receive training to recognize the symptoms of Valley Fever and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Community Development Department within 24 hours of the training session.

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5 Conclusions

5.1 Air Quality

As discussed in Section 2.2, *Air Quality Impact Analysis*, if construction activities occurred at all parcels simultaneously the Project would generate fugitive dust emissions of PM_{10} during construction and decommissioning of the Project that exceed the County's significance threshold, largely due to emissions associated with fugitive dust from construction activities on-site. However, with implementation of the required standard dust control measures per EKAPCD Rule 402 (Recommendation AQ-1), generated fugitive dust emissions of PM_{10} during construction and decommissioning would not exceed that County's significance threshold. As previously mentioned, EKAPCD has determined that commercial solar power plants generate fugitive dust emission in eastern Kern County and, therefore, in accordance with Rule 201 (Permits Required) and 210.1 (New and Modified Stationary Source Review), commercial solar facilities are required to obtain a district air permit. Because construction of the Project would disturb more than 10 acres on contiguous surface area, Recommendation AQ-1, development of a fugitive dust monitoring plan, is necessary to obtain a permit to construct and operate the Project within the County.

Due to earthmoving activities associated with construction, there is the potential for nearby residents and on-site workers to have an increased risk of exposure to Valley Fever if spores are present. Recommendation AQ-2 is not required to comply with the EKAPCD's permitting rules for a commercial solar field, however is recommended to reduce health impacts to the surrounding communities and on-site workers. Valley Fever spores are naturally occurring in the soil of Kern County and fungal spores can become airborne during ground disturbances, such as construction work. Reduction of dust disturbance or stabilization of dust will reduce the amount of fungal spores becoming airborne and thus reduce the incidences of individuals becoming infected.

5.2 Health Risk Assessment

As shown in Table 6 construction of the Project is not anticipated to result in a significant exposure risk to DPM because of the large area in which the construction would occur relative to the fixed location of the receptors and because construction activities would be temporary. Although decommissioning emissions are expected to comprise only a fraction of the construction emissions, the health impact related to future decommissioning activities was assumed to be equivalent to health impacts related to construction activity. The health risk associated with the Project does not exceed EKAPCD significance thresholds of 20 in one million for excess cancer risk and 1.0 for chronic health risks.

5.3 GHG

As discussed in Section 3.2, *Greenhouse Gas Impact Analysis*, the Project would not generate GHG emissions that would exceed local and regional significance thresholds and is consistent with applicable GHG reduction plans. Further, due to being a renewable solar energy Project, the Project would reduce the local, regional, and statewide cumulative GHG emissions and offset a portion of the incremental cumulative GHG impacts of other Projects. The Project would support Kern County's General Plan Resource Goal to promote solar development to conserve fossil fuels and would be regionally beneficial to air quality.

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6 References

California Air Resources Board (CARB), 2018. iADAM Air Quality Data Statistics. www.arb.ca.gov/adam/index.html.

California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. Sacramento, CA. January 2008.

California Air Resources Board (CARB). 2004. *Mechanisms of Particulate Toxicity: Health Effects in Susceptible Humans*. Principal Investigator: Colin Solomon, Ph.D., Lung Biology Center, University of California, San Francisco, May 28, 2004.

_____. 2010. Estimate of Premature Deaths Associated with Fine Particle Pollution (PM2.5) in California Using a U.S. Environmental Protection Agency Methodology. August 31, 2010. www.arb.ca.gov/research/health/pm-mort/pm-report_2010.pdf. Accessed March 8, 2018.

_____. 2011. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider the "LEV III" Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards and Test Procedures and to the On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and to the Evaporative Emission Requirements for Heavy-Duty Vehicles. Sacramento, CA. December 7, 2011.

_____. 2014. AB 32 Scoping Plan Website. Updated June 2014. Accessed September, 2014. www.arb.ca.gov/cc/scopingplan/scopingplan.htm

_____. 2015a. Frequently Asked Questions About Executive Order B-30-15. Sacramento, CA. April 2015.

_____. 2015b. Findings of the Scientific Review Panel on the Report on Diesel Exhaust as Adopted at the Panel's April 22, 1998 Meeting. www.arb.ca.gov/toxics/dieseltac/de-fnds.htm. Last reviewed by CARB July 21, 2015.

_____. 2017. California's 2017 Climate Change Scoping Plan. Sacramento, CA. December 14, 2017.

_____. 2020. California Greenhouse Gas Emission Inventory – 2020 Edition – by Category as Defined in the 2008 Scoping Plan. https://ww2.arb.ca.gov/ghg-inventory-data (accessed December 2020).

California Climate Change Center (CCCC).2009. The Impacts of Sea-Level Rise on the California Coast.

California Department of Industrial Relations, 2017. Protection from Valley Fever. www.dir.ca.gov/dosh/valley-fever-home.html. November 2017.

California Department of Public Health (CDPH). 2016. Valley Fever and African Americans, Filipinos, and Hispanics. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/VFRaceEthnicity.pdf. January 2016.

_____. 2017. Epidemiologic Summary of Coccidioidomycosis in California, 2016. June 2017. www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/CocciEpiSummary2016.pdf. Accessed March 8, 2018.

California Department of Transportation (DOT),1997. Transportation Project-Level Carbon Monoxide Protocol, revised December 1997. www.dot.ca.gov/env/air/docs/co-protocol-searchable.pdf. Accessed November 14, 2018

California Department of Water Resources (DWR). 2008. Managing an Uncertain Future: Climate Change Adaption Strategies for California's Water.

California Energy Commission (CEC). 2009. Environmental Health and Equity Impacts from Climate Change and Mitigation Policies in California: A Review of the Literature.

_____. 2018a. Total System Electric Generation. www.energy.ca.gov/almanac/electricity_data/total_system_power.html. Accessed September 20, 2018

_____. 2018b. Total Electricity System Power. www.energyalmanac.ca.gov/electricity/total_system_power.html Accessed October 2018.

California Public Utilities Commission (CPUC). 2010a. Embedded Energy in Water Studies Study 1: Statewide and Regional Water-Energy Relationship. August 31, 2010.

_____. 2010b. Embedded Energy in Water Studies Study 2: Water Agency and Function Component Study and Embedded Energy-Water Load Profiles. August 31, 2010.

_____. 2018a. RPS Program Overview. www.cpuc.ca.gov/RPS_Overview/.

_____. 2018b.California Renewables Portfolio Standard (RPS). www.cpuc.ca.gov/RPS_Homepage/.

Centers for Disease Control and Prevention (CDC). 2017. Valley Fever (Coccidioidomycosis) Statistics. www.cdc.gov/fungal/diseases/coccidioidomycosis/statistics.html. Updated November 9, 2017.

Colson, Aaron J.; Vredenburgh, Larry; Guevara, Ramon E.; Rangel, Natalia P.; Kloock, Carl T.; and Lauer, Antje, 2017. Large-Scale Land Development, Fugitive Dust, and Increased Coccidioidomycosis Incidence in the Antelope Valley of California, 1999–2014. Mycopathologia, 27 May 2016 / Accepted: 16 December 2016. www.knowthecause.com/ downloads/Colson2017FugitiveDustCoccidiodes.pdf. Copyright Springer Science + Business Media Dordrecht 2017.

The Daily Independent, 2018. Op-Ed by Congressman Kevin McCarthy and Assemblyman Vince Fong: State-Federal Synergy to Eradicate and Treat Valley Fever. www.ridgecrestca.com/news/ 20180120/op-ed-state-federal-synergy-to-eradicate-and-treat-valley-fever. January 20, 2018.

Eastern Kern Air Pollution Control District (EKAPCD). 1996. Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970, as Amended. http://www.kernair.org/Documents/CEQA/CEQA_Guidelines%20&%20Charts.pdf

_____.2012. Addressing GHG Emission Impacts for Stationary Source Projects When Serving as the Lead CEQA Agency.

_____.2017. Ozone Attainment Plan.https://www.arb.ca.gov/planning/sip/planarea/easternkern/easternkern.htm

EPD Solutions, Inc. 2019. Aratina Solar Project Traffic Impact Analysis. May 20.

Federal Correctional Institution/Satellite Camp Prison Mendota, California (FCI Mendota), 2015. Admissions & Orientation Handbook, an Inmate's Guide to Policies and Procedures https://www.bop.gov/locations/institutions/men/MEN_aohandbook.pdf.

Huang, J. Y., Bristow, B., Shafir, S., & Sorvillo, F., 2012. Coccidioidomycosis-associated Deaths, United States, 1990–2008. Emerging Infectious Diseases, 18(11), 1723-1728. https://dx.doi.org/10.3201/eid1811.120752. November 2012.

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change Fifth Assessment Synthesis Report. Cambridge, UK. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdfIowa State University, 2010. Coccidioidomycosis. www.cfsph.iastate.edu/Factsheets/pdfs/coccidioidomycosis.pdf. Updated June 2010.

Johnson, L., Gaab, E.M., Sanchez, J., Bui, P.Q., Nobile, C.J., Hoyer, K.K., et al., 2014. Valley fever: danger lurking in a dust cloud. *Microbes Infect*. 2014; 16:591–600. www.knowthecause.com/downloads/Johnson2014ValleyFever-1.pdf.

Kern County. 2009. Kern County General Plan. https://psbweb.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf

Kern Council of Governments. 2019. Transportation Data Management System. https://kerncog.ms2soft.com/tcds/tsearch.asp?loc=Kerncog&mod=

Kern County Planning Department. 2006. Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impacts Reports. http://www.kernair.org/Documents/CEQA/AirQualityAssessmentPreparationGuidelines.pdf

_____. 2014. Master Kern Solar Project List. https://psbweb.co.kern.ca.us/planning/pdfs/renewable/MasterKernSolarProjectsList.pdf

Kern County Public Health Services (KCPHS). 2019. Valley Fever (Coccidioidomycosis) in Kern County. http://kerncountyvalleyfever.com/.

McCue, Patrick M., O'Farrell, Thomas P., 1988. Serological survey for selected diseases in the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). Journal of Wildlife Diseases, vol. 24, issue 2, pp. 274-81. April 24, 1988.

Merck Sharp & Dohme Corp., 2018. Coccidioidomycosis. Merck Manual, Veterinary Manual. www.merckvetmanual.com/generalized-conditions/fungal-infections/coccidioidomycosis.

Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines - The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. https://oehha.ca.gov/air/air-toxics-hot-spots

Santa Barbara County Air Pollution Control Board (SBCAPCD). 2020. Modeling Guidelines for Health Risk Assessments. https://www.ourair.org/wp-content/uploads/apcd-15i.pdf

United States Environmental Protection Agency (USEPA). 2006. AP-42 Fifth Edition Compilation of Air Pollutant Emission Factors. http://www.epa.gov/ttnchie1/ap42/

_____. 2018a. Overview of Greenhouse Gases. https://www.epa.gov/ghgemissions/overview-greenhouse-gases

_____. 2018b. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*. U. S. EPA #430-R-18-003. April 2018. https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf

Appendix AQGHG

Bulk Emissions Calculations

Bellefield Solar Project - 1,500 MW

Emissions Factors Used in Analysis

Exhaust Emissions Factors for Equipment in Mojave Desert Air Basin

Equipment [1, 2, 3]	Fuel Type	Consumption (gallons/hr)	Actual HP	Modeled HP	HC lbs/hr	ROG lbs/hr	TOG lbs/hr	CO lbs/hr	NOx lbs/hr	CO_2 lbs/hr	PM_{10} lbs/hr	$PM_{2.5}$ lbs/hr	tal PM lbs/hr	SO_X lbs/hr	NH_3 lbs/hr
Air Compressor	diesel	1.03E+00	78	50	2.78E-02	3.31E-02	4.00E-02	2.03E-01	1.69E-01	2.23E+01	9.49E-03	8.74E-03	9.49E-03	2.88E-04	1.89E-04
Crane	diesel	2.74E+00	231	237.5	3.97E-02	4.81E-02	5.72E-02	2.87E-01	5.32E-01	6.16E+01	2.47E-02	2.27E-02	2.47E-02	5.68E-04	5.03E-04
Crawler Tractor	diesel	3.31E+00	212	175	5.10E-02	6.17E-02	7.35E-02	4.68E-01	6.22E-01	7.45E+01	3.47E-02	3.19E-02	3.47E-02	6.87E-04	6.08E-04
Drum Roller Compactor	diesel	2.24E+00	134	137.5	1.97E-02	2.39E-02	2.84E-02	2.99E-01	2.53E-01	5.04E+01	1.35E-02	1.24E-02	1.35E-02	4.66E-04	4.11E-04
Excavator	diesel	2.89E+00	212	175	2.22E-02	2.68E-02	3.19E-02	3.80E-01	2.52E-01	6.49E+01	1.22E-02	1.13E-02	1.22E-02	6.00E-04	5.30E-04
Generator Set	diesel	1.07E+00	84	75	9.03E-03	1.09E-02	1.30E-02	1.65E-01	1.20E-01	2.42E+01	9.00E-04	8.28E-04	9.00E-04	2.23E-04	1.97E-04
Grader	diesel	3.15E+00	187	175	5.48E-02	6.64E-02	7.90E-02	4.71E-01	6.36E-01	7.08E+01	3.55E-02	3.26E-02	3.55E-02	6.53E-04	5.78E-04
Off-highway Truck	diesel	5.79E+00	402	300	3.68E-02	4.46E-02	5.30E-02	2.43E-01	3.78E-01	9.34E+01	1.47E-02	1.36E-02	1.47E-02	8.63E-04	7.62E-04
Other Construction Equipment	diesel	3.26E+00	172	175	3.82E-02	4.62E-02	5.50E-02	4.45E-01	4.82E-01	7.33E+01	2.52E-02	2.32E-02	2.52E-02	6.77E-04	5.98E-04
Rough-terrain Forklift	diesel	2.30E+00	100	100	9.91E-03	1.20E-02	1.43E-02	2.74E-01	1.78E-01	4.51E+01	5.41E-03	4.97E-03	5.41E-03	4.16E-04	3.68E-04
Rubber-tired Loader	diesel	2.80E+00	203	175	3.42E-02	4.14E-02	4.93E-02	4.01E-01	3.73E-01	6.30E+01	2.04E-02	1.88E-02	2.04E-02	5.82E-04	5.15E-04
Skid Steer	diesel	1.34E+00	75	75	8.40E-03	1.02E-02	1.21E-02	1.87E-01	1.35E-01	3.02E+01	5.41E-03	4.97E-03	5.41E-03	2.79E-04	2.47E-04
Trencher (big)	diesel	5.94E+00	300	300	6.70E-02	8.11E-02	9.66E-02	3.98E-01	9.79E-01	1.34E+02	3.89E-02	3.58E-02	3.89E-02	1.23E-03	1.09E-03
Trencher (small)	diesel	1.84E+00	78	75	5.49E-02	6.64E-02	7.91E-02	3.42E-01	5.58E-01	4.15E+01	3.77E-02	3.46E-02	3.77E-02	3.82E-04	3.38E-04
Vibratory Post Driver	diesel	3.26E+00	158	175	3.82E-02	4.62E-02	5.50E-02	4.45E-01	4.82E-01	7.33E+01	2.52E-02	2.32E-02	2.52E-02	6.77E-04	5.98E-04

1. Emissions factors for diesel and gasoline equip developed from the CARB 2017 Off-Road Inventory Model for year 2021. Emissions based on the equipment within the model horsepower bin nearest the applicant provided horsepower rating; emissions between bins were averaged if actual horsepower was equally between two model horsepower bins. Note that emission factors from the 2017 Inventory Model are substantially lower than in the previous OFFROAD2011 model because of changed assumptions by CARB regarding load factors, hours of use, fuel consumption, and equipment population.

2. "Other Construction Equipment" used for vibratory post driver.

On-Road Mobile Vehicle Emission Factors Used in Analysis

Source: Kern (MD), EMFAC 2017 Annual Average, Year 2021

Running Emissions, grams/mile

Vehicle Type	Speed	ROG	TOG	CO	NO_X	SO_X	PM_{10} (g/mile) Exhaust	PM_{10} (g/mile) Tire Wear	PM_{10} (g/mile) Brake	$PM_{2.5}$ * (g/mile) Exhaust	$PM_{2.5}$ * (g/mile) Tire Wear	$PM_{2.5}$ * (g/mile) Brake	CO_2	CH_4	N_2O
LDA	10	0.054299411	0.078527218	1.347225921	0.08138168	0.005285559	0.006904451	0.008000002	0.036750011	0.006360808	0.002	0.015750005	534.3778	0.01337	0.009329429
LDA	55	0.009411187	0.013669752	0.635862847	0.047850366	0.0026241	0.00124563	0.008000002	0.036750011	0.001149284	0.002	0.015750005	265.2807	0.00234	0.005282045
LDT2	10	0.113875225	0.165736995	2.316214923	0.233921598	0.006862602	0.007462904	0.008000002	0.036750011	0.006865988	0.002	0.015750005	693.6342	0.026231	0.01667386
LDT2	55	0.020821614	0.030341238	1.094537687	0.135351522	0.00340918	0.001334833	0.008000002	0.036750011	0.001228682	0.002	0.015750005	344.5699	0.004772	0.009568516
LHD2	10	0.46423082	0.536538601	2.234301639	1.899541987	0.012785684	0.049500457	0.01106541	0.089180026	0.047316278	0.00276635	0.038220011	1332.875	0.025902	0.149548713
LHD2	55	0.074065754	0.084938647	0.531479091	2.805882703	0.005462701	0.018208651	0.01162367	0.089180026	0.017417909	0.00290592	0.038220011	573.9193	0.003762	0.078540398
MHDT	10	0.93089634	1.074273286	2.187734463	6.968026476	0.020797924	0.139144122	0.012000003	0.130340037	0.133100483	0.003	0.055860016	2182.89	0.050245	0.287278885
MHDT	55	0.081651737	0.096066154	0.590544102	1.969250583	0.009091322	0.070170375	0.012000003	0.130340037	0.067129991	0.003	0.055860016	952.1907	0.00525	0.120014736
MDV	10	0.128522056	0.179799516	2.531670728	0.217932089	0.008253695	0.007353134	0.008000002	0.036750011	0.006784253	0.002	0.015750005	835.0966	0.027095	0.019212492
MDV	55	0.025203682	0.034849455	1.169714179	0.135013204	0.004092362	0.001402286	0.008000002	0.036750011	0.001297001	0.002	0.015750005	414.007	0.005159	0.010920095
HHDT	10	0.489390526	0.55714819	1.984211219	11.27049963	0.027592379	0.049925506	0.03596705	0.06168487	0.047765742	0.00899176	0.026436373	2920.591	0.02274	0.459056542
HHDT	55	0.044923547	0.051149415	0.215741884	2.051619893	0.011065852	0.045143928	0.035965447	0.061684875	0.043191017	0.00899136	0.026436375	1171.286	0.002091	0.184082731

Start Emissions, grams/trip

Vehicle Type	ROG	TOG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
LDA	0.286980058	0.314204266	2.415478206	0.217709966	0.000561255	0.002036305	0.001872448	56.71645462	0.062373566	0.028304269
LDT2	0.490788457	0.537348218	3.170523491	0.413381154	0.000755176	0.002277637	0.002094421	76.31268731	0.097512032	0.039260161
LHD2	0.029590538	0.032397915	0.36941926	0.11029023	4.24685E-05	7.65054E-05	7.03439E-05	4.291563037	0.005820018	0.008224845
MHDT	0.030545634	0.033443624	0.689405452	1.197738419	5.02115E-05	7.77406E-05	7.14796E-05	5.074013572	0.005553845	0.003646446
MDV	0.5684099	0.622208886	3.951603941	0.45951846	0.000930797	0.002406107	0.002215998	94.05972289	0.108955854	0.041142166
HHDT	4.51281E-07	4.94095E-07	0.000613997	1.938833935	2.94789E-08	2.52264E-08	2.31947E-08	0.002978929	8.63483E-08	9.51932E-08

	Additional ROG Emissions				**Additional TOG Emissions**			
Vehicle Type	Diurnal (g/vehicle/day)	Hot Soak (g/trip)[1]	Resting Losses (g/vehicle/day)[2]	Running Losses (g/trip)	Diurnal (g/vehicle/day)	Hot Soak (g/trip)[1]	Resting Losses (g/vehicle/day)[2]	Running Losses (g/trip)
LDA	0.32733974	0.123924524	0.25193818	0.243414079	0.32733974	0.123924524	0.25193818	0.243414079
LDT2	0.628717171	0.208979759	0.479056604	0.704677931	0.628717171	0.208979759	0.479056604	0.704677931
LHD2	0.01329524	0.028245733	0.006239152	0.177096147	0.01329524	0.028245733	0.006239152	0.177096147
MHDT	0.008698231	0.013682678	0.003995934	0.077193669	0.008698231	0.013682678	0.003995934	0.077193669
MDV	0.612516433	0.202983941	0.502419233	0.632750837	0.612516433	0.202983941	0.502419233	0.632750837
HHDT	3.88011E-07	4.0635E-07	1.8141E-07	1.01473E-06	3.88011E-07	4.0635E-07	1.8141E-07	1.01473E-06

[1] Hotsoak emissions occur during the first hour the vehilce is parked after normal operation

[2] Diurnal/resting losses have to do with the vehicle population on site as it "rests".

Note: Mobile emission factors are weighted averages based on the vehicle population per fuel type, vehicle class and speed obtained from EMFAC2017.

Additional Greenhouse Gas Emissions Factors

GHG Global Warming Potential [1,2]

CO_2:	1	GWP
CH_4:	28	GWP
N_2O:	265	GWP

Note: 1 ton (short, US) = 0.90718474 metric ton.

1. Based on 100 Yr GWP from IPCC Fifth Assessment, 2014.

2. No climate-carbon feedbacks (CC fb) included

Indirect Water Supply GHG Emissions

State Water Project/ Central Valley Proj	428	kwh/acre foot [1]
Local Supply (Groundwater)	906-1,990	kwh/million gallons [2]
Local Treatment	44	kwh/millions gallons [3]
Local Delivery	45-956	kwh/million gallons [4]
Factor used:	***1993***	***kwh/MG*** [5]
	649	***kwh/AF***

Note: 1 million gallons (MG) = 3.07 acre feet (AF)

1. Embedded Energy in Water Studies, 2010a: Study 1, Figure 3.4: Dos Amigos Pumping Plant. (p.62-63)

2. Embedded Energy in Water Studies, 2010b:Study 2, Table 4-6: Central Valley energy intensity range for groundwater (main water supply)

3. Embedded Energy in Water Studies, 2010b:Study 2, Table 4-6: Lowest Statewide energy intensity value used because no Central Valley specific values, but minimal treatment of water observed in Central Valley agencies

4. Embedded Energy in Water Studies, 2010b:Study 2, Table 4-6: Statewide energy intensity values assuming booster pump use on moderate terrain

5 Energy intensity (EI) value used for analysis = the average supply EI + minimal water treatment EI + average local delivery EI

Southern California Edison Electricity Generation [1]

CO_2:	702.436	lbs/MWH
CH_4:	0.029	lbs/MWH
N_2O:	0.00617	lbs/MWH
	0.00031973	MT/kwh

Indirect GHG Factor: *0.208 MT/Acre Foot*

Note: 1 Metric Tons (MT) = 2204.62 lbs

1. California Emissions Estimator Model, CAPCOA 2017

Paved roads - Emission Factor Derivation Table

$$E_{ext} = [\, k\,(sL)^{0.91} \times (W)^{1.02}]\,(1 - P/4N)$$

where:
E=particulate emissions factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight class (tons)
P = # of "wet" days with at least 0.01 inch of precipitation
N = # of days in averaging period (default 365 for annual)

				On-Site Vehicles[6]	
Parameter	**Unit**	**PM10**	**PM2.5**	**PM10**	**PM2.5**
Mean Vehicle Weight[1]	tons	2.2	2.2	10	10
k factor[2]	lb/VMT	0.016	0.0024	0.016	0.0024
Silt Loading, sL[3]	g/m^2	0.1	0.1	0.1	0.1
precipitation, P [4]	days	24	24	24	24
Averaging period, N [5]	days	365	365	365	365
Uncontrolled Emission factor, E	**lb/VMT**	**0.00432706**	**0.00065**	**0.02027**	**0.00304**

Notes:

1. Assumption based on the mix of all vehicles (not just project vehicles) driving on paved roads to site. Eland EIR used 2.2 tons versus CA Statewide MVW = 2.4 tons (CARB 7.9, November 2016).
2. Consistent with Eland EIR assumption obtained from URBEMIS. Note that AP-42 Table 13.2.1-1 recommends 0.0022 lb/VMT for PM10 and 0.00054 lb/VMT for PM2.5. PM2.5 factor is estimated to be 15% of PM10 per CARB's *Miscellanous Process Methodology 7.9 Entrained Road Travel, Paved Road Dust* (November 2016).
3. Consistent with Eland EIR assumption obtained from URBEMIS. Note that CARB 7.9, Nov 2016: Table 3. Values for roadway categories ranges from 0.015 for "freeways" to 0.32 for "local" roads.
4. CARB 7.9, Nov 2016: Table 8. Kern county recieves ≥ 0.01 inches of rain 24 days/year
5. AP-42 13.2 eqn 2 (EPA, January 2011)
6. Assumption based on onsite fleet mix of heavy, medium and light duty trucks (https://www.epa.gov/emission-standards-reference-guide/vehicle-weight-classifications-emission-standards-reference-guide) and silt loading for "Local" roadway category (CARB 7.9, Nov 2016: Table 3.

Unpaved roads - Emission Factor Derivation Table

$$E.F._{\text{dust},i} = \left(\frac{k(s/12)^1 (S/30)^{0.5}}{(M/0.5)^{0.2}} - C \right) \left(1 - \frac{P}{365}\right)$$

where:
E=particulate emissions factor (lb/VMT)
k = particle size multiplier for particle size range and units of interest
s = surface material silt content (%)
M= surface material mositure content (%)
S = mean vehicle speed (mph)
C = emission factor for 1980s vehicle fleet exhust, brake wear and tire wear
P = # of "wet" days with at least 0.01 inch of precipitation

Parameter	**Unit**	**PM10**	**PM2.5**
Particle size, k [1]	lbs/VMT	1.8	0.18
Silt content, s [2]	%	4.3	4.3
Surface moisture content, M [3]	%	0.5	0.5
Mead vehicle speed, S [4]	mph	10	10
Exhaust emission factor, C [5]	lbs/VMT	0.00047	0.00036
precipitation, P [6]	days	24	24
Uncontrolled Emission factor, E	**lb/VMT**	**0.35**	**0.03**
Control efficiency for watering [7]	%	0.55	0.55
Controlled Emission factor, E	**lb/VMT**	**0.16**	**0.016**
Control efficiency for dust palliative [8]	%	0.84	0.84
Controlled Emission factor, E	**lb/VMT**	**0.06**	**0.01**

Notes:

1. Consistent with Eland EIR assumption obtained for Public Roads from AP-42 Table 13.2.2-2.
2. Consistent with Eland EIR assumption obtained from URBEMIS. Note that AP-42 recommends range from 1.8-35 % for public roads (Table 13.2.2-3). CARB 7.9, Nov 2016: Table 3. Values for roadway categories ranges from 0.015 for "freeways" t0 0.32 for "local" roads.
3. Consistent with Eland EIR assumption obtained from URBEMIS. Note that AP-42 recommends range from 0.03-13 % for public roads (Table 13.2.2-3).
4. EKAPCD-recommended measure for construction sites where all on-site construction vehicles shall not exceed 15 mph on any unpaved surface on the construction site. Note that AP-42 recommends range from 10-55 mph for public roads (Table 13.2.2-3).
5. AP-42 recommended emission factor for 1980's vehicles fleet exhaust, brake wear and tire wear for unpaved roads (Table 13.2.2.-4.)
6. CARB 7.9, Nov 2016: Table 8. Kern county recieves ≥ 0.01 inches of rain 24 days/year
7. MRI, April 2001. Particulate Emission Measurements from Controlled Construction Activities, EPA/600/R-01/031.
8. Per CARB certification for Soil Sement®

Bellefield Solar Project - 1,500 MW

On-Site Equipment Combustion Emissions[1]

Phase 1 - Site Prep and Grading		# of Days in Phase :	218													
Equipment	HP Estimate	Number of Units	Daily Hours	Days in Use	Total Hourly Usage (units*hours per day*days)	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
Crawler Tractor	212	1	5	218	1,088	55.53	67.19	79.96	509.19	677.20	81,046.94	37.73	34.71	0.66	0.75	36.8
Grader	187	3	8	218	5,224	286.49	346.66	412.55	2,461.53	3,322.01	370,037.43	185.21	170.39	3.02	3.41	167.8
Off-highway Truck	402	5	4	218	4,353	160.34	194.02	230.90	1,059.52	1,645.32	406,652.61	64.21	59.07	3.32	3.75	184.5
Drum Roller Compactor	134	2	8	218	3,483	68.71	83.14	98.94	1,042.50	879.49	175,575.86	47.02	43.26	1.43	1.62	79.6
Rubber-tired Loader	203	2	8	218	3,483	119.22	144.25	171.67	1,397.43	1,299.82	219,544.25	71.09	65.40	1.79	2.03	99.6
Rough-terrain Forklift	130	3	8	218	5,224	51.77	62.64	74.54	1,433.88	930.15	235,341.01	28.25	25.99	1.92	2.17	106.7
Skid Steer	75	3	8	218	5,224	43.88	53.09	63.18	979.41	703.81	157,914.87	28.25	25.99	1.29	1.46	71.6
					AVG EXHAUST EMISSIONS PER DAY	**3.61**	**4.37**	**5.20**	**40.81**	**43.45**	**7,562.74**	**2.12**	**1.95**	**0.06**	**0.07**	**3.43**
					TOTAL	**785.93**	**950.98**	**1,131.74**	**8,883.46**	**9,457.80**	**1,646,112.97**	**461.75**	**424.81**	**13.44**	**15.20**	**746.66**

Phase 2 - Tracker Foundations		# of Days in Phase :	250													
Equipment	HP Estimate	Number of Units	Daily Hours	Days in Use	Total Hourly Usage (units*hours per day*days)	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
Air Compressor	78	1	8	250	2,000	55.61	66.18	80.07	406.47	338.20	44,501.20	18.99	17.47	0.38	0.58	20.2
Generator Set	84	3	8	250	6,000	54.17	65.55	78.01	992.73	718.54	145,069.11	5.40	4.97	1.18	1.34	65.8
Off-highway Truck	402	5	4	250	5,000	184.17	222.84	265.20	1,216.93	1,889.78	467,071.49	73.75	67.85	3.81	4.31	211.9
Other Construction Equipment	172	1	2	250	500	19.10	23.11	27.50	222.30	240.77	36,664.26	12.61	11.60	0.30	0.34	16.6
Rough-terrain Forklift	100	5	8	250	10,000	99.10	119.91	142.70	2,744.86	1,780.58	450,511.79	54.07	49.75	3.68	4.16	204.3
Rubber-tired Loader	203	1	8	250	2,000	68.46	82.84	98.59	802.53	746.47	126,081.64	40.83	37.56	1.03	1.16	57.2
Vibratory Post Driver	158	7	8	250	14,000	534.76	647.06	770.05	6,224.39	6,741.65	1,026,599.32	353.19	324.94	8.38	9.48	465.7
Skid Steer	75	7	8	250	14,000	117.59	142.29	169.33	2,624.84	1,886.22	423,213.57	75.71	69.65	3.45	3.91	192.0
					AVG EXHAUST EMISSIONS PER DAY	**4.53**	**5.48**	**6.53**	**60.94**	**57.37**	**10,878.85**	**2.54**	**2.34**	**0.09**	**0.10**	**4.93**
					TOTAL	**1,132.96**	**1,369.78**	**1,631.47**	**15,235.05**	**14,342.23**	**2,719,712.37**	**634.55**	**583.79**	**22.21**	**25.28**	**1,233.64**

Phase 3 - Underground Cabling		# of Days in Phase :	250													
Equipment	HP Estimate	Number of Units	Daily Hours	Days in Use	Total Hourly Usage (units*hours per day*days)	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
Excavator	212	3	8	250	6,000	132.95	160.86	191.44	2,280.84	1,509.36	389,634.34	73.48	67.60	3.18	3.60	176.7
Trencher (big)	300	1	8	250	2,000	134.10	162.26	193.10	795.00	1,957.38	267,283.58	77.84	71.61	2.18	2.47	121.2
Off-highway Truck	402	5	4	250	5,000	184.17	222.84	265.20	1,216.93	1,889.78	467,071.49	73.75	67.85	3.81	4.31	211.9
Drum Roller Compactor	134	2	8	250	4,000	78.91	95.49	113.64	1,197.39	1,010.16	201,662.24	54.01	49.69	1.65	1.86	91.5
Rubber-tired Loader	203	1	8	250	2,000	68.46	82.84	98.59	802.53	746.47	126,081.64	40.83	37.56	1.03	1.16	57.2
Skid Steer	75	3	8	250	6,000	50.40	60.98	72.57	1,124.93	808.38	181,377.25	32.45	29.85	1.48	1.68	82.3
					AVG EXHAUST EMISSIONS PER DAY	**2.60**	**3.14**	**3.74**	**29.67**	**31.69**	**6,532.44**	**1.41**	**1.30**	**0.05**	**0.06**	**2.96**
					TOTAL	**648.99**	**785.28**	**934.54**	**7,417.63**	**7,921.53**	**1,633,110.54**	**352.35**	**324.16**	**13.33**	**15.08**	**740.77**

Phase 4 -Mechanical Installatior		# of Days in Phase :	292													
Equipment	HP Estimate	Number of Units	Daily Hours	Days in Use	Total Hourly Usage (units*hours per day*days)	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
Air Compressor	78	15	8	292	35,040	974.24	1,159.42	1,402.90	7,121.30	5,925.32	779,660.95	332.70	306.08	6.61	10.08	353.6
Generator Set	84	8	8	292	18,688	168.74	204.17	242.98	3,092.02	2,238.03	451,841.92	16.82	15.48	3.69	4.17	205.0
Off-highway Truck	402	6	4	292	7,008	258.13	312.34	371.71	1,705.66	2,648.72	654,647.39	103.37	95.10	5.34	6.04	296.9
Other Construction Equipment	172	1	2	292	584	22.31	26.99	32.12	259.65	281.22	42,823.86	14.73	13.55	0.35	0.40	19.4
Rough-terrain Forklift	100	7	8	292	16,352	162.04	196.07	233.34	4,488.39	2,911.61	736,676.87	88.42	81.35	6.01	6.81	334.2
Rubber-tired Loader	203	3	8	292	7,008	239.90	290.28	345.45	2,812.06	2,615.63	441,790.08	143.06	131.61	3.61	4.08	200.4
Skid Steer	75	1	8	292	2,336	19.62	23.74	28.25	437.97	314.73	70,616.21	12.63	11.62	0.58	0.65	32.0
					AVG EXHAUST EMISSIONS PER DAY	**6.32**	**7.58**	**9.10**	**68.21**	**58.00**	**10,883.76**	**2.44**	**2.24**	**0.09**	**0.11**	**4.94**
					TOTAL	**1,844.98**	**2,213.02**	**2,656.77**	**19,917.05**	**16,935.25**	**3,178,057.28**	**711.73**	**654.79**	**26.18**	**32.23**	**1,441.54**

Phase 5- Electrical Installation		# of Days in Phase :	334													
Equipment	HP Estimate	Number of Units	Daily Hours	Days in Use	Total Hourly Usage (units*hours per day*days)	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
Air Compressors	78	2	8	334	5,344	148.58	176.83	213.96	1,086.08	903.68	118,907.19	50.74	46.68	1.01	1.54	53.9
Off-highway Truck	402	7	4	334	9,352	344.47	416.81	496.03	2,276.16	3,534.64	873,610.51	137.94	126.90	7.13	8.07	396.3
Rubber-tired Loader	203	3	8	334	8,016	274.40	332.03	395.14	3,216.54	2,991.85	505,335.23	163.63	150.54	4.12	4.66	229.2
Rough-terrain Forklift	100	4	8	334	10,688	105.92	128.16	152.52	2,933.71	1,903.09	481,507.00	57.79	53.17	3.93	4.45	218.4
Trencher (small)	78	2	8	334	5,344	293.39	355.00	422.48	1,828.24	2,983.94	221,528.60	201.24	185.14	1.81	2.04	100.5
Crane	231	1	2	334	668	26.55	32.13	38.23	192.00	355.52	41,133.56	16.47	15.15	0.34	0.38	18.7
Excavator	212	2	8	334	5,344	118.41	143.28	170.51	2,031.47	1,344.34	347,034.32	65.45	60.21	2.83	3.20	157.4
					AVG EXHAUST EMISSIONS PER DAY	**3.93**	**4.74**	**5.66**	**40.61**	**41.97**	**7,751.67**	**2.08**	**1.91**	**0.06**	**0.07**	**3.52**
					TOTAL	**1,311.72**	**1,584.22**	**1,888.88**	**13,564.19**	**14,017.05**	**2,589,056.40**	**693.25**	**637.79**	**21.17**	**24.34**	**1,174.38**

Year	HC lbs	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	NH_3 lbs	SO_X lbs	MT of CO_2e
2021	427.77	517.41	615.98	5,252.89	5,269.52	955,587.53	245.97	226.30	7.80	8.85	433.45
2022	4,052.80	4,888.98	5,836.03	46,518.19	45,055.34	8,494,320.27	2,047.81	1,883.99	69.52	80.64	3,852.96
2023	1,244.01	1,496.89	1,791.37	13,246.31	12,349.00	2,316,141.75	559.84	515.05	19.01	22.63	1,050.58
Total	5,724.58	6,903.27	8,243.39	65,017.39	62,673.85	11,766,049.55	2,853.63	2,625.34	96.33	112.12	5,336.99

Notes: MT = Metric Tons

1. Equipment list assumptions were prepared using Eland 1 Solar EIR as recommended by the Applicant
2. Off-high Truck additional emissions during transit operations calculated with onsite mobile emissions
3. Emissions for 2021 calculated using following asssumptions related to construction days/schedule: 65 days of phase1, 43 days of phase 2
4. Emissions for 2022 calculated using following asssumptions related to construction days/schedule: 153 days of phase 1, 207 days of phase 2, 226 days of phase 3, 183 days of phase, 129 days phase 5
5. Emissions for 2023 calculated using following asssumptions related to construction days/schedule: 0 days of phase 1, 0 days of phase 2, 24 days of phase 3, 109 days of phase, 205 days phase 6

Bellefield Solar Project - 1,500 MW

Fugitive Dust Emissions During Construction On-site (excludes vehicular traffic from vendor vehicles)

				Natural Soil					
Phase 1 - Site Prep and Grading		**Number of Days**	**218**	**No Additional Control[4]**		**With Water Control [5]**		**With Palliative Control[6]**	
Vehicle Type	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor [4]**	**$PM_{2.5}$ lbs/mile factor [4]**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Mobile Construction Equipment	1.34	0.35	0.034	0.47	0.05	0.2	0.0	0.1	0.0
Stationary Construction Equipm	0	0.35	0.034	0.00	0.00	0.0	0.0	0.0	0.0
Off-highway Truck[3]	10,883	0.18	0.019	2,001.06	204.03	1701.7	168.7	605.0	60.0
Total Pounds Per day				**9.20**	**0.94**	**7.82**	**0.78**	**2.78**	**0.28**
Total	**10,884**			**2,001.53**	**204.08**	**1,701.88**	**168.76**	**605.11**	**60.00**

				Natural Soil					
Phase 2 - Tracker Foundations		**Number of Days**	**250**	**No Additional Control[4]**		**With Water Control [5]**		**With Palliative Control[6]**	
Vehicle Type	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor [4]**	**$PM_{2.5}$ lbs/mile factor [4]**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Mobile Construction Equipment	1.6	0.35	0.034	0.55	0.05	0.2	0.0	0.1	0.0
Stationary Construction Equipm	0	0.35	0.034	0.00	0.00	0.0	0.0	0.0	0.0
Off-highway Truck[3]	12,500	0.18	0.019	2,298.37	234.34	1954.5	193.8	694.9	68.9
Total Pounds Per day				**9.20**	**0.94**	**7.82**	**0.78**	**2.78**	**0.28**
Total	**12,502**			**2,298.92**	**234.40**	**1,954.74**	**193.83**	**695.02**	**68.92**

				Natural Soil					
Phase 3 - Underground Cabling		**Number of Days**	**250**	**No Additional Control[4]**		**With Water Control [5]**		**With Palliative Control[6]**	
Vehicle Type	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor [4]**	**$PM_{2.5}$ lbs/mile factor [4]**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Mobile Construction Equipment	1.1	0.35	0.034	0.38	0.04	0.2	0.0	0.1	0.0
Stationary Construction Equipm	0	0.35	0.034	0.00	0.00	0.0	0.0	0.0	0.0
Off-highway Truck[3]	12,500	0.18	0.019	2,298.37	234.34	1954.5	193.8	694.9	68.9
Total Pounds Per day				**9.19**	**0.94**	**7.82**	**0.78**	**2.78**	**0.28**
Total	**12,501**			**2,298.74**	**234.38**	**1,954.66**	**193.82**	**694.99**	**68.91**

				Natural Soil					
Phase 4 -Mechanical Installation		**Number of Days**	**292**	**No Additional Control[4]**		**With Water Control [5]**		**With Palliative Control[6]**	
Vehicle Type	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor [4]**	**$PM_{2.5}$ lbs/mile factor [4]**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Mobile Construction Equipment	1.6	0.35	0.034	0.55	0.05	0.2	0.0	0.1	0.0
Stationary Construction Equipm	0	0.35	0.034	0.00	0.00	0.0	0.0	0.0	0.0
Off-highway Truck[3]	17,520	0.18	0.019	3,221.39	328.46	2739.4	271.6	974.0	96.6
Total Pounds Per day				**11.03**	**1.13**	**9.38**	**0.93**	**3.34**	**0.33**
Total	**17,522**			**3,221.94**	**328.51**	**2,739.67**	**271.66**	**974.10**	**96.59**

				Natural Soil					
Phase 5- Electrical Installation		**Number of Days**	**334**	**No Additional Control[4]**		**With Water Control [5]**		**With Palliative Control[6]**	
Vehicle Type	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor [4]**	**$PM_{2.5}$ lbs/mile factor [4]**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Mobile Construction Equipment	1.35	0.35	0.034	0.47	0.05	0.2	0.0	0.1	0.0
Stationary Construction Equipm	0	0.35	0.034	0.00	0.00	0.0	0.0	0.0	0.0
Off-highway Truck[3]	23,380	0.18	0.019	4,298.87	438.32	2064.8	216.8	886.9	100.0
Total Pounds Per day				**12.87**	**1.31**	**6.18**	**0.65**	**2.66**	**0.30**
Total	**23,381**			**4,299.34**	**438.36**	**2,065.05**	**216.82**	**886.97**	**100.00**

Year	No Additional Control[4]		With Water Control [5]		With Palliative Control[6]	
	PM_{10} lbs	$PM_{2.5}$ lbs	PM_{10} lbs	$PM_{2.5}$ lbs	PM_{10} lbs	$PM_{2.5}$ lbs
2021	988.53	100.79	840.54	83.35	298.86	29.63
2022	10,094.92	1,029.29	7,588.21	759.98	2,793.62	284.55
2023	3,037.02	309.66	1,987.26	201.56	763.72	80.24
Total	**14,120.48**	**1,439.74**	**10,416.00**	**1,044.88**	**3,856.20**	**394.42**

Notes:

1. Crawler tractor, loader, skid-steer, drum roller compactor, and forklifts assumed to transit an average of 0.5 acres/8hr day. VMT is estimated based on the hours of operation and conversion of acreage to square miles to miles. Mobile equipment that is considered earth moving (i.e. grader) are accounted for seperately due to a specific operations.
2. Trencher, pile driver, excavator, and crane work primarily in place and are not considered mobile in this analysis.
3. Off-highway trucks are assumed to travel 10 miles per day on site and is consistent with Eland assumptions.
4. Uncontrolled emission factors based on silt content of local soil, onsite fleet mix, and and typical construction activites frpm AP-42, Table 13.2.2-2
5. Emission factors are reduced via water control by 55% efficiency per MRI, April 2001. Particulate Emission Measurements from Controlled Construction Activities, EPA/600/R-01/031.
6. Emission factors are reduced via palliative control by 84% efficiency per CARB certification for Soil Sement®
7. Emissions based on assumption of % of activity occuring on compacted/scraper road where base uncontrolled emission factors are 2.27 and 0.227 for PM_{10} and $PM_{2.5}$, respectively.
8. Emissions based on assumption of % of activity occuring on gravel road where base uncontrolled emission factors are 1.76 and 0.176 for PM_{10} and $PM_{2.5}$, respectively.
9. Emissions for 2021 calculated using following asssumptions related to construction days/schedule: 65 days of phase1, 43 days of phase 2
10. Emissions for 2022 calculated using following asssumptions related to construction days/schedule: 153 days of phase 1, 207 days of phase 2, 226 days of phase 3, 183 days of phase, 129 days phase 5
11. Emissions for 2023 calculated using following asssumptions related to construction days/schedule: 0 days of phase 1, 0 days of phase 2, 24 days of phase 3, 109 days of phase, 205 days phase 6

Particulates from Grading [1]

		Grader Parameters	
Travel Speed (S):		7.1	mph
Hours Operating:		8	
Acres/ 8hr-day:		0.5	
Width of Grading Blade (ft)[2]:		12	**Water Controlled[3]**
PM-10 Emissions Factor (lbs/ VMT)	E = 0.6 * 0.051 * (S)^(2.0)	*1.54255*	*0.6*
PM-2.5 Emissions Factor (lbs/VMT)	E = 0.031*0.04*(S)^(2.5)	*0.2*	*0.1*

Location	Acreage[4]	VMT[5]	Fugitive Dust From Grading		Mitigated Fugitive Dust From Grading[3]	
			PM 10 (lbs)	PM2.5 (lbs)	PM 10 (lbs)	PM2.5 (lbs)
Site	6086	4183.96	6453.950762	696.8753147	2517.040797	271.7813727
TOTAL	6086	4183.96	6453.950762	696.8753147	2517.040797	271.7813727

Year	Fugitive Dust From Grading		Mitigated Fugitive Dust From Grading[3]	
	PM_{10} lbs	$PM_{2.5}$ lbs	PM_{10} lbs	$PM_{2.5}$ lbs
2021	1,912.52	206.51	745.88	80.54
2022	4,541.43	490.37	1,771.16	191.24
2023	0.00	0.00	0.00	0.00
Total	**6,453.95**	**696.88**	**2,517.04**	**271.78**

Notes:

1. Fugitive dust emissions from grading the project site were estimated using the methodology described in Section 11., Western Surface Coal Mining of the USEPA AP-42 and used in CalEEMod2016.3.2 (CAPCOA 2017).
2. Blade width of grading equipment is default width of 12 feet based on Caterpillar's 140 Motor Grader. (CalEEMod Appendix A, 2017)
3. Assumes use of water to control dust reduces dust by 61% based on per 3.2 hour watering interval of general construction; test series 701 reproted in WRAP Fugitive Dust Handbook, September 2006
4. Grading acreage is less than the total project site acreage; applicant indicated approximately 74% of the gross site acreage would be graded. As of December 2020 the total site acreage was 8,224 acres; it is assumed 6,086 acres or 74% of the site would be graded.
5. VMT is estimated based on grading area and blade width where VMT = Acres graded/Blade Width * (43560 sqft/acre)/(5280 ft/mile)

Bellefield Solar Project - 1,500 MW

On-site Mobile Emissions (max 10 mph)

Activity 1 - Site Preparation				No. Days in Phase:	218											Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Vehicle Type	No. Units/Trips per Day	Days Operating	Miles Traveled per Unit per Day [1]	Total Onsite Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
Vendors (Trucks)	25																				
~~T6 (MHDT)~~	8	218	0.25	435	1.41	1.56	4.75	11.29	2,114.45	0.27	0.18	0.02	0.07	0.29	0.995	80.04	8.16	38.45	4.04	16.51	1.86
~~T7 (HHDT)~~	17	218	0.25	925	1.00	1.14	4.05	38.80	5,956.32	0.30	0.17	0.06	0.05	0.94	2.815	170.09	17.34	81.70	8.58	35.09	3.96
AVG EMISSIONS PER DAY					**0.01**	**0.01**	**0.04**	**0.23**	**37.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.02**	**1.15**	**0.12**	**0.55**	**0.06**	**0.24**	**0.03**
TOTAL				**1,360**	**2.41**	**2.69**	**8.80**	**50.09**	**8,070.77**	**0.57**	**0.35**	**0.08**	**0.12**	**1.23**	**3.81**	**250.13**	**25.50**	**120.14**	**12.61**	**51.60**	**5.82**

Activity 2 - Grading and Earthwork				No. Days in Phase:	218											Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Vehicle Type	No. Units/Trips per Day	Days Operating	Miles Traveled per Unit per Day [1]	Total Onsite Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
Vendors (Trucks)	25																				
~~T6 (MHDT)~~	8	218	0.25	435	1.41	1.56	4.75	11.29	2,114.45	0.27	0.18	0.02	0.07	0.29	0.995	80.04	8.16	38.45	4.04	16.51	1.86
~~T7 (HHDT)~~	17	218	0.25	925	1.00	1.14	4.05	38.80	5,956.32	0.30	0.17	0.06	0.05	0.94	2.815	170.09	17.34	81.70	8.58	35.09	3.96
AVG EMISSIONS PER DAY					**0.01**	**0.01**	**0.04**	**0.23**	**37.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.02**	**1.15**	**0.12**	**0.55**	**0.06**	**0.24**	**0.03**
TOTAL				**1,360**	**2.41**	**2.69**	**8.80**	**50.09**	**8,070.77**	**0.57**	**0.35**	**0.08**	**0.12**	**1.23**	**3.81**	**250.13**	**25.50**	**120.14**	**12.61**	**51.60**	**5.82**

Activity 3, 4, 5 - Concrete Foundations, Structural Steel Work and Electrical/Instrumentation Work				No. Days in Phase:	495											Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Vehicle Type	No. Units/Trips per Day	Days Operating	Miles Traveled per Unit per Day [1]	Total Onsite Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
Vendors (Trucks)	55																				
~~T6 (MHDT)~~	18	495	0.25	2,225	7.20	7.96	24.26	57.69	10,808.53	1.38	0.94	0.10	0.36	1.48	5.085	409.16	41.72	196.53	20.63	84.41	9.52
~~T7 (HHDT)~~	37	495	0.25	4,574	4.94	5.62	20.03	191.86	29,452.16	1.49	0.84	0.28	0.23	4.63	13.919	841.04	85.75	403.97	42.41	173.51	19.56
AVG EMISSIONS PER DAY					**0.02**	**0.03**	**0.09**	**0.50**	**81.42**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.04**	**2.53**	**0.26**	**1.21**	**0.13**	**0.52**	**0.06**
TOTAL				**6,799**	**12.13**	**13.58**	**44.30**	**249.55**	**40,260.68**	**2.87**	**1.78**	**0.38**	**0.58**	**6.11**	**19.00**	**1,250.20**	**127.47**	**600.50**	**63.05**	**257.93**	**29.08**

Activity 6 - Collector Line Installation				No. Days in Phase:	126											Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Vehicle Type	No. Units/Trips per Day	Days Operating	Miles Traveled per Unit per Day [1]	Total Onsite Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
Vendors (Trucks)	15																				
~~T6 (MHDT)~~	5	126	0.25	158	0.51	0.57	1.72	4.10	767.44	0.10	0.07	0.01	0.03	0.11	0.361	29.05	2.96	13.95	1.47	5.99	0.68
~~T7 (HHDT)~~	10	126	0.25	316	0.34	0.39	1.38	13.25	2,034.68	0.10	0.06	0.02	0.02	0.32	0.962	58.10	5.92	27.91	2.93	11.99	1.35
AVG EMISSIONS PER DAY					**0.01**	**0.01**	**0.02**	**0.14**	**22.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.69**	**0.07**	**0.33**	**0.03**	**0.14**	**0.02**
TOTAL				**474**	**0.85**	**0.95**	**3.11**	**17.35**	**2,802.12**	**0.20**	**0.12**	**0.03**	**0.04**	**0.42**	**1.32**	**87.15**	**8.89**	**41.86**	**4.40**	**17.98**	**2.03**

												Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Year	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
2021	2.48	2.78	9.07	51.38	8,284.20	0.59	0.36	0.08	0.12	1.26	3.91	256.96	26.20	123.42	12.96	53.01	5.98
2022	9.72	10.87	35.49	200.69	32,363.86	2.30	1.43	0.31	0.47	4.91	15.28	1,004.30	102.40	482.39	50.65	207.20	23.36
2023	5.60	6.27	20.44	115.00	18,556.30	1.32	0.82	0.18	0.27	2.82	8.76	576.36	58.77	276.84	29.07	118.91	13.41
Total	**17.80**	**19.92**	**65.00**	**367.07**	**59,204.35**	**4.21**	**2.62**	**0.56**	**0.86**	**8.99**	**27.95**	**1,837.62**	**187.37**	**882.65**	**92.67**	**379.12**	**42.74**

Operational				No. Work days in Year:	244			No. Workers:	20							Un-mitigated		Mitigated-Watering		Mitigated-Palliatives	
Vehicle Type	Trips per Day	Round Trip (miles)	Daily VMT	Annual VMT	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs	Fugitive Dust (PM_{10}) lbs	Fugitive Dust ($PM_{2.5}$) lbs
Pickup Trucks (LDT2)	6	10	56	13,566	3.47	5.02	69.66	7.05	20,755.22	1.56	0.74	0.21	0.80	0.50	9.485	2,494.45	254.34	1,198.14	125.80	514.63	58.02
Utility/Service Vehicle (T6)	1	10	7	1,708	3.51	4.05	8.25	26.26	8,219.78	1.06	0.72	0.08	0.19	1.08	3.861	314.05	32.02	150.84	15.84	64.79	7.30
Water Truck(T7)	1	10	9	2,220	2.40	2.73	9.71	55.21	14,296.79	0.72	0.41	0.14	0.11	2.25	6.756	408.26	41.63	196.10	20.59	84.23	9.50
Avg Daily Emissions					**0.04**	**0.05**	**0.36**	**0.36**	**177.34**	**0.01**	**0.01**	**0.00**	**0.00**	**0.02**	**0.08**	**13.18**	**1.34**	**6.33**	**0.66**	**2.72**	**0.31**
Annual Total Emissions					**9.37**	**11.80**	**87.63**	**88.51**	**43,271.80**	**3.34**	**1.87**	**0.42**	**1.10**	**3.83**	**20.10**	**3,216.76**	**327.98**	**1,545.08**	**162.22**	**663.65**	**74.82**

Note: 1 lb = 453.59 grams; MT = metric tons

1. Distance traveled on-site is based on the assumption that vendors vehicles will deliver equipment and materials to staging areas near the access roads and therefore minimal on-site driving would occur. Workers passenger vehicles are assumed to not be driven on the project site accept for accessing the on-site parking lots will be at or near the main access site for the project.
2. Emission calculations include running emissions; start emissions, hotsoak, and running losses for a single trip; diurnal, and resting loss emissions per vehicle.
3. Emissions for 2021 calculated using following assumptions related to construction days/schedule: 65 days from Activity 1, 65 days from Activity 2, 43 days from Activity 3,4,5
4. Emissions for 2022 calculated using following assumptions related to construction days/schedule: 153 days from Activity 1, 153 days from Activity 2, 258 days from Activity 3,4,5 and 0 days from Activity 6
5. Emissions for 2023 calculated using following assumptions related to construction days/schedule: 0 days from Activity 1, 0 days from Activity 2, 194 days from Activity 3,4,5 and 126 days from Activity 7
6. Operational trip information was not available therefore assumptions were made assuming that daily operations would be similar to the Eland Solar project and that there would be 20 full-time employees and have the same operational emissions.

Bellefield Solar Project - 1,500 MW

On-Road Mobile Emissions (55 mph) [1]

Activity 1 - Site Preparation

Vehicle Type[2,3]	Daily Trips To Site[4]	Daily Trips from Site	No. of Trips (one-way)	Average Miles per Trip (one-way)[5,6]	Daily Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
Within EKAPCD																
Vendors (Trucks)	25															
T6 (MHDT)	8	8	16	5	80	0.01	0.02	0.10	0.35	167.98	0.04	0.02	0.00	0.00	0.02	0
T7 (HHDT)	17	17	34	5	170	0.02	0.02	0.08	0.77	439.08	0.05	0.03	0.00	0.00	0.07	0
Employee Commute	100															
Passenger Vehicle (LDA)	73	73	146	5	730	0.30	0.31	1.80	0.15	445.29	0.07	0.03	0.00	0.02	0.02	0
Light-duty Truck (LDT2)	27	27	54	5	270	0.23	0.24	1.03	0.13	214.24	0.03	0.01	0.00	0.01	0.01	0
					Daily Emissions[7]	**0.56**	**0.60**	**3.02**	**1.39**	**1,266.59**	**0.19**	**0.09**	**0.01**	**0.04**	**0.12**	**0.59**
	No. of Days:	218			*Total Activity 1 Emissions:*	*122.65*	*129.55*	*656.35*	*303.29*	*275,686.14*	*42.10*	*20.52*	*2.67*	*8.71*	*25.72*	*128.25*
		5442														

Activity 2 - Grading and Earthwork

Vehicle Type[2,3]	Daily Trips To Site[4]	Daily Trips from Site	No. of Trips (one-way)	Average Miles per Trip (one-way)[5,6]	Daily Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
Within EKAPCD																
Vendors (Trucks)	25															
T6 (MHDT)	8	8	16	5	80	0.01	0.02	0.10	0.35	167.98	0.04	0.02	0.00	0.00	0.02	0
T7 (HHDT)	17	17	34	5	170	0.02	0.02	0.08	0.77	439.08	0.05	0.03	0.00	0.00	0.07	0
Employee Commute	400															
Passenger Vehicle (LDA)	292	292	584	5	2,920	1.20	1.26	7.20	0.59	1,781.17	0.30	0.12	0.02	0.10	0.07	1
Light-duty Truck (LDT2)	108	108	216	5	1,080	0.93	0.98	4.12	0.52	856.95	0.11	0.05	0.01	0.06	0.04	0
					Daily Emissions[7]	**2.16**	**2.27**	**11.51**	**2.22**	**3,245.18**	**0.50**	**0.22**	**0.03**	**0.15**	**0.20**	**1.50**
	No. of Days:	218			*Total Activity 2 Emissions:*	*470.20*	*494.62*	*2,504.58*	*484.12*	*706,347.58*	*108.97*	*48.32*	*6.93*	*33.72*	*44.00*	*326.11*
		5442														

Activity 3, 4, 5 - Concrete Foundations, Structural Steel Work and Electrical/Instrumentation Work

Vehicle Type[2,3]	Daily Trips To Site[4]	Daily Trips from Site	No. of Trips (one-way)	Average Miles per Trip (one-way)[5,6]	Daily Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
Within EKAPCD																
Vendors (Trucks)	55															
T6 (MHDT)	18	18	36	5	180	0.03	0.04	0.23	0.78	377.95	0.08	0.05	0.00	0.00	0.05	0
T7 (HHDT)	37	37	74	5	370	0.04	0.04	0.18	1.67	955.65	0.12	0.06	0.01	0.00	0.15	0
Employee Commute	1,000															
Passenger Vehicle (LDA)	730	730	1,460	5	7,300	2.99	3.15	18.01	1.47	4,452.92	0.75	0.31	0.04	0.24	0.18	2
Light-duty Truck (LDT2)	270	270	540	5	2,700	2.33	2.44	10.29	1.30	2,142.38	0.28	0.12	0.02	0.14	0.10	1
					Daily Emissions[7]	**5.39**	**5.67**	**28.71**	**5.22**	**7,928.89**	**1.22**	**0.54**	**0.08**	**0.39**	**0.48**	**3.66**
	No. of Days:	495			*Total Activity 3, 4, 5 Emissions:*	*2,666.14*	*2,804.16*	*14,199.45*	*2,583.67*	*3,920,836.26*	*605.72*	*266.98*	*38.51*	*191.27*	*236.22*	*1,809.29*
		27198														

Activity 6 - Collector Line Installation

Vehicle Type[2,3]	Daily Trips To Site[4]	Daily Trips from Site	No. of Trips (one-way)	Average Miles per Trip (one-way)[5,6]	Daily Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
Within EKAPCD																
Vendors (Trucks)	15															
T6 (MHDT)	5	5	10	5	50	0.01	0.01	0.07	0.22	104.98	0.02	0.01	0.00	0.00	0.01	0
T7 (HHDT)	10	10	20	5	100	0.01	0.01	0.05	0.45	258.28	0.03	0.02	0.00	0.00	0.04	0
Employee Commute	75															
Passenger Vehicle (LDA)	55	55	110	5	550	0.23	0.24	1.36	0.11	335.49	0.06	0.02	0.00	0.02	0.01	0
Light-duty Truck (LDT2)	20	20	40	5	200	0.17	0.18	0.76	0.10	158.69	0.02	0.01	0.00	0.01	0.01	0
					Daily Emissions[7]	**0.42**	**0.44**	**2.23**	**0.88**	**857.46**	**0.13**	**0.06**	**0.01**	**0.03**	**0.07**	**0.40**
	No. of Days:	126			*Total Activity 6 Emissions:*	*52.70*	*55.62*	*282.14*	*110.79*	*108,382.46*	*16.65*	*7.98*	*1.05*	*3.76*	*9.45*	*50.35*

Year	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
2021	407.52	428.80	2,171.42	458.00	631,950.93	97.44	43.62	6.20	29.20	41.20	291.97
2022	1,808.20	1,902.25	9,632.65	1,902.08	2,736,678.77	422.33	187.73	26.85	129.65	172.30	1,263.69
2023	1,095.97	1,152.90	5,838.45	1,121.80	1,642,622.73	253.67	112.45	16.12	78.60	101.89	758.33
Total	**3,311.69**	**3,483.95**	**17,642.52**	**3,481.88**	**5,011,252.43**	**773.44**	**343.80**	**49.17**	**237.45**	**315.39**	**2,313.99**

Operation[8] **No. Work days in Year: 244**

Vehicle Type	Trips to Site (Daily)	Trips from Site (Daily)	No. of Daily Trips (one-way)	Average Miles per Trip (one-way)[3,4,5]	Daily Vehicle Miles Traveled	ROG lbs	TOG lbs	CO lbs	NO_X lbs	CO_2 lbs	PM_{10} lbs	$PM_{2.5}$ lbs	SO_X lbs	CH_4 lbs	N_2O lbs	MT of CO_2e
Employee Commute	20	25														
Passenger Vehicle (LDA)	15	18	33	5	165	0.07	0.07	0.41	0.03	100.65	0.02	0.01	0.00	0.01	0.00	0
Light-duty Truck (LDT2)	5	7	12	5	60	0.05	0.05	0.23	0.03	47.61	0.01	0.00	0.00	0.00	0.00	0
Service Vehicles (LHDT2)	3	3	6	5	30	0.01	0.01	0.04	0.19	38.02	0.01	0.00	0.00	0.00	0.01	0
Equipment/Material Delivery (T6)	0.3	0.3	0.6	5	3	0.00	0.00	0.00	0.01	5.84	0.00	0.00	0.00	0.00	0.00	0
					Daily Operational On-road Emissions	**0.12**	**0.13**	**0.68**	**0.26**	**192.12**	**0.03**	**0.01**	**0.00**	**0.01**	**0.01**	**0.09**
					Annual Operational On-road Emissions	**29.96**	**31.64**	**166.01**	**64.10**	**46,878.16**	**7.86**	**3.47**	**0.46**	**2.19**	**3.01**	**21.65**

Note: 1 lb = 453.59 grams; MT = metric tons

1. On-road emissions use mileage to determine running emissions from associated with vendor vehicles coming to the site. Starting and additional emissions for vendor vehicles are not included here, and are included with on-site emissions. Emissions from employee commute vehicles assume only one trip to the site per day occur. On-road emissions for employee commute acount for running and start emissions for all pollutants, as well as hotsoak, running losses, diurnal, and resting loss ROG and TOG emissions.
2. It is assumed that 1/3 of the vendor trips are done by T6 trucks (MHDT) and 2/3 by T7 trucks (HHDT); assumption is the same as used in Eland 1 Solar Project
3. To more accurately represent the type of vehicles used by employees for commuting it is assumed that 73% of the vehicles are light-duty automobiles (LDA) and 27% is light-duty trucks (LDT2). Percentages were derived from the distribution of gasoline powered LDA and LDT2 VMT from EMFAC2017.
4. Trip data is based on Aratina traffic values and have been vetted by the applicant.
5. Assumed that vendors are coming from either Mojave or California City, approximately 5 miles from the project site.
6. Assumed that employees are coming from within a 5 mile radius of the project site and that each employee drives themselves (i.e. no carpooling)
7. On-road emissions are calculated using emission factors that weighted based on the type of fuel used per vehicle class indicated in EMFAC2017 by sub-area.
8. Operational trip information was not available therefore assumptions were made assuming that daily operations would be similar to the Eland Solar project and that there would be 20 full-time employees and have the same operational emissions.
9. Emissions for 2021 calculated using following asssumptions related to construction days/schedule: 65 days from Activity 1, 65 days from Activity 2, 43 days from Activity 3,4,5
10. Emissions for 2022 calculated using following asssumptions related to construction days/schedule: 153 days from Activity 1, 153 days from Activity 2, 258 days from Activity 3,4,5 and 0 days from Activity 6
11. Emissions for 2023 calculated using following asssumptions related to construction days/schedule: 0 days from Activity 1, 0 days from Activity 2, 194 days from Activity 3,4,5 and 126 days from Activity 7

Bellefield Solar Project - 1,500 MW

Fugitive Dust Emissions on Paved Roads in Kern County[1]

Activity 1 - Site Preparation					Number of Days	218
Vehicle Type	**DailyVehicle Miles Traveled**	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor**	**$PM_{2.5}$ lbs/mile factor**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Vendors (Trucks)						
T6 (MHDT)	80	17,413	0.004	0.0006	75.35	11.30
T7 (HHDT)	170	37,002	0.004	0.0006	160.11	24.02
Employee Commute						
Passenger Vehicle (LDA)	730	158,892	0.004	0.0006	687.54	103.13
Light-duty Truck (LDT2)	270	58,768	0.004	0.0006	254.29	38.14
Total Pounds Per Day					**5.41**	**0.81**
Total	**1,250**				**1,177.29**	**176.59**

Activity 2 - Grading and Earthwork					Number of Days	218
Vehicle Type	**DailyVehicle Miles Traveled**	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor**	**$PM_{2.5}$ lbs/mile factor**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Vendors (Trucks)						
T6 (MHDT)	80	17,413	0.004	0.0006	75.35	11.30
T7 (HHDT)	170	37,002	0.004	0.0006	160.11	24.02
Employee Commute						
Passenger Vehicle (LDA)	2,920	635,570	0.004	0.0006	2,750.15	412.52
Light-duty Truck (LDT2)	1,080	235,074	0.004	0.0006	1,017.18	152.58
Total Pounds Per Day					**18.39**	**2.76**
Total	**4,000**				**4,002.78**	**600.42**

Activity 3, 4, 5 - Concrete Foundations, Structural Steel Work and Electrical/Instrumentation Work					Number of Days	495
Vehicle Type	**DailyVehicle Miles Traveled**	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor**	**$PM_{2.5}$ lbs/mile factor**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Vendors (Trucks)						
T6 (MHDT)	180	89,010	0.004	0.0006	385.15	57.77
T7 (HHDT)	370	182,965	0.004	0.0006	791.70	118.76
Employee Commute						
Passenger Vehicle (LDA)	7,300	3,609,850	0.004	0.0006	15,620.03	2,343.00
Light-duty Truck (LDT2)	2,700	1,335,150	0.004	0.0006	5,777.27	866.59
Total Pounds Per Day					**45.65**	**6.85**
Total	**10,000**				**22,574.15**	**3,386.12**

Activity 6 - Collector Line Installation					Number of Days	126
Vehicle Type	**DailyVehicle Miles Traveled**	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor**	**$PM_{2.5}$ lbs/mile factor**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Vendors (Trucks)						
T6 (MHDT)	50	6,320	0.004	0.0006	27.35	4.10
T7 (HHDT)	100	12,640	0.004	0.0006	54.69	8.20
Employee Commute						
Passenger Vehicle (LDA)	550	69,520	0.004	0.0006	300.82	45.12
Light-duty Truck (LDT2)	200	25,280	0.004	0.0006	109.39	16.41
Total Pounds Per Day					**3.89**	**0.58**
Total	**750**				**492.25**	**73.84**

Year	PM_{10} lbs	$PM_{2.5}$ lbs
2021	3,497.99	524.70
2022	15,422.86	2,313.43
2023	9,325.61	1,398.84
Total	**28,246.47**	**4,236.97**

Operational Phase Fugitive Dust Emissions on Paved Roads					**Number of Days:**	**244**
Vehicle Type	**DailyVehicle Miles Traveled**	**Total Vehicle Miles Traveled**	**PM_{10} lbs/mile factor**	**$PM_{2.5}$ lbs/mile factor**	**PM_{10} lbs**	**$PM_{2.5}$ lbs**
Employee Commute						
Passenger Vehicle (LDA)	165	40260	0.004	0.0006	174.21	26.13
Light-duty Truck (LDT2)	60	14640	0.004	0.0006	63.35	9.50
Service Vehicles (LHDT2)	30	7320	0.004	0.0006	31.67	4.75
Equipment/Material Delivery (T6)	3	678.32	0.004	0.0006	2.94	0.44
				Total Pounds Per Day	**1.12**	**0.17**
				Annual Pounds	**272.16**	**40.82**

Notes:

1. Emission factor calculation presented in "Emission Factors" tab
2. Emissions for 2021 calculated using following asssumptions related to construction days/schedule: 65 days from Activity 1, 65 days from Activity 2, 43 days from Activity 3,4,5
3. Emissions for 2022 calculated using following asssumptions related to construction days/schedule: 153 days from Activity 1, 153 days from Activity 2, 258 days from Activity 3,4,5 and 0 days from Activity 6
4. Emissions for 2023 calculated using following asssumptions related to construction days/schedule: 0 days from Activity 1, 0 days from Activity 2, 194 days from Activity 3,4,5 and 126 days from Activity 7

Bellefield Solar Project - 1,500 MW

Construction Criteria Emissions by Year

Emission Type	Source	Emissions (tons per year)						With Water Control		With Palliative Control	
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$	PM_{10} (tons)	$PM_{2.5}$ (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)
2021											
Exhaust	Off Road Construction Equipment	0.3	2.6	0.0	2.6	0.1	0.1	0.1	0.1	0.1	0.1
	On-Road Vehicles	0.2	0.3	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Dust	Off Road Construction Activity	-	-	-	-	1.5	0.2	0.8	0.1	0.5	0.1
	On-Road Vehicles (resuspended)	-	-	-	-	1.9	0.3	1.8	0.3	1.8	0.3
Subtotal		**0.5**	**2.9**	**0.0**	**3.7**	**3.5**	**0.6**	**2.8**	**0.5**	**2.5**	**0.5**
EKAPCD Tons/Year Threshold		**25**	**25**	**27**	**N/A**	**15**	**N/A**	**15**	**N/A**	**15**	**N/A**
Exceed Threshold?		No	No	No	N/A	No	N/A	No	N/A	No	N/A
2022											
Exhaust	Off Road Construction Equipment	2.4	22.5	0.0	23.3	1.0	0.9	1.0	0.9	1.0	0.9
	On-Road Vehicles	0.9	1.1	0.0	4.8	0.2	0.1	0.2	0.1	0.2	0.1
Fugitive Dust	Off Road Construction Activity	-	-	-	-	7.3	0.8	4.7	0.5	2.3	0.2
	On-Road Vehicles (resuspended)	-	-	-	-	8.2	1.2	8.0	1.2	7.8	1.2
Subtotal		**3.4**	**23.6**	**0.1**	**28.1**	**16.8**	**3.0**	**13.9**	**2.7**	**11.3**	**2.4**
EKAPCD Tons/Year Threshold		**25**	**25**	**27**	**N/A**	**15**	**N/A**	**15**	**N/A**	**15**	**N/A**
Exceed Threshold?		No	No	No	N/A	Yes	N/A	No	N/A	No	N/A
2023											
Exhaust	Off Road Construction Equipment	0.7	6.2	0.0	6.6	0.3	0.3	0.3	0.3	0.3	0.3
	On-Road Vehicles	0.6	0.6	0.0	2.9	0.1	0.1	0.1	0.1	0.1	0.1
Fugitive Dust	Off Road Construction Activity	-	-	-	-	1.5	0.2	1.0	0.1	0.4	0.0
	On-Road Vehicles (resuspended)	-	-	-	-	5.0	0.7	4.8	0.7	4.7	0.7
Subtotal		**1.3**	**6.8**	**0.0**	**9.6**	**6.9**	**1.2**	**6.2**	**1.1**	**5.5**	**1.1**
EKAPCD Tons/Year Threshold		**25**	**25**	**27**	**N/A**	**15**	**N/A**	**15**	**N/A**	**15**	**N/A**
Exceed Threshold?		No	No	No	N/A	No	N/A	No	N/A	No	N/A
Total											
Exhaust	Off Road Construction Equipment	3.5	31.3	0.1	32.5	1.4	1.3	-	-	-	-
	On-Road Vehicles	1.7	1.9	0.0	8.9	0.4	0.2	-	-	-	-
Fugitive Dust	Off Road Construction Activity	-	-	-	-	10.3	1.1	6.5	0.7	3.2	0.3
	On-Road Vehicles (resuspended)	-	-	-	-	15.0	2.2	14.6	2.2	14.3	2.1
Subtotal		**5.1**	**33.3**	**0.1**	**41.4**	**27.1**	**4.8**	**21.0**	**2.8**	**17.5**	**2.5**
EKAPCD Tons/Year Threshold		**25**	**25**	**27**	**N/A**	**15**	**N/A**	**15**	**N/A**	**15**	**N/A**
Exceed Threshold?		No	Yes	Yes	N/A	Yes	N/A	Yes	N/A	Yes	N/A

1. Operational emissions were estimated assuming that operationas for Bellefield would be similar as for Eland Solar Project.
2. Assumes maintenance vehicles are traveling on 50% paved roads and 50% unpaved roads/ untreated soil
3. Annualized at 260 working days per year

Emission Type	Source	Emissions (tons per year)					
		ROG	NO_X	SO_X	CO	PM_{10}	$PM_{2.5}$
Operational							
Exhaust	On Road and On-Site Vehicles	0.0	0.1	0.0	0.1	0.0	0.0
Fugitive Dust	Maintenance Vehicles	-	-	-	-	1.6	0.2
Subtotal		**0.0**	**0.1**	**0.0**	**0.1**	**1.6**	**0.2**
EKAPCD Tons/Year Threshold		**25**	**25**	**27**	**N/A**	**15**	**N/A**
Exceed Threshold?		No	No	No	N/A	No	N/A
Daily Operational Emissions[1]		***0.122785973***	***0.625478952***	***0.003600492***	***1.03947379***	***13.2293677***	***1.366076042***

Notes:
1. Annualized at 244 working days per year

GHG Emissions from Construction

Year	Emissions Source (MT of CO2e)				Total (MT of CO_2e)
	Off-Road	On-site Mobile	Off-site Mobile	Indirect GHG Emissions from Water Use	
2021	433	3.9	292	23	753
2022	3,853	15.3	1,264	93	5,225
2023	1,051	8.8	758	70	1,888
Total Construction	5,337	27.9	2,314	**187**	**7,866**
Decommissioning	5,337	27.9	2,314	187	7,866
Amortized Emissions (30-year life)	*356*	*2*	*154*	*12*	*524*
EKAPCD Threshold					**25,000**
Exceed Threshold?					No

Note: Numbers have been rounded to the nearest metric ton (MT).

1. From the Water Supply Assessment prepared by Rincon for Bellefield, approximately 900 AF of water would be required over the projects 24-month construction period.

2. Construction begins at start of Q4 (October) . Therefore 3 months of construction occur in 2021, 12 months in 2022, and the remaining 9 months in 2023. Water use by year was weighted based on that schedule.

GHG Emissions from Operation

Location	Emissions Source (MT of CO2e)				Total (MT of CO_2e)
	Off-Road	On-site Mobile	Off-site Mobile	Indirect GHG Emissions from Water Use	
Total	0	20	22	42	83
Amortized Construct	356	2	154	12	524
Total	**356**	**22**	**176**	**54**	**608**
EKAPCD CEQA Threshold					**25,000**
Exceed Threshold?					No

Note: Numbers have been rounded to the nearest metric ton (MT).

1. From the Water Supply Assessment prepared by Rincon for Bellefield, approximately 200.8 AF of water would be required each year during operation.

Bellefield Solar Project - 1,500 MW

Displaced Energy Production during 30-year Project life

Annual Energy Production	
Grid Size (MW)	1500
Total hrs/year	8760
% Operational time [1]	*28%*
Operational hours/year	2,464
KWh produced per year	3,695,625,000
Assumed Heat Rate (Btu/KWh)	10,000
Annual Fuel Equivalent (MMBtu)[2]	36,956,250

California Power Mix[3]		Annual Fuel Displacement (MMBtu)
Coal[4]	4.13%	1,526,293
Large Hydro	14.72%	5,439,960
Natural Gas[4]	33.67%	12,443,169
Nuclear	9.08%	3,355,628
Oil	0.01%	3,696
Other (petroleum coke/waste heat)	0.14%	51,739
Renewables	29.00%	10,717,313
Unspecified sources of Power	9.25%	3,418,453
Total	**100.00%**	**36,956,250**

Annual Pollutant Displacement[4]

Natural Gas Turbine Emissions

Pollutant	AP-42 Emission Factor (lb/MMBtu)[5]	Controlled Emission Factor (lb/MMBtu)	Controlled Emissions (lb)	Controlled Emissions (ton)	AP-42 Emission Factor Source Notes[5]
NO_2	0.099	0.099	1,231,874	615.94	Table 3.1-1, lean premix; Assume SCR Control Efficiency
CO	0.015	0.015	186,648	93.32	Table 3.1-1, lean premix; Assume Ox. Cat. Control Efficiency
PM_{10}	0.0047	0.0047	58,483	29.24	Table 3.1-2a, PM (condensible)
$PM_{2.5}$	0.0019	0.0019	23,642	11.82	Table 3.1-2a, PM (filterable)
SO_2	0.0034	0.0034	42,307	21.15	Table 3.1-2a
CO_2	110	110	1,368,748,631	684,374.32	Table 3.1-2a

Coal Combustion Emissions

Pollutant	AP-42 Emission Factor (lb/ton)[6]	Controlled Emission Factor (lb/ton)	Emissions (lb)[7]	Emissions (ton)	AP-42 Emission Factor Source Notes[6]
NOx	12	12	763147	381.57	Table 1.1-3 pulverized coal, wall fired, bituminous coal NSPS
CO	0.5	0.5	31798	15.90	Table 1.1-3 pulverized coal, wall fired, bituminous coal NSPS
PM_{10}[8]	0.46	0.084	5342	2.67	Table 1.1-4, PC-fired dry bottom wall-fired, scrubber control
$PM_{2.5}$[8]	0.12	0.06	3816	1.91	Table 1.1-4, PC-fired dry bottom wall-fired, scrubber control
SO_2[9]	2.85	0.57	36249	18.12	Table 1.1-3 pulverized coal, wall fired, bituminous coal NSPS
CO_2	6040	6040	384117103	192,058.55	Table 1.1-20
Total NMHC	0.06	0.06	3816	1.91	Table 1.1-19; assumed all hydrocarbons are reactive
CH_4	0.04	0.04	2544	1.27	Table 1.1-19
N_2O	0.03	0.03	1908	0.95	Table 1.1-19

Total Displaced Emissions Associated With Direct Combustion

Pollutant	tons/year[8]	tons/lifetime (30 years)
ROG (NMHC)	1.91	57.24
NO_X	997.51	29,925.30
CO	109.22	3,276.68
PM_{10}	31.91	957.37
$PM_{2.5}$	13.73	411.87
SO_X	39.28	1,178.34
CO_2E	795,348.16	23,860,444.80

Notes:

1. Operational time is based on annual average solar radiation hours per day per year (6.75) for the project area. Source: National Renewable Energy Laboratories, U.S. Department of Energy (https://pvwatts.nrel.gov/pvwatts.php)
2. The Project is assumed to displace existing power generation equivalent to the current power mix(each year of operation.
3. California Power Mix assumptions are based on data from Total California Electrical System Power (http://www.energyalmanac.ca.gov/electricity/total_system_power.html).
4. Combustion of natural gas and coal for power are of the greatest concern related to the generation of criteria pollutants and GHG emissions, therefore only fuel displacement of natural gas and coal due to electricty production from the Solar Scarlet facility are considered in this assessment.
5. EPA Air Pollution Emission Factors AP-42 Section 3.1, Stationary Gas Turbines
6. EPA Air Pollution Emission Factors AP-42 Section 1.1, Bituminous and Subbituminous Coal Combustion
7. Coal characteristics used for conversion: Assumed coal heat content = 24 MMBtu/ton
8. Total particulate matter (CPM-TOT) is expressed in terms of coal ash content therefore emission factor is determined by multiplying % ash content of coal (assumed to be 20% herein) by value listed in Table 1.1-4. Organic fraction of particulate matter is 20% of total CPM-TOT (Table 1.1-5) and listed as controlled emission factor.
9. SO_x emission factor calculated by multiplying the weight percent of sulfur (assumed to be 7.5%) by the value listed in Table 1.1-3
10. CO_2E volumes are in metric tons rather than short (US) tons

Appendix HRA

Health Risk Assessment Data

DPM Emission Rates for HRA[1]

	APN/FID[2]	Acreage	Proportion	Total Emissions (lbs) 2021	2022	2023 Total	Annual Emissions (lbs/yr) 2021	2022	2023 Total	Max Hr Emissions (lbs/hr) 2021	2022	2023 Total
Kern County	235-022-01	657.12	7.81%	19.246328	160.02915	43.803858 223.07934	19.246328	160.02915	43.803858 112.4043163	0.0269179	0.055954	0.020849 0.039302
Kern County	235-024-14	82.19	0.98%	2.4072554	20.01582	5.4788153 27.901891	2.4072554	20.0158202	5.47881526 14.05909234	0.0033668	0.006999	0.002608 0.004916
Kern County	235-024-15	79.94	0.95%	2.3413554	19.467875	5.3288294 27.13806	2.3413554	19.4678753	5.32882945 13.67421635	0.0032746	0.006807	0.002536 0.004781
Kern County	235-024-41	654.99	7.78%	19.183943	159.51043	43.661871 222.35624	19.183943	159.510428	43.6618714 112.039967	0.0268307	0.055773	0.020781 0.039175
Kern County	235-064-01	332.71	3.95%	9.7447129	81.025229	22.178569 112.94851	9.7447129	81.0252288	22.1785695 56.91204054	0.013629	0.02833	0.010556 0.019899
Kern County	235-065-17	33.49	0.40%	0.9808856	8.1558562	2.2324556 11.369197	0.9808856	8.15585619	2.23245557 5.728665317	0.0013719	0.002852	0.001063 0.002003
Kern County	235-065-18	442.64	5.26%	12.964443	107.7966	29.506543 150.26759	12.964443	107.796601	29.5065432 75.71622621	0.0181321	0.037691	0.014044 0.026474
Kern County	235-081-01	10.17	0.12%	0.2978682	2.4767112	0.6779359 3.4525153	0.2978682	2.47671118	0.6779359 1.739639483	0.0004166	0.000866	0.000323 0.000608
Kern County	235-081-02	10.18	0.12%	0.2981611	2.4791465	0.6786025 3.4559101	0.2981611	2.47914649	0.6786025 1.741350043	0.000417	0.000867	0.000323 0.000609
Kern County	235-081-03	10.19	0.12%	0.298454	2.4815818	0.6792691 3.4593049	0.298454	2.4815818	0.6792691 1.743060602	0.0004174	0.000868	0.000323 0.000609
Kern County	235-081-04	10.2	0.12%	0.2987469	2.4840171	0.6799357 3.4626997	0.2987469	2.48401711	0.67993571 1.744771162	0.0004178	0.000869	0.000324 0.00061
Kern County	235-081-05	10.21	0.12%	0.2990398	2.4864524	0.6806023 3.4660945	0.2990398	2.48645242	0.68060231 1.746481722	0.0004182	0.000869	0.000324 0.000611
Kern County	235-081-07	10.2	0.12%	0.2987469	2.4840171	0.6799357 3.4626997	0.2987469	2.48401711	0.67993571 1.744771162	0.0004178	0.000869	0.000324 0.00061
Kern County	235-081-09	61.19	0.73%	1.7921883	14.901667	4.0789476 20.772803	1.7921883	14.9016674	4.07894763 10.46691641	0.0025066	0.00521	0.001941 0.00366
Kern County	235-081-10	20.43	0.24%	0.5983724	4.9753402	1.3618712 6.9355838	0.5983724	4.97534016	1.36187122 3.494674005	0.0008369	0.00174	0.000648 0.001222
Kern County	235-081-11	10.19	0.12%	0.298454	2.4815818	0.6792691 3.4593049	0.298454	2.4815818	0.6792691 1.743060602	0.0004174	0.000868	0.000323 0.000609
Kern County	235-081-12	10.18	0.12%	0.2981611	2.4791465	0.6786025 3.4559101	0.2981611	2.47914649	0.6786025 1.741350043	0.000417	0.000867	0.000323 0.000609
Kern County	235-082-01	5.1	0.06%	0.1493734	1.2420086	0.3399679 1.7313498	0.1493734	1.24200856	0.33996785 0.872385581	0.0002089	0.000434	0.000162 0.000305
Kern County	235-082-17	5.12	0.06%	0.1499592	1.2468792	0.3413011 1.7381395	0.1499592	1.24687918	0.34130106 0.875806701	0.0002097	0.000436	0.000162 0.000306
Kern County	235-082-18	5.11	0.06%	0.1496663	1.2444439	0.3406345 1.7347446	0.1496663	1.24444387	0.34063446 0.874096141	0.0002093	0.000435	0.000162 0.000306
Kern County	235-082-19	10.22	0.12%	0.2993327	2.4888877	0.6812689 3.4694893	0.2993327	2.48888773	0.68126891 1.748192282	0.0004186	0.00087	0.000324 0.000611
Kern County	235-082-24	2.56	0.03%	0.0749796	0.6234396	0.1706505 0.8690697	0.0749796	0.62343959	0.17065053 0.437903351	0.0001049	0.000218	8.12E-05 0.000153
Kern County	235-082-25	2.56	0.03%	0.0749796	0.6234396	0.1706505 0.8690697	0.0749796	0.62343959	0.17065053 0.437903351	0.0001049	0.000218	8.12E-05 0.000153
Kern County	**235-102-02**	**305.1**	**3.62%**									
	235-102-02a	26	0.31%	0.7615116	6.3318083	1.7331694 8.8264894	0.7615116	6.33180833	1.73316945 4.447455904	0.0010651	0.002214	0.000825 0.001555
Kern County	235-102-02b	279.1	3.32%	8.1745345	67.969527	18.604907 94.748969	8.1745345	67.9695271	18.6049074 47.74172857	0.0114329	0.023766	0.008855 0.016693
Kern County	**235-132-16**	**601.47**	7.14%									
	235-132-16a	6.6	0.08%	0.1933068	1.6073052	0.4399584 2.2405704	0.1933068	1.60730519	0.4399584 1.128969576	0.0002704	0.000562	0.000209 0.000395
	235-132-16b	217	2.58%	6.3556933	52.846246	14.465299 73.667239	6.3556933	52.8462464	14.4652988 37.1191512	0.0088891	0.018478	0.006885 0.012979
	235-132-16c	377.87	4.49%	11.0674	92.023093	25.188952 128.27944	11.0674	92.0230928	25.1889515 64.63692933	0.0154789	0.032176	0.011989 0.0226
Kern County	235-134-01	490.81	5.83%	14.375289	119.52749	32.717573 166.62036	14.375289	119.527494	32.7175729 83.95599355	0.0201053	0.041793	0.015572 0.029355
Kern County	**235-221-01**	**489.81**	**5.82%**									
	235-221-01a	26	0.31%	0.7615116	6.3318083	1.7331694 8.8264894	0.7615116	6.33180833	1.73316945 4.447455904	0.0010651	0.002214	0.000825 0.001555
	235-221-01b	463.81	5.51%	13.584489	112.95215	30.917743 157.45439	13.584489	112.952155	30.9177431 79.33748165	0.0189993	0.039494	0.014716 0.02774
Kern County	235-340-09	82.69	0.98%	2.4218999	20.137586	5.5121454 28.071631	2.4218999	20.1375858	5.51214545 14.14462034	0.0033873	0.007041	0.002624 0.004946
Kern County	235-340-10	10.38	0.12%	0.3040189	2.5278527	0.6919346 3.5238062	0.3040189	2.52785271	0.69193457 1.775561242	0.0004252	0.000884	0.000329 0.000621
Kern County	235-340-11	10.39	0.12%	0.3043118	2.530288	0.6926012 3.527201	0.3043118	2.53028802	0.69260118 1.777271802	0.0004256	0.000885	0.00033 0.000621
Kern County	235-340-28	41.6	0.49%	1.2184186	10.130893	2.7730711 14.122383	1.2184186	10.1308933	2.77307112 7.115929447	0.0017041	0.003542	0.00132 0.002488
Kern County	235-351-01	81.53	0.97%	2.3879248	19.85509	5.4348194 27.677834	2.3879248	19.8550897	5.43481942 13.94619538	0.0033398	0.006942	0.002587 0.004876
Kern County	235-351-02	20.47	0.24%	0.599544	4.9850814	1.3645376 6.949163	0.599544	4.9850814	1.36453764 3.501516245	0.0008385	0.001743	0.000649 0.001224
Kern County	235-351-03	20.45	0.24%	0.5989582	4.9802108	1.3632044 6.9423734	0.5989582	4.98021078	1.36320443 3.498095125	0.0008377	0.001741	0.000649 0.001223
Kern County	235-351-04	40.86	0.49%	1.1967448	9.9506803	2.7237424 13.871168	1.1967448	9.95068032	2.72374245 6.98934801	0.0016738	0.003479	0.001296 0.002444
California City	**235-101-45**	**304.04**	**3.61%**									
	235-101-45a	4.6	0.05%	0.134729	1.120243	0.3066377 1.5616097	0.134729	1.12024301	0.30663767 0.786857583	0.0001884	0.000392	0.000146 0.000275
	235-101-45b	299.44	3.56%	8.7702709	72.922949	19.960779 101.654	8.7702709	72.9229494	19.9607792 51.22100754	0.0122661	0.025498	0.009501 0.017909
California City	235-101-46	103.66	1.23%	3.0360883	25.244433	6.9100133 35.190534	3.0360883	25.2444327	6.91001327 17.73166458	0.0042463	0.008827	0.003289 0.0062
California City	235-101-47	154.85	1.84%	4.5353876	37.710789	10.322357 52.568534	4.5353876	37.7107892	10.3223573 26.48802103	0.0063432	0.013186	0.004913 0.009262
California City	235-101-48	151.16	1.80%	4.4273115	36.812159	10.076381 51.315852	4.4273115	36.8121595	10.0763805 25.8568244	0.006192	0.012871	0.004796 0.009041
California City	235-101-49	464.68	5.52%	13.60997	113.16403	30.975738 157.74973	13.60997	113.164027	30.9757376 79.48630037	0.0190349	0.039568	0.014743 0.027792
California City	**235-101-51**	**262.88**	**3.12%**									
	235-101-51a	4.2	0.05%	0.1230134	1.0228306	0.2799735 1.4258175	0.1230134	1.02283058	0.27997353 0.718435185	0.000172	0.000358	0.000133 0.000251
	235-101-51b	120	1.43%	3.5146691	29.223731	7.9992436 40.737643	3.5146691	29.2237307	7.9992436 20.52671956	0.0049156	0.010218	0.003807 0.007177
	235-101-51c	138.68	1.65%	4.0617859	33.772891	9.2444592 47.079137	4.0617859	33.7728915	9.24445919 23.72204557	0.0056808	0.011809	0.0044 0.008294

California City	235-061-02	658.81	7.83%	19.295826	160.44072	43.916514	223.65306	19.295826	160.440717	43.916514	112.6934009	0.0269872	0.056098	0.020903	0.039403
New Bellfield Areas (FID)	0	294.829267	3.50%	8.6352276	71.800093	19.653426	100.08875	8.6352276	71.8000926	19.6534261	50.43231401	0.0120772	0.025105	0.009354	0.017634
	1	816.206402	9.70%	23.905795	198.77163	54.408615	277.08604	23.905795	198.771634	54.4086153	139.6169993	0.0334347	0.069501	0.025897	0.048817
	2	10.305329	0.12%	0.3018318	2.509668	0.686957	3.4984568	0.3018318	2.509668	0.68695698	1.762788319	0.0004221	0.000878	0.000327	0.000616
	3	62.734601	0.75%	1.837428	15.277826	4.1819113	21.297165	1.837428	15.2778257	4.1819113	10.73112968	0.0025698	0.005342	0.00199	0.003752
	4	30.583795	0.36%	0.895766	7.4481049	2.0387269	10.382598	0.895766	7.44810492	2.03872689	5.231541525	0.0012528	0.002604	0.00097	0.001829
	5	10.29359	0.12%	0.301488	2.5068092	0.6861744	3.4944717	0.301488	2.50680919	0.68617445	1.760780293	0.0004217	0.000877	0.000327	0.000616
	6	12.956187	0.15%	0.3794726	3.1552343	0.8636641	4.3983711	0.3794726	3.15523434	0.86366413	2.216233476	0.0005307	0.001103	0.000411	0.000775
	7	2.589014	0.03%	0.0758294	0.6305054	0.1725846	0.8789194	0.0758294	0.6305054	0.17258461	0.442866369	0.0001061	0.00022	8.21E-05	0.000155
	8	41.356692	0.49%	1.2112924	10.07164	2.7568521	14.039785	1.2112924	10.0716403	2.75685212	7.074310155	0.0016941	0.003522	0.001312	0.002474
	9	17.949466	0.21%	0.5257203	4.371253	1.1965179	6.0934912	0.5257203	4.37125301	1.19651793	3.07036379	0.0007353	0.001528	0.000569	0.001074
	10	243.421069	2.89%	7.1295375	59.280598	16.226537	82.636673	7.1295375	59.2805981	16.2265369	41.63863348	0.0099714	0.020727	0.007723	0.014559
	11	10.118987	0.12%	0.2963741	2.4642879	0.6745354	3.4351974	0.2963741	2.46428793	0.67453535	1.730913403	0.0004145	0.000862	0.000321	0.000605
	12	28.210422	0.34%	0.8262525	6.8701148	1.880517	9.5768843	0.8262525	6.87011481	1.88051698	4.825561842	0.0011556	0.002402	0.000895	0.001687
	13	26.525452	0.32%	0.7769016	6.4597722	1.7681963	9.00487	0.7769016	6.45977223	1.76819627	4.53733762	0.0010866	0.002259	0.000842	0.001586
	14	23.552058	0.28%	0.6898141	5.7356583	1.5699887	7.9954612	0.6898141	5.73565835	1.56998874	4.028720747	0.0009648	0.002005	0.000747	0.001409
	17	2.5511	0.03%	0.0747189	0.6212722	0.1700573	0.8660484	0.0747189	0.62127216	0.17005725	0.436380952	0.0001045	0.000217	8.09E-05	0.000153
	18	11.580326	0.14%	0.3391751	2.8201694	0.7719487	3.9312933	0.3391751	2.82016941	0.77194874	1.980884202	0.0004744	0.000986	0.000367	0.000693
	Total	***8418.293757***	100.00%	246.56264	2050.1163	561.16652	2857.8454	246.56264	2050.11625	561.166521	1439.999626	0.3448429	0.716824	0.267095	0.503496

Construction Information:

Total Construction Period	516	days
2021 Construction Period	65	days
2022 Construction Period	260	days
2023 Construction Period	191	days
Work Day hours (6am-5pm)	11	hours
Schedule (M-F)	5	days
Max Construction in one year	260	days

For All Sources:

Release height	3.1	m	
Unit rate EF	1	g/s-m^2	(default)
Urban Opt	blank		

Emissions Inventory

PM10 Emissions (lbs)	2021	2022	2023	Total
Onsite Diesel Equipment Exhaust	245.9743582	2047.814339	559.8422487	2853.6
On-site Mobile Exhaust	0.588282015	2.301911544	1.324272049	4.2
Total	246.6	2050.1	561.2	2857.8

Notes:

1. HRAs are an evaluation of localized TAC emissions therefore only on-site exhaust PM10 emissions were utilized in the HRA. Sources included are PM10 exhaust emissions from off-road diesel equipment and on-site mobile emissions. See Appendix AQGHG for emissions by year.

2. Project site parcels were modeled as induvial area sources except if the polygon would require more coordinate points than allowed for modeling, in which case the parcel was modeled as multiple smaller polygons to encompass the entire parcel, such parcels are denoted with a letter after the parcel number.

Toxic Air Contaminant Health Risk Analysis

Carcinogenic

Cancer Health Risk

Dose [air] = Concentration [air] * DBR * Absorption * EF * 10^-6

Risk = Dose * Cancer Potency * ASF * FAH * (ED/AT)

Where:

DBR =	Daily Breathing Rate normalized to body weight for age class (L/kg BW-day)
A =	Absorption - assumed to be 1.0 (100%)
EF =	Exposure Frequency = days present/365 days Usually 0.96 (350/365 to account for 2 week vacation)
ASF =	Age Sensitivity Factor
FAH =	Fraction of Time at Home
ED =	Exposure duration in years
AT =	Averaging time (always 70 yrs)

Construction Duration: 24 months 2 years

Construction & Deconstruction *48 months* 4 years

	Age Bin						
	3rd trimester	0<2 yrs	2<9 yrs	2<16 yrs	16<30 yrs	16-70 yrs	
DBR =	361	1090	861	745	335	290	*Note: 95 percentile*
A =	1.0	1.0	1.0	1.0	1.0	1.0	
EF =	0.96	0.96	0.96	0.96	0.96	0.96	
ASF =	10	10	3	3	1	1	
FAH =	1	1	1	1	1	1	
ED =	0.25	2.00	2.00	2.00	2.00	2.00	Construction Only
ED =	*0.25*	*2.00*	*4.00*	*4.00*	*4.00*	*4.00*	*Construction and Deconstruction*
ED =	*0.25*	*2.00*	*7.00*	*14.00*	*14.00*	*54.00*	*Lifetime exposure*
AT =	70	70	70	70	70	70	
Cancer Risk Factor:	1.24E-05	2.99E-04	7.08E-05	6.12E-05	9.18E-06	7.95E-06	Construction Only
Cancer Risk Factor:	*1.24E-05*	*2.99E-04*	*1.42E-04*	*1.22E-04*	*1.84E-05*	*1.59E-05*	*Construction and Deconstruction*
Cancer Risk Factor:	*1.24E-05*	*2.99E-04*	*2.48E-04*	*4.29E-04*	*6.42E-05*	*2.15E-04*	*Lifetime exposure*

Methodology Source: *California EPA, Office of Environmental Health Hazard Assessment (February 2015). Air Toxics Hot Spots Program Risk Assessment Guidelines - The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.*

NonCarcinogenic

Risk Equation

Hazard Quotient = Concentration/Chronic Inhalation Reference Exposure Level

Hazard Index = Sum of all Hazard Quotients (HQs)

Risk Calculation For Residents

TAC: Diesel Engine Exhaust Particulate Matter

Cancer Potency, Inhl (mg/kg-day)^-1	1.10E+00	Cancer Slope Factor per OEHHA Appendix A: Hot Spots Unit Risk and Cancer Potency Values; http://oehha.ca.gov/air/hot_spots/tsd052909.html
Chronic Inhalation REL, ug/cu m	5.0E+00	Chronic Inhalation REL as of June 2014; http://www.oehha.ca.gov/air/Allrels.html

		UTM			Carcinogenic Risk By Age Group						Summed Carcinogenic Risk	Maximum Lifetime Carcinogenic Risk		Chronic Risk HQ	
RECEPTOR ID	GRP	east	north	Concentration, ug/cu m	3rd trimester	0<2 yrs	2<9 yrs	2<16 yrs	16<30 yrs	16-70 yrs		30 Year Resident	70 Year Resident		
374	**CARTGRID**	**400371.0**	**3878298.0**	**2.52E-03**	**3.43E-08**	**8.29E-07**	**1.97E-07**	**1.70E-07**	**2.55E-08**	**2.21E-08**	**8.64E-07**	**2.23E-06**	**2.65E-06**	**5.05E-04**	**Off-site PMI**
1271	**SENSITIV**	**397558**	**3877589**	**4.83E-04**	**6.57E-09**	**1.59E-07**	**3.76E-08**	**3.25E-08**	**4.88E-09**	**4.22E-09**	**1.65E-07**	**4.27E-07**	**5.07E-07**	**9.66E-05**	**MEIR**

Construction and Deconstruction (48 months of exposure out of 70 years)

374	**CARTGRID**	**400371.0**	**3878298.0**	**2.52E-03**	**3.43E-08**	**8.29E-07**	**3.93E-07**	**3.40E-07**	**5.10E-08**	**4.41E-08**	**1.06E-06**	**2.23E-06**	**2.65E-06**	**5.05E-04**	**Off-site PMI**
1271	**SENSITIV**	**397558**	**3877589**	**4.83E-04**	**6.57E-09**	**1.59E-07**	**7.52E-08**	**6.51E-08**	**9.75E-09**	**8.44E-09**	**2.03E-07**	**4.27E-07**	**5.07E-07**	**9.66E-05**	**MEIR**

Appendix Model

AERMOD Input File
GLC File
Additional Model Files Available by Request

AERMOD Input

```
**AERMOD INPUT FILE CREATED BY HARP VERSION 19121
**DATE CREATED: 6/23/2020 5:22:13 PM
**
CO STARTING
   TITLEONE  Construction HRA
   TITLETWO
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   POLLUTID OTHER
   RUNORNOT RUN
   ERRORFIL "C:\Users\elinard\Desktop\BELLEFIELD\BELLEFIELD\BELLEFIELD_AERMOD.ERR"
CO FINISHED
**
**SOURCES
SO STARTING
**SOURCES LOCATIONS
   LOCATION 23502201 AREAPOLY  402523  3881465  793.05
   LOCATION 23502414 AREAPOLY  401735  3883104  802.98
   LOCATION 23502415 AREAPOLY  401705  3882282  801.98
   LOCATION 23502441 AREAPOLY  401677  3881465  800.94
   LOCATION 23506401 AREAPOLY  403301  3879852  783.35
   LOCATION 23506517 AREAPOLY  400815  3876803  784.8
   LOCATION 23506518 AREAPOLY  401646  3878200  789.38
   LOCATION 23508101 AREAPOLY  401650  3879826  794.91
   LOCATION 23508102 AREAPOLY  401649  3879622  794.08
   LOCATION 23508103 AREAPOLY  401649  3879419  794.01
   LOCATION 23508104 AREAPOLY  401648  3879216  793.1
   LOCATION 23508105 AREAPOLY  401445  3879212  794.28
   LOCATION 23508107 AREAPOLY  401446  3879416  795.53
   LOCATION 23508109 AREAPOLY  401245  3879819  797.93
   LOCATION 23508110 AREAPOLY  401242  3879209  795.22
   LOCATION 23508111 AREAPOLY  401447  3879619  795.83
   LOCATION 23508112 AREAPOLY  401447  3879823  796.04
   LOCATION 23508201 AREAPOLY  401445  3879009  793.34
   LOCATION 23508217 AREAPOLY  401240  3878700  793.04
   LOCATION 23508218 AREAPOLY  401241  3878802  793.69
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   LOCATION 3510202b AREAPOLY  405700  3875018  789.4
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   LOCATION 3513216c AREAPOLY  401326  3874171  775.72
   LOCATION 23513401 AREAPOLY  402031  3876568  779.77
   LOCATION 3522101a AREAPOLY  406500  3873413  777.01
   LOCATION 3522101b AREAPOLY  407317  3873418  775.41
   LOCATION 23524009 AREAPOLY  402470  3879022  788.11
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   LOCATION 23534028 AREAPOLY  403292  3879031  784.49
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   LOCATION 23535102 AREAPOLY  400231  3879396  801.84
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   LOCATION 23535104 AREAPOLY  400838  3879406  799.19
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   LOCATION 3510145b AREAPOLY  406432  3875430  801.34
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   LOCATION 23510147 AREAPOLY  407346  3876652  816.72
   LOCATION 23510148 AREAPOLY  409044  3875433  809.6
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   LOCATION 3510151c AREAPOLY  406527  3876640  798.43
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   LOCATION 3513216b AREAPOLY  401587  3874159  775.14
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    LOCATION FID9 AREAPOLY  400411  3877359  789.3
    LOCATION FID10 AREAPOLY  402045  3877386  782.39
    LOCATION FID11 AREAPOLY  401424  3876557  783.34
    LOCATION FID12 AREAPOLY  401656  3874524  776.63
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    SRCPARAM 23506401 7.43004703591276E-07 3.1  5
    SRCPARAM 23506517 6.33046966825268E-10 3.1  5
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    SRCPARAM FID5 2.39762155941306E-05 3.1  6
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**Saturday
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RE FINISHED
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**MET PATHWAY
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ME PROFFILE "C:\Users\elinard\Desktop\Desktop\Take home Projects\HRAs\8minute
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ME SURFDATA 3183 2009
ME UAIRDATA 93214 2009
ME SITEDATA 0 2009
ME PROFBASE 849.5
ME FINISHED
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**OUTPUT PATHWAY
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   RECTABLE 1 1ST
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GLC Period File

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* AERMOD ( 18081):  HARP GENERATED FILE
      12/14/20
* AERMET ( 14134):
      21:48:19
* MODELING OPTIONS USED:   RegDFAULT  CONC  ELEV  RURAL
*         PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL
*         FOR A TOTAL OF  1281 RECEPTORS.
*         FORMAT: (3(1X,F13.5),3(1X,F8.2),2X,A6,2X,A8,2X,I8.8,2X,A8)


*        X             Y      AVERAGE CONC    ZELEV    ZHILL    ZFLAG    AVE     GRP
     NUM HRS   NET ID
* _____________  _____________  _____________   _______   _______   _______  _______
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  397217.00000 3870352.00000 3.0713610e-04   775.00   775.00     0.00  PERIOD
CARTGRID  00043872  1001
  397467.00000 3870352.00000 3.0937140e-04   774.60   774.60     0.00  PERIOD
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  397717.00000 3870352.00000 3.1355640e-04   774.20   774.20     0.00  PERIOD
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CARTGRID  00043872  1002
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CARTGRID  00043872  1002
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CARTGRID  00043872  1003
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C.2 Amicus Curiae Brief, Friant Ranch, SJVUAPCD

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

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[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

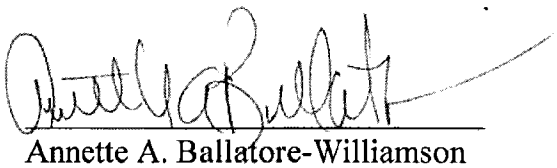
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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Sierra Club, supra, 172 Cal.Rptr.3d at 303; AR 4554 8

FEDERAL STATUTES

United States Environmental Protection Agency ("EPA") Clean Air Act. 42 U.S.C. § 7412 1,2,5,6

42 U.S.C. § 7412 1

U.S.C. §§ 7407 – 7411 1

U.S.C. §§ 7501 – 7515 1

42 U.S.C. § 7411 1

42 U.S.C. § 7412(b) 1,2

42 U.S.C. § 7409(b)(1) 2, 6

CALIFORNIA STATUTES

California Environmental Quality Act ("CEQA") ..... *passim*

OTHER AUTHORITIES

United States Environmental Protection Agency,
Ground-level Ozone: Basic Information,
available at: http://www.epa.gov/airquality/ozonepollution/basic.html
(visited March 10, 015).....4

San Joaquin Valley Air Pollution Control District 2007 Ozone Plan,
Executive Summary p. ES-6, available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_
Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).....5

United States Environmental Protection Agency, *Particulate Matter:
Basic Information*, available at:
http://www.epa.gov/airquality/particlepollution/basic.html
(visited March 10, 2015).....5

United States Environmental Protection Agency, *Table of
National Ambient Air Quality Standards*, available at:
http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015) 6

*San Joaquin Valley Unified Air Pollution Control District 2013
Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16,
available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan
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_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).....6

San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0;
3.3.9; 4.14.1, available at:
http://www.valleyair.org/rules/currntrules/Rule22010411.pdf
(visited March 19, 2015).....7

*San Joaquin Valley Unified Air Pollution Control District Guide to
Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22,
available at:
http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan
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San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).....8

San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan, Appendix B pp. B-6, B-9, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).....9

I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

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Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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C.3 Amicus Curiae Brief, Friant Ranch, SCAQMD

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S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED
APR 13 2015
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Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
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BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

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PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

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