FINAL

Glare Study
Rugged Solar Project

Major Use Permit PDS2017-MUP-12-007W1

Boulevard, San Diego County, California

Lead Agency:

County of San Diego

Planning and Development Services

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Project Proponent:

Rugged Solar

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Rugged Solar Project Glare Study

PREPARED FOR: J. WHALEN ASSOCIATES, INC.

PREPARED BY: POWER ENGINEERS, INC.

EXECUTIVE SUMMARY

POWER Engineers, Inc. (POWER) has been commissioned by J. Whalen Associates, Inc. to prepare a glare study for Rugged Solar, LLC's Modified Rugged Solar Project (Project). In August 2013, POWER studied glare impacts to this area as part of Soitec Solar Development's Project approved in 2015. Solar technologies, arrangements and sensitive viewers of the Modified Project have changed. Methodology and standards for performing glare analysis have also evolved during this time. These changes required a new study to be performed and outputs from previous glare studies are no longer valid.

This study utilizes the Solar Glare Hazard Analysis Tool licensed by GlareGauge to determine the occurrence and duration of solar glare visible to sensitive viewers. Proposed solar operations were analyzed from residential viewpoints and major roadways within one mile of the Project

Review of the analysis determined potential glare will be limited to motorists traveling on the private Tule Mountain Road from September through March. No glare was reported for residential viewers or motorists on Ribbonwood and McCain Valley Roads due to their distances to the Project and the 5 degree wake/stow angle of the single-axis tracking PV panels (see Section 4.0). Based on these findings, it is POWER's professional opinion that instances of glare and overall glare impacts from the Modified Rugged Solar Project are anticipated to be low. For further discussion please see Section 5.0. For a detailed reporting of the GlareGauge analysis results, see Appendix A.

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ACRONYMS AND ABBREVIATIONS

AR	anti-reflective
KOP(s)	Key Observation Point(s)
POWER	POWER Engineers, Inc.
Project	Rugged Solar Project
PV	photovoltaic

1.0 INTRODUCTION

POWER Engineers, Inc. (POWER) has performed this Glare Study for the proposed Rugged Solar Project (Project) to identify potential glare impacts to surrounding residences. This study was commissioned by J. Whalen Associates, Inc. on behalf of Rugged Solar, LLC. The Project is located within the Mountain Empire Subregional Plan area in unincorporated San Diego County, California (see Figure 1). The Project will utilize single-axis tracking photovoltaic (PV) solar technology to produce up to 74 megawatts alternating current of solar energy. Specifically, this study does the following:

- Identifies sensitive residential viewers within one mile of the Project (see Section 3.1).
- Characterizes typical glare behavior experienced from the solar Project throughout the day and year (see Section 3.2).
- Evaluates when and where glare may be visible to sensitive viewers (see Section 4.0).

2.0 DEFINITIONS AND DESCRIPTIONS

The following definitions and descriptions are important for understanding the methodology and results of the study:

Anti-reflective Coating – Anti-reflective Coating, also known as AR coating, is a surface treatment to solar panel glass designed to reduce reflected light and increase panel efficiencies. AR Coating methods may vary by manufacturer. This study assumes both form and function are in original working conditions through the life of the Project.

Photovoltaic Panel – Photovoltaic panels, also known as PV panels, are designed to absorb solar energy and retain as much of the solar spectrum as possible in order to produce electricity.

Single Axis Solar Tracker – Single axis solar trackers are designed to maximize the efficiency of a PV panel operation. PV panels mounted to a single axis tracker rotate around a fixed axis allowing PV panels to track the sun's east/west position throughout the day.

Glare – A continuous source of brightness, relative to diffuse or surface scattered lighting. For purposes of this study, glare is caused by the sun reflecting off solar panels (see Figure 3).

Key Observation Points (KOP) – KOPs refer to locations with sensitivity to potential glare. For this study, KOPs included roadways and residential structures within one mile of the Project (see Section 3.1).

GlareGauge – The GlareGauge tool uses Solar Glare Hazard Analysis Tool technology. Developed by Sandia National Laboratories, this tool is a web-based application that predicts the potential for solar glare and ocular impacts from solar technologies (see https://share.sandia.gov/phlux/). The GlareGauge tool and Solar Glare Hazard Analysis Tool technologies have become the Federal Aviation Administration standard for analyzing solar glare for both terrestrial and aerial viewers.

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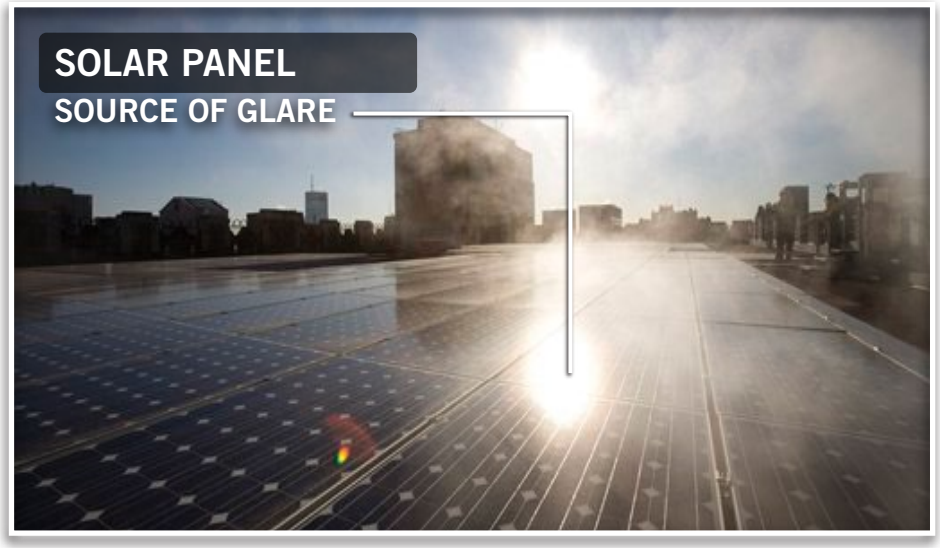
Rugged Solar Project Glare Study

Figure 1 - Project Location


SOLAR PANEL
SOURCE OF GLARE


GLASS
SOURCE OF GLARE


METAL
SOURCE OF GLARE


WATER
SOURCE OF GLARE

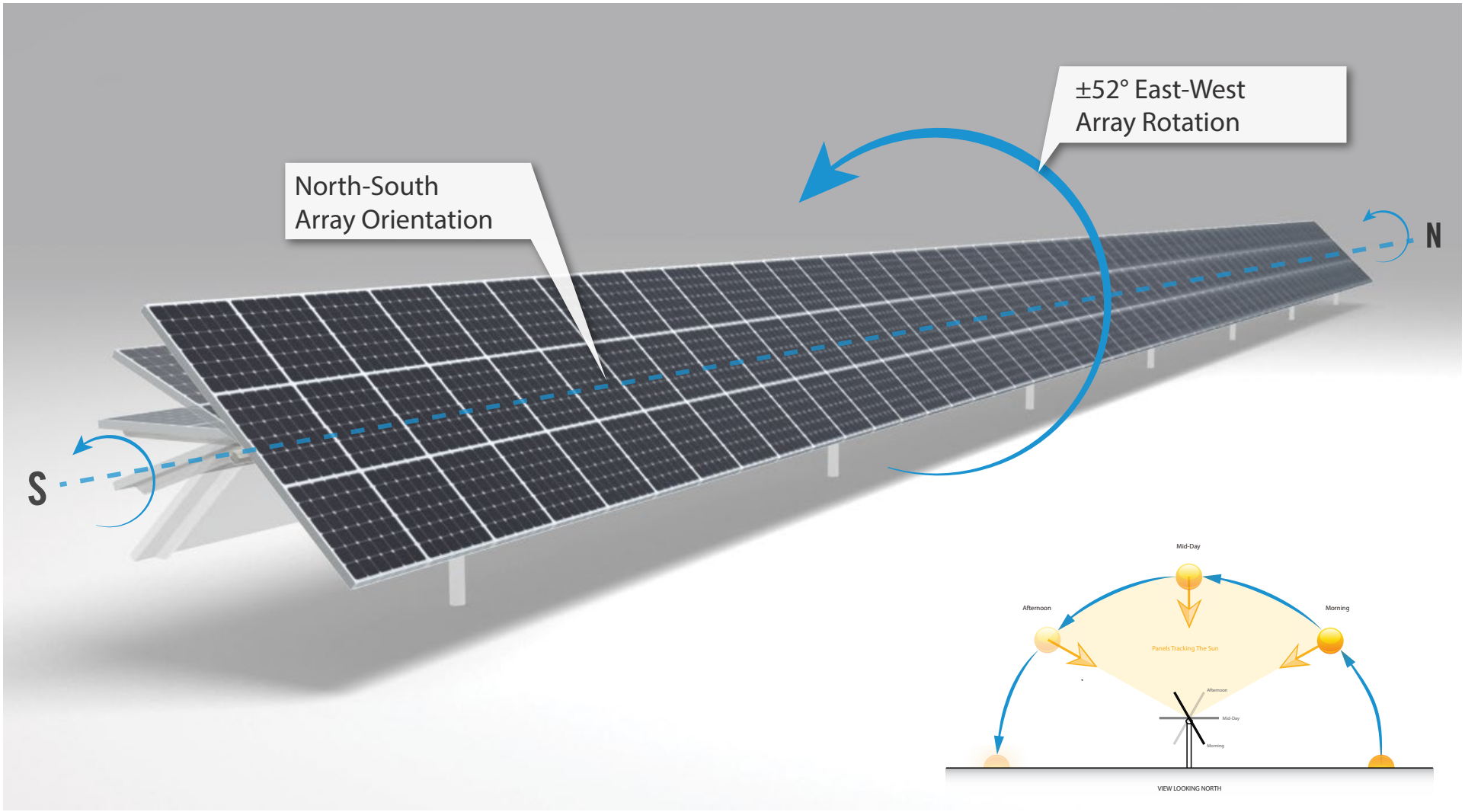


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Figure 3 - Single Axis Tracker

3.0 METHODOLOGY

POWER used the following methodology to determine the location and duration of potential glare:

Identify Potential Glare Issues – This study focused on potential issues where glare may be visible from nearby residences. POWER prepared the study based on these locations (see Section 3.1).

Characterize Glare Behavior – POWER utilized the GlareGauge tool to determine when and where solar glare may occur throughout the year (see https://share.sandia.gov/phlux/). Technical specifications of proposed solar equipment were provided by J. Whalen Associates, Inc. and include panel dimensions, type, angle, orientation, and placement (see Section 3.2).

Evaluate – Once glare was characterized, visual analysts documented the occurrence and hazard level of potential glare (see Section 3.3).

3.1 Identify Potential Glare Issues

The proposed Project was analyzed to evaluate and document any occurrences of glare that would potentially cause distractions to nearby residences or motorists. This study specifically focused on residential viewers and motorists that are located within one mile of the proposed Project boundary with direct line of sight to proposed solar installations.

Google Earth aerial imagery was used to identify any major structures within one mile of the Project. To optimize the analysis, some residences south of Interstate 8 and west of Ribbonwood Road were screened for line of sight to the Project and omitted from the study if none was present. Proposed solar operations were then studied from KOPs identified at 64 remaining structures (see Figure 4). Single point locations were analyzed for each KOP at an elevation of 15 feet above ground to represent a worst-case scenario second story view.

- **Surrounding Residential Structures:**
  - Distance from Project: 0-1.0 mile
  - Viewer Height: 15 feet above ground

Google Earth aerial imagery was used to identify any major roadways near the project and include Interstate 8, Ribbonwood Road, McCain Valley Road, and Private Tule Mountain Road. Viewshed Analysis provided by the client concluded that, within one mile of the Project, there was not a direct line of site from Interstate 8 to the solar installations due to its distance from and reduced elevation to the Project (See Appendix B – Rugged Solar Project Viewshed Analysis). As a result, Interstate 8 was omitted from further study. Remaining surrounding roadways were studied up to one mile from the Project at an elevation of 5 feet above ground representing an average motorist viewer height. For detailed elevation and GPS coordinates of each sensitive viewer, please see Appendix A – GlareGauge Results. Each KOP is described below:

- **Surrounding Major Roadways:**
  - Ribbonwood Road: Located west of the Project running north/south.
  - McCain Valley Road: Located on the eastern portion of the Project running north/south
  - *Tule Mountain Road: Private road centrally located in the Project running east/west connecting Ribbonwood Road and McCain Valley Road.*

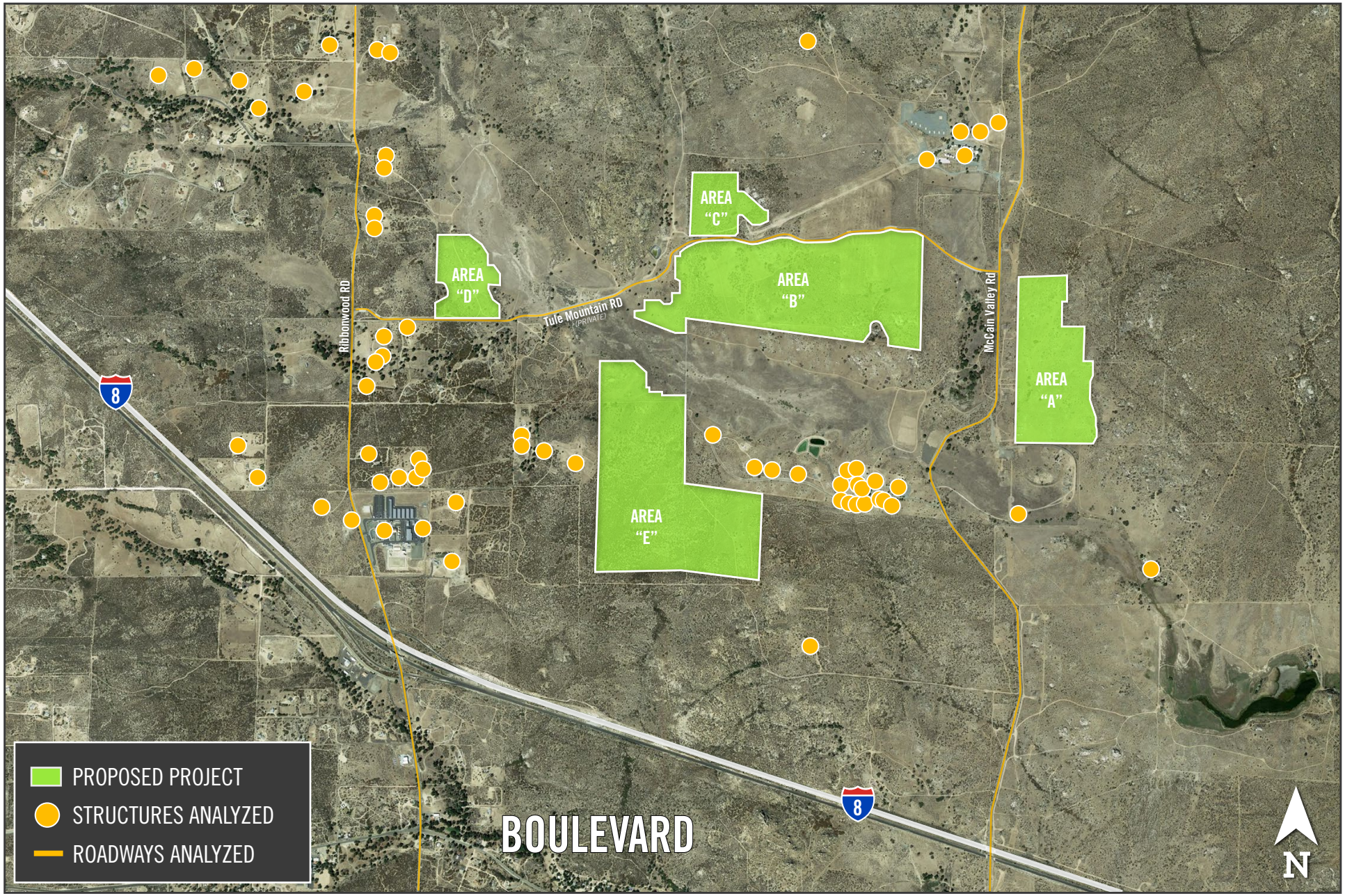

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Figure 4 - Key Observation Points

3.2 Characterize Glare Behavior

POWER utilized the GlareGauge tool to determine when and where solar glare may occur throughout the year. The sun changes its east-west orientation throughout the day. It also changes its north-south position throughout the year. The sun reaches its highest position in the sky at noon during the summer months and its lowest position in the sky at noon during the winter months (see Figure 5). For a detailed description of the GlareGauge tool including the purpose, input data and output data, see section 3.3. Technical specifications of proposed solar equipment were provided by J. Whalen Associates, Inc. and are described below:

Photovoltaic Solar Panels:

- Single Axis Trackers
- Panel Orientation: North/South
- Panel Rotation Limits: ± 52 degrees
- Rack Height: 4.5 feet above grade
- Wake/Stow Angle: 5.0 degrees

A single-axis solar tracker has four primary positions: wake, tracking, backtracking, and stow positions. These are characterized by the following descriptions (see Figure 6):

- Wake – The stationary position of a solar array prior to sunrise. A solar array in wake position rests in a position of 5.0 degrees from parallel to the ground facing east.
- Tracking – The process by which solar arrays rotate around a fixed axis to maintain a 90 degree relationship to the angle of inbound sunlight.
- Back tracking – The process by which solar arrays rotate away from 90 degrees relative to the sun to avoid shading of the adjacent arrays. This occurs when an array reaches its maximum tracking angle.
- Stow – The stationary position of a solar array that is not in tracking or back tracking procedures. A solar array in stow position rests in a position of 5.0 degrees from parallel to the ground facing west and will occur during non-daylight hours.

The general behavior of a single-axis solar tracker used for our study purposes is as such:

- All panels will be positioned at a 5.0 degree east facing angle prior to sunrise.
- Once the sun rises in the east, the solar arrays will enter the wake cycle and slowly rotate into a +52 degree east facing angle, with the sun perpendicular to the panel face. This ends the wake cycle and begins the tracking cycle.
- When the inbound sunlight is perpendicular (90 degrees) to the face of the solar panels, the arrays will begin to track the sun throughout the day until the panel reaches its westerly 52 degree rotational limits.
- When the solar arrays reach a 52 degree west facing angle, they will stop tracking the sun, start the back-tracking cycle and rotate to a 5.0 degree west facing stow angle.
- Solar arrays will remain in 5.0 degree west facing angle until after the sun has set.

Spring Equinox

March 19, 2020
12 hours 8 minutes of daylight
Sunrise - 6:49 a.m.
Sunset - 6:56 p.m.

Summer Solstice

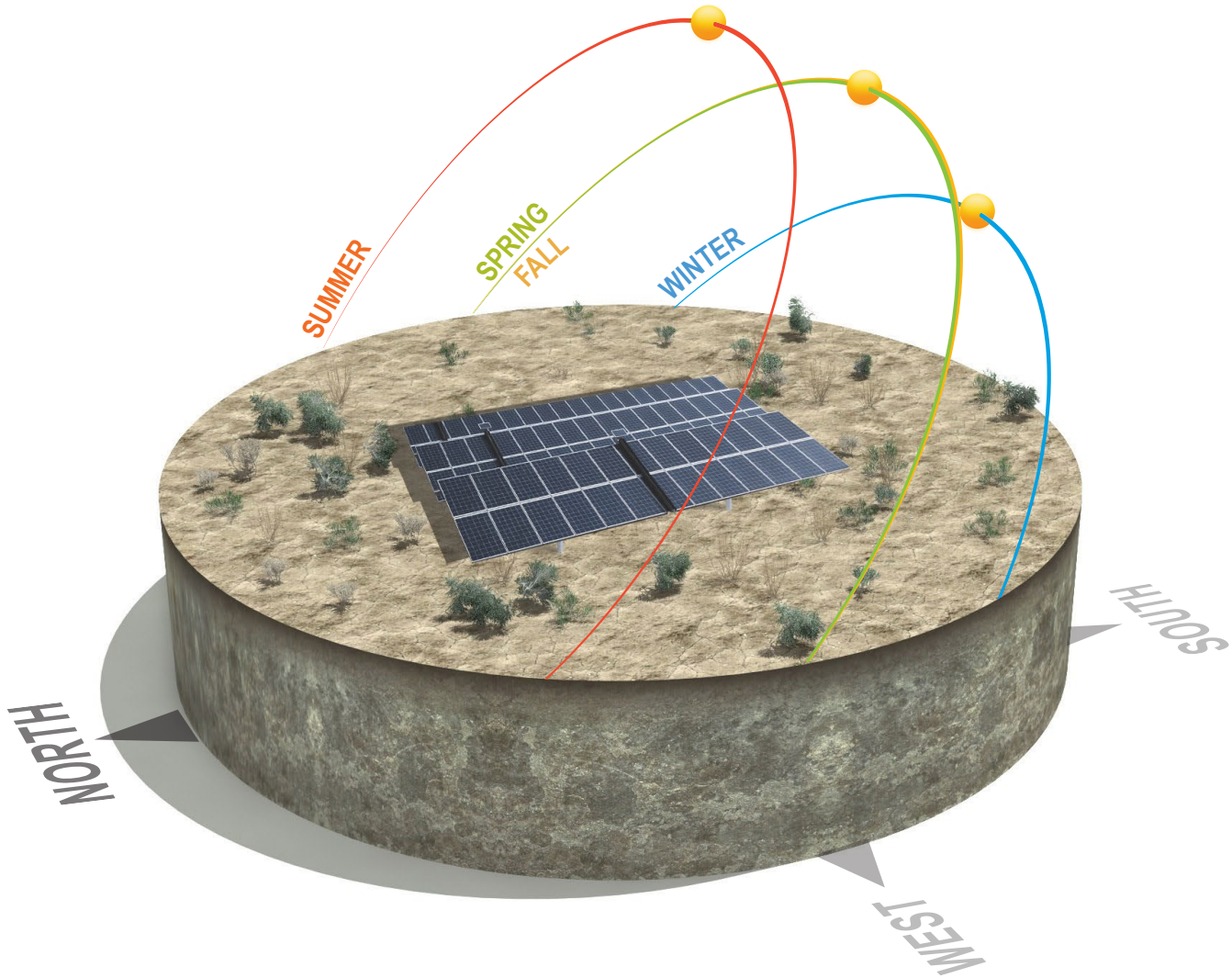
June 21, 2020
14 hours 18 minutes of daylight
Sunrise - 5:38 a.m.
Sunset - 7:56 p.m.

Fall Equinox

September 22, 2020
12 hours 7 minutes of daylight
Sunrise - 6:33 a.m.
Sunset - 6:40 p.m.

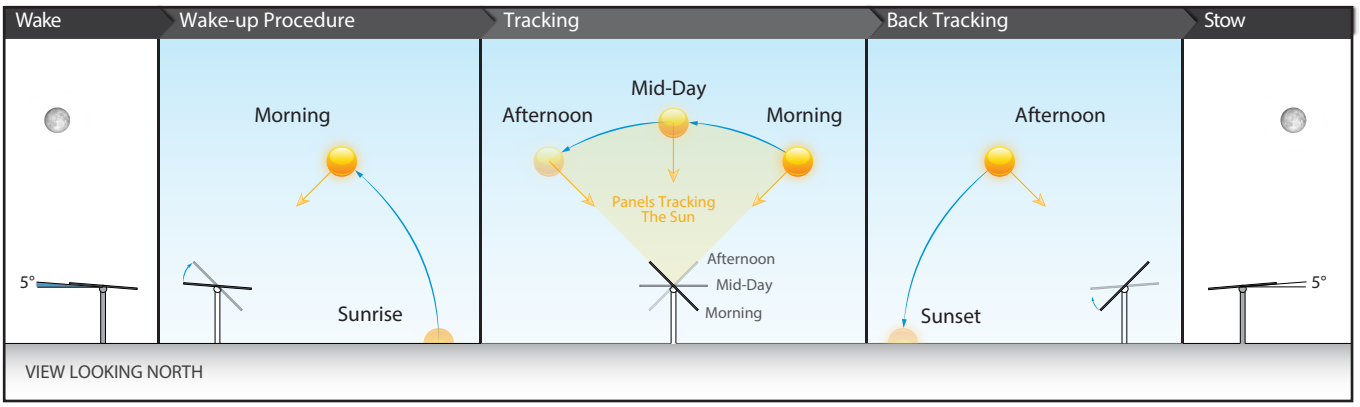
Winter Solstice

December 21, 2020
10 hours 00 minutes of daylight
Sunrise - 6:43 a.m.
Sunset - 4:44 p.m.



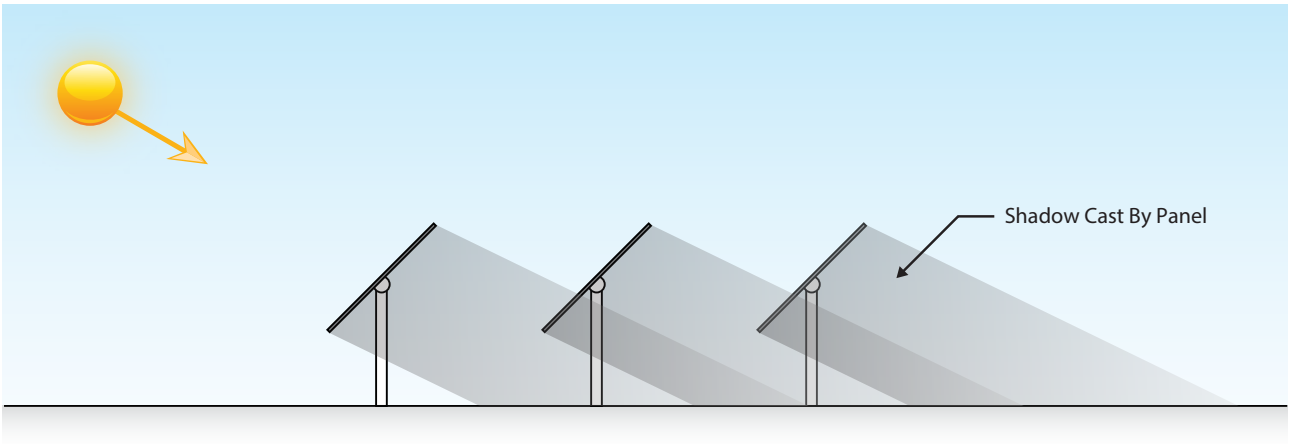
The sun changes its east-west orientation throughout the day. It also changes its north-south position throughout the year. The sun reaches its highest position in the sky at noon in the summer months and its lowest position in the sky at noon during the winter months.

SINGLE AXIS TRACKER BEHAVIOR

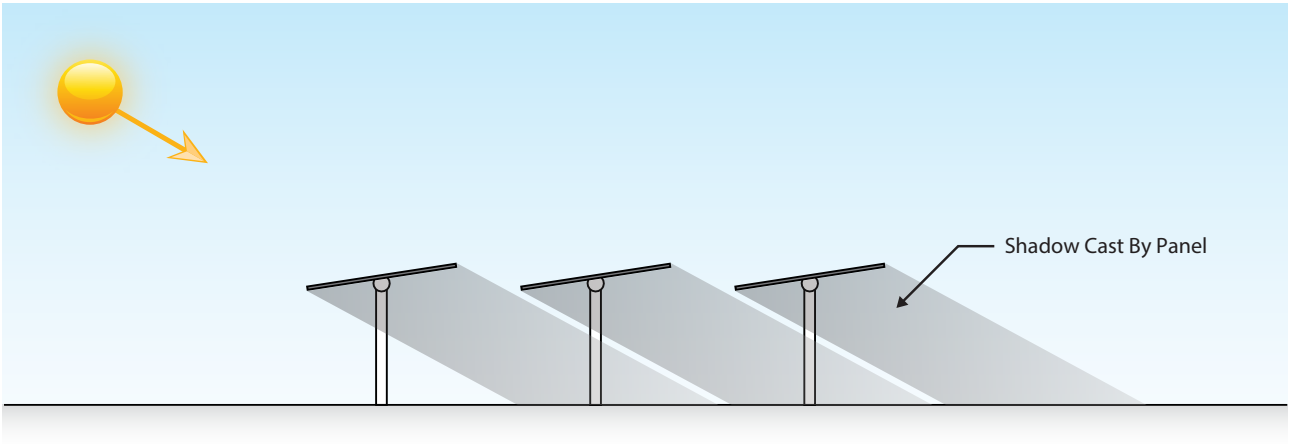


BACK TRACKING PROCEDURES

PANELS *WITHOUT* BACK TRACKING



PANELS *WITH* BACK TRACKING



3.3 Glare Evaluation – GlareGauge Analysis

To identify the occurrence of glare, POWER utilized the GlareGauge tool licensed by ForgeSolar (see https://www.forgesolar.com/). The GlareGauge tool is a web-based glare assessment tool that uses the Solar Glare Hazard Analysis Tool technology developed by Sandia National Laboratories in collaboration with the Department of Energy. The GlareGuage tool allows input of specific viewer position, solar facility location, panel specifics, and elevation data either through point and click navigation or through the import of geo-located engineered data, as was the case for this Project. The GlareGauge tool provides a quantified assessment of when and where glare may occur throughout the year from a solar installation, as well as identifying the potential impacts on the human eye if glare does occur. The GlareGauge analyzes for worst case scenario and does not account for visual obstructions from surrounding vegetation or minor terrain undulation.

Glare was analyzed at five-minute intervals throughout the entire year to determine when and where glare may be visible to nearby residences and motorists. Glare was analyzed with PV rotational limits of 52 degrees facing east and west and a wake/stow angle of 5 degrees. Should rotational limits or wake/stow angles change, additional analysis will be required. Refer to Section 4.0 and Appendix A for glare results.

4.0 RESULTS

For detailed tabular results of the GlareGauge analysis please see the attached Appendix A – GlareGuage Results. Below is a summary of our findings:

Review of the analysis determined potential glare will be limited to motorists traveling on the private Tule Mountain Road from September through March. Potential glare emanates from solar arrays on the northern portions of Area “B” that are nearest Tule Mountain Road, specifically referenced as sections “PV 5” and “PV 8” in the tabular results (See Appendix A).

No glare was reported for residential viewers or motorists on Ribbonwood and McCain Valley Roads due to their distances to the Project and the 5-degree wake/stow angle of the single-axis tracking PV panels.

In PV installations, glare is most common in the first and last hour of the day when the sun is lowest in the sky. When single axis tracking PV panels are stowed flat (parallel to the ground), incoming sunlight from the rising/setting sun glances across the surface of the panel resulting in a high potential for visible glare impacts. The Project utilizes a 5.0 degree wake/stow angle resulting in potential glare being redirected 5 degrees above that of a flat panel, up and away from most viewers. This redirected glare will continue to rise over distance and is largely responsible for the lack of potential impacts seen in this proposed installation. Should wake/stow angles change, additional analysis would be required.

Due to the following factors, it is POWER’s professional opinion that glare resulting from the proposed solar operations will have the following impacts to residences and motorists:

- Impacts to Residences: (LOW)
  - Residential Viewers: No potential glare reported due to the orientation, rotational limits and wake/stow angle of the proposed single-axis tracking PV panels.
- Impacts to Motorists: (LOW)
  - Ribbonwood Road: No potential glare reported due to the orientation, rotational limits and wake/stow angle of the proposed single-axis tracking PV panels.

- McCain Valley Road: No potential glare reported due to the orientation, rotational limits and wake/stow angle of the proposed single-axis tracking PV panels.
- *Tule Mountain Road (Private):* Potential glare was recorded throughout the day for motorists traveling both east and west on private Tule Mountain Road. Potential glare was reported from September through March reaching a glare category of "yellow" for ocular impact level with the potential to cause temporary after-image. Should Tule Mountain Road be made available for public travel, screening fence or vegetation may be recommended. For a detailed description of the GlareGauge analysis results, see Appendix A.

5.0 COMPARITIVE DISCUSSION

It is important to discuss the distinct differences, regarding glare, of the current Proposed Rugged solar project compared to the Previously Approved Soitec Solar Development Solar Project (2013) (Previously Approved Project).

The Previously Approved Project utilized dual-axis tracking solar panels as opposed to the single-axis trackers of the current Project. That combined with modified panel arrangements have resulted in substantially different glare trajectories and subsequent impacts.

Methods for analyzing glare impacts have also evolved since the Previously Approved Project. At that time, 2013, the Sandia Labs Glare Hazard Analysis Tool (SGHAT) did not have the capability to perform analysis on dual axis trackers. Instead, proprietary methods of 3D geometric analysis were performed at 4 key times during the year employing seasonal comparisons to infer glare impacts. Ocular impacts were comparative in nature and limited to time and duration without specific values for hazard level should glare occur.

Current methods of glare analysis, such as the GlareGauge Tool, have become much more specific and qualitative where geometric analysis should only be employed when unique equipment behavior limitations are beyond the capabilities of SGHAT based technologies.

The results of the glare analysis for the Previously Approved Project can be found in Appendix 2.1-3, Boulevard Glare Study, to the Soitec Project Final Program EIR. In summary, the Previously Approved Project resulted in potential glare impacts to five residences directly west of the project site as well as potential impacts to motorists on Ribbonwood Road and McCain Valley Road. These potential glare impacts were caused by dual axis tracking panels and their unique wake/stow cycle, size, and orientation to the project.

Analyzing the change in solar technology with the use of modern analysis methods, we have concluded that glare impacts associated with the current proposed Rugged Solar Project would be substantially reduced in comparison to the Previously Approved Project.

6.0 SOURCES

ForgeSolar GlareGauge Web Application. 2019. https://www.forgesolar.com/tools/glaregauge. Accessed 2019.

Files provided by J. Whalen Associates, Inc.

09_10_19 Rugged_Site Plan.pdf

09_10_19 Rugged_Grading Plan.pdf

173007-BNDY-25P.dwg

173007-fmz-25P.dwg

173007-LD-25P.dwg

173007-plout-25P.dwg

Array Boundary.dwg

Rugged Solar Viewshed.pdf

APPENDIX A GLAREGAUGE RESULTS

GlareGauge Glare Analysis Results

Site Configuration: Rugged PV

Single-Axis Tracking +/-52 deg rotation 5 degree stow 15 ft viewer height Analysis 5 min interval

Created Oct. 16, 2019 1:15 p.m.
Updated May 11, 2020 2:05 p.m.
DNI varies and peaks at 1,000.0 W/m^2
Analyze every 5 minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone UTC-8
Site Configuration ID: 32256.5888

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
PV1	SA tracking	SA tracking	0	0	-
PV2	SA tracking	SA tracking	0	0	-
PV3	SA tracking	SA tracking	0	0	-
PV 4	SA tracking	SA tracking	0	0	-
PV 5	SA tracking	SA tracking	0	549	-
PV 6	SA tracking	SA tracking	0	0	-
PV 7	SA tracking	SA tracking	0	0	-
PV 8	SA tracking	SA tracking	13,991	7,963	-
PV 9	SA tracking	SA tracking	0	0	-
PV array 10	SA tracking	SA tracking	0	0	-

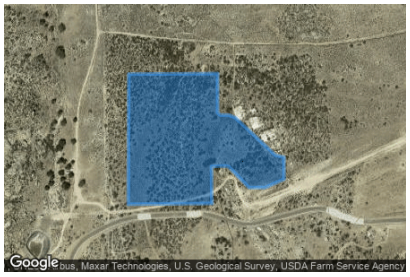
Component Data

PV Array(s)

Name: PV1
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad

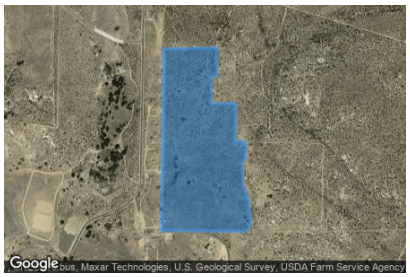
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.693725	-116.285844	3547.89	4.50	3552.39
2	32.694068	-116.286174	3549.41	4.50	3553.91
3	32.694068	-116.286466	3553.02	4.50	3557.52
4	32.694546	-116.286466	3555.54	4.50	3560.04
5	32.694961	-116.286784	3553.07	4.50	3557.57
6	32.695388	-116.287432	3555.54	4.50	3560.04
7	32.695387	-116.289081	3576.31	4.50	3580.81
8	32.693295	-116.289147	3593.35	4.50	3597.85
9	32.693288	-116.288822	3586.26	4.50	3590.76
10	32.693233	-116.288705	3584.01	4.50	3588.51
11	32.693160	-116.288638	3583.18	4.50	3587.68
12	32.692926	-116.288535	3580.70	4.50	3585.20
13	32.692699	-116.288535	3583.01	4.50	3587.51
14	32.692503	-116.288935	3595.94	4.50	3600.44
15	32.691910	-116.288955	3602.00	4.50	3606.50
16	32.691914	-116.285881	3563.13	4.50	3567.63
17	32.692329	-116.285872	3571.59	4.50	3576.09
18	32.692572	-116.286217	3559.34	4.50	3563.84
19	32.693036	-116.286440	3554.14	4.50	3558.64
20	32.693201	-116.286440	3552.69	4.50	3557.19
21	32.693197	-116.285843	3548.06	4.50	3552.56

Name: PV2
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.697334	-116.273192	3586.94	4.50	3591.44
2	32.697334	-116.273401	3585.37	4.50	3589.87
3	32.697383	-116.273460	3585.85	4.50	3590.35
4	32.698169	-116.273460	3600.41	4.50	3604.91
5	32.698158	-116.275589	3598.49	4.50	3602.99
6	32.695537	-116.275601	3561.63	4.50	3566.13
7	32.695552	-116.273593	3563.86	4.50	3568.36
8	32.695730	-116.273601	3564.22	4.50	3568.72
9	32.696297	-116.273605	3572.25	4.50	3576.75
10	32.696306	-116.273388	3574.38	4.50	3578.88
11	32.696306	-116.273240	3576.69	4.50	3581.19
12	32.696287	-116.273187	3577.89	4.50	3582.39
13	32.695872	-116.272707	3585.71	4.50	3590.21
14	32.695872	-116.272323	3579.50	4.50	3584.00
15	32.696043	-116.271869	3589.79	4.50	3594.29
16	32.696485	-116.271869	3599.23	4.50	3603.73
17	32.696525	-116.272074	3593.39	4.50	3597.89
18	32.697284	-116.273042	3587.19	4.50	3591.69

Name: PV3
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad

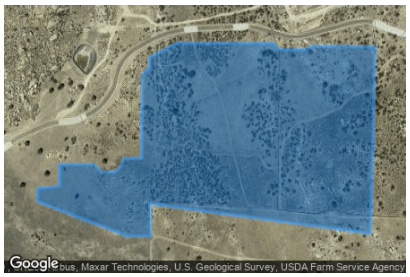


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.688976	-116.258834	3528.64	4.50	3533.14
2	32.688891	-116.258837	3528.64	4.50	3533.14
3	32.688847	-116.258838	3528.64	4.50	3533.14
4	32.686274	-116.258884	3494.58	4.50	3499.08
5	32.686231	-116.254826	3512.53	4.50	3517.03
6	32.686553	-116.254620	3517.24	4.50	3521.74
7	32.686849	-116.254620	3520.31	4.50	3524.81
8	32.687046	-116.254692	3523.20	4.50	3527.70
9	32.687417	-116.254692	3532.94	4.50	3537.44
10	32.688186	-116.254998	3540.46	4.50	3544.96
11	32.688981	-116.254998	3555.91	4.50	3560.41
12	32.689245	-116.254854	3555.02	4.50	3559.52
13	32.689844	-116.254854	3566.59	4.50	3571.09
14	32.689853	-116.255355	3559.98	4.50	3564.48
15	32.691390	-116.255329	3583.65	4.50	3588.15
16	32.691390	-116.256493	3572.46	4.50	3576.96
17	32.692484	-116.256493	3572.92	4.50	3577.42
18	32.692484	-116.256227	3576.81	4.50	3581.31
19	32.693635	-116.256227	3587.98	4.50	3592.48
20	32.693575	-116.258753	3586.17	4.50	3590.67
21	32.689067	-116.258834	3531.18	4.50	3535.68

Name: PV 4
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad

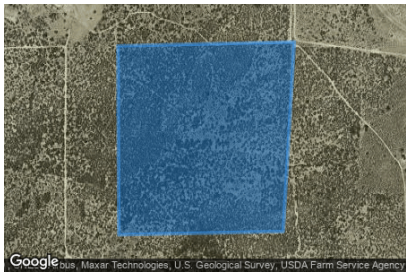
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.689875	-116.280572	3529.80	4.50	3534.30
2	32.689875	-116.278925	3523.33	4.50	3527.83
3	32.689414	-116.278271	3520.67	4.50	3525.18
4	32.688737	-116.278271	3518.46	4.50	3522.96
5	32.688737	-116.278099	3518.43	4.50	3522.93
6	32.688556	-116.278099	3517.85	4.50	3522.35
7	32.688556	-116.277434	3516.45	4.50	3520.95
8	32.688376	-116.277445	3516.58	4.50	3521.08
9	32.688376	-116.276200	3513.76	4.50	3518.26
10	32.684493	-116.276254	3578.56	4.50	3583.06
11	32.684447	-116.279369	3594.84	4.50	3599.34
12	32.684932	-116.279376	3586.59	4.50	3591.09
13	32.684948	-116.279375	3586.30	4.50	3590.80
14	32.686800	-116.279396	3550.00	4.50	3554.50
15	32.686800	-116.280458	3561.79	4.50	3566.29
16	32.687960	-116.280444	3536.09	4.50	3540.59
17	32.689465	-116.280473	3529.61	4.50	3534.11
18	32.689466	-116.280567	3531.70	4.50	3536.20

Name: PV 5
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.691177	-116.270917	3546.94	4.50	3551.44
2	32.691773	-116.276196	3550.64	4.50	3555.14
3	32.691123	-116.276185	3519.99	4.50	3524.49
4	32.691123	-116.276743	3522.19	4.50	3526.69
5	32.691818	-116.278889	3528.83	4.50	3533.33
6	32.692080	-116.278899	3530.67	4.50	3535.17
7	32.692134	-116.278363	3531.32	4.50	3535.82
8	32.692567	-116.278363	3534.65	4.50	3539.15
9	32.692567	-116.277537	3534.81	4.50	3539.31
10	32.692414	-116.277365	3532.91	4.50	3537.41
11	32.692414	-116.277033	3534.40	4.50	3538.90
12	32.692513	-116.276904	3533.54	4.50	3538.04
13	32.692692	-116.276805	3533.66	4.50	3538.16
14	32.692692	-116.276389	3537.99	4.50	3542.49
15	32.692786	-116.276391	3539.33	4.50	3543.83
16	32.693505	-116.276389	3560.12	4.50	3564.62
17	32.694371	-116.276378	3564.97	4.50	3569.47
18	32.694527	-116.276214	3564.42	4.50	3568.92
19	32.694721	-116.276210	3566.53	4.50	3571.03
20	32.694792	-116.276047	3568.49	4.50	3572.99
21	32.695012	-116.275544	3559.83	4.50	3564.33
22	32.695009	-116.273236	3558.86	4.50	3563.36
23	32.694884	-116.273111	3559.61	4.50	3564.11
24	32.694886	-116.272446	3574.70	4.50	3579.20
25	32.694948	-116.272301	3582.18	4.50	3586.68
26	32.694937	-116.270810	3578.17	4.50	3582.67
27	32.693154	-116.270842	3556.89	4.50	3561.39

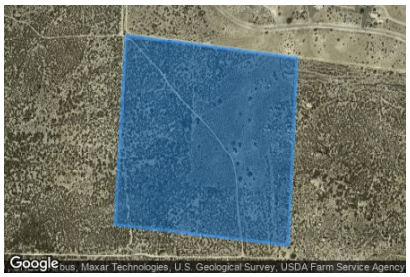
Name: PV 6
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.684422	-116.280484	3612.15	4.50	3616.65
2	32.684501	-116.276254	3578.44	4.50	3582.94
3	32.680683	-116.276522	3598.31	4.50	3602.81
4	32.680618	-116.280463	3670.79	4.50	3675.29

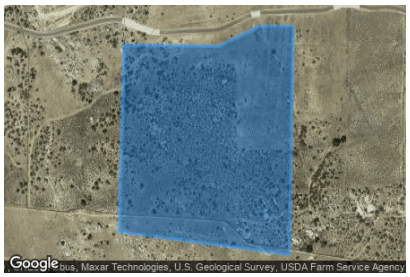
Name: PV 7
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.684498	-116.276254	3578.44	4.50	3582.94
2	32.684038	-116.272156	3529.85	4.50	3534.35
3	32.680263	-116.272360	3549.23	4.50	3553.73
4	32.680682	-116.276520	3598.31	4.50	3602.81

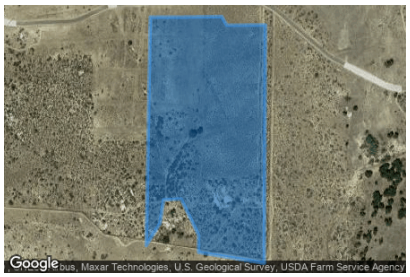


Name: PV 8
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.694938	-116.270803	3578.07	4.50	3582.57
2	32.694911	-116.268523	3600.09	4.50	3604.59
3	32.695315	-116.267550	3588.52	4.50	3593.02
4	32.695317	-116.266819	3593.31	4.50	3597.81
5	32.695318	-116.266750	3593.53	4.50	3598.03
6	32.690714	-116.266846	3533.69	4.50	3538.19
7	32.691175	-116.270924	3546.76	4.50	3551.26

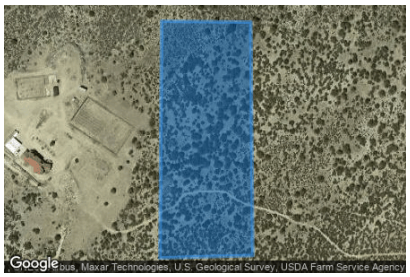


Name: PV 9
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.695317	-116.266748	3593.53	4.50	3598.03
2	32.695317	-116.266044	3587.13	4.50	3591.63
3	32.695329	-116.265035	3586.00	4.50	3590.50
4	32.695153	-116.264914	3585.32	4.50	3589.82
5	32.695160	-116.263988	3595.60	4.50	3600.10
6	32.690362	-116.264014	3557.64	4.50	3562.14
7	32.690579	-116.265592	3536.73	4.50	3541.24
8	32.690931	-116.265592	3544.23	4.50	3548.73
9	32.691653	-116.266010	3552.04	4.50	3556.54
10	32.691635	-116.266428	3549.29	4.50	3553.79
11	32.691166	-116.266514	3549.09	4.50	3553.59
12	32.690714	-116.266844	3533.61	4.50	3538.11

Name: PV array 10
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: 5.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	32.686807	-116.280461	3561.70	4.50	3566.20
2	32.686798	-116.279393	3550.14	4.50	3554.64
3	32.684447	-116.279369	3594.84	4.50	3599.34
4	32.684422	-116.280481	3612.15	4.50	3616.65

Route Receptor(s)

Name: McCain Valley Rd
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	32.706298	-116.258503	3704.80	5.00	3709.81
2	32.705540	-116.258503	3699.72	5.00	3704.72
3	32.704168	-116.258718	3674.59	5.00	3679.59
4	32.703481	-116.258782	3669.83	5.00	3674.83
5	32.702651	-116.258782	3666.42	5.00	3671.42
6	32.700647	-116.258675	3650.92	5.00	3655.92
7	32.698805	-116.258568	3635.80	5.00	3640.80
8	32.697523	-116.258739	3622.44	5.00	3627.44
9	32.696439	-116.259254	3605.50	5.00	3610.50
10	32.695464	-116.259748	3583.28	5.00	3588.28
11	32.694381	-116.259758	3582.41	5.00	3587.41
12	32.688322	-116.259855	3521.53	5.00	3526.53
13	32.687979	-116.259952	3519.11	5.00	3524.11
14	32.687573	-116.260177	3520.62	5.00	3525.62
15	32.687320	-116.260456	3513.80	5.00	3518.80
16	32.687085	-116.260992	3509.41	5.00	3514.41
17	32.686715	-116.262194	3498.58	5.00	3503.58
18	32.686633	-116.262366	3496.07	5.00	3501.07
19	32.686507	-116.262526	3493.60	5.00	3498.60
20	32.685234	-116.263310	3488.83	5.00	3493.83
21	32.684981	-116.263363	3489.01	5.00	3494.01
22	32.684674	-116.263342	3487.85	5.00	3492.85
23	32.684213	-116.263106	3488.08	5.00	3493.08
24	32.683428	-116.262741	3495.39	5.00	3500.39
25	32.682669	-116.262280	3507.84	5.00	3512.84
26	32.679292	-116.259061	3484.45	5.00	3489.45
27	32.678886	-116.258825	3475.46	5.00	3480.47
28	32.678606	-116.258750	3469.92	5.00	3474.92
29	32.678271	-116.258728	3464.68	5.00	3469.68
30	32.675273	-116.258557	3417.02	5.00	3422.02
31	32.674966	-116.258600	3409.92	5.00	3414.92
32	32.673142	-116.259104	3379.07	5.00	3384.07
33	32.669918	-116.260037	3348.72	5.00	3353.72
34	32.668997	-116.260080	3334.51	5.00	3339.51
35	32.668139	-116.260059	3315.13	5.00	3320.13
36	32.667723	-116.260059	3305.08	5.00	3310.08

Name: Ribbonwood Rd
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	32.706702	-116.293428	3603.74	5.00	3608.74
2	32.702983	-116.293385	3614.02	5.00	3619.02
3	32.702712	-116.293364	3615.14	5.00	3620.14
4	32.699895	-116.293471	3627.98	5.00	3632.98
5	32.698884	-116.293171	3651.85	5.00	3656.85
6	32.697331	-116.293385	3640.81	5.00	3645.81
7	32.696085	-116.293321	3675.78	5.00	3680.78
8	32.695615	-116.293192	3681.45	5.00	3686.45
9	32.694099	-116.293471	3700.43	5.00	3705.43
10	32.688924	-116.293616	3650.68	5.00	3655.68
11	32.684861	-116.293723	3696.16	5.00	3701.16
12	32.684138	-116.293637	3703.88	5.00	3708.88
13	32.677438	-116.291427	3608.58	5.00	3613.59
14	32.675975	-116.290998	3580.83	5.00	3585.83
15	32.671242	-116.290161	3530.86	5.00	3535.86
16	32.669201	-116.290118	3512.89	5.00	3517.89

Name: Tule Mountain Rd
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	32.692096	-116.293498	3658.08	5.00	3663.08
2	32.692096	-116.292876	3655.44	5.00	3660.44
3	32.692041	-116.292564	3655.82	5.00	3660.82
4	32.691680	-116.291921	3653.68	5.00	3658.68
5	32.691644	-116.291470	3663.09	5.00	3668.09
6	32.691662	-116.285559	3555.24	5.00	3560.24
7	32.691743	-116.285204	3553.33	5.00	3558.33
8	32.691870	-116.284872	3550.92	5.00	3555.92
9	32.691879	-116.283799	3544.34	5.00	3549.34
10	32.692769	-116.279950	3531.98	5.00	3536.98
11	32.692895	-116.279682	3533.10	5.00	3538.10
12	32.693076	-116.279371	3536.29	5.00	3541.29
13	32.693396	-116.278539	3541.67	5.00	3546.67
14	32.693437	-116.278051	3542.88	5.00	3547.89
15	32.693586	-116.277622	3548.23	5.00	3553.23
16	32.693780	-116.277305	3559.82	5.00	3564.82
17	32.694083	-116.277048	3559.07	5.00	3564.07
18	32.694525	-116.276908	3570.65	5.00	3575.65
19	32.694719	-116.276780	3568.34	5.00	3573.34
20	32.694913	-116.276490	3563.15	5.00	3568.15
21	32.695031	-116.276222	3566.03	5.00	3571.03
22	32.695193	-116.275803	3565.77	5.00	3570.77
23	32.695265	-116.275433	3558.30	5.00	3563.30
24	32.695302	-116.274972	3555.73	5.00	3560.73
25	32.695342	-116.273824	3558.81	5.00	3563.81
26	32.695324	-116.273642	3559.11	5.00	3564.11
27	32.695216	-116.273228	3561.43	5.00	3566.43
28	32.695130	-116.272805	3565.64	5.00	3570.64
29	32.695144	-116.272617	3567.36	5.00	3572.36
30	32.695238	-116.272021	3581.58	5.00	3586.58
31	32.695446	-116.271169	3591.96	5.00	3596.96
32	32.695433	-116.270831	3585.39	5.00	3590.39
33	32.695238	-116.270192	3585.35	5.00	3590.35
34	32.695162	-116.269860	3588.86	5.00	3593.86
35	32.695225	-116.268690	3605.81	5.00	3610.81
36	32.695284	-116.268363	3601.35	5.00	3606.35
37	32.695532	-116.267757	3592.84	5.00	3597.84
38	32.695568	-116.267537	3590.89	5.00	3595.89
39	32.695627	-116.266035	3591.28	5.00	3596.28
40	32.695762	-116.265455	3588.39	5.00	3593.39
41	32.695681	-116.264860	3590.08	5.00	3595.08
42	32.695685	-116.264404	3590.57	5.00	3595.57
43	32.695591	-116.263959	3591.27	5.00	3596.27
44	32.695089	-116.263213	3589.18	5.00	3594.18
45	32.694548	-116.262467	3574.97	5.00	3579.97
46	32.694376	-116.262113	3567.50	5.00	3572.50
47	32.693889	-116.261008	3564.62	5.00	3569.62
48	32.693861	-116.259860	3578.79	5.00	3583.79
49	32.693857	-116.259769	3580.21	5.00	3585.21

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	32.685330	-116.281816	3603.45	15.00	3618.45
OP 2	32.685907	-116.283550	3605.13	15.00	3620.13
OP 3	32.686670	-116.274766	3517.10	15.00	3532.10
OP 4	32.685176	-116.272575	3512.90	15.00	3527.90
OP 5	32.685052	-116.271691	3515.00	15.00	3530.00
OP 6	32.684899	-116.270304	3523.87	15.00	3538.87
OP 7	32.684502	-116.268142	3517.70	15.00	3532.70
OP 8	32.685075	-116.267692	3521.29	15.00	3536.29
OP 9	32.685156	-116.267381	3520.45	15.00	3535.45
OP 10	32.683707	-116.268110	3527.14	15.00	3542.14
OP 11	32.683608	-116.267649	3527.72	15.00	3542.72
OP 12	32.683563	-116.267204	3527.78	15.00	3542.78
OP 13	32.683603	-116.266796	3528.46	15.00	3543.46
OP 14	32.683811	-116.266023	3529.04	15.00	3544.04
OP 15	32.683752	-116.265766	3528.99	15.00	3543.99
OP 16	32.683504	-116.265374	3525.64	15.00	3540.64
OP 17	32.684439	-116.267134	3517.41	15.00	3532.41
OP 18	32.684281	-116.266925	3517.56	15.00	3532.56
OP 19	32.684556	-116.266297	3518.30	15.00	3533.30
OP 20	32.684330	-116.265036	3526.69	15.00	3541.69
OP 21	32.683109	-116.258630	3475.25	15.00	3490.25
OP 22	32.682553	-116.289824	3684.28	15.00	3699.28
OP 23	32.686156	-116.284696	3605.28	15.00	3620.28
OP 24	32.686580	-116.284771	3606.09	15.00	3621.09
OP 25	32.691316	-116.290614	3640.60	15.00	3655.60
OP 26	32.690973	-116.291886	3639.84	15.00	3654.85
OP 27	32.698653	-116.291783	3654.84	15.00	3669.84
OP 28	32.688808	-116.292824	3641.43	15.00	3656.43
OP 29	32.690103	-116.292019	3627.74	15.00	3642.74
OP 30	32.689864	-116.292298	3634.16	15.00	3649.16
OP 31	32.698677	-116.263529	3617.70	15.00	3632.70
OP 32	32.698708	-116.261775	3596.80	15.00	3611.80
OP 33	32.699945	-116.261818	3605.95	15.00	3620.96
OP 34	32.699918	-116.260712	3607.43	15.00	3622.43
OP 35	32.700284	-116.259808	3630.92	15.00	3645.92
OP 36	32.703806	-116.269810	3762.20	15.00	3777.20
OP 37	32.685903	-116.292677	3677.42	15.00	3692.42
OP 38	32.684774	-116.291084	3691.02	15.00	3706.02
OP 39	32.684544	-116.292071	3702.84	15.00	3717.84
OP 40	32.684887	-116.290108	3683.38	15.00	3698.38
OP 41	32.685108	-116.289968	3678.17	15.00	3693.17
OP 42	32.685609	-116.290113	3673.28	15.00	3688.28
OP 43	32.683725	-116.288134	3660.31	15.00	3675.31
OP 44	32.681031	-116.288408	3688.39	15.00	3703.39
OP 45	32.677235	-116.269820	3507.14	15.00	3522.14
OP 46	32.701027	-116.298522	3668.22	15.00	3683.22
OP 47	32.701424	-116.296097	3643.84	15.00	3658.84
OP 48	32.703573	-116.292278	3604.04	15.00	3619.05
OP 49	32.703537	-116.294896	3628.62	15.00	3643.62
OP 50	32.703392	-116.291677	3603.12	15.00	3618.12
OP 51	32.702337	-116.303568	3747.72	15.00	3762.72
OP 52	32.702586	-116.301626	3743.79	15.00	3758.79
OP 53	32.702280	-116.299223	3686.80	15.00	3701.80
OP 54	32.686171	-116.299415	3755.50	15.00	3770.50
OP 55	32.684758	-116.298428	3760.03	15.00	3775.03
OP 56	32.683503	-116.295043	3747.33	15.00	3762.33

OP 57	32.682419	-116.291894	3696.34	15.00	3711.34
OP 58	32.682871	-116.293576	3717.24	15.00	3732.24
OP 59	32.680663	-116.251780	3455.50	15.00	3470.50
OP 60	32.688625	-116.288948	3612.27	15.00	3627.27
OP 61	32.705852	-116.298481	3656.28	15.00	3671.28
OP 62	32.695719	-116.292417	3653.07	15.00	3668.07
OP 63	32.696283	-116.292465	3648.01	15.00	3663.01
OP 64	32.698262	-116.291860	3653.69	15.00	3668.69

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV1	SA tracking	SA tracking	0	0	-	-
PV2	SA tracking	SA tracking	0	0	-	-
PV3	SA tracking	SA tracking	0	0	-	-
PV 4	SA tracking	SA tracking	0	0	-	-
PV 5	SA tracking	SA tracking	0	549	-	-
PV 6	SA tracking	SA tracking	0	0	-	-
PV 7	SA tracking	SA tracking	0	0	-	-
PV 8	SA tracking	SA tracking	13,991	7,963	-	-
PV 9	SA tracking	SA tracking	0	0	-	-
PV array 10	SA tracking	SA tracking	0	0	-	-

Click the name of the PV array to scroll to its results

PV & Receptor Analysis Results detailed results for each PV array and receptor

PV1 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	0

No glare found

PV2 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	0

No glare found

PV3 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	0

No glare found

PV 4 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	0

No glare found

PV 5 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0

OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0
OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	549

PV 5 - OP Receptor (OP 1)

No glare found

PV 5 - OP Receptor (OP 2)

No glare found

PV 5 - OP Receptor (OP 3)

No glare found

PV 5 - OP Receptor (OP 4)

No glare found

PV 5 - OP Receptor (OP 5)

No glare found

PV 5 - OP Receptor (OP 6)

No glare found

PV 5 - OP Receptor (OP 7)

No glare found

PV 5 - OP Receptor (OP 8)

No glare found

PV 5 - OP Receptor (OP 9)

No glare found

PV 5 - OP Receptor (OP 10)

No glare found

PV 5 - OP Receptor (OP 11)

No glare found

PV 5 - OP Receptor (OP 12)

No glare found

PV 5 - OP Receptor (OP 13)

No glare found

PV 5 - OP Receptor (OP 14)

No glare found

PV 5 - OP Receptor (OP 15)

No glare found

PV 5 - OP Receptor (OP 16)

No glare found

PV 5 - OP Receptor (OP 17)

No glare found

PV 5 - OP Receptor (OP 18)

No glare found

PV 5 - OP Receptor (OP 19)

No glare found

PV 5 - OP Receptor (OP 20)

No glare found

PV 5 - OP Receptor (OP 21)

No glare found

PV 5 - OP Receptor (OP 22)

No glare found

PV 5 - OP Receptor (OP 23)

No glare found

PV 5 - OP Receptor (OP 24)

No glare found

PV 5 - OP Receptor (OP 25)

No glare found

PV 5 - OP Receptor (OP 26)

No glare found

PV 5 - OP Receptor (OP 27)

No glare found

PV 5 - OP Receptor (OP 28)

No glare found

PV 5 - OP Receptor (OP 29)

No glare found

PV 5 - OP Receptor (OP 30)

No glare found

PV 5 - OP Receptor (OP 31)

No glare found

PV 5 - OP Receptor (OP 32)

No glare found

PV 5 - OP Receptor (OP 33)

No glare found

PV 5 - OP Receptor (OP 34)

No glare found

PV 5 - OP Receptor (OP 35)

No glare found

PV 5 - OP Receptor (OP 36)

No glare found

PV 5 - OP Receptor (OP 37)

No glare found

PV 5 - OP Receptor (OP 38)

No glare found

PV 5 - OP Receptor (OP 39)

No glare found

PV 5 - OP Receptor (OP 40)

No glare found

PV 5 - OP Receptor (OP 41)

No glare found

PV 5 - OP Receptor (OP 42)

No glare found

PV 5 - OP Receptor (OP 43)

No glare found

PV 5 - OP Receptor (OP 44)

No glare found

PV 5 - OP Receptor (OP 45)

No glare found

PV 5 - OP Receptor (OP 46)

No glare found

PV 5 - OP Receptor (OP 47)

No glare found

PV 5 - OP Receptor (OP 48)

No glare found

PV 5 - OP Receptor (OP 49)

No glare found

PV 5 - OP Receptor (OP 50)

No glare found

PV 5 - OP Receptor (OP 51)

No glare found

PV 5 - OP Receptor (OP 52)

No glare found

PV 5 - OP Receptor (OP 53)

No glare found

PV 5 - OP Receptor (OP 54)

No glare found

PV 5 - OP Receptor (OP 55)

No glare found

PV 5 - OP Receptor (OP 56)

No glare found

PV 5 - OP Receptor (OP 57)

No glare found

PV 5 - OP Receptor (OP 58)

No glare found

PV 5 - OP Receptor (OP 59)

No glare found

PV 5 - OP Receptor (OP 60)

No glare found

PV 5 - OP Receptor (OP 61)

No glare found

PV 5 - OP Receptor (OP 62)

No glare found

PV 5 - OP Receptor (OP 63)

No glare found

PV 5 - OP Receptor (OP 64)

No glare found

PV 5 - Route Receptor (McCain Valley Rd)

No glare found

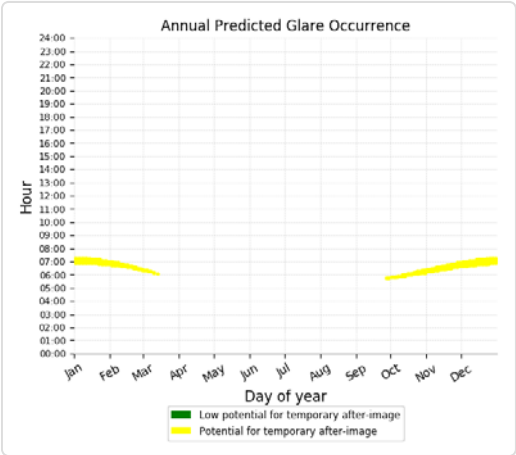
PV 5 - Route Receptor (Ribbonwood Rd)

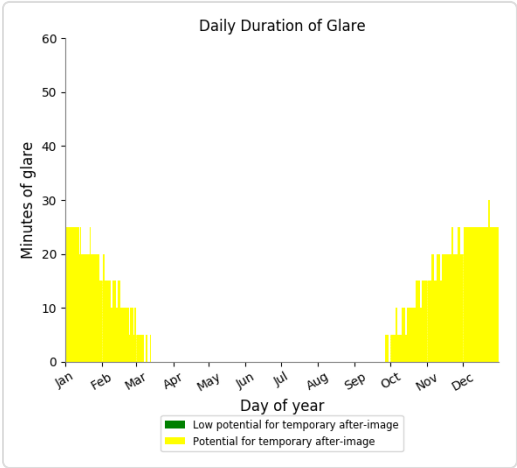
No glare found

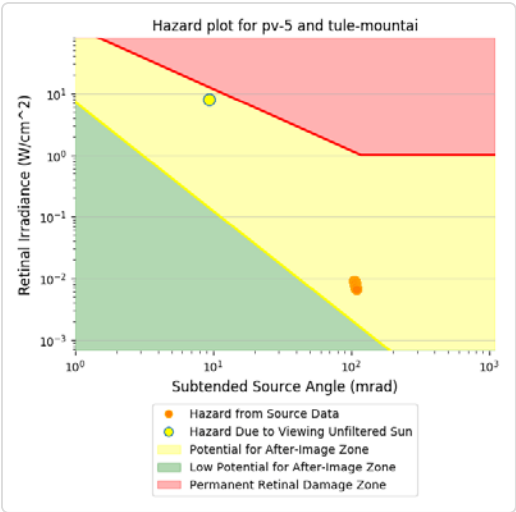
PV 5 - Route Receptor (Tule Mountain Rd)

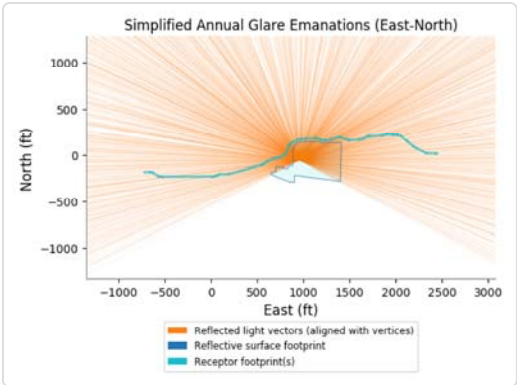
PV array is expected to produce the following glare for receptors at this location:

- *0 minutes of "green" glare with low potential to cause temporary after-image.*
- *549 minutes of "yellow" glare with potential to cause temporary after-image.*









Glare vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

PV 6 no glare found

Component	*Green glare (min)*	*Yellow glare (min)*
OP: OP 1	*0*	*0*
OP: OP 2	*0*	*0*
OP: OP 3	*0*	*0*
OP: OP 4	*0*	*0*
OP: OP 5	*0*	*0*
OP: OP 6	*0*	*0*
OP: OP 7	*0*	*0*
OP: OP 8	*0*	*0*
OP: OP 9	*0*	*0*
OP: OP 10	*0*	*0*
OP: OP 11	*0*	*0*
OP: OP 12	*0*	*0*
OP: OP 13	*0*	*0*
OP: OP 14	*0*	*0*
OP: OP 15	*0*	*0*
OP: OP 16	*0*	*0*
OP: OP 17	*0*	*0*
OP: OP 18	*0*	*0*
OP: OP 19	*0*	*0*
OP: OP 20	*0*	*0*
OP: OP 21	*0*	*0*
OP: OP 22	*0*	*0*
OP: OP 23	*0*	*0*
OP: OP 24	*0*	*0*
OP: OP 25	*0*	*0*
OP: OP 26	*0*	*0*
OP: OP 27	*0*	*0*
OP: OP 28	*0*	*0*
OP: OP 29	*0*	*0*
OP: OP 30	*0*	*0*
OP: OP 31	*0*	*0*
OP: OP 32	*0*	*0*
OP: OP 33	*0*	*0*
OP: OP 34	*0*	*0*
OP: OP 35	*0*	*0*
OP: OP 36	*0*	*0*
OP: OP 37	*0*	*0*
OP: OP 38	*0*	*0*
OP: OP 39	*0*	*0*
OP: OP 40	*0*	*0*
OP: OP 41	*0*	*0*
OP: OP 42	*0*	*0*
OP: OP 43	*0*	*0*
OP: OP 44	*0*	*0*
OP: OP 45	*0*	*0*
OP: OP 46	*0*	*0*
OP: OP 47	*0*	*0*

OP: OP 48	*0*	*0*
OP: OP 49	*0*	*0*
OP: OP 50	*0*	*0*
OP: OP 51	*0*	*0*
OP: OP 52	*0*	*0*
OP: OP 53	*0*	*0*
OP: OP 54	*0*	*0*
OP: OP 55	*0*	*0*
OP: OP 56	*0*	*0*
OP: OP 57	*0*	*0*
OP: OP 58	*0*	*0*
OP: OP 59	*0*	*0*
OP: OP 60	*0*	*0*
OP: OP 61	*0*	*0*
OP: OP 62	*0*	*0*
OP: OP 63	*0*	*0*
OP: OP 64	*0*	*0*
Route: McCain Valley Rd	*0*	*0*
Route: Ribbonwood Rd	*0*	*0*
Route: Tule Mountain Rd	*0*	*0*

No glare found

PV 7 no glare found

Component	*Green glare (min)*	*Yellow glare (min)*
OP: OP 1	*0*	*0*
OP: OP 2	*0*	*0*
OP: OP 3	*0*	*0*
OP: OP 4	*0*	*0*
OP: OP 5	*0*	*0*
OP: OP 6	*0*	*0*
OP: OP 7	*0*	*0*
OP: OP 8	*0*	*0*
OP: OP 9	*0*	*0*
OP: OP 10	*0*	*0*
OP: OP 11	*0*	*0*
OP: OP 12	*0*	*0*
OP: OP 13	*0*	*0*
OP: OP 14	*0*	*0*
OP: OP 15	*0*	*0*
OP: OP 16	*0*	*0*
OP: OP 17	*0*	*0*
OP: OP 18	*0*	*0*
OP: OP 19	*0*	*0*
OP: OP 20	*0*	*0*
OP: OP 21	*0*	*0*
OP: OP 22	*0*	*0*
OP: OP 23	*0*	*0*
OP: OP 24	*0*	*0*
OP: OP 25	*0*	*0*
OP: OP 26	*0*	*0*
OP: OP 27	*0*	*0*
OP: OP 28	*0*	*0*
OP: OP 29	*0*	*0*
OP: OP 30	*0*	*0*
OP: OP 31	*0*	*0*
OP: OP 32	*0*	*0*
OP: OP 33	*0*	*0*
OP: OP 34	*0*	*0*
OP: OP 35	*0*	*0*
OP: OP 36	*0*	*0*
OP: OP 37	*0*	*0*
OP: OP 38	*0*	*0*
OP: OP 39	*0*	*0*
OP: OP 40	*0*	*0*
OP: OP 41	*0*	*0*
OP: OP 42	*0*	*0*
OP: OP 43	*0*	*0*
OP: OP 44	*0*	*0*
OP: OP 45	*0*	*0*
OP: OP 46	*0*	*0*
OP: OP 47	*0*	*0*

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	0	0

No glare found

PV 8 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0

OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0
OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	13991	7963

PV 8 - OP Receptor (OP 1)

No glare found

PV 8 - OP Receptor (OP 2)

No glare found

PV 8 - OP Receptor (OP 3)

No glare found

PV 8 - OP Receptor (OP 4)

No glare found

PV 8 - OP Receptor (OP 5)

No glare found

PV 8 - OP Receptor (OP 6)

No glare found

PV 8 - OP Receptor (OP 7)

No glare found

PV 8 - OP Receptor (OP 8)

No glare found

PV 8 - OP Receptor (OP 9)

No glare found

PV 8 - OP Receptor (OP 10)

No glare found

PV 8 - OP Receptor (OP 11)

No glare found

PV 8 - OP Receptor (OP 12)

No glare found

PV 8 - OP Receptor (OP 13)

No glare found

PV 8 - OP Receptor (OP 14)

No glare found

PV 8 - OP Receptor (OP 15)

No glare found

PV 8 - OP Receptor (OP 16)

No glare found

PV 8 - OP Receptor (OP 17)

No glare found

PV 8 - OP Receptor (OP 18)

No glare found

PV 8 - OP Receptor (OP 19)

No glare found

PV 8 - OP Receptor (OP 20)

No glare found

PV 8 - OP Receptor (OP 21)

No glare found

PV 8 - OP Receptor (OP 22)

No glare found

PV 8 - OP Receptor (OP 23)

No glare found

PV 8 - OP Receptor (OP 24)

No glare found

PV 8 - OP Receptor (OP 25)

No glare found

PV 8 - OP Receptor (OP 26)

No glare found

PV 8 - OP Receptor (OP 27)

No glare found

PV 8 - OP Receptor (OP 28)

No glare found

PV 8 - OP Receptor (OP 29)

No glare found

PV 8 - OP Receptor (OP 30)

No glare found

PV 8 - OP Receptor (OP 31)

No glare found

PV 8 - OP Receptor (OP 32)

No glare found

PV 8 - OP Receptor (OP 33)

No glare found

PV 8 - OP Receptor (OP 34)

No glare found

PV 8 - OP Receptor (OP 35)

No glare found

PV 8 - OP Receptor (OP 36)

No glare found

PV 8 - OP Receptor (OP 37)

No glare found

PV 8 - OP Receptor (OP 38)

No glare found

PV 8 - OP Receptor (OP 39)

No glare found

PV 8 - OP Receptor (OP 40)

No glare found

PV 8 - OP Receptor (OP 41)

No glare found

PV 8 - OP Receptor (OP 42)

No glare found

PV 8 - OP Receptor (OP 43)

No glare found

PV 8 - OP Receptor (OP 44)

No glare found

PV 8 - OP Receptor (OP 45)

No glare found

PV 8 - OP Receptor (OP 46)

No glare found

PV 8 - OP Receptor (OP 47)

No glare found

PV 8 - OP Receptor (OP 48)

No glare found

PV 8 - OP Receptor (OP 49)

No glare found

PV 8 - OP Receptor (OP 50)

No glare found

PV 8 - OP Receptor (OP 51)

No glare found

PV 8 - OP Receptor (OP 52)

No glare found

PV 8 - OP Receptor (OP 53)

No glare found

PV 8 - OP Receptor (OP 54)

No glare found

PV 8 - OP Receptor (OP 55)

No glare found

PV 8 - OP Receptor (OP 56)

No glare found

PV 8 - OP Receptor (OP 57)

No glare found

PV 8 - OP Receptor (OP 58)

No glare found

PV 8 - OP Receptor (OP 59)

No glare found

PV 8 - OP Receptor (OP 60)

No glare found

PV 8 - OP Receptor (OP 61)

No glare found

PV 8 - OP Receptor (OP 62)

No glare found

PV 8 - OP Receptor (OP 63)

No glare found

PV 8 - OP Receptor (OP 64)

No glare found

PV 8 - Route Receptor (McCain Valley Rd)

No glare found

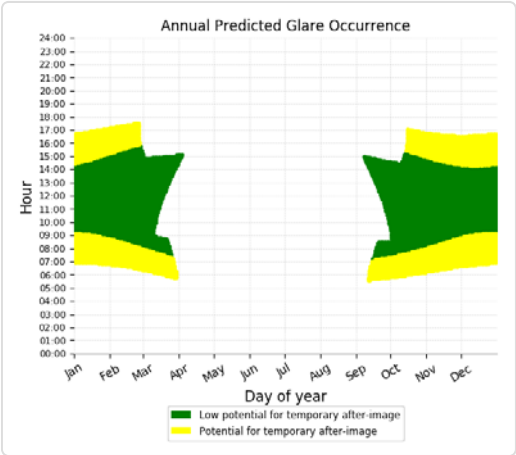
PV 8 - Route Receptor (Ribbonwood Rd)

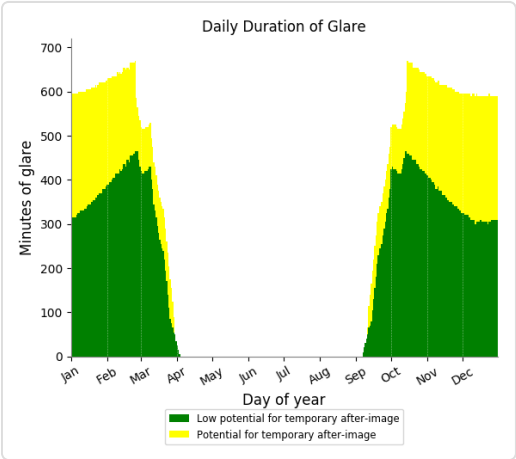
No glare found

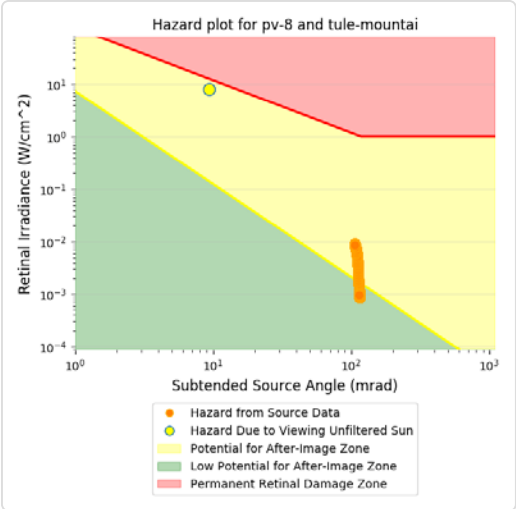
PV 8 - Route Receptor (Tule Mountain Rd)

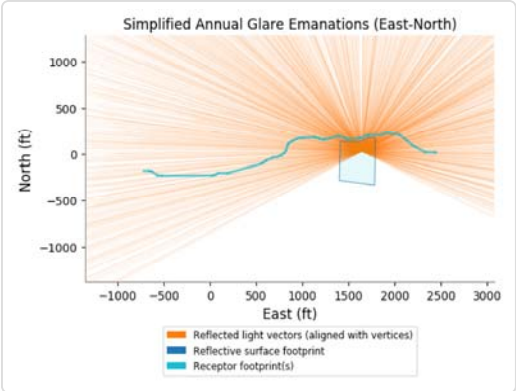
PV array is expected to produce the following glare for receptors at this location:

- *13,991 minutes of "green" glare with low potential to cause temporary after-image.*
- *7,963 minutes of "yellow" glare with potential to cause temporary after-image.*









Glare vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

PV 9 no glare found

Component	*Green glare (min)*	*Yellow glare (min)*
OP: OP 1	*0*	*0*
OP: OP 2	*0*	*0*
OP: OP 3	*0*	*0*
OP: OP 4	*0*	*0*
OP: OP 5	*0*	*0*
OP: OP 6	*0*	*0*
OP: OP 7	*0*	*0*
OP: OP 8	*0*	*0*
OP: OP 9	*0*	*0*
OP: OP 10	*0*	*0*
OP: OP 11	*0*	*0*
OP: OP 12	*0*	*0*
OP: OP 13	*0*	*0*
OP: OP 14	*0*	*0*
OP: OP 15	*0*	*0*
OP: OP 16	*0*	*0*
OP: OP 17	*0*	*0*
OP: OP 18	*0*	*0*
OP: OP 19	*0*	*0*
OP: OP 20	*0*	*0*
OP: OP 21	*0*	*0*
OP: OP 22	*0*	*0*
OP: OP 23	*0*	*0*
OP: OP 24	*0*	*0*
OP: OP 25	*0*	*0*
OP: OP 26	*0*	*0*
OP: OP 27	*0*	*0*
OP: OP 28	*0*	*0*
OP: OP 29	*0*	*0*
OP: OP 30	*0*	*0*
OP: OP 31	*0*	*0*
OP: OP 32	*0*	*0*
OP: OP 33	*0*	*0*
OP: OP 34	*0*	*0*
OP: OP 35	*0*	*0*
OP: OP 36	*0*	*0*
OP: OP 37	*0*	*0*
OP: OP 38	*0*	*0*
OP: OP 39	*0*	*0*
OP: OP 40	*0*	*0*
OP: OP 41	*0*	*0*
OP: OP 42	*0*	*0*
OP: OP 43	*0*	*0*
OP: OP 44	*0*	*0*
OP: OP 45	*0*	*0*
OP: OP 46	*0*	*0*
OP: OP 47	*0*	*0*

OP: OP 48	*0*	*0*
OP: OP 49	*0*	*0*
OP: OP 50	*0*	*0*
OP: OP 51	*0*	*0*
OP: OP 52	*0*	*0*
OP: OP 53	*0*	*0*
OP: OP 54	*0*	*0*
OP: OP 55	*0*	*0*
OP: OP 56	*0*	*0*
OP: OP 57	*0*	*0*
OP: OP 58	*0*	*0*
OP: OP 59	*0*	*0*
OP: OP 60	*0*	*0*
OP: OP 61	*0*	*0*
OP: OP 62	*0*	*0*
OP: OP 63	*0*	*0*
OP: OP 64	*0*	*0*
Route: McCain Valley Rd	*0*	*0*
Route: Ribbonwood Rd	*0*	*0*
Route: Tule Mountain Rd	*0*	*0*

No glare found

PV array 10 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0

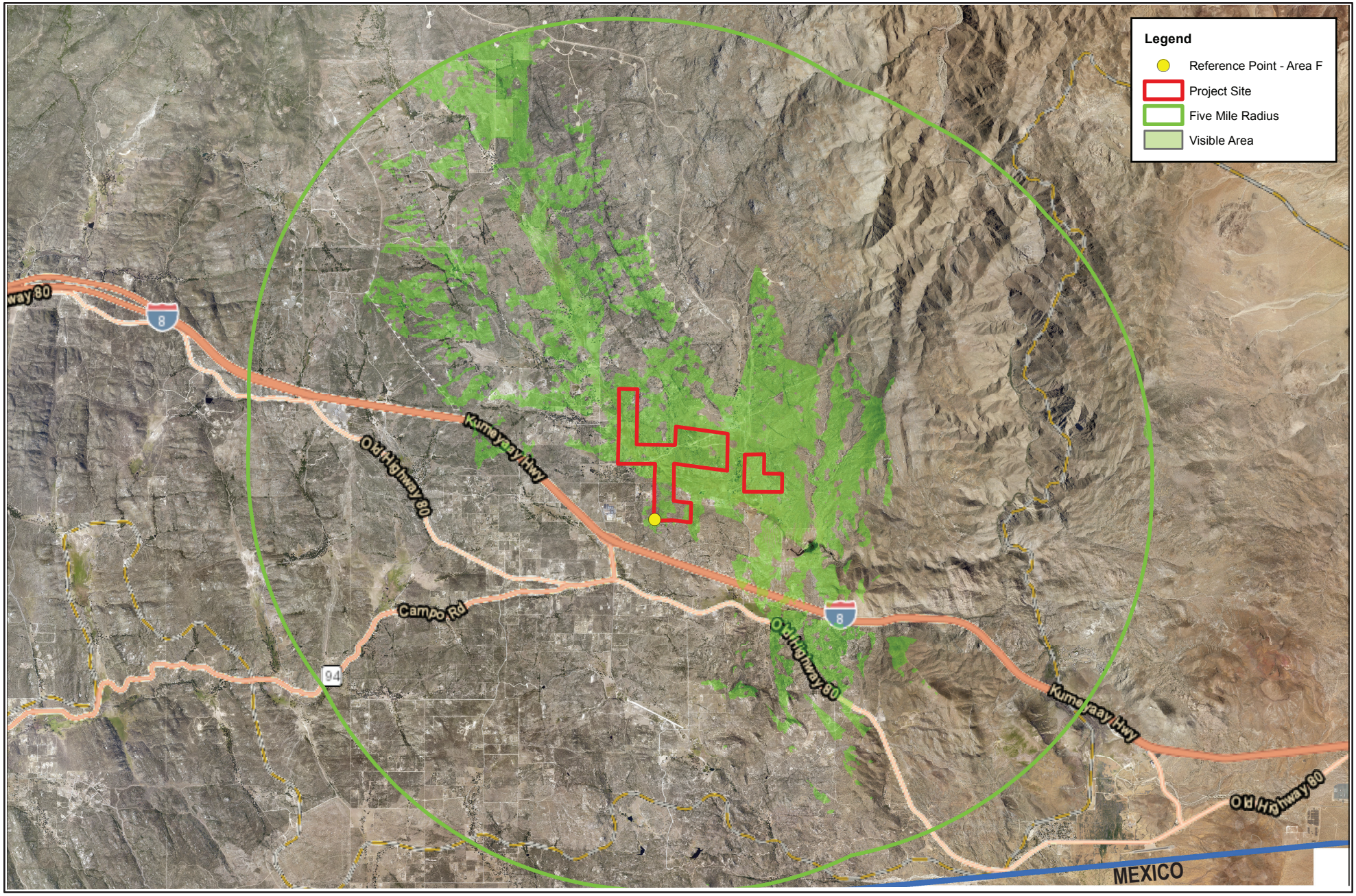
OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
Route: McCain Valley Rd	0	0
Route: Ribbonwood Rd	0	0
Route: Tule Mountain Rd	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 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large 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, not 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.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the Help page for assumptions and limitations not listed here.

APPENDIX B VIEWSHED ANALYSIS



Michael Baker INTERNATIONAL

173007Figures.indd

0 0.5 1 2 Miles

Source:

RUGGED SOLAR PROJECT

Viewshed Analysis

Figure 3