JACUMBA VALLEY RANCH SOLAR PROJECT
DRAFT AVIATION GLARE STUDY

March 8, 2018 | Prepared by POWER Engineers for Bayway r.e.

PROJECT CONTACT:

Jason Pfaff
Visualization Services Department Manager
(509) 780-0053
jason.pfaff@powereng.com

POWER ENGINEERS

Jacumba Valley Ranch Solar Project
Draft Aviation Glare Study

PREPARED FOR: *BAYWA R.E.*

PREPARED BY: *POWER ENGINEERS, INC.*

EXECUTIVE SUMMARY

POWER Engineers, Inc. has prepared a glare study for Baywa r.e's Jacumba Valley Ranch Solar Project. This study utilized the Solar Glare Hazard Analysis Tool licensed by GlareGauge and meets Federal Aviation Administration requirements for analyzing glare for airport operations. Proposed solar operations were analyzed for airport operations and pilots on final approach.

After review of the analysis, POWER determined potential glare is limited to the Jacumba Airport Runway 7 approach during the afternoon hours of the winter months lasting for less than one hour per day. Potential glare reported has a hazard level of "green" (low potential for temporary after-image) and is acceptable by the FAA. No other occurrences of glare were reported due to the rotational limits and wake/stow procedures of solar operations (see Section 4.0)

Based on these findings, it is POWER's professional opinion that the proposed JVR Solar Project will not impact airport operations at the Jacumba. For a detailed reporting of the GlareGauge analysis results, see Appendix A.

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ACRONYMS AND ABBREVIATIONS

AR	anti-reflective
ATC	Air Traffic Control
FAA	Federal Aviation Administration
JVR	Jacumba Valley Ranch
KOP(s)	Key Observation Point(s)
MW	megawatts
POWER	POWER Engineers, Inc.
Project	Jacumba Valley Ranch Solar Project
PV	photovoltaic
SGHAT	Solar Glare Hazard Analysis Tool

1.0 INTRODUCTION

The Federal Aviation Administration (FAA) has expressed concern for glare resulting from photovoltaic (PV) systems potentially causing distractions to pilots or air traffic control tower personnel. For this reason, the FAA has asked solar developers to perform a glare analysis to evaluate and document potential occurrences of glare. POWER Engineers, Inc. (POWER) has performed this study for Baywa r.e.'s Jacumba Valley Ranch (JVR) Solar Farm Project (Project). The Project is located in the community of Jacumba, California, in southeastern San Diego County (see Figure 1).

The proposed Project will utilize single-axis tracking photovoltaic solar technology and produce up to 100 megawatts (MW) of energy (see Figure 2). This Glare Study was commissioned by DUDEK on behalf of Baywa r.e. and prepared for Jacumba Airport officials, the FAA, and San Diego County. Specifically, this study does the following:

- Identifies any sensitive viewers (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 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.

Final Approach – The angle of descent maintained by pilots during landing procedures. The FAA defines this as two miles total distance from 50 feet above the landing threshold using a standard three degree angle of decent. During these procedures, the aircraft is directly in line with the runway.

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).

GlareGauge – The GlareGauge, by Forge Solar, uses Solar Glare Hazard Analysis Tool (SGHAT) technology, developed by Sandia National Laboratories. This web-based tool predicts the potential for solar glare and ocular impacts from an array of PV panels. The GlareGauge is compatible with FAA glare guidelines for analysis of any solar energy installation proposed at a federally obligated airport.

Key Observation Points (KOPs) – KOPs refer to locations with sensitivity to potential glare. For this study, KOPs included pilots on final approach to the Jacumba Airport (see Section 3.1).

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Figure 1 - Project Location Map

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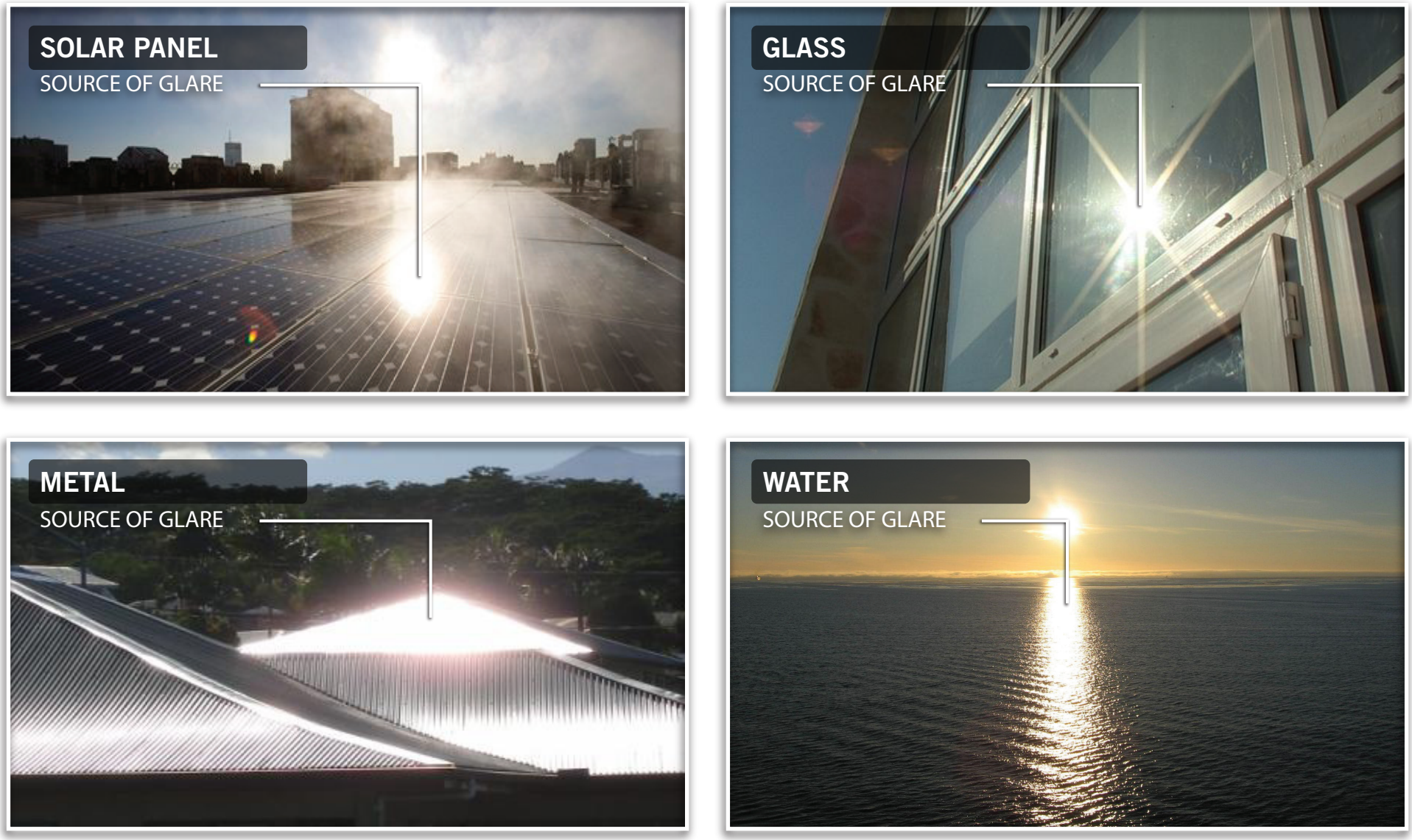
Figure 2 - Site Map


SOLAR PANEL
SOURCE OF GLARE
GLASS
SOURCE OF GLARE
METAL
SOURCE OF GLARE
WATER
SOURCE OF GLARE

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 (see Figure 4).

3.0 METHODOLOGY

This study was commissioned by DUDEK on behalf of Baywa r.e. to determine if glare will be visible to sensitive viewers. The analysis considered the changing positions of the sun throughout the day and year, and its influence on a single-axis tracking PV array.

Identify Potential Glare Issues – This study focused on potential issues where glare may be visible by pilots on final approach to the Jacumba Airport. POWER prepared the study based on these locations (see Section 3.1).

Characterize Glare Behavior – POWER utilized the GlareGauge 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 Baywa r.e. and include PV operating procedures, type, panel coating/texture, 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 4.0).

3.1 Identify Potential Glare Issues

The FAA has expressed concern for glare resulting from PV systems potentially causing distractions to pilots. For this reason, the FAA has asked solar developers to perform a glare hazard analysis to evaluate and document potential occurrences of glare. Proposed solar operations were studied for two landing approaches for one runway located at the Jacumba Airport (see Appendix A – Glare Results). No air traffic control tower is present at Jacumba Airport.

Each landing approach associated with Jacumba Airport is described below:

- **Jacumba Runway 7 Landing Approach:**
    - Threshold Distance from Project: 400 feet
    - Heading: East
    - Runway Elevation: 2,808 feet
    - Final Approach Slope: 3.0 degrees

- **Jacumba Runway 25 Landing Approach:**
    - Threshold Distance from Project: 1,600 feet
    - Heading: West
    - Runway Elevation: 2,828 feet
    - Final Approach Slope: 3.0 degrees

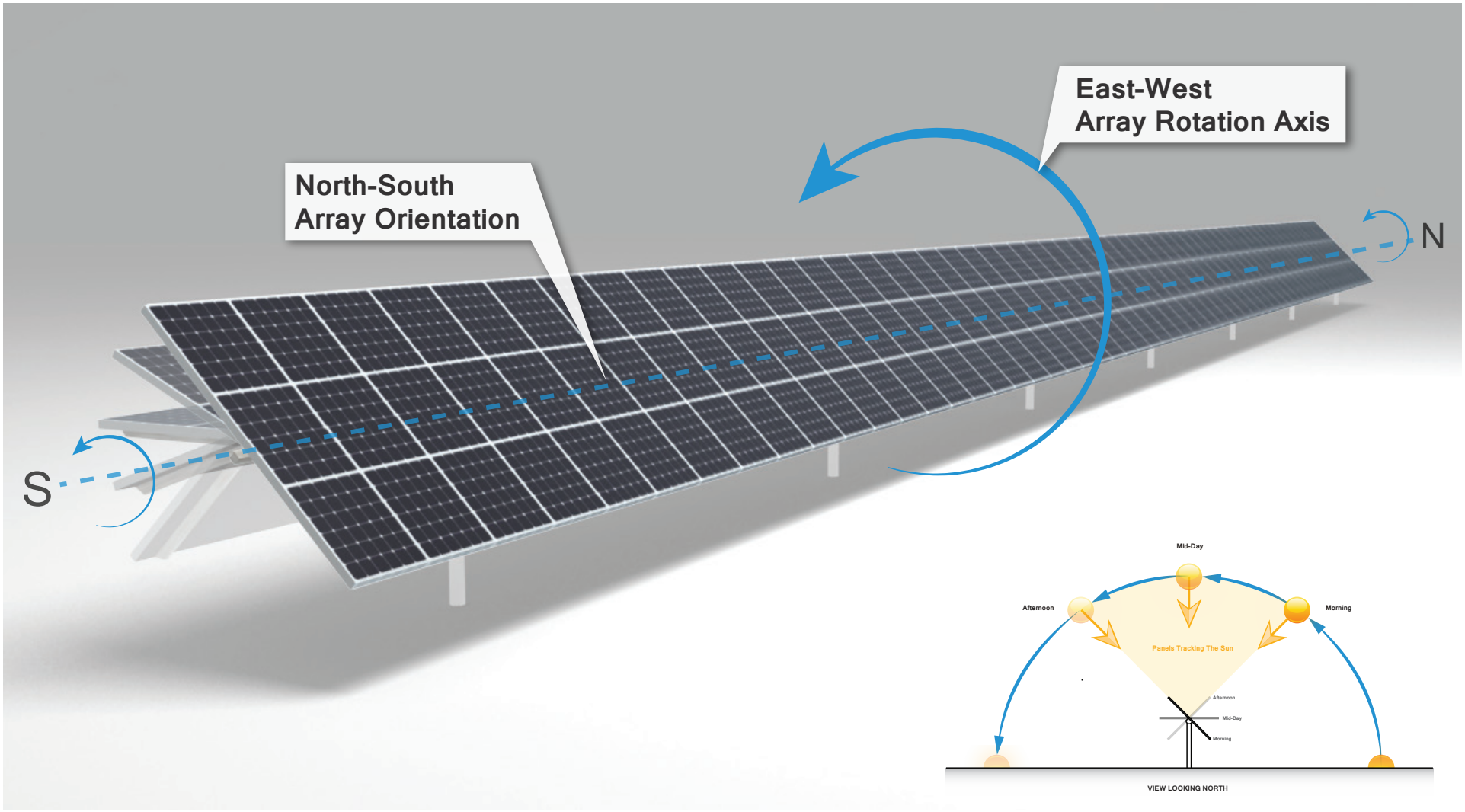


Figure 4 - Single Axis Solar Tracker

3.2 Characterize Glare Behavior

POWER utilized the GlareGauge to determine when and where solar glare may occur throughout the year (see https://share.sandia.gov/phlux/). Technical specifications of this study are described below:

Approach Slope – The typical landing approach, as defined by the FAA, is approximately three degrees. When on approach, the aircraft is directly in line with the runway.

Runway Information – Information derived from the website (www.airnav.com) was used to verify the details of each runway.

Single-Axis Tracking Photovoltaic Solar Panels – Details of solar technologies were provided by Baywa r.e. are described below:

- Tracking: Single-axis with back-tracking to reduce shading
- Tracking Axis Orientation: 180 due south
- Maximum Tracking Angle: ± 55 Degrees
- Wake Angle: 5 degrees
- Modified Wake Angle: 20 degree
- Stow Angle: 5 degrees
- Coating/Texture: Anti-Reflective Coated Smooth Surface Glass
- Average Mount Height: 3.0 feet above grade

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 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 eliminate 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 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 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 +55 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 55 degree rotational limits.

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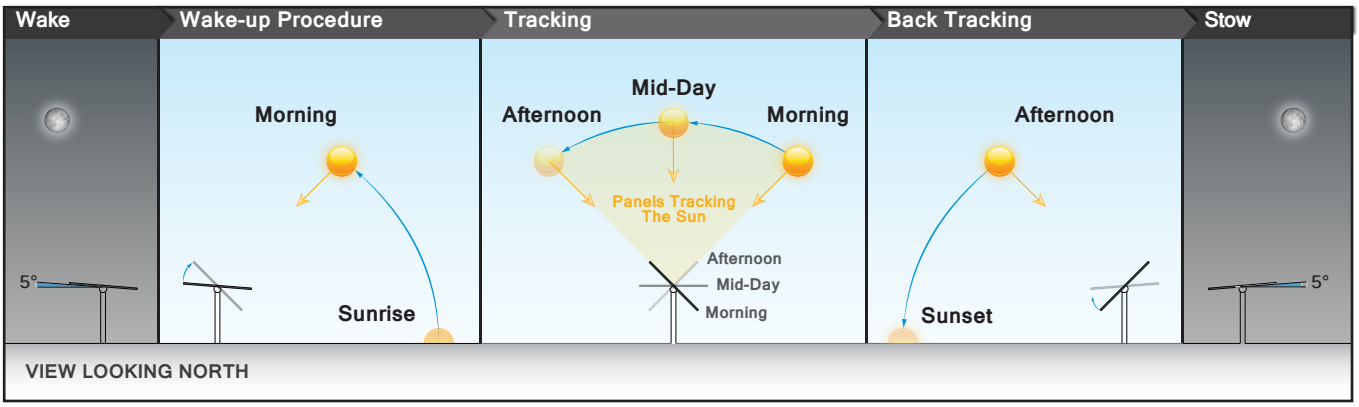
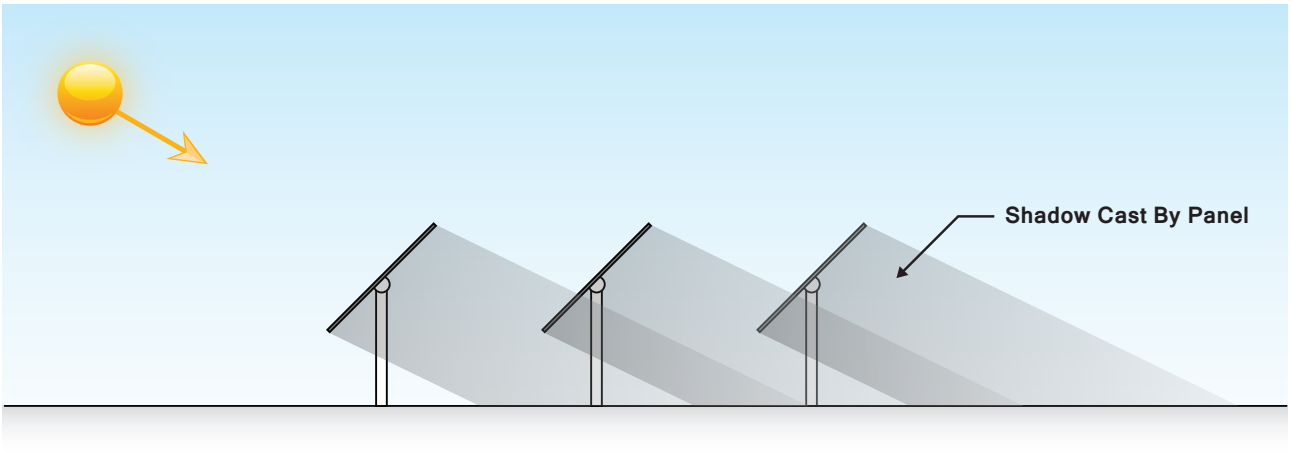
Figure 5 - Key Observation Points

Single Axis Tracker Behavior

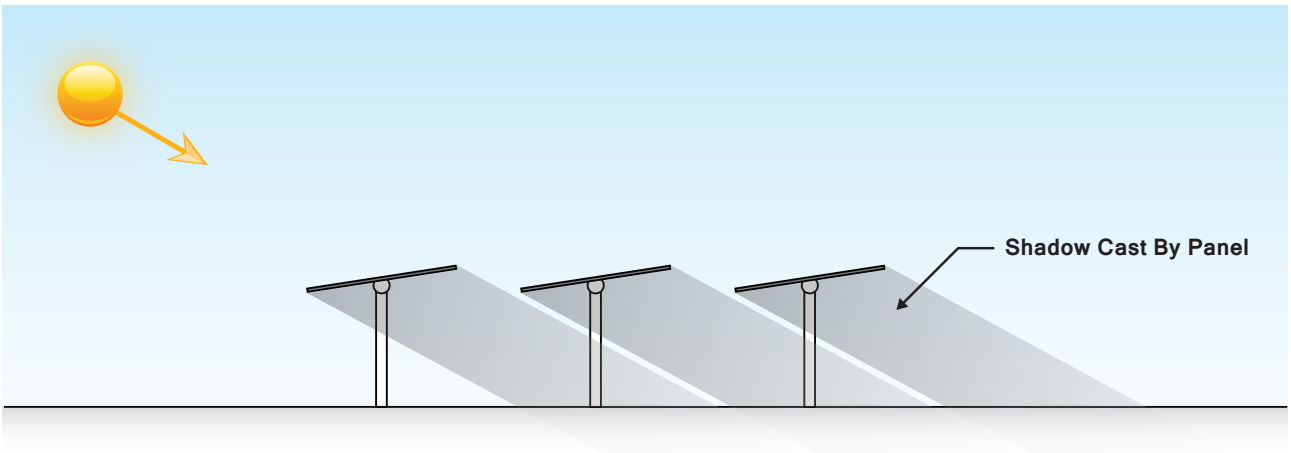


Back Tracking Procedures

Panels *without* Back Tracking



Panels *with* Back Tracking



- When the solar arrays reach a 55 degree west facing angle, they will stop tracking the sun, start the back-tracking cycle and rotate to a 5 degree west facing stow angle.
- Solar arrays will remain in 5 degree west facing angle until after the sun has set.

In some cases, modified panel behavior may reduce the impact of potential glare. Modified behaviors used for our study purposes are as such:

- All arrays south of Old Highway 80 will utilize a minimum 20 degree east facing wake angle. Operation of any angle less than 20 degrees east facing will require additional analysis.

3.3 Glare Evaluation – GlareGauge Analysis

To identify the occurrence of glare, POWER utilized the GlareGauge licensed by ForgeSolar. The GlareGauge uses SGHAT technology and is a web based glare assessment tool allowing input of viewer position, solar facility location, solar technology, and elevation data. The GlareGauge provides a quantified assessment of when and where glare may occur throughout the year from a solar installation, as well as identifying the potential effects on the human eye when glare does occur. Glare was analyzed at one minute intervals throughout the entire year to determine when and where glare may be visible to pilots on final approach. The GlareGauge meets FAA glare analysis requirements (for more information, see Appendix B – 78 FR 63276). Refer to Section 4.0 and Appendix A for glare results.

4.0 RESULTS

After review of the GlareGauge analysis, POWER determined potential glare visible from the proposed solar operations is limited to the Runway 7 approach during the afternoon hours of the winter months lasting for less than one hour per day. Potential glare reported has a hazard level of "green" (low potential for temporary after-image) and is acceptable by the FAA. During the morning hours, the modified wake angle of arrays south of Old Highway 80 redirects any potential glare up and out of the view of pilots landing on the Runway 7 approach.

For all arrays north of Old Highway 80, the 55 degree array rotational limits combined with the 5 degree wake/stow angle cause any potential glare to be redirected above and away from analyzed sensitive viewers throughout the day and year. Based on these findings, it is POWER's professional opinion that the proposed JVR Solar Project will not impact airport operations at the Jacumba Airport. For a detailed reporting of the GlareGauge analysis results, see Appendix A.

5.0 SOURCES

Federal Aviation Administration (FAA). 2010. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. November 2010. Full report can be downloaded at: http://www.faa.gov/airports/environmental/policy_guidance/media/airport_solar_guide.pdf.

AirNav Web Application. 2018. https://www.airnav.com/airport/L78. Accessed 2018.

ForgeSolar GlareGauge Web Application. 2018. https://www.forgesolar.com/tools/glaregauge. Accessed 2018.

Files provided by Baywa r.e.:
20180213_Base Layout Rev 05.dwg
163279-APN BDNY-25P.dwg
163279-TP-25P.dwg
Site Location 1.jpg
BayWa-2015.ctb
2017-11-14_JVR Solar Project Description.pdf
163279-PreApp-01-CONCEPT PLOT PLAN.pdf
Jacumba Solar Bounds.kmz

APPENDIX A GLARE RESULTS

FORGESOLAR GLARE ANALYSIS

Project: **JVR Solar**
Jacumba

Site configuration: **PV Final**
Analysis conducted by Andy Stephens (andy.stephens@powereng.com) at 18:29 on 05 Mar, 2018.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis and observer eye characteristics are as follows:

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

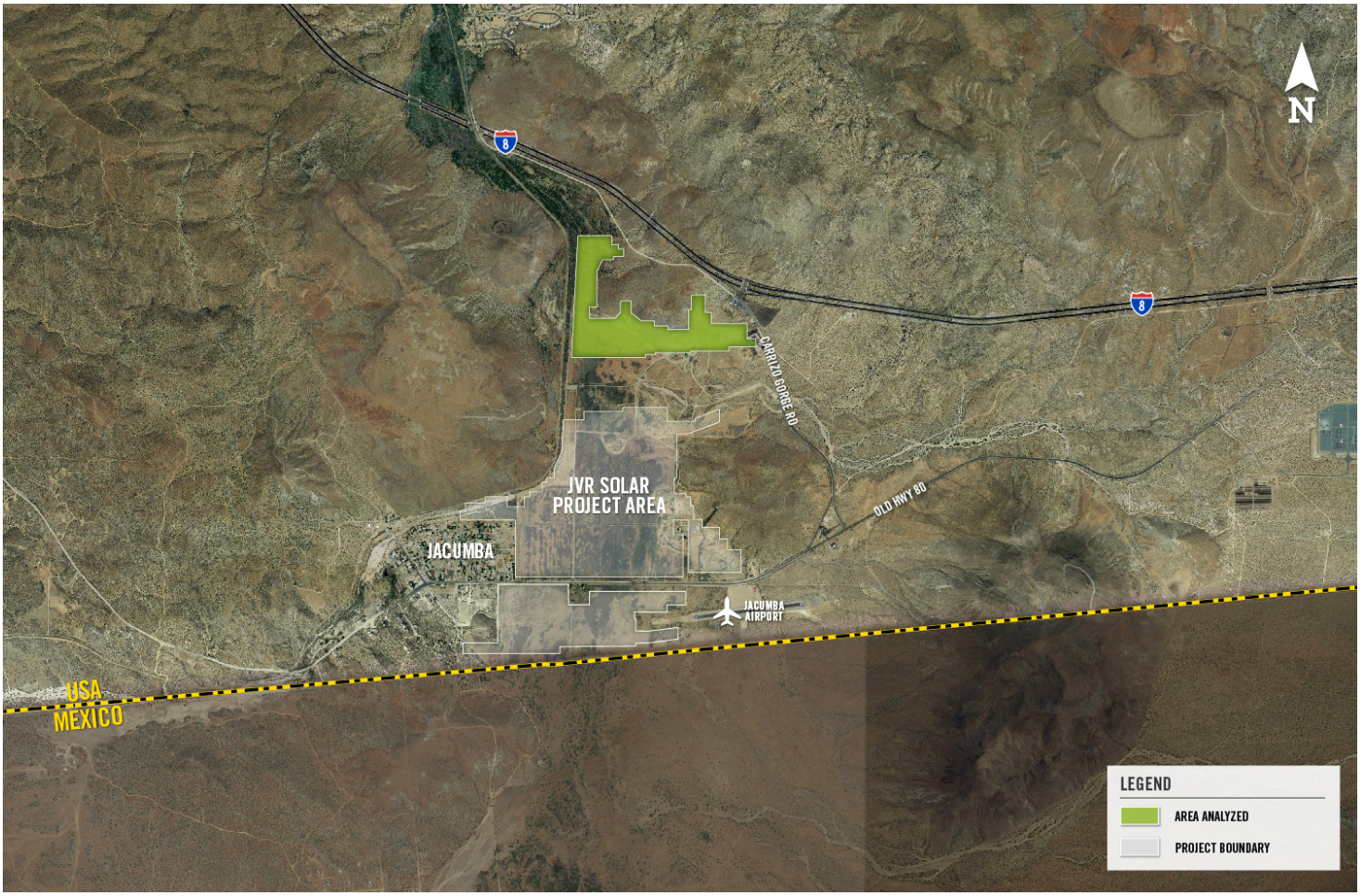
SITE CONFIGURATION

Analysis Parameters

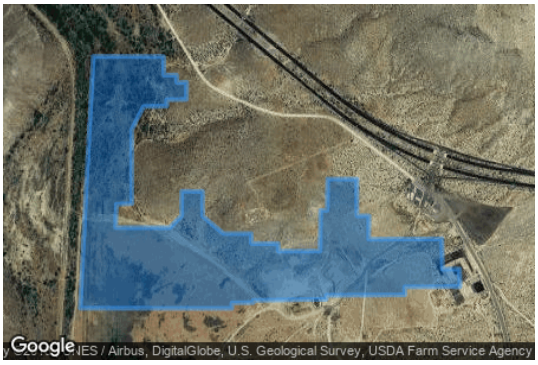
DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 15957.2425

Name: PV array Mid
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 5.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.621551	-116.187028	2802.78	3.00	2805.78
2	32.622109	-116.187014	2801.82	3.00	2804.82
3	32.622108	-116.186675	2800.79	3.00	2803.79
4	32.622649	-116.186668	2811.44	3.00	2814.44
5	32.622671	-116.185188	2793.24	3.00	2796.24
6	32.622941	-116.185199	2800.38	3.00	2803.38
7	32.622968	-116.183540	2791.19	3.00	2794.19
8	32.622404	-116.183545	2793.47	3.00	2796.47
9	32.622405	-116.182235	2787.18	3.00	2790.18
10	32.622972	-116.182228	2786.97	3.00	2789.97
11	32.622976	-116.181871	2785.70	3.00	2788.70
12	32.623321	-116.181874	2792.90	3.00	2795.90
13	32.623331	-116.180988	2784.71	3.00	2787.71
14	32.623894	-116.180979	2781.52	3.00	2784.52
15	32.623887	-116.180621	2783.28	3.00	2786.28
16	32.624159	-116.180605	2786.13	3.00	2789.13
17	32.624164	-116.180057	2781.51	3.00	2784.51
18	32.624776	-116.180033	2784.17	3.00	2787.17
19	32.625833	-116.179501	2777.57	3.00	2780.57
20	32.627802	-116.179350	2769.24	3.00	2772.24
21	32.627818	-116.177857	2769.20	3.00	2772.20
22	32.628366	-116.177863	2767.74	3.00	2770.74
23	32.628401	-116.174930	2767.21	3.00	2770.21
24	32.628618	-116.174915	2767.17	3.00	2770.17
25	32.628630	-116.171628	2787.04	3.00	2790.04
26	32.627734	-116.171622	2795.17	3.00	2798.17
27	32.627745	-116.169546	2787.33	3.00	2790.33
28	32.627912	-116.169548	2789.84	3.00	2792.84
29	32.628500	-116.167738	2798.81	3.00	2801.81
30	32.627715	-116.167752	2795.17	3.00	2798.17
31	32.626926	-116.170128	2784.64	3.00	2787.64
32	32.626918	-116.170937	2781.75	3.00	2784.75
33	32.624166	-116.170939	2778.27	3.00	2781.27
34	32.624165	-116.171127	2778.33	3.00	2781.33
35	32.623220	-116.171129	2788.84	3.00	2791.84
36	32.623222	-116.170236	2800.58	3.00	2803.58
37	32.622969	-116.170236	2810.16	3.00	2813.16
38	32.622965	-116.169941	2817.07	3.00	2820.07
39	32.622423	-116.169941	2818.70	3.00	2821.70
40	32.622423	-116.169683	2824.15	3.00	2827.15
41	32.621542	-116.169662	2819.58	3.00	2822.58
42	32.621533	-116.169066	2836.76	3.00	2839.76
43	32.621148	-116.169066	2830.50	3.00	2833.50
44	32.621139	-116.167756	2846.83	3.00	2849.83
45	32.620335	-116.167755	2823.17	3.00	2826.17
46	32.620335	-116.167109	2838.53	3.00	2841.53
47	32.619685	-116.167105	2826.22	3.00	2829.22
48	32.619685	-116.166089	2841.01	3.00	2844.01
49	32.618221	-116.166067	2808.16	3.00	2811.16
50	32.618238	-116.170050	2794.73	3.00	2797.74
51	32.618802	-116.170053	2793.96	3.00	2796.96
52	32.619018	-116.170048	2793.90	3.00	2796.90
53	32.619607	-116.170037	2795.56	3.00	2798.56
54	32.620414	-116.170042	2805.00	3.00	2808.00
55	32.621235	-116.170050	2815.61	3.00	2818.61
56	32.621551	-116.170053	2812.08	3.00	2815.08
57	32.621560	-116.171185	2801.66	3.00	2804.66



Name: PV array North
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 5.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.631863	-116.178882	2752.98	3.00	2755.98
2	32.635184	-116.178687	2745.68	3.00	2748.68
3	32.639532	-116.178407	2737.05	3.00	2740.05
4	32.639527	-116.175860	2737.90	3.00	2740.90
5	32.638965	-116.175841	2744.78	3.00	2747.78
6	32.638964	-116.175387	2757.18	3.00	2760.18
7	32.638733	-116.175374	2764.03	3.00	2767.03
8	32.638746	-116.175023	2768.14	3.00	2771.14
9	32.638221	-116.175030	2778.30	3.00	2781.30
10	32.638215	-116.175745	2742.60	3.00	2745.60
11	32.638018	-116.175742	2741.94	3.00	2744.94
12	32.638004	-116.176583	2740.39	3.00	2743.39
13	32.637290	-116.177017	2741.30	3.00	2744.30
14	32.635048	-116.177010	2747.80	3.00	2750.80
15	32.635031	-116.177572	2747.32	3.00	2750.32
16	32.634317	-116.177594	2749.53	3.00	2752.53
17	32.634314	-116.175633	2753.47	3.00	2756.47
18	32.634685	-116.175198	2763.94	3.00	2766.94
19	32.635426	-116.175197	2809.87	3.00	2812.87
20	32.635421	-116.174446	2786.80	3.00	2789.80
21	32.634665	-116.174438	2764.32	3.00	2767.32
22	32.634134	-116.173684	2818.27	3.00	2821.27
23	32.634135	-116.172677	2864.05	3.00	2867.05
24	32.633833	-116.172667	2817.85	3.00	2820.85
25	32.633831	-116.171699	2796.75	3.00	2799.75
26	32.633600	-116.171688	2768.10	3.00	2771.10
27	32.633600	-116.170175	2781.61	3.00	2784.61
28	32.634845	-116.170157	2807.78	3.00	2810.78
29	32.634845	-116.169913	2802.97	3.00	2805.97
30	32.635798	-116.169902	2831.62	3.00	2834.62
31	32.635794	-116.168840	2808.24	3.00	2811.24
32	32.634680	-116.168837	2793.24	3.00	2796.24
33	32.634676	-116.168400	2795.32	3.00	2798.32
34	32.633964	-116.168409	2787.03	3.00	2790.03
35	32.633975	-116.165753	2820.37	3.00	2823.37
36	32.633049	-116.165734	2814.54	3.00	2817.54
37	32.633054	-116.165114	2823.66	3.00	2826.66
38	32.632521	-116.165095	2817.19	3.00	2820.19
39	32.632511	-116.167103	2791.84	3.00	2794.84
40	32.632268	-116.167101	2790.88	3.00	2793.88
41	32.632253	-116.169951	2785.82	3.00	2788.82
42	32.632133	-116.169949	2783.63	3.00	2786.63
43	32.632102	-116.172601	2769.23	3.00	2772.23
44	32.632035	-116.172599	2769.52	3.00	2772.52
45	32.632026	-116.173375	2766.32	3.00	2769.32
46	32.631854	-116.173381	2766.67	3.00	2769.67

Name: PV array South 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 20.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.613935	-116.186890	2811.06	3.00	2814.06
2	32.613928	-116.178943	2806.56	3.00	2809.56
3	32.613456	-116.178943	2807.88	3.00	2810.88
4	32.613449	-116.179745	2807.76	3.00	2810.76
5	32.613207	-116.179750	2808.67	3.00	2811.67
6	32.613214	-116.186930	2821.96	3.00	2824.96

Name: PV array South 2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 20.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

PV google static map

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.615758	-116.178801	2802.08	3.00	2805.08
2	32.615746	-116.174155	2798.35	3.00	2801.35
3	32.615414	-116.174160	2802.76	3.00	2805.76
4	32.615396	-116.174021	2802.59	3.00	2805.59
5	32.613887	-116.174032	2809.21	3.00	2812.21
6	32.613896	-116.173914	2809.42	3.00	2812.42
7	32.613751	-116.173924	2809.81	3.00	2812.81
8	32.613724	-116.178838	2807.40	3.00	2810.40

Name: PV array South 3
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 10.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.617095	-116.177229	2799.28	3.00	2802.28
2	32.617104	-116.170244	2799.94	3.00	2802.94
3	32.616390	-116.170223	2802.15	3.00	2805.15
4	32.616408	-116.171650	2799.62	3.00	2802.62
5	32.615749	-116.171661	2802.92	3.00	2805.92
6	32.615746	-116.174144	2801.54	3.00	2804.54
7	32.615760	-116.178795	2802.24	3.00	2805.24
8	32.616244	-116.178780	2802.79	0.00	2802.79
9	32.616247	-116.177230	2800.98	3.00	2803.98

Name: PV array South 4
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 15.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.614516	-116.174030	2807.08	3.00	2810.08
2	32.614516	-116.173060	2809.35	3.00	2812.35
3	32.614742	-116.170865	2808.76	3.00	2811.76
4	32.614168	-116.170871	2810.82	3.00	2813.82
5	32.613874	-116.173092	2812.61	3.00	2815.61
6	32.613874	-116.174020	2809.27	3.00	2812.27

Name: PV array South Addition North
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 10.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

PV google static map

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.617469	-116.184309	2801.31	3.00	2804.31
2	32.617478	-116.179137	2797.51	3.00	2800.51
3	32.615716	-116.179114	2801.73	3.00	2804.73
4	32.615707	-116.184341	2803.16	3.00	2806.17

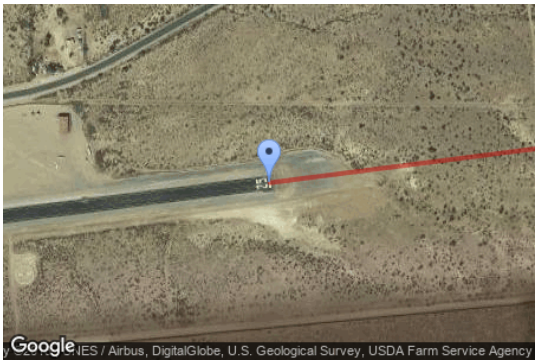
Name: PV array South Addition South
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 55.0°
Resting angle: 20.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

PV google static map

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.615699	-116.184336	2801.38	3.00	2804.38
2	32.615713	-116.179111	2797.50	3.00	2800.50
3	32.613978	-116.179116	2805.98	3.00	2808.98
4	32.613964	-116.184384	2806.64	3.00	2809.64

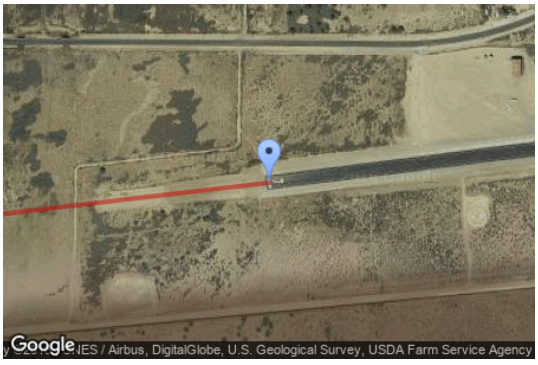
Flight Path Receptor(s)

Name: FP 25
Description:
Threshold height: 50 ft
Direction: °
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 90.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.616331	-116.161444	2825.19	50.00	2875.20
Two-mile	32.619985	-116.127354	3139.67	288.98	3428.65

Name: FP 7
Description:
Threshold height: 50 ft
Direction: °
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 90.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.615458	-116.169663	2805.48	50.00	2855.48
Two-mile	32.612089	-116.203795	2916.45	492.49	3408.94

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	32.617665	-116.183279	2799.38	8.00
OP 2	2	32.625382	-116.149033	2964.32	8.00
OP 3	3	32.634426	-116.165219	2832.78	8.00
OP 4	4	32.636256	-116.164618	2879.04	8.00

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array Mid	SA tracking	SA tracking	0	0	-
PV array North	SA tracking	SA tracking	0	0	-
PV array South 1	SA tracking	SA tracking	2,337	0	-
PV array South 2	SA tracking	SA tracking	4,853	0	-
PV array South 3	SA tracking	SA tracking	0	0	-
PV array South 4	SA tracking	SA tracking	4,513	0	-
PV array South Addition North	SA tracking	SA tracking	0	0	-
PV array South Addition South	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
FP 25	0	0
FP 7	11703	0
1	0	0
2	0	0
3	0	0
4	0	0

Results for: PV array Mid

Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	0	0
OP 1	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 2	0	0
OP 3	0	0
OP 4	0	0

Flight Path: FP 25

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array North

Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

Flight Path: FP 25

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South 1

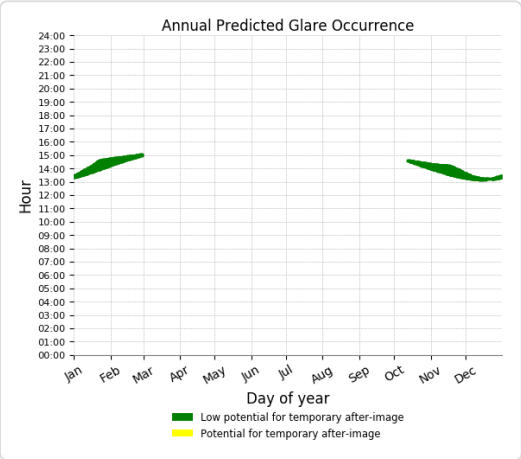
Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	2337	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

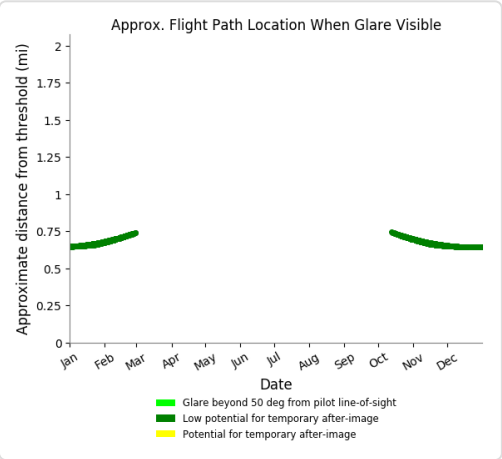
Flight Path: FP 25

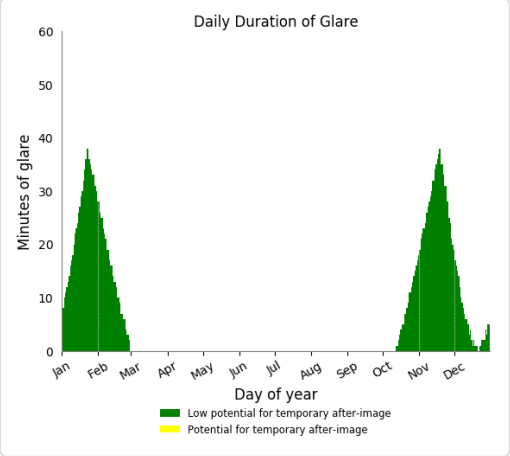
0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
2337 minutes of green glare







Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South 2

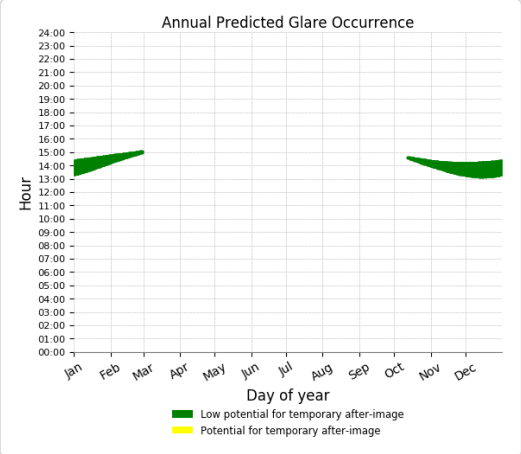
Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	4853	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

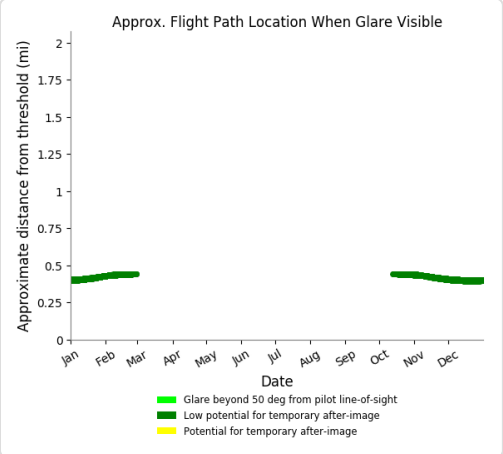
Flight Path: FP 25

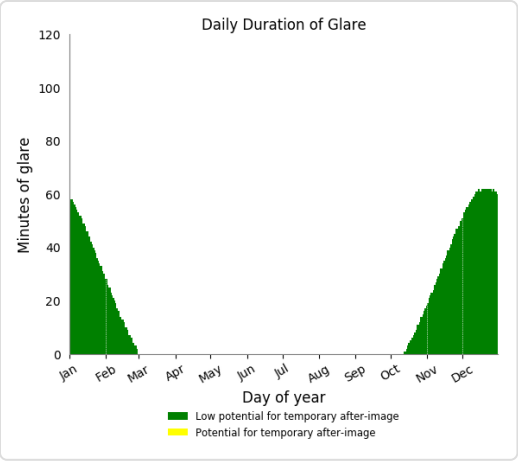
0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
4853 minutes of green glare







Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South 3

Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

Flight Path: FP 25

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South 4

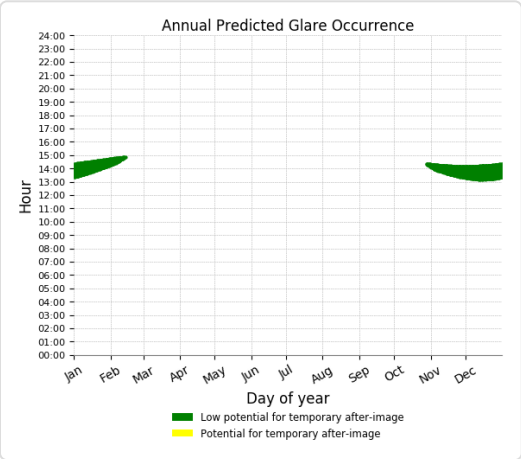
Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	4513	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

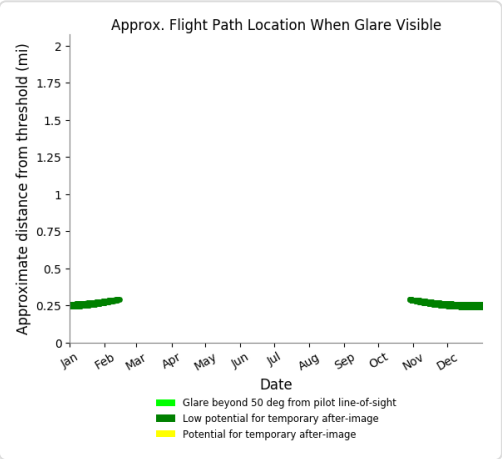
Flight Path: FP 25

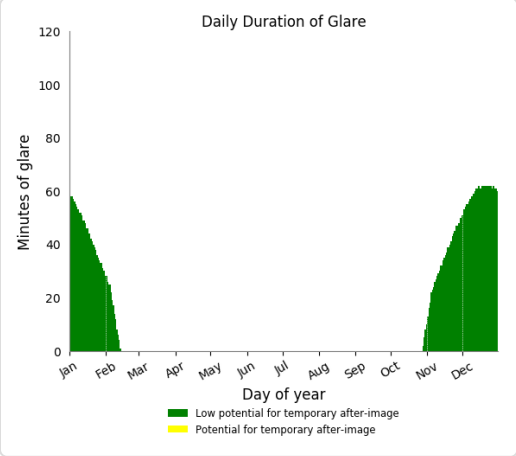
0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
4513 minutes of green glare







Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South Addition North

Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

Flight Path: FP 25

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array South Addition South

Receptor	Green Glare (min)	Yellow Glare (min)
FP 25	0	0
FP 7	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0

Flight Path: FP 25

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
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.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

APPENDIX B 78 FR 63276

Research and Innovative Technology Administration

Aylward, Anne D.; Brecht-Clark, Jan M.; Farley, Audrey L.; Hu, Patricia S.; Ishihara, David S.; Johns, Robert C.; Lang, Steven R.; Partridge, Ellen L.; Schmitt, Rolf R.; Womack, Kevin C.

Saint Lawrence Seaway Development Corporation

Middlebrook, Craig H.; Pisani, Salvatore L.

[FR Doc. 2013–24813 Filed 10–22–13; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of interim policy; opportunity to comment.

SUMMARY: This notice establishes interim FAA policy for proposals by sponsors of federally obligated airports to construct solar energy systems on airport property. FAA is adopting an interim policy because it is in the public interest to enhance safety by clarifying and adding standards for measuring ocular impact of proposed solar energy systems which are effective upon publication. FAA will consider comments and make appropriate modifications before issuing a final policy. The policy applies to any proposed on-airport solar energy system that has not received from the FAA either an unconditional airport layout plan approval or a ''no objection'' finding on a Notice of Proposed Construction or Alteration Form 7460–1.

DATES: The effective date of this interim policy is October 23, 2013.

Comments must be received by November 22, 2013.

ADDRESSES: You can get an electronic copy of the interim policy and the comment form on the FAA Airports Web site at *http://www.faa.gov/airports/environmental/.*

You can submit comments using the Comments Matrix, using any of the following methods:

Electronic Submittal to the FAA: Go to *http://www.faa.gov/airports/environmental/* and follow the instructions for sending your comments electronically.

Mail: FAA Office of Airports, Office of Airport Planning and Programming, Routing Symbol APP–400, 800 Independence Avenue SW., Room 615, Washington, DC 20591. Please send two copies.

Fax: 1–202–267–5302.

Hand Delivery: To FAA Office of Airports, Office of Airport Planning and Programming, Routing Symbol APP–400, 800 Independence Avenue SW., Room 615, Washington, DC 20591; between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Please provide two copies.

For more information on the notice and comment process, see the **SUPPLEMENTARY INFORMATION** section of this document.

Privacy: We will post all comments we receive, without change, to *http://www.faa.gov/airports/environmental/*, including any personal information you provide.

Comments Received: To read comments received, go to *http://www.faa.gov/airports/environmental/* at any time.

FOR FURTHER INFORMATION CONTACT: Ralph Thompson, Manager, Airport Planning and Environmental Division, APP–400, Federal Aviation Administration, 800 Independence Ave. SW., Washington, DC 20591, telephone (202) 267–3263; facsimile (202) 267–5257; email: *ralph.thompson@faa.gov.*

SUPPLEMENTARY INFORMATION: The FAA invites interested persons to join in this notice and comment process by filing written comments, data, or views. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data.

Availability of Documents

You can get an electronic copy of this interim policy by visiting the FAA's Airports Web page at *http://www.faa.gov/airports/environmental/.*

Authority for the Policy

This notice is published under the authority described in Subtitle VII, part B, chapter 471, section 47122 of title 49 United States Code.

Background

There is growing interest in installing solar photovoltaic (PV) and solar hot water (SHW) systems on airports. While solar PV or SHW systems (henceforth referred to as solar energy systems) are designed to absorb solar energy to maximize electrical energy production or the heating of water, in certain situations the glass surfaces of the solar energy systems can reflect sunlight and produce glint (a momentary flash of bright light) and glare (a continuous source of bright light). In conjunction with the United States Department of Energy (DOE), the FAA has determined that glint and glare from solar energy systems could result in an ocular impact to pilots and/or air traffic control (ATC) facilities and compromise the safety of the air transportation system. While the FAA supports solar energy systems on airports, the FAA seeks to ensure safety by eliminating the potential for ocular impact to pilots and/or air traffic control facilities due to glare from such projects.

The FAA established a cross-organizational working group in 2012, to establish a standard for measuring glint and glare, and clear thresholds for when glint and glare would impact aviation safety. The standards that this working group developed are set forth in this notice.

A sponsor of a federally-obligated airport must request FAA review and approval to depict certain proposed solar installations (e.g., ground-based installations and collocated installations that increase the footprint of the collocated building or structure) on its airport layout plan (ALP), before construction begins.[1] A sponsor of a federally-obligated airport must notify the FAA of its intent to construct any solar installation [2] by filing FAA Form 7460–1, ''Notice of Proposed Construction or Alteration'' under 14 CFR Part 77 for a Non-Rulemaking case (NRA) [3] [4]. This includes the intent to permit airport tenants, including Federal agencies, to build such

[1] FAA Technical Guidance for Evaluating Selected Solar Technologies on Airports, Section 2.3.5, states that ''solar installations of any size, located on an airport, that are not collocated on an existing structure (i.e., roof of an existing building) and require a new footprint, need to be shown on the Airport Layout Plan (ALP). Collocated solar installations need to be shown on the ALP only if these installations substantially change the footprint of the collocated building or structure. *Available at: http://www.faa.gov/airports/environmental/policy_guidance/media/airport_solar_guide_print.pdf.* Title 49 of the United States Code (USC), sec. 47107(a), requires, in part, a current ALP approved by the FAA prior to the approval of an airport development project. See Grant Assurance No. 29, AC No. 150/5070–6B, and FAA Order No. 5100.38.

[2] Any solar installation means any ground-based solar energy installation and those solar energy installations collocated with a building or structure (i.e., rooftop installations).

[3] FAA Technical Guidance for Evaluating Selected Solar Technologies on Airports Section 3.1 reads in part ''All solar projects at airports must submit to FAA a Notice of Proposed Construction Form 7460 . . .''. This section further states ''Even if the project will be roof mounted . . . the sponsor must still submit a case'' [i.e., file a Form 7460–1].

[4] The requirements of this policy are not mandatory for a proposed solar installation that is not on an airport and for which a form 7460–1 is filed under part 77 and is studied under the Obstruction Evaluation Program. However, the FAA urges proponents of off-airport solar-installations to voluntarily implement the provisions in this policy.

installations. The sponsor's obligation to obtain FAA review and approval to depict certain proposed solar energy installation projects at an airport is found in 49 U.S.C. 47107(a)(16) and Sponsor Grant Assurance 29, ''Airport Layout Plan.'' Under these latter provisions, the sponsor may not make or permit any changes or alterations in the airport or any of its facilities which are not in conformity with the ALP as approved by the FAA and which might, in the opinion of the FAA, adversely affect the safety, utility or efficiency of the airport.

Airport sponsors and project proponents must comply with the policies and procedures in this notice to demonstrate to the FAA that a proposed solar energy system will not result in an ocular impact that compromises the safety of the air transportation system. This process enables the FAA to approve amendment of the ALP to depict certain solar energy projects or issue a ''no objection'' finding to a filed 7460–1 form. The FAA expects to continue to update these policies and procedures as part of an iterative process as new information and technologies become available.

Solar energy systems located on an airport that is not federally-obligated or located outside the property of a federally-obligated airport are not subject to this policy. Proponents of solar energy systems located off-airport property or on non-federally-obligated airports are strongly encouraged to consider the requirements of this policy when siting such systems.

This interim policy clarifies and adds standards for measurement of glint or glare presented in the 2010 Technical Guidance document. Later this year the FAA plans to publish an update to the ''Technical Guidance for Evaluating Selected Solar Technologies on Airports,'' (hereinafter referred to as ''Technical Guidance'') dated November 2010. This update to the technical guidance will include the standards for measuring glint and glare outlined in this notice. It will also provide enhanced criteria to ensure the proper siting of a solar energy installation to eliminate the potential for harmful glare to pilots or air traffic control facilities.

In advance of the planned update, as part of this Notice, we are clarifying one aspect of the Technical Guidance relating to airport sponsor and FAA responsibilities for evaluating the potential for solar energy systems installed on airports to either block, reflect, or disrupt radar signals, NAVAIDS, and other equipment required for safe aviation operations. Section 3.1 of the Technical Guidance, entitled ''Airspace Review,'' correctly states that this role is exclusively the responsibility of FAA Technical Operations (Tech Ops). However subsection 3.1.3, ''System Interference,'' states: ''[s]tudies conducted during project siting should identify the location of radar transmission and receiving facilities and other NAVAIDS, and determine locations that would not be suitable for structures based on their potential to either block, reflect, or disrupt radar signals.''

Reading the two sections together, what is meant is that the airport sponsor, in siting a proposed solar energy system, is responsible for limiting the potential for inference with communication, navigation, and surveillance (CNS) facilities. The sponsor should do so by ensuring that solar energy systems remain clear of the critical areas surrounding CNS facilities. FAA Advisory Circular (AC) 5300–13, ''Airport Design,'' Chapter 6, defines the critical areas for common CNS facilities located on an airport. Sponsors may need to coordinate with FAA Technical Operations concerning CNS facilities not in AC 5300–13. As stated in Section 3.1, the FAA is responsible for evaluating if there are any impacts to CNS facilities. The FAA will conduct this review after the Form 7460–1 is filed for the construction of a new solar energy system installation on an airport. In summary, airport sponsors do not need to conduct studies on their own to determine impacts to CNS facilities when siting a solar energy system on airport. Section 3.1.3 will be revised accordingly in the next version of the Technical Guidance.

Interim Policy Statement

The following sets forth the standards for measuring ocular impact, the required analysis tool, and the obligations of the Airport Sponsor when a solar energy system is proposed for development on a federally-obligated airport.

The FAA is adopting an interim policy because it is in the public interest to enhance safety by clarifying and adding standards for measuring ocular impact of proposed solar energy systems. FAA will consider comments and make appropriate modifications before issuing a final policy in a future **Federal Register** Notice. The policy applies to any proposed solar energy system that has not received unconditional airport layout plan approval (ALP) or a ''no objection'' from the FAA on a filed 7460–1, Notice of Proposed Construction or Alteration.

Standard for Measuring Ocular Impact

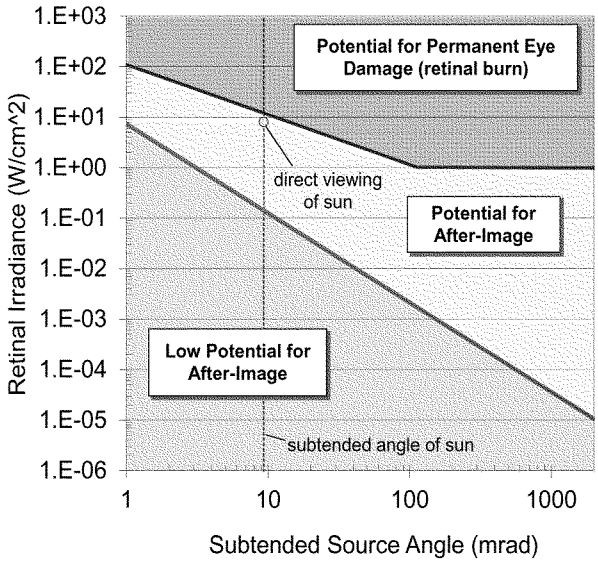
FAA adopts the *Solar Glare Hazard Analysis Plot* shown in Figure 1 below as the standard for measuring the ocular impact of any proposed solar energy system on a federally-obligated airport. To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a ''no objection'' to a Notice of Proposed Construction Form 7460–1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:

1. No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab, and

2. No potential for glare or ''low potential for after-image'' (shown in green in Figure 1) along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath.

Ocular impact must be analyzed over the entire calendar year in one (1) minute intervals from when the sun rises above the horizon until the sun sets below the horizon.

Figure 1



Solar Glare Ocular Hazard Plot: The potential ocular hazard from solar glare is a function of retinal irradiance and the subtended angle (size/distance) of the glare source. It should be noted that the ratio of spectrally weighted solar illuminance to solar irradiance at the earth's surface yields a conversion factor of ~100 lumens/W. Plot adapted from Ho et al., 2011.

Chart References: Ho, C.K., C.M. Ghanbari, and R.B. Diver, 2011, Methodology to Assess Potential Glint and Glare Hazards from Concentrating Solar Power Plants: Analytical Models and Experimental Validation, J. Solar Energy Engineering, August 2011, Vol. 133, 031021-1 – 031021-9.

Tool To Assess Ocular Impact

In cooperation with the DOE, the FAA is making available free-of-charge the *Solar Glare Hazard Analysis Tool* (SGHAT). The SGHAT was designed to determine whether a proposed solar energy project would result in the potential for ocular impact as depicted on the *Solar Glare Hazard Analysis Plot* shown above.

The SGHAT employs an interactive Google map where the user can quickly locate a site, draw an outline of the proposed solar energy system, and specify observer locations (Airport Traffic Control Tower cab) and final approach paths. Latitude, longitude, and elevation are automatically recorded through the Google interface, providing necessary information for sun position and vector calculations. Additional information regarding the orientation and tilt of the solar energy panels, reflectance, environment, and ocular factors are entered by the user.

If glare is found, the tool calculates the retinal irradiance and subtended source angle (size/distance) of the glare source to predict potential ocular hazards ranging from temporary after-image to retinal burn. The results are presented in a simple, easy-to-interpret plot that specifies when glare will occur throughout the year, with color codes indicating the potential ocular hazard. The tool can also predict relative energy production while evaluating alternative designs, layouts, and locations to identify configurations that maximize energy production while mitigating the impacts of glare.

Users must first register for the use of the tool at this web address: *www.sandia.gov/glare.*

Required Use of the SGHAT

As of the date of publication of this interim policy, the FAA requires the use of the SGHAT 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 SGHAT is a validated tool specifically designed to measure glare according to the *Solar Glare Hazard Analysis Plot.* All sponsors of federally-obligated airports who propose to install or to permit others to install solar energy systems on the airport must attach the SGHAT report, outlining solar panel glare and ocular impact, for each point of measurement to the Notice of Proposed Construction Form 7460–1. The FAA will consider the use of alternative tools or methods on a case-by-case basis. However, the FAA must approve the use of an alternative tool or method prior to an airport sponsor seeking approval for any proposed on-airport solar energy system. The alternative tool or method must evaluate ocular impact in accordance with the *Solar Glare Hazard Analysis Plot.*

Please contact the Office of Airport Planning and Programming, Airport Planning and Environmental Division, APP–400, for more information on the validation process for alternative tools or methods.

Airport sponsor obligations have been discussed above under Background. We caution airport sponsors that under preexisting airport grant compliance policy, failure to seek FAA review of a solar installation prior to construction could trigger possible compliance action under 14 CFR Part 16, ''Rules of Practice for Federally-Assisted Airport Enforcement Proceedings.'' Moreover, if a solar installation creates glare that interferes with aviation safety, the FAA could require the airport to pay for the elimination of solar glare by removing or relocating the solar facility.

Issued in Washington, DC, on September 27, 2013.

Benito De Leon,

Director, Office of Airport Planning and Programming.

[FR Doc. 2013–24729 Filed 10–22–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Third Meeting: RTCA Tactical Operations Committee (TOC)

AGENCY: Federal Aviation Administration (FAA), U.S. Department of Transportation (DOT)

ACTION: Third Meeting Notice of RTCA Tactical Operations Committee.

SUMMARY: The FAA is issuing this notice to advise the public of the third meeting of the RTCA Tactical Operations Committee.

DATES: The meeting will be held November 7, 2013 from 9 a.m.–3 p.m.

ADDRESSES: The meeting will be held at RTCA Headquarters, 1150 18th Street NW., Suite 910, Washington, DC 20036.

FOR FURTHER INFORMATION CONTACT: The RTCA Secretariat, 1150 18th Street NW., Suite 910, Washington, DC 20036, or by telephone at (202) 833–9339, fax at (202) 833–9434, or Web site *http://www.rtca.org.* Andy Cebula, NAC Secretary can also be contacted at *acebula@rtca.org* or 202–330–0652.

SUPPLEMENTARY INFORMATION: Pursuant to section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. No. 92–463, 5 U.S.C., App.), notice is hereby given for a meeting of the Tactical Operations Committee (TOC). The agenda will include the following:

November 19, 2013

- Opening of Meeting/Introduction of TOC Members
- Official Statement of Designated Federal Official
- Approval of July 23, 2013 Meeting Summary
- FAA Report
- Notice to Airmen (NOTAM) Activity Prioritization
- Regional Task Groups (RTGs)
- Reports on current activities underway by Regional Task Groups: Eastern, Central, Western
- VHF Omni-directional Range (VOR) Minimum Operating Network
- New Tasking: Obstacle Clearance
- Anticipated Issues for TOC consideration and action at the next meeting
- Other Business
- Adjourn

Attendance is open to the interested public but limited to space availability. With the approval of the chairman, members of the public may present oral statements at the meeting. Persons wishing to present statements or obtain information should contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section. Members of the public may present a written statement to the committee at any time.

Issued in Washington, DC, on October 18, 2013.

Edith V. Parish,

Senior Advisor, Mission Support Services, Air Traffic Organization, Federal Aviation Administration.

[FR Doc. 2013–24968 Filed 10–22–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Public Notice for Waiver of Aeronautical Land-Use Assurance

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of intent of waiver with respect to land; French Lick Airport; French Lick, Indiana.

SUMMARY: The FAA is considering a proposal to change a portion of airport land from aeronautical use to non-aeronautical use and to authorize the sale of airport property located at French Lick Airport, French Lick, Indiana. The aforementioned land is not needed for aeronautical use. The proposal consists of 18.606 acres located in the southern section of airport property which is not being used by the airport presently. The land is to be sold to Commissioners of Orange County for the construction of County Road CR 300 South/Airport Road to facilitate access to the airport.

DATES: Comments must be received on or before November 22, 2013.

ADDRESSES: Documents are available for review by appointment at the FAA Airports District Office, Azra Hussain, Program Manager, 2300 E. Devon Avenue, Des Plaines, Illinois 60018 Telephone: (847) 294–8252/Fax: (847) 294–7046 and Zachary D. Brown, French Lick Municipal Airport, 9764 West County Road 375 South, French Lick, Indiana, 47933.

Written comments on the Sponsor's request must be delivered or mailed to: Azra Hussain, Program Manager, Federal Aviation Administration, Airports District Office, 2300 E. Devon Avenue, Des Plaines, Illinois (847) 294–7046.

FOR FURTHER INFORMATION CONTACT: Azra Hussain, Program Manager, Federal Aviation Administration, Airports District Office, 2300 E. Devon Avenue, Des Plaines, Illinois 60018. Telephone Number: (847) 294–8252/FAX Number: (847) 294–7046.

SUPPLEMENTARY INFORMATION: In accordance with section 47107(h) of Title 49, United States Code, this notice is required to be published in the **Federal Register** 30 days before modifying the land-use assurance that requires the property to be used for an aeronautical purpose.

The subject land consists of two parcels. Parcel 1 (approx. 16.667 acres) was acquired through the Federal Aid to Airport Program dated July 28, 1963 and Parcel 2 (approx. 1.939 acres) was acquired by the sponsor as part of a larger parcel (approx. 9.97 acres) for the nominal sum of One Dollar and zero cents ($1.00) on April 19, 2010. The Commissioners of Orange County intend to purchase the property for a nominal sum of One Dollar and zero cents ($1.00) for the construction of County Road CR 300 South/Airport Road. Construction of the road will facilitate access to the airport. The aforementioned land is not needed for aeronautical use, as shown on the Airport Layout Plan. There are no impacts to the airport by allowing the airport to dispose of the property.

This notice announces that the FAA is considering the release of the subject airport property at French Lick Airport, French Lick, Indiana, subject to easements and covenants running with the land. Approval does not constitute a commitment by the FAA to financially assist in the disposal of the subject airport property nor a determination that all measures covered by the program are eligible for grant-in-aid funding from the FAA. The disposition of proceeds from the sale of the airport property will be in accordance with FAA's Policy and Procedures Concerning the Use of Airport Revenue, published in the **Federal Register** on February 16, 1999 (64 FR 7696).

Issued in Des Plaines, Illinois on September 30, 2013.

James Keefer,

Manager, Chicago Airports District Office, FAA, Great Lakes Region.

[FR Doc. 2013–24738 Filed 10–22–13; 8:45 am]

BILLING CODE 4910–13–P