APPENDIX 12

Glint and Glare Assessment

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Gundary Solar Farm

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Glint and Glare Assessment

Prepared for
Umwelt Pty Limited on behalf of Lightsource bp

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Executive Summary

Moir Landscape Architecture (Moir LA) have been engaged by Umwelt Pty Limited on behalf of Lightsource bp (the proponent) to provide a glint and glare assessment for the proposed Gundary Solar Farm (the Project). The report will accompany the Environmental Impact Statement (EIS) prepared for the Project.

This Project is located approximately 10 kilometres (km) southeast of Goulburn (NSW) in Goulburn Mulwaree Local Government Area (LGA).

The Glint and Glare Assessment has been prepared in accordance with the Department of Planning and Environment (DPE) (now Department of Planning, Housing and Infrastructure (DPHI)) Large-Scale Solar Energy Guideline (August 2022).

In accordance with the Guideline, the following has been assessed:

- Assessment of residential receptors within 3 km of the proposed solar array that have a line of sight.
- All roads and rail lines within 1 km of the proposed solar array
- Aviation receptors within 5km of the proposed solar array.

Moir LA have undertaken this glint and glare assessment utilising the Solar Glare Hazard Analysis Tool (SGHAT). The SGHAT is used to evaluate glare resulting from solar farms at different receptors, based on proximity, orientation and specifications of the PV modules.

A total of 54 Private Receptors with a line of sight within 3km and three (3) Public Receptors within 5km of the Project were identified as sensitive Observation Points (OP). Based on the desktop assessment no high/moderate potential “Yellow” glare was investigated for private and public receptors.

Two (2) Road Receptors were identified as part of the assessment. Based on the glare assessment Kooringaroo Road has been identified to experience the “Yellow” glare (<30 hrs per year) from the Project.

One (1) landing strip was identified within a 5km radius north-west of the Project. As part of the assessment two flight paths were identified for each strip. Based on the desktop assessment no potential “Yellow” glare was investigated for on any of these flight paths.

It is important to reiterate that the assessment is based on a worst-case scenario and does not take into account weather conditions, intervening elements such as vegetation and built structures.

Lightsource bp is committing to a 5m-wide screen planting along the eastern and north-eastern boundary, designed to mitigate the potential glare impacts, particularly along Kooringaroo Road.

Principles for mitigation, to reduce potential glare have been discussed in detail in this report in accordance with the *Large-Scale Solar Energy Guideline Technical Supplement - Landscape and Visual Impact Assessment*.

1.0 Introduction

1.1 The purpose of this report

The Glint and Glare Assessment has been prepared to meet the Planning Secretary's Environmental Assessment Requirements (SEARs) for the Project, and in accordance with the Large-Scale Solar Energy Guideline Appendix C - Glint and Glare Assessment, 2022.

Glint is generally defined as a momentary flash of bright light while glare can be defined as continuous source of excessive brightness proportionates to ambient lighting (FAA, 2021).

While glint and glare impacts can be relatively uncommon, it is important to model and assess these impacts to ensure any potential significant impact is avoided or mitigated appropriately (DPE) (now DPHI), 2022). Assessments must to be undertaken to ensure that sensitive visual receptors such as road users, surrounding rail network, nearby buildings, air traffic controllers and pilots are not impacted by the proposed development (ForgeSolar, 2022).

The performance objectives as related to the Guideline for Residential Receivers, Road and Rail Receivers and Aviation Receivers are outlined in each of the receiver assessments.

1.2 Glint and glare key principles

The key principles for ensuring the Project can be undertaken whilst maintaining an acceptable level of amenity are outlined in the Guideline as follows:

1. **Solar panels should be sited to reduce the likely impacts of glint and glare.**

2. **Solar panels and other infrastructure should be constructed of materials and / or treated to minimise glint and glare.**

3. **If large scale solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies should be adopted.**

1.3 Assessment requirements

Table 1 provides an outline of the assessment requirements for the glint and glare report (in accordance with the Guidelines, DPE (now DPHI) 2022) and where these have been addressed in the report. The SEARs also state that the proponent is to 'provide a glint and glare assessment prepared in accordance with the Solar Guideline'.
The objective of the assessment as stated in the Guideline is to *"demonstrate that glint and glare would not pose a significant risk to motorists or pilots and that nuisance from glare is minimised for residential locations in accordance with the objectives outlines in [the Guideline]".*

Report Structure	
Requirements for Glint and Glare Assessment:	**Addressed in report:**
A justification for excluding any modeled glare results because they would be insignificant due to the size, position and luminance of the glare source or high ambient luminance.	**Refer to:** **Section 2.0**
A description of the proposed PV panels indicating: *- the axis of rotation and maximum tilt angle* *- the light absorption efficiency and / or refractive index values at different angles.* *- whether any backtracking is proposed and the time and duration of these operations.*	**Refer to:** **Section 3.0: Project Overview**
Results of the glint and glare analysis for each assessable receptor	**Refer to:** **Section 4.0: Residential Receptors** (Assess all residential receptors within 3 km of the proposed solar array that have a line of sight). **Section 5.0: Road and Rail Receptors** (Assess all roads and rail lines within 1 km of the proposed solar array). **Section 6.0: Aviation Receptors** (Assess all air traffic control towers and take off / landing approaches to any runway or landing strip within 5 km of the proposed solar array).
Identification of existing vegetation or built structures and a quantitative assessment of whether these features would eliminate or reduce the modeled impacts.	**Refer to Section 7.0**
Details of strategies to either avoid or mitigate impacts including re-siting or sizing the project, altering the tracking patterns, implementing vegetation screening, or entering neighbor agreements with landowners if all other measures have been exhausted.	**Refer to:** **Section 8.0: Mitigation Recommendations**

Table 1 Overview of Assessment Requirements

2.0 Study Method

2.1 Assessment Methodology

Moir LA have undertaken this glint and glare assessment utilising Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories. The SGHAT is used to evaluate glare resulting from solar farms at different receptors, based on proximity, orientation and specifications of the PV modules. This tool is recognised by the Australian Government Civil Aviation Safety Authority (CASA).

SGHAT is used to indicate the nature of glare that can be expected at each potential receptor. Glare can be broadly classified into three categories and presented by the following three colours:

- **Green Glare:** Low potential for temporary after-image
- **Yellow Glare:** Potential for temporary after-image
- **Red Glare:** Retinal burn, not expected for PV.

Note: The main focus of this assessment is the yellow glare. Red glare is not expected for PV and green glare is low potential to cause after image and deemed negligible. (Ho,2011)

The glare analysis tool used to assess the glint and glare hazard was run at a simulation interval of one minute, based on the reflectivity of solar rays off PV modules which typically lasts for at least one minute.

Modelling for the solar farms in the SGHAT tool is based on the following factors:

- Position of the sun over time with respect to the location of the proposed solar farm.
- Assessment is based on a worst-case scenario assuming clear weather all year round, (ie. no consideration of cloud coverage).
- Tracking axis tilt, tracking axis orientation and properties of the PV modules.
- Potential to screen the impact by surrounding topography (does not take into account intervening elements such as vegetation and built structures).

2.2 Modelling Assumptions

The glare and glint impact is calculated utilising the geographic location, elevation, position of the sun and other vector calculations including module orientation, reflective environment and visual factors. Sun position is determined at every one (1) minute interval throughout the year.

Although the SGHAT is an extensive tool to understand the impacts of potential glare, it does not consider weather conditions, separation between PV modules and existing surrounding vegetation (if present) between the Project and a sensitive receiver.

It is noted that the Project proposes 3 m high solar panels at full tilt with an occasional height of up to 4 m (depending on topography). The glint and glare assessment was based on a maximum solar panel height of 3 m as the occasional 4 m high panels will typically be limited to lower lying areas, thus generally keeping the overall height of panels across the Project Area at 3 m.

Single axis tracking PV panels with the maximum height of 3 m, capable of rotating to a maximum of 60° have been considered to indicate a full rotational range of 120° for this analysis. The trackers are oriented north south with a maximum pitch distance of 5m. Glare modelling has been conducted to correspond to maximum tracker height to provide a wider range of observed solar glare based on the extremities.

The glint and glare effects of PV panels depends on the scale and type of infrastructure, the prominence and topography of the site relative to the surrounding environment, and any proposed screening measures to reduce visibility of the site.

Glare modelling has been conducted using the Shade-slope backtracking function within the SGHAT tool. Ground Coverage Ratio (GCR) calculations are used within the SGHAT tool for 'Shade-Slope' backtracking analysis. GCR is defined as the ratio of the array length (L) to proposed pitch distance (R) (Doubleday et al. 2016).

For this assessment GCR is calculated considering L = 2.40m and R = 5m. The resulting GCR = 0.47

$$GCR = \frac{L}{R}$$

Section 3.0 provides an overview of the PV panel parameters used for the assessment.

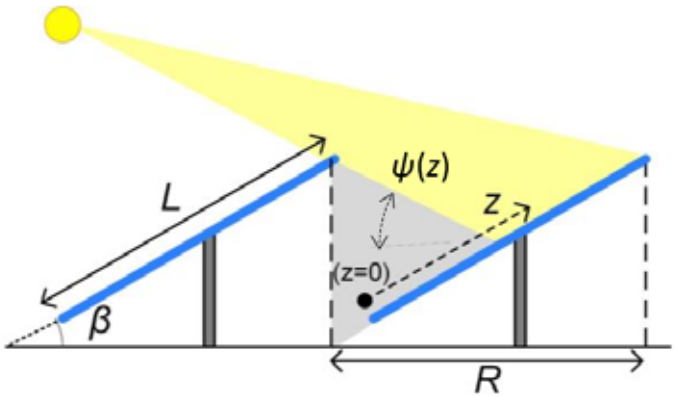


Image 01 Ground Coverage Ratio Calculations (Doubleday et al. 2016)

2.3 Backtracking Operations

A single axis horizontal tracking system can be configured to do a 'backtracking' technique, which implies that when the sun is low in the sky in the morning or evening, the tracking system can adjust the panels to maximise solar capture while minimising overshadowing. (Refer to **Image 2 & 3**).

The SGHAT tool uses a simplified model of backtracking to avoid shading. Single-axis trackers follow the movement of the sun as it moves east to west throughout the day. Yields are maximised, and light reflection is minimised when panels are directly facing the sun. In times when the sun is not in the tracking range, it is assumed that the panels instantaneously 'backtrack' to their resting angle of 0° (horizontal) over the night. Due to this, glare from the backtracking mechanism will be more conservatively simulated and at times of sunset and sunrise, when the sun is at a lower angle relative to the array, glare impacts will be more noticeable.

Variable angles of incidence of the sun relative to the panels may occur when the tracking system is performing a backtracking operation, and this variation is somewhat represented by SGHAT software in its recent update of 2022.

Shade-slope backtracking function within the SGHAT tool considers the lowest possible panel rotation angle during backtracking. Therefore, 0° resting angle option is modelled. This function simulates the impression of the panels returning to a predefined angle after the maximum tilt angle has been attained.

It is important to note however, that this backtracking modelling is not a realistic representation of how a backtracking technique would work in actuality but gives an indication of the potential glare of shifting the PV panels away from the sun after the maximum tilt is reached.

For the purposes of the assessment, the assumptions for backtracking in relation to the Project is as follow: (Refer to **Image 3**)

- Normal tracking with backtracking and a night time stowing angle of 0° - to represent a worst-case scenario for the Project. In this case, the panels move between the operational range (maximum tilt).

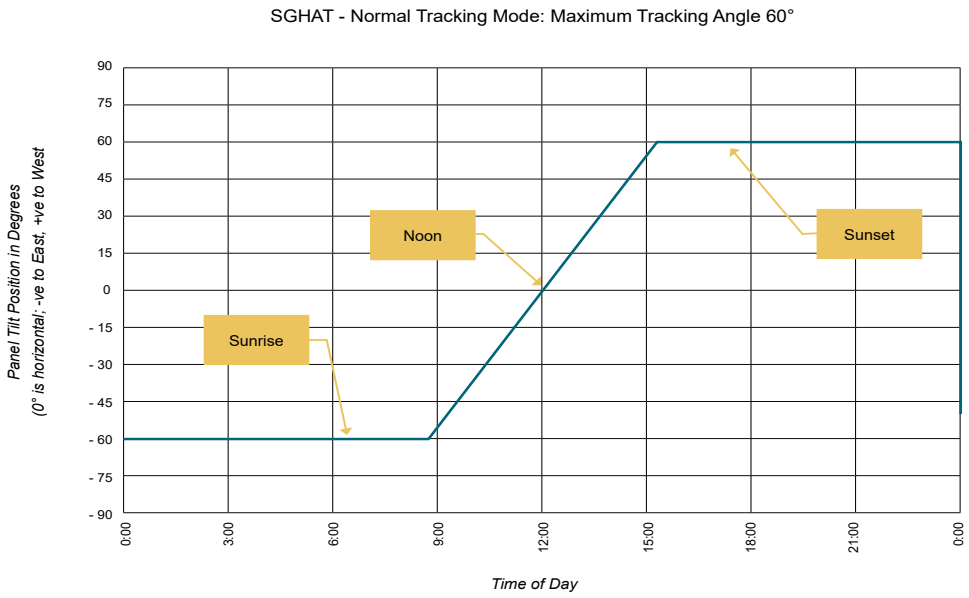
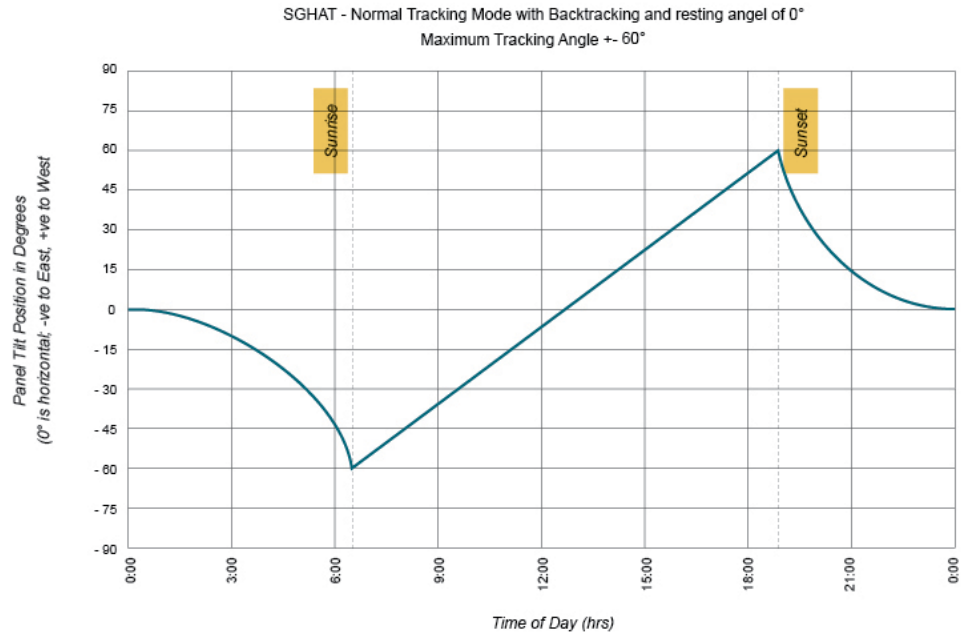


Image 02 Normal Tracking without Backtracking (2023)



LEGEND

0° Resting Angle

Image 03 Normal Tracking with Backtracking and Resting Angle of 0° (2023)

3.0 Project Overview

3.1 Site Context

The Project is located approximately 10 kilometres (km) southeast of Goulburn (NSW) in Goulburn Mulwaree Local Government Area (LGA). (Refer to **Figure 1**).

The Project encompasses the operation of a 400 Megawatt peak (MWp) solar farm, complete with a Battery Energy Storage System (BESS) ranging from up to 555 MWp and 1,570 Megawatt hour (MWh) capacity, as well as the necessary infrastructure to connect it to the National Electricity Market (NEM) through a new on-site connection to the existing 330kV overhead transmission line, located in the north-west corner of the Project Area. It will cover an area of approximately 702 hectares, with the development infrastructure occupying about 512 hectares.

The Project's access point will be the existing driveway on Windellama Road, via the Hume Highway, specifically at 961 Windellama Road. The Project is situated approximately 1.1 km from the eastern boundary of the proposed Merino Solar Farm Stage 1 and approximately 4.6 km from the north-eastern boundary of the proposed Merino Solar Farm Stage 2. The location of the Project and its regional context is shown in **Figure 1**.

The Project will generate clean energy to power to around 133,000 homes and reduce carbon emissions by 670,000 tonnes.

Figure 1 Project Site Context (Map Source: EsriMap, 2023)

3.2 Solar Panel Specifications

Each module consists of P type Mono-crystalline cell type with a 2.0 mm, anti-reflection coated semi-tempered glass set in an anodised aluminium alloy frame (Suzhou Talesun Solar Technologies Co., Ltd. 2021).

To attain optimum solar energy collection, the project modelling has utilised a maximum rotational range of 120°. The panels are fixed on a tubular frame with a single axis tracking procedure. For accuracy, Glare analysis has been performed using maximum tracker height not exceeding 1.95m when facing at the highest angle.

Refer to **Figure 2** for typical panel dimensions utilised for this assessment.

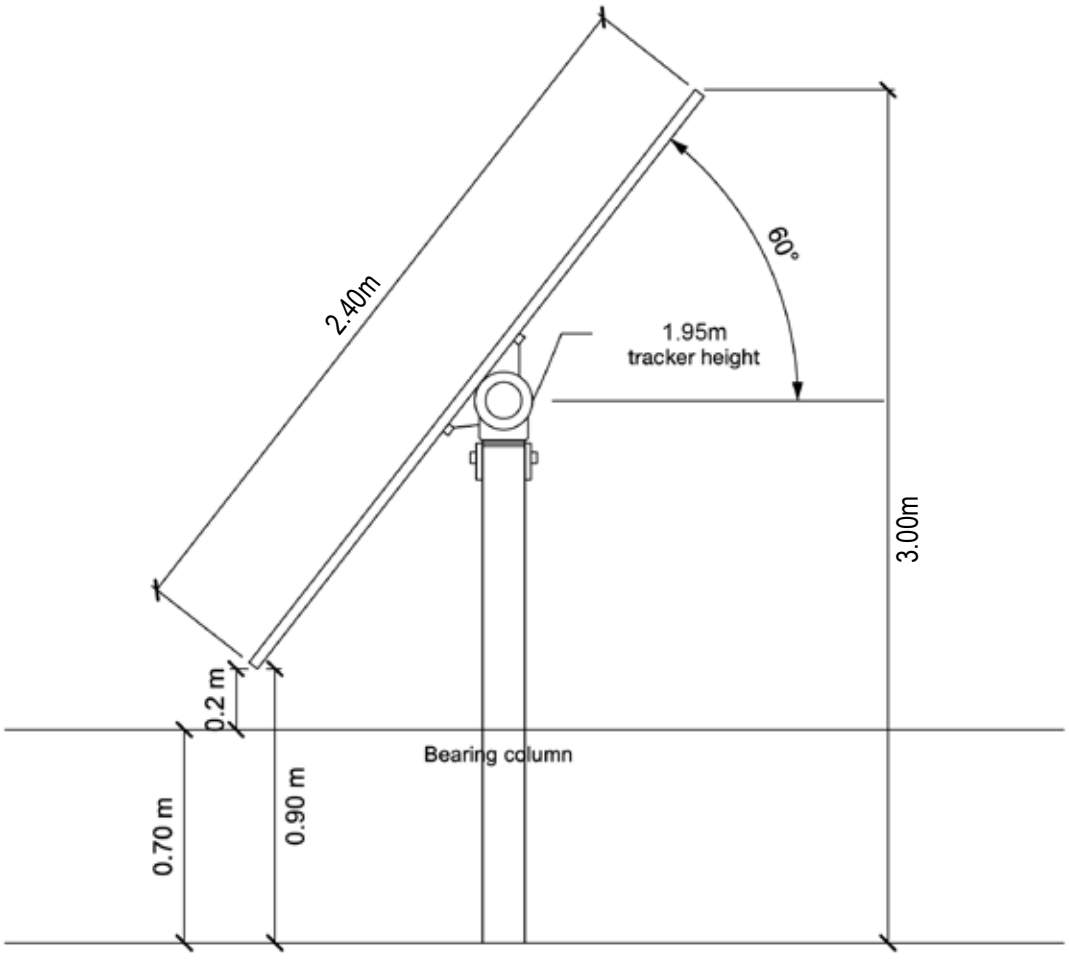


Figure 2 PV Parameters utilised for this assessment (provided by Lightsource bp)

General Solar PV system inputs:			
Input Data	**Units**	**Value**	**Comments**
Time Zone	UTC	+11	NSW time Zone
Orientation of Array	Degrees	0	Rows aligned in north-south directions
PV Surface materials	-	Smooth Glass with Anti-Reflective Coating	Provided by the Lightsource bp.
Mounting Type	-	Single Axis Tracking	As per tracker data sheet
Single Axis Tracking Parameters			
Axis Orientation	Degrees	0	Panels orientated north south
Module Offset angle	Degrees	0	Facing upwards Panels rotate during operation
Max tracking angle	Degrees	±60° (Range of 120°)	Panels following the Sun
Resting angle	Degrees	0°	Panels following the Sun, to represent backtracking and after dark stowing angles
Maximum Tracker Height	Metres	1.95m	Provided by the Lightsource bp.
Backtracking	-	Shade-Slope	Provided by the Lightsource bp.
Ground Coverage Ration	-	0.47	Ratio of the Array length to the pitch distance as provided by the Lightsource bp.

Table 2. Summary of modeling parameters

3.3 Array layout

A single axis tracking system follows the sun's trajectory and rotates the panels across east to west. The rows of modules will be spaced approximately 5m apart to ensure no shading occurs and allows for ease of access for maintenance purposes. (Refer to **Table 2**)

For the purpose of this report, the Project has been divided into fourteen (14) separate areas for assessment regarding to the software limitation which does not take any effects on the overall result. Refer to **Figure 3** for PV array areas.

Figure 3 PV Array Areas (Map Source: Esri Maps, 2023)

4.0 Private Receptors

4.1 Overview of methodology

Table 4 provides an overview of the scope, methodology and performance objectives for assessment of glint and glare on residential receptors

Glint and Glare Requirements - Private Receptors		
Scope	**Methodology**	**Performance Objective**
All residential receptors within 3km of the proposed solar array that have a line of sight. Representative viewpoints may be used for residential receptors that are clustered together.	**Analysis of the daily and yearly glare impacts in minutes.** **All residential receptors must be assessed at a height of 1.5 m above ground level.**	**Refer to Table 5.**
Note: Modeling for residential receptors is calculated on a receptor height of 1.5 m AGL.		

Table 4. Residential Receptors Assessment Requirements (Source: DPE(now DPHI), 2022)

Impact rating and performance objectives for glare impacts to residential		
High Glare Impact	**Moderate Glare Impact**	**Low Glare Impact**
> 30 minutes per day **> 30 hours per year** *Significant amount of glare that should be avoided*	**< 30 minutes per day** **< 30 hours per year** *Implement mitigation measures to reduce impacts as far as practicable*	**< 10 minutes per day** **< 10 hours per year** *No mitigation required*

Table 5. Residential Receptor Impact Rating and Performance Objectives (Source: DPE(now DPHI), 2022)

4.2 Private and Public Receptors

A desktop assessment based on the viewshed analysis completed as part of the LVIA undertaken by Envisage identified fifty-four (54) non associated Private Receptors with a line of sight to the Project within 3 km of the Project.

Additionally three (3) key Public Receptor locations within 5 km have been identified. These include Pomaderris Nature Reserve, Adrenaline Skydive, and Goulburn Flight Training Centre. (Refer to **Figure 4**)

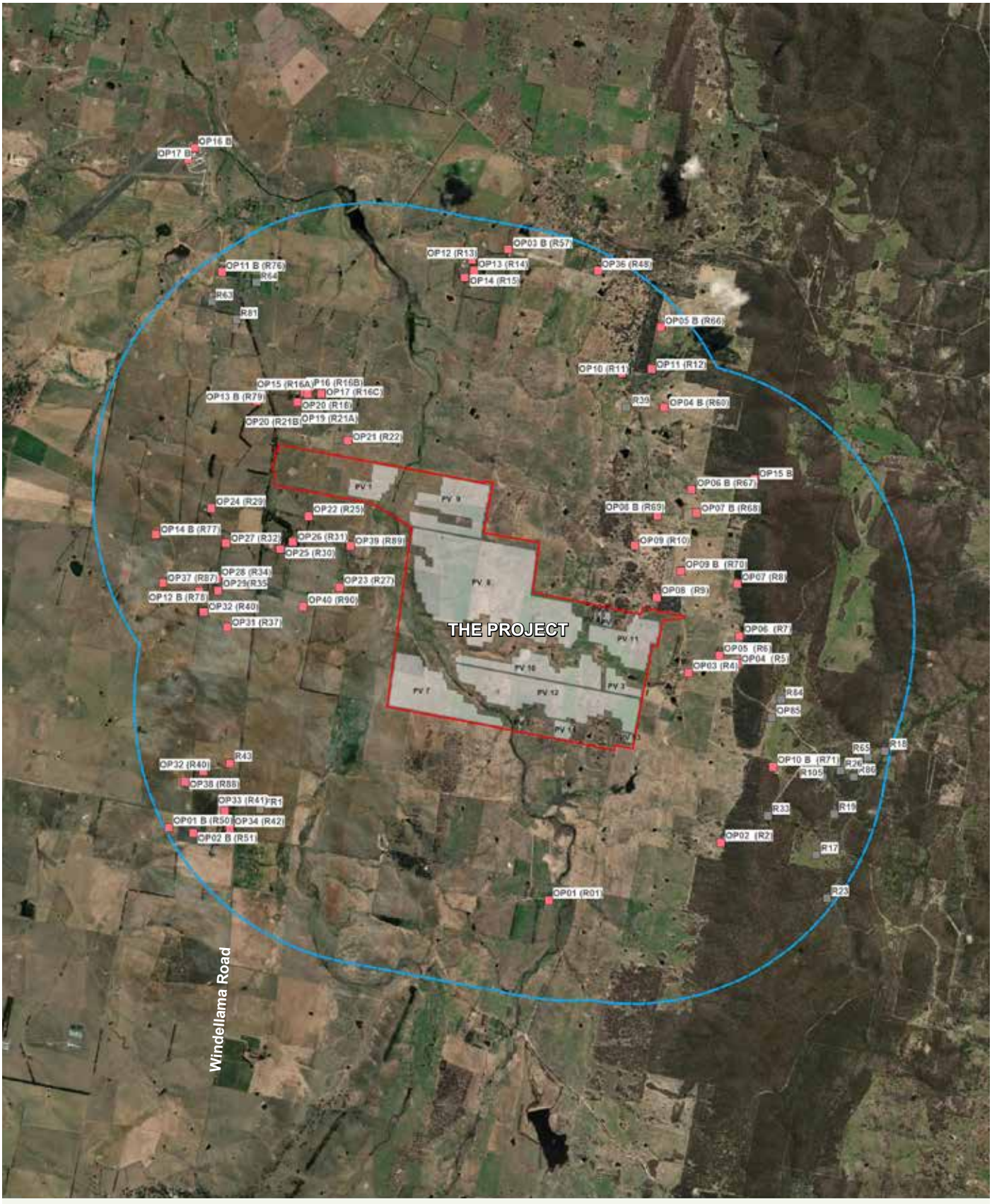


Figure 4 Residential Receptors (Map Source: Esri Maps, 2023)

Private Receptor	Coordinates	Elevation	Distance to the nearest solar panel	Yellow Glare (Hours Per Year):	Potential Glint and Glare Rating	Recommended Mitigation Measures
OP 01 (R01)	34°53'1.32"S 149°46'56.86"E	678	1.86 km	0	NIL	Not Required.
OP 02 (R02)	34°52'38.00"S 149°48'15.95"E	725	1.53 km	0	NIL	Not Required.
OP 03 (R04)	34°51'34.87"S 149°47'58.76"E	695	0.48 km	0	NIL	Not Required.
OP 04 (R05)	34°51'31.02"S 149°48'21.12"E	717	0.97 km	0	NIL	Not Required.
OP 05 (R06)	34°51'28.13"S 149°48'12.93"E	709	0.75 km	0	NIL	Not Required.
0P 06 (R07)	34°51'20.59"S 149°48'21.94"E	719	0.94 km	0	NIL	Not Required.
OP 07 (R08)	34°51'1.21"S 149°48'20.26"E	728	1.01 km	0	NIL	Not Required.
OP 08 (R09)	34°51'7.10"S 149°47'43.14"E	724	0.28 km	0	NIL	Not Required.
OP 09 (R10)	34°50'47.89"S 149°47'32.33"E	723	0.80 km	0	NIL	Not Required.
OP 10 (R11)	34°49'43.67"S 149°47'24.18"E	689	0.81 km	0	NIL	Not Required.
OP 11 (R12)	34°49'41.80"S 149°47'37.78"E	702	2.35 km	0	NIL	Not Required.
OP 12 (R13)	34°49'2.77"S 149°46'13.32"E	675	2.52 km	0	NIL	Not Required.
OP 13 (R14)	34°49'6.89"S 149°46'14.54"E	674	2.41 km	0	NIL	Not Required.
OP 14 (R15)	34°49'9.61"S 149°46'10.08"E	671	2.31 km	0	NIL	Not Required.
OP 15 (R16A)	34°49'54.22"S 149°44'57.38"E	678	1.02 km	0	NIL	Not Required.
OP 16 (R16B)	34°49'54.57"S 149°44'58.99"E	678	1.01 km	0	NIL	Not Required.
OP 17 (R16C)	34°49'54.53"S 149°45'5.09"E	668	0.99 km	0	NIL	Not Required.
OP 18 (R20)	34°49'57.85"S 149°44'54.25"E	680	0.85 km	0	NIL	Not Required.
OP 19 (R21A)	34°50'5.15"S 149°44'54.09"E	669	0.63 km	0	NIL	Not Required.
OP 20 (R21B)	34°50'6.01"S 149°44'53.43"E	669	0.60 km	0	NIL	Not Required.
OP 21 (R22)	34°50'11.74"S 149°45'18.05"E	673	0.39 km	0	NIL	Not Required.

Residential Receptor	Location	Elevation	Distance to the nearest solar panel	Yellow Glare (Hours Per Year):	Potential Glint and Glare Rating	Recommended Mitigation Measures
OP 22 (R25)	34°50'40.44"S 149°45'0.86"E	683	0.29 km	0	NIL	Not Required.
OP 23 (R27)	34°51'6.60"S 149°45'15.95"E	667	0.90 km	0	NIL	Not Required.
OP 24 (R29)	34°50'38.46"S 149°44'15.55"E	706	1.03 km	0	NIL	Not Required.
OP 25 (R30)	34°50'52.99"S 149°44'48.11"E	694	0.74 km	0	NIL	Not Required.
OP 26 (R31)	34°50'50.13"S 149°44'53.83"E	696	0.62 km	9.1	LOW	Not Required.
OP 27 (R32)	34°50'51.38"S 149°44'22.85"E	689	1.05 km	0	NIL	Not Required.
OP 28 (R34)	34°51'4.78"S 149°44'19.06"E	686	1.41 km	2.4	LOW	Not Required.
OP 29 (R35)	34°51'9.09"S 149°44'19.74"E	685	1.50 km	4.7	LOW	Not Required.
OP 30 (R36)	34°51'17.21"S 149°44'13.34"E	696	2.82 km	0.7	LOW	Not Required.
OP 31 (R37)	34°51'22.80"S 149°44'24.40"E	682	1.81 km	0.4	LOW	Not Required.
OP 32 (R40)	34°52'16.84"S 149°44'15.21"E	678	2.33 km	0	NIL	Not Required.
OP 33 (R41)	34°52'31.28"S 149°44'25.62"E	675	2.29 km	0	NIL	Not Required.
OP 34 (R42)	34°52'37.78"S 149°44'28.17"E	677	2.35 km	0	NIL	Not Required.
OP 35 (R43)	34°52'13.48"S 149°44'27.50"E	672	1.99 km	0	NIL	Not Required.
OP 36 (R48)	34°49'5.57"S 149°47'11.81"E	698	2.81 km	0	NIL	Not Required.
OP 37 (R87)	34°51'6.82"S 149°43'54.13"E	682	1.92 km	0	NIL	Not Required.
OP 38 (R88)	34°52'20.86"S 149°44'6.83"E	679	2.56 km	0	NIL	Not Required.
OP 39 (R89)	34°50'51.06"S 149°45'20.51"E	666	0.74 km	0	NIL	Not Required.
OP 40 (R90)	34°51'14.28"S 149°44'59.47"E	670	1.23 km	2.4	LOW	Not Required.
OP 01B (R50)	34°52'38.13"S 149°43'59.87"E	676	2.96 km	0	NIL	Not Required.
OP 02B (R51)	34°52'40.05"S 149°44'11.32"E	672	2.74 km	0	NIL	Not Required.

Private Receptor	Location	737Ele-vation	Distance to the nearest solar panel	Yellow Glare (Hours Per Year):	Potential Glint and Glare Rating	Recommended Mitigation Measures
OP 03B (R57)	34°48'58.62"S 149°46'29.84"E	687	2.74 km	0	NIL	Not Required.
OP 04B (R60)	34°49'55.99"S 149°47'44.10"E	702	2.25 km	0	NIL	Not Required.
OP 05B (R66)	34°49'25.99"S 149°47'41.80"E	718	2.78 km	0	NIL	Not Required.
OP 06B (R67)	34°50'26.43"S 149°47'58.05"E	693	2.40 km	0	NIL	Not Required.
OP 07B (R68)	34°50'35.16"S 149°48'0.43"E	697	2.47 km	0	NIL	Not Required.
OP 08B (R69)	34°50'36.46"S 149°47'42.37"E	724	2.01 km	0	NIL	Not Required.
OP 09B (R70)	34°50'57.02"S 149°47'53.93"E	704	2.46 km	0	NIL	Not Required.
OP 10B (R71)	34°52'9.12"S 149°48'39.13"E	736	1.67 km	0	NIL	Not Required.
OP 11B (R76)	34°49'10.09"S 149°44'17.67"E	650	2.52 km	0	NIL	Not Required.
OP 12B (R78)	34°51'9.56"S 149°44'11.12"E	690	1.63 km	3.7	LOW	Not Required.
OP 13B (R79)	34°49'57.98"S 149°44'35.43"E	678	0.99 km	0	NIL	Not Required.
OP 14B (R77)	34°50'48.84"S 149°43'50.35"E	690	1.75 km	0	NIL	Not Required.
OP 15B (Public Receptor)	POMADERRIS NATURE RESERVE	737	2.70 km	0	NIL	Not Required.
OP 16B (Public Receptor)	ADRENALIN SKYDIVE	636	4.24 km	0	NIL	Not Required.
OP 17B (Public Receptor)	GOULBURN FLIGHT TRAINING CENTRE	638	4.14 km	0	NIL	Not Required.

Table 6. Private and Public receptors assessment results

Based on the desktop assessment, no high or moderate potential “Yellow” glare has been identified for Private and Public Receptors. It is crucial to emphasise that this assessment is based on a worst-case scenario and does not account for variables such as weather conditions or intervening elements like vegetation and built structures.

The assessment reveals a low potential for “Yellow” glare (less than 10 hours per year) for OP26 (R31), OP28 (R34), OP29 (R35), OP30 (R36), OP31 (R37), OP40 (R90), and OP12B (R78).

Also, upon conducting a desktop assessment of the receptors using aerial imagery, it is evident that the existing vegetation surrounding the affected receptors would mitigate the potential “Yellow” glare.

As a result, there is no need for any mitigation measures to be recommended for Private and Public Receptors in the vicinity of the Project. Detailed information regarding the expected time of day when glare might be experienced by each Private Receptor is provided in **Appendix A.**

5.0 Road and Rail Receptors

5.1 Overview of Methodology

Table 7 provides an overview of the scope, methodology and performance objectives for assessment of glint and glare on road and railway line receptors.

Glint and Glare Requirements - Road & Rail		
Scope	**Methodology**	**Performance Objective**
All roads and rail lines within 1 km of the proposed solar array.	**Solar glare analysis to identify whether glint and glare are geometrically possible within the forward looking eye-line of motorists and rail operators.**	**If glare is geometrically possible then measures should be taken to eliminate the occurrence of glare. Alternatively, the applicant must demonstrate that glare would not significantly impede the safe operation of vehicles or the interpretation of signals and signage.**
Note: Modeling for road receptors is calculated on a maximum height of 2.4 m AGL - representative of the eye level for truck drivers (Source: Austroads Ltd. 2021).		
Modeling for rail lines is based a representative eye height of 3 m AGL to represent the eye level of train drivers (Source: Transport Asset Standards Authority 2020).		

Table 7. Road and Rail Receptor Assessment Requirements (Source: DPE(now DPHI), 2022)

5.2 Road and Rail Receptors

The desktop assessment has determined that there are no Rail Receptors located within a 1km radius of the Project. However, both Windellama Road and Kooringaroo Road have been identified as Road Receptors within the 1 km radius.

Figure 5 provides a visual representation of the Road Receptors that have been identified within the 1km proximity to the Project.

Figure 5 Rail and Road Receptors (Map Source: Esri Maps, 2023)

5.3 Results of Glint and Glare Assessment - Road and Rail

Two (2) road receptors were considered as part of the assessment.
Table 8 provides an overview of the annual glare experienced along the Windellama and Kooringaroo Roads.

Road / Rail Receptor:	Approximate Distance to the Project:	Elevation:	Yellow Glare (Hours Per Year):	Existing screening factors:	Mitigation Recommendations:
Kooringaroo Road	0.28km	698-718m	16.7	Limited existing scattered vegetation between the road and the Project will partially obscure potential glare from the Project.	Additional screening vegetation along the north-easter boundary of the Project will likely mitigate further potential glare from the Project. (Refer to Figure 7)
Windellama Road	0.29km	678-681m	0	Existing scattered vegetation along the road will likely obscure potential view toward the Project.	Not Required.

Table 8. Road & Rail receptor assessment results

Based on the glare assessment, it has been determined that Kooringaroo Road is projected to experience approximately 16.7 hours of 'Yellow' glare per year originating from PV Array 10. This glare occurrence is expected during the period from mid-October to March, specifically between 5:50 pm and 7:00 pm. According to the performance objectives if yellow glare is geometrically possible then measures should be taken to eliminate the occurrence of glare. Alternatively, the applicant must demonstrate that glare would not significantly impede the safe operation of vehicles or the interpretation of signals and signage.

Upon conducting a desktop assessment of the receptors using aerial imagery, it is apparent that there is some limited scattered screening vegetation between the affected section of the road and the Project. This vegetation may partially mitigate the glare experienced by Road Receptors. (Refer to **section 8.0**)

It is crucial to emphasise that this assessment is based on a worst-case scenario and does not account for factors such as weather conditions, intervening elements like vegetation, or built structures, which may influence the actual glare experienced.

For more detailed information on the glare impact on Kooringaroo Road, please refer to the comprehensive glare impact output provided in **Appendix A**.

6.0 Aviation Receptors

6.1 Overview of Methodology

Table 9 provides an overview of the scope, methodology and performance objectives for assessment of glint and glare on aviation receptors.

Glint and Glare Requirements - Aviation Receptors		
Scope	**Methodology**	**Performance Objective**
All air traffic control towers and take off / landing approaches to any runway or landing strip within 5km of the proposed solar array.	**Solar glare analysis that is worst case in all scenarios accounting for all aircraft using the airport (e.g. gliders, helicopters etc).**	**Any glint and glare should be avoided unless the aerodrome operator agrees that the impact would not be material (e.g. occurs at times when there are no flights or would not pose a safety risk to airport operations).**

Note: Modeling for Flight Path receptors is calculated on a threshold crossing height of 50ft (15m) in 2 mile (3.21km) point ground elevation and the ±50 degree azimuthal and 30 degree vertical viewing angle representative of the pilot field view from cockpit. (Source: Rogers, 2015)

Table 9. Aviation Receptor Assessment Requirements (Source: DPE, 2022)

6.2 Aviation Receptors

The desktop assessment has identified the presence of one (1) landing strip located within a 5km radius on north west of the development footprint. For each landing strip, two flight paths have been identified, each with a threshold distance of 2 miles (equivalent to 3.21 km). (Refer to **Figure 6**)

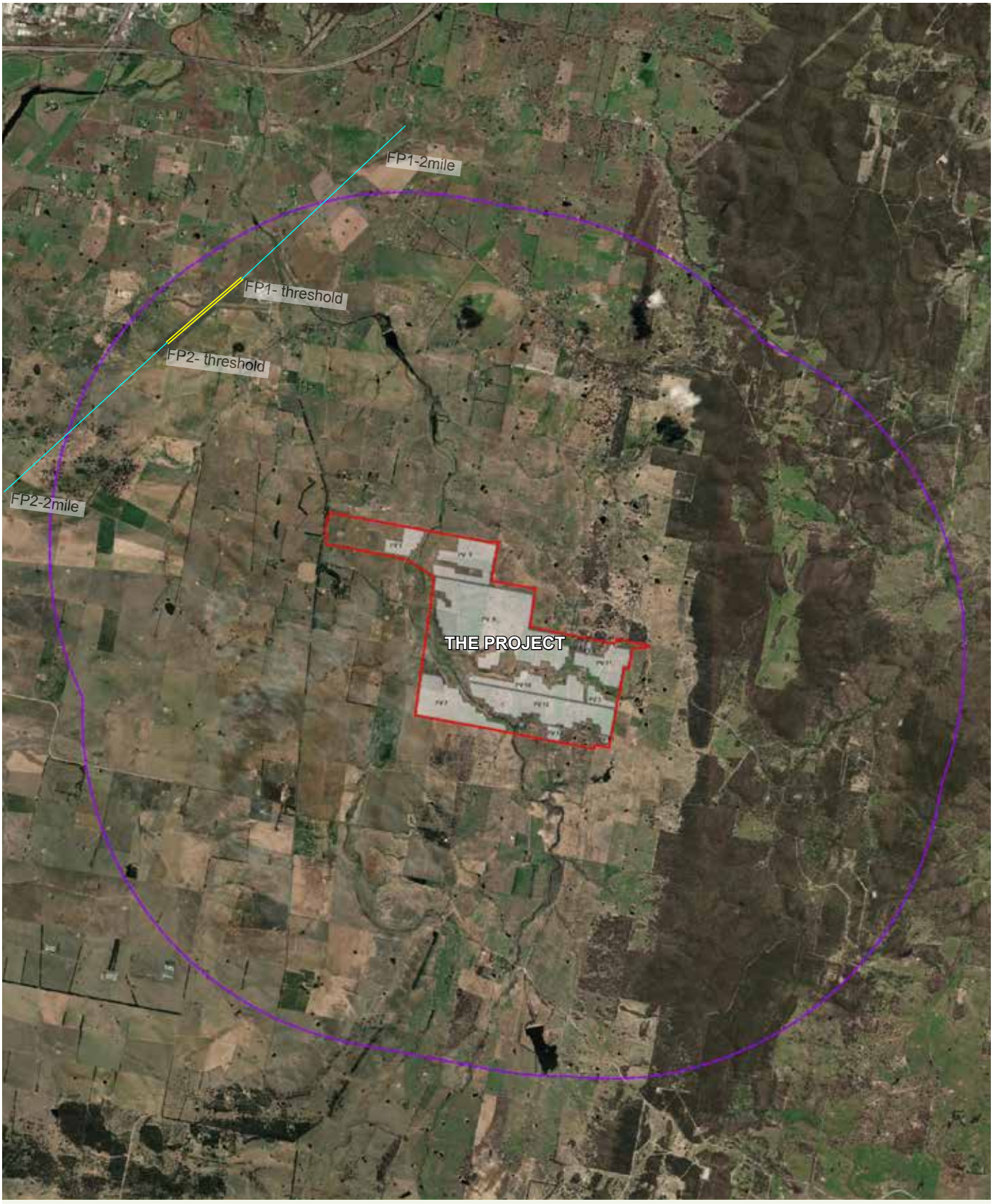
6.3 Results of Glint and Glare Assessment - Aviation Receptors

Based on the desktop assessment, two (2) Flight Point thresholds (a threshold of 2 miles representing the flight paths from the identified landing strips) are situated within this 5km. (Refer to **Figure 6**). The assessment found that no glare was identified for any of the flight paths associated with these thresholds. As a result, no mitigation measures are deemed necessary.

Detailed glare impact outputs for each receptor is provided in **Appendix A**.

Aviation Receptor:	Approximate Distance to the Project:	Ground Elevation:	Yellow Glare (Hours Per Year):	Mitigation Recommendations:
FP01	4.40km	636m	0	Not Required.
FP02	4.30km	652m	0	Not Required.

Table 10. Aviation receptor assessment results



LEGEND

- PV Array Area
- Project Boundary
- 5 km from nearest panel
- Aviation Receptor
- 2 mile Flight Path threshold

N

0 1 2 3 4km

Figure 6 Aviation Receptors (Map Source:Esri Maps, 2023)

7.0 Performance Objectives

7.1 Summary of assessment results

7.1.1 Private and Public Receptors

Table 5 provides a comprehensive overview of the scope, methodology, and performance objectives related to the assessment of glint and glare on private and public receptors. The assessment conducted by Moir LA is summarized as follows:

> **A total of 54 private and 3 public receptors have been assessed, of which seven (7) Private Receptors will have a low potential for 'Yellow' glare, with an annual exposure of less than 10 hours. Notably, no private or public receptors have been assessed as having a moderate or high potential for 'Yellow' glare.**

The assessment findings indicate that the 'Yellow' glare exposure for OP26 (R31), OP28 (R34), OP29 (R35), OP30 (R36), OP31 (R37), OP40 (R90), and OP12B (R78) is below the acceptable threshold of 10 hours per year.

Moreover, a detailed assessment of aerial imagery has revealed that the existing vegetation surrounding these receptors is likely to obscure any potential glare originating from the Project. Consequently, no mitigation measures are considered necessary.

For an understanding of when glare is likely to be experienced for each receptor, refer to **Appendix A.**

7.1.2 Road and Rail Receptors

Table 7 provides a comprehensive overview of the scope, methodology, and performance objectives concerning the assessment of glint and glare on Road Receptors. The assessment conducted by Moir LA is summarised below:

> **One (1) Road Receptor has been assessed as having a potential glare rating exceeding 10 hours per year.**

The assessment reveals that Kooringaroo Road is projected to experience approximately 16.7 hours per year of potential "Yellow" glare.

In accordance with the performance objectives for Road and rail receptors, if glare is geometrically possible then measures should be taken to eliminate the occurrence of glare. Alternatively, the applicant must demonstrate that glare would not significantly impede the safe operation of vehicles or the interpretation of signals and signage.

Upon conducting a desktop assessment of the aerial imagery with respect to Kooringaroo Road, it has been observed that there is some limited scattered screening vegetation between the

affected section of the road and the Project. This vegetation may offer partial mitigation of the glare experienced by Road Receptors. However, it is recommended to consider implementing additional screening planting or adjusting the operation time of PV Array 10 to further reduce the potential glare impact. (Refer to **Section 8** for more details.)

The assessment reveals that Kooringaroo Road would experience potential “Yellow” glare from mid-October to March, particularly between 5:50 pm and 7:00 pm. (Refer to **Appendix A**.)

8.0 Mitigation

8.1 Overview of Impacts

As previously mentioned, it is crucial to consider strategies for either avoiding or mitigating impacts associated with glare for various receptors within specific proximity limits. Here is a summary of the key findings from the assessment:

Private and Public Receptors:

- A total of 54 private and 3 public receptors were assessed. Seven (7) of private receptors (OP26 (R31), OP28 (R34), OP29 (R35), OP30 (R36), OP31 (R37), OP40 (R90), and OP12B (R78)) were found to have a low rating for glare impacts, indicating that they are not significantly affected by glare.

Road Receptors:

- Among the two (2) roads identified within a 1km radius of the Project, one (1) road receptor was determined to experience potential yellow glare. Kooringaroo Road receptor has limited screening vegetation which partially screens the glare impacts associated with the Project. However, additional screening planting has been proposed in the Lightsource BP Project layout for further mitigation.

Aviation Receptors:

- An assessment of the two (2) flight paths originating from Goulburn Airport found that there are no glare impacts affecting aviation receptors. Therefore, these flight paths are not impacted by glare from the Project.

These findings provide a comprehensive overview of the glare impact assessment and highlight areas where potential mitigation strategies or adjustments will be required to minimise glare impacts on specific receptors.

8.2 Proposed Mitigation Strategies

One of the most effective methods for reducing the potential glare impact at private, road, and rail receptors is to implement screen planting along the project boundary or, as applicable, at affected viewpoints.

Mitigation principles have been recommended in accordance with DPE's Technical Guidelines.

The Technical Supplement states: *Vegetation screening, or the planting of trees and shrubs, to visually screen solar energy projects or other potential visual impacts (such as glint and glare) from view may be a useful mitigation option for selected viewpoints. On-site screening, such as perimeter planting, should be considered in the first instance. If this is unlikely to be effective, screening can be considered at affected viewpoints.*

In line with these principles, the Project has integrated a 5m landscaping screening buffer, as specified in the Lightsource bp Project layout. This landscape screening buffer will be established as a 5m-wide zone of screening vegetation on the eastern and north-eastern boundary of PV Array 11 as part of the Project's establishment. This strategic placement of vegetation is expected to potentially mitigate glare impacts from the Project, particularly from Kooringaroo Road.

To provide a clear visual representation of the extent and locations of proposed screening vegetation, refer to **Figure 7** for reference.

Figure 7 Mitigation Screening (Map Source: Esri Maps, 2023)

9.0 Conclusion

This report serves the purpose of identifying potential glint and glare impacts from the Project on surrounding receptors, including residential receptors within 3 km of the Project, road and rail receptors within 1 km, and aviation receptors within 5 km.

Based on the parameters and assumptions outlined in this report, potential glare exposure has been assessed for a total of 54 private residential receptors, three (3) public-sensitive receptors, two (2) road receptors, and one (1) aviation receptor.

The assessment findings indicate that the 'Yellow' glare exposure for OP26 (R31), OP28 (R34), OP29 (R35), OP30 (R36), OP31 (R37), OP40 (R90), and OP12B (R78) remains below the acceptable threshold of 10 hours per year. Furthermore, a detailed analysis of aerial imagery has revealed that existing vegetation surrounding these receptors is likely to provide effective screening, thus obscuring any potential glare originating from the Project. Consequently, no additional mitigation measures are deemed necessary for these receptors.

Kooringaroo Road is projected to experience approximately 16.7 hours per year of potential "Yellow" glare. In accordance with the performance objectives for Road and Rail Receptors, if glare is geometrically possible then measures should be taken to eliminate the occurrence of glare. Alternatively, the applicant must demonstrate that glare would not significantly impede the safe operation of vehicles or the interpretation of signals and signage. A desktop assessment utilising aerial imagery has shown the presence of limited scattered screening vegetation between the affected road section and the Project, offering partial mitigation of glare. To further diminish the potential glare impact, it is recommended to considering additional screening planting.

In alignment with mitigation requirements, a 5m landscape screen buffer along the eastern and north-eastern boundary of PV Array 11, as outlined in the Lightsource bp Project layout is recommended as an option to address the potential glare impacts. This landscape screen buffer includes a 5-metre-wide zone of screening vegetation on-site, strategically positioned to effectively fragment and mitigate potential glare impacts from the Project, particularly along Kooringaroo Road.

Additionally, one landing strip was identified within a 5 km radius of the development footprint, and two Flight Point thresholds were identified through desktop assessment. No glare impacts have been identified for any of the associated flight paths, rendering additional mitigation measures unnecessary.

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Appendix A

FORGESOLAR GLARE ANALYSIS (SECTION A)

Project: **2321 GUNDARY SOLAR FARM**
Site configuration: **2321 GUNDARY SF A**

Client: UMWELT

Created 11 May, 2023
Updated 05 Sep, 2023
Time-step 1 minute
Timezone offset UTC10
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 90321.15924

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	478	8.0	546	9.1	-
PV array 10	SA tracking	SA tracking	8,276	137.9	1,001	16.7	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	723	12.1	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	2,969	49.5	0	0.0	-
PV array 4	SA tracking	SA tracking	1,169	19.5	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	3,314	55.2	0	0.0	-
PV array 7	SA tracking	SA tracking	5,482	91.4	633	10.6	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

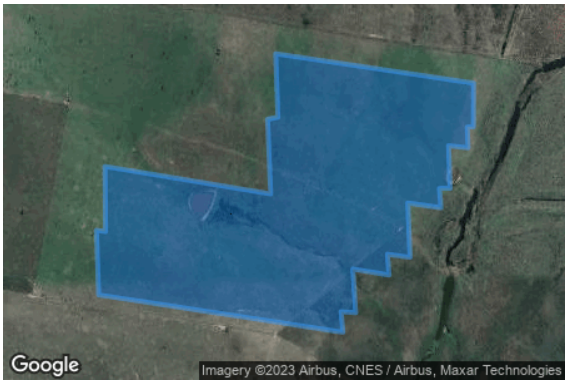
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	5,734	95.6	1,001	16.7
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	618	10.3	0	0.0
OP 3	544	9.1	0	0.0
OP 4	0	0.0	0	0.0
OP 5	261	4.3	0	0.0
OP 6	622	10.4	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 7	964	16.1	0	0.0
OP 8	1,564	26.1	0	0.0
OP 9	363	6.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	465	7.8	0	0.0
OP 23	659	11.0	0	0.0
OP 24	747	12.4	0	0.0
OP 25	752	12.5	0	0.0
OP 26	1,231	20.5	546	9.1
OP 27	696	11.6	0	0.0
OP 28	689	11.5	142	2.4
OP 29	621	10.3	283	4.7
OP 30	1,219	20.3	39	0.7
OP 31	1,255	20.9	24	0.4
OP 32	157	2.6	0	0.0
OP 33	343	5.7	0	0.0
OP 34	348	5.8	0	0.0
OP 35	186	3.1	0	0.0
OP 36	0	0.0	0	0.0
OP 37	880	14.7	0	0.0
OP 38	169	2.8	0	0.0
OP 39	647	10.8	0	0.0
OP 40	677	11.3	145	2.4

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.840456	149.755350	675.25	1.95	677.20
2	-34.840842	149.758197	672.75	1.95	674.70
3	-34.839794	149.758144	676.52	1.95	678.47
4	-34.839764	149.758322	676.87	1.95	678.82
5	-34.838872	149.758283	677.61	1.95	679.56
6	-34.839286	149.761683	652.30	1.95	654.25
7	-34.839897	149.761681	652.06	1.95	654.01
8	-34.839903	149.761575	653.51	1.95	655.46
9	-34.840194	149.761589	652.81	1.95	654.76
10	-34.840164	149.761253	656.23	1.95	658.18
11	-34.840764	149.761281	653.53	1.95	655.48
12	-34.840764	149.761097	654.88	1.95	656.83
13	-34.841036	149.761122	652.81	1.95	654.76
14	-34.840969	149.760553	656.86	1.95	658.81
15	-34.841733	149.760592	651.87	1.95	653.82
16	-34.841689	149.760203	655.00	1.95	656.95
17	-34.841981	149.760231	653.26	1.95	655.21
18	-34.841897	149.759608	659.68	1.95	661.63
19	-34.842511	149.759658	657.56	1.95	659.51
20	-34.842497	149.759408	659.19	1.95	661.14
21	-34.842786	149.759439	658.50	1.95	660.45
22	-34.842261	149.755242	679.24	1.95	681.19
23	-34.841353	149.755203	676.42	1.95	678.37
24	-34.841369	149.755361	676.81	1.95	678.76

Name: PV array 10
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.858406	149.770000	655.09	1.95	657.04
2	-34.859275	149.776911	670.07	1.95	672.02
3	-34.858694	149.776881	667.72	1.95	669.67
4	-34.858422	149.777164	667.36	1.95	669.31
5	-34.858517	149.777869	669.53	1.95	671.48
6	-34.857853	149.777822	668.66	1.95	670.61
7	-34.857567	149.778106	669.19	1.95	671.14
8	-34.857733	149.779386	673.06	1.95	675.01
9	-34.858044	149.779392	674.91	1.95	676.86
10	-34.858317	149.781619	676.41	1.95	678.36
11	-34.859039	149.781789	677.78	1.95	679.73
12	-34.859308	149.781792	679.96	1.95	681.91
13	-34.859375	149.782231	679.89	1.95	681.84
14	-34.859536	149.782239	681.33	1.95	683.28
15	-34.859567	149.782506	681.61	1.95	683.56
16	-34.860022	149.782522	686.44	1.95	688.39
17	-34.860122	149.783111	688.43	1.95	690.38
18	-34.859500	149.783086	682.00	1.95	683.95
19	-34.859569	149.783803	683.21	1.95	685.16
20	-34.859289	149.783789	681.37	1.95	683.32
21	-34.859447	149.785550	682.53	1.95	684.48
22	-34.858550	149.785517	679.87	1.95	681.82
23	-34.858550	149.785744	680.18	1.95	682.13
24	-34.857958	149.785717	677.91	1.95	679.86
25	-34.858142	149.787292	680.38	1.95	682.33
26	-34.858758	149.787306	683.68	1.95	685.63
27	-34.858850	149.787914	683.32	1.95	685.27
28	-34.859147	149.787919	684.39	1.95	686.34
29	-34.859217	149.788481	683.00	1.95	684.95
30	-34.859839	149.788483	684.87	1.95	686.82
31	-34.859889	149.788428	685.10	1.95	687.05
32	-34.860054	149.788430	685.75	1.95	687.70
33	-34.860358	149.788434	687.01	1.95	688.96
34	-34.860727	149.788435	688.51	1.95	690.46
35	-34.861000	149.788452	689.51	1.95	691.46
36	-34.861206	149.788459	689.25	1.95	691.20
37	-34.861380	149.788465	689.05	1.95	691.00
38	-34.861585	149.788469	688.82	1.95	690.77
39	-34.861731	149.788458	689.04	1.95	690.99
40	-34.861660	149.787962	691.38	1.95	693.33
41	-34.861623	149.787682	693.41	1.95	695.36
42	-34.861578	149.787337	694.64	1.95	696.59
43	-34.861491	149.786699	694.22	1.95	696.17
44	-34.861439	149.786264	691.51	1.95	693.46
45	-34.861253	149.784794	688.21	1.95	690.16
46	-34.861211	149.784530	689.95	1.95	691.90
47	-34.861151	149.784191	691.97	1.95	693.92
48	-34.861125	149.784062	692.51	1.95	694.46
49	-34.861102	149.783899	693.26	1.95	695.21
50	-34.861085	149.783822	693.65	1.95	695.60
51	-34.861071	149.783685	694.25	1.95	696.20
52	-34.861043	149.783443	695.39	1.95	697.34
53	-34.859242	149.769586	655.35	1.95	657.30
54	-34.858619	149.769571	655.00	1.95	656.95
55	-34.858669	149.769994	655.22	1.95	657.17

Name: PV array 11
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.854928	149.786786	682.51	1.95	684.46
2	-34.855153	149.788475	685.33	1.95	687.28
3	-34.855178	149.788637	684.59	1.95	686.54
4	-34.855197	149.788745	684.14	1.95	686.09
5	-34.855216	149.788878	683.68	1.95	685.63
6	-34.855257	149.789198	684.90	1.95	686.85
7	-34.855306	149.789552	687.26	1.95	689.21
8	-34.855581	149.791525	700.41	1.95	702.36
9	-34.854836	149.791494	701.31	1.95	703.26
10	-34.854864	149.791889	701.91	1.95	703.86
11	-34.854581	149.791869	701.25	1.95	703.20
12	-34.854628	149.792308	701.24	1.95	703.19
13	-34.854017	149.792292	699.50	1.95	701.45
14	-34.854047	149.792558	699.02	1.95	700.97
15	-34.853761	149.792550	699.97	1.95	701.92
16	-34.853831	149.793075	699.31	1.95	701.26
17	-34.854142	149.793086	698.06	1.95	700.01
18	-34.854433	149.795772	705.20	1.95	707.15
19	-34.855344	149.795817	705.80	1.95	707.75
20	-34.856011	149.795669	708.16	1.95	710.11
21	-34.856144	149.795500	709.31	1.95	711.26
22	-34.856744	149.795525	708.98	1.95	710.93
23	-34.856639	149.794693	710.56	1.95	712.51
24	-34.856929	149.794705	710.54	1.95	712.49
25	-34.856917	149.794600	710.75	1.95	712.70
26	-34.857533	149.794625	709.83	1.95	711.78
27	-34.857822	149.794578	709.08	1.95	711.03
28	-34.857867	149.794406	709.56	1.95	711.51
29	-34.858489	149.794442	706.20	1.95	708.15
30	-34.858772	149.794394	704.16	1.95	706.11
31	-34.858753	149.794222	704.23	1.95	706.18
32	-34.859358	149.794253	699.89	1.95	701.84
33	-34.859356	149.794136	699.89	1.95	701.84
34	-34.859644	149.794147	697.80	1.95	699.75
35	-34.859267	149.791322	687.69	1.95	689.64
36	-34.858947	149.791308	688.01	1.95	689.96
37	-34.858900	149.790925	685.57	1.95	687.52
38	-34.858286	149.790900	686.54	1.95	688.49
39	-34.858083	149.789519	683.80	1.95	685.75
40	-34.857792	149.789519	683.80	1.95	685.75
41	-34.857742	149.789139	683.25	1.95	685.20
42	-34.857125	149.789114	683.46	1.95	685.41
43	-34.857064	149.788703	682.21	1.95	684.16
44	-34.857678	149.788719	682.27	1.95	684.22
45	-34.857631	149.788367	681.25	1.95	683.20
46	-34.856964	149.788344	681.16	1.95	683.11
47	-34.856719	149.786636	678.00	1.95	679.95
48	-34.856106	149.786614	679.61	1.95	681.56
49	-34.855211	149.786697	681.71	1.95	683.66

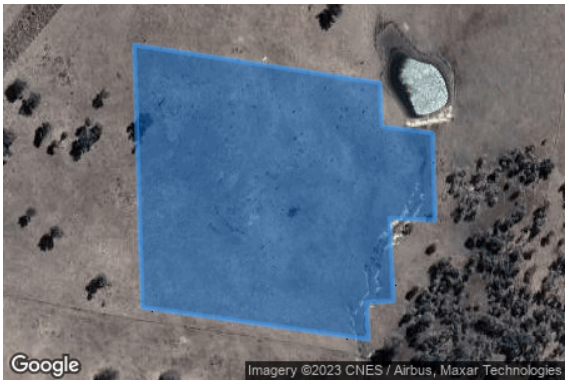
Name: PV array 12
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.859419	149.769711	655.67	1.95	657.62
2	-34.861188	149.783350	696.52	1.95	698.47
3	-34.861232	149.783715	695.09	1.95	697.04
4	-34.861282	149.784147	693.17	1.95	695.12
5	-34.861345	149.784637	689.71	1.95	691.66
6	-34.862506	149.793494	693.21	1.95	695.16
7	-34.863142	149.793542	694.26	1.95	696.21
8	-34.866122	149.792931	694.11	1.95	696.06
9	-34.865931	149.791367	702.04	1.95	703.99
10	-34.865333	149.791322	703.42	1.95	705.37
11	-34.865036	149.791375	703.20	1.95	705.15
12	-34.865019	149.791258	703.60	1.95	705.55
13	-34.864686	149.790997	703.23	1.95	705.18
14	-34.864553	149.789928	704.25	1.95	706.20
15	-34.863931	149.789911	701.83	1.95	703.78
16	-34.863808	149.789000	698.34	1.95	700.29
17	-34.864411	149.789019	700.24	1.95	702.19
18	-34.864303	149.788022	694.23	1.95	696.18
19	-34.864583	149.788039	694.66	1.95	696.61
20	-34.864439	149.786811	697.29	1.95	699.24
21	-34.865050	149.786856	697.08	1.95	699.03
22	-34.865314	149.786586	697.74	1.95	699.69
23	-34.865150	149.785300	694.98	1.95	696.93
24	-34.864858	149.785286	695.42	1.95	697.37
25	-34.864750	149.784472	695.43	1.95	697.38
26	-34.864730	149.784300	696.07	1.95	698.02
27	-34.864708	149.784110	696.73	1.95	698.68
28	-34.864983	149.784128	696.32	1.95	698.27
29	-34.864675	149.781517	703.05	1.95	705.00
30	-34.864367	149.781494	702.23	1.95	704.18
31	-34.864328	149.781228	700.18	1.95	702.13
32	-34.863703	149.781219	698.95	1.95	700.90
33	-34.863708	149.781372	700.44	1.95	702.39
34	-34.863419	149.781353	699.61	1.95	701.56
35	-34.863236	149.779844	691.61	1.95	693.56
36	-34.863519	149.779856	690.43	1.95	692.38
37	-34.863342	149.778442	682.56	1.95	684.51
38	-34.863936	149.778461	678.80	1.95	680.75
39	-34.863886	149.777744	674.62	1.95	676.57
40	-34.864161	149.777750	672.97	1.95	674.92
41	-34.864058	149.776792	667.31	1.95	669.26
42	-34.863769	149.776778	669.04	1.95	670.99
43	-34.863364	149.773750	660.53	1.95	662.48
44	-34.862753	149.773742	661.26	1.95	663.21
45	-34.862656	149.773025	660.60	1.95	662.55
46	-34.862372	149.773017	661.22	1.95	663.17
47	-34.862250	149.772294	661.76	1.95	663.71
48	-34.861636	149.772283	662.10	1.95	664.05
49	-34.861336	149.770414	657.93	1.95	659.88
50	-34.860978	149.770014	657.15	1.95	659.10
51	-34.860361	149.769983	656.71	1.95	658.66
52	-34.860352	149.769682	655.91	1.95	657.86

Name: PV array 13
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.866069	149.791139	701.41	1.95	703.36
2	-34.866275	149.792711	694.92	1.95	696.87
3	-34.867181	149.792725	694.34	1.95	696.29
4	-34.867058	149.791775	696.40	1.95	698.35
5	-34.866747	149.791756	697.15	1.95	699.10
6	-34.866678	149.791158	699.92	1.95	701.87

Name: PV array 14
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.864939	149.782561	702.09	1.95	704.04
2	-34.865206	149.784672	693.63	1.95	695.58
3	-34.865511	149.784689	693.01	1.95	694.96
4	-34.865558	149.785125	694.61	1.95	696.56
5	-34.866172	149.785147	693.39	1.95	695.34
6	-34.866156	149.784756	690.39	1.95	692.34
7	-34.866739	149.784789	688.82	1.95	690.77
8	-34.866747	149.784561	687.86	1.95	689.81
9	-34.867008	149.784575	686.24	1.95	688.19
10	-34.866783	149.782631	699.00	1.95	700.95

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.864660	149.778232	674.47	1.95	676.42
2	-34.864670	149.778331	675.34	1.95	677.29
3	-34.864680	149.778433	676.22	1.95	678.17
4	-34.864698	149.778569	677.49	1.95	679.44
5	-34.864713	149.778664	678.31	1.95	680.26
6	-34.864418	149.778643	677.80	1.95	679.75
7	-34.864425	149.778731	678.62	1.95	680.57
8	-34.865039	149.778767	680.03	1.95	681.98
9	-34.865042	149.778650	678.66	1.95	680.61
10	-34.865319	149.778669	678.68	1.95	680.63
11	-34.865292	149.778386	675.36	1.95	677.31
12	-34.865894	149.778403	674.05	1.95	676.00
13	-34.865903	149.778250	672.04	1.95	673.99
14	-34.866181	149.778256	670.94	1.95	672.89
15	-34.866158	149.778006	667.76	1.95	669.71
16	-34.865242	149.777983	670.58	1.95	672.53
17	-34.865254	149.778092	671.86	1.95	673.81
18	-34.864955	149.778101	672.70	1.95	674.65
19	-34.864652	149.778112	673.44	1.95	675.39

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.861793	149.789000	688.70	1.95	690.65
2	-34.862401	149.793651	693.05	1.95	695.00
3	-34.862093	149.793694	691.55	1.95	693.50
4	-34.861472	149.793673	688.72	1.95	690.67
5	-34.861217	149.791758	688.32	1.95	690.27
6	-34.860601	149.791725	686.00	1.95	687.95
7	-34.860556	149.791328	687.34	1.95	689.29
8	-34.860266	149.791334	687.14	1.95	689.09
9	-34.860143	149.790352	686.29	1.95	688.24
10	-34.859460	149.790336	683.76	1.95	685.71
11	-34.859302	149.789038	683.43	1.95	685.38
12	-34.859945	149.788957	684.94	1.95	686.89

Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.853669	149.787596	691.34	1.95	693.29
2	-34.854597	149.787623	689.26	1.95	691.21
3	-34.854562	149.787377	687.65	1.95	689.60
4	-34.853644	149.787352	689.28	1.95	691.23

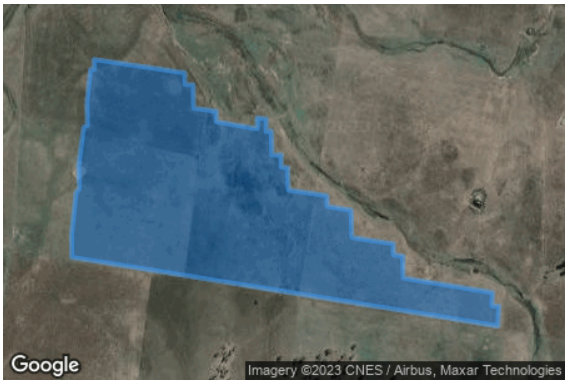
Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.854681	149.788294	689.54	1.95	691.49
2	-34.854657	149.788044	689.39	1.95	691.34
3	-34.854036	149.788026	692.11	1.95	694.06
4	-34.854010	149.787787	691.97	1.95	693.92
5	-34.853389	149.787776	691.87	1.95	693.82
6	-34.853464	149.788267	693.88	1.95	695.83

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

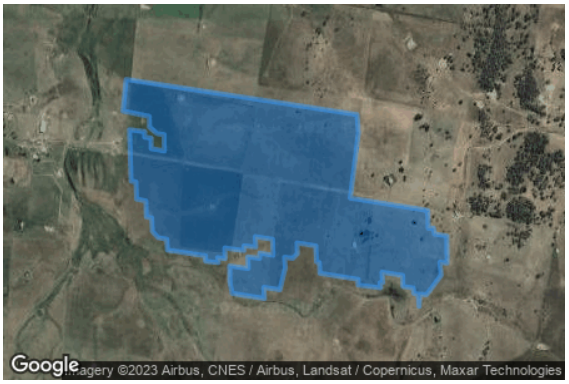
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.853629	149.789463	692.51	1.95	694.46
2	-34.854545	149.789498	688.36	1.95	690.31
3	-34.854551	149.789619	688.95	1.95	690.90
4	-34.855170	149.789627	687.82	1.95	689.77
5	-34.855020	149.788506	686.04	1.95	687.99
6	-34.854078	149.788476	691.03	1.95	692.98
7	-34.854096	149.788651	689.99	1.95	691.94
8	-34.853515	149.788637	692.65	1.95	694.60

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.858389	149.762044	654.78	1.95	656.73
2	-34.858763	149.765150	654.46	1.95	656.41
3	-34.859087	149.765169	655.94	1.95	657.89
4	-34.859107	149.765445	655.09	1.95	657.04
5	-34.859756	149.765464	657.08	1.95	659.03
6	-34.859846	149.766237	655.17	1.95	657.12
7	-34.860139	149.766237	655.26	1.95	657.21
8	-34.860337	149.767642	653.16	1.95	655.11
9	-34.860035	149.767650	652.68	1.95	654.63
10	-34.860060	149.767953	652.64	1.95	654.59
11	-34.860414	149.767951	653.24	1.95	655.19
12	-34.860401	149.768125	653.19	1.95	655.14
13	-34.861070	149.768155	654.66	1.95	656.61
14	-34.861072	149.768471	654.35	1.95	656.30
15	-34.861415	149.768471	655.30	1.95	657.25
16	-34.861426	149.768686	655.44	1.95	657.39
17	-34.862054	149.768715	656.53	1.95	658.48
18	-34.862219	149.770037	655.98	1.95	657.93
19	-34.862518	149.770054	657.26	1.95	659.21
20	-34.862624	149.770872	660.29	1.95	662.24
21	-34.863389	149.770896	664.47	1.95	666.42
22	-34.863570	149.772327	662.49	1.95	664.44
23	-34.863872	149.772327	664.38	1.95	666.33
24	-34.863916	149.772649	663.73	1.95	665.68
25	-34.864530	149.772662	667.21	1.95	669.16
26	-34.864941	149.775730	660.60	1.95	662.55
27	-34.865307	149.775709	661.69	1.95	663.64
28	-34.865324	149.775948	661.21	1.95	663.16
29	-34.865877	149.775910	664.14	1.95	666.09
30	-34.863949	149.761276	660.39	1.95	662.34
31	-34.863321	149.761262	658.42	1.95	660.37
32	-34.862142	149.761421	654.55	1.95	656.50
33	-34.862025	149.761536	654.61	1.95	656.56
34	-34.861411	149.761501	654.38	1.95	656.33
35	-34.860282	149.761686	655.50	1.95	657.45
36	-34.860234	149.761807	655.78	1.95	657.73
37	-34.859571	149.761793	654.80	1.95	656.75
38	-34.858667	149.761920	654.60	1.95	656.55
39	-34.858675	149.762038	654.78	1.95	656.73

Name: PV array 8
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.845411	149.763747	652.46	1.95	654.41
2	-34.847392	149.779619	707.21	1.95	709.16
3	-34.848408	149.779711	704.09	1.95	706.04
4	-34.852081	149.779147	685.99	1.95	687.94
5	-34.852786	149.784478	691.16	1.95	693.11
6	-34.853775	149.784508	691.71	1.95	693.66
7	-34.853775	149.784878	689.84	1.95	691.79
8	-34.854100	149.784925	690.53	1.95	692.48
9	-34.854219	149.785789	685.62	1.95	687.57
10	-34.855742	149.785800	682.29	1.95	684.24
11	-34.855683	149.785310	685.04	1.95	686.99
12	-34.856422	149.785389	681.50	1.95	683.45
13	-34.857511	149.784392	682.41	1.95	684.36
14	-34.857481	149.783917	687.18	1.95	689.13
15	-34.858167	149.783881	680.46	1.95	682.41
16	-34.857481	149.783808	688.31	1.95	690.26
17	-34.857436	149.783517	691.61	1.95	693.56
18	-34.857131	149.783481	694.73	1.95	696.68
19	-34.857050	149.782769	697.28	1.95	699.23
20	-34.856428	149.782753	702.34	1.95	704.29
21	-34.856247	149.781331	690.38	1.95	692.33
22	-34.856842	149.781372	686.61	1.95	688.56
23	-34.856842	149.781181	684.12	1.95	686.07
24	-34.857128	149.781225	681.30	1.95	683.25
25	-34.856967	149.779683	671.16	1.95	673.11
26	-34.856650	149.779697	671.81	1.95	673.76
27	-34.856311	149.777061	674.88	1.95	676.83
28	-34.855703	149.777025	677.46	1.95	679.41
29	-34.855667	149.776828	677.06	1.95	679.01
30	-34.854769	149.776781	677.81	1.95	679.76
31	-34.854597	149.775486	674.67	1.95	676.62
32	-34.855203	149.775514	675.51	1.95	677.46
33	-34.855472	149.775192	675.81	1.95	677.76
34	-34.855406	149.774631	673.87	1.95	675.82
35	-34.856003	149.774686	674.26	1.95	676.21
36	-34.857236	149.774311	667.81	1.95	669.76
37	-34.857097	149.773200	666.06	1.95	668.01
38	-34.857725	149.773250	663.66	1.95	665.61
39	-34.857439	149.771031	657.32	1.95	659.27
40	-34.856844	149.770881	658.78	1.95	660.73
41	-34.855897	149.770853	661.80	1.95	663.75
42	-34.856044	149.772136	665.70	1.95	667.65
43	-34.855386	149.772106	666.67	1.95	668.62
44	-34.855475	149.772917	667.66	1.95	669.61
45	-34.855178	149.772928	667.97	1.95	669.92
46	-34.855297	149.773847	670.37	1.95	672.32
47	-34.854400	149.773822	667.85	1.95	669.80
48	-34.854247	149.772617	670.96	1.95	672.91
49	-34.854831	149.772658	668.72	1.95	670.67
50	-34.854761	149.771839	667.26	1.95	669.21
51	-34.855033	149.771839	666.77	1.95	668.72
52	-34.854889	149.770528	663.03	1.95	664.98
53	-34.855489	149.770544	662.17	1.95	664.12
54	-34.855433	149.770022	661.56	1.95	663.51
55	-34.855714	149.770078	660.72	1.95	662.67
56	-34.855625	149.769203	659.64	1.95	661.59
57	-34.855331	149.769208	660.52	1.95	662.47
58	-34.855006	149.766578	654.49	1.95	656.44
59	-34.854394	149.766550	657.29	1.95	659.24

Name: PV array 9
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.840718	149.772712	672.26	1.95	674.21
2	-34.840814	149.773442	671.97	1.95	673.92
3	-34.841456	149.773456	675.07	1.95	677.02
4	-34.841747	149.773419	676.57	1.95	678.52
5	-34.841731	149.773314	676.64	1.95	678.59
6	-34.842339	149.773342	678.44	1.95	680.39
7	-34.842631	149.773217	678.20	1.95	680.15
8	-34.842756	149.773061	677.22	1.95	679.17
9	-34.843378	149.773086	674.65	1.95	676.60
10	-34.843647	149.773042	673.22	1.95	675.17
11	-34.843625	149.772867	672.64	1.95	674.59
12	-34.844278	149.772897	670.46	1.95	672.41
13	-34.844536	149.772847	669.57	1.95	671.52
14	-34.844522	149.772678	668.82	1.95	670.77
15	-34.845225	149.772706	668.61	1.95	670.56
16	-34.845481	149.772669	668.60	1.95	670.55
17	-34.845486	149.772600	668.15	1.95	670.10
18	-34.846100	149.772636	668.91	1.95	670.86
19	-34.846103	149.772514	668.39	1.95	670.34
20	-34.846381	149.772536	668.80	1.95	670.75
21	-34.845264	149.763456	651.54	1.95	653.49
22	-34.844958	149.763439	651.17	1.95	653.12
23	-34.844922	149.763219	650.29	1.95	652.24
24	-34.843692	149.763178	648.91	1.95	650.86
25	-34.844175	149.766897	654.86	1.95	656.81
26	-34.844772	149.766933	655.27	1.95	657.22
27	-34.845303	149.771283	663.76	1.95	665.71
28	-34.844328	149.771242	664.76	1.95	666.71
29	-34.843819	149.767178	655.00	1.95	656.95
30	-34.843528	149.767169	655.11	1.95	657.06
31	-34.843097	149.763747	648.51	1.95	650.46
32	-34.842475	149.763756	648.01	1.95	649.96
33	-34.842494	149.764075	648.08	1.95	650.03
34	-34.841894	149.764058	648.00	1.95	649.95
35	-34.841903	149.764161	648.00	1.95	649.95
36	-34.841614	149.764144	647.51	1.95	649.46
37	-34.841956	149.767048	654.66	1.95	656.61
38	-34.840915	149.767103	652.33	1.95	654.28
39	-34.840928	149.767232	652.75	1.95	654.70
40	-34.840081	149.767326	653.68	1.95	655.63
41	-34.840302	149.769306	665.37	1.95	667.32
42	-34.840380	149.769919	668.21	1.95	670.16
43	-34.840484	149.770793	669.07	1.95	671.02
44	-34.840569	149.771476	669.92	1.95	671.87

Route Receptors

Name: Kooringaroo Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.844894	149.797785	700.88	2.40	703.28
2	-34.845405	149.797839	701.95	2.40	704.35
3	-34.845951	149.797839	703.24	2.40	705.64
4	-34.846461	149.797667	703.72	2.40	706.12
5	-34.847201	149.797324	703.91	2.40	706.31
6	-34.847958	149.797195	705.08	2.40	707.48
7	-34.849341	149.797324	704.87	2.40	707.27
8	-34.850441	149.797796	706.13	2.40	708.53
9	-34.851753	149.798514	706.49	2.40	708.89
10	-34.851939	149.798593	705.97	2.40	708.37
11	-34.852547	149.798599	705.19	2.40	707.59
12	-34.852771	149.798593	704.93	2.40	707.33
13	-34.853040	149.798615	704.39	2.40	706.79
14	-34.853405	149.798706	703.13	2.40	705.53
15	-34.853634	149.798856	701.27	2.40	703.67
16	-34.853753	149.799179	698.70	2.40	701.10
17	-34.854386	149.803824	706.81	2.40	709.21
18	-34.854440	149.803980	707.21	2.40	709.61
19	-34.854545	149.804131	707.69	2.40	710.09
20	-34.854779	149.804259	708.11	2.40	710.51
21	-34.856232	149.804463	705.67	2.40	708.07
22	-34.857038	149.804442	706.36	2.40	708.76
23	-34.857666	149.804434	709.30	2.40	711.70
24	-34.858094	149.804444	710.53	2.40	712.93
25	-34.858255	149.804528	710.98	2.40	713.38
26	-34.859954	149.805322	714.53	2.40	716.93
27	-34.860861	149.805901	718.87	2.40	721.27

Name: Windellama Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.834436	149.746048	677.52	2.40	679.92
2	-34.836286	149.745962	679.80	2.40	682.20
3	-34.839443	149.745632	678.70	2.40	681.10
4	-34.844828	149.744791	681.97	2.40	684.37
5	-34.846403	149.744502	680.38	2.40	682.78

Flight Path Receptors

Name: FP 1
Description:
Threshold height: 15 m
Direction: 223.8°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	-34.805429	149.732106	636.07	15.24	651.31
Two-mile	-34.784578	149.756529	662.01	157.98	819.99

Name: FP 2
Description:
Threshold height: 15 m
Direction: 46.6°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
Threshold	-34.813216	149.721592	652.85	15.24	668.09
Two-mile	-34.833085	149.695979	659.64	177.14	836.78

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-34.883425	149.782499	678.14	1.50
OP 2	2	-34.877136	149.804446	725.31	1.50
OP 3	3	-34.859601	149.799602	695.53	1.50
OP 4	4	-34.858549	149.805847	717.10	1.50
OP 5	5	-34.857731	149.803540	709.27	1.50
OP 6	6	-34.855640	149.806088	719.97	1.50
OP 7	7	-34.850278	149.805584	728.28	1.50
OP 8	8	-34.851951	149.795252	724.46	1.50
OP 9	9	-34.846589	149.792266	723.70	1.50
OP 10	10	-34.828718	149.789979	689.94	1.50
OP 11	11	-34.828221	149.793890	702.36	1.50
OP 12	12	-34.817370	149.770320	675.10	1.50
OP 13	13	-34.818471	149.770658	674.38	1.50
OP 14	14	-34.819313	149.769430	671.09	1.50
OP 15	15	-34.831701	149.749292	678.80	1.50
OP 16	16	-34.831833	149.749689	678.33	1.50
OP 17	17	-34.831833	149.751459	668.36	1.50
OP 18	18	-34.832753	149.748745	680.80	1.50
OP 19	19	-34.834789	149.748397	669.25	1.50
OP 20	20	-34.834983	149.748166	669.30	1.50
OP 21	21	-34.836595	149.755113	673.20	1.50
OP 22	22	-34.844590	149.750204	683.40	1.50
OP 23	23	-34.851920	149.754485	667.64	1.50
OP 24	24	-34.844028	149.737691	706.23	1.50
OP 25	25	-34.848039	149.746730	694.73	1.50
OP 26	26	-34.847273	149.748334	696.18	1.50
OP 27	27	-34.847599	149.739714	689.48	1.50
OP 28	28	-34.851350	149.738663	686.00	1.50
OP 29	29	-34.852512	149.738963	685.00	1.50
OP 30	30	-34.854783	149.737118	696.95	1.50
OP 31	31	-34.856359	149.740187	682.37	1.50
OP 32	32	-34.871366	149.737596	678.33	1.50
OP 33	33	-34.875353	149.740535	675.81	1.50
OP 34	34	-34.877175	149.741179	677.38	1.50
OP 35	35	-34.870409	149.740978	672.18	1.50
OP 36	36	-34.818114	149.786580	698.85	1.50
OP 37	37	-34.851735	149.731624	682.75	1.50
OP 38	38	-34.872269	149.735245	679.71	1.50
OP 39	39	-34.847496	149.755791	666.00	1.50
OP 40	40	-34.853988	149.749772	670.60	1.50

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	478	8.0	546	9.1	-
PV array 10	SA tracking	SA tracking	8,276	137.9	1,001	16.7	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	723	12.1	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	2,969	49.5	0	0.0	-
PV array 4	SA tracking	SA tracking	1,169	19.5	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	3,314	55.2	0	0.0	-
PV array 7	SA tracking	SA tracking	5,482	91.4	633	10.6	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	5,734	95.6	1,001	16.7
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	618	10.3	0	0.0
OP 3	544	9.1	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 4	0	0.0	0	0.0
OP 5	261	4.3	0	0.0
OP 6	622	10.4	0	0.0
OP 7	964	16.1	0	0.0
OP 8	1,564	26.1	0	0.0
OP 9	363	6.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	465	7.8	0	0.0
OP 23	659	11.0	0	0.0
OP 24	747	12.4	0	0.0
OP 25	752	12.5	0	0.0
OP 26	1,231	20.5	546	9.1
OP 27	696	11.6	0	0.0
OP 28	689	11.5	142	2.4
OP 29	621	10.3	283	4.7
OP 30	1,219	20.3	39	0.7
OP 31	1,255	20.9	24	0.4
OP 32	157	2.6	0	0.0
OP 33	343	5.7	0	0.0
OP 34	348	5.8	0	0.0
OP 35	186	3.1	0	0.0
OP 36	0	0.0	0	0.0
OP 37	880	14.7	0	0.0
OP 38	169	2.8	0	0.0
OP 39	647	10.8	0	0.0
OP 40	677	11.3	145	2.4

PV: PV array 1 potential temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 26	478	8.0	546	9.1
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 1 and Route: Kooringaroo Road

No glare found

PV array 1 and Route: Windellama Road

No glare found

PV array 1 and FP: FP 1

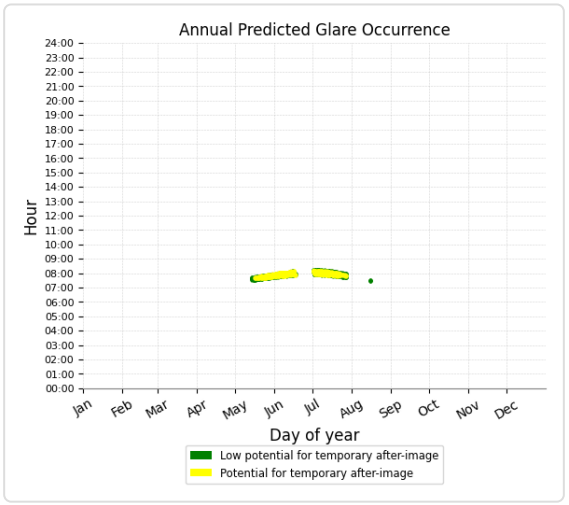
No glare found

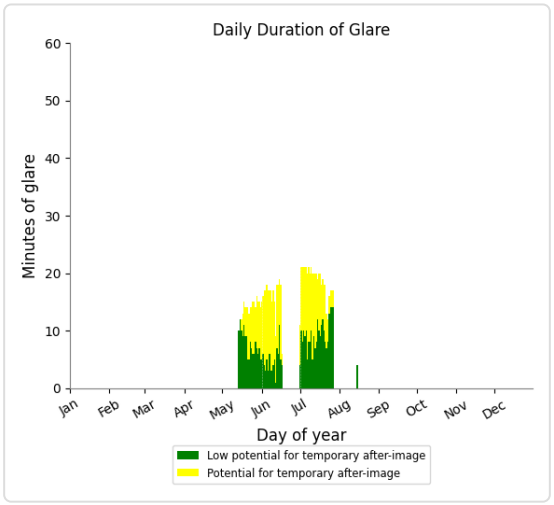
PV array 1 and FP: FP 2

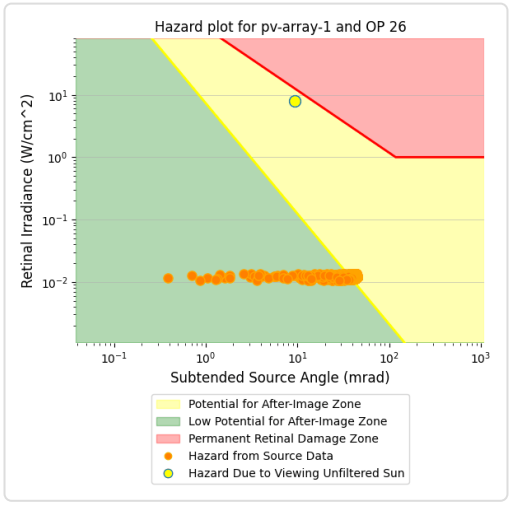
No glare found

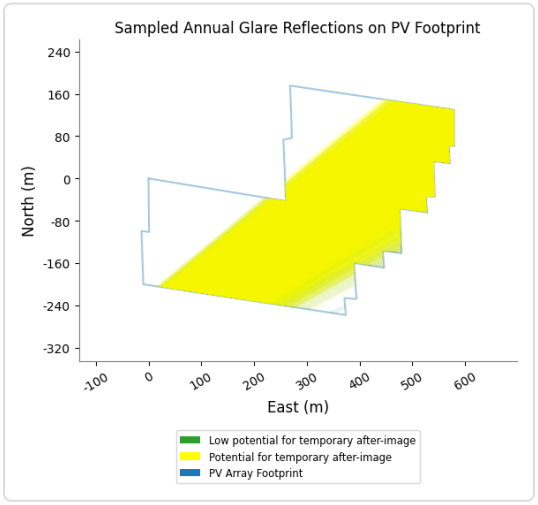
PV array 1 and OP 26

Yellow glare: 546 min.
Green glare: 478 min.









PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV array 1 and OP 18

No glare found

PV array 1 and OP 19

No glare found

PV array 1 and OP 20

No glare found

PV array 1 and OP 21

No glare found

PV array 1 and OP 22

No glare found

PV array 1 and OP 23

No glare found

PV array 1 and OP 24

No glare found

PV array 1 and OP 25

No glare found

PV array 1 and OP 27

No glare found

PV array 1 and OP 28

No glare found

PV array 1 and OP 29

No glare found

PV array 1 and OP 30

No glare found

PV array 1 and OP 31

No glare found

PV array 1 and OP 32

No glare found

PV array 1 and OP 33

No glare found

PV array 1 and OP 34

No glare found

PV array 1 and OP 35

No glare found

PV array 1 and OP 36

No glare found

PV array 1 and OP 37

No glare found

PV array 1 and OP 38

No glare found

PV array 1 and OP 39

No glare found

PV array 1 and OP 40

No glare found

PV: PV array 10 potential temporary after-image

Receptor results ordered by category of glare

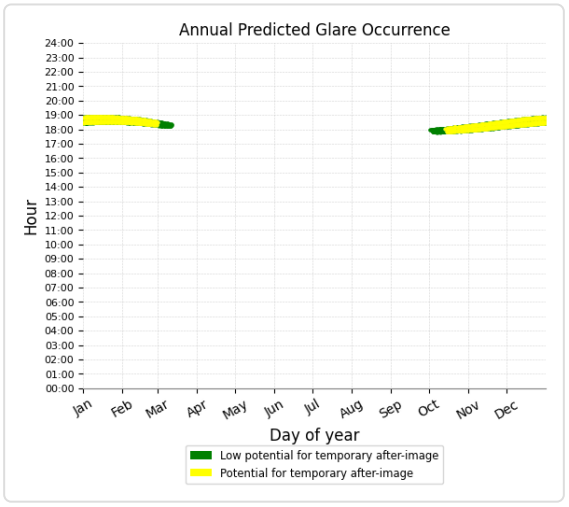
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	1,007	16.8	1,001	16.7
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 5	82	1.4	0	0.0
OP 6	400	6.7	0	0.0
OP 7	777	12.9	0	0.0
OP 8	1,001	16.7	0	0.0
OP 22	222	3.7	0	0.0
OP 23	583	9.7	0	0.0
OP 24	492	8.2	0	0.0
OP 25	547	9.1	0	0.0
OP 26	478	8.0	0	0.0
OP 27	524	8.7	0	0.0
OP 28	286	4.8	0	0.0
OP 29	333	5.5	0	0.0
OP 30	314	5.2	0	0.0
OP 31	223	3.7	0	0.0
OP 37	341	5.7	0	0.0
OP 39	331	5.5	0	0.0
OP 40	335	5.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 32	0	0.0	0	0.0

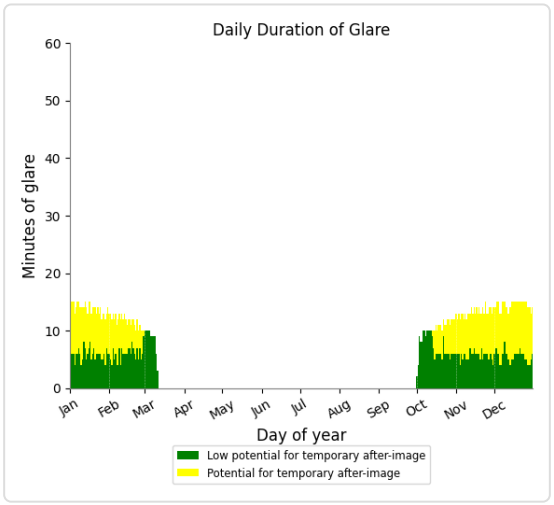
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 38	0	0.0	0	0.0

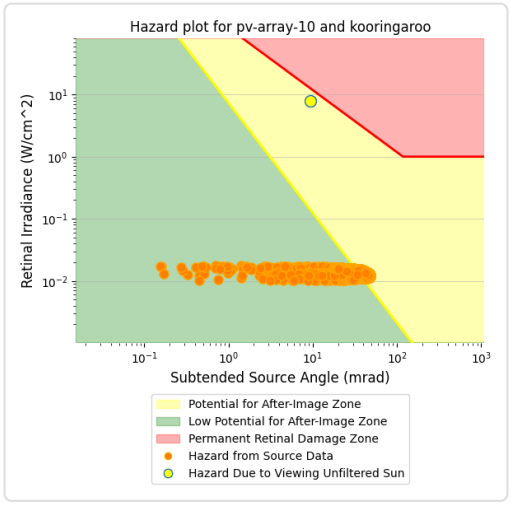
PV array 10 and Route: Kooringaroo Road

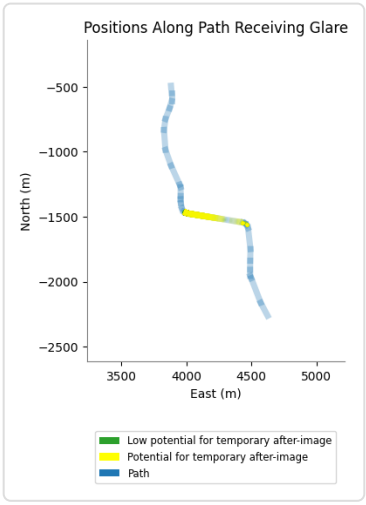
Yellow glare: 1,001 min.

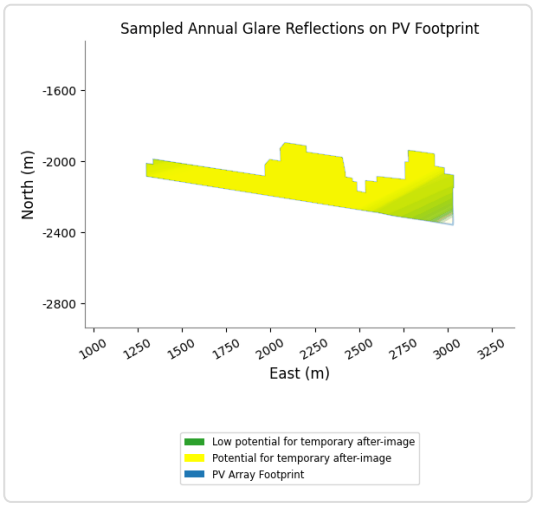
Green glare: 1,007 min.











PV array 10 and Route: Windellama Road

No glare found

PV array 10 and FP: FP 1

No glare found

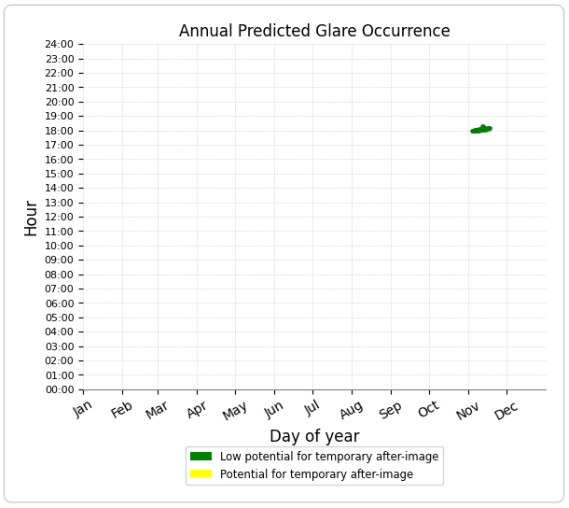
PV array 10 and FP: FP 2

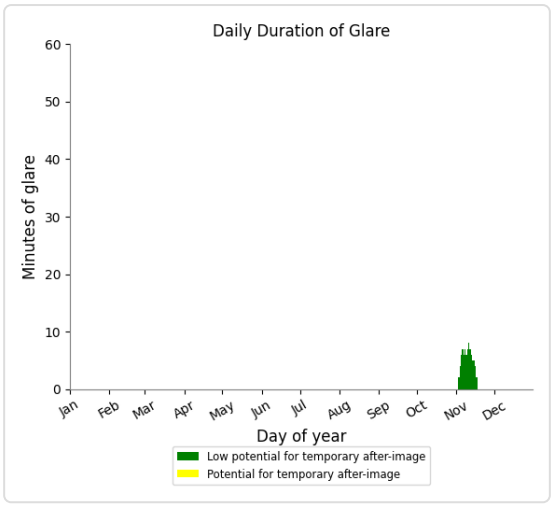
No glare found

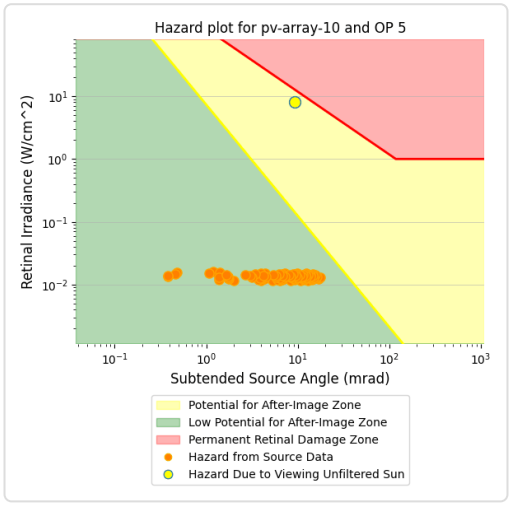
PV array 10 and OP 5

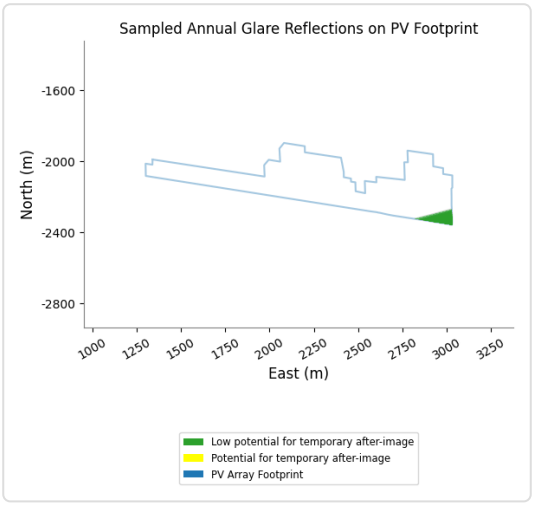
Yellow glare: none

Green glare: 82 min.





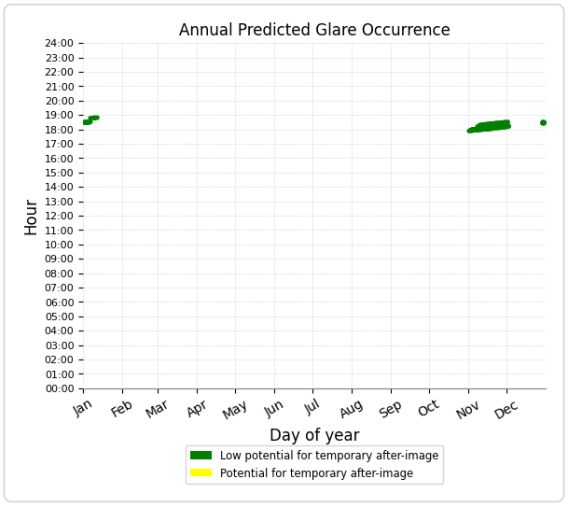


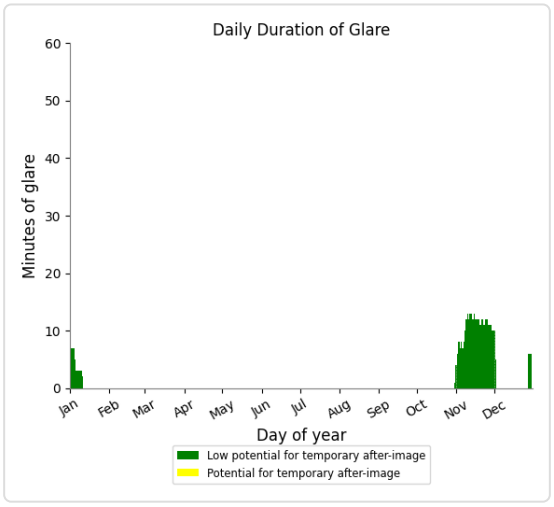


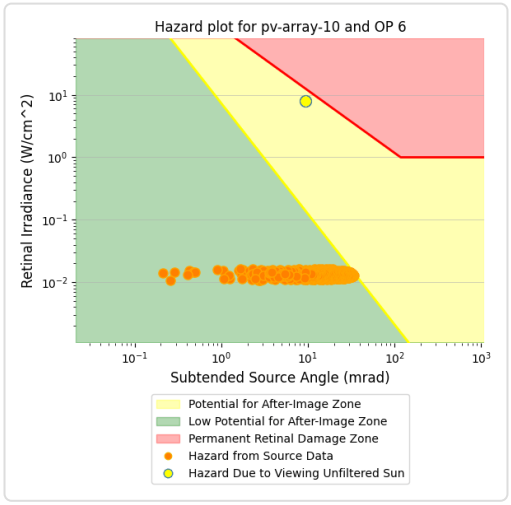
PV array 10 and OP 6

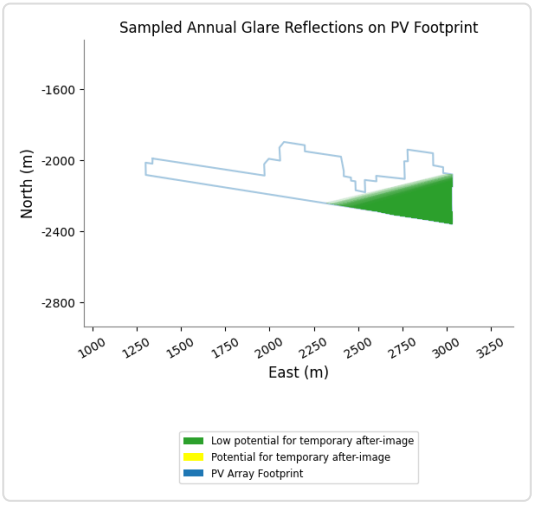
Yellow glare: none

Green glare: 400 min.





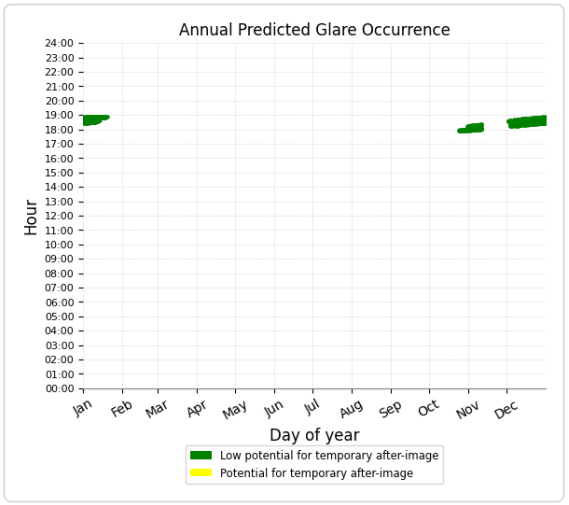


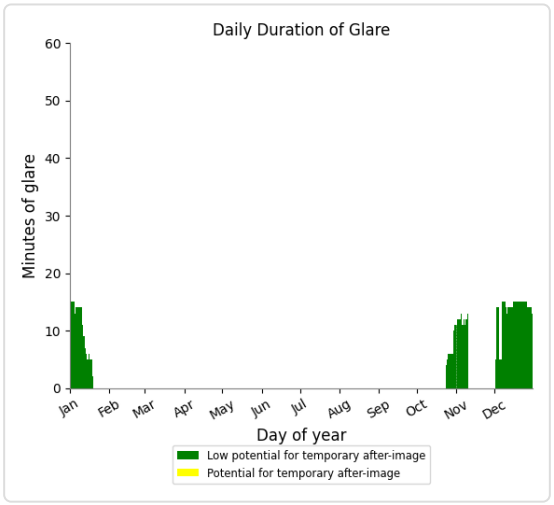


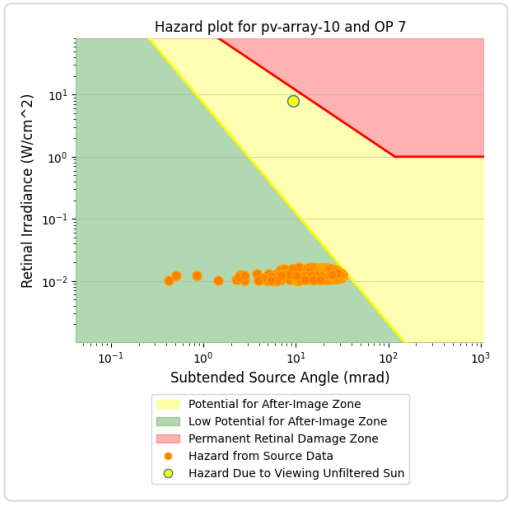
PV array 10 and OP 7

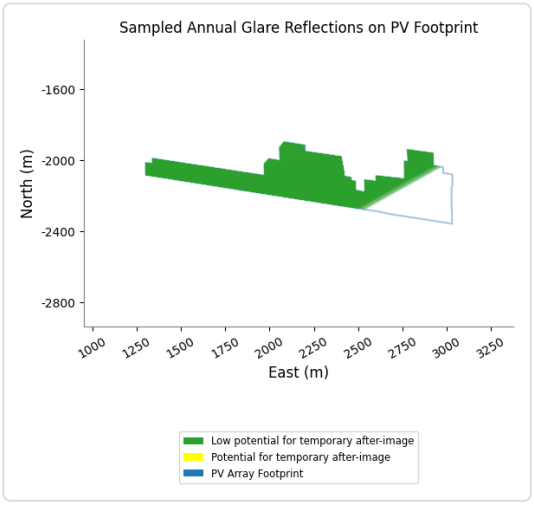
Yellow glare: none

Green glare: 777 min.





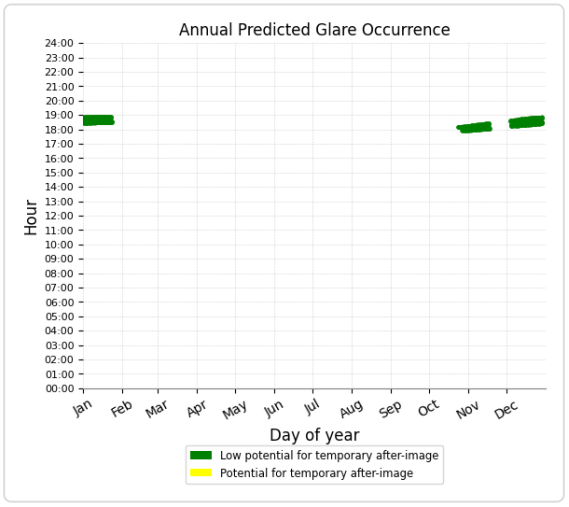


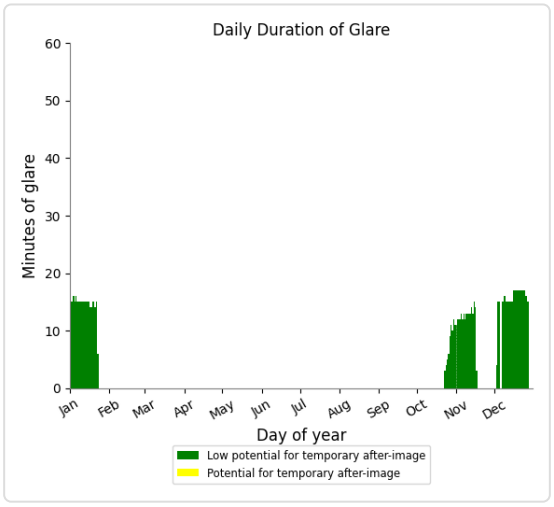


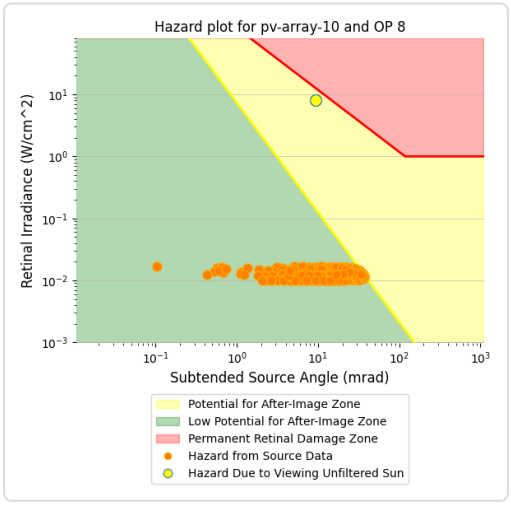
PV array 10 and OP 8

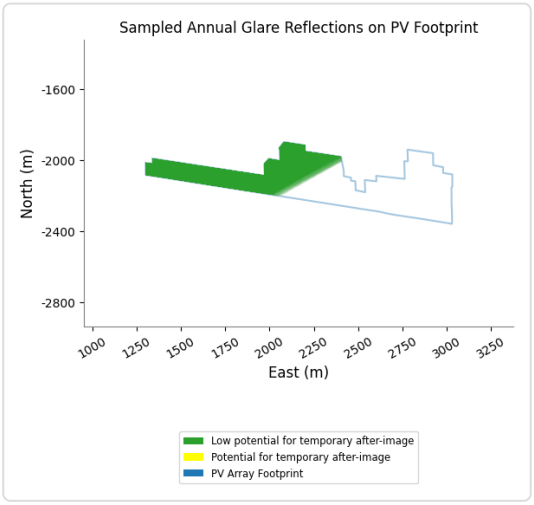
Yellow glare: none

Green glare: 1,001 min.





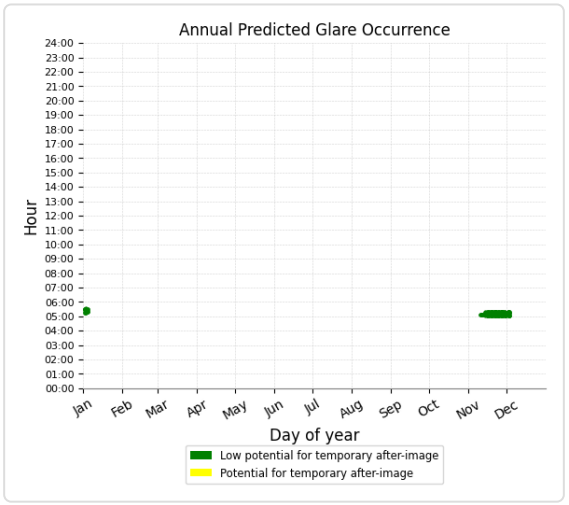


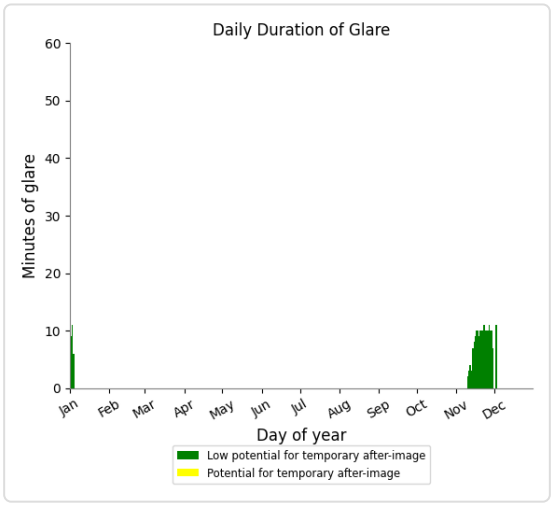


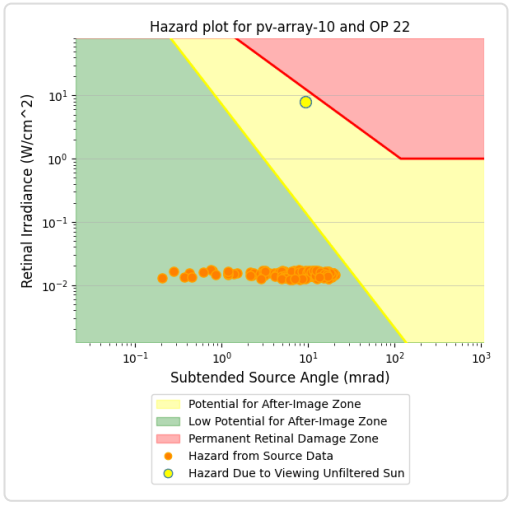
PV array 10 and OP 22

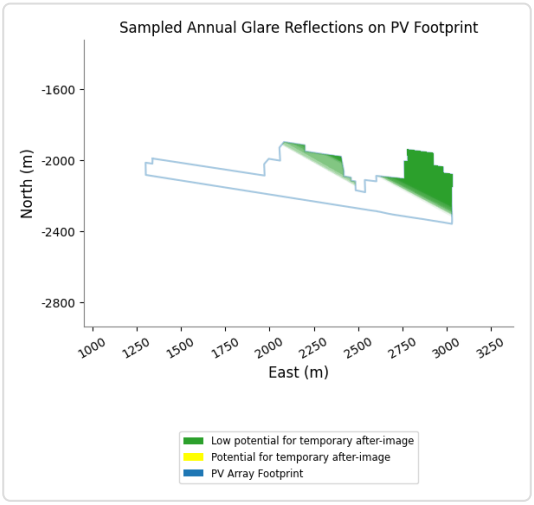
Yellow glare: none

Green glare: 222 min.





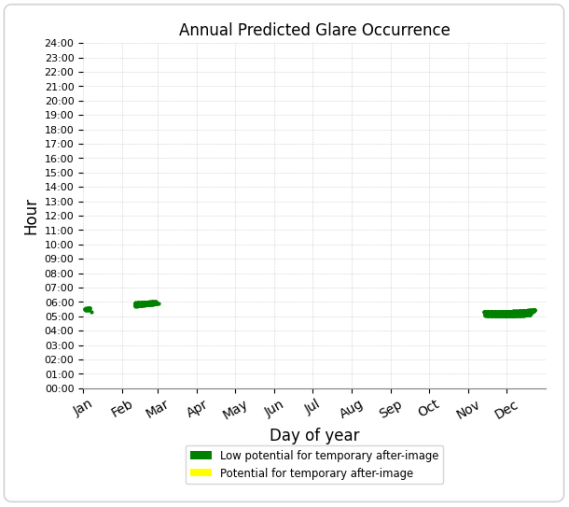


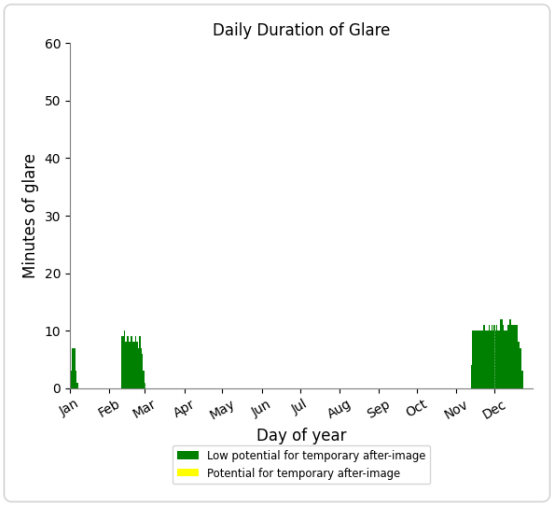


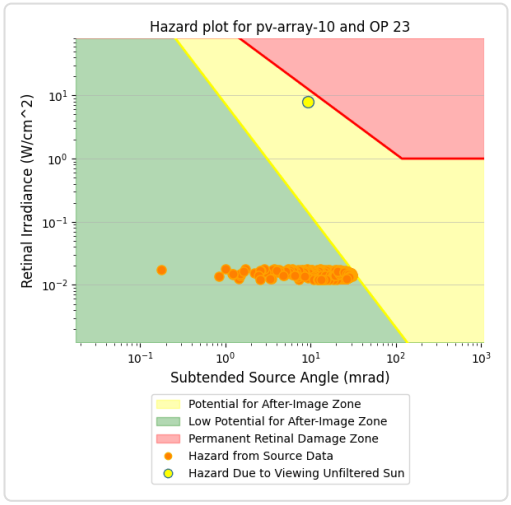
PV array 10 and OP 23

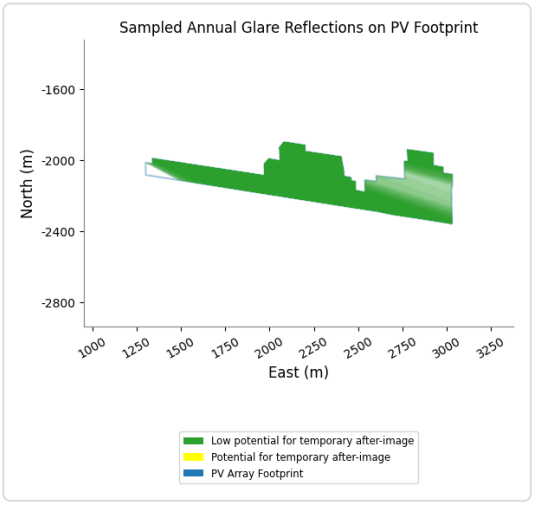
Yellow glare: none

Green glare: 583 min.





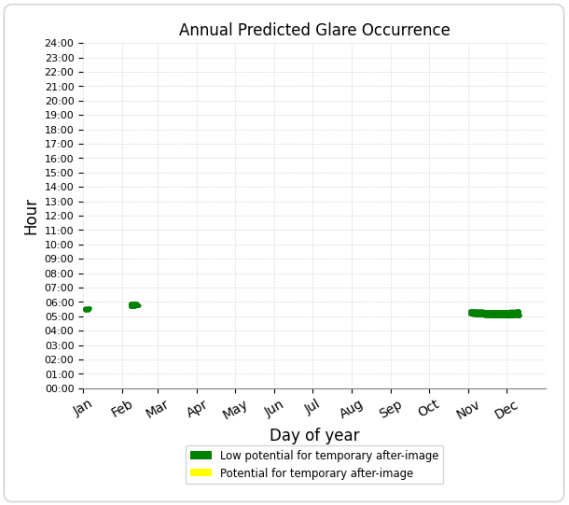


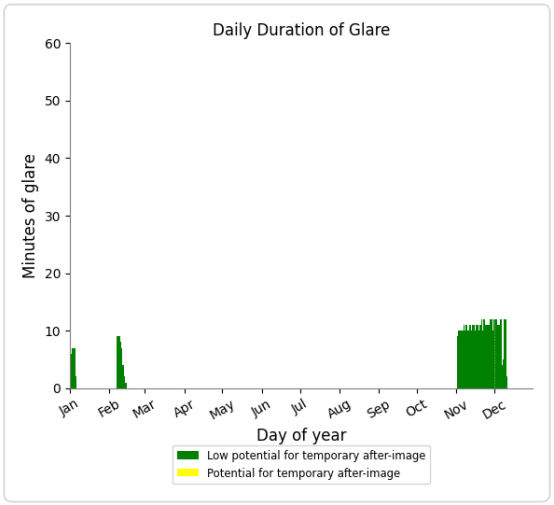


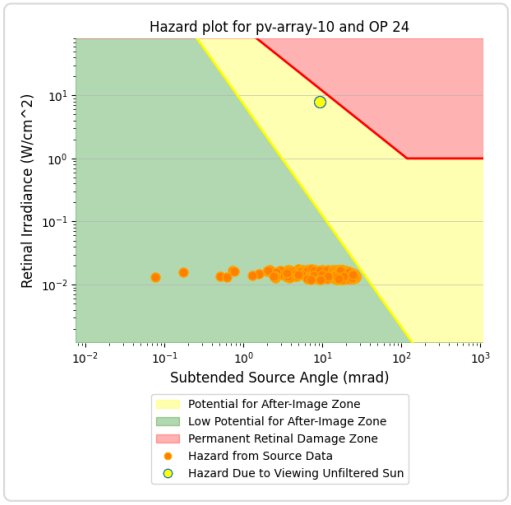
PV array 10 and OP 24

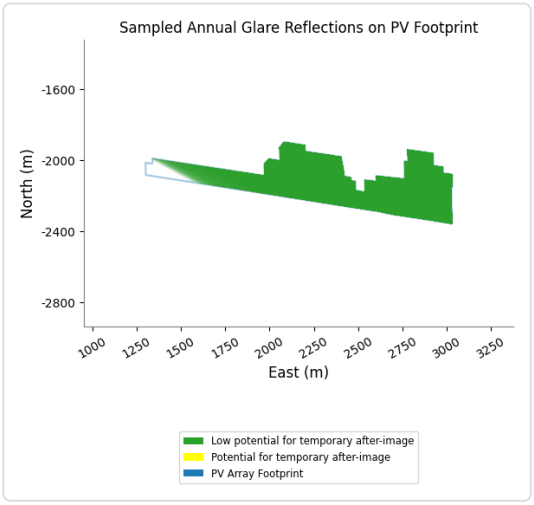
Yellow glare: none

Green glare: 492 min.





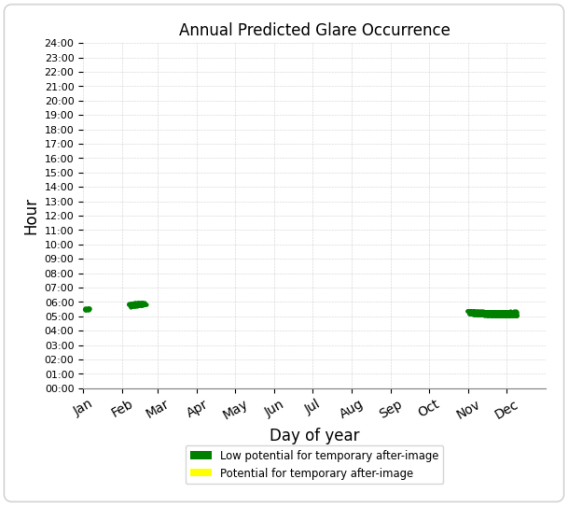


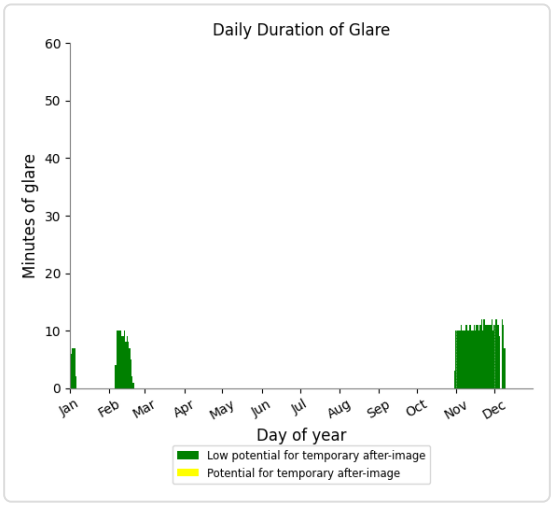


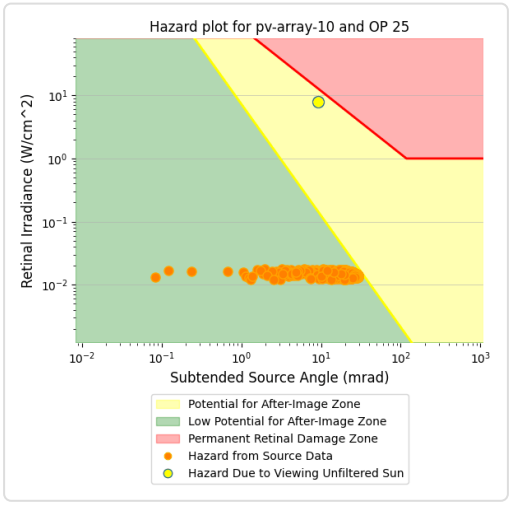
PV array 10 and OP 25

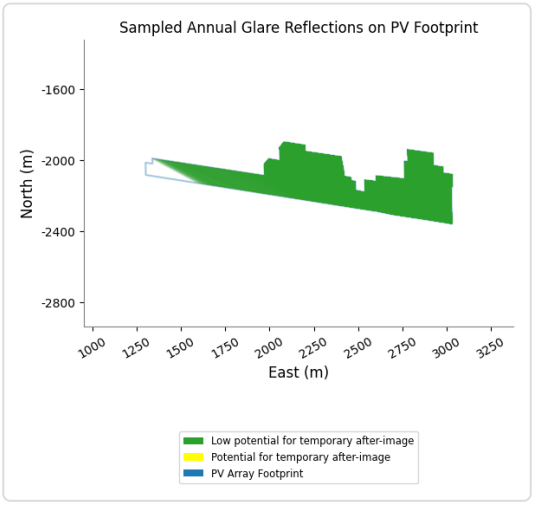
Yellow glare: none

Green glare: 547 min.





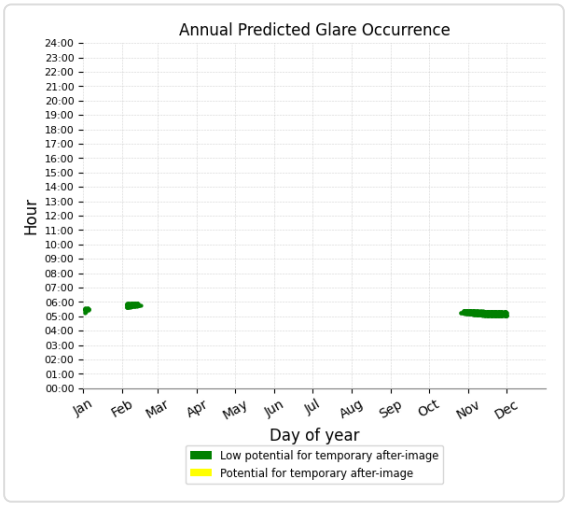


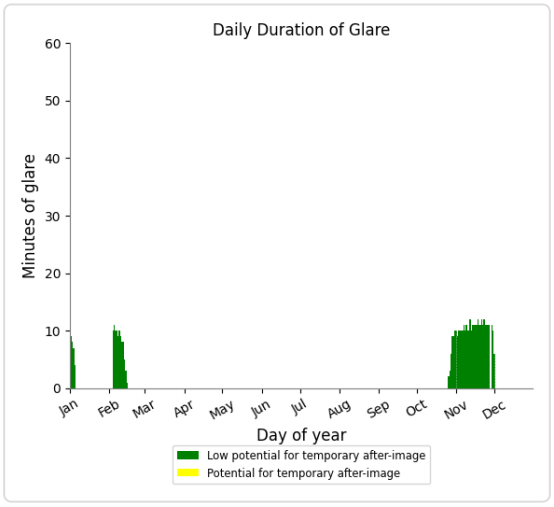


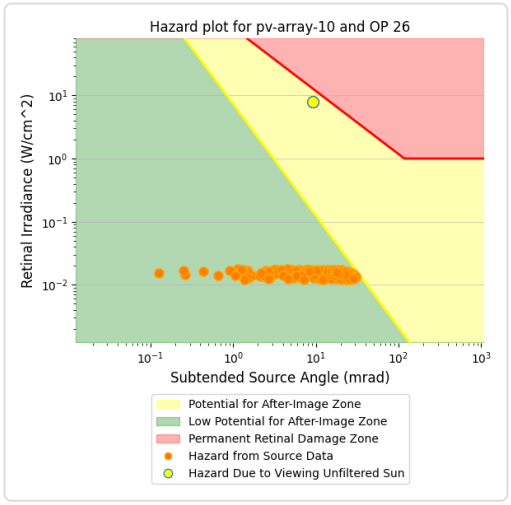
PV array 10 and OP 26

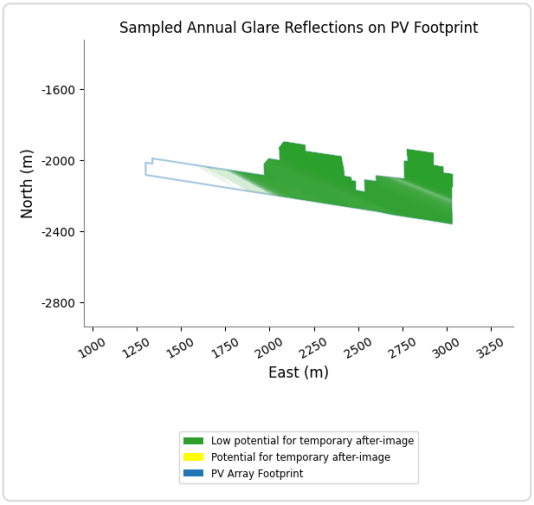
Yellow glare: none

Green glare: 478 min.





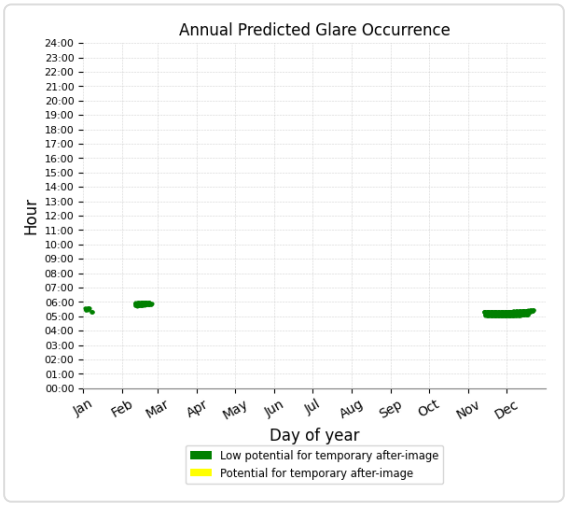


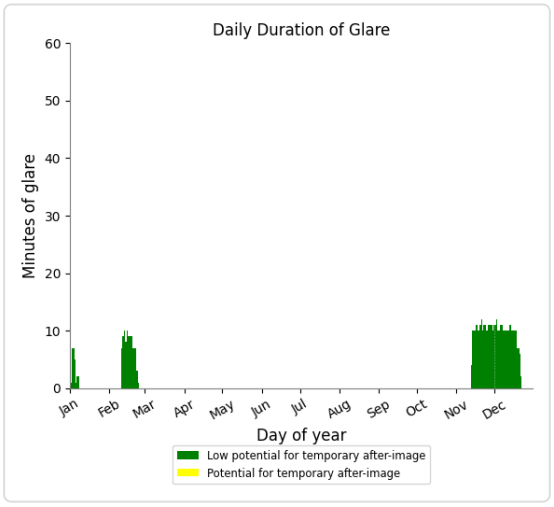


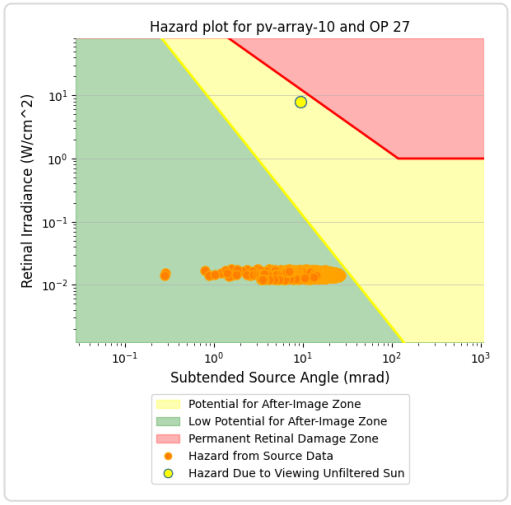
PV array 10 and OP 27

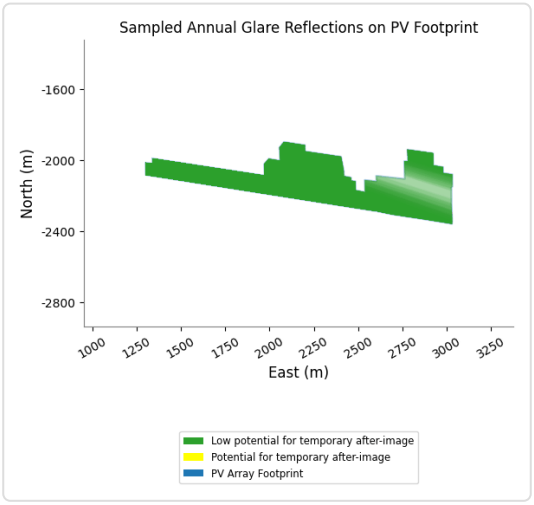
Yellow glare: none

Green glare: 524 min.





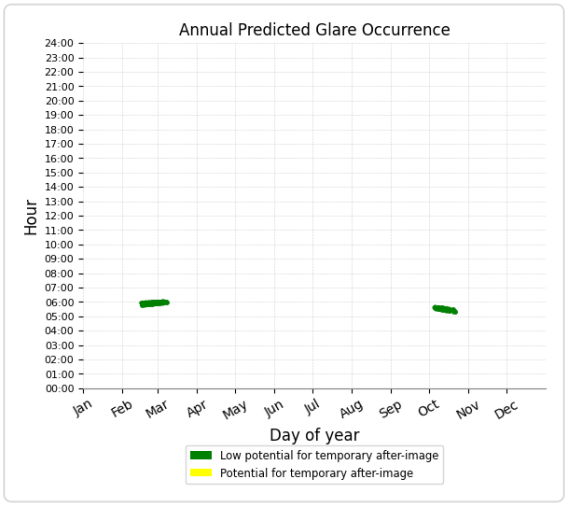


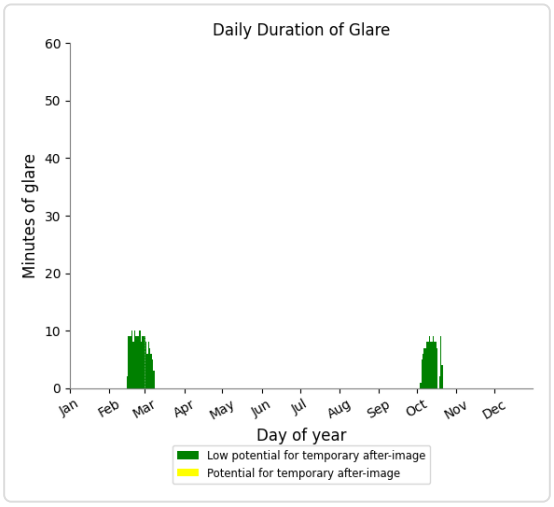


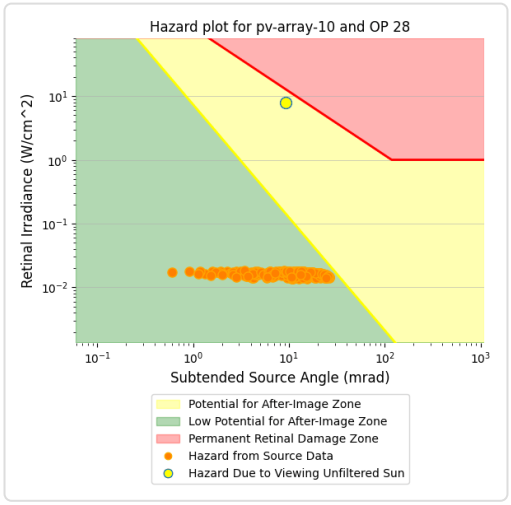
PV array 10 and OP 28

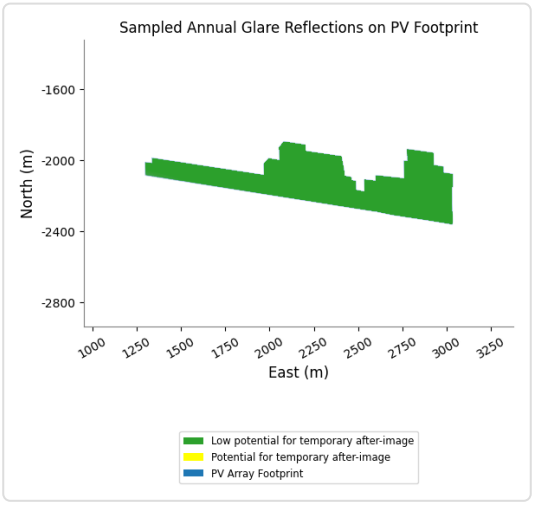
Yellow glare: none

Green glare: 286 min.





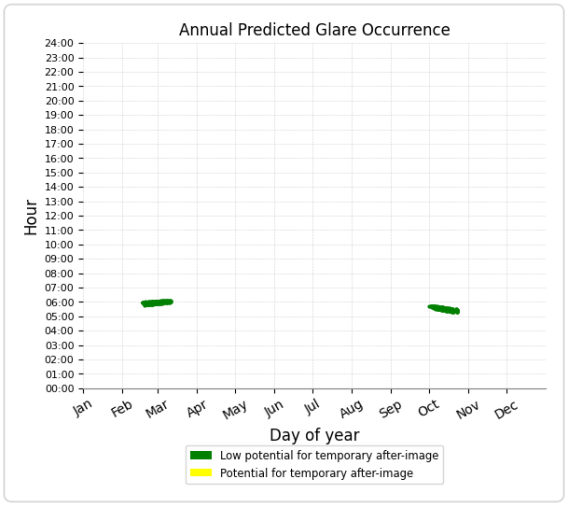


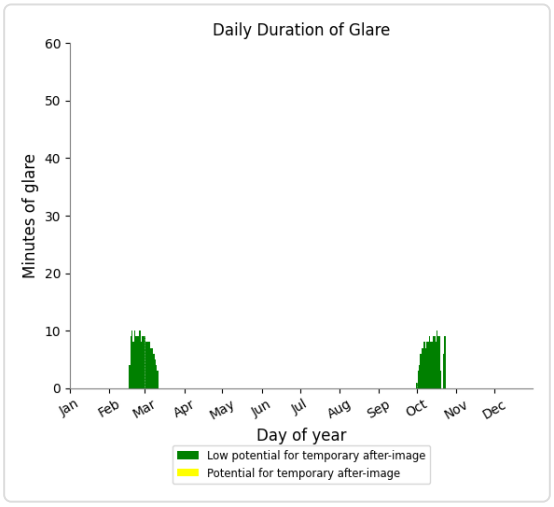


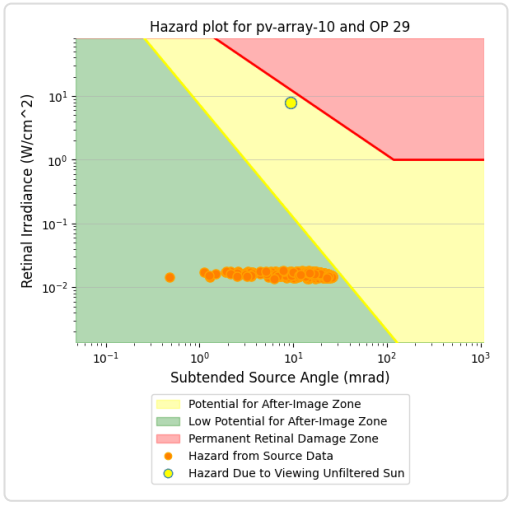
PV array 10 and OP 29

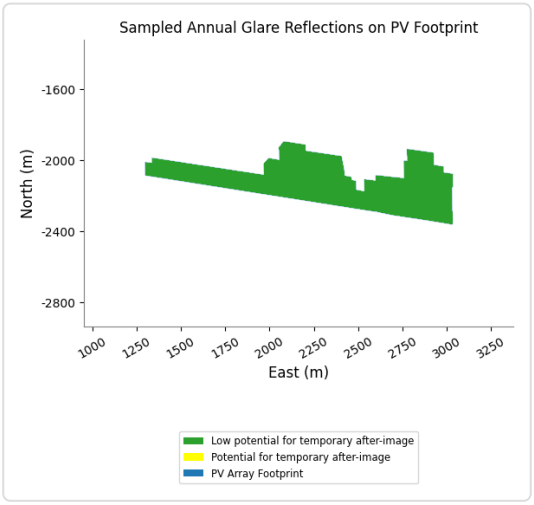
Yellow glare: none

Green glare: 333 min.





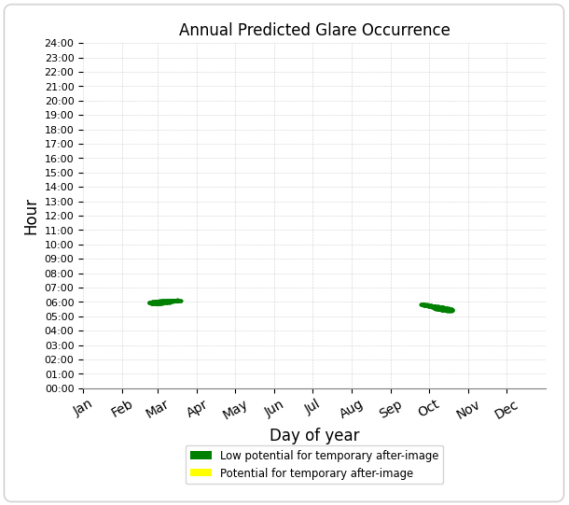


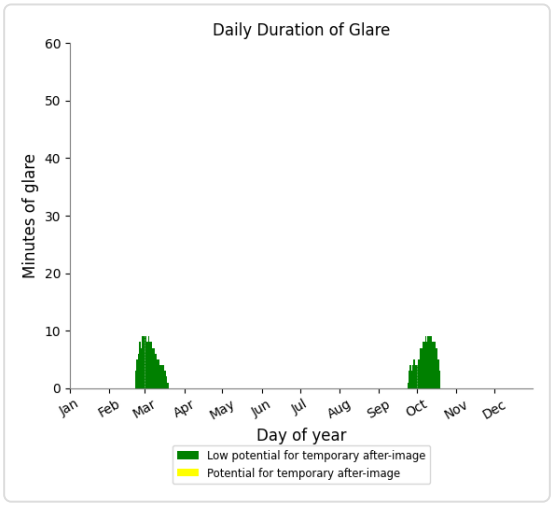


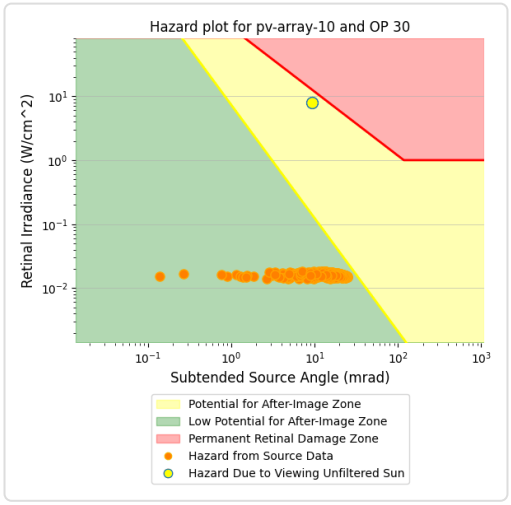
PV array 10 and OP 30

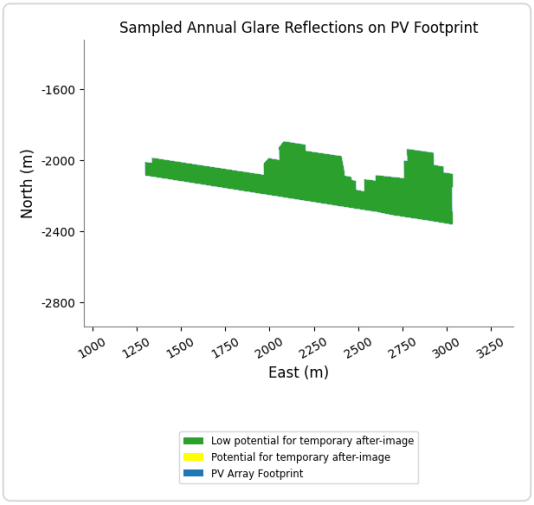
Yellow glare: none

Green glare: 314 min.





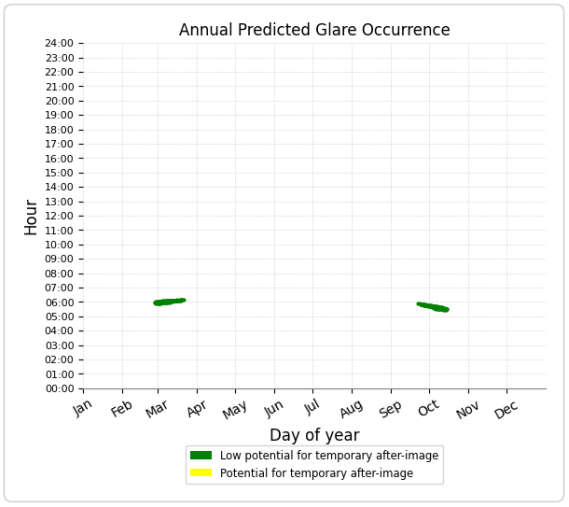


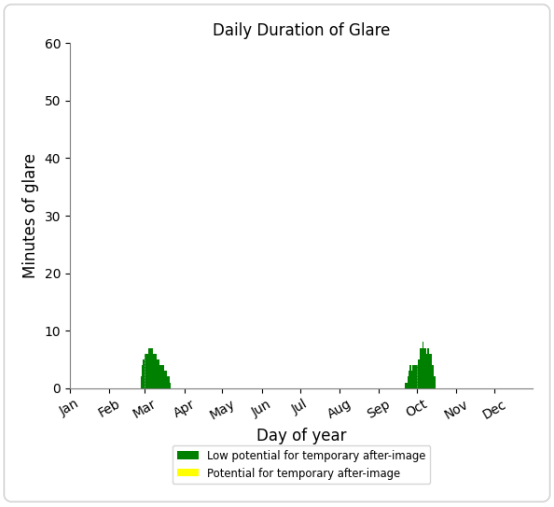


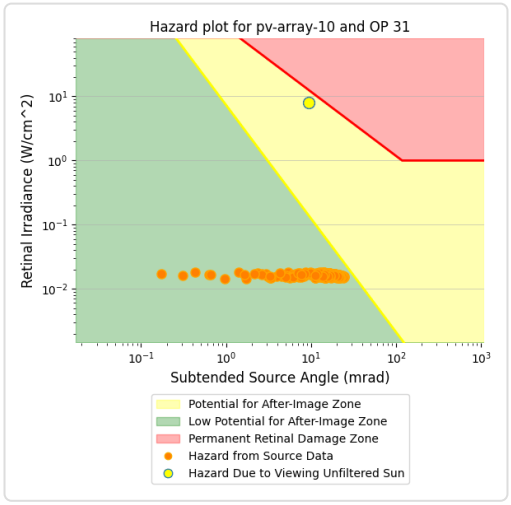
PV array 10 and OP 31

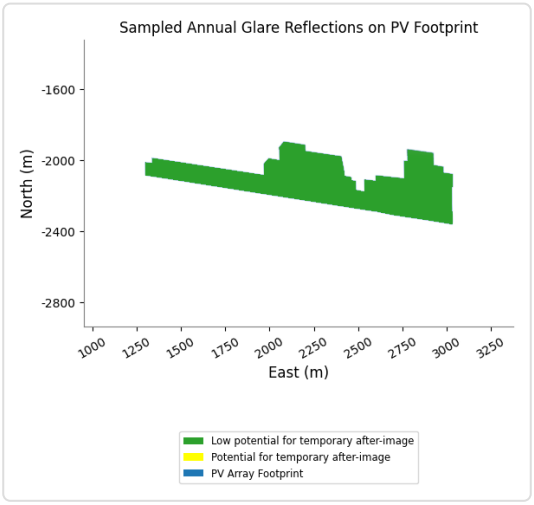
Yellow glare: none

Green glare: 223 min.





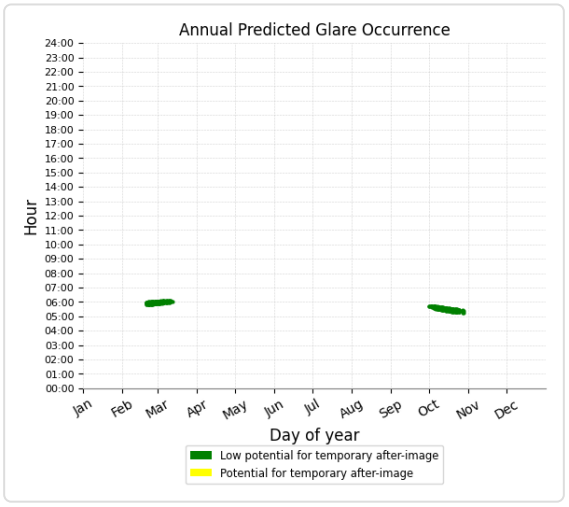


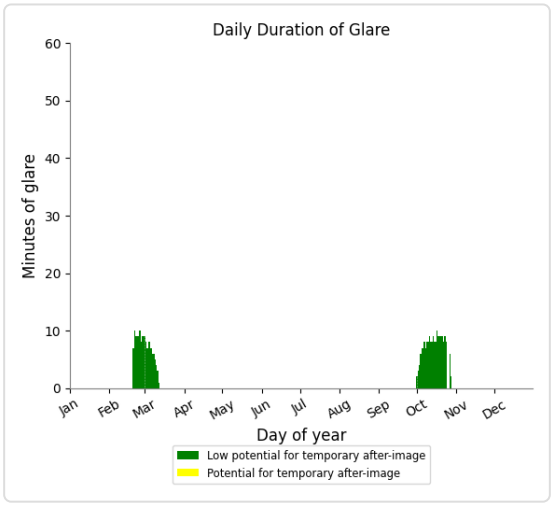


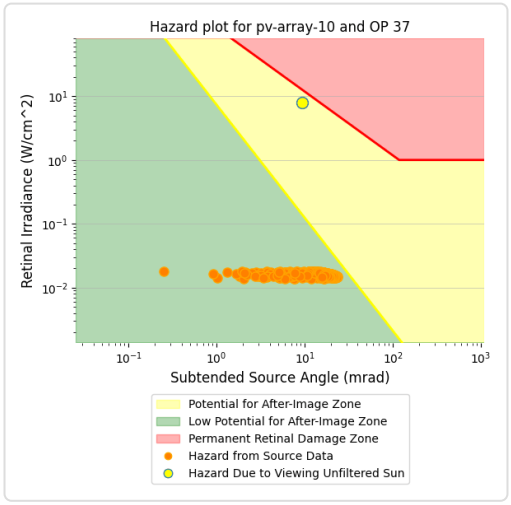
PV array 10 and OP 37

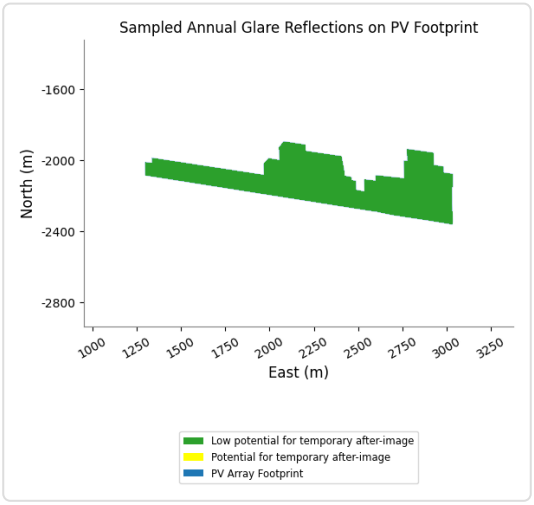
Yellow glare: none

Green glare: 341 min.





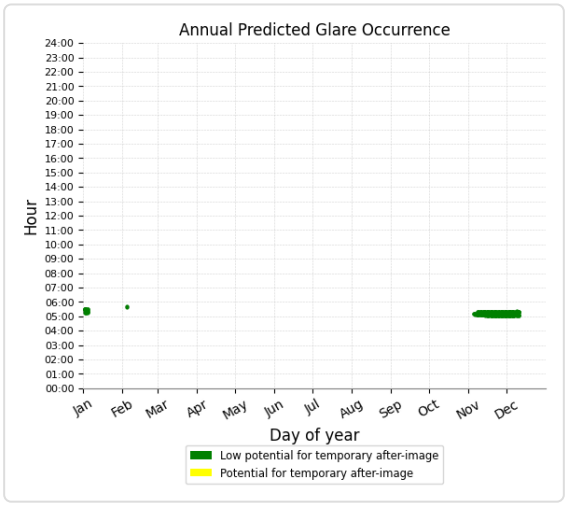


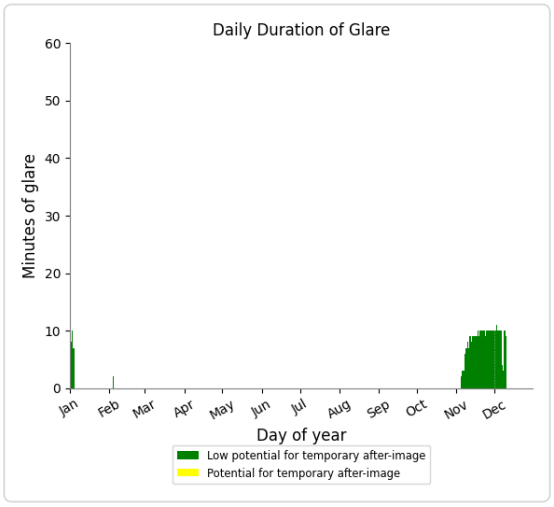


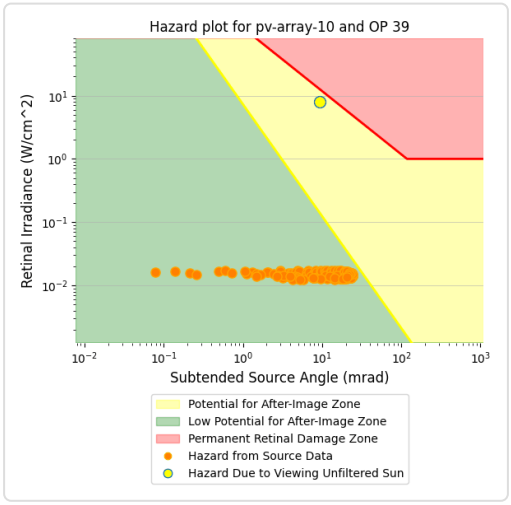
PV array 10 and OP 39

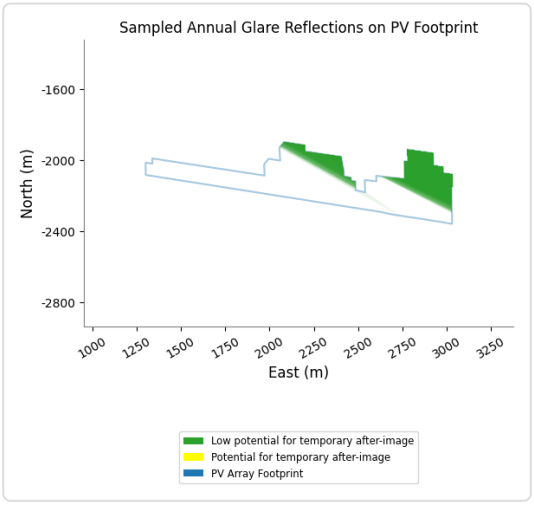
Yellow glare: none

Green glare: 331 min.





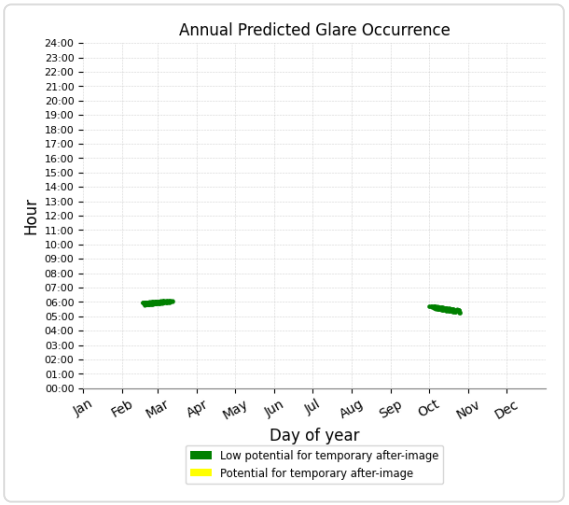


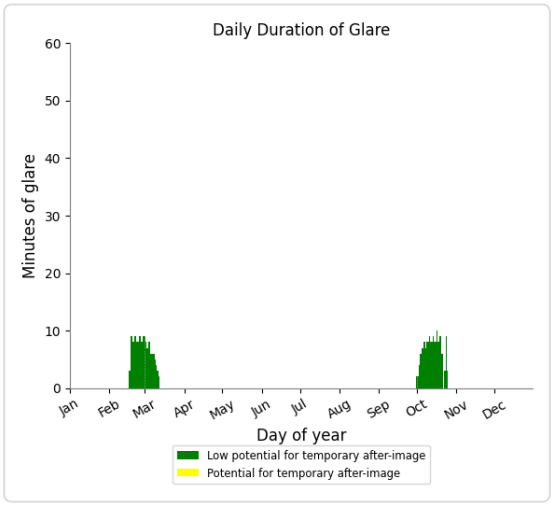


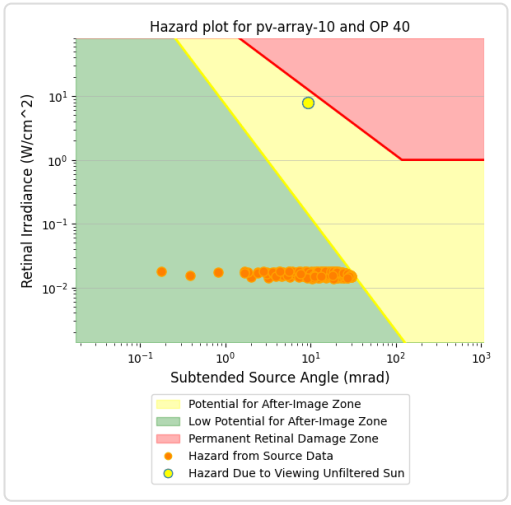
PV array 10 and OP 40

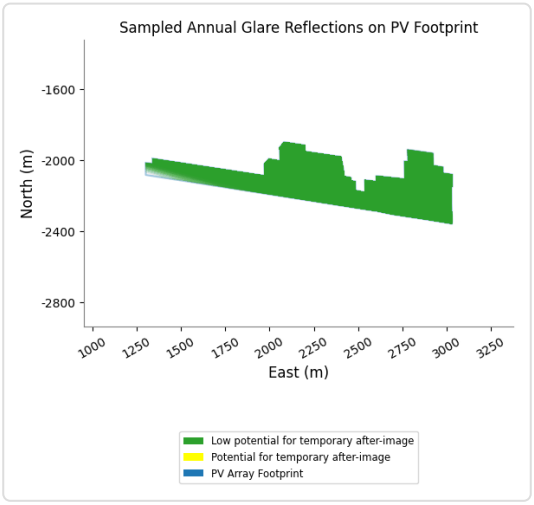
Yellow glare: none

Green glare: 335 min.









PV array 10 and OP 1

No glare found

PV array 10 and OP 2

No glare found

PV array 10 and OP 3

No glare found

PV array 10 and OP 4

No glare found

PV array 10 and OP 9

No glare found

PV array 10 and OP 10

No glare found

PV array 10 and OP 11

No glare found

PV array 10 and OP 12

No glare found

PV array 10 and OP 13

No glare found

PV array 10 and OP 14

No glare found

PV array 10 and OP 15

No glare found

PV array 10 and OP 16

No glare found

PV array 10 and OP 17

No glare found

PV array 10 and OP 18

No glare found

PV array 10 and OP 19

No glare found

PV array 10 and OP 20

No glare found

PV array 10 and OP 21

No glare found

PV array 10 and OP 32

No glare found

PV array 10 and OP 33

No glare found

PV array 10 and OP 34

No glare found

PV array 10 and OP 35

No glare found

PV array 10 and OP 36

No glare found

PV array 10 and OP 38

No glare found

PV: PV array 11 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 11 and Route: Kooringaroo Road

No glare found

PV array 11 and Route: Windellama Road

No glare found

PV array 11 and FP: FP 1

No glare found

PV array 11 and FP: FP 2

No glare found

PV array 11 and OP 1

No glare found

PV array 11 and OP 2

No glare found

PV array 11 and OP 3

No glare found

PV array 11 and OP 4

No glare found

PV array 11 and OP 5

No glare found

PV array 11 and OP 6

No glare found

PV array 11 and OP 7

No glare found

PV array 11 and OP 8

No glare found

PV array 11 and OP 9

No glare found

PV array 11 and OP 10

No glare found

PV array 11 and OP 11

No glare found

PV array 11 and OP 12

No glare found

PV array 11 and OP 13

No glare found

PV array 11 and OP 14

No glare found

PV array 11 and OP 15

No glare found

PV array 11 and OP 16

No glare found

PV array 11 and OP 17

No glare found

PV array 11 and OP 18

No glare found

PV array 11 and OP 19

No glare found

PV array 11 and OP 20

No glare found

PV array 11 and OP 21

No glare found

PV array 11 and OP 22

No glare found

PV array 11 and OP 23

No glare found

PV array 11 and OP 24

No glare found

PV array 11 and OP 25

No glare found

PV array 11 and OP 26

No glare found

PV array 11 and OP 27

No glare found

PV array 11 and OP 28

No glare found

PV array 11 and OP 29

No glare found

PV array 11 and OP 30

No glare found

PV array 11 and OP 31

No glare found

PV array 11 and OP 32

No glare found

PV array 11 and OP 33

No glare found

PV array 11 and OP 34

No glare found

PV array 11 and OP 35

No glare found

PV array 11 and OP 36

No glare found

PV array 11 and OP 37

No glare found

PV array 11 and OP 38

No glare found

PV array 11 and OP 39

No glare found

PV array 11 and OP 40

No glare found

PV: PV array 12 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 12 and Route: Kooringaroo Road

No glare found

PV array 12 and Route: Windellama Road

No glare found

PV array 12 and FP: FP 1

No glare found

PV array 12 and FP: FP 2

No glare found

PV array 12 and OP 1

No glare found

PV array 12 and OP 2

No glare found

PV array 12 and OP 3

No glare found

PV array 12 and OP 4

No glare found

PV array 12 and OP 5

No glare found

PV array 12 and OP 6

No glare found

PV array 12 and OP 7

No glare found

PV array 12 and OP 8

No glare found

PV array 12 and OP 9

No glare found

PV array 12 and OP 10

No glare found

PV array 12 and OP 11

No glare found

PV array 12 and OP 12

No glare found

PV array 12 and OP 13

No glare found

PV array 12 and OP 14

No glare found

PV array 12 and OP 15

No glare found

PV array 12 and OP 16

No glare found

PV array 12 and OP 17

No glare found

PV array 12 and OP 18

No glare found

PV array 12 and OP 19

No glare found

PV array 12 and OP 20

No glare found

PV array 12 and OP 21

No glare found

PV array 12 and OP 22

No glare found

PV array 12 and OP 23

No glare found

PV array 12 and OP 24

No glare found

PV array 12 and OP 25

No glare found

PV array 12 and OP 26

No glare found

PV array 12 and OP 27

No glare found

PV array 12 and OP 28

No glare found

PV array 12 and OP 29

No glare found

PV array 12 and OP 30

No glare found

PV array 12 and OP 31

No glare found

PV array 12 and OP 32

No glare found

PV array 12 and OP 33

No glare found

PV array 12 and OP 34

No glare found

PV array 12 and OP 35

No glare found

PV array 12 and OP 36

No glare found

PV array 12 and OP 37

No glare found

PV array 12 and OP 38

No glare found

PV array 12 and OP 39

No glare found

PV array 12 and OP 40

No glare found

PV: PV array 13 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 13 and Route: Kooringaroo Road

No glare found

PV array 13 and Route: Windellama Road

No glare found

PV array 13 and FP: FP 1

No glare found

PV array 13 and FP: FP 2

No glare found

PV array 13 and OP 1

No glare found

PV array 13 and OP 2

No glare found

PV array 13 and OP 3

No glare found

PV array 13 and OP 4

No glare found

PV array 13 and OP 5

No glare found

PV array 13 and OP 6

No glare found

PV array 13 and OP 7

No glare found

PV array 13 and OP 8

No glare found

PV array 13 and OP 9

No glare found

PV array 13 and OP 10

No glare found

PV array 13 and OP 11

No glare found

PV array 13 and OP 12

No glare found

PV array 13 and OP 13

No glare found

PV array 13 and OP 14

No glare found

PV array 13 and OP 15

No glare found

PV array 13 and OP 16

No glare found

PV array 13 and OP 17

No glare found

PV array 13 and OP 18

No glare found

PV array 13 and OP 19

No glare found

PV array 13 and OP 20

No glare found

PV array 13 and OP 21

No glare found

PV array 13 and OP 22

No glare found

PV array 13 and OP 23

No glare found

PV array 13 and OP 24

No glare found

PV array 13 and OP 25

No glare found

PV array 13 and OP 26

No glare found

PV array 13 and OP 27

No glare found

PV array 13 and OP 28

No glare found

PV array 13 and OP 29

No glare found

PV array 13 and OP 30

No glare found

PV array 13 and OP 31

No glare found

PV array 13 and OP 32

No glare found

PV array 13 and OP 33

No glare found

PV array 13 and OP 34

No glare found

PV array 13 and OP 35

No glare found

PV array 13 and OP 36

No glare found

PV array 13 and OP 37

No glare found

PV array 13 and OP 38

No glare found

PV array 13 and OP 39

No glare found

PV array 13 and OP 40

No glare found

PV: PV array 14 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 2	618	10.3	0	0.0
OP 34	105	1.8	0	0.0
OP 1	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 14 and Route: Kooringaroo Road

No glare found

PV array 14 and Route: Windellama Road

No glare found

PV array 14 and FP: FP 1

No glare found

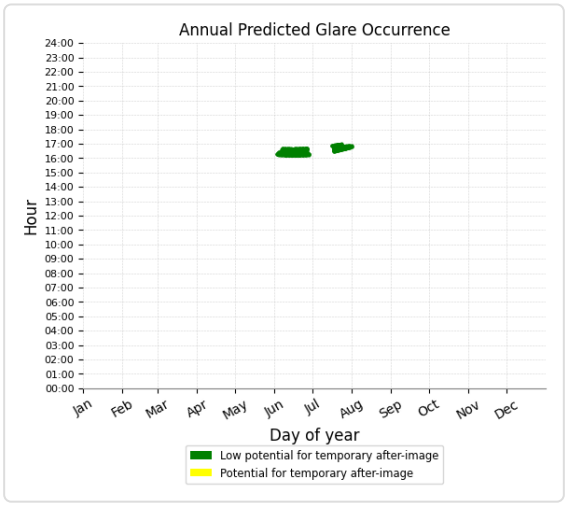
PV array 14 and FP: FP 2

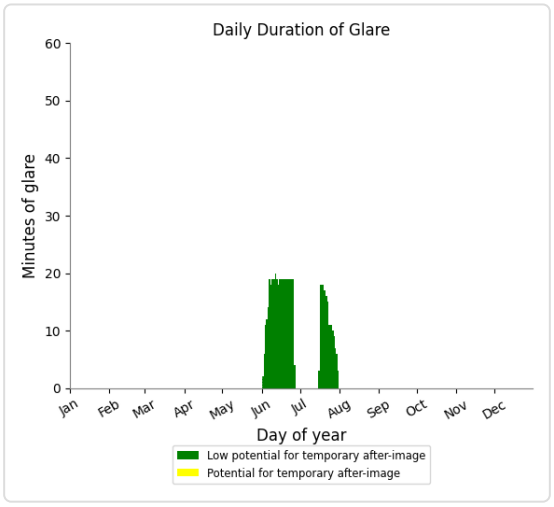
No glare found

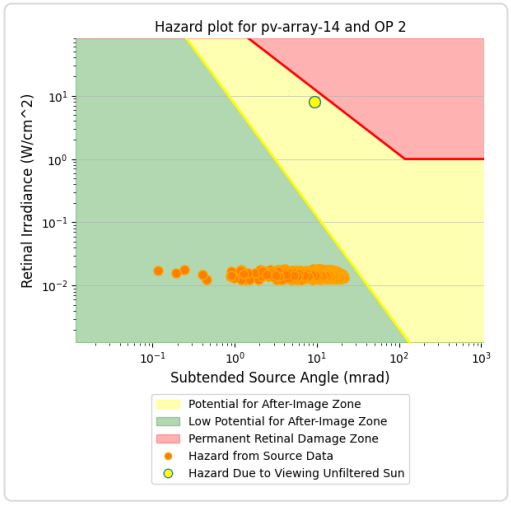
PV array 14 and OP 2

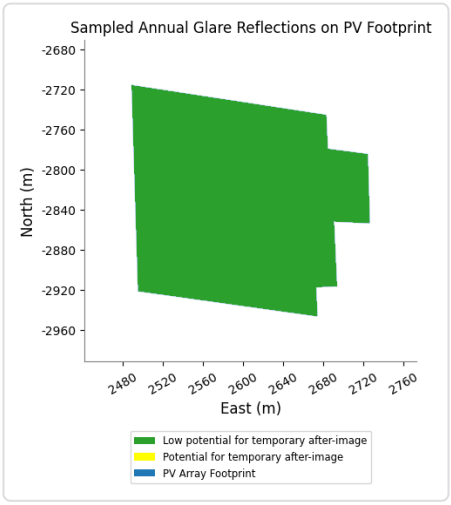
Yellow glare: none

Green glare: 618 min.





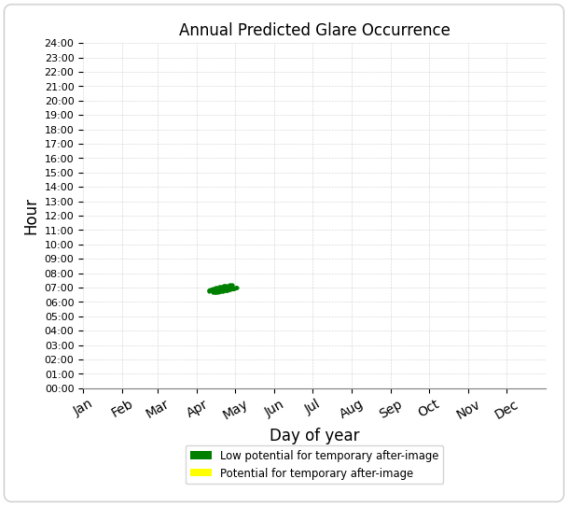


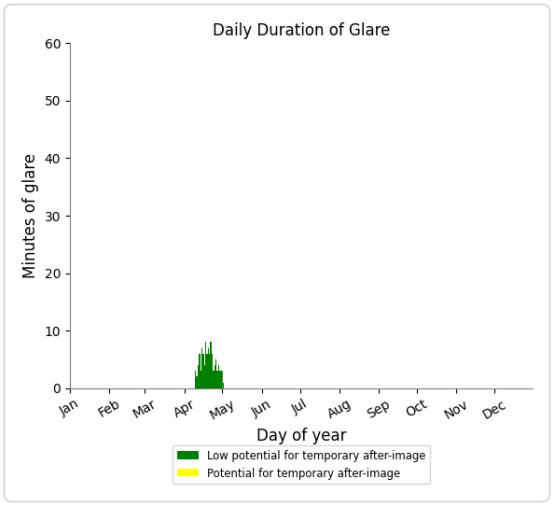


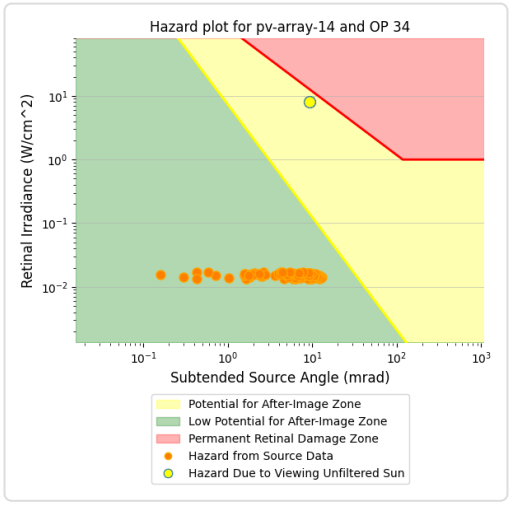
PV array 14 and OP 34

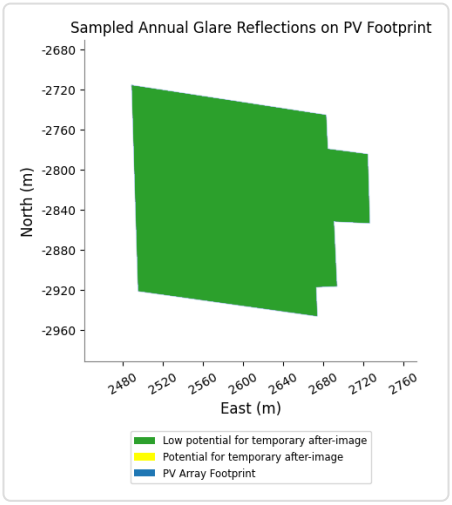
Yellow glare: none

Green glare: 105 min.









PV array 14 and OP 1

No glare found

PV array 14 and OP 3

No glare found

PV array 14 and OP 4

No glare found

PV array 14 and OP 5

No glare found

PV array 14 and OP 6

No glare found

PV array 14 and OP 7

No glare found

PV array 14 and OP 8

No glare found

PV array 14 and OP 9

No glare found

PV array 14 and OP 10

No glare found

PV array 14 and OP 11

No glare found

PV array 14 and OP 12

No glare found

PV array 14 and OP 13

No glare found

PV array 14 and OP 14

No glare found

PV array 14 and OP 15

No glare found

PV array 14 and OP 16

No glare found

PV array 14 and OP 17

No glare found

PV array 14 and OP 18

No glare found

PV array 14 and OP 19

No glare found

PV array 14 and OP 20

No glare found

PV array 14 and OP 21

No glare found

PV array 14 and OP 22

No glare found

PV array 14 and OP 23

No glare found

PV array 14 and OP 24

No glare found

PV array 14 and OP 25

No glare found

PV array 14 and OP 26

No glare found

PV array 14 and OP 27

No glare found

PV array 14 and OP 28

No glare found

PV array 14 and OP 29

No glare found

PV array 14 and OP 30

No glare found

PV array 14 and OP 31

No glare found

PV array 14 and OP 32

No glare found

PV array 14 and OP 33

No glare found

PV array 14 and OP 35

No glare found

PV array 14 and OP 36

No glare found

PV array 14 and OP 37

No glare found

PV array 14 and OP 38

No glare found

PV array 14 and OP 39

No glare found

PV array 14 and OP 40

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 2 and Route: Kooringaroo Road

No glare found

PV array 2 and Route: Windellama Road

No glare found

PV array 2 and FP: FP 1

No glare found

PV array 2 and FP: FP 2

No glare found

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

PV array 2 and OP 18

No glare found

PV array 2 and OP 19

No glare found

PV array 2 and OP 20

No glare found

PV array 2 and OP 21

No glare found

PV array 2 and OP 22

No glare found

PV array 2 and OP 23

No glare found

PV array 2 and OP 24

No glare found

PV array 2 and OP 25

No glare found

PV array 2 and OP 26

No glare found

PV array 2 and OP 27

No glare found

PV array 2 and OP 28

No glare found

PV array 2 and OP 29

No glare found

PV array 2 and OP 30

No glare found

PV array 2 and OP 31

No glare found

PV array 2 and OP 32

No glare found

PV array 2 and OP 33

No glare found

PV array 2 and OP 34

No glare found

PV array 2 and OP 35

No glare found

PV array 2 and OP 36

No glare found

PV array 2 and OP 37

No glare found

PV array 2 and OP 38

No glare found

PV array 2 and OP 39

No glare found

PV array 2 and OP 40

No glare found

PV: PV array 3 low potential for temporary after-image

Receptor results ordered by category of glare

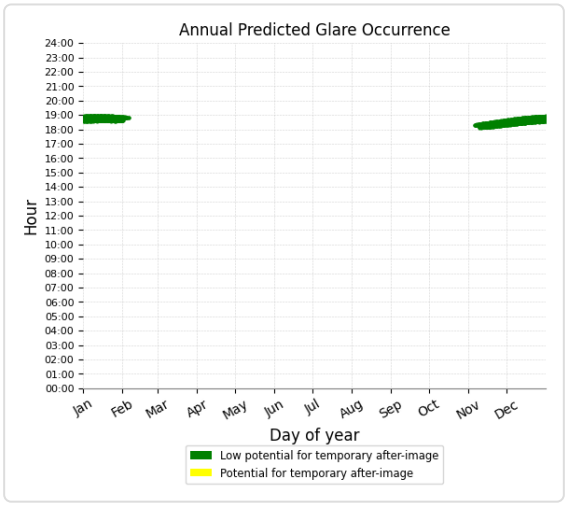
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	885	14.8	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 3	134	2.2	0	0.0
OP 5	179	3.0	0	0.0
OP 6	222	3.7	0	0.0
OP 22	243	4.0	0	0.0
OP 23	76	1.3	0	0.0
OP 24	255	4.2	0	0.0
OP 25	205	3.4	0	0.0
OP 26	275	4.6	0	0.0
OP 27	148	2.5	0	0.0
OP 28	31	0.5	0	0.0
OP 39	316	5.3	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0

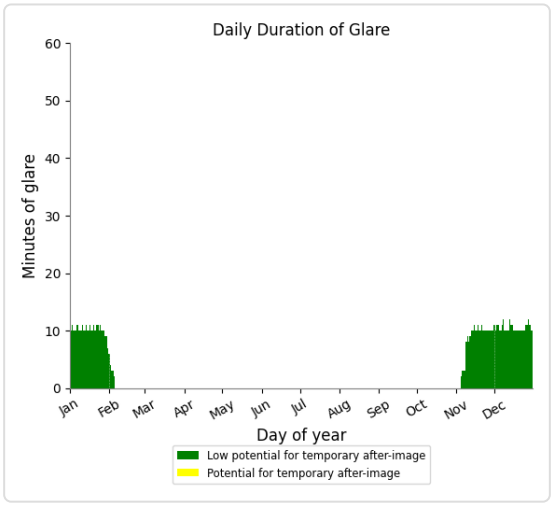
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

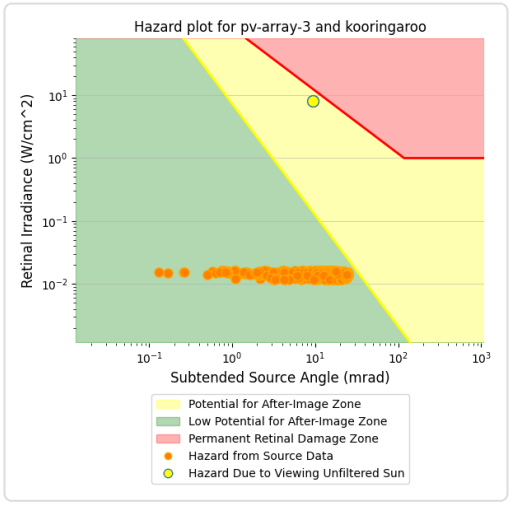
PV array 3 and Route: Kooringaroo Road

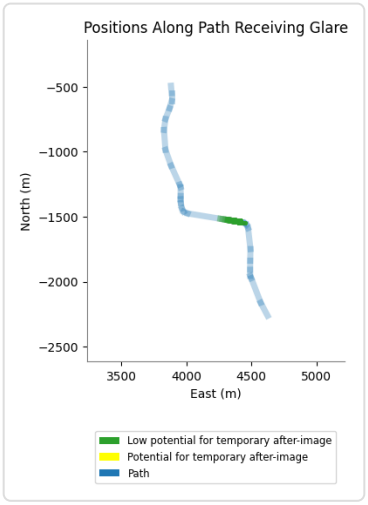
Yellow glare: none

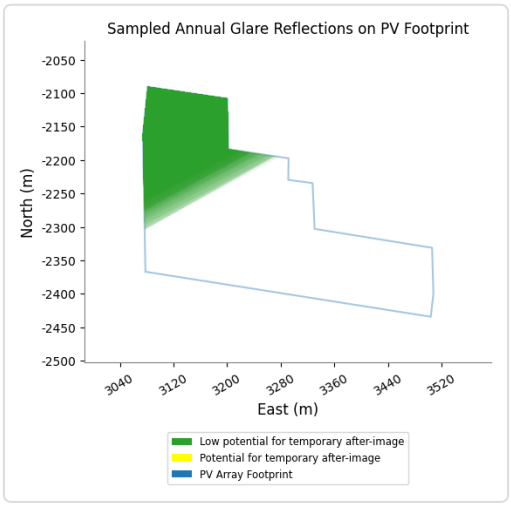
Green glare: 885 min.











PV array 3 and Route: Windellama Road

No glare found

PV array 3 and FP: FP 1

No glare found

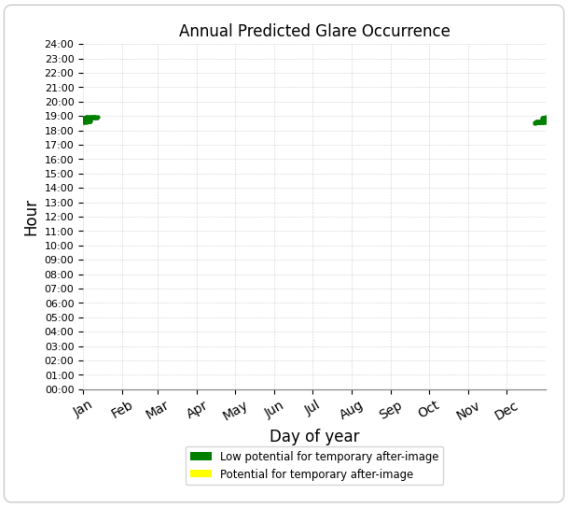
PV array 3 and FP: FP 2

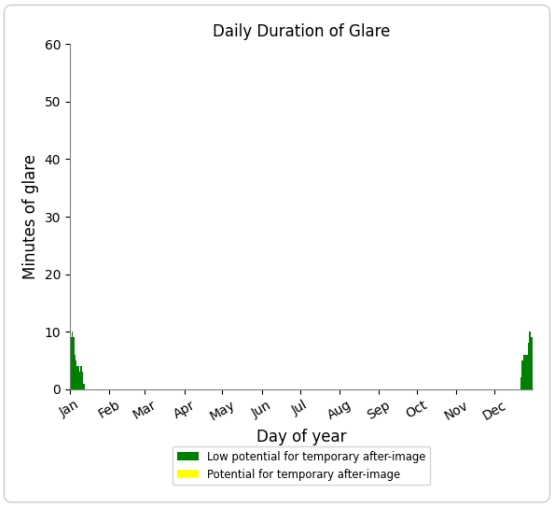
No glare found

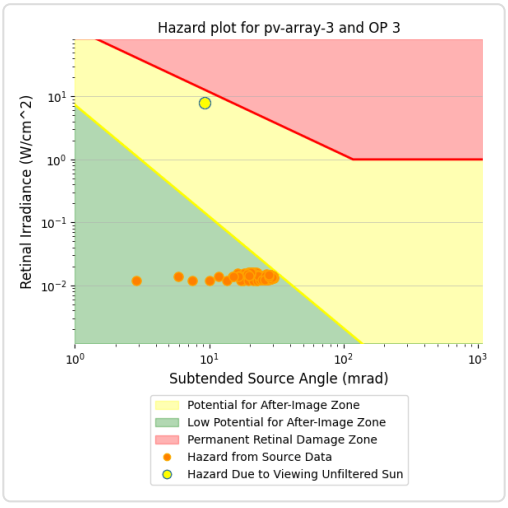
PV array 3 and OP 3

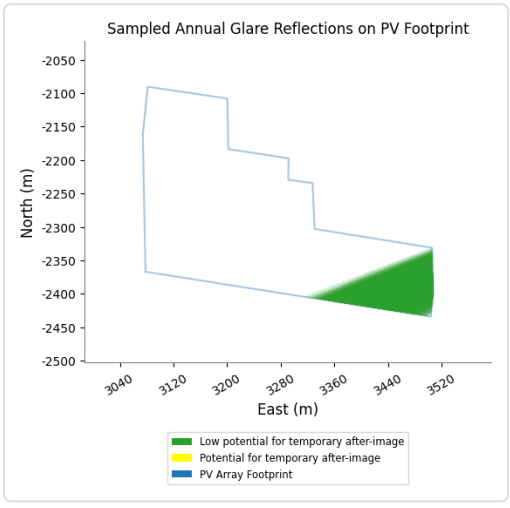
Yellow glare: none

Green glare: 134 min.





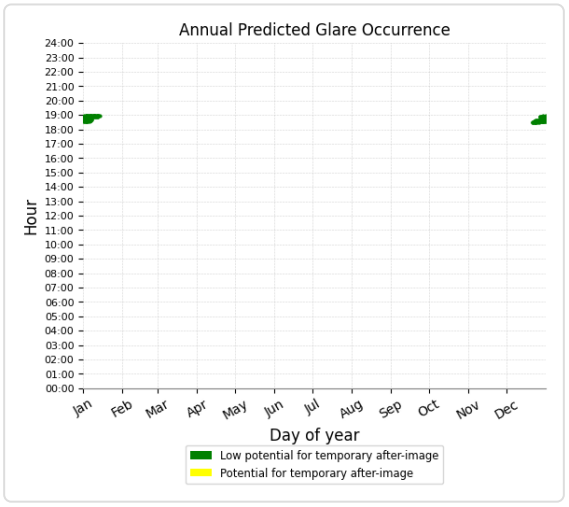


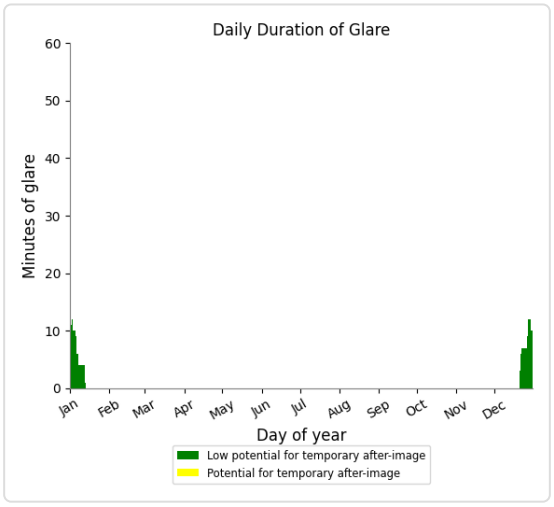


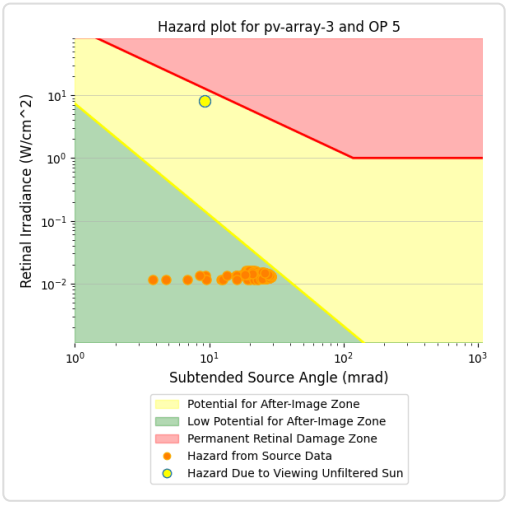
PV array 3 and OP 5

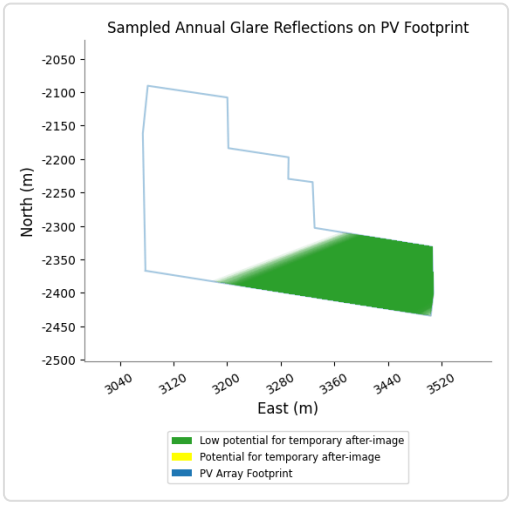
Yellow glare: none

Green glare: 179 min.





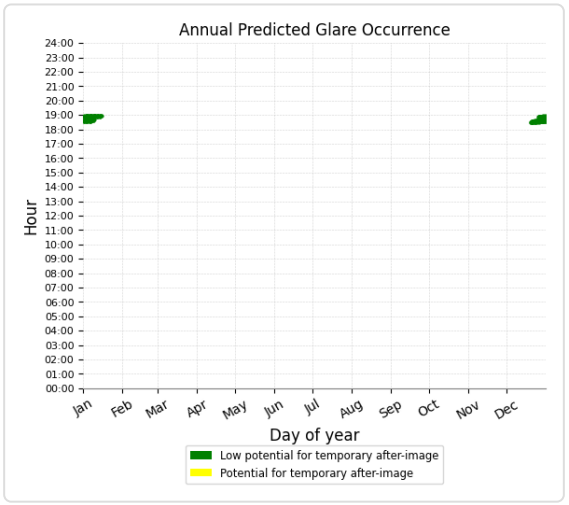


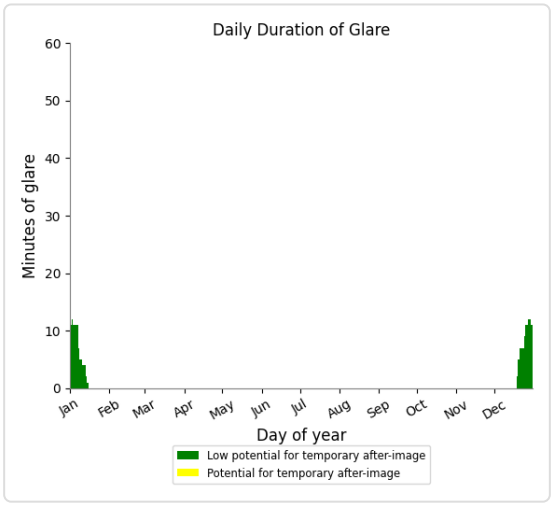


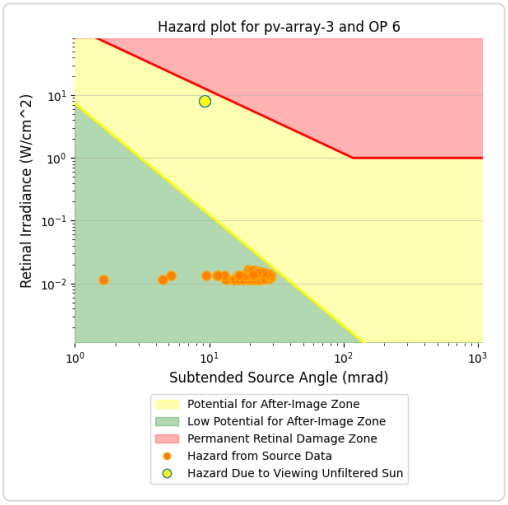
PV array 3 and OP 6

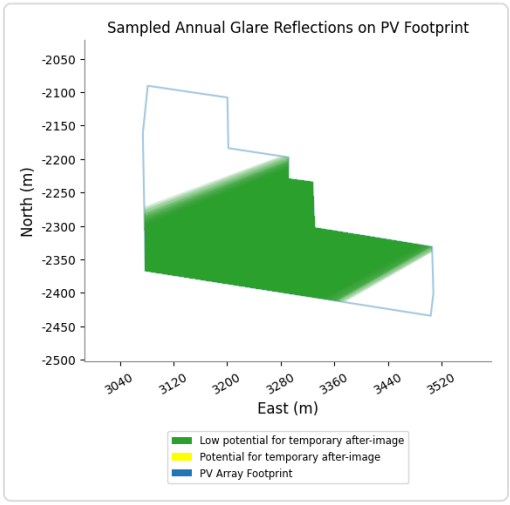
Yellow glare: none

Green glare: 222 min.





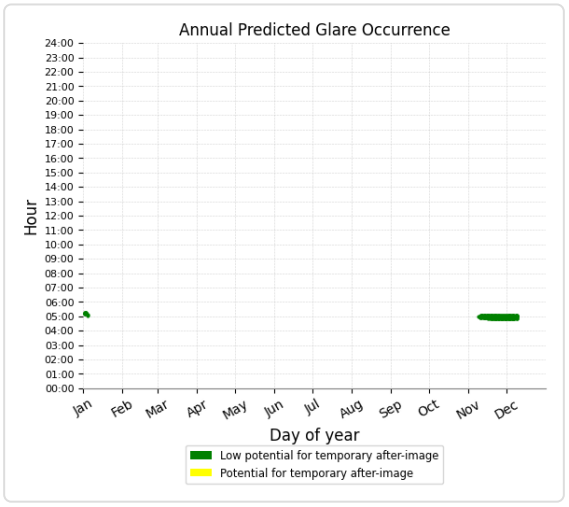


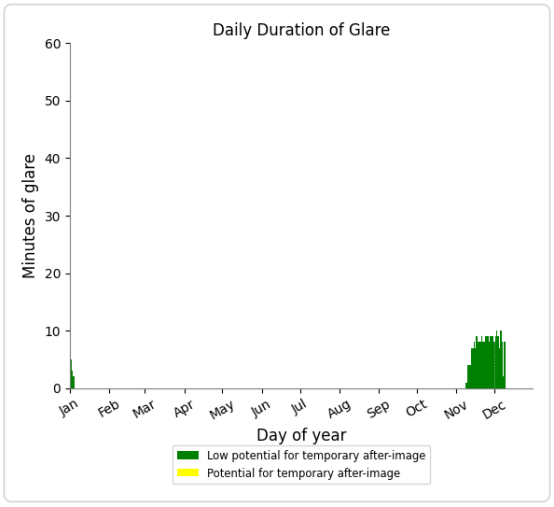


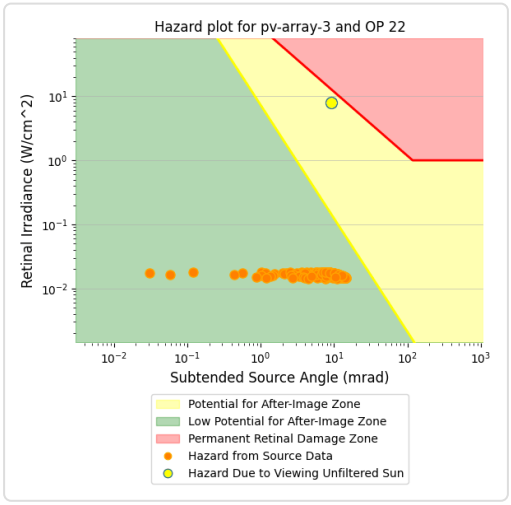
PV array 3 and OP 22

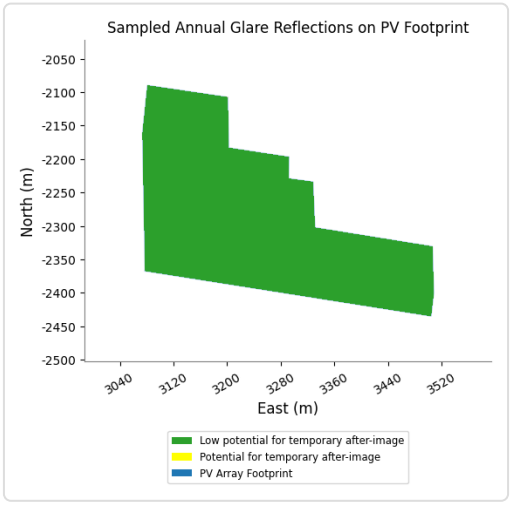
Yellow glare: none

Green glare: 243 min.





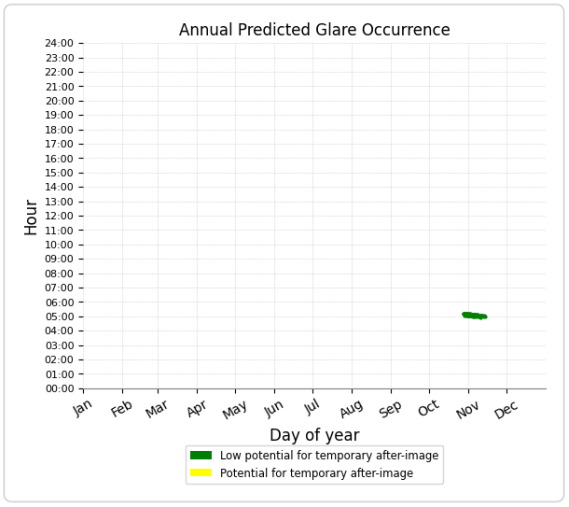


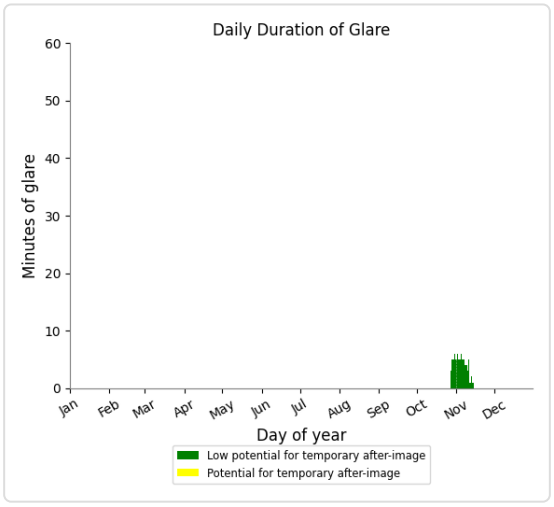


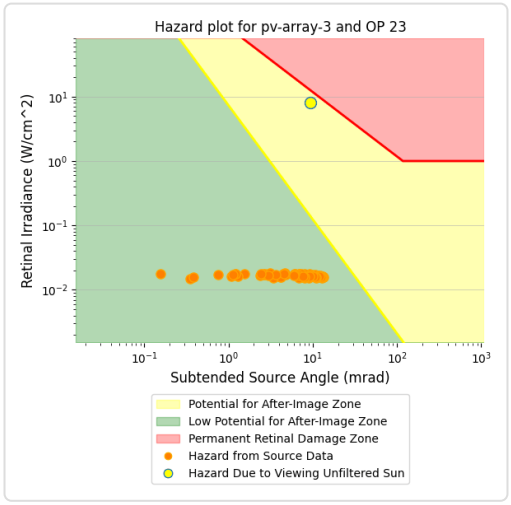
PV array 3 and OP 23

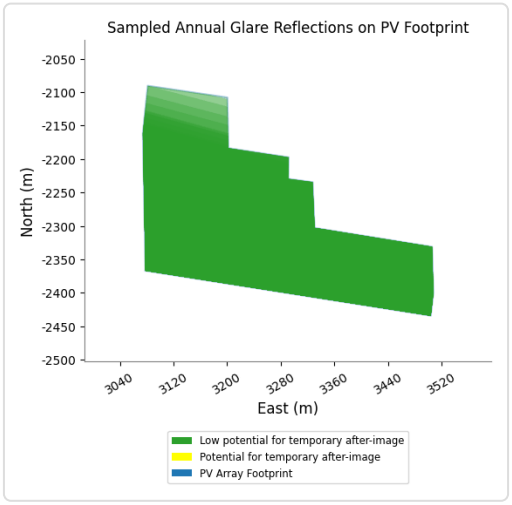
Yellow glare: none

Green glare: 76 min.





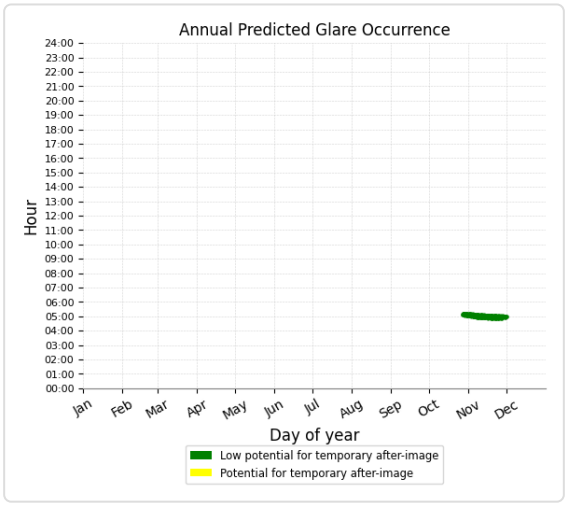


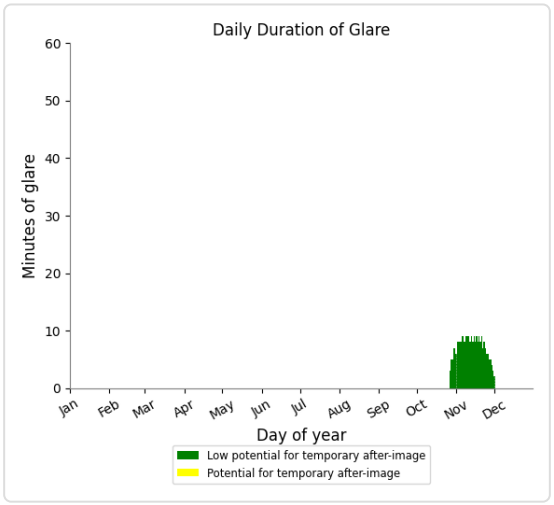


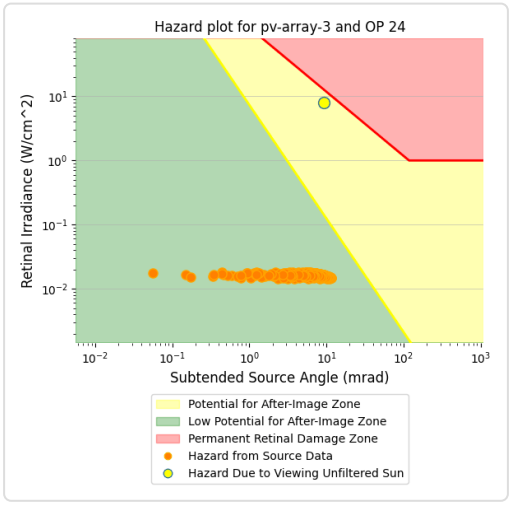
PV array 3 and OP 24

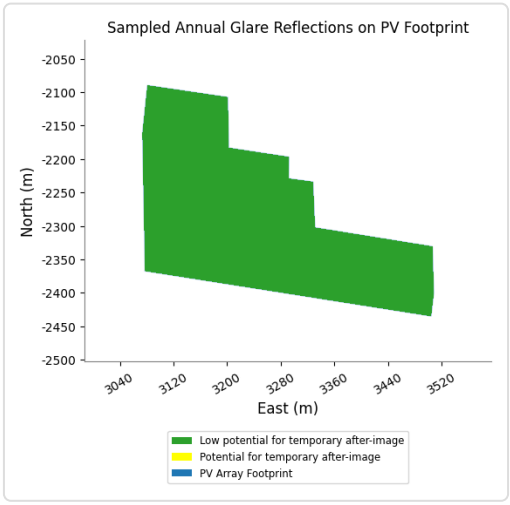
Yellow glare: none

Green glare: 255 min.





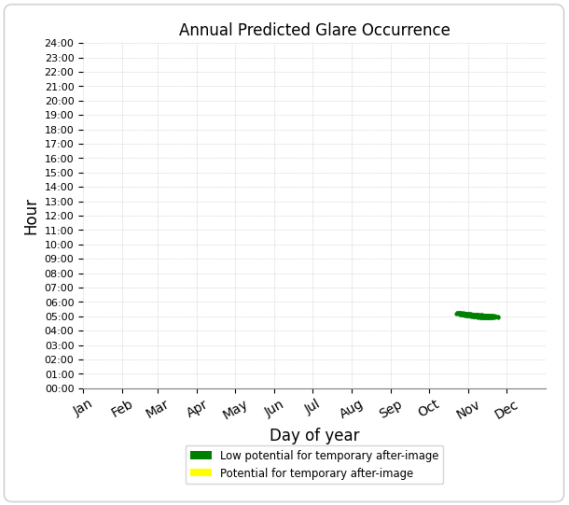


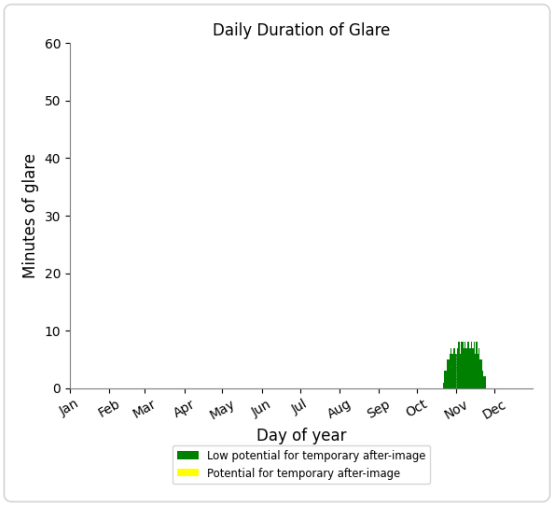


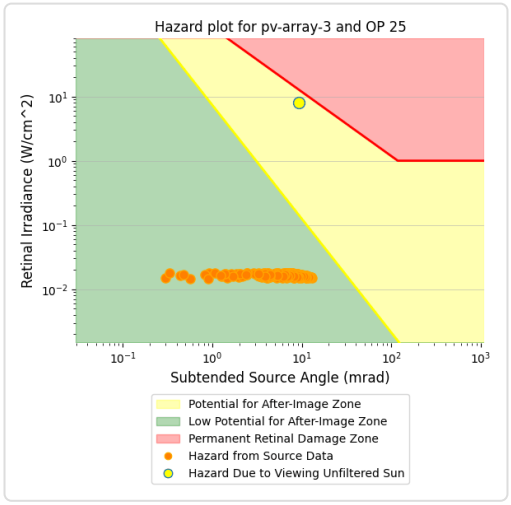
PV array 3 and OP 25

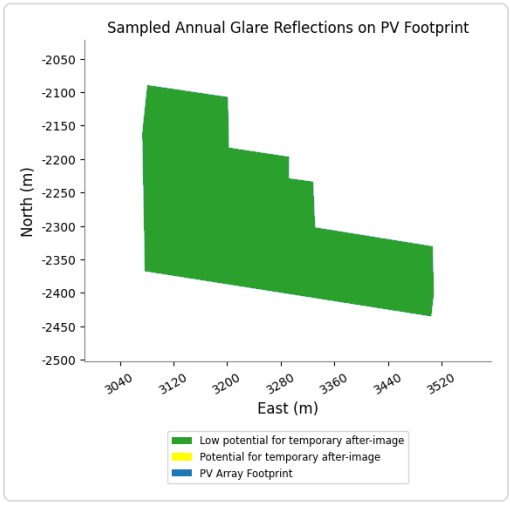
Yellow glare: none

Green glare: 205 min.





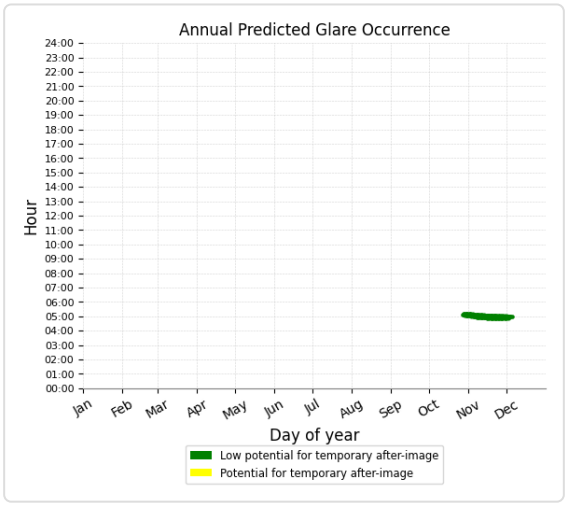


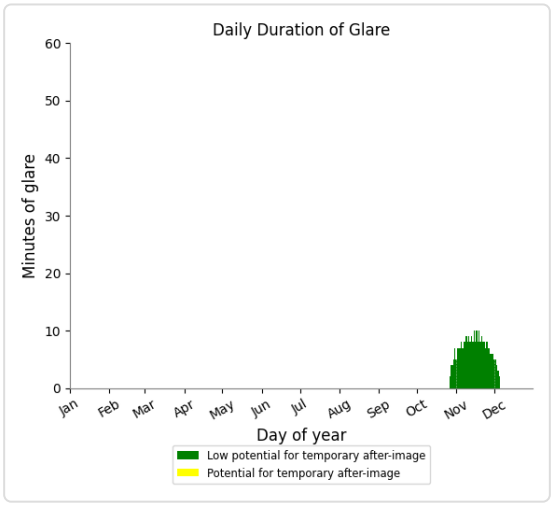


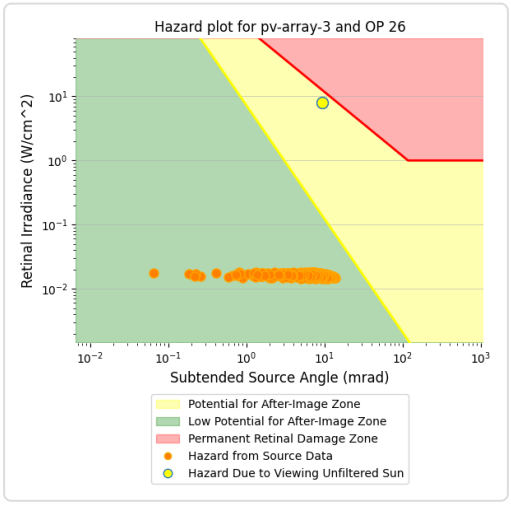
PV array 3 and OP 26

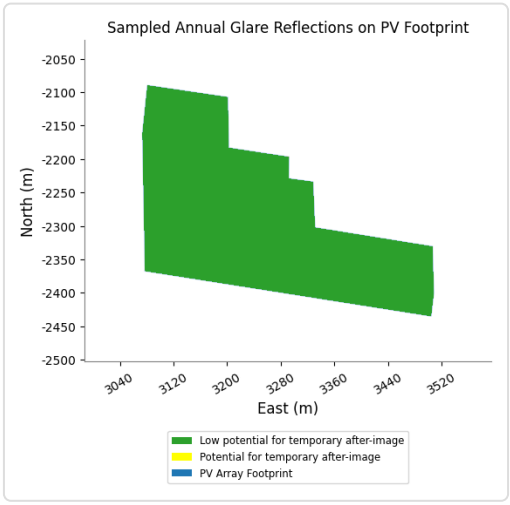
Yellow glare: none

Green glare: 275 min.





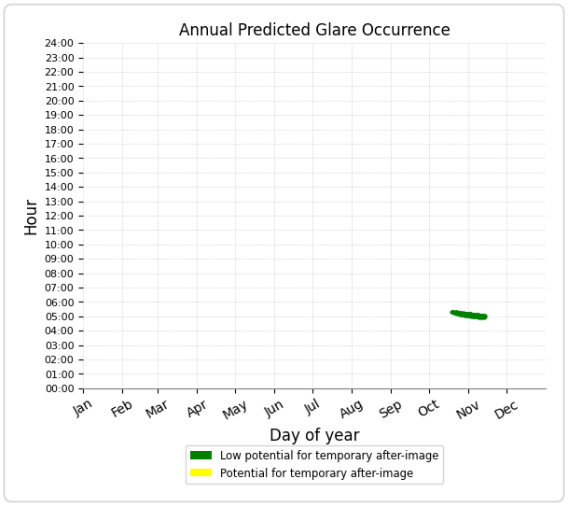


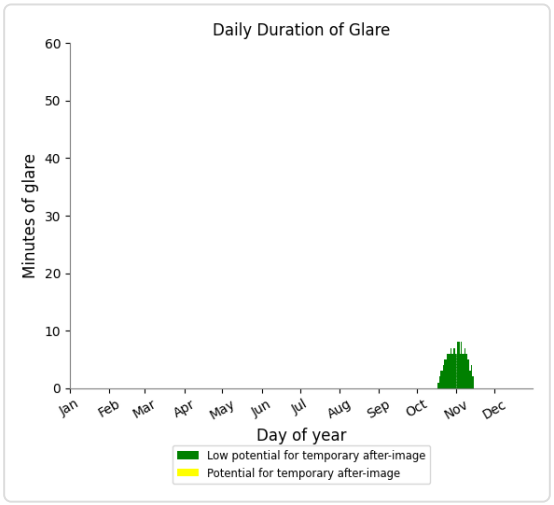


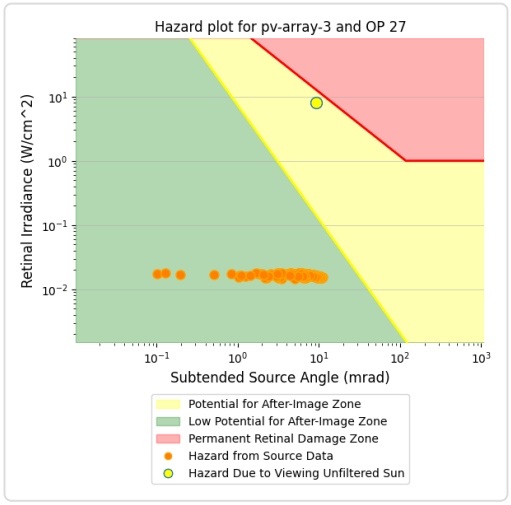
PV array 3 and OP 27

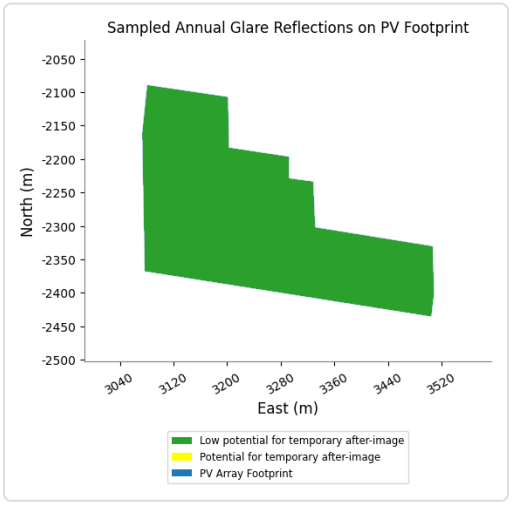
Yellow glare: none

Green glare: 148 min.





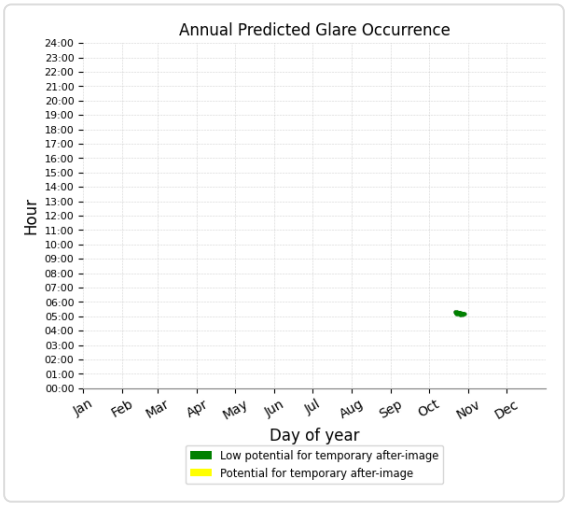


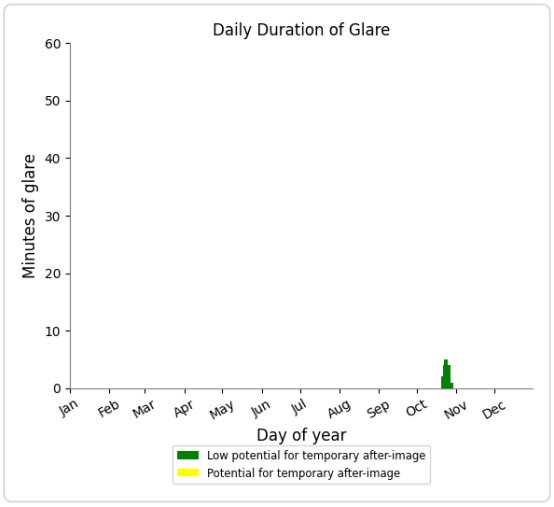


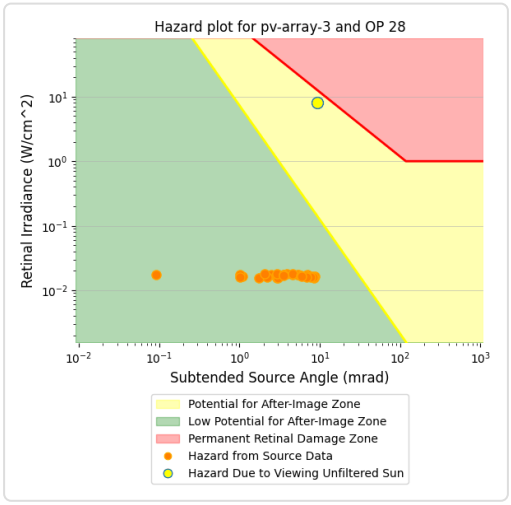
PV array 3 and OP 28

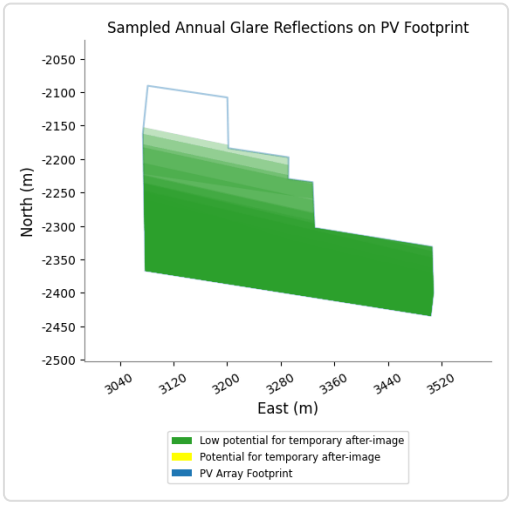
Yellow glare: none

Green glare: 31 min.





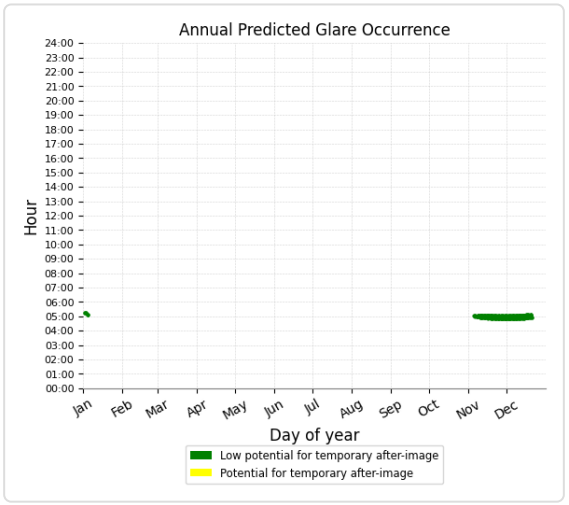


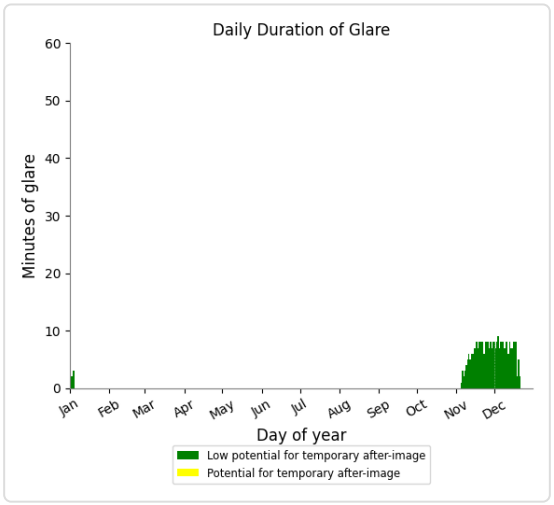


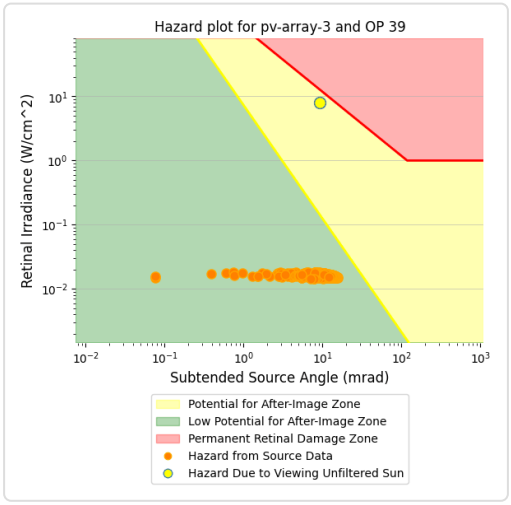
PV array 3 and OP 39

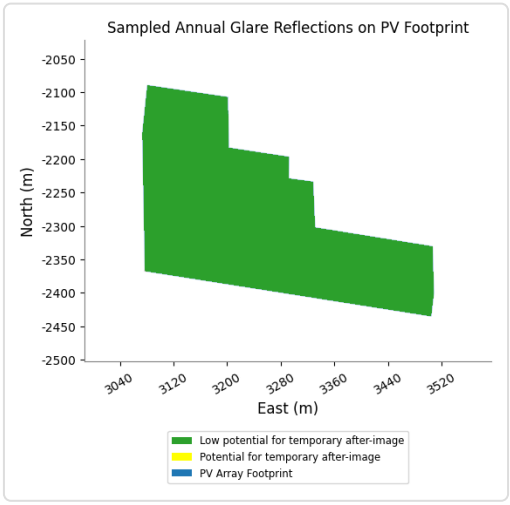
Yellow glare: none

Green glare: 316 min.









PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 14

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV array 3 and OP 18

No glare found

PV array 3 and OP 19

No glare found

PV array 3 and OP 20

No glare found

PV array 3 and OP 21

No glare found

PV array 3 and OP 29

No glare found

PV array 3 and OP 30

No glare found

PV array 3 and OP 31

No glare found

PV array 3 and OP 32

No glare found

PV array 3 and OP 33

No glare found

PV array 3 and OP 34

No glare found

PV array 3 and OP 35

No glare found

PV array 3 and OP 36

No glare found

PV array 3 and OP 37

No glare found

PV array 3 and OP 38

No glare found

PV array 3 and OP 40

No glare found

PV: PV array 4 low potential for temporary after-image

Receptor results ordered by category of glare

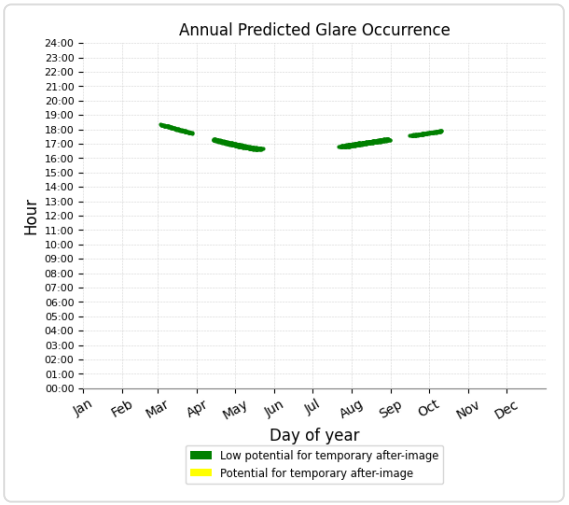
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	709	11.8	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 7	98	1.6	0	0.0
OP 8	362	6.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

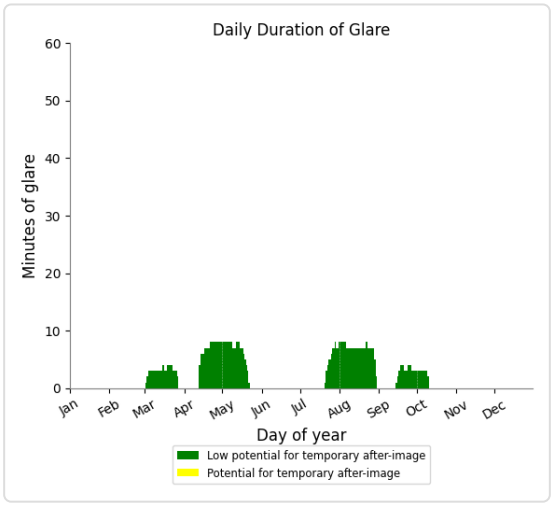
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

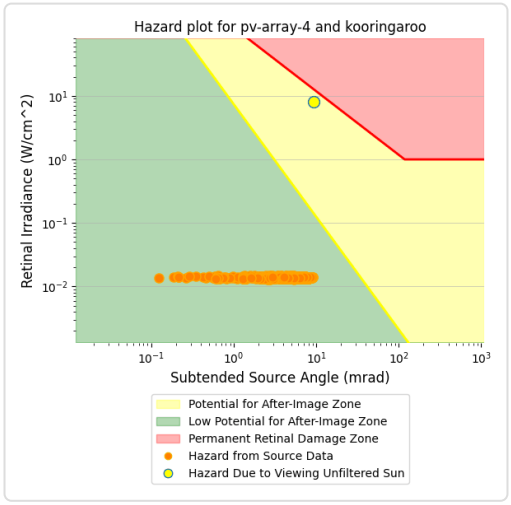
PV array 4 and Route: Kooringaroo Road

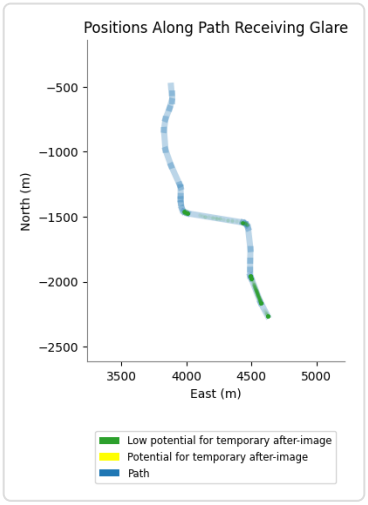
Yellow glare: none

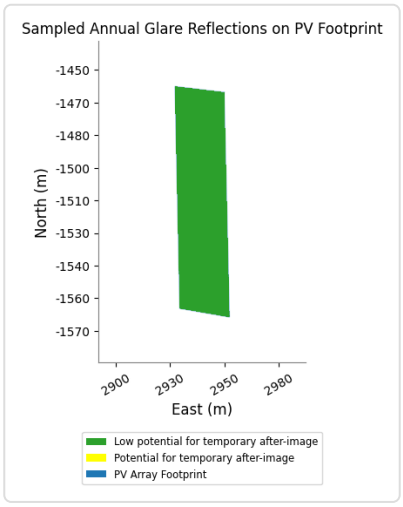
Green glare: 709 min.











PV array 4 and Route: Windellama Road

No glare found

PV array 4 and FP: FP 1

No glare found

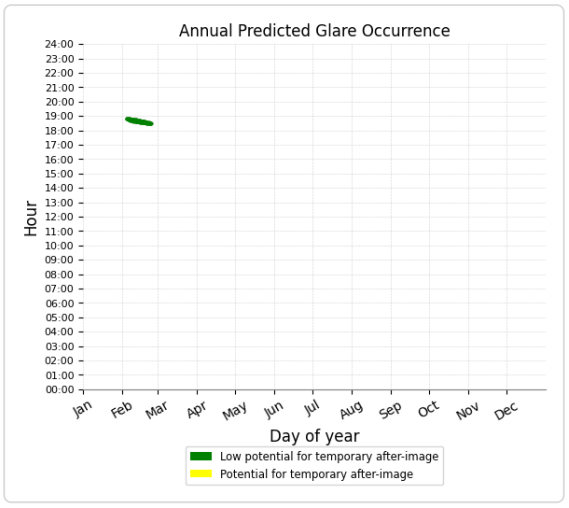
PV array 4 and FP: FP 2

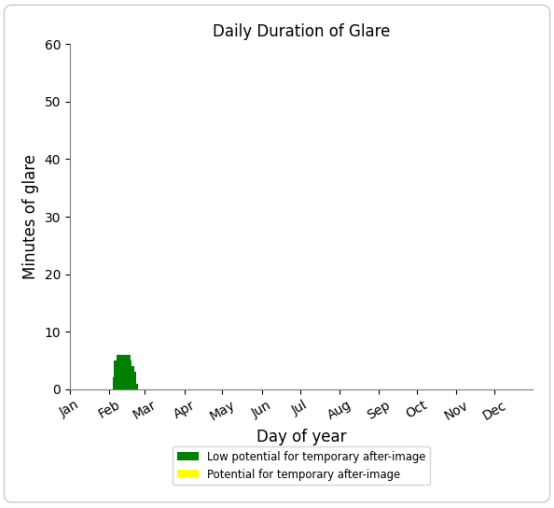
No glare found

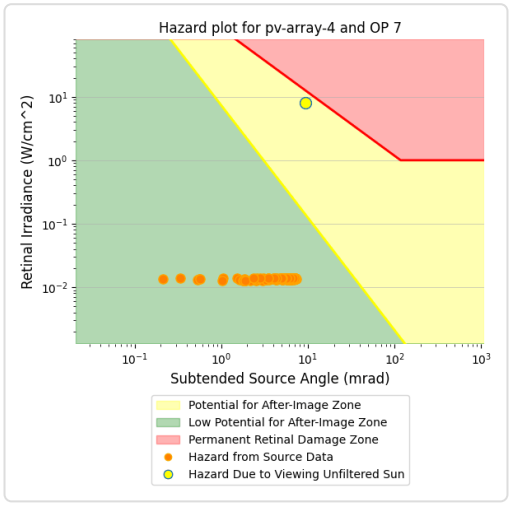
PV array 4 and OP 7

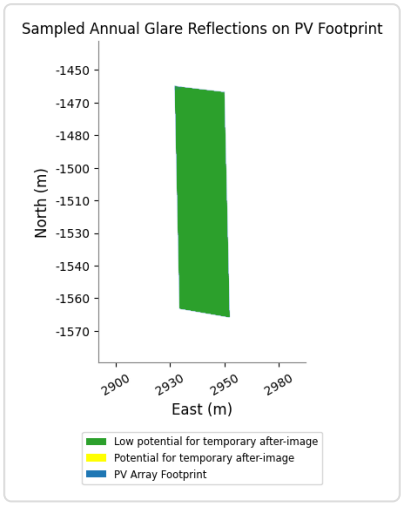
Yellow glare: none

Green glare: 98 min.





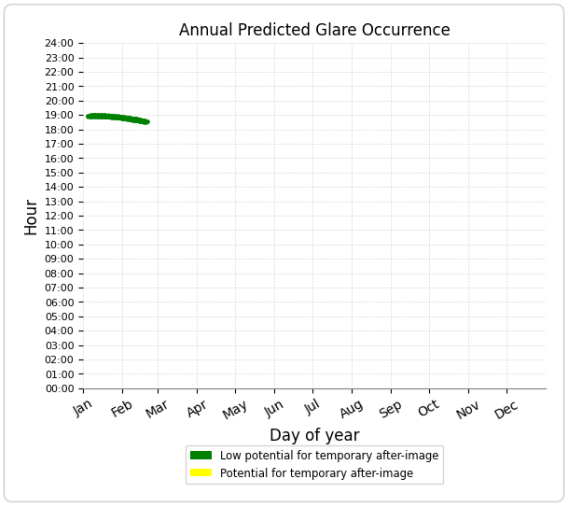


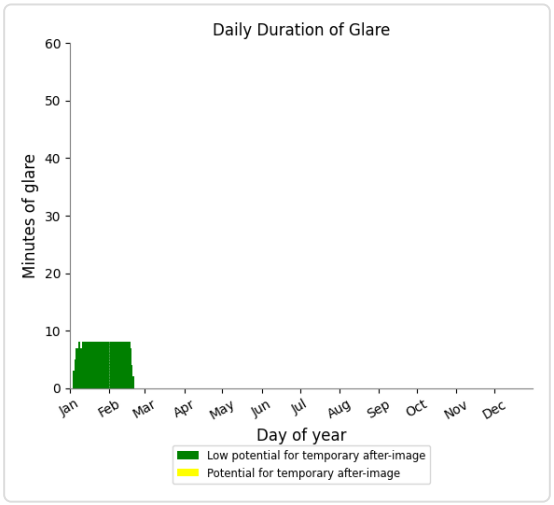


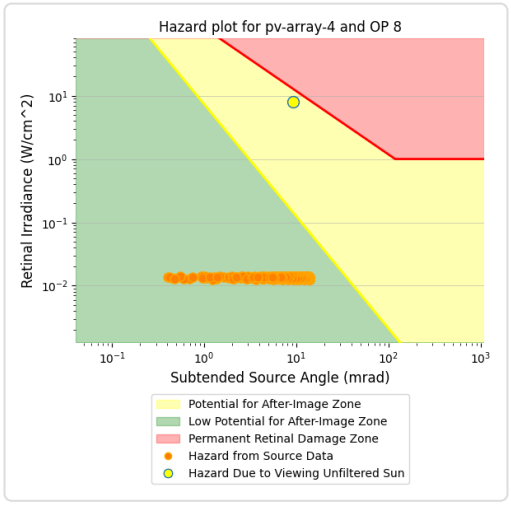
PV array 4 and OP 8

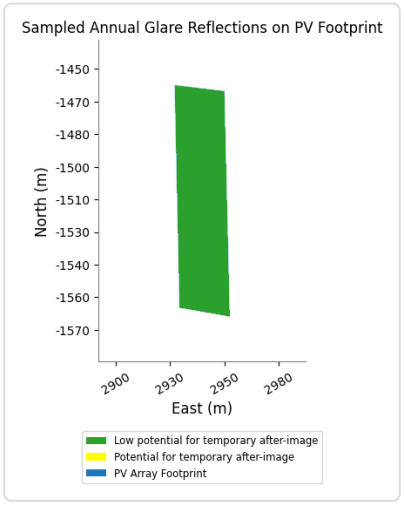
Yellow glare: none

Green glare: 362 min.









PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV array 4 and OP 18

No glare found

PV array 4 and OP 19

No glare found

PV array 4 and OP 20

No glare found

PV array 4 and OP 21

No glare found

PV array 4 and OP 22

No glare found

PV array 4 and OP 23

No glare found

PV array 4 and OP 24

No glare found

PV array 4 and OP 25

No glare found

PV array 4 and OP 26

No glare found

PV array 4 and OP 27

No glare found

PV array 4 and OP 28

No glare found

PV array 4 and OP 29

No glare found

PV array 4 and OP 30

No glare found

PV array 4 and OP 31

No glare found

PV array 4 and OP 32

No glare found

PV array 4 and OP 33

No glare found

PV array 4 and OP 34

No glare found

PV array 4 and OP 35

No glare found

PV array 4 and OP 36

No glare found

PV array 4 and OP 37

No glare found

PV array 4 and OP 38

No glare found

PV array 4 and OP 39

No glare found

PV array 4 and OP 40

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 5 and Route: Kooringaroo Road

No glare found

PV array 5 and Route: Windellama Road

No glare found

PV array 5 and FP: FP 1

No glare found

PV array 5 and FP: FP 2

No glare found

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV array 5 and OP 18

No glare found

PV array 5 and OP 19

No glare found

PV array 5 and OP 20

No glare found

PV array 5 and OP 21

No glare found

PV array 5 and OP 22

No glare found

PV array 5 and OP 23

No glare found

PV array 5 and OP 24

No glare found

PV array 5 and OP 25

No glare found

PV array 5 and OP 26

No glare found

PV array 5 and OP 27

No glare found

PV array 5 and OP 28

No glare found

PV array 5 and OP 29

No glare found

PV array 5 and OP 30

No glare found

PV array 5 and OP 31

No glare found

PV array 5 and OP 32

No glare found

PV array 5 and OP 33

No glare found

PV array 5 and OP 34

No glare found

PV array 5 and OP 35

No glare found

PV array 5 and OP 36

No glare found

PV array 5 and OP 37

No glare found

PV array 5 and OP 38

No glare found

PV array 5 and OP 39

No glare found

PV array 5 and OP 40

No glare found

PV: PV array 6 low potential for temporary after-image

Receptor results ordered by category of glare

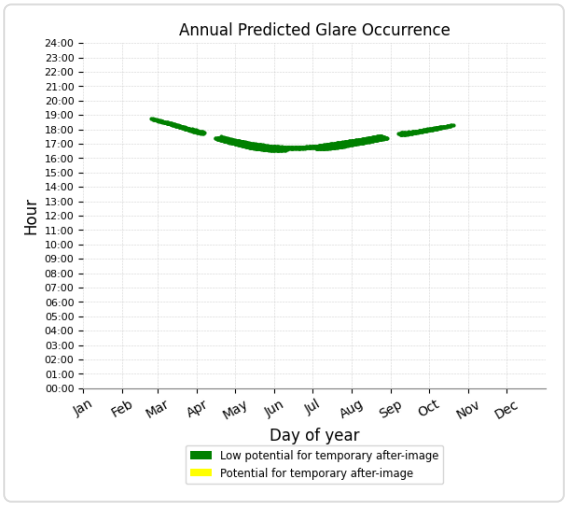
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	1,806	30.1	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 3	410	6.8	0	0.0
OP 32	157	2.6	0	0.0
OP 33	343	5.7	0	0.0
OP 34	243	4.0	0	0.0
OP 35	186	3.1	0	0.0
OP 38	169	2.8	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0

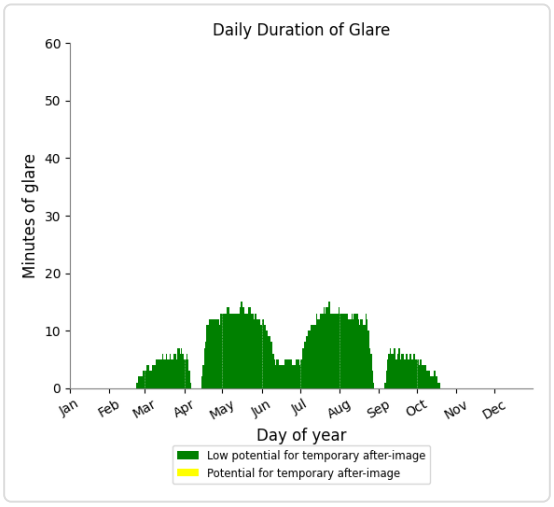
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 31	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

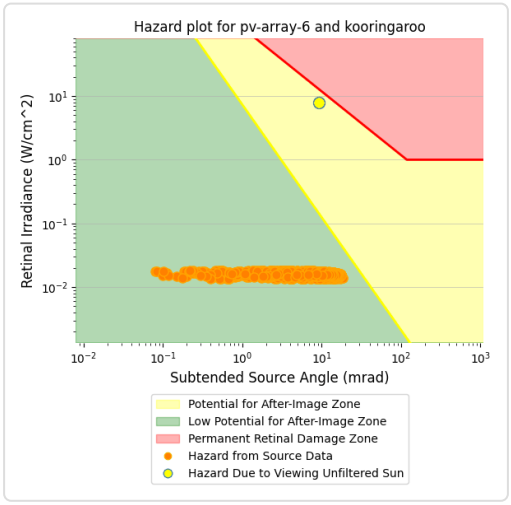
PV array 6 and Route: Kooringaroo Road

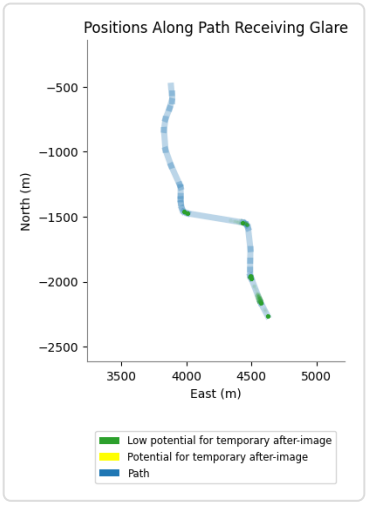
Yellow glare: none

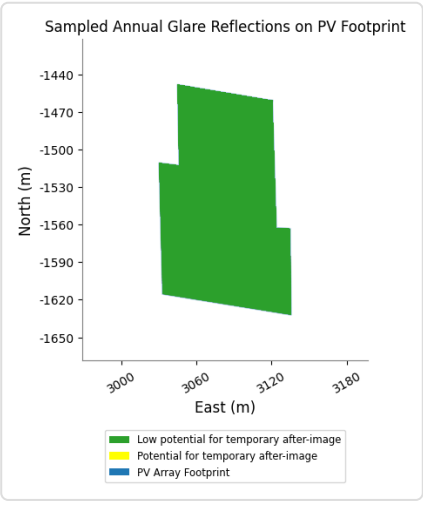
Green glare: 1,806 min.











PV array 6 and Route: Windellama Road

No glare found

PV array 6 and FP: FP 1

No glare found

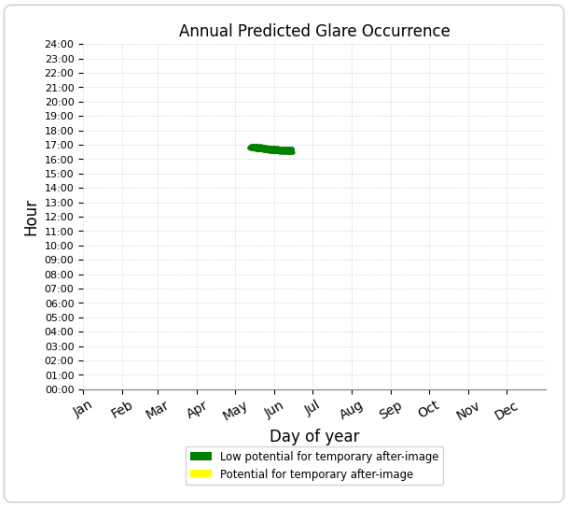
PV array 6 and FP: FP 2

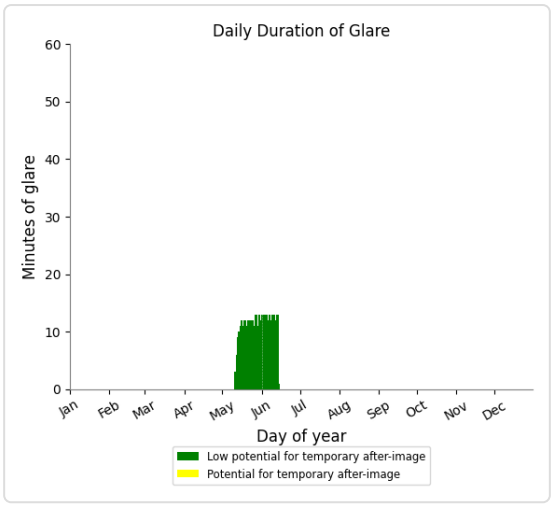
No glare found

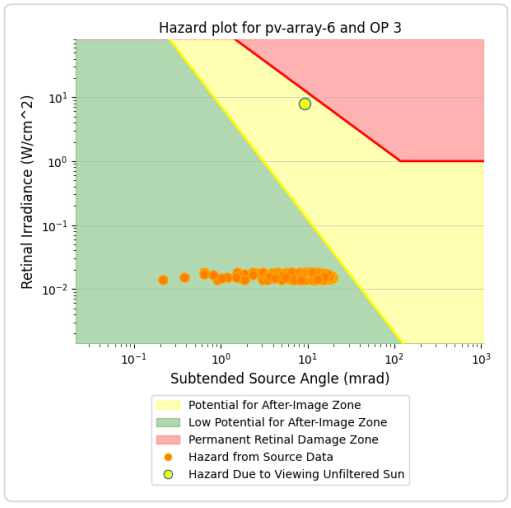
PV array 6 and OP 3

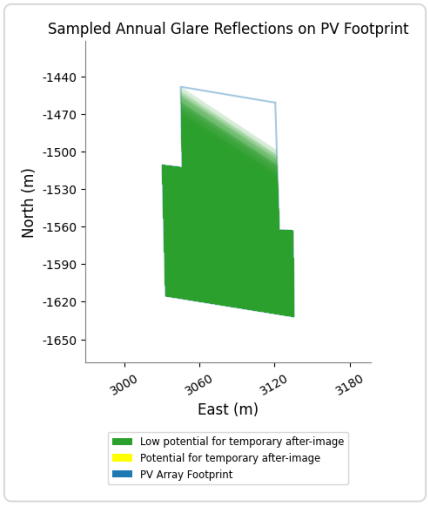
Yellow glare: none

Green glare: 410 min.





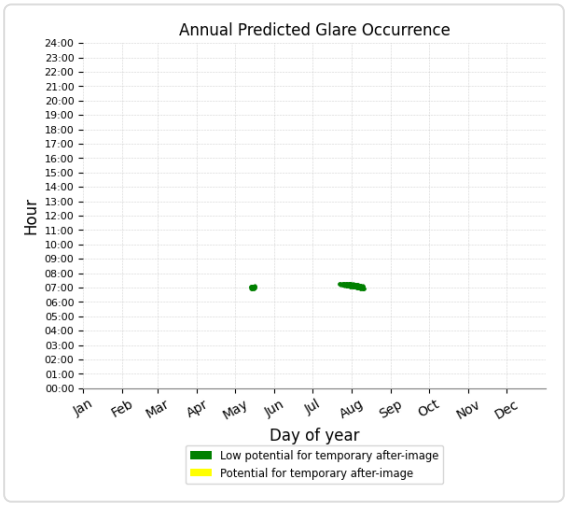


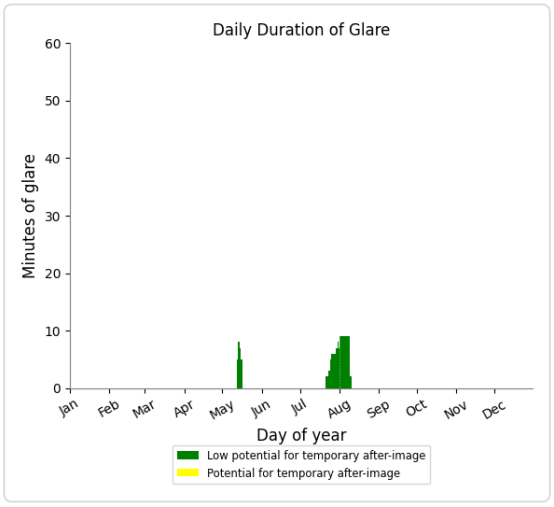


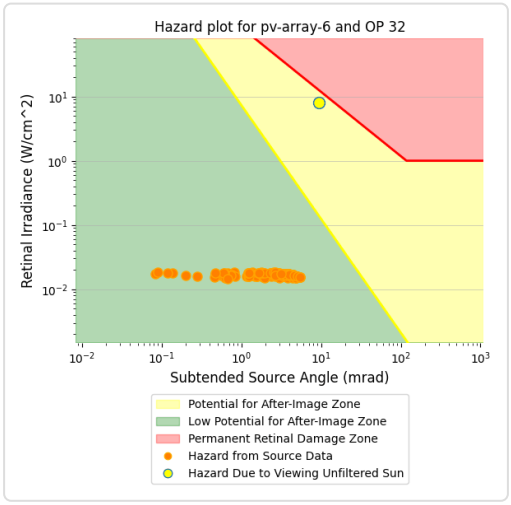
PV array 6 and OP 32

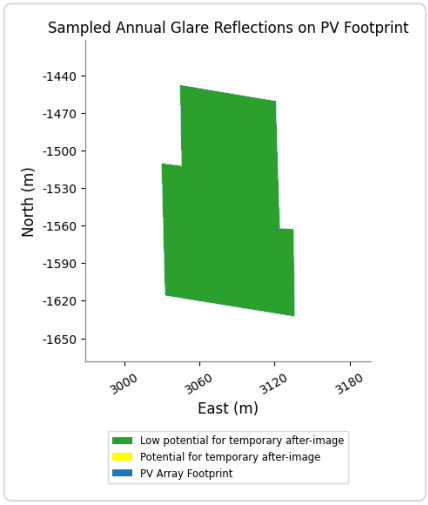
Yellow glare: none

Green glare: 157 min.





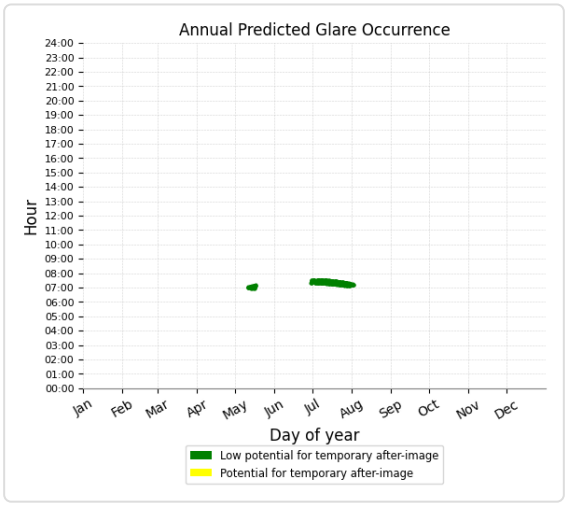


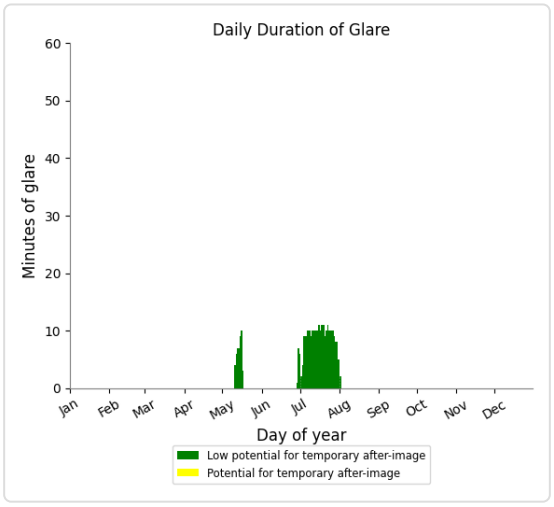


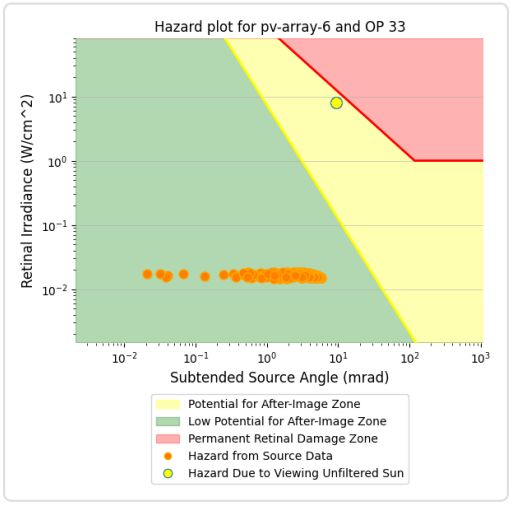
PV array 6 and OP 33

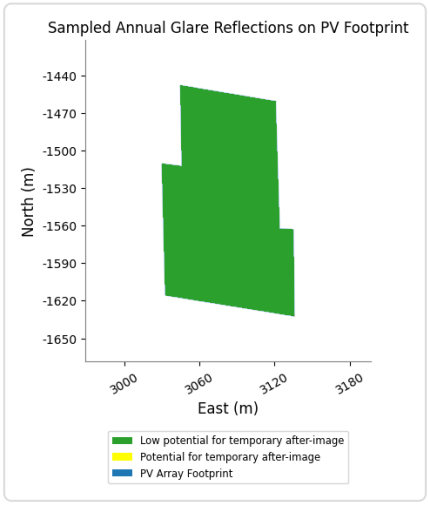
Yellow glare: none

Green glare: 343 min.





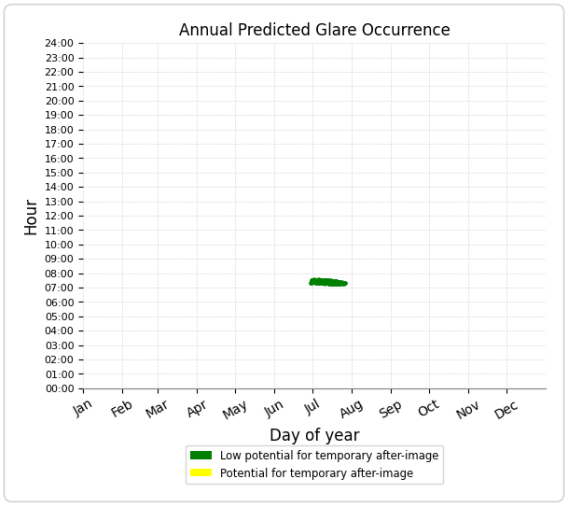


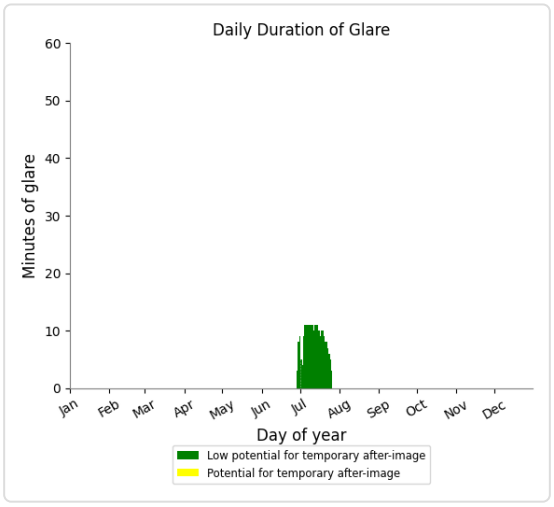


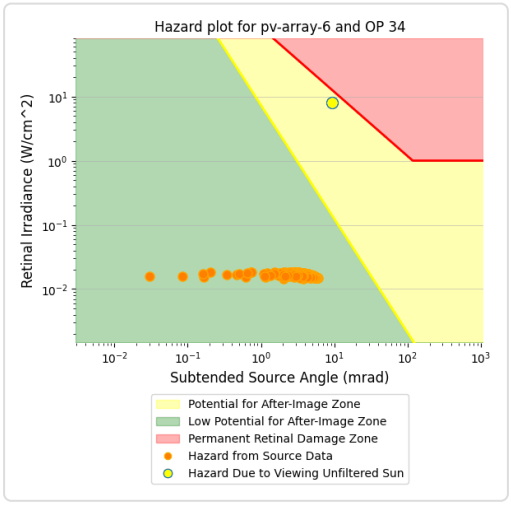
PV array 6 and OP 34

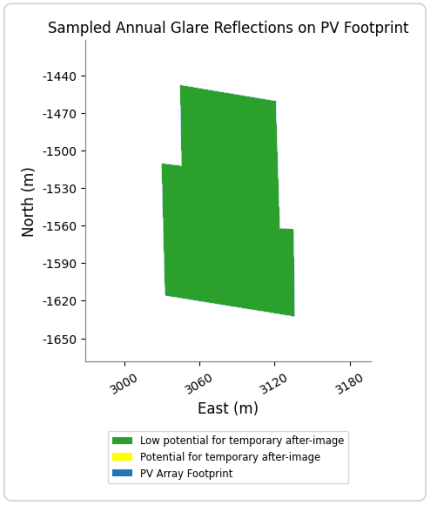
Yellow glare: none

Green glare: 243 min.





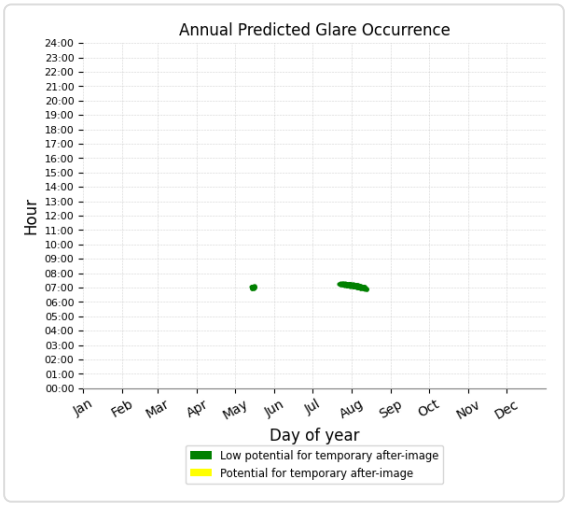


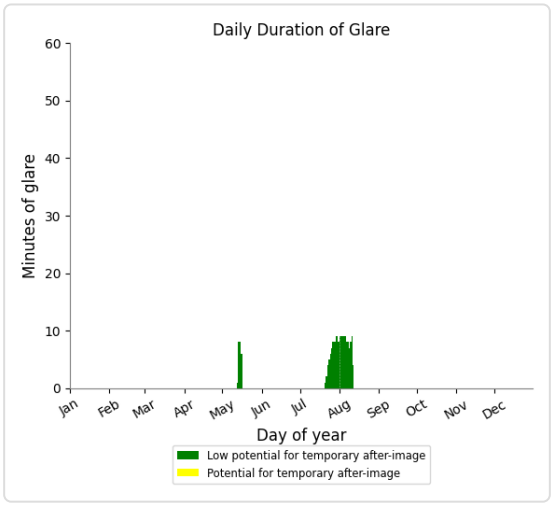


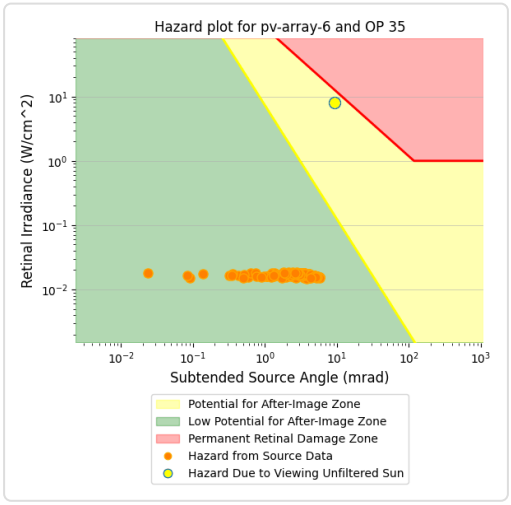
PV array 6 and OP 35

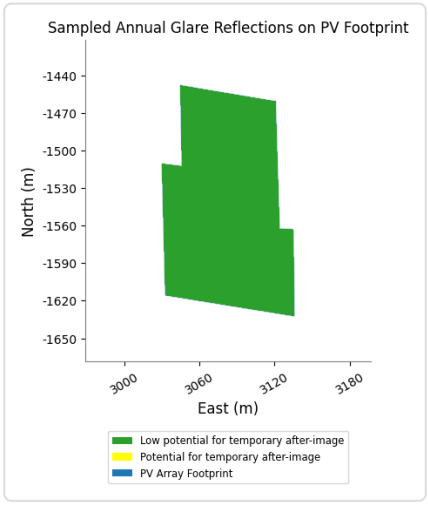
Yellow glare: none

Green glare: 186 min.





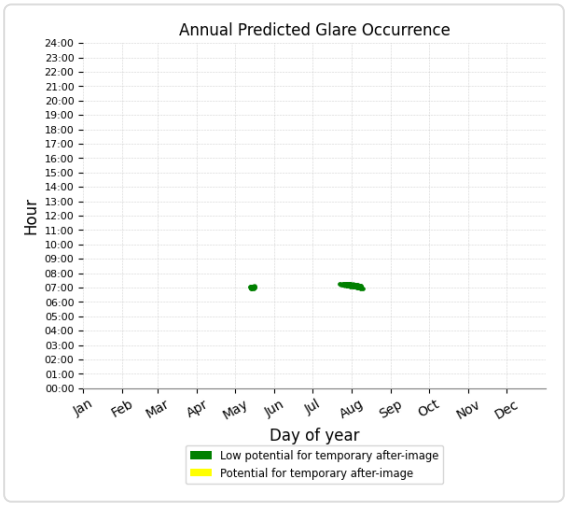


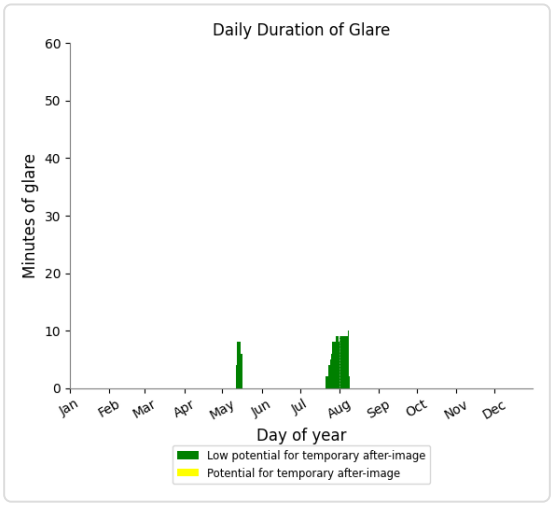


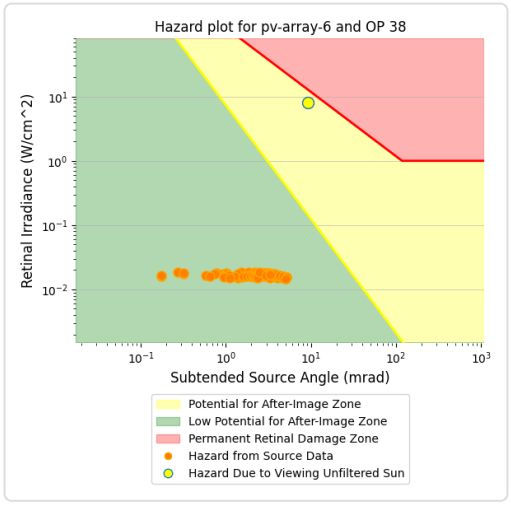
PV array 6 and OP 38

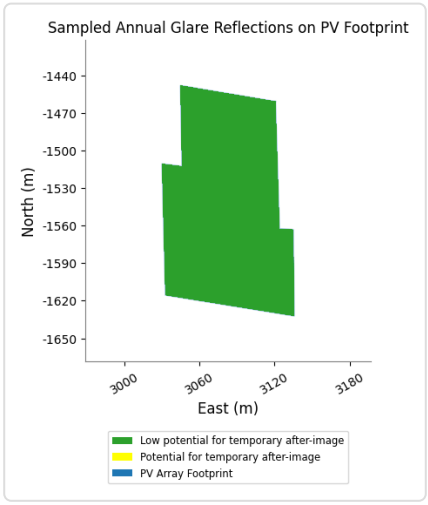
Yellow glare: none

Green glare: 169 min.









PV array 6 and OP 1

No glare found

PV array 6 and OP 2

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV array 6 and OP 18

No glare found

PV array 6 and OP 19

No glare found

PV array 6 and OP 20

No glare found

PV array 6 and OP 21

No glare found

PV array 6 and OP 22

No glare found

PV array 6 and OP 23

No glare found

PV array 6 and OP 24

No glare found

PV array 6 and OP 25

No glare found

PV array 6 and OP 26

No glare found

PV array 6 and OP 27

No glare found

PV array 6 and OP 28

No glare found

PV array 6 and OP 29

No glare found

PV array 6 and OP 30

No glare found

PV array 6 and OP 31

No glare found

PV array 6 and OP 36

No glare found

PV array 6 and OP 37

No glare found

PV array 6 and OP 39

No glare found

PV array 6 and OP 40

No glare found

PV: PV array 7 potential temporary after-image

Receptor results ordered by category of glare

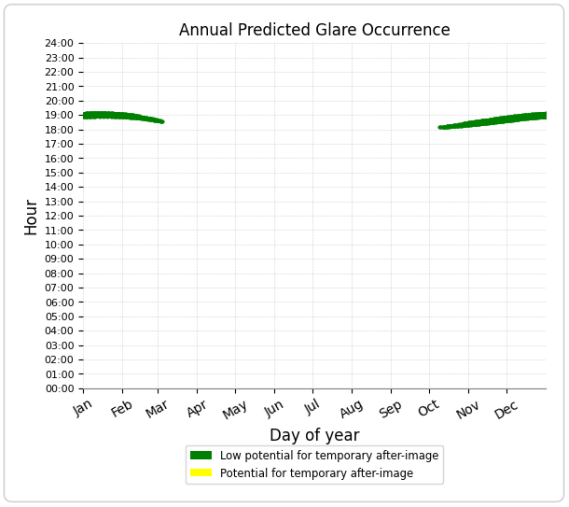
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	1,327	22.1	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 28	372	6.2	142	2.4
OP 29	288	4.8	283	4.7
OP 30	905	15.1	39	0.7
OP 31	1,032	17.2	24	0.4
OP 40	342	5.7	145	2.4
OP 7	89	1.5	0	0.0
OP 8	201	3.4	0	0.0
OP 9	363	6.0	0	0.0
OP 27	24	0.4	0	0.0
OP 37	539	9.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0

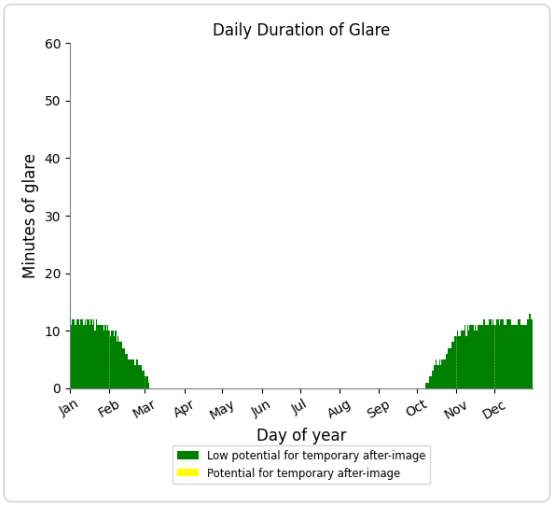
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0
OP 36	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0

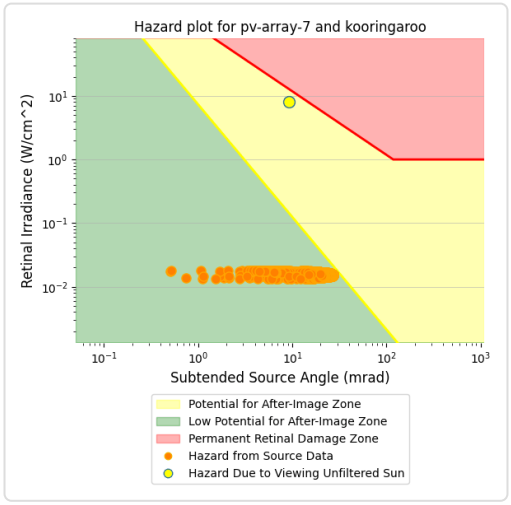
PV array 7 and Route: Kooringaroo Road

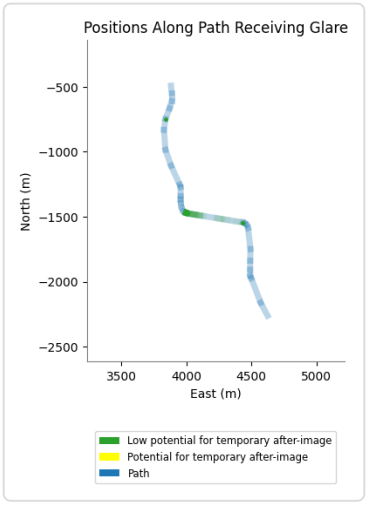
Yellow glare: none

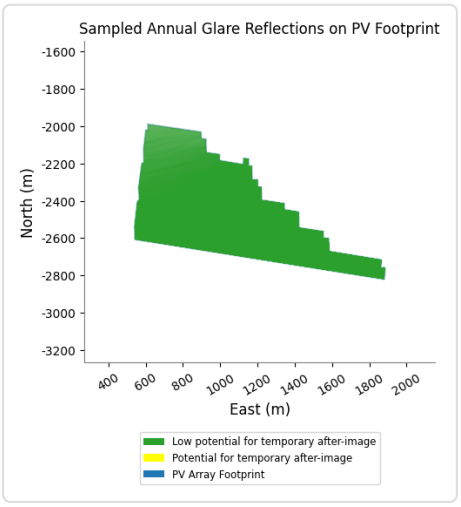
Green glare: 1,327 min.











PV array 7 and Route: Windellama Road

No glare found

PV array 7 and FP: FP 1

No glare found

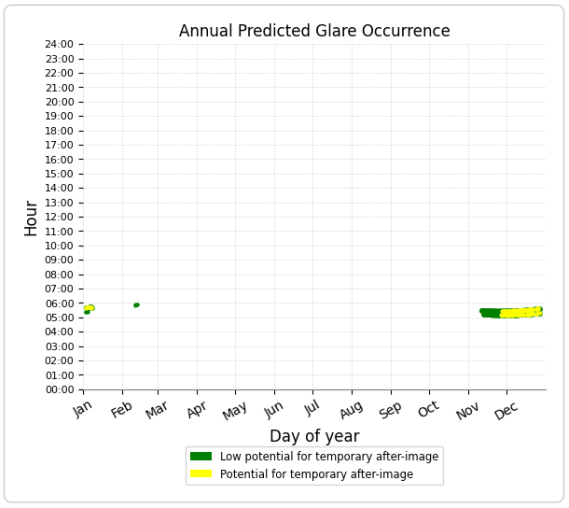
PV array 7 and FP: FP 2

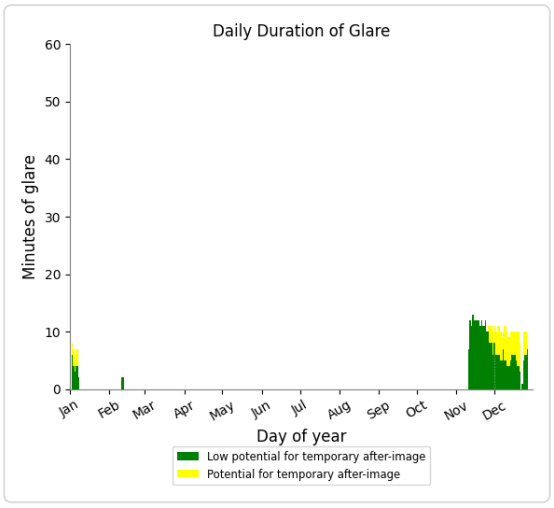
No glare found

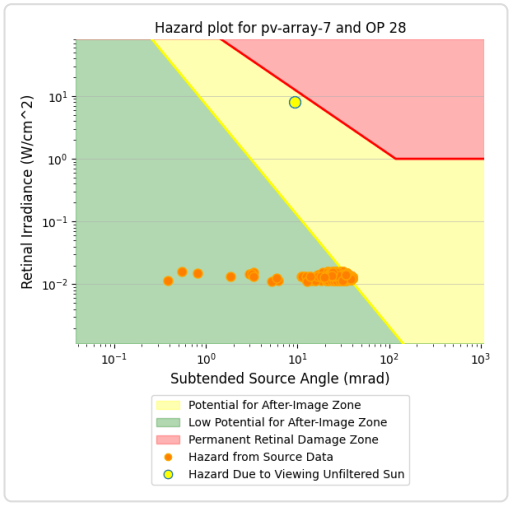
PV array 7 and OP 28

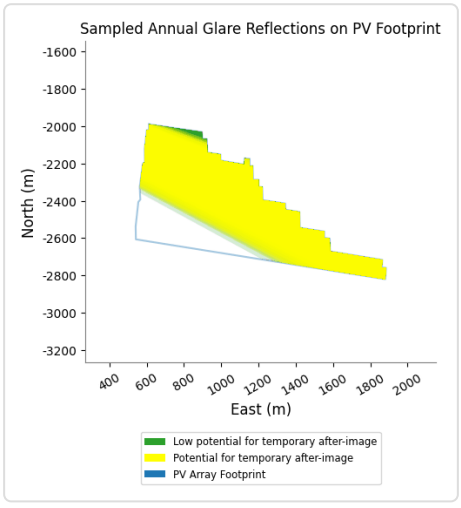
Yellow glare: 142 min.

Green glare: 372 min.





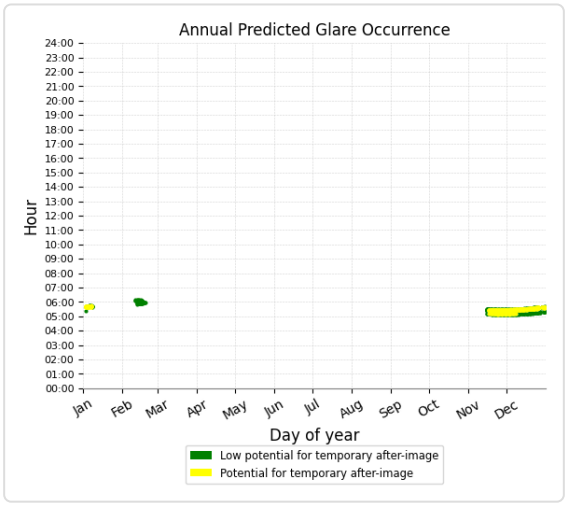


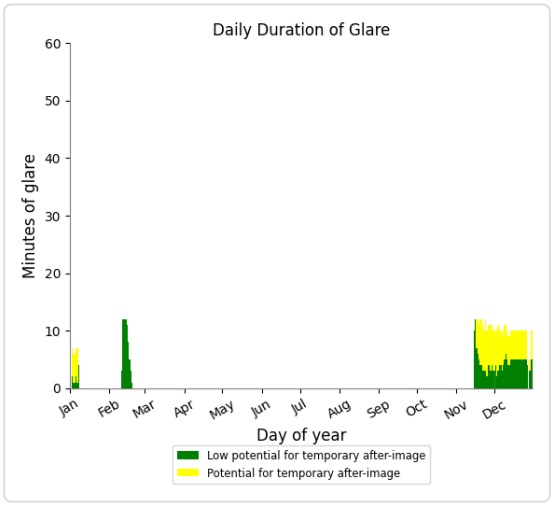


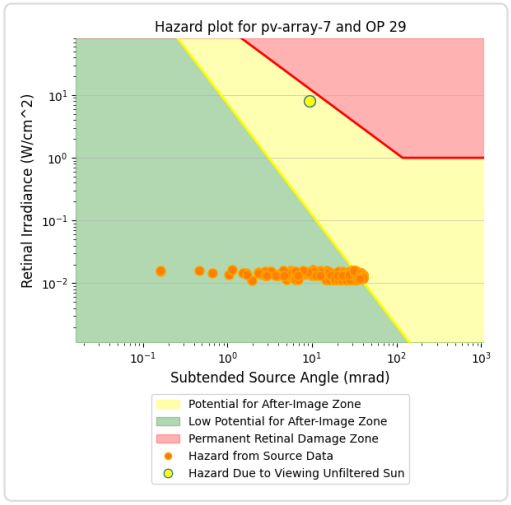
PV array 7 and OP 29

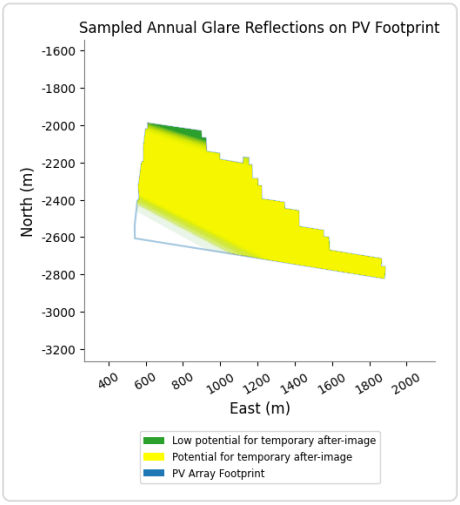
Yellow glare: 283 min.

Green glare: 288 min.





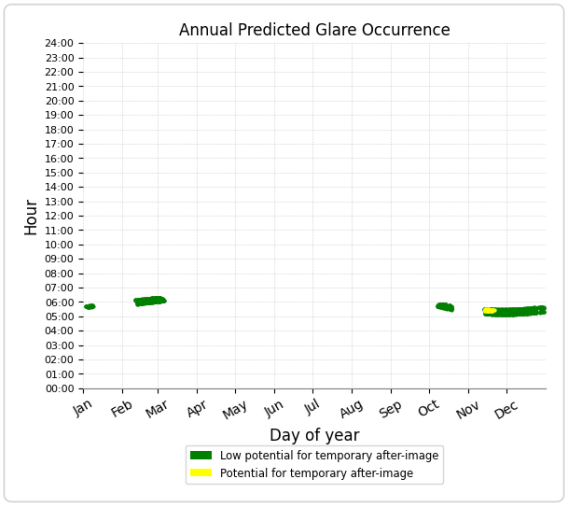


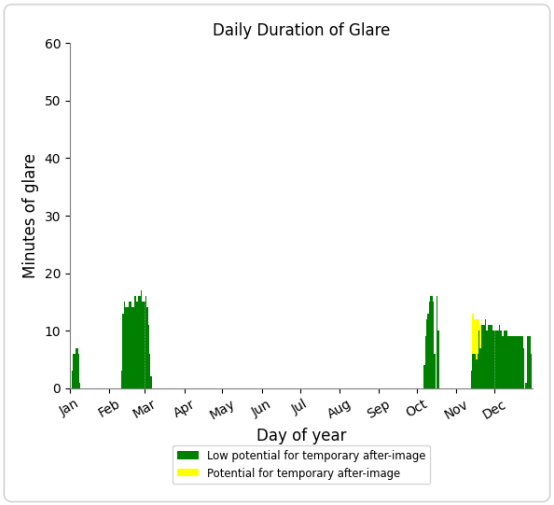


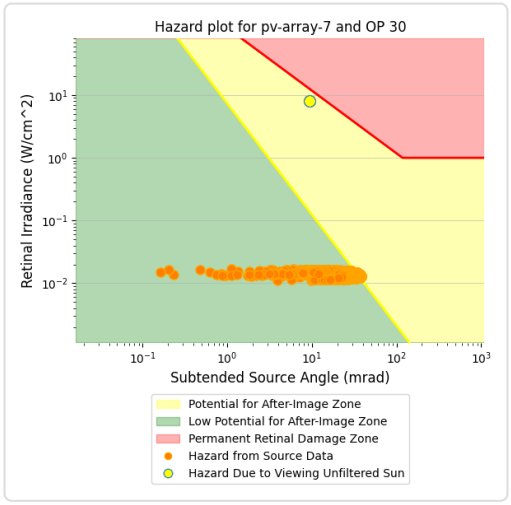
PV array 7 and OP 30

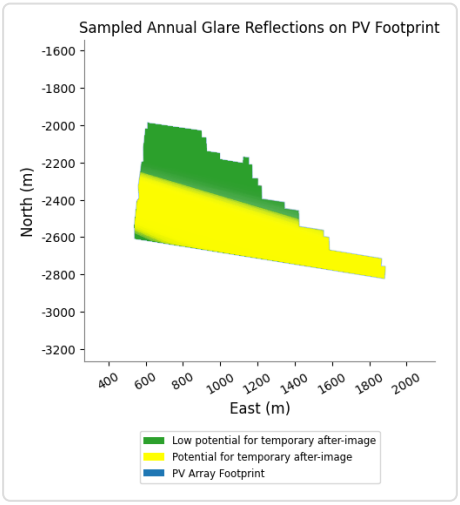
Yellow glare: 39 min.

Green glare: 905 min.





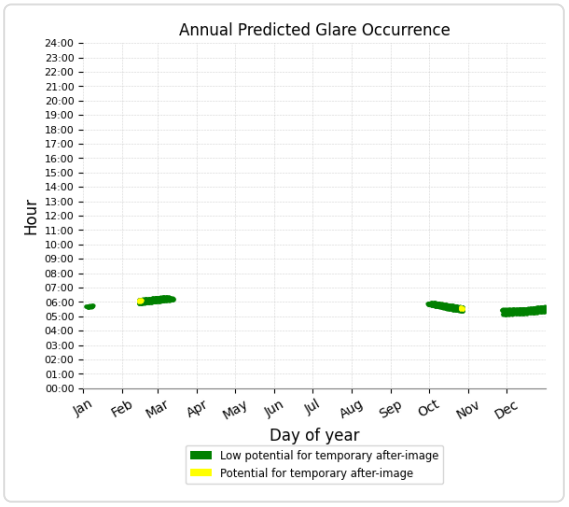


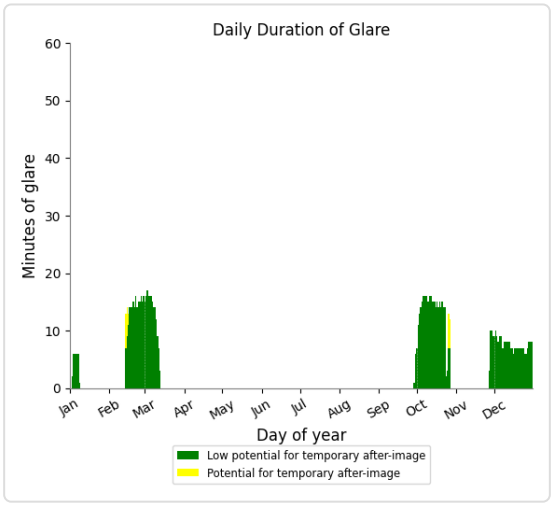


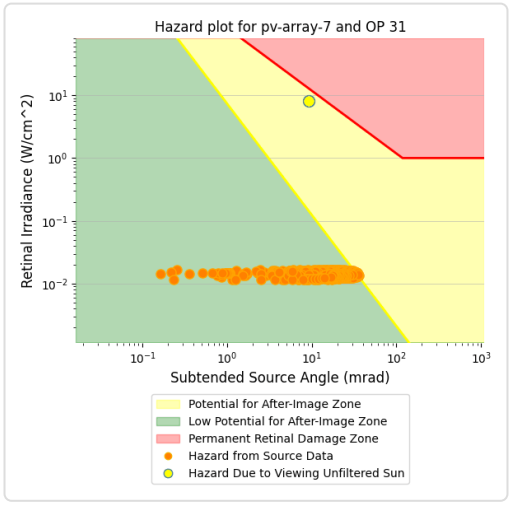
PV array 7 and OP 31

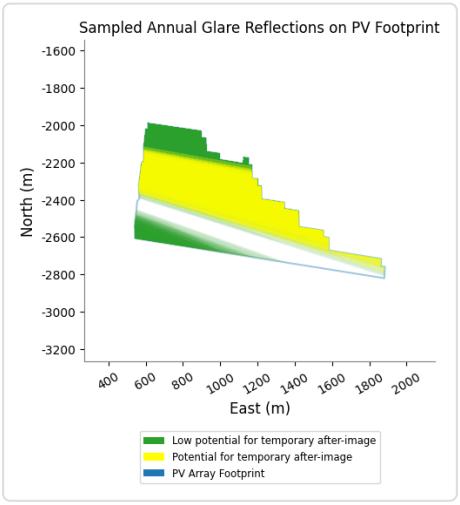
Yellow glare: 24 min.

Green glare: 1,032 min.





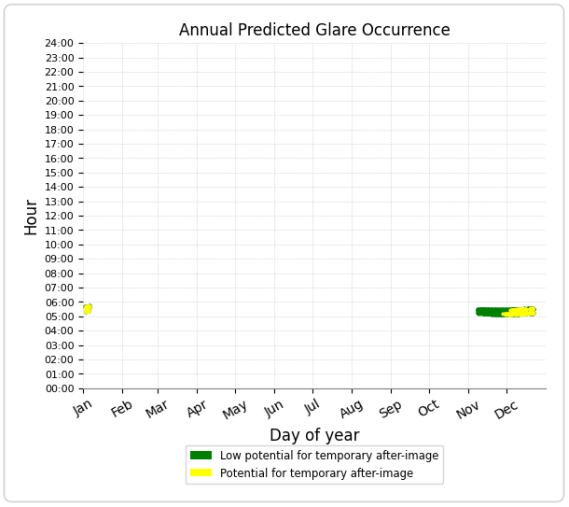


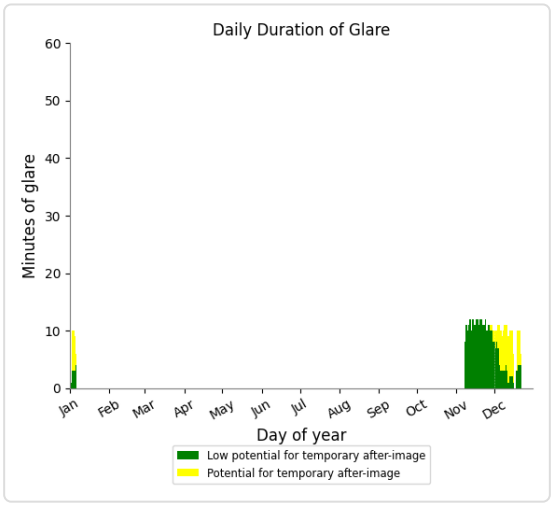


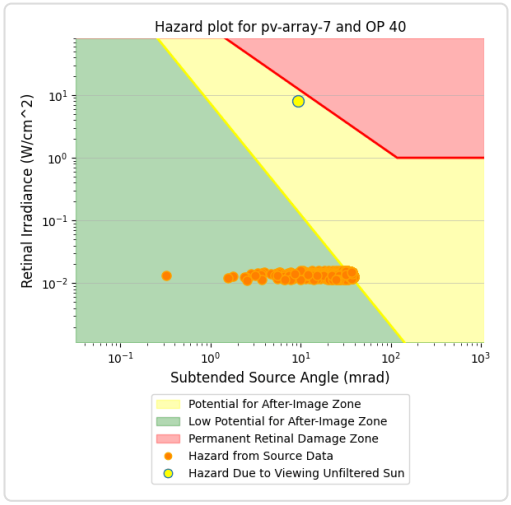
PV array 7 and OP 40

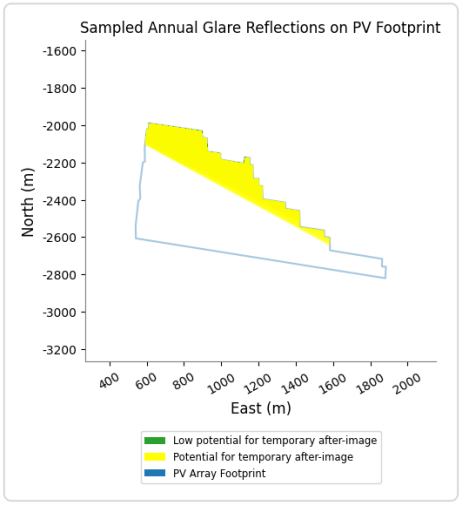
Yellow glare: 145 min.

Green glare: 342 min.





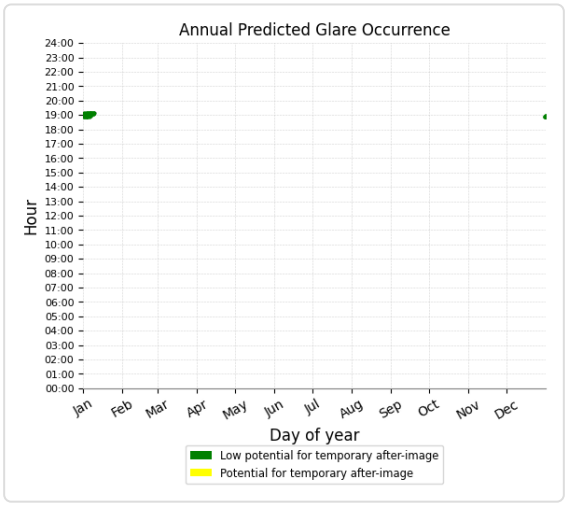


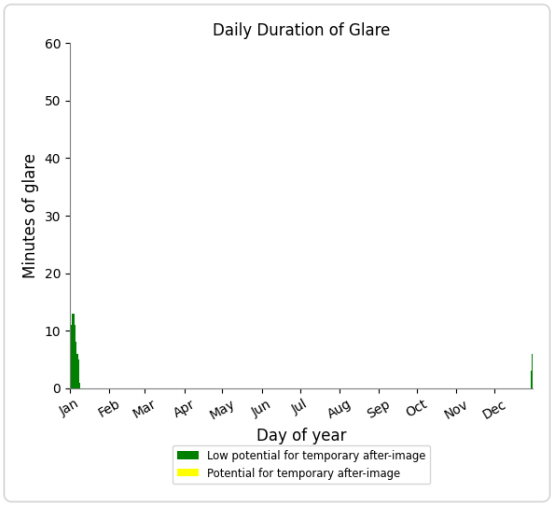


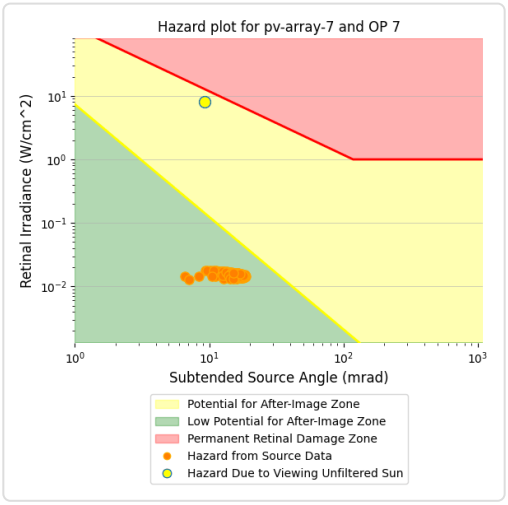
PV array 7 and OP 7

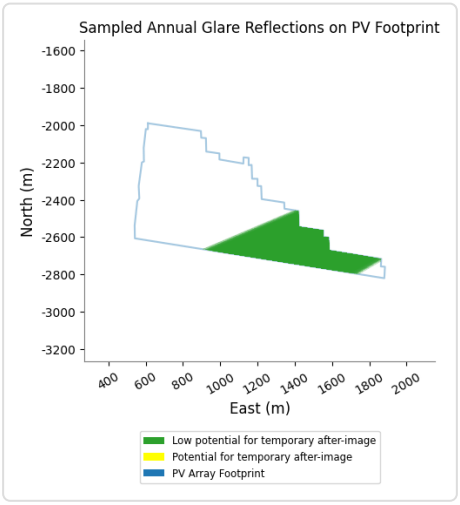
Yellow glare: none

Green glare: 89 min.





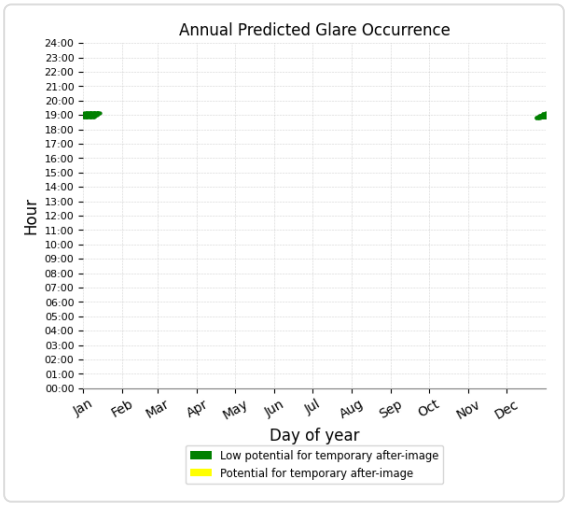


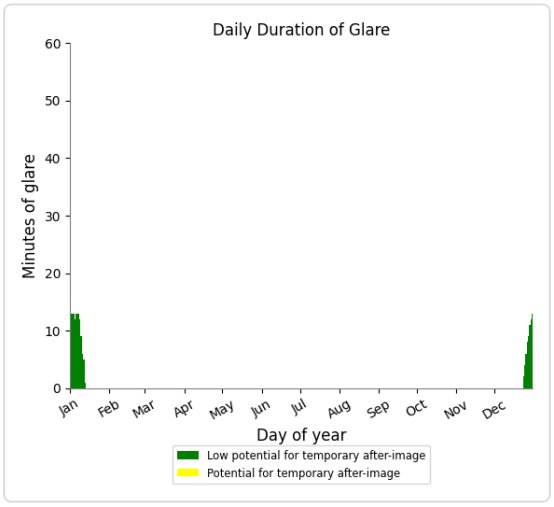


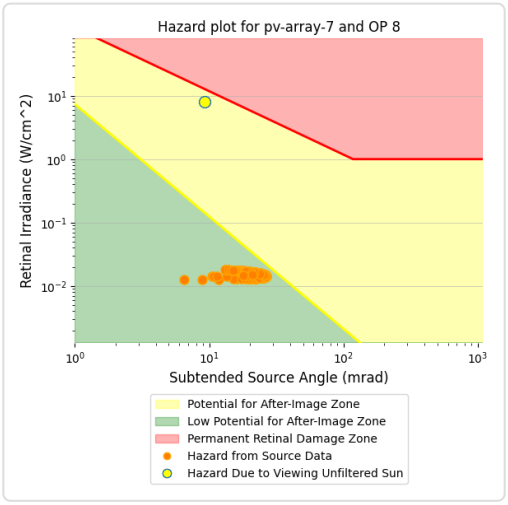
PV array 7 and OP 8

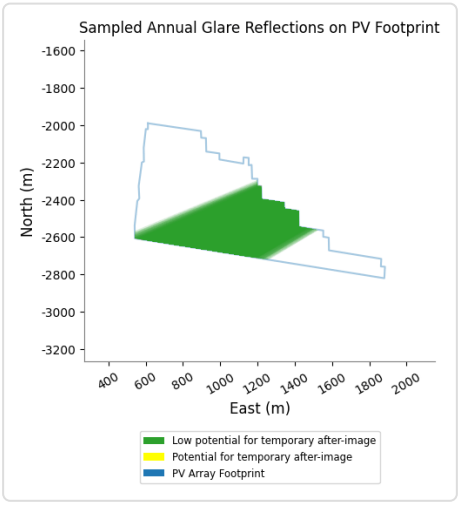
Yellow glare: none

Green glare: 201 min.





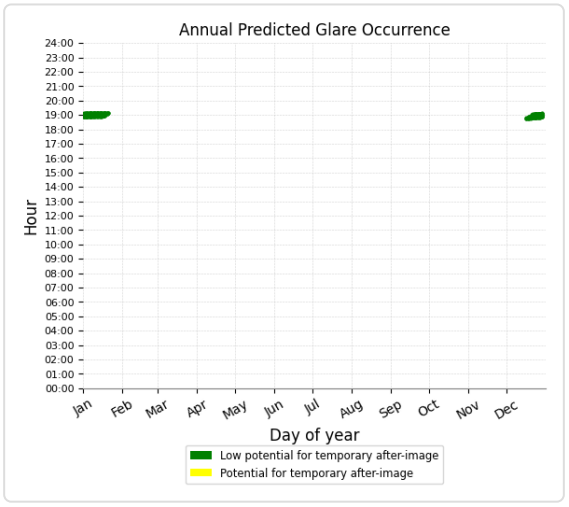


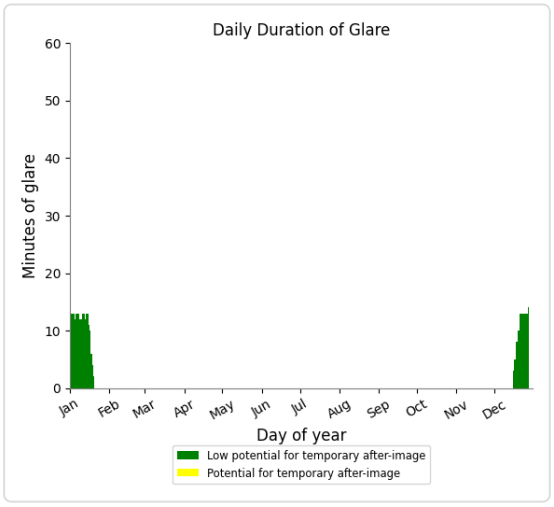


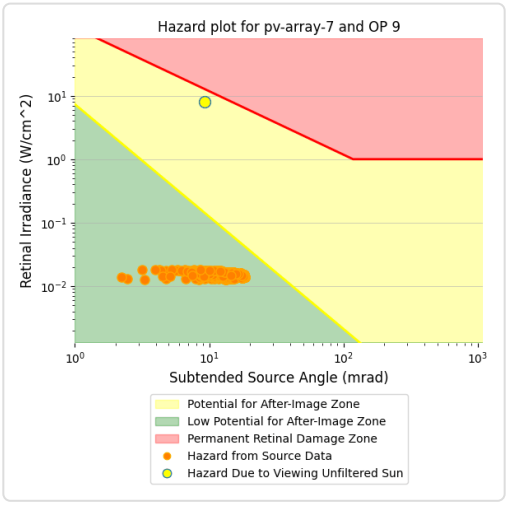
PV array 7 and OP 9

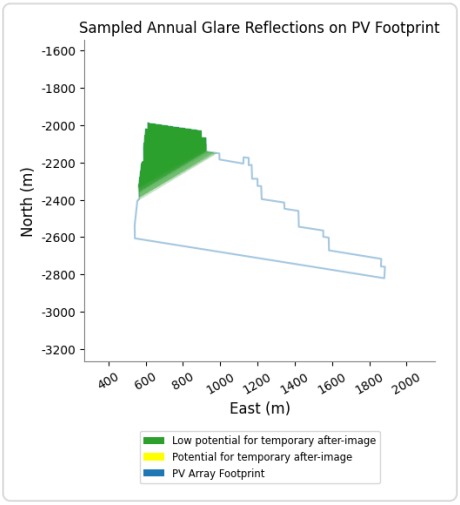
Yellow glare: none

Green glare: 363 min.





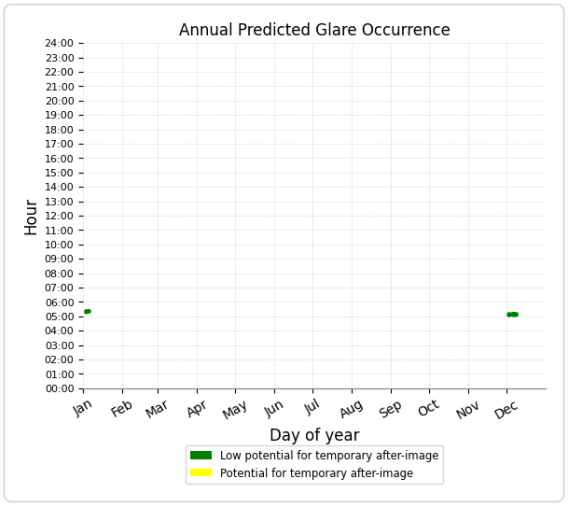


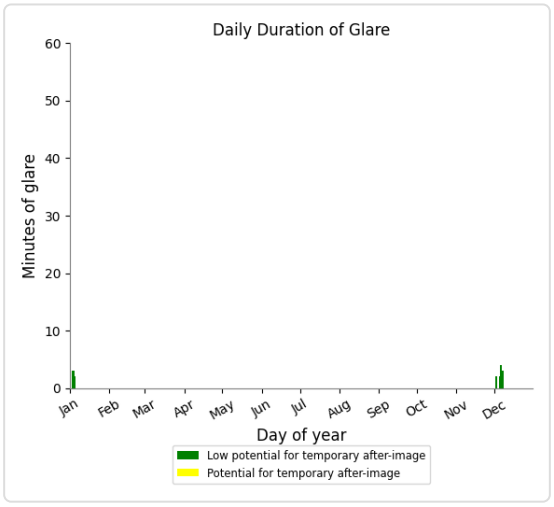


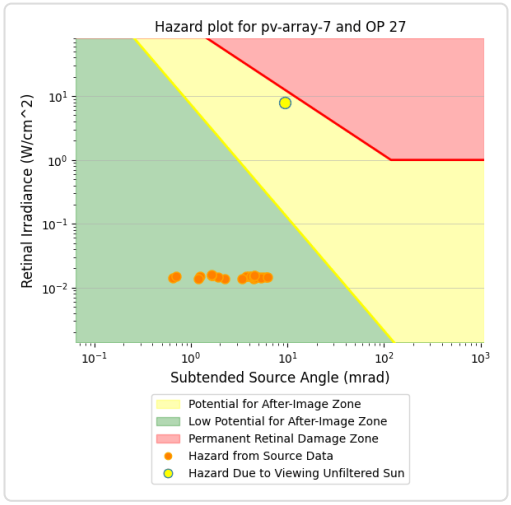
PV array 7 and OP 27

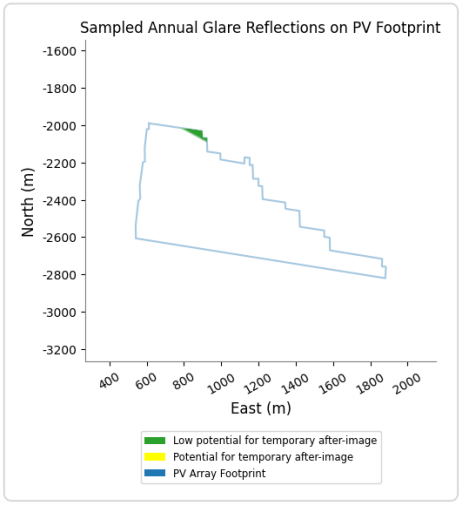
Yellow glare: none

Green glare: 24 min.





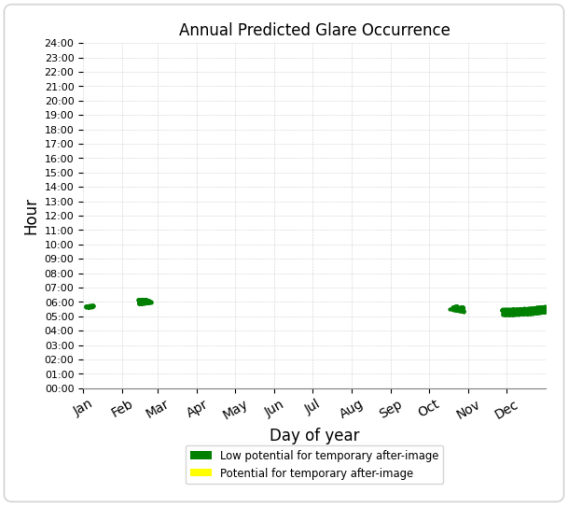


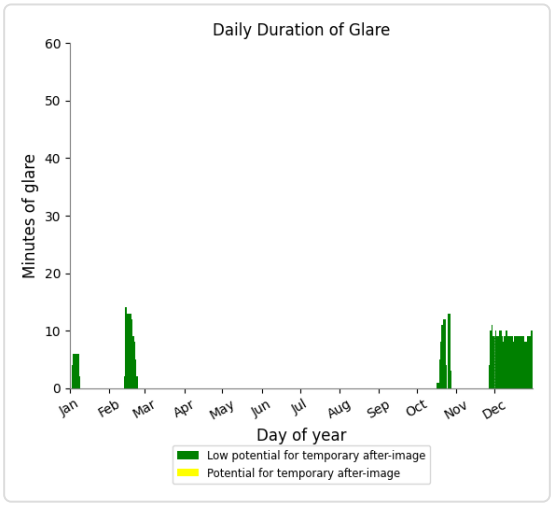


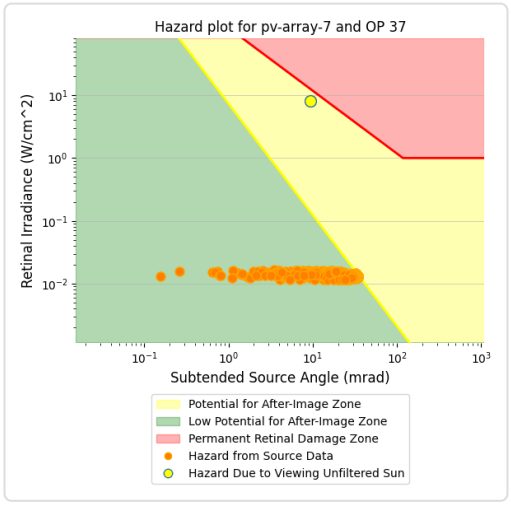
PV array 7 and OP 37

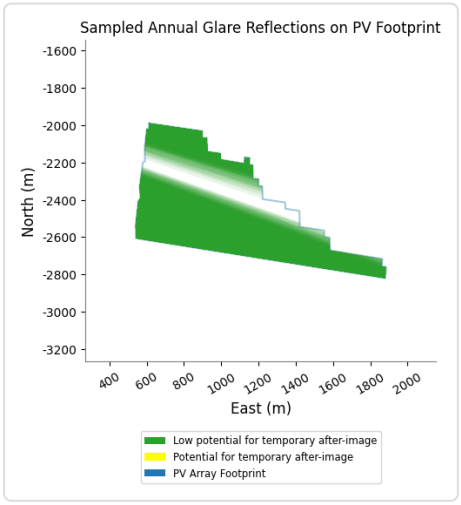
Yellow glare: none

Green glare: 539 min.









PV array 7 and OP 1

No glare found

PV array 7 and OP 2

No glare found

PV array 7 and OP 3

No glare found

PV array 7 and OP 4

No glare found

PV array 7 and OP 5

No glare found

PV array 7 and OP 6

No glare found

PV array 7 and OP 10

No glare found

PV array 7 and OP 11

No glare found

PV array 7 and OP 12

No glare found

PV array 7 and OP 13

No glare found

PV array 7 and OP 14

No glare found

PV array 7 and OP 15

No glare found

PV array 7 and OP 16

No glare found

PV array 7 and OP 17

No glare found

PV array 7 and OP 18

No glare found

PV array 7 and OP 19

No glare found

PV array 7 and OP 20

No glare found

PV array 7 and OP 21

No glare found

PV array 7 and OP 22

No glare found

PV array 7 and OP 23

No glare found

PV array 7 and OP 24

No glare found

PV array 7 and OP 25

No glare found

PV array 7 and OP 26

No glare found

PV array 7 and OP 32

No glare found

PV array 7 and OP 33

No glare found

PV array 7 and OP 34

No glare found

PV array 7 and OP 35

No glare found

PV array 7 and OP 36

No glare found

PV array 7 and OP 38

No glare found

PV array 7 and OP 39

No glare found

PV: PV array 8 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 8 and Route: Kooringaroo Road

No glare found

PV array 8 and Route: Windellama Road

No glare found

PV array 8 and FP: FP 1

No glare found

PV array 8 and FP: FP 2

No glare found

PV array 8 and OP 1

No glare found

PV array 8 and OP 2

No glare found

PV array 8 and OP 3

No glare found

PV array 8 and OP 4

No glare found

PV array 8 and OP 5

No glare found

PV array 8 and OP 6

No glare found

PV array 8 and OP 7

No glare found

PV array 8 and OP 8

No glare found

PV array 8 and OP 9

No glare found

PV array 8 and OP 10

No glare found

PV array 8 and OP 11

No glare found

PV array 8 and OP 12

No glare found

PV array 8 and OP 13

No glare found

PV array 8 and OP 14

No glare found

PV array 8 and OP 15

No glare found

PV array 8 and OP 16

No glare found

PV array 8 and OP 17

No glare found

PV array 8 and OP 18

No glare found

PV array 8 and OP 19

No glare found

PV array 8 and OP 20

No glare found

PV array 8 and OP 21

No glare found

PV array 8 and OP 22

No glare found

PV array 8 and OP 23

No glare found

PV array 8 and OP 24

No glare found

PV array 8 and OP 25

No glare found

PV array 8 and OP 26

No glare found

PV array 8 and OP 27

No glare found

PV array 8 and OP 28

No glare found

PV array 8 and OP 29

No glare found

PV array 8 and OP 30

No glare found

PV array 8 and OP 31

No glare found

PV array 8 and OP 32

No glare found

PV array 8 and OP 33

No glare found

PV array 8 and OP 34

No glare found

PV array 8 and OP 35

No glare found

PV array 8 and OP 36

No glare found

PV array 8 and OP 37

No glare found

PV array 8 and OP 38

No glare found

PV array 8 and OP 39

No glare found

PV array 8 and OP 40

No glare found

PV: PV array 9 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Kooringaroo Road	0	0.0	0	0.0
Windellama Road	0	0.0	0	0.0
FP 1	0	0.0	0	0.0
FP 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 22	0	0.0	0	0.0
OP 23	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0
OP 28	0	0.0	0	0.0
OP 29	0	0.0	0	0.0
OP 30	0	0.0	0	0.0
OP 31	0	0.0	0	0.0
OP 32	0	0.0	0	0.0
OP 33	0	0.0	0	0.0
OP 34	0	0.0	0	0.0
OP 35	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 36	0	0.0	0	0.0
OP 37	0	0.0	0	0.0
OP 38	0	0.0	0	0.0
OP 39	0	0.0	0	0.0
OP 40	0	0.0	0	0.0

PV array 9 and Route: Kooringaroo Road

No glare found

PV array 9 and Route: Windellama Road

No glare found

PV array 9 and FP: FP 1

No glare found

PV array 9 and FP: FP 2

No glare found

PV array 9 and OP 1

No glare found

PV array 9 and OP 2

No glare found

PV array 9 and OP 3

No glare found

PV array 9 and OP 4

No glare found

PV array 9 and OP 5

No glare found

PV array 9 and OP 6

No glare found

PV array 9 and OP 7

No glare found

PV array 9 and OP 8

No glare found

PV array 9 and OP 9

No glare found

PV array 9 and OP 10

No glare found

PV array 9 and OP 11

No glare found

PV array 9 and OP 12

No glare found

PV array 9 and OP 13

No glare found

PV array 9 and OP 14

No glare found

PV array 9 and OP 15

No glare found

PV array 9 and OP 16

No glare found

PV array 9 and OP 17

No glare found

PV array 9 and OP 18

No glare found

PV array 9 and OP 19

No glare found

PV array 9 and OP 20

No glare found

PV array 9 and OP 21

No glare found

PV array 9 and OP 22

No glare found

PV array 9 and OP 23

No glare found

PV array 9 and OP 24

No glare found

PV array 9 and OP 25

No glare found

PV array 9 and OP 26

No glare found

PV array 9 and OP 27

No glare found

PV array 9 and OP 28

No glare found

PV array 9 and OP 29

No glare found

PV array 9 and OP 30

No glare found

PV array 9 and OP 31

No glare found

PV array 9 and OP 32

No glare found

PV array 9 and OP 33

No glare found

PV array 9 and OP 34

No glare found

PV array 9 and OP 35

No glare found

PV array 9 and OP 36

No glare found

PV array 9 and OP 37

No glare found

PV array 9 and OP 38

No glare found

PV array 9 and OP 39

No glare found

PV array 9 and OP 40

No glare found

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.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 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. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
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.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
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.
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.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- 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

FORGESOLAR GLARE ANALYSIS (SECTION B)

Project: **2321 GUNDARY SOLAR FARM**
Site configuration: **2321 GUNDARY SF B**

Client: UMWELT

Created 04 Sep, 2023
Updated 05 Sep, 2023
Time-step 1 minute
Timezone offset UTC10
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 99384.15924

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	2,079	34.6	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	210	3.5	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	95	1.6	0	0.0	-
PV array 4	SA tracking	SA tracking	404	6.7	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	630	10.5	0	0.0	-
PV array 7	SA tracking	SA tracking	1,785	29.8	220	3.7	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

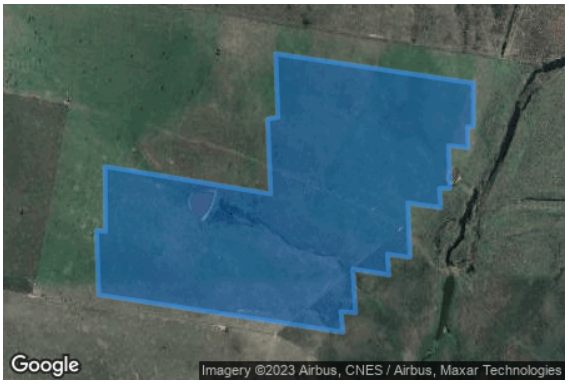
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	389	6.5	0	0.0
OP 2	400	6.7	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	101	1.7	0	0.0
OP 7	225	3.8	0	0.0
OP 8	1,541	25.7	0	0.0
OP 9	811	13.5	0	0.0
OP 10	51	0.8	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 11	0	0.0	0	0.0
OP 12	756	12.6	220	3.7
OP 13	0	0.0	0	0.0
OP 14	713	11.9	0	0.0
OP 15	216	3.6	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.840456	149.755350	675.25	1.95	677.20
2	-34.840842	149.758197	672.75	1.95	674.70
3	-34.839794	149.758144	676.52	1.95	678.47
4	-34.839764	149.758322	676.87	1.95	678.82
5	-34.838872	149.758283	677.61	1.95	679.56
6	-34.839286	149.761683	652.30	1.95	654.25
7	-34.839897	149.761681	652.06	1.95	654.01
8	-34.839903	149.761575	653.51	1.95	655.46
9	-34.840194	149.761589	652.81	1.95	654.76
10	-34.840164	149.761253	656.23	1.95	658.18
11	-34.840764	149.761281	653.53	1.95	655.48
12	-34.840764	149.761097	654.88	1.95	656.83
13	-34.841036	149.761122	652.81	1.95	654.76
14	-34.840969	149.760553	656.86	1.95	658.81
15	-34.841733	149.760592	651.87	1.95	653.82
16	-34.841689	149.760203	655.00	1.95	656.95
17	-34.841981	149.760231	653.26	1.95	655.21
18	-34.841897	149.759608	659.68	1.95	661.63
19	-34.842511	149.759658	657.56	1.95	659.51
20	-34.842497	149.759408	659.19	1.95	661.14
21	-34.842786	149.759439	658.50	1.95	660.45
22	-34.842261	149.755242	679.24	1.95	681.19
23	-34.841353	149.755203	676.42	1.95	678.37
24	-34.841369	149.755361	676.81	1.95	678.76

Name: PV array 10
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.45
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.858406	149.770000	655.09	1.95	657.04
2	-34.859275	149.776911	670.07	1.95	672.02
3	-34.858694	149.776881	667.72	1.95	669.67
4	-34.858422	149.777164	667.36	1.95	669.31
5	-34.858517	149.777869	669.53	1.95	671.48
6	-34.857853	149.777822	668.66	1.95	670.61
7	-34.857567	149.778106	669.19	1.95	671.14
8	-34.857733	149.779386	673.06	1.95	675.01
9	-34.858044	149.779392	674.91	1.95	676.86
10	-34.858317	149.781619	676.41	1.95	678.36
11	-34.859039	149.781789	677.78	1.95	679.73
12	-34.859308	149.781792	679.96	1.95	681.91
13	-34.859375	149.782231	679.89	1.95	681.84
14	-34.859536	149.782239	681.33	1.95	683.28
15	-34.859567	149.782506	681.61	1.95	683.56
16	-34.860022	149.782522	686.44	1.95	688.39
17	-34.860122	149.783111	688.43	1.95	690.38
18	-34.859500	149.783086	682.00	1.95	683.95
19	-34.859569	149.783803	683.21	1.95	685.16
20	-34.859289	149.783789	681.37	1.95	683.32
21	-34.859447	149.785550	682.53	1.95	684.48
22	-34.858550	149.785517	679.87	1.95	681.82
23	-34.858550	149.785744	680.18	1.95	682.13
24	-34.857958	149.785717	677.91	1.95	679.86
25	-34.858142	149.787292	680.38	1.95	682.33
26	-34.858758	149.787306	683.68	1.95	685.63
27	-34.858850	149.787914	683.32	1.95	685.27
28	-34.859147	149.787919	684.39	1.95	686.34
29	-34.859217	149.788481	683.00	1.95	684.95
30	-34.859839	149.788483	684.87	1.95	686.82
31	-34.859889	149.788428	685.10	1.95	687.05
32	-34.860054	149.788430	685.75	1.95	687.70
33	-34.860358	149.788434	687.01	1.95	688.96
34	-34.860727	149.788435	688.51	1.95	690.46
35	-34.861000	149.788452	689.51	1.95	691.46
36	-34.861206	149.788459	689.25	1.95	691.20
37	-34.861380	149.788465	689.05	1.95	691.00
38	-34.861585	149.788469	688.82	1.95	690.77
39	-34.861731	149.788458	689.04	1.95	690.99
40	-34.861660	149.787962	691.38	1.95	693.33
41	-34.861623	149.787682	693.41	1.95	695.36
42	-34.861578	149.787337	694.64	1.95	696.59
43	-34.861491	149.786699	694.22	1.95	696.17
44	-34.861439	149.786264	691.51	1.95	693.46
45	-34.861253	149.784794	688.21	1.95	690.16
46	-34.861211	149.784530	689.95	1.95	691.90
47	-34.861151	149.784191	691.97	1.95	693.92
48	-34.861125	149.784062	692.51	1.95	694.46
49	-34.861102	149.783899	693.26	1.95	695.21
50	-34.861085	149.783822	693.65	1.95	695.60
51	-34.861071	149.783685	694.25	1.95	696.20
52	-34.861043	149.783443	695.39	1.95	697.34
53	-34.859242	149.769586	655.35	1.95	657.30
54	-34.858619	149.769571	655.00	1.95	656.95
55	-34.858669	149.769994	655.22	1.95	657.17

Name: PV array 11
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.854928	149.786786	682.51	1.95	684.46
2	-34.855153	149.788475	685.33	1.95	687.28
3	-34.855178	149.788637	684.59	1.95	686.54
4	-34.855197	149.788745	684.14	1.95	686.09
5	-34.855216	149.788878	683.68	1.95	685.63
6	-34.855257	149.789198	684.90	1.95	686.85
7	-34.855306	149.789552	687.26	1.95	689.21
8	-34.855581	149.791525	700.41	1.95	702.36
9	-34.854836	149.791494	701.31	1.95	703.26
10	-34.854864	149.791889	701.91	1.95	703.86
11	-34.854581	149.791869	701.25	1.95	703.20
12	-34.854628	149.792308	701.24	1.95	703.19
13	-34.854017	149.792292	699.50	1.95	701.45
14	-34.854047	149.792558	699.02	1.95	700.97
15	-34.853761	149.792550	699.97	1.95	701.92
16	-34.853831	149.793075	699.31	1.95	701.26
17	-34.854142	149.793086	698.06	1.95	700.01
18	-34.854433	149.795772	705.20	1.95	707.15
19	-34.855344	149.795817	705.80	1.95	707.75
20	-34.856011	149.795669	708.16	1.95	710.11
21	-34.856144	149.795500	709.31	1.95	711.26
22	-34.856744	149.795525	708.98	1.95	710.93
23	-34.856639	149.794693	710.56	1.95	712.51
24	-34.856929	149.794705	710.54	1.95	712.49
25	-34.856917	149.794600	710.75	1.95	712.70
26	-34.857533	149.794625	709.83	1.95	711.78
27	-34.857822	149.794578	709.08	1.95	711.03
28	-34.857867	149.794406	709.56	1.95	711.51
29	-34.858489	149.794442	706.20	1.95	708.15
30	-34.858772	149.794394	704.16	1.95	706.11
31	-34.858753	149.794222	704.23	1.95	706.18
32	-34.859358	149.794253	699.89	1.95	701.84
33	-34.859356	149.794136	699.89	1.95	701.84
34	-34.859644	149.794147	697.80	1.95	699.75
35	-34.859267	149.791322	687.69	1.95	689.64
36	-34.858947	149.791308	688.01	1.95	689.96
37	-34.858900	149.790925	685.57	1.95	687.52
38	-34.858286	149.790900	686.54	1.95	688.49
39	-34.858083	149.789519	683.80	1.95	685.75
40	-34.857792	149.789519	683.80	1.95	685.75
41	-34.857742	149.789139	683.25	1.95	685.20
42	-34.857125	149.789114	683.46	1.95	685.41
43	-34.857064	149.788703	682.21	1.95	684.16
44	-34.857678	149.788719	682.27	1.95	684.22
45	-34.857631	149.788367	681.25	1.95	683.20
46	-34.856964	149.788344	681.16	1.95	683.11
47	-34.856719	149.786636	678.00	1.95	679.95
48	-34.856106	149.786614	679.61	1.95	681.56
49	-34.855211	149.786697	681.71	1.95	683.66

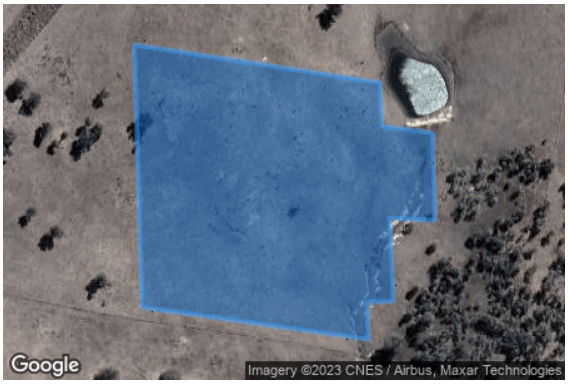
Name: PV array 12
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.859419	149.769711	655.67	1.95	657.62
2	-34.861188	149.783350	696.52	1.95	698.47
3	-34.861232	149.783715	695.09	1.95	697.04
4	-34.861282	149.784147	693.17	1.95	695.12
5	-34.861345	149.784637	689.71	1.95	691.66
6	-34.862506	149.793494	693.21	1.95	695.16
7	-34.863142	149.793542	694.26	1.95	696.21
8	-34.866122	149.792931	694.11	1.95	696.06
9	-34.865931	149.791367	702.04	1.95	703.99
10	-34.865333	149.791322	703.42	1.95	705.37
11	-34.865036	149.791375	703.20	1.95	705.15
12	-34.865019	149.791258	703.60	1.95	705.55
13	-34.864686	149.790997	703.23	1.95	705.18
14	-34.864553	149.789928	704.25	1.95	706.20
15	-34.863931	149.789911	701.83	1.95	703.78
16	-34.863808	149.789000	698.34	1.95	700.29
17	-34.864411	149.789019	700.24	1.95	702.19
18	-34.864303	149.788022	694.23	1.95	696.18
19	-34.864583	149.788039	694.66	1.95	696.61
20	-34.864439	149.786811	697.29	1.95	699.24
21	-34.865050	149.786856	697.08	1.95	699.03
22	-34.865314	149.786586	697.74	1.95	699.69
23	-34.865150	149.785300	694.98	1.95	696.93
24	-34.864858	149.785286	695.42	1.95	697.37
25	-34.864750	149.784472	695.43	1.95	697.38
26	-34.864730	149.784300	696.07	1.95	698.02
27	-34.864708	149.784110	696.73	1.95	698.68
28	-34.864983	149.784128	696.32	1.95	698.27
29	-34.864675	149.781517	703.05	1.95	705.00
30	-34.864367	149.781494	702.23	1.95	704.18
31	-34.864328	149.781228	700.18	1.95	702.13
32	-34.863703	149.781219	698.95	1.95	700.90
33	-34.863708	149.781372	700.44	1.95	702.39
34	-34.863419	149.781353	699.61	1.95	701.56
35	-34.863236	149.779844	691.61	1.95	693.56
36	-34.863519	149.779856	690.43	1.95	692.38
37	-34.863342	149.778442	682.56	1.95	684.51
38	-34.863936	149.778461	678.80	1.95	680.75
39	-34.863886	149.777744	674.62	1.95	676.57
40	-34.864161	149.777750	672.97	1.95	674.92
41	-34.864058	149.776792	667.31	1.95	669.26
42	-34.863769	149.776778	669.04	1.95	670.99
43	-34.863364	149.773750	660.53	1.95	662.48
44	-34.862753	149.773742	661.26	1.95	663.21
45	-34.862656	149.773025	660.60	1.95	662.55
46	-34.862372	149.773017	661.22	1.95	663.17
47	-34.862250	149.772294	661.76	1.95	663.71
48	-34.861636	149.772283	662.10	1.95	664.05
49	-34.861336	149.770414	657.93	1.95	659.88
50	-34.860978	149.770014	657.15	1.95	659.10
51	-34.860361	149.769983	656.71	1.95	658.66
52	-34.860352	149.769682	655.91	1.95	657.86

Name: PV array 13
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.866069	149.791139	701.41	1.95	703.36
2	-34.866275	149.792711	694.92	1.95	696.87
3	-34.867181	149.792725	694.34	1.95	696.29
4	-34.867058	149.791775	696.40	1.95	698.35
5	-34.866747	149.791756	697.15	1.95	699.10
6	-34.866678	149.791158	699.92	1.95	701.87

Name: PV array 14
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.864939	149.782561	702.09	1.95	704.04
2	-34.865206	149.784672	693.63	1.95	695.58
3	-34.865511	149.784689	693.01	1.95	694.96
4	-34.865558	149.785125	694.61	1.95	696.56
5	-34.866172	149.785147	693.39	1.95	695.34
6	-34.866156	149.784756	690.39	1.95	692.34
7	-34.866739	149.784789	688.82	1.95	690.77
8	-34.866747	149.784561	687.86	1.95	689.81
9	-34.867008	149.784575	686.24	1.95	688.19
10	-34.866783	149.782631	699.00	1.95	700.95

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.864660	149.778232	674.47	1.95	676.42
2	-34.864670	149.778331	675.34	1.95	677.29
3	-34.864680	149.778433	676.22	1.95	678.17
4	-34.864698	149.778569	677.49	1.95	679.44
5	-34.864713	149.778664	678.31	1.95	680.26
6	-34.864418	149.778643	677.80	1.95	679.75
7	-34.864425	149.778731	678.62	1.95	680.57
8	-34.865039	149.778767	680.03	1.95	681.98
9	-34.865042	149.778650	678.66	1.95	680.61
10	-34.865319	149.778669	678.68	1.95	680.63
11	-34.865292	149.778386	675.36	1.95	677.31
12	-34.865894	149.778403	674.05	1.95	676.00
13	-34.865903	149.778250	672.04	1.95	673.99
14	-34.866181	149.778256	670.94	1.95	672.89
15	-34.866158	149.778006	667.76	1.95	669.71
16	-34.865242	149.777983	670.58	1.95	672.53
17	-34.865254	149.778092	671.86	1.95	673.81
18	-34.864955	149.778101	672.70	1.95	674.65
19	-34.864652	149.778112	673.44	1.95	675.39

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.861793	149.789000	688.70	1.95	690.65
2	-34.862401	149.793651	693.05	1.95	695.00
3	-34.862093	149.793694	691.55	1.95	693.50
4	-34.861472	149.793673	688.72	1.95	690.67
5	-34.861217	149.791758	688.32	1.95	690.27
6	-34.860601	149.791725	686.00	1.95	687.95
7	-34.860556	149.791328	687.34	1.95	689.29
8	-34.860266	149.791334	687.14	1.95	689.09
9	-34.860143	149.790352	686.29	1.95	688.24
10	-34.859460	149.790336	683.76	1.95	685.71
11	-34.859302	149.789038	683.43	1.95	685.38
12	-34.859945	149.788957	684.94	1.95	686.89

Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.853669	149.787596	691.34	1.95	693.29
2	-34.854597	149.787623	689.26	1.95	691.21
3	-34.854562	149.787377	687.65	1.95	689.60
4	-34.853644	149.787352	689.28	1.95	691.23

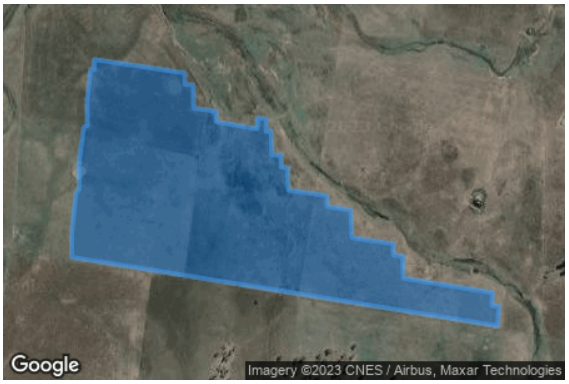
Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.854681	149.788294	689.54	1.95	691.49
2	-34.854657	149.788044	689.39	1.95	691.34
3	-34.854036	149.788026	692.11	1.95	694.06
4	-34.854010	149.787787	691.97	1.95	693.92
5	-34.853389	149.787776	691.87	1.95	693.82
6	-34.853464	149.788267	693.88	1.95	695.83

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

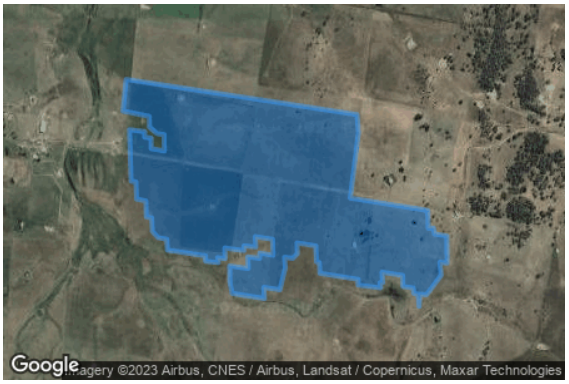
Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.853629	149.789463	692.51	1.95	694.46
2	-34.854545	149.789498	688.36	1.95	690.31
3	-34.854551	149.789619	688.95	1.95	690.90
4	-34.855170	149.789627	687.82	1.95	689.77
5	-34.855020	149.788506	686.04	1.95	687.99
6	-34.854078	149.788476	691.03	1.95	692.98
7	-34.854096	149.788651	689.99	1.95	691.94
8	-34.853515	149.788637	692.65	1.95	694.60

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.858389	149.762044	654.78	1.95	656.73
2	-34.858763	149.765150	654.46	1.95	656.41
3	-34.859087	149.765169	655.94	1.95	657.89
4	-34.859107	149.765445	655.09	1.95	657.04
5	-34.859756	149.765464	657.08	1.95	659.03
6	-34.859846	149.766237	655.17	1.95	657.12
7	-34.860139	149.766237	655.26	1.95	657.21
8	-34.860337	149.767642	653.16	1.95	655.11
9	-34.860035	149.767650	652.68	1.95	654.63
10	-34.860060	149.767953	652.64	1.95	654.59
11	-34.860414	149.767951	653.24	1.95	655.19
12	-34.860401	149.768125	653.19	1.95	655.14
13	-34.861070	149.768155	654.66	1.95	656.61
14	-34.861072	149.768471	654.35	1.95	656.30
15	-34.861415	149.768471	655.30	1.95	657.25
16	-34.861426	149.768686	655.44	1.95	657.39
17	-34.862054	149.768715	656.53	1.95	658.48
18	-34.862219	149.770037	655.98	1.95	657.93
19	-34.862518	149.770054	657.26	1.95	659.21
20	-34.862624	149.770872	660.29	1.95	662.24
21	-34.863389	149.770896	664.47	1.95	666.42
22	-34.863570	149.772327	662.49	1.95	664.44
23	-34.863872	149.772327	664.38	1.95	666.33
24	-34.863916	149.772649	663.73	1.95	665.68
25	-34.864530	149.772662	667.21	1.95	669.16
26	-34.864941	149.775730	660.60	1.95	662.55
27	-34.865307	149.775709	661.69	1.95	663.64
28	-34.865324	149.775948	661.21	1.95	663.16
29	-34.865877	149.775910	664.14	1.95	666.09
30	-34.863949	149.761276	660.39	1.95	662.34
31	-34.863321	149.761262	658.42	1.95	660.37
32	-34.862142	149.761421	654.55	1.95	656.50
33	-34.862025	149.761536	654.61	1.95	656.56
34	-34.861411	149.761501	654.38	1.95	656.33
35	-34.860282	149.761686	655.50	1.95	657.45
36	-34.860234	149.761807	655.78	1.95	657.73
37	-34.859571	149.761793	654.80	1.95	656.75
38	-34.858667	149.761920	654.60	1.95	656.55
39	-34.858675	149.762038	654.78	1.95	656.73

Name: PV array 8
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.845411	149.763747	652.46	1.95	654.41
2	-34.847392	149.779619	707.21	1.95	709.16
3	-34.848408	149.779711	704.09	1.95	706.04
4	-34.852081	149.779147	685.99	1.95	687.94
5	-34.852786	149.784478	691.16	1.95	693.11
6	-34.853775	149.784508	691.71	1.95	693.66
7	-34.853775	149.784878	689.84	1.95	691.79
8	-34.854100	149.784925	690.53	1.95	692.48
9	-34.854219	149.785789	685.62	1.95	687.57
10	-34.855742	149.785800	682.29	1.95	684.24
11	-34.855683	149.785310	685.04	1.95	686.99
12	-34.856422	149.785389	681.50	1.95	683.45
13	-34.857511	149.784392	682.41	1.95	684.36
14	-34.857481	149.783917	687.18	1.95	689.13
15	-34.858167	149.783881	680.46	1.95	682.41
16	-34.857481	149.783808	688.31	1.95	690.26
17	-34.857436	149.783517	691.61	1.95	693.56
18	-34.857131	149.783481	694.73	1.95	696.68
19	-34.857050	149.782769	697.28	1.95	699.23
20	-34.856428	149.782753	702.34	1.95	704.29
21	-34.856247	149.781331	690.38	1.95	692.33
22	-34.856842	149.781372	686.61	1.95	688.56
23	-34.856842	149.781181	684.12	1.95	686.07
24	-34.857128	149.781225	681.30	1.95	683.25
25	-34.856967	149.779683	671.16	1.95	673.11
26	-34.856650	149.779697	671.81	1.95	673.76
27	-34.856311	149.777061	674.88	1.95	676.83
28	-34.855703	149.777025	677.46	1.95	679.41
29	-34.855667	149.776828	677.06	1.95	679.01
30	-34.854769	149.776781	677.81	1.95	679.76
31	-34.854597	149.775486	674.67	1.95	676.62
32	-34.855203	149.775514	675.51	1.95	677.46
33	-34.855472	149.775192	675.81	1.95	677.76
34	-34.855406	149.774631	673.87	1.95	675.82
35	-34.856003	149.774686	674.26	1.95	676.21
36	-34.857236	149.774311	667.81	1.95	669.76
37	-34.857097	149.773200	666.06	1.95	668.01
38	-34.857725	149.773250	663.66	1.95	665.61
39	-34.857439	149.771031	657.32	1.95	659.27
40	-34.856844	149.770881	658.78	1.95	660.73
41	-34.855897	149.770853	661.80	1.95	663.75
42	-34.856044	149.772136	665.70	1.95	667.65
43	-34.855386	149.772106	666.67	1.95	668.62
44	-34.855475	149.772917	667.66	1.95	669.61
45	-34.855178	149.772928	667.97	1.95	669.92
46	-34.855297	149.773847	670.37	1.95	672.32
47	-34.854400	149.773822	667.85	1.95	669.80
48	-34.854247	149.772617	670.96	1.95	672.91
49	-34.854831	149.772658	668.72	1.95	670.67
50	-34.854761	149.771839	667.26	1.95	669.21
51	-34.855033	149.771839	666.77	1.95	668.72
52	-34.854889	149.770528	663.03	1.95	664.98
53	-34.855489	149.770544	662.17	1.95	664.12
54	-34.855433	149.770022	661.56	1.95	663.51
55	-34.855714	149.770078	660.72	1.95	662.67
56	-34.855625	149.769203	659.64	1.95	661.59
57	-34.855331	149.769208	660.52	1.95	662.47
58	-34.855006	149.766578	654.49	1.95	656.44
59	-34.854394	149.766550	657.29	1.95	659.24

Name: PV array 9
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.47
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-34.840718	149.772712	672.26	1.95	674.21
2	-34.840814	149.773442	671.97	1.95	673.92
3	-34.841456	149.773456	675.07	1.95	677.02
4	-34.841747	149.773419	676.57	1.95	678.52
5	-34.841731	149.773314	676.64	1.95	678.59
6	-34.842339	149.773342	678.44	1.95	680.39
7	-34.842631	149.773217	678.20	1.95	680.15
8	-34.842756	149.773061	677.22	1.95	679.17
9	-34.843378	149.773086	674.65	1.95	676.60
10	-34.843647	149.773042	673.22	1.95	675.17
11	-34.843625	149.772867	672.64	1.95	674.59
12	-34.844278	149.772897	670.46	1.95	672.41
13	-34.844536	149.772847	669.57	1.95	671.52
14	-34.844522	149.772678	668.82	1.95	670.77
15	-34.845225	149.772706	668.61	1.95	670.56
16	-34.845481	149.772669	668.60	1.95	670.55
17	-34.845486	149.772600	668.15	1.95	670.10
18	-34.846100	149.772636	668.91	1.95	670.86
19	-34.846103	149.772514	668.39	1.95	670.34
20	-34.846381	149.772536	668.80	1.95	670.75
21	-34.845264	149.763456	651.54	1.95	653.49
22	-34.844958	149.763439	651.17	1.95	653.12
23	-34.844922	149.763219	650.29	1.95	652.24
24	-34.843692	149.763178	648.91	1.95	650.86
25	-34.844175	149.766897	654.86	1.95	656.81
26	-34.844772	149.766933	655.27	1.95	657.22
27	-34.845303	149.771283	663.76	1.95	665.71
28	-34.844328	149.771242	664.76	1.95	666.71
29	-34.843819	149.767178	655.00	1.95	656.95
30	-34.843528	149.767169	655.11	1.95	657.06
31	-34.843097	149.763747	648.51	1.95	650.46
32	-34.842475	149.763756	648.01	1.95	649.96
33	-34.842494	149.764075	648.08	1.95	650.03
34	-34.841894	149.764058	648.00	1.95	649.95
35	-34.841903	149.764161	648.00	1.95	649.95
36	-34.841614	149.764144	647.51	1.95	649.46
37	-34.841956	149.767048	654.66	1.95	656.61
38	-34.840915	149.767103	652.33	1.95	654.28
39	-34.840928	149.767232	652.75	1.95	654.70
40	-34.840081	149.767326	653.68	1.95	655.63
41	-34.840302	149.769306	665.37	1.95	667.32
42	-34.840380	149.769919	668.21	1.95	670.16
43	-34.840484	149.770793	669.07	1.95	671.02
44	-34.840569	149.771476	669.92	1.95	671.87

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-34.877248	149.733392	676.66	1.50
OP 2	2	-34.877736	149.736530	672.74	1.50
OP 3	3	-34.816270	149.774945	687.63	1.50
OP 4	4	-34.832221	149.795595	702.10	1.50
OP 5	5	-34.823917	149.794925	718.02	1.50
OP 6	6	-34.840652	149.799444	693.75	1.50
OP 7	7	-34.843100	149.800098	697.95	1.50
OP 8	8	-34.851934	149.795258	724.54	1.50
OP 9	9	-34.849279	149.798495	704.99	1.50
OP 10	10	-34.869064	149.811292	736.59	1.50
OP 11	11	-34.819425	149.738225	650.78	1.50
OP 12	12	-34.852672	149.736507	690.02	1.50
OP 13	13	-34.832789	149.743150	678.73	1.50
OP 14	14	-34.846924	149.730615	690.46	1.50
OP 15	15	-34.839542	149.807660	737.64	1.50
OP 16	16	-34.806698	149.734245	636.07	1.50
OP 17	17	-34.807504	149.733532	638.67	1.50

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	2,079	34.6	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	210	3.5	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	95	1.6	0	0.0	-
PV array 4	SA tracking	SA tracking	404	6.7	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	630	10.5	0	0.0	-
PV array 7	SA tracking	SA tracking	1,785	29.8	220	3.7	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	389	6.5	0	0.0
OP 2	400	6.7	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	101	1.7	0	0.0
OP 7	225	3.8	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 8	1,541	25.7	0	0.0
OP 9	811	13.5	0	0.0
OP 10	51	0.8	0	0.0
OP 11	0	0.0	0	0.0
OP 12	756	12.6	220	3.7
OP 13	0	0.0	0	0.0
OP 14	713	11.9	0	0.0
OP 15	216	3.6	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV array 1 and OP 14

No glare found

PV array 1 and OP 15

No glare found

PV array 1 and OP 16

No glare found

PV array 1 and OP 17

No glare found

PV: PV array 10 low potential for temporary after-image

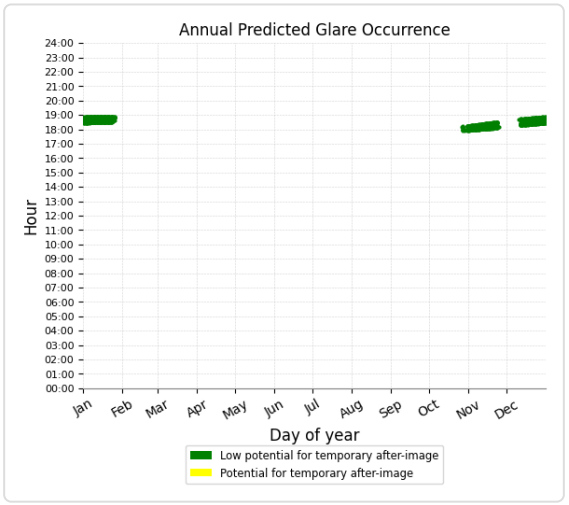
Receptor results ordered by category of glare

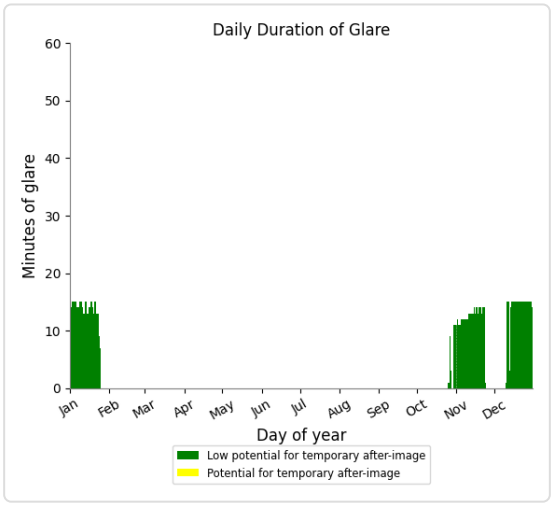
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 8	973	16.2	0	0.0
OP 9	619	10.3	0	0.0
OP 12	348	5.8	0	0.0
OP 14	139	2.3	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

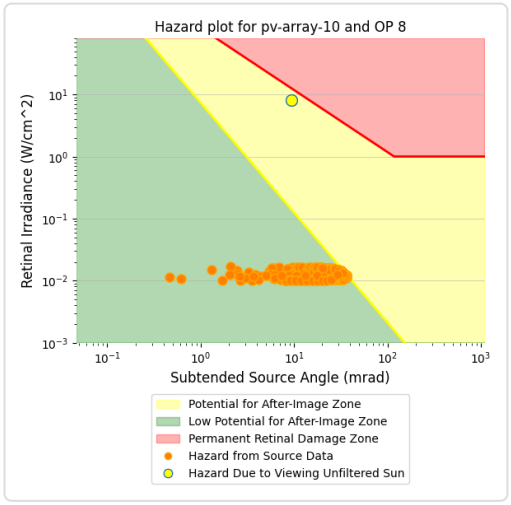
PV array 10 and OP 8

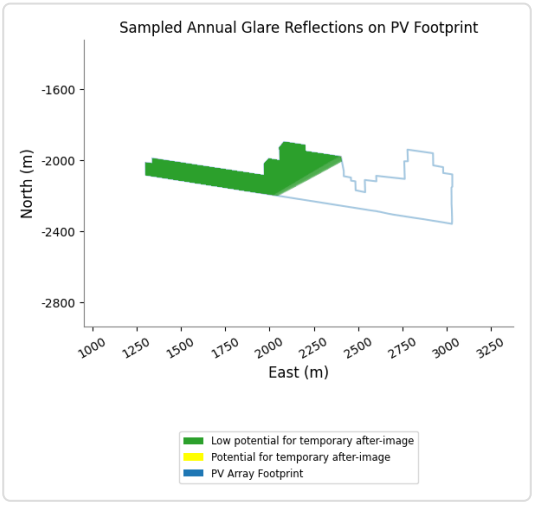
Yellow glare: none

Green glare: 973 min.





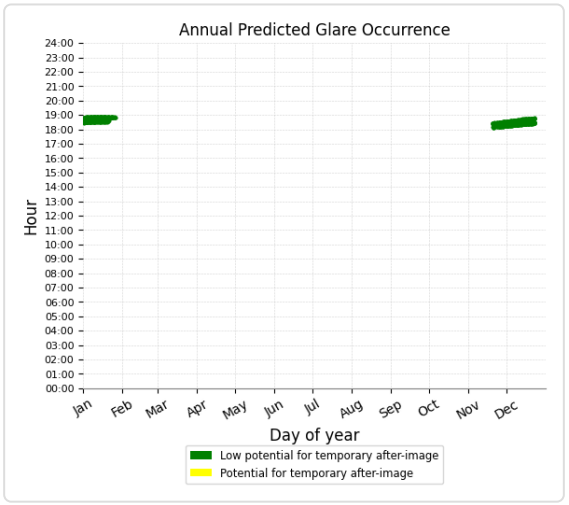


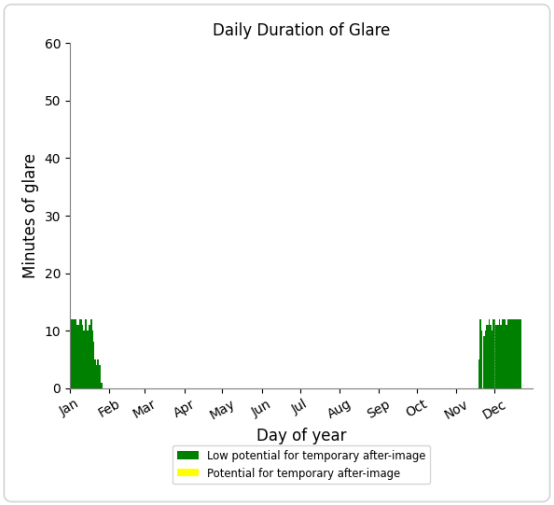


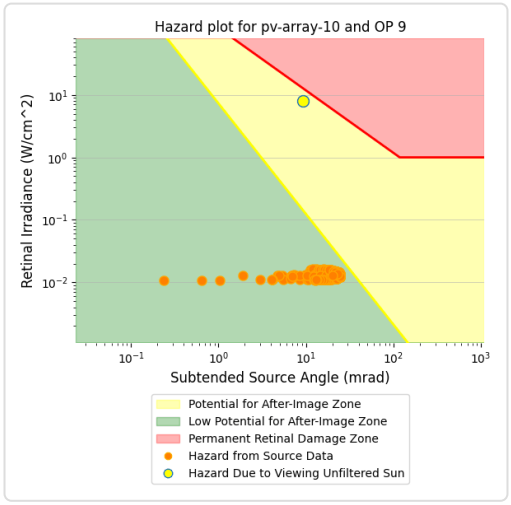
PV array 10 and OP 9

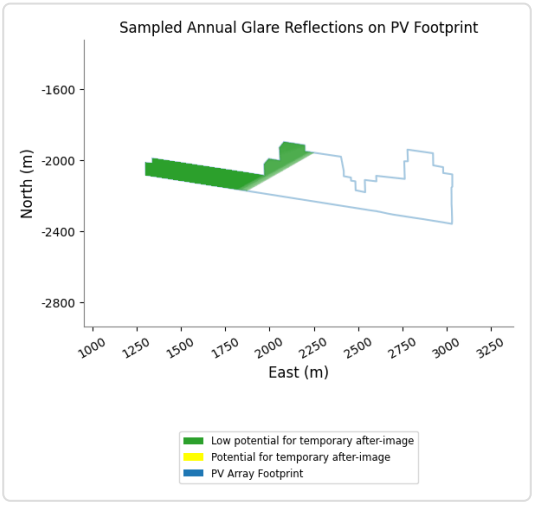
Yellow glare: none

Green glare: 619 min.





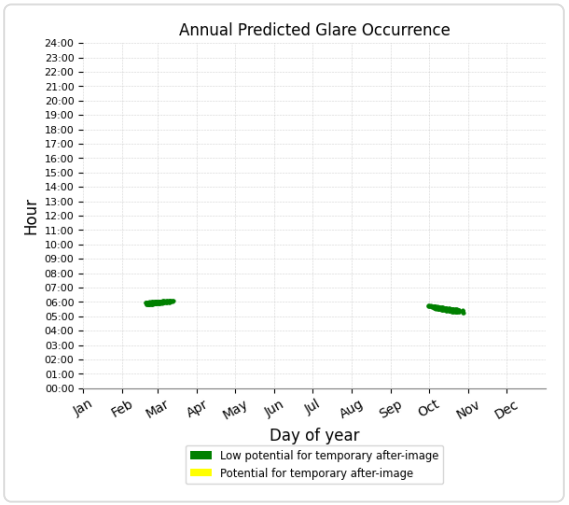


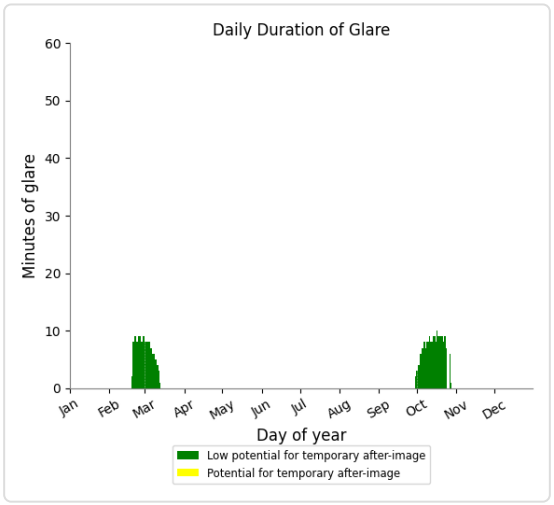


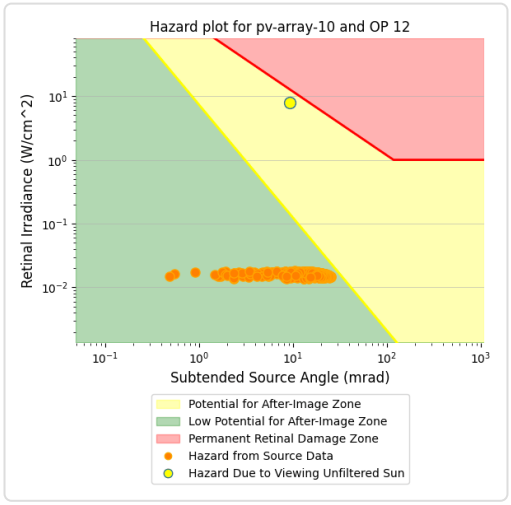
PV array 10 and OP 12

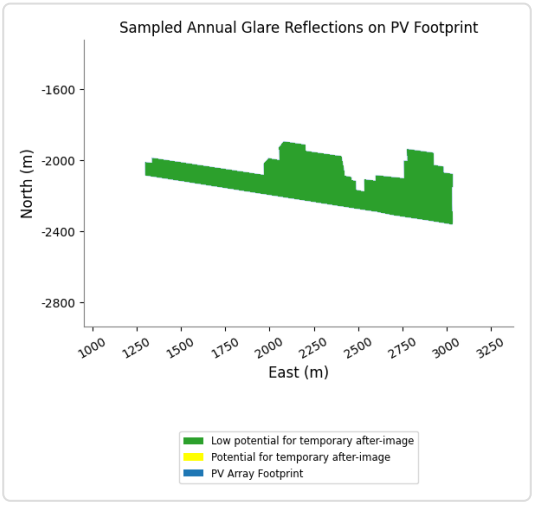
Yellow glare: none

Green glare: 348 min.





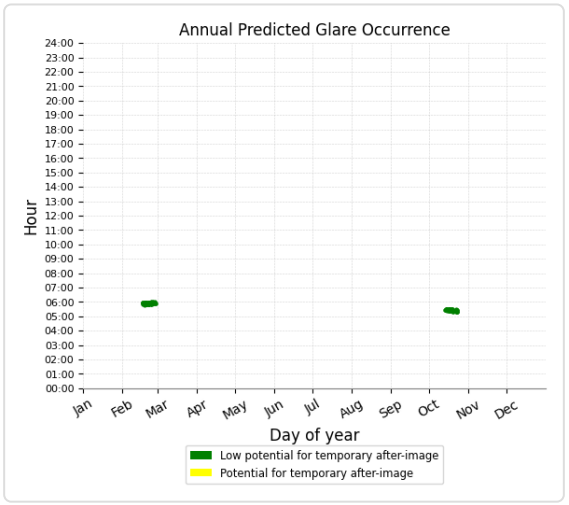


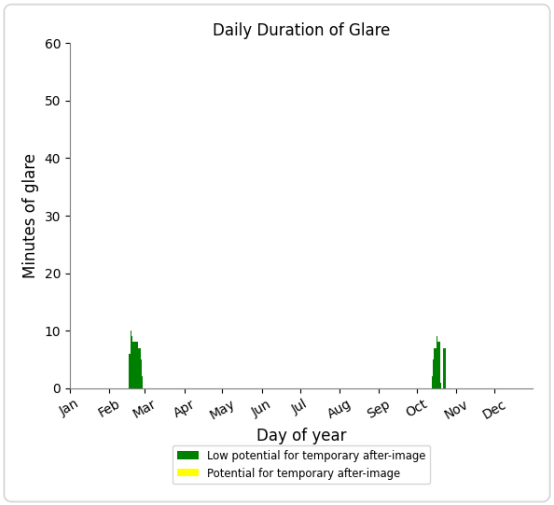


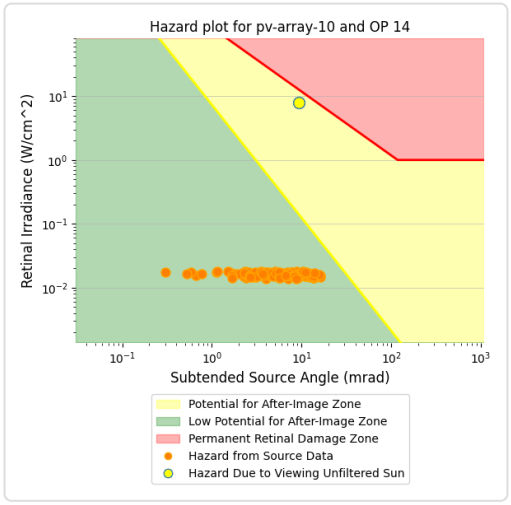
PV array 10 and OP 14

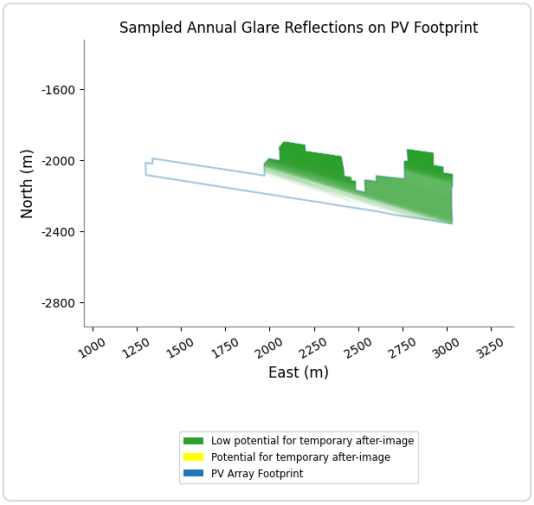
Yellow glare: none

Green glare: 139 min.









PV array 10 and OP 1

No glare found

PV array 10 and OP 2

No glare found

PV array 10 and OP 3

No glare found

PV array 10 and OP 4

No glare found

PV array 10 and OP 5

No glare found

PV array 10 and OP 6

No glare found

PV array 10 and OP 7

No glare found

PV array 10 and OP 10

No glare found

PV array 10 and OP 11

No glare found

PV array 10 and OP 13

No glare found

PV array 10 and OP 15

No glare found

PV array 10 and OP 16

No glare found

PV array 10 and OP 17

No glare found

PV: PV array 11 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 11 and OP 1

No glare found

PV array 11 and OP 2

No glare found

PV array 11 and OP 3

No glare found

PV array 11 and OP 4

No glare found

PV array 11 and OP 5

No glare found

PV array 11 and OP 6

No glare found

PV array 11 and OP 7

No glare found

PV array 11 and OP 8

No glare found

PV array 11 and OP 9

No glare found

PV array 11 and OP 10

No glare found

PV array 11 and OP 11

No glare found

PV array 11 and OP 12

No glare found

PV array 11 and OP 13

No glare found

PV array 11 and OP 14

No glare found

PV array 11 and OP 15

No glare found

PV array 11 and OP 16

No glare found

PV array 11 and OP 17

No glare found

PV: PV array 12 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 12 and OP 1

No glare found

PV array 12 and OP 2

No glare found

PV array 12 and OP 3

No glare found

PV array 12 and OP 4

No glare found

PV array 12 and OP 5

No glare found

PV array 12 and OP 6

No glare found

PV array 12 and OP 7

No glare found

PV array 12 and OP 8

No glare found

PV array 12 and OP 9

No glare found

PV array 12 and OP 10

No glare found

PV array 12 and OP 11

No glare found

PV array 12 and OP 12

No glare found

PV array 12 and OP 13

No glare found

PV array 12 and OP 14

No glare found

PV array 12 and OP 15

No glare found

PV array 12 and OP 16

No glare found

PV array 12 and OP 17

No glare found

PV: PV array 13 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 13 and OP 1

No glare found

PV array 13 and OP 2

No glare found

PV array 13 and OP 3

No glare found

PV array 13 and OP 4

No glare found

PV array 13 and OP 5

No glare found

PV array 13 and OP 6

No glare found

PV array 13 and OP 7

No glare found

PV array 13 and OP 8

No glare found

PV array 13 and OP 9

No glare found

PV array 13 and OP 10

No glare found

PV array 13 and OP 11

No glare found

PV array 13 and OP 12

No glare found

PV array 13 and OP 13

No glare found

PV array 13 and OP 14

No glare found

PV array 13 and OP 15

No glare found

PV array 13 and OP 16

No glare found

PV array 13 and OP 17

No glare found

PV: PV array 14 low potential for temporary after-image

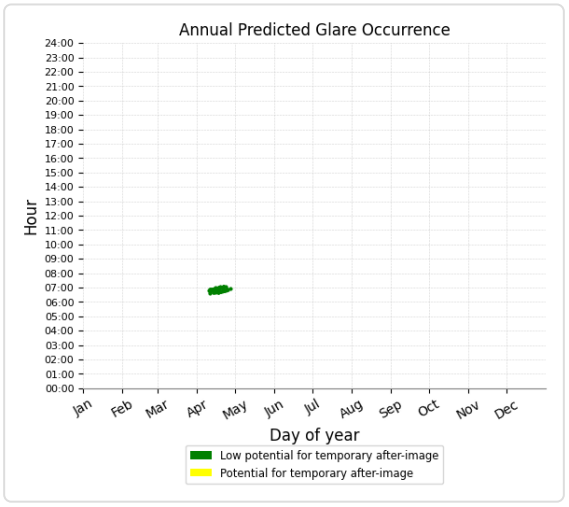
Receptor results ordered by category of glare

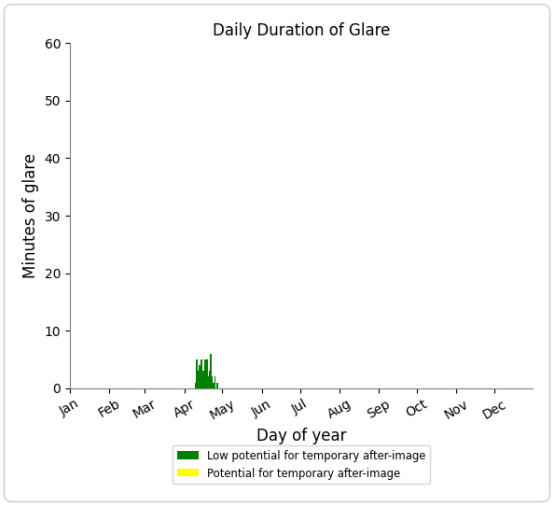
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	58	1.0	0	0.0
OP 2	101	1.7	0	0.0
OP 10	51	0.8	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

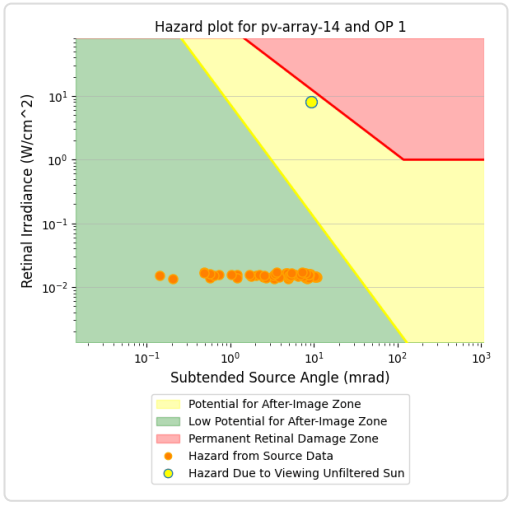
PV array 14 and OP 1

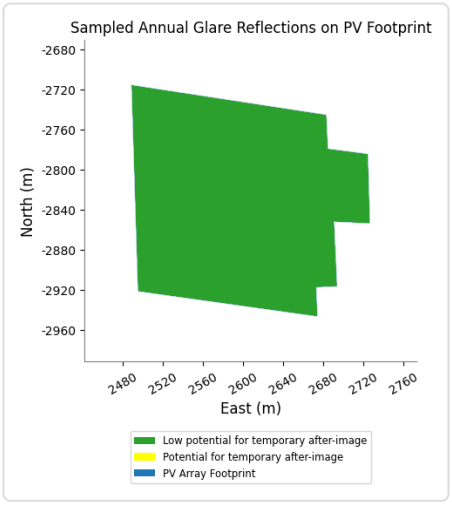
Yellow glare: none

Green glare: 58 min.





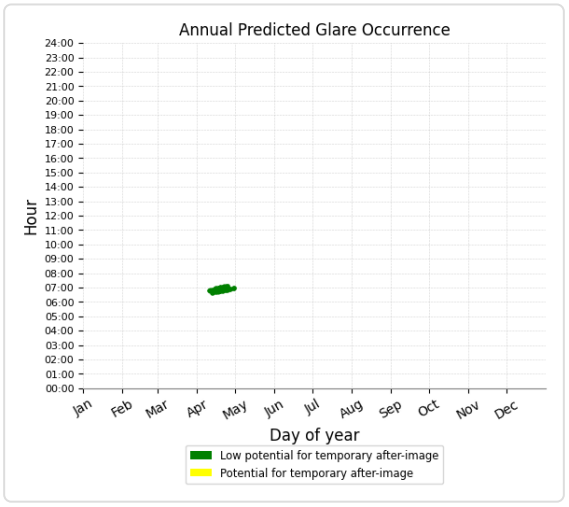


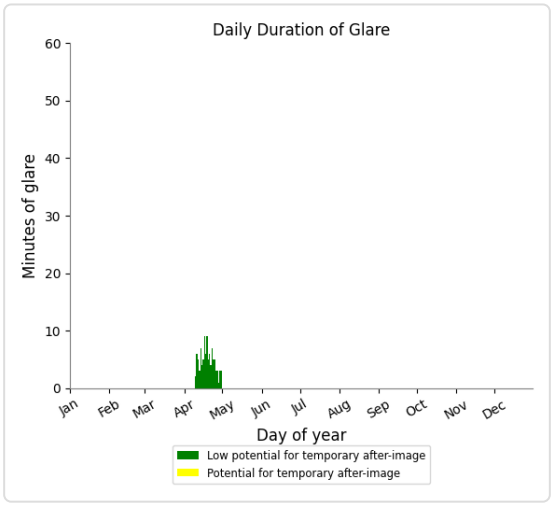


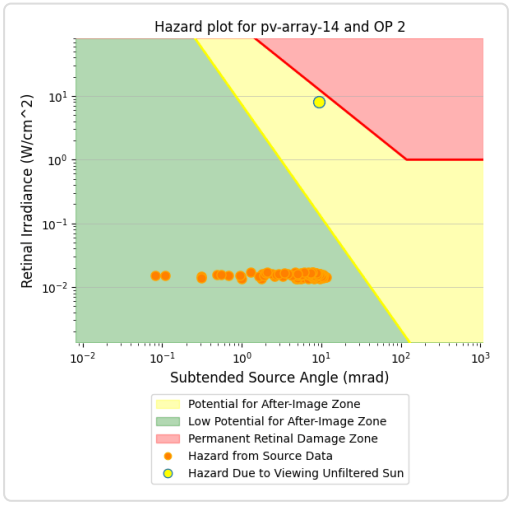
PV array 14 and OP 2

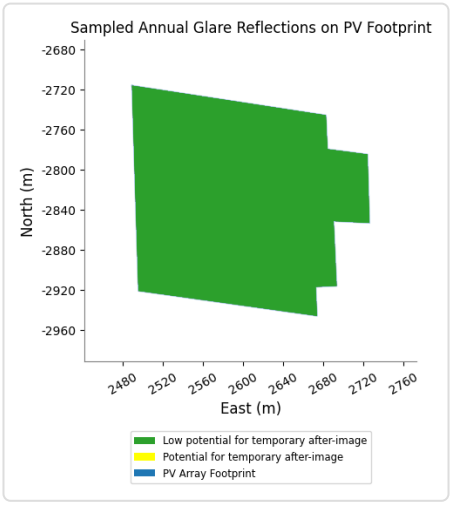
Yellow glare: none

Green glare: 101 min.



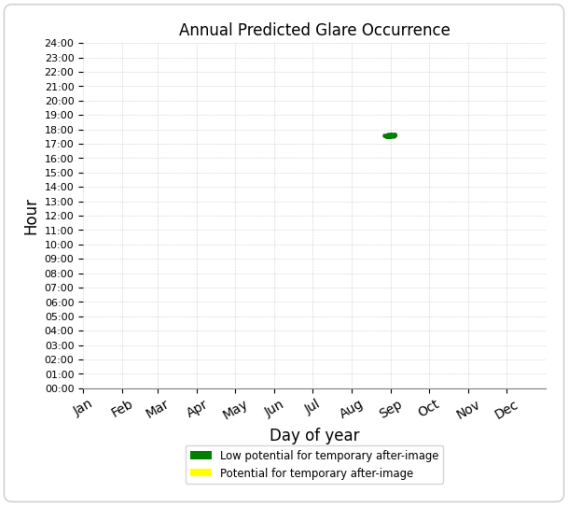


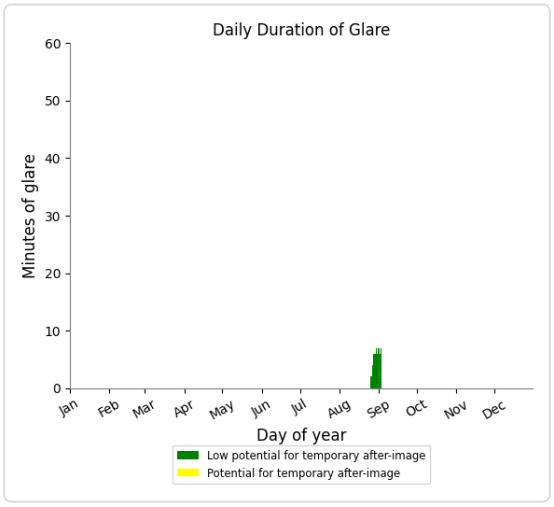


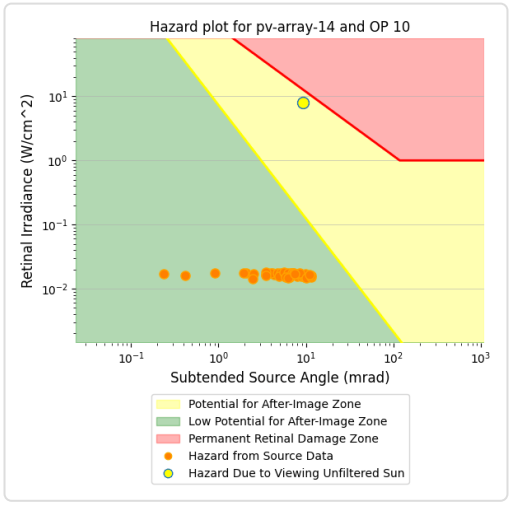


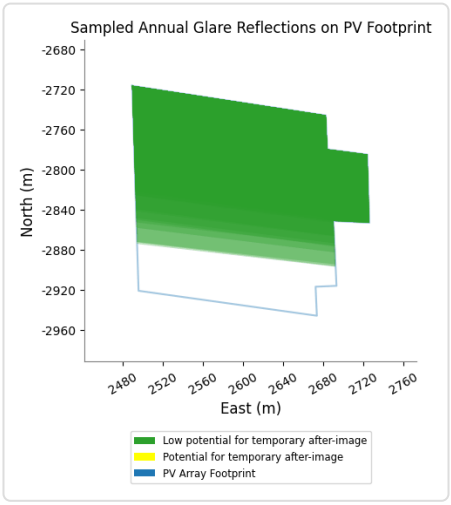
PV array 14 and OP 10

Yellow glare: none
Green glare: 51 min.









PV array 14 and OP 3

No glare found

PV array 14 and OP 4

No glare found

PV array 14 and OP 5

No glare found

PV array 14 and OP 6

No glare found

PV array 14 and OP 7

No glare found

PV array 14 and OP 8

No glare found

PV array 14 and OP 9

No glare found

PV array 14 and OP 11

No glare found

PV array 14 and OP 12

No glare found

PV array 14 and OP 13

No glare found

PV array 14 and OP 14

No glare found

PV array 14 and OP 15

No glare found

PV array 14 and OP 16

No glare found

PV array 14 and OP 17

No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 8

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV array 2 and OP 14

No glare found

PV array 2 and OP 15

No glare found

PV array 2 and OP 16

No glare found

PV array 2 and OP 17

No glare found

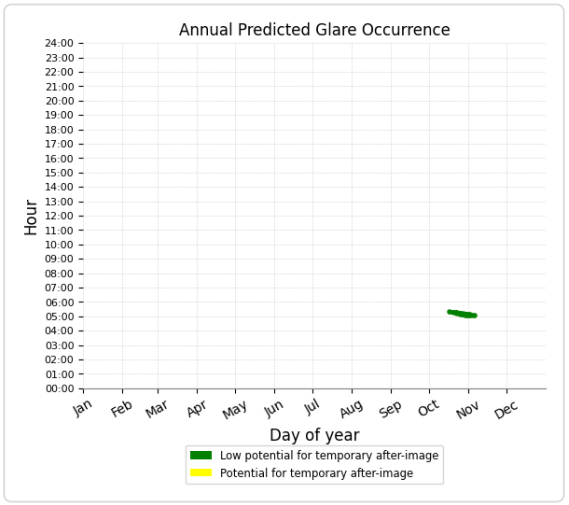
PV: PV array 3 low potential for temporary after-image

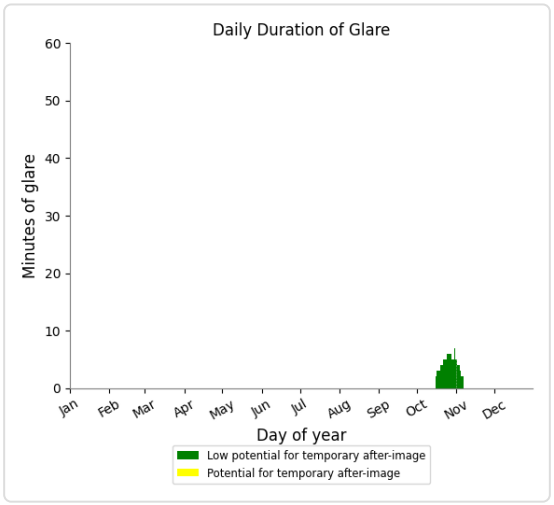
Receptor results ordered by category of glare

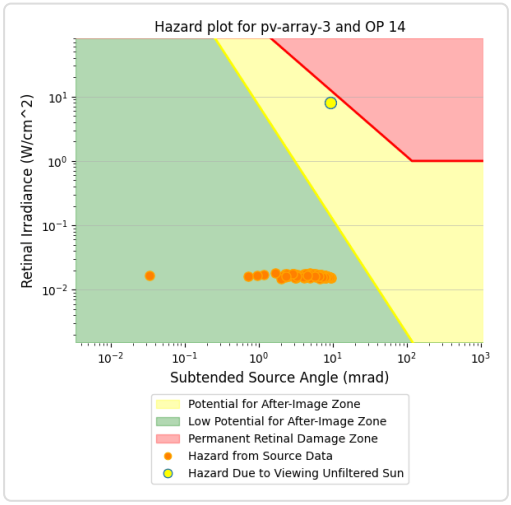
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 14	95	1.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

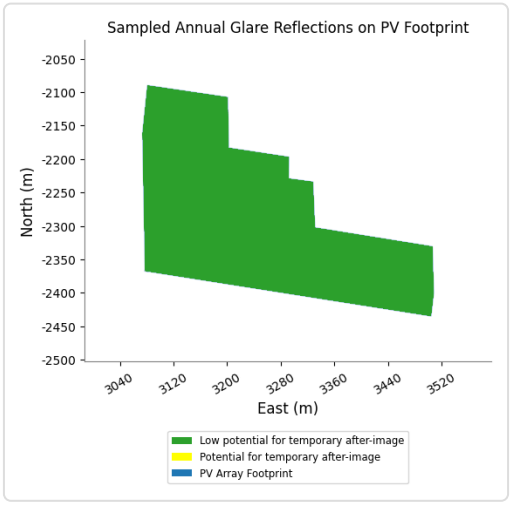
PV array 3 and OP 14

Yellow glare: none
Green glare: 95 min.









PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV array 3 and OP 15

No glare found

PV array 3 and OP 16

No glare found

PV array 3 and OP 17

No glare found

PV: PV array 4 low potential for temporary after-image

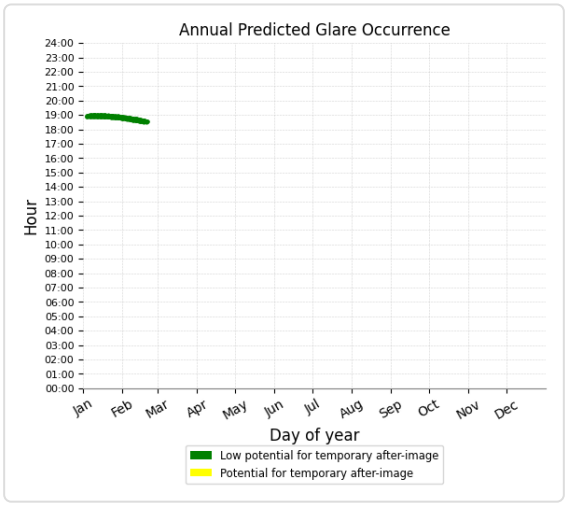
Receptor results ordered by category of glare

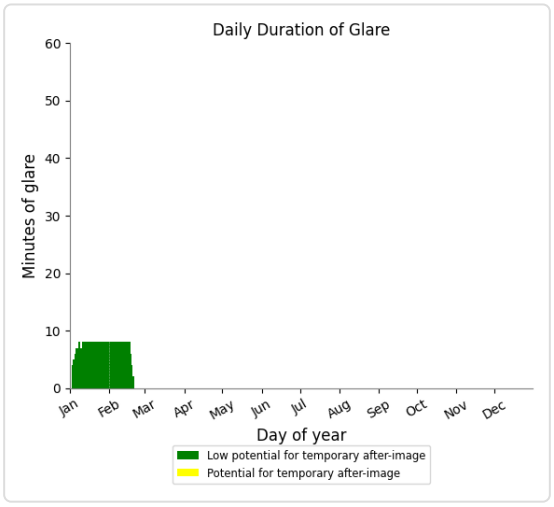
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 8	368	6.1	0	0.0
OP 9	36	0.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

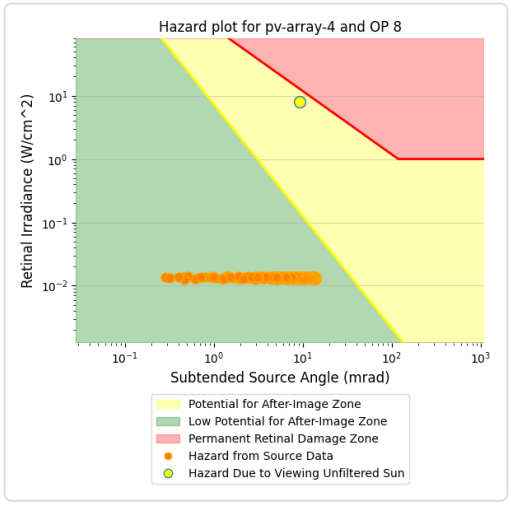
PV array 4 and OP 8

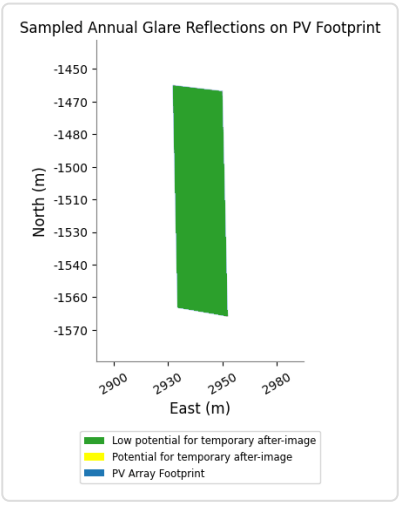
Yellow glare: none

Green glare: 368 min.



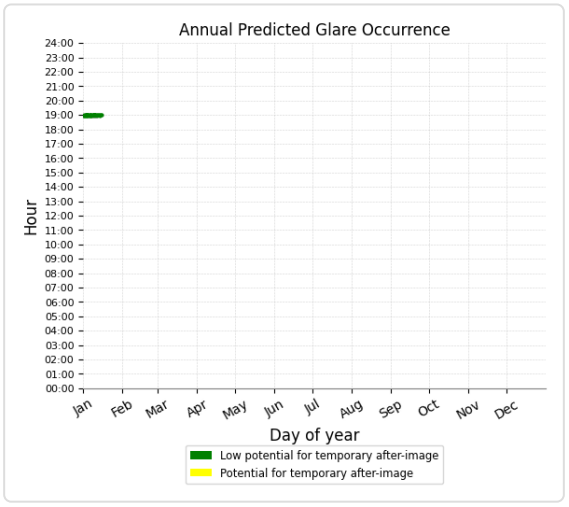


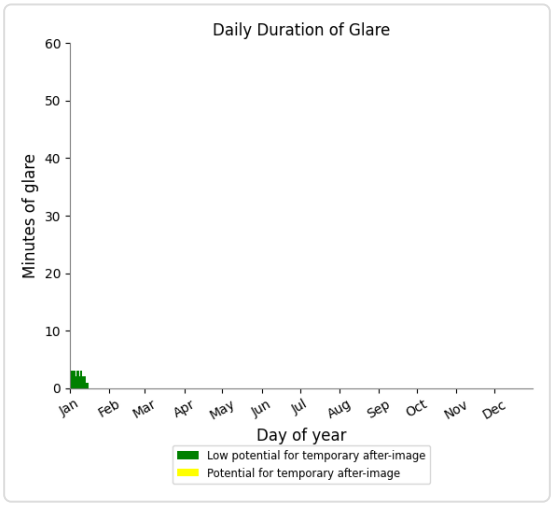


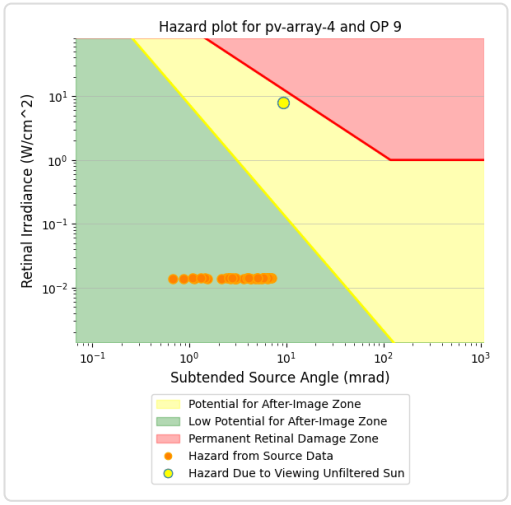


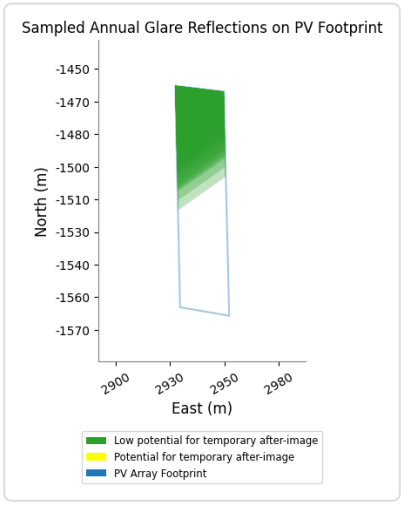
PV array 4 and OP 9

Yellow glare: none
Green glare: 36 min.









PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 4

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

PV array 4 and OP 14

No glare found

PV array 4 and OP 15

No glare found

PV array 4 and OP 16

No glare found

PV array 4 and OP 17

No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 5 and OP 1

No glare found

PV array 5 and OP 2

No glare found

PV array 5 and OP 3

No glare found

PV array 5 and OP 4

No glare found

PV array 5 and OP 5

No glare found

PV array 5 and OP 6

No glare found

PV array 5 and OP 7

No glare found

PV array 5 and OP 8

No glare found

PV array 5 and OP 9

No glare found

PV array 5 and OP 10

No glare found

PV array 5 and OP 11

No glare found

PV array 5 and OP 12

No glare found

PV array 5 and OP 13

No glare found

PV array 5 and OP 14

No glare found

PV array 5 and OP 15

No glare found

PV array 5 and OP 16

No glare found

PV array 5 and OP 17

No glare found

PV: PV array 6 low potential for temporary after-image

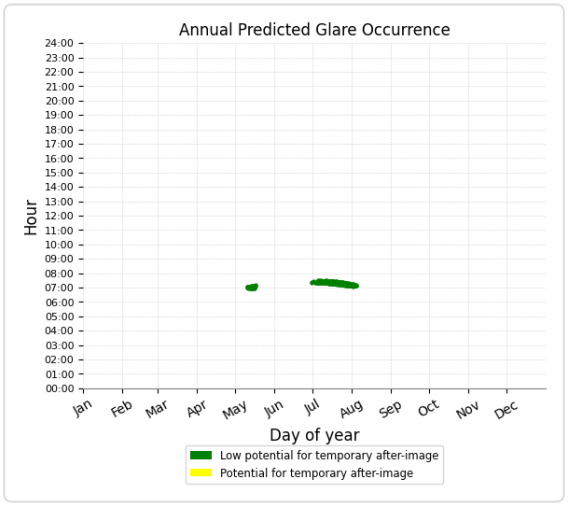
Receptor results ordered by category of glare

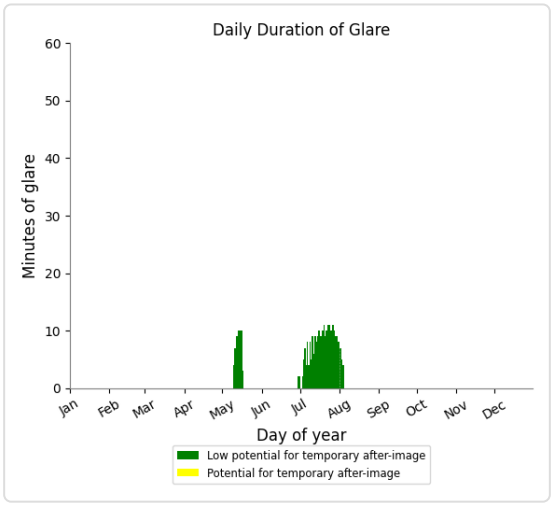
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	331	5.5	0	0.0
OP 2	299	5.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

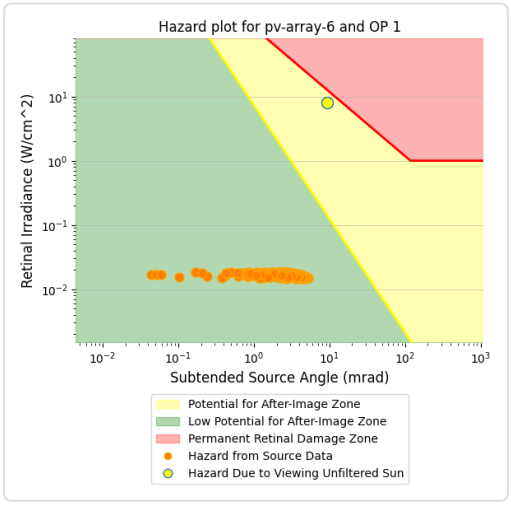
PV array 6 and OP 1

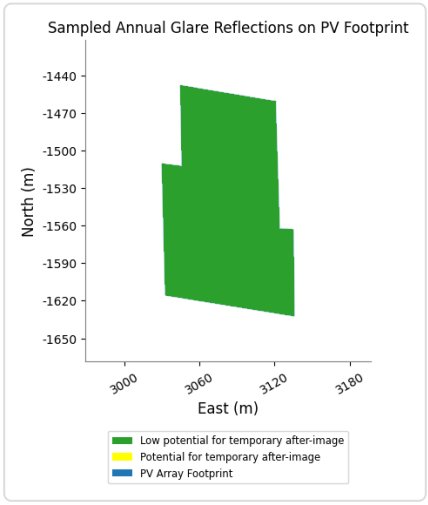
Yellow glare: none

Green glare: 331 min.



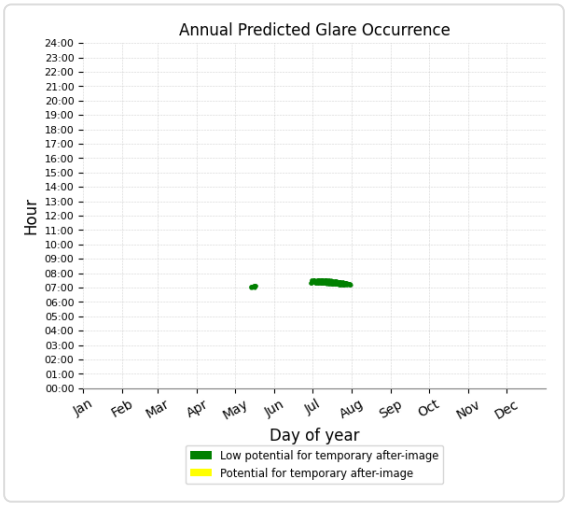


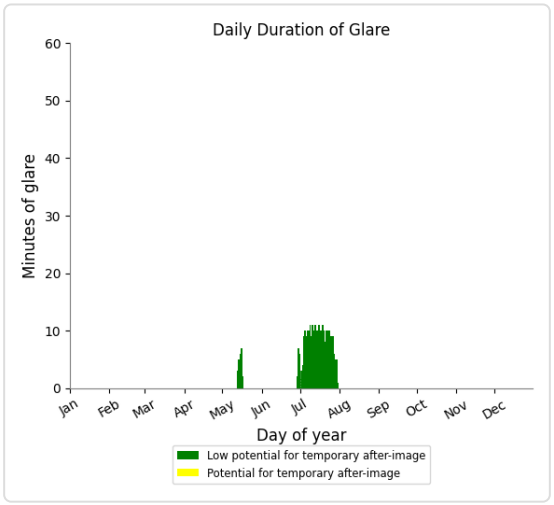


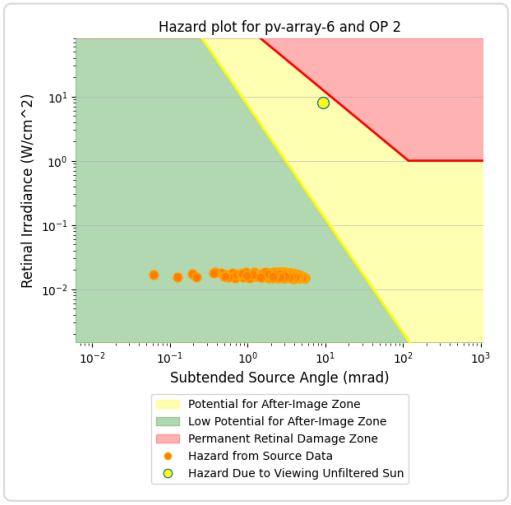


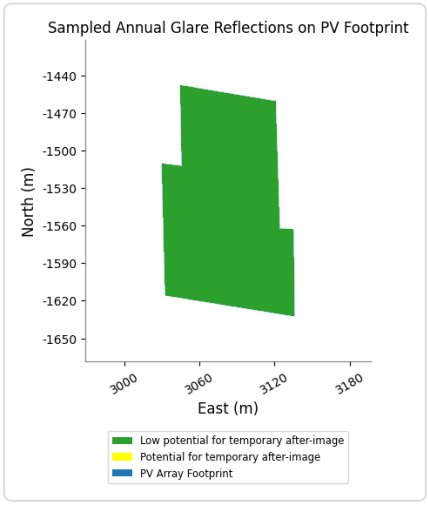
PV array 6 and OP 2

Yellow glare: none
Green glare: 299 min.









PV array 6 and OP 3

No glare found

PV array 6 and OP 4

No glare found

PV array 6 and OP 5

No glare found

PV array 6 and OP 6

No glare found

PV array 6 and OP 7

No glare found

PV array 6 and OP 8

No glare found

PV array 6 and OP 9

No glare found

PV array 6 and OP 10

No glare found

PV array 6 and OP 11

No glare found

PV array 6 and OP 12

No glare found

PV array 6 and OP 13

No glare found

PV array 6 and OP 14

No glare found

PV array 6 and OP 15

No glare found

PV array 6 and OP 16

No glare found

PV array 6 and OP 17

No glare found

PV: PV array 7 potential temporary after-image

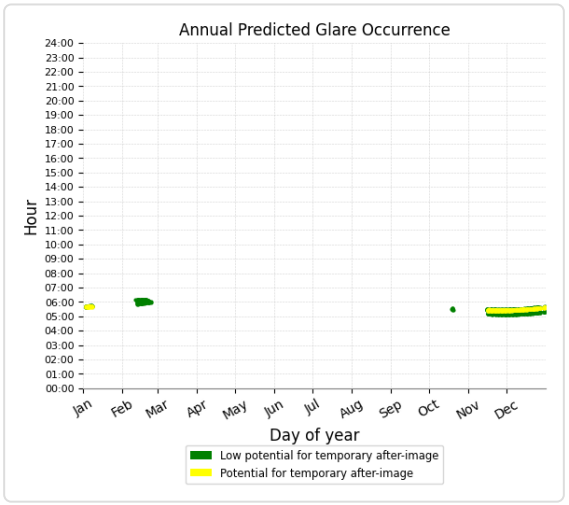
Receptor results ordered by category of glare

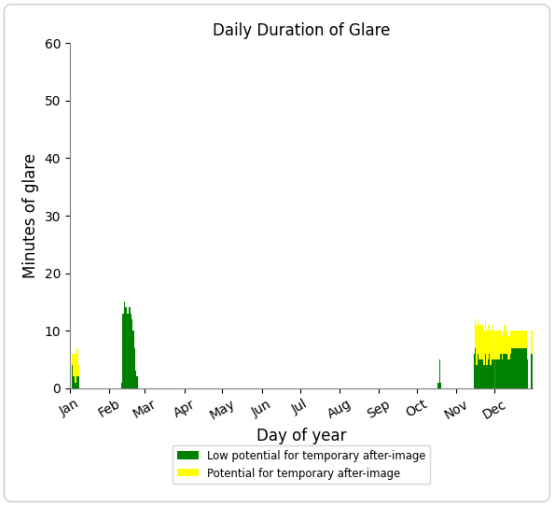
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 12	408	6.8	220	3.7
OP 6	101	1.7	0	0.0
OP 7	225	3.8	0	0.0
OP 8	200	3.3	0	0.0
OP 9	156	2.6	0	0.0
OP 14	479	8.0	0	0.0
OP 15	216	3.6	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

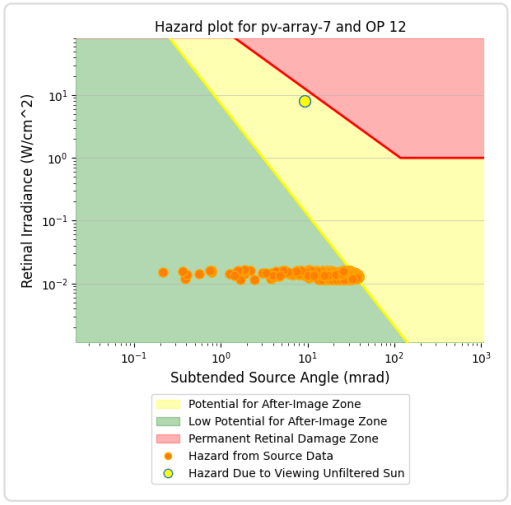
PV array 7 and OP 12

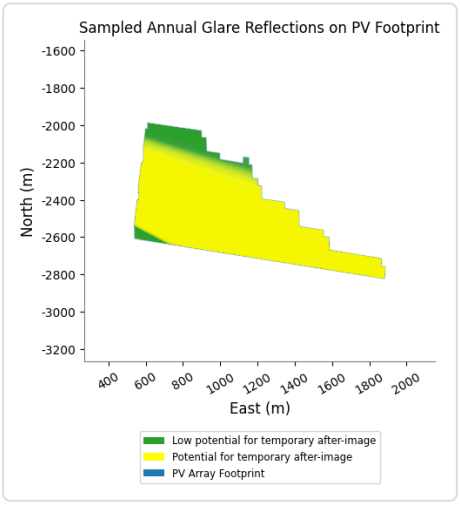
Yellow glare: 220 min.

Green glare: 408 min.





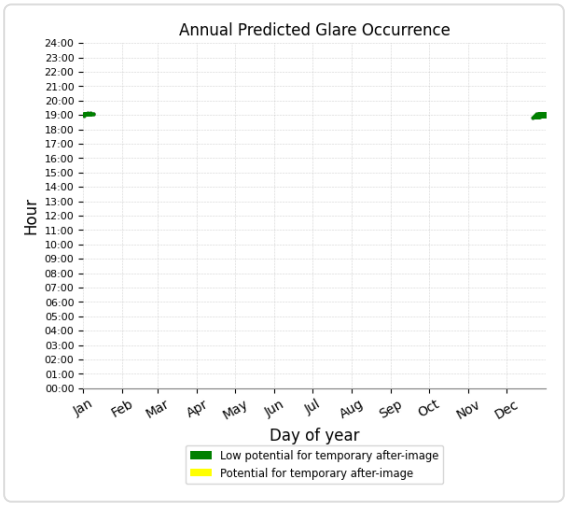


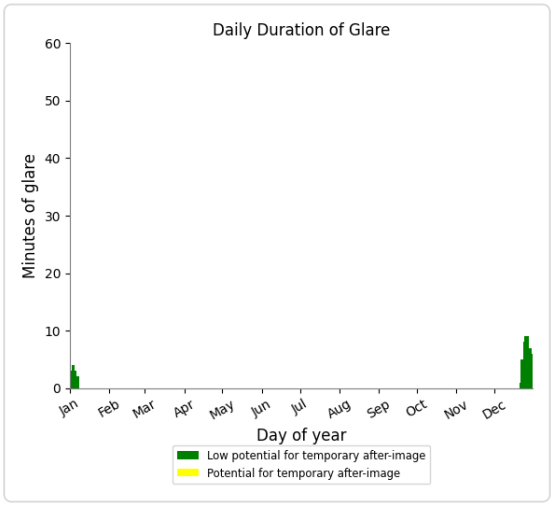


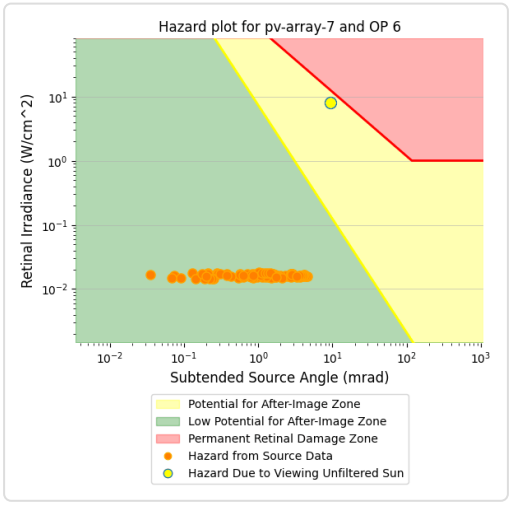
PV array 7 and OP 6

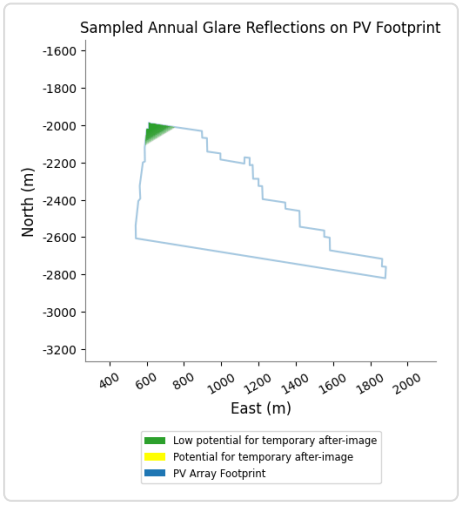
Yellow glare: none

Green glare: 101 min.





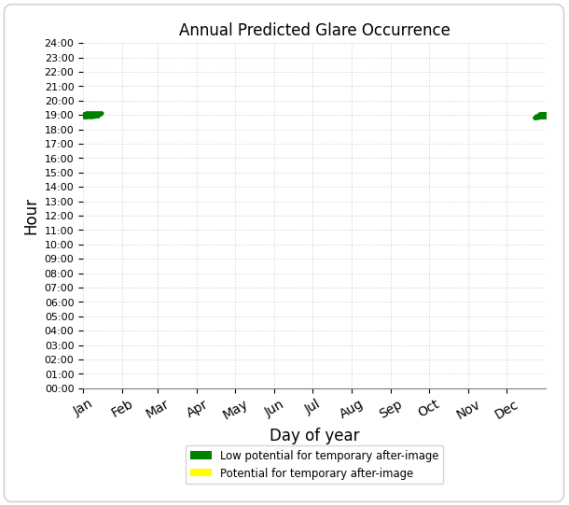


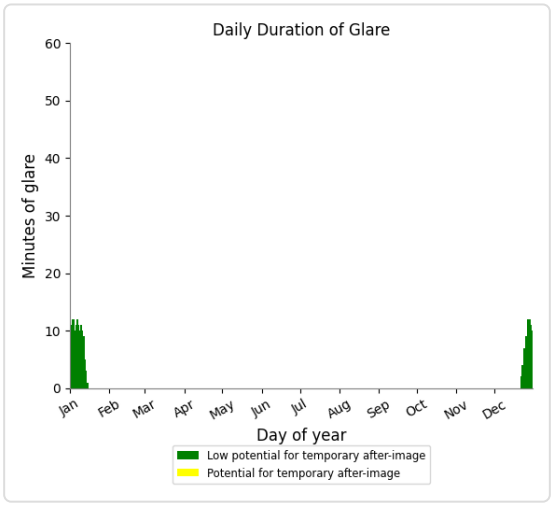


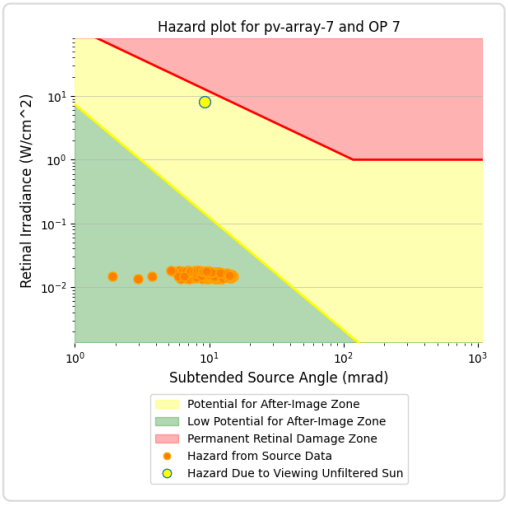
PV array 7 and OP 7

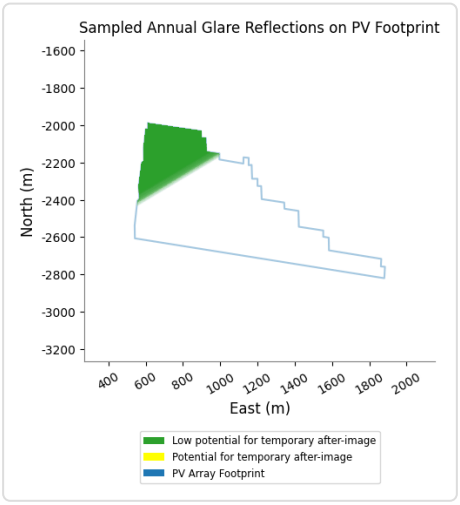
Yellow glare: none

Green glare: 225 min.





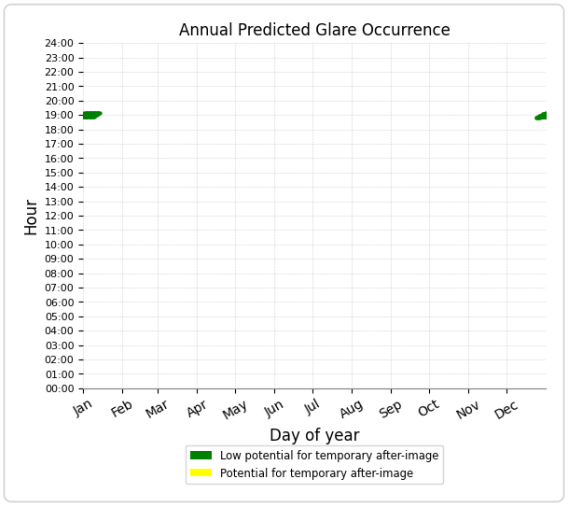


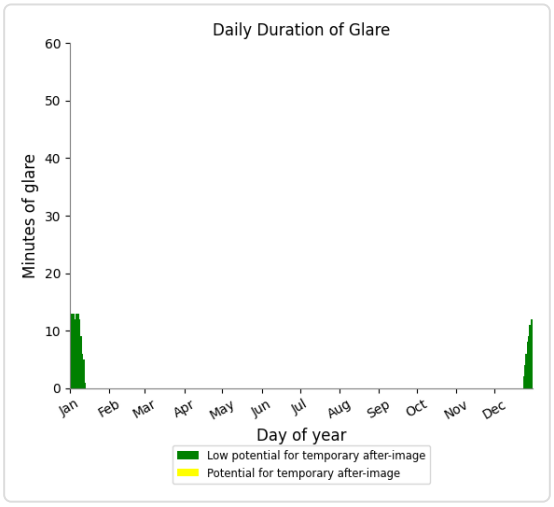


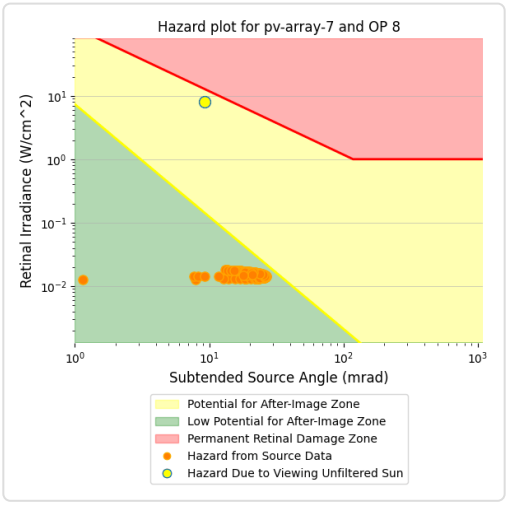
PV array 7 and OP 8

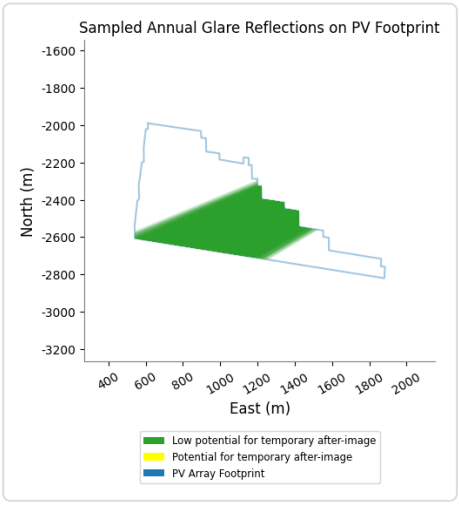
Yellow glare: none

Green glare: 200 min.





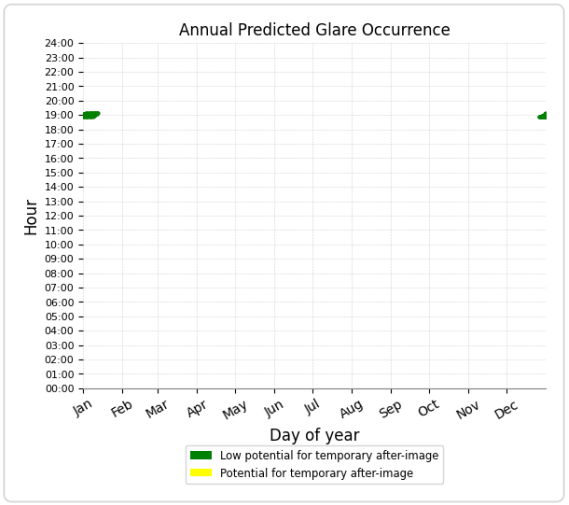


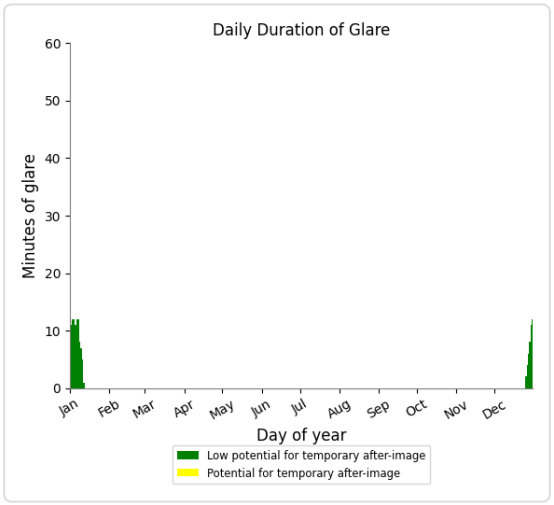


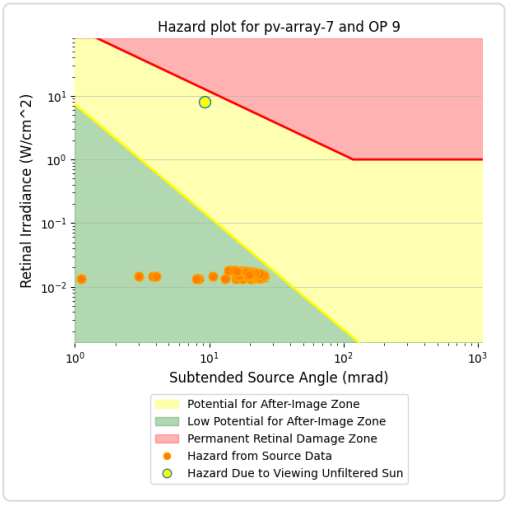
PV array 7 and OP 9

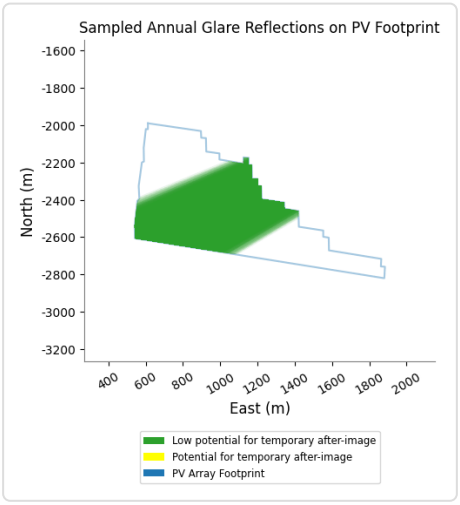
Yellow glare: none

Green glare: 156 min.





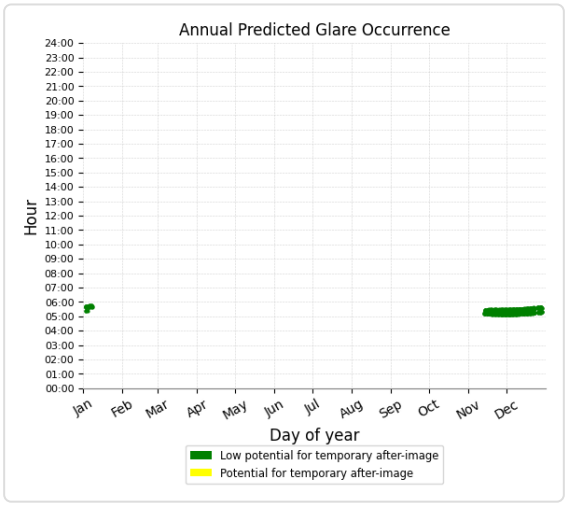


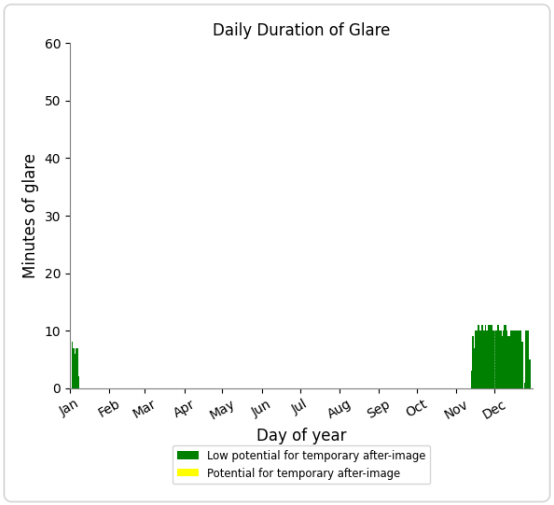


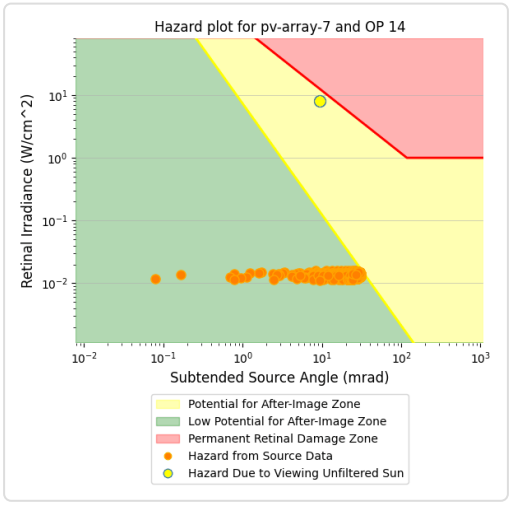
PV array 7 and OP 14

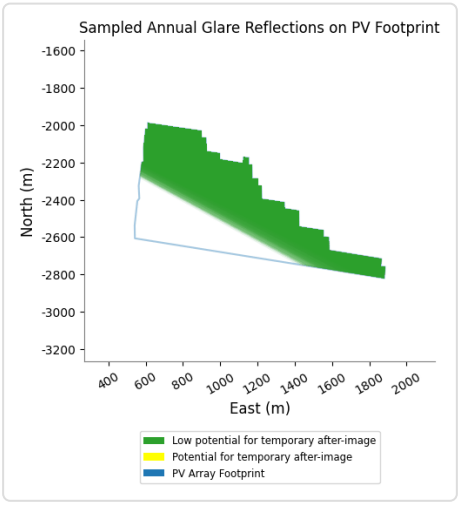
Yellow glare: none

Green glare: 479 min.



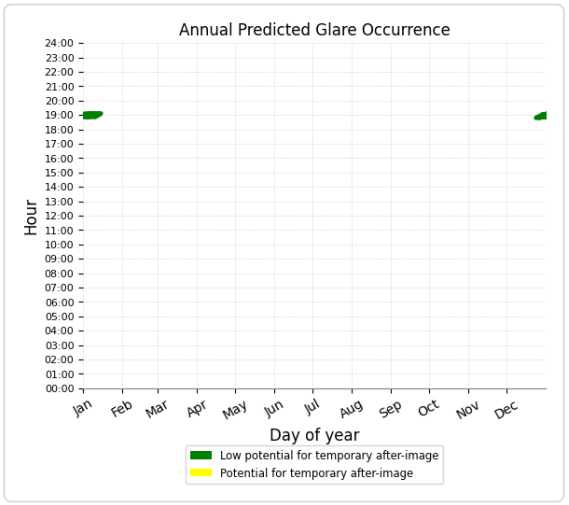


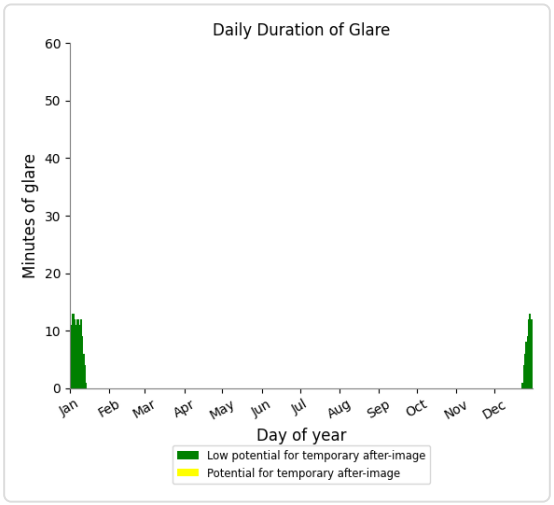


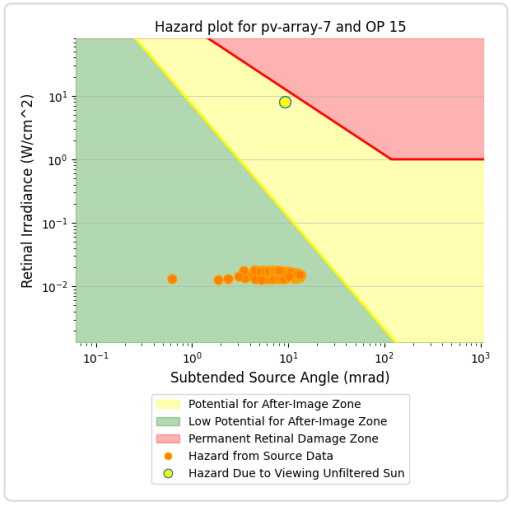


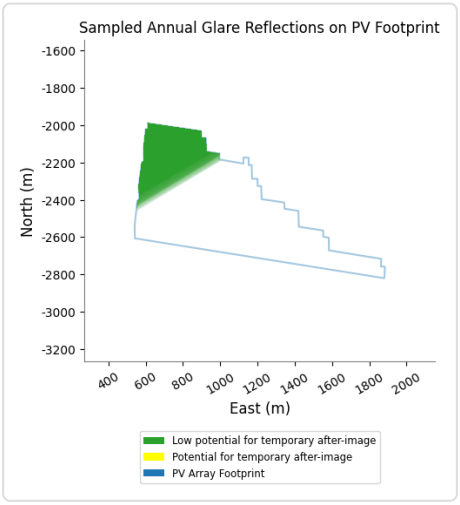
PV array 7 and OP 15

Yellow glare: none
Green glare: 216 min.









PV array 7 and OP 1

No glare found

PV array 7 and OP 2

No glare found

PV array 7 and OP 3

No glare found

PV array 7 and OP 4

No glare found

PV array 7 and OP 5

No glare found

PV array 7 and OP 10

No glare found

PV array 7 and OP 11

No glare found

PV array 7 and OP 13

No glare found

PV array 7 and OP 16

No glare found

PV array 7 and OP 17

No glare found

PV: PV array 8 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 8 and OP 1

No glare found

PV array 8 and OP 2

No glare found

PV array 8 and OP 3

No glare found

PV array 8 and OP 4

No glare found

PV array 8 and OP 5

No glare found

PV array 8 and OP 6

No glare found

PV array 8 and OP 7

No glare found

PV array 8 and OP 8

No glare found

PV array 8 and OP 9

No glare found

PV array 8 and OP 10

No glare found

PV array 8 and OP 11

No glare found

PV array 8 and OP 12

No glare found

PV array 8 and OP 13

No glare found

PV array 8 and OP 14

No glare found

PV array 8 and OP 15

No glare found

PV array 8 and OP 16

No glare found

PV array 8 and OP 17

No glare found

PV: PV array 9 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0

PV array 9 and OP 1

No glare found

PV array 9 and OP 2

No glare found

PV array 9 and OP 3

No glare found

PV array 9 and OP 4

No glare found

PV array 9 and OP 5

No glare found

PV array 9 and OP 6

No glare found

PV array 9 and OP 7

No glare found

PV array 9 and OP 8

No glare found

PV array 9 and OP 9

No glare found

PV array 9 and OP 10

No glare found

PV array 9 and OP 11

No glare found

PV array 9 and OP 12

No glare found

PV array 9 and OP 13

No glare found

PV array 9 and OP 14

No glare found

PV array 9 and OP 15

No glare found

PV array 9 and OP 16

No glare found

PV array 9 and OP 17

No glare found

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.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 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. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
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.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
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.
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.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- 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