ENVIRONMENTAL ETHOS

DINGO LANE SOLAR FARM

GLARE IMPACT ASSESSMENT REPORT

Prepared For
Byron Shire Council

October 2020

Prepared by Environmental Ethos
for Byron Shire Council

REF NO. 19010

FINAL ISSUE: 8 October 2020

Cover Image: ToGa Wanderings

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1. INTRODUCTION

This report has been prepared by Environmental Ethos on behalf of Byron Shire Council to assess the potential solar glint and glare impacts of the proposed Dingo Lane Solar Farm (the Project). The Project comprises of the installation and operation of a solar farm up to 5MW AC, which will utilise photovoltaic (PV) modules to generate electricity. The Project is a key component of Byron Shire Council's Net Zero Emissions Strategy.

The Project site is located on Lot 15 DP1178892, which is part of the buffer land adjacent to Bryon Resource Recovery Centre. The footprint of the proposed development will cover an area of approximately 13.1 hectares (ha), with the solar array area covering an area up to 11ha. The PV panels will run east/west and will be mounted on a fixed frame supporting system at a nominal 20 degree incline to north. This assessment also considered an alternative option to mount the PV panels on a single axis horizontal tracking system. The solar panels, including the mounting structures, will be a maximum height of 2 metres for the fixed frame option, and 3 meters for the tracking system option.

1.1. Location

The Project site is located approximately 3 kilometres south of Mullumbimby, *refer Figure 1.* The Project site adjoins Dingo Lane on the north and north-western boundaries, which is a gravel access road to Bryon Resource Recovery Centre to the east of the Project site. The site is zoned RU2 Rural Landscape and is currently used for grazing. Grazing is the predominant land use within the low lying valley surrounding the site. To the north, east and west are areas of RU5 Large Lot Residential, located on undulating hills. The majority of the remaining land surrounding the site is zoned RU1 Primary Production.

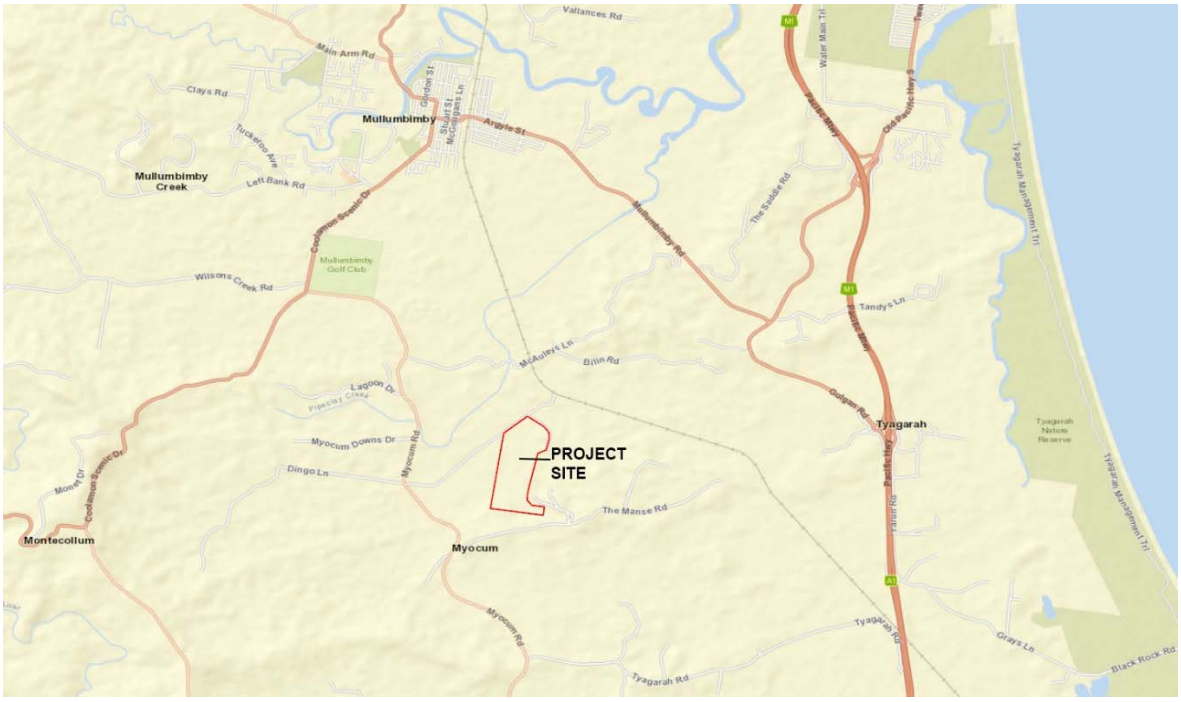


Figure 1. Location Plan

2. SCOPE OF THE ASSESSMENT

The scope of this glint and glare impact assessment includes the following:

- Description of the methodology used to undertake the study;
- Assessment of the baseline conditions;
- Description of the elements of the Project with the potential to influence glint and glare including size, height, and angle of PV modules, the type of framing system, as well as operational considerations for the tracking system option;
- Identification of the viewshed and potential visibility of the Project;
- Desktop mapping of potential glint and glare at the location of sensitive receptors within the viewshed, based on Solar Glare Hazard Analysis and viewshed analysis;
- Assessment of the potential risk of glint and glare on sensitive receptors during operation of the Project;
- Assessment of potential mitigations measures to avoid, mitigate, or manage potential impacts; and
- Consideration of impacts, before and after mitigation measures are established, on surrounding sensitive receptors.

3. METHODOLOGY

3.1. Glint and Glare Definitions

Glint and glare refers to the human experience of reflected light.

This study utilises Solar Glare Hazard Analysis software developed in the USA to address policy adherence required for the 2013 U.S. Federal Aviation Administration (FAA) Interim Policy 78 FR 63276. The FAA definitions of glint and glare are as follows:

"Reflectivity refers to light that is reflected off surfaces. The potential effects of reflectivity are glint (a momentary flash of bright light) and glare (a continuous source of bright light). These two effects are referred to hereinafter as "glare," which can cause a brief loss of vision, also known as flash blindness."[1]

The FAA Technical Guidelines distinguishes between glint and glare according to time duration, without correlation to light intensity.

Solar Glare Hazard Analysis software evaluates the potential impact of light produced as a direct reflection of the sun from PV modules, either stationary such as fixed frame solar systems, or relatively slow moving objects such as solar tracking systems. This is consistent with FAA Technical Guidelines definition of 'glare' since the source of the solar reflectance occurs over a long (not momentary) duration.

[1] Federal Aviation Administration, Version 1.1 April 2018, Technical Guidance for Evaluating Selected Solar Technologies on Airports

3.2. Glare Assessment Parameters

Glare assessment modelling for solar farms is based on the following factors:

- the tilt, orientation, and optical properties of the PV modules in the solar array;
- sun position over time, taking into account geographic location;
- the location of sensitive receptors (viewers); and
- Screening potential of surrounding topography and vegetation.

3.3. Glare Intensity Categories

The potential hazard from solar glare is a function of retinal irradiance (power of electromagnetic radiation per unit area produced by the sun) and the subtended angle (size and distance) of the glare source.[2]

Glare can be broadly classified into three categories: low potential for after-image, potential for after-image, and potential for permanent eye damage, *Figure 2* illustrates the glare intensity categories used in this study.

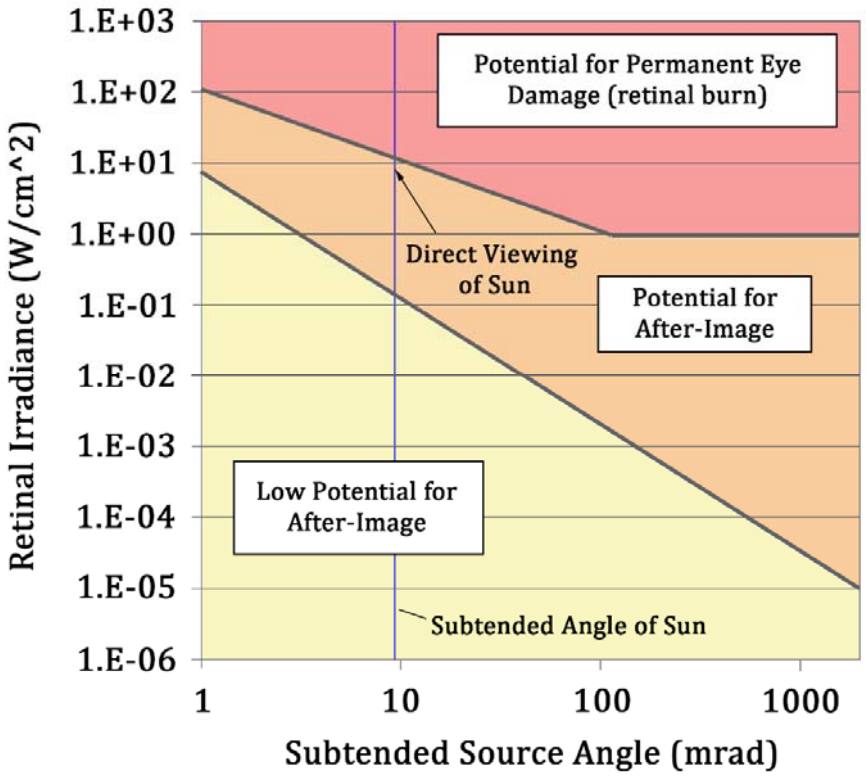


Figure 2. Ocular impacts and Hazard Ranges[3]

The amount of light reflected from a PV module depends on the amount of sunlight hitting the surface, as well as the surface reflectivity. The amount of sunlight interacting with the PV module

[2] HO, C.K., C.M. Ghanbari, and R.B. Diver, 2011, Methodology to Assess Potential Glint and Glare hazards from Concentrated Solar Power Plants
[3] Source: Solar Glare Hazard Analysis Tool (SGHAT) Presentation (2013) https://share.sandia.gov/phlux/static/references/glint-glare/SGHAT_Ho.pdf

will vary based on geographic location, time of year, cloud cover, and PV module orientation. 1000W/m^2 is generally used in most counties as an estimate of the solar energy interacting with a PV module when no other information is available. This study modelled scenarios using 2000 W/m^2 in order to cover potentially higher solar energy levels in Australia as compared to other parts of the world. Flash blindness for a period of 4-12 seconds (i.e. time to recovery of vision) occurs when 7-11 W/m^2 (or 650-1,100 lumens/m^2) reaches the eye[4].

3.4. Reflection and Angle of Incidence

PV modules are designed to maximise the absorption of solar energy and therefore minimise the extent of solar energy reflected. PV modules have low levels of reflectivity between 0.03 and 0.20 depending on the specific materials, anti-reflective coatings, and angle of incidence.[5]

The higher reflectivity values of 0.20, that is 20% of incident light being reflected, can occur when the angle of incidence is greater than 50°. *Figure 3 and 4* show the relationship between increased angles of incidence and increased levels of reflected light. Where the angle of incidence remains below 50° the amount of reflected light remains below 10%. The angle of incidence is particularly relevant to specular reflection (light reflection from a smooth surface). Diffuse reflection (light reflection from a rough surface) may also occur in PV modules, however this is typically a result of dust or similar materials building up on the PV module surface, which would potentially reduce the reflection.

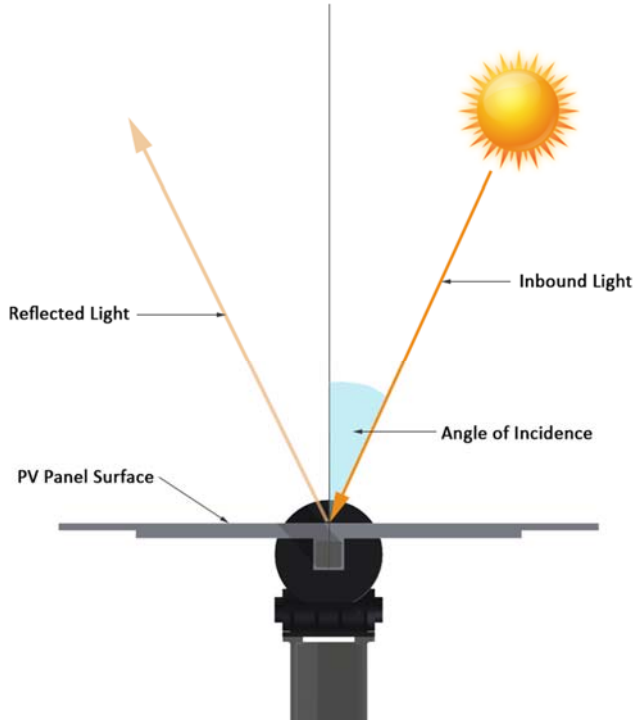


Figure 3. Angle of Incidence Relative to PV Panel Surface

[4] Sandia National Laboratory, SGHAT Technical Manual
[5] *Ho, C. 2013 Relieving a Glare Problem*

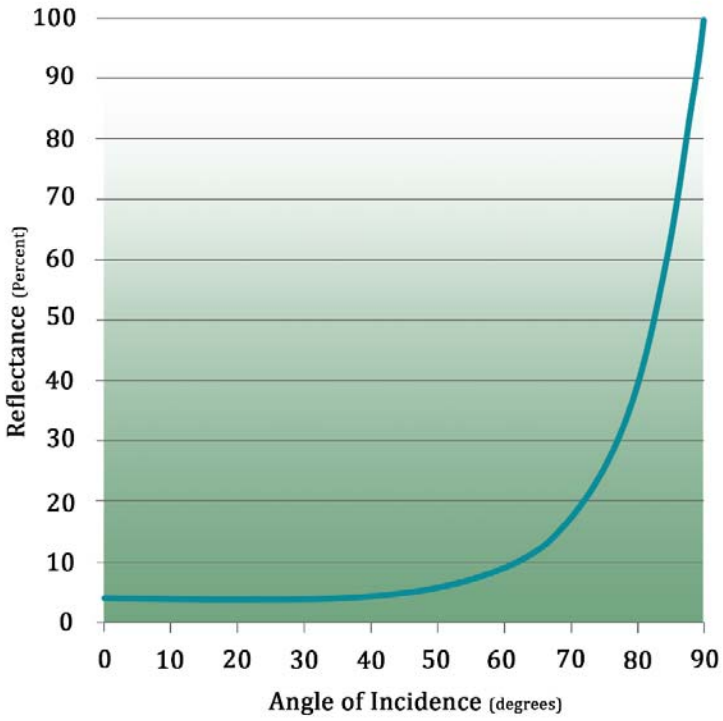


Figure 4. Angles of Incidence and Increased Levels of Reflected Light (Glass (n-1.5))

The sun changes its east-west orientation throughout the day, and the sun's north-south position in the sky changes throughout the year. The sun reaches its highest position at noon on the Summer Solstice (21 December in the Southern Hemisphere) and its lowest position at sunrise and sunset on the Winter Solstice (21 June in the Southern Hemisphere).

In a fixed PV solar array, the angle of incidence varies as the sun moves across the sky, that is the angle of incidence are at their lowest around noon where the sun is directly overhead, and increase in the early mornings and late evenings as the incidence angles increase. If the PV array is mounted on a tracking system, this variation is reduced because the panel is rotated to remain perpendicular to the sun. Therefore a PV modular array using a tracking system has less potential to cause glare whilst it tracks the sun. *Figure 5* illustrates a PV module mounted horizontal single axis tracking system following the east to west path of the sun.

A single axis tracking system has a fixed maximum angle of rotation, once the tracking mechanism reaches this maximum angle, the PV modules position relative to the sun becomes fixed and therefore the angle of incidence increases and the potential for glare increases. Some tracking systems utilise 'backtracking' to avoid PV modules over-shadowing each other. During the backtracking procedure (early morning and late afternoon) the tracking system begins to rotate away from the sun to reduce shadow casting to adjoining PV panels. During the backtracking phase, higher angles of incidence will occur in comparison to the tracking phase, and this may increase the potential for glare.

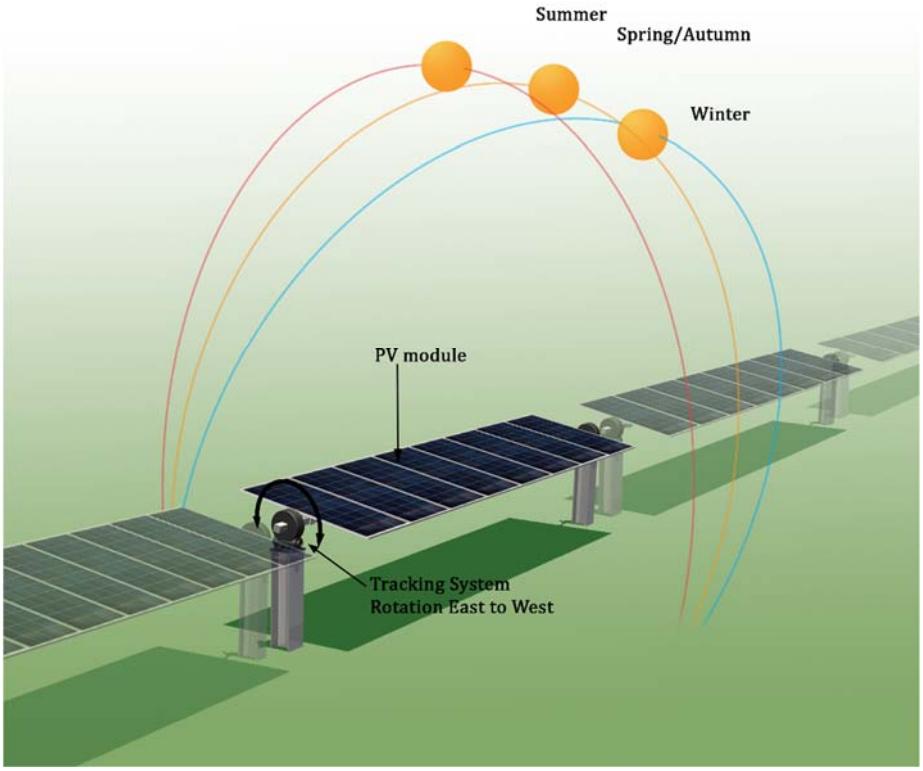


Figure 5. Diagrammatic illustration of sun position relative to PV module mounted on a horizontal single axis tracking system.

3.5. Viewshed Analysis

A desktop viewshed analysis was undertaken using ArcGIS 3D modelling. The extent of visibility of the proposed solar farm was assessed relative to the location of sensitive receptors (dwellings, roads, etc.) The desktop viewshed analysis is based on topography only and does not take into consideration vegetation. A detailed site assessment of visibility was undertaken as part of the Visual Impact Assessment for the Project and this information has been utilised as the basis for analysing potential glare hazard in conjunction with solar hazard assessment software.

3.6. Solar Glare Hazard Analysis

This assessment has utilised the Solar Glare Hazard Analysis Tool (SGHAT 3.0) co-developed by Sandi National Laboratory[6] and ForgeSolar (Sim Industries) (referred to as GlareGauge) to assess potential glare utilising latitude and longitudinal coordinates, elevation, sun position, and vector calculations. The PV module orientation, reflectance environment and ocular factors are also considered by the software. If potential glare is identified by the model, the tool calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular hazards according to the glare intensity categories (refer *Section 3.3*).

The sun position algorithm used by SGHAT calculates the sun position in two forms: first as a unit vector extending from the Cartesian origin toward the sun, and second as azimuthal and altitudinal

[6] https://share.sandia.gov/phlux/static/references/glint-glare/SGHAT_Technical_Reference-v5.pdf

angles. The algorithm enables determination of the sun position at one (1) minute intervals throughout the year.

The SGHAT is a high level tool and does not take into consideration the following factors:

- Backtracking or the effect of shading in relation to the PV array tracking system;
- Gaps between PV modules;
- Atmospheric conditions; and
- Vegetation between the solar panels and the viewer (sensitive receptor).

SGHAT has been used extensively in the United States to assess the potential impact of solar arrays located in close proximity to airports. The US Federal Aviation Administration requires the use of SGHAT to demonstrated compliance with the safety requirements of all proposed solar energy systems located at federally obligated airports. Used in conjunction with a viewshed analysis, the two tools represent a conservative assessment.

3.7. Risk Assessment

Once the potential for glare has been identified through the viewshed analysis and SGHAT, a risk assessment approach is used to identify the potential significance of the hazard based on the magnitude of the glare hazard generated, distance from the Project, existing vegetation, and the sensitivity of the receptors (viewers). Mitigation measures are then considered to avoid, reduce or managed the identified risks.

4. EXISTING CONDITIONS

The baseline is a statement of the characteristics which currently exist in the Project area. The baseline glare condition assessment takes into consideration the following:

- Characteristics of the environment that may affect the potential for glare;
- Land use and human modifications to the landscape such as roads, buildings, and existing infrastructure, which may influence glare and sensitivity to glare.

4.1. Baseline Conditions

The baseline conditions within the vicinity of the Project site are characteristic of a rural landscape; generally cleared grazing land in the valleys and vegetated hill slopes. The Byron Resource Recovery Centre located to the east of the Project site consists of highly disturbed areas used for waste recycling, reuse, and disposal; these areas are largely screened from external views by existing vegetation. The majority of remnant vegetation on low lying land has been cleared as a result of past agricultural practices, some areas of native vegetation remain along creek lines. The surrounding hills and ridges generally remain wooded with some areas supporting orchard plantations.

Existing dwellings in the area include rural and large lot residential properties, in general these are surrounded by existing trees both native and introduced species.

Constructed elements within the landscape include the resource recovery centre, rural buildings, residential dwellings, and infrastructure (roads, transmission lines, and a communications tower).

There are no significant existing features in the landscape with the potential to contribute to glare.

4.2. Atmospheric Conditions

Atmospheric conditions such as cloud cover, dust and haze will impact light reflection, however these factors have not been accounted for in this glare assessment. The Bureau of Meteorology statistics for Byron Bay (Cape Byron Lighthouse) 13.7 km from the Project site (the closest BOM records for cloud cover statistics) recorded 112 cloudy days per year (mean number over the period 1957 to 2007)[7]. Cloudy days predominately occur during the summer months, December to March. Since atmospheric conditions have not been factored into this assessment modelling, statistically the glare potential represents a conservative assessment.

5. PROJECT DESCRIPTION

The general layout of the solar farm is as show in *Figure 6.* The main elements of the Solar Farm with the potential to influence glare are the tilt, orientation, and optical properties of the PV modules in the solar array, and in the case of the tracking system option, the rotational capabilities of that system. Whilst specific products are yet to be determined for the Project, the general technical properties of the main elements influencing glare are described below.

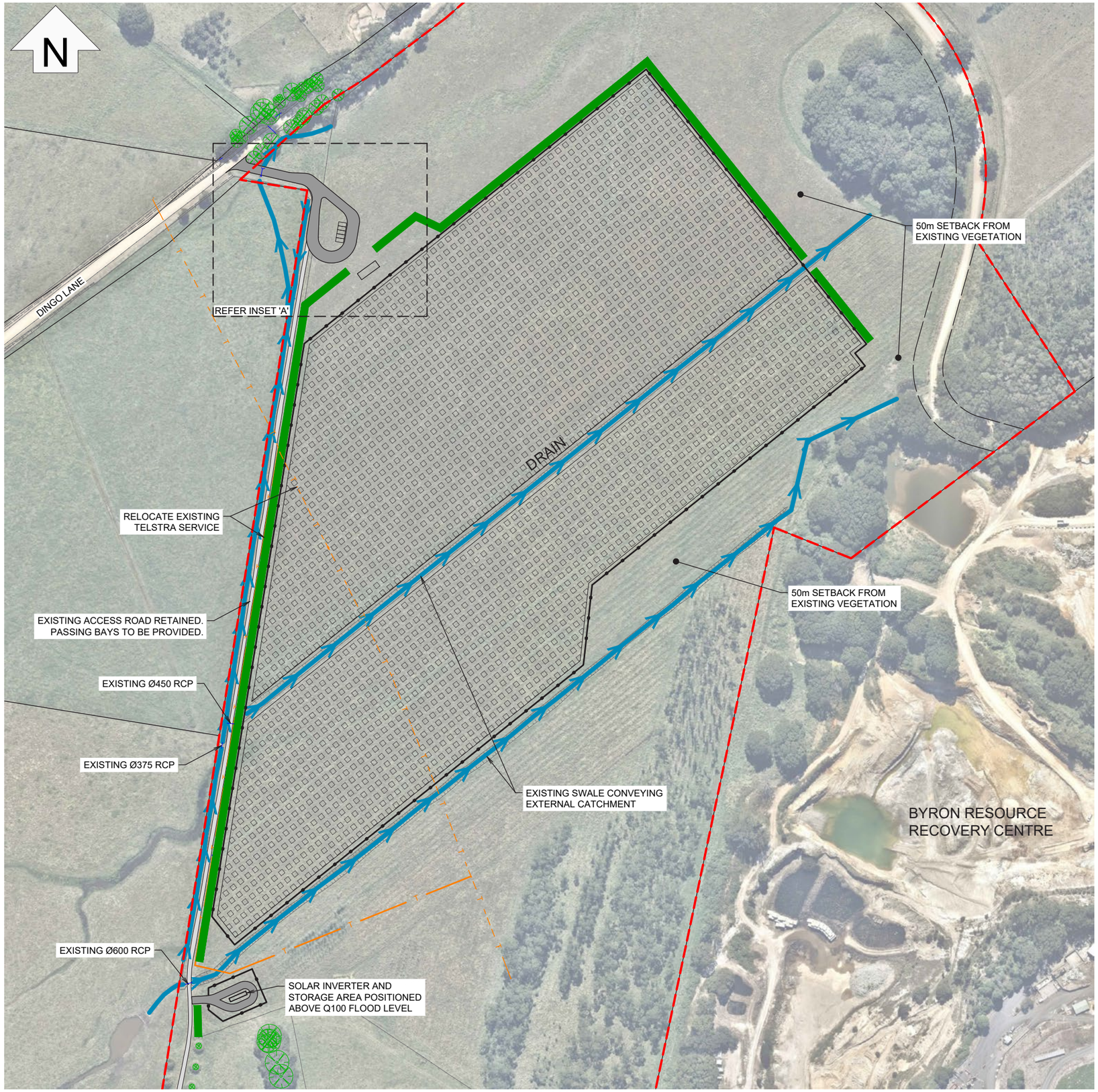
5.1. PV modules

Each PV panel typically comprises of 72 polycrystalline silicon solar cells overlayed by a 3.2 to 4.0 mm tempered glass front and held in an anodised aluminium alloy frame. Half cut cell technology is also available which consists of 144 monocrystalline cells connected in series to reduce ribbon resistant. Dual-glass and frameless PV systems area also available. The approximate dimensions for a typical solar panel is 2 metres x 1 metre. The proposed solar array arrangement for this Project is 2 solar panels in portrait, resulting in an array width of approximately 4.05 metres.

5.2. Fixed Frame System

This study assessed the potential glare impacts of a fixed tilt system in which the PV panels are supported by a frame at a fixed angle. The zenith tilt angle of the panels was set at 20 degrees, that is, the panels are tilted to the north at 20 degrees where 0 degrees is parallel to the ground. The panels were assumed to face true north. The maximum height of the PV modules above natural ground is anticipated to be 1.8 metres, a height of 2 metres was used in the model to allow for any slight variation.

[7] http://www.bom.gov.au/climate/averages/tables/cw_058009.shtml



PLAN

SCALE 1:2,000

SOURCE:
PLANIT CONSULTING
SK0001 - A

ENVIRONMENTAL ETHOS

N

DATUM GDA 1994,
PROJECTION MGA ZONE 56

SCALE 1:2,000 @ A1

LEGEND

- SITE BOUNDARY
- PROPERTY BOUNDARY
- EXISTING SWALE
- EXISTING ROAD
- SOLAR ARRAY AREA (11ha)
- ROAD
- SECURITY FENCE
- LANDSCAPE SCREENING
- EXISTING TELSTRA SERVCE
- TELSTRA SERVICE DIVERSION

NOTES:

SOLAR ARRAY AREA ASSUMPTIONS:
- 5m SPACING BETWEEN PANEL ROWS
- SURFACE TO BE NAVIGABLE BY LIGHT VEHICLE FOR MAINTENANCE

PROJECT NO. 19010
CREATED BY: SC
DATE: 06 12 2019

FINAL ISSUE
VERSION: B

DINGO LANE SOLAR FARM

GLARE IMPACT ASSESSMENT

PROJECT LAYOUT PLAN

FIGURE 6.0

Photo 1. Example of a typical fixed tilt system

5.3. Horizontal single axis tracking system

A horizontal single axis tracking system was also considered in the modelling as an optional alternative to a fixed frame system. A horizontal single axis tracking system rotates the PV panels across an east to west arc, following the sun's trajectory across the sky. The purpose of the tracking system is to optimize solar energy collection by holding the PV module perpendicular to the sun. The tracking system is capable of a maximum rotation range of 90^{o} (+/- 45^{o}) or 120^{o} (+/- 60^{o}) depending on the system used. The Project modelling utilised a rotation range of 120^{o} (+/- 60^{o}), refer *Figure 7.*

The zenith tilt angle of the panels was assumed to be set at zero, that is, the panels are not tilted on a north – south alignment but remain horizontal along the plane of the tracker. This enables the height of the panel to remain consistent relative to each other and avoids potential over shadowing.

The maximum height of the PV modules above natural ground was assumed to be up to 3 metres, a height of 3 metres was used in the modelling. The glare assessment modelling uses an analytical approach to simulate light reflection from a planar PV footprint relative to the location of sensitive receptors. By using the maximum height above ground, the model represents a worst case scenario since the panels are considered likely to be slightly lower than the maximum.

The configuration of the tracking system rows vary slightly dependent on the type of system used, generally rows are approximately 5-6 metres apart.

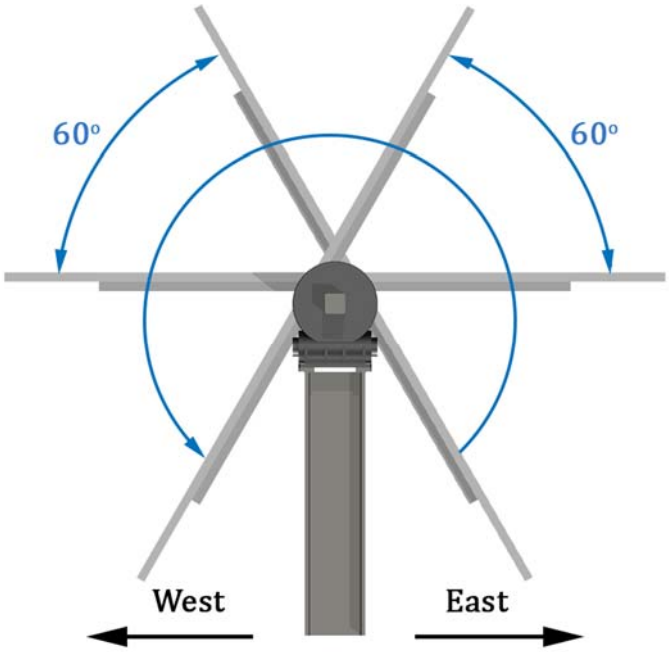


Figure 7. Illustration of PV Module Rotation Angles

Plate 2. Example of a typical frameless solar array mounted on a single axis tracking system[8]

5.4. Solar Inverters, Control Room, and Fencing

The proposed solar farm will also include solar inverters, a control/switch building, and perimeter fencing. These elements are not considered likely to influence glare as they generally comprise of non-reflective surfaces typically found in the built environment.

[8] Source: http://solarbuildermag.com/featured/frameless-modules-mount/

6. DESKTOP GLARE ASSESSMENT

The aim of the desktop glare assessment is to identify if any sensitive receptors have the potential to be impacted by glare. The software modelling systems used in the desktop assessment include viewshed modelling to identify the location of sensitive receptors with line of sight to the solar farm, and the SGHAT to identify the potential and ocular significance of glare.

6.1. Viewshed Analysis

The results of the viewshed analysis (based on topography) is shown in *Figure 8.*

Contour information (contours at 10 m intervals) was assessed and shows the Project site is located at the base of a valley surrounded by hills and ridges. These hills and ridges constrain views into the site from the north, south and east. The valley extends west to a ridgeline approximately 4km from the Project site.

Solar Farms are characterised by their low horizontal profile. The major elements of a solar farm are the PV arrays (PV panels and supporting structures), these are generally 3 to 4 metres above ground level. In this study a maximum height of 3 metres above ground level was used in the modelling. At distances greater than 1 km a 3 metre high horizontal object in the landscape becomes visually insignificant (perceived as a narrow line in the distance) when viewed across a flat plain. Where viewpoints are elevated above the plane of a solar farm, such as when the project is located in a valley surrounded by hills and ridges, these elevated locations provide vantage points and increase potential visibility.

The potential risk of glare hazard generated by solar farms generally focuses on sensitive receptors within 1km of the facility[9]. Sensitive receptors located in elevated positions beyond 1km from a solar farm also have the potential to be effected by glare impacts, however the magnitude of this potential impact decreases over distance from the project. This study focused on sensitive receptors within 2km of the solar farm, extending to 4km for sensitive receptors located in elevated locations within the viewshed.

The viewshed analysis in this study has utilised the detailed visibility assessment undertaken in the *Visual Impact Assessment* [10] to confirm screening provided by topographic features, and the screening potential of existing vegetation.

The results of the viewshed analysis are summarised below:

- The desktop and site assessment confirm visibility of the Project is restricted to the south and east by ridgelines and existing vegetation.
- Large lot residential areas to the north west of the Project site are substantially screened by existing vegetation.
- Visibility of the site from properties to the north are restricted to south facing slopes and also largely screened by existing vegetation.

[9] The State of Victoria Department of Environment, Land, Water and Planning 2019, Solar Energy Facilities Design and Development Guidelines

[10] Environmental Ethos, October 2020, Dingo Lane Solar Farm Visual Impact Assessment

ENVIRONMENTAL ETHOS

N

DATUM GDA 1994,
PROJECTION MGA ZONE 56

0 0.25 0.5 1 Kilometers

SCALE 1:25,000 @ A3

LEGEND

- PV ARRAYS
- SITE BOUNDARY
- DISTANCE FROM PROJECT
- DWELLING (no impact identified)
- DWELLING (potential glare impact)
- RIDGELINES

Least Visible

ZONE OF THEORETICAL VISIBILITY*

Most Visible

*(Analysis based on Digital Terrain Model)

PROJECT No. 19010	DRAFT ISSUE
CREATED BY: SC	VERSION: **B**
DATE: 10 01 2020	

DINGO LANE SOLAR FARM

GLARE IMPACT ASSESSMENT

VIEWSHED ANALYSIS

FIGURE **8.0**

- Visibility of the site to the west extends along the valley to the ridgeline at approximately 4km from the Project site. Visibility is interrupted in places due to undulations in topography.
- 116 dwellings were assessed in the glare modelling. 67 dwellings within the 2km of the Project site, and an additional 49 properties in elevated locations along the western ridgeline, and to the east of the site. In some cases the visibility analysis identified some properties may not have line of sight to the Project due to existing vegetation, however these were included in the glare model as a worst case scenario. The properties, including rural and rural residential dwellings, are as follows:
    - Four (4) rural dwellings within 500 metres of the Project site (OP1-OP4) may have views of the Project, these are mainly located on the north facing slope of the ridgeline to the south of the Project site. Existing vegetation will provide screening to some of these properties.
    - 16 dwellings located within 1km of the Project site (OP5 to OP20) were assessed in the glare modelling, the majority of these dwellings are located on the south facing slopes of hills to the north of the Project site, and to the west. Existing vegetation will provide screening to many of these properties.
    - 47 dwellings located between 1km and 2km from the Project site (OP21 to OP67) were assessed in the modelling, the majority of these dwellings are located to the north and west of the Project site. Existing vegetation will provide screening to many of these properties.
    - 49 dwellings located between 2km and 4km from the Project site (RP1 to RP49) were assessed in the modelling, the majority of these dwellings are located along the ridgeline to the west of the Project site. A small number of dwelling (6) were also assessed to the east of the Project site. Existing vegetation will provide screening to many of these properties.
- A number of local roads are located within the viewshed, visibility of the Project site is generally restricted due to topography and existing vegetation as follows:
    - Dingo Lane – adjoins project site, has views to the site
    - Myocum Road – views to site for a section between Myocum Downs Road and The Manse Road
    - The Manse Road – limited views between Myocum Road and Kingsvale Road
    - Myocum Ridge Road – has partial views of the site
    - Kingsvale Road – Project site not visible
    - Myocum Downs Drive – Project site not visible
    - Lagoon Drive– Project site not visible
    - McAuleys Road– Project site not visible
    - Bilin Road– Project site not visible

- Coolamon Scenic Drive – limited views of the Project site in the far distance

The potential glare hazard impact for identified rural and residential dwellings, and surrounding local roads with views to the site has been assessed in *Section 6.2.*

6.2. Solar Glare Hazard Analysis

The parameters used in the SGHAT model are detailed in *Tables 1 and 2.*

Table 1. Input data for SGHAT Analysis – Fixed Frame System

SGHAT Model Parameters	Values
Time Zone	UTC +10
Axis Tracking	Fixed (no rotation)
Tilt	20 degrees
Orientation of tracking axis	0
Offset angle of module	0
Module Surface material	Smooth glass without anti-reflective coating (ARC)
Reflectivity	Vary with sun
Correlate slope error with surface type?	Yes
Slope error	6.55mrad
Height of panels above ground	2 m maximum height

Table 2. Input data for SGHAT Analysis – Horizontal Single Axis Tracking System

SGHAT Model Parameters	Values
Time Zone	UTC +10
Axis Tracking	Horizontal Single Axis
Tilt of tracking axis	0
Orientation of tracking axis	0
Offset angle of module	0
Module Surface material	Smooth glass without anti-reflective coating (ARC)
Maximum tracking angle	60
Resting angles	60, 45 & 5
Reflectivity	Vary with sun
Correlate slope error with surface type?	Yes
Slope error	6.55mrad
Height of panels above ground	3m maximum height

The assessment outcomes for the SGHAT are detailed in *Appendix A to D*, and outlined in *Tables 3 and 4.*

Table 3. SGHAT Assessment Results – Fixed Frame System

Sensitive Receptor	Glare Potential
Observation Points (OP) 1 to 5, 11 to 23, and 35 to 47 Rural and Residential Dwellings	No Glare
Observation Point 6 – Rural Dwelling	Glare Potential – refer table 5
Observation Point 7 to 10 – Large Lot Residential	Glare Potential – refer table 5
Observation Point 24 to 34 – Large Lot Residential	Glare Potential – refer table 5
Observation Point 48 to 50 – Large Lot Residential	Glare Potential – refer table 5
Observation Point 52 to 67 – Rural Dwellings	Glare Potential – refer table 5
Ridgeline Points 8, 15 to 17, and 25 to 43 - Rural and Residential Dwellings	No Glare
Ridgeline Points (RP) 1 to 7 - Rural and Residential Dwellings	Glare Potential – refer table 5
Ridgeline Points 9 to 14 Rural and Residential Dwellings	Glare Potential – refer table 5
Ridgeline Points 18 to 24 Rural and Residential Dwellings	Glare Potential – refer table 5
Ridgeline Points 44 to 49 Rural and Residential Dwellings	Glare Potential – refer table 5
Route 1 – Dingo Lane	Glare Potential – refer table 5
Route 2 – Myocum Ridge Road	No Glare
Route 3 – Myocum road	Glare Potential – refer table 5
Route 4 – The Manse Road	No Glare
Route 5 – Bilin Road	Glare Potential – refer table 5
Route 6 - Coolamon Scenic Drive (North)	Glare Potential – refer table 5
Route 7 - Coolamon Scenic Drive (South)	No Glare
Route 8 – Lagoon Drive	Glare Potential – refer table 5
Route 9 – McAuleys Road	Glare Potential – refer table 5
Route 10 – Myocum Downs Road	Glare Potential – refer table 5

Table 4. SGHAT Assessment Results – Horizontal Single Axis Tracking System

Sensitive Receptor	Glare Potential
Observation Points 01 to 67 Rural and Residential Dwellings	No Glare
Ridgeline Points 01 to 49 Rural and Residential Dwellings	No Glare
Route 1 – Dingo Lane	No Glare
Route 2 – Myocum Ridge Road	No Glare
Route 3 – Myocum road	No Glare
Route 4 – The Manse Road	No Glare
Route 5 – Bilin Road	No Glare
Route 6 – Coolamon Scenic Drive (North)	No Glare

Sensitive Receptor	Glare Potential
Route 7 – Coolamon Scenic Drive (South)	No Glare
Route 8 – Lagoon Drive	No Glare
Route 9 – McAuleys Road	No Glare
Route 10 – Myocum Downs Road	No Glare

7. POTENTIAL IMPACTS

7.1. Solar Glare Hazard Analysis Tool (SGHAT) Results

The SGHAT modelling found potential glare hazard may occur as a result of the Project when utilising a fixed frame system. SGHAT modelling identified potentially 35 affected rural and large lot residential dwellings; five (5) within 1km of the Project site, and 30 between 1 and 2km from the site. Most of the affected properties are located to the west of the Project and glare hazard potential occurs in the early morning. A smaller number of affected properties are located to the east and these are potentially impacted by glare during the late afternoon, *refer Appendix A*.

SGHAT modelling also identified an additional 27 potentially affected rural and large lot residential dwellings between 2 and 4km from the site. Most of the affected properties are located on the ridgeline to the west of the Project and glare hazard potential occurs in the early morning. A smaller number of affected properties are also located to the east and these are potentially impacted by glare during the late afternoon, *refer Appendix B*.

SGHAT modelling was undertaken for 10 routes within the vicinity of the Project site, seven (7) of the routes were identified in the modelling as potentially affected by glare hazard, *refer Appendix C*. Many of these roads are lined by vegetation which will mitigate potential glare, *refer Table 5*.

No glare potential was found when the PV modules are mounted on a single axis tracking system, refer *Appendix D*. An assumed backtracking procedure was include in the modelling, details are provided in *Section 7.2*.

A summary of the potential glare hazard risk identified in the SGHAT modelling for the fixed frame system, together with existing mitigation factors, such as minor variations in topography, existing vegetation, and distance from the site, are outline in *Table 5*. The proposed screen plantings detailed in the Statement of Landscape Intent[11], are also considered in relation to the ability to mitigate potential risk of glare hazard in the future.

Table 5. Glare potential risk assessment for fixed tilt system

Sensitive Receptor	Distance from glare source	Glare Potential (based on topography)	Mitigation factors (existing and proposed)	Risk of glare hazard prior to screen planting	Risk of glare hazard after screen planting established
OP6 Large Lot Residential	500m – 1km	Glare Potential (Yellow) Early morning	Existing vegetation around dwelling and along intervening creek line – likely to provide partial screening	Low- potential for small amount of glare, amenity risk is low.	Negligible

[11] Planit Consulting, 2020, Dingo Lane Solar Farm – Statement of Landscape Intent

Sensitive Receptor	Distance from glare source	Glare Potential (based on topography)	Mitigation factors (existing and proposed)	Risk of glare hazard prior to screen planting	Risk of glare hazard after screen planting established
			Proposed landscape screening will mitigation potential glare once established.		
OP7 to OP10 Large Lot Residential	500m – 1km	Glare Potential (Yellow) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
OP24 to OP34 Large Lot Residential	1km – 1.5km	Glare Potential (Yellow) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
OP48 to OP50 Large Lot Residential	1.5km - 2km	Glare Potential (Yellow) Late afternoon	Existing vegetation provides screening to the Project	Negligible	Negligible
OP52 to OP67 Large Lot Residential	1.5km - 2km	Glare Potential (Yellow) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
RP1 to RP12 Large Lot Residential and Rural	2km – 4km	Glare Potential (Green and Yellow) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
RP13 and RP14 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation may provide partial screening to the Project Proposed landscape screening will mitigation potential glare once established.	Low	Negligible
RP18 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation may provide partial screening to the Project Proposed landscape screening will mitigation potential glare once established.	Low	Negligible
RP19 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
RP20 and RP21 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation may provide partial screening to the Project Proposed landscape screening will mitigation potential glare once established.	Low	Negligible
RP22 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
RP23 and RP24 Rural	2km – 4km	Glare Potential (Low level green glare) Early morning	Existing vegetation may provide partial screening to the Project	Low	Negligible

Sensitive Receptor	Distance from glare source	Glare Potential (based on topography)	Mitigation factors (existing and proposed)	Risk of glare hazard prior to screen planting	Risk of glare hazard after screen planting established
			Proposed landscape screening will mitigation potential glare once established.		
RP44 to RP49 Large Lot Residential	2km – 4km	Glare Potential (Low amounts of yellow glare) Late afternoon	Existing vegetation provides screening to the Project	Negligible	Negligible
Dingo Lane	<500m	Glare Potential (Yellow) Early morning and late afternoon	Existing vegetation will provide only limited screening. Proposed landscape screening will mitigation potential glare once established.	High	Negligible
Myocum road	500m – 1km	Glare Potential (Low amounts of yellow glare) Early morning	Existing vegetation will provide partial screening. Proposed landscape screening will mitigation potential glare once established.	Moderate	Negligible
Bilin Road	500m – 1km	Glare Potential (Low amounts of yellow glare) Late afternoon	Existing vegetation provides screening to the Project	Negligible	Negligible
Coolamon Scenic Drive (North)	2km – 4km	Glare Potential (Low amounts of green and yellow glare) Early morning	Existing vegetation will provide partial screening. Proposed landscape screening will mitigation potential glare once established.	Low	Negligible
Lagoon Road	1km – 1.5km	Glare Potential (Low amounts of yellow glare) Early morning	Existing vegetation provides screening to the Project	Negligible	Negligible
McAuley's Road	500m – 1km	Glare Potential (Low amounts of yellow glare) Late afternoon	Existing vegetation provides screening to the Project	Negligible	Negligible
Myocum Downs Road	500m – 1km	Glare Potential (Low amounts of yellow glare) Late afternoon	Existing vegetation provides screening to the Project	Negligible	Negligible

Yellow = Glare with potential to cause temporary after-image

Green = Glare with potential to cause temporary after-image

7.2. Backtracking Operations

A single axis horizontal tracking system can be programed to operate a 'backtracking' procedure (*refer section 3.4*), that is, during the early morning and late afternoon when the sun is low in the sky, the tracking system can adjust the panels to maximise solar capture whilst minimising overshadowing. There are several backtracking algorithms developed for this purpose, with each

system optimised dependent on the distance between panels, the width of each panel, the incidence angle of the sun, and the field slope angle.

The assumed backtracking procedure for the modelling is as follows:

- Maximum tracking angle – 60 degrees
- Backtracking angle to 45 degrees
- Stow angle (after dark) 5 degrees

When the tracking system is operating a backtracking procedure, variable angles of incidence of the sun relative to the panels may occur and this variation is not currently modelled by SGHAT software. SGHAT 3.0 does however include a 'resting angle' feature which models the effect of the panels reverting (resting) to a specified angle once the maximum tilt angle is reached. Modelling resting angles is not a true representation of how a backtracking procedure would operate under normal circumstances. However, the 'resting angle' feature does provide some indication of the potential glare implications of moving the PV panels away from the sun once the maximum tilt is reach. Various resting angles were tested in the model to provide some assessment of potential glare risk, the results of this assessment are presented in *Table 6 and Appendix D.*

Table 6. SGHAT Assessment Results – Resting Angle Analysis

Sensitive Receptor	Resting Angle 45 degrees *- Glare Potential	Stowing Angle 5 degrees **- Glare Potential
Rural and residential Dwellings	No Glare – all dwellings	No Glare – all dwellings
Route 1 – Dingo Lane	No Glare	No Glare
Route 2 – Myocum Ridge Road	No Glare	No Glare
Route 3 – Myocum road	No Glare	No Glare
Route 4 – The Manse Road	No Glare	No Glare
Route 5 – Bilin Road	No Glare	No Glare
Route 6 – Coolamon Scenic Drive (North)	No Glare	No Glare
Route 7 – Coolamon Scenic Drive (South)	No Glare	No Glare
Route 8 – Lagoon Drive	No Glare	No Glare
Route 9 – McAuleys Road	No Glare	No Glare
Route 10 – Myocum Downs Road	No Glare	No Glare

*Modelling is based on the PV panels moving directly to 45 degrees once maximum tilt of 60 degrees is reached, in reality this process would track gradually, therefore this represents a worst case scenario.

*Modelling is based on the PV panels moving directly to 5 degrees once maximum tracking of 60 degrees is reached, in reality this process would track gradually, therefore this represents a worst case scenario.

8. MANAGEMENT AND MITIGATION MEASURES

Dingo Lane, a gravel access road located to the north and north-west of the Project site, is currently only partially screened by existing vegetation and glare hazard potential was identified along this travel path. The glare model identified potential glare hazard may occur (when using a fixed frame system) during late spring to early autumn (October to April), for approximately 1 hour in the morning (6am to 7am) and approximately 1 hour in the late afternoon (5pm to 6pm). In addition, a

small amount of glare hazard was identified as potentially affecting part of Myocum Road, and also Coolamon Scenic Drive (north).

In order to mitigate potential glare impacts on Dingo Lane, Myocum Road and Coolamon Scenic Drive, a vegetated landscape buffer along the Project site's northern and western boundaries is recommended. The Project's Statement of Landscape Intent currently details screen planting in these locations, which is considered sufficient to mitigate potential glare hazard once established. Planting should be maintained to achieve the required height and density, and managed for the life of the Project.

In relation to the mitigation of potential glare hazard affecting the property identified as OP6, and properties on the ridgeline to the west of the Project site (identified as RP13, RP14, RP18, RP20, RP21, RP23 and RP24), the proposed screen planting on the western boundary of the Project, once established, will screen these properties reducing the potential risk of glare to negligible.

9. SUMMARY

In summary, based on the assumptions and parameters of this desktop assessment, the following results were identified:

- The viewshed analysis identified limited visibility of the Project site from the north, south and east due to ridgelines blocking views from these directions.
- The Project is visible from the ridgeline to the west of the site.
- Existing vegetation, along creek lines, on hill slopes, and surrounding large lot residential areas, substantially screen views to the Project site.
- Glare modelling was undertaken for 116 dwellings and 10 roads within 4 km of the Project site.
- No glare potential was identified in the assessment modelling when the Project utilises a single axis tracking system, including during a (standard) backtracking operation.
- One (1) dwelling within 1km of the Project site and seven (7) dwellings on the ridgeline to the west were identified in the glare modelling with potential to be affected by glare when the Project utilises a Fixed Frame System.
- Dingo Lane, and to a lesser extent Myocum Road and Coolamon Scenic Drive (north), were identified in the modelling as potentially affected by glare when a Fixed Frame System is used.
- A recommended of this report is to establish vegetated landscape buffers along the Project site's northern and western boundaries as detailed in the Statement of Landscape Intent, to mitigate glare potential identified in the modelling when using a Fixed Frame System.
- Vegetation screening should be established prior to the operation of the Solar Farm, and managed and maintained for the life of the Project, in order to avoid the risk of glare impacting travellers along Dingo Lane, Myocum Road, and Coolamon Scenic Drive.
- Vegetation screening will also mitigate the potential impact of glare on the amenity of the eight (8) residential properties identified in this assessment.

APPENDIX A:

SOLAR GLARE HAZARD ANALYSIS – FIXED FRAME SYSTEM DWELLINGS WITHIN 2KM

ForgeSolar

Site Configuration: DingoLaneSF_2020_Ops

Myocum, NSW

Created **Sept. 20, 2020 8:06 p.m.**
Updated **Sept. 28, 2020 7:34 a.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43488.6245

Summary of Results Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	20.0	0.0	605	56,280	-
PV array 2	20.0	0.0	654	28,978	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,233 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585558	153.506564	5.97	2.00	7.97
2	-28.584173	153.508790	5.00	2.00	7.00
3	-28.585337	153.509788	7.94	2.00	9.94
4	-28.586100	153.508731	5.85	2.00	7.85
5	-28.587951	153.506151	6.36	2.00	8.36

Name: PV array 2
Description: Central section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,763 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588160	153.506129	6.23	2.00	8.23
2	-28.585437	153.509917	7.81	2.00	9.81
3	-28.585843	153.510255	7.74	2.00	9.74
4	-28.585937	153.510142	7.43	2.00	9.43
5	-28.586059	153.510252	8.22	2.00	10.22
6	-28.587543	153.508254	5.75	2.00	7.75
7	-28.587885	153.508163	5.46	2.00	7.46
8	-28.589394	153.505990	6.82	2.00	8.82
9	-28.589305	153.505891	6.43	0.00	6.43

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.593460	153.503778	41.29	1.50	42.79
OP 2	-28.593828	153.506122	57.28	1.50	58.78
OP 3	-28.593988	153.512023	48.98	1.50	50.48
OP 4	-28.592500	153.514104	55.73	1.50	57.23
OP 5	-28.592434	153.500930	12.23	1.50	13.73
OP 6	-28.586404	153.497894	15.63	1.50	17.13
OP 7	-28.585698	153.498988	17.66	1.50	19.16
OP 8	-28.585463	153.497203	20.74	1.50	22.24
OP 9	-28.585247	153.496559	22.55	1.50	24.05
OP 10	-28.584625	153.497010	21.54	1.50	23.04
OP 11	-28.580969	153.503264	11.87	1.50	13.37
OP 12	-28.578633	153.500561	14.86	1.50	16.36
OP 13	-28.577917	153.504037	23.06	1.50	24.56
OP 14	-28.578407	153.505324	12.17	1.50	13.67
OP 15	-28.579980	153.507041	13.42	1.50	14.92
OP 16	-28.577634	153.506955	18.07	1.50	19.57
OP 17	-28.578350	153.508468	25.41	1.50	26.91
OP 18	-28.580602	153.510485	22.21	1.50	23.71
OP 19	-28.579924	153.513006	10.98	1.50	12.48
OP 20	-28.577540	153.514004	28.59	1.50	30.09
OP 21	-28.599198	153.498495	32.23	1.50	33.73
OP 22	-28.594017	153.496591	15.96	1.50	17.46
OP 23	-28.595284	153.492101	28.42	1.50	29.92
OP 24	-28.586033	153.494976	15.50	1.50	17.00
OP 25	-28.585303	153.494054	21.49	1.50	22.99
OP 26	-28.585680	153.492986	22.87	1.50	24.37
OP 27	-28.586726	153.492895	18.76	1.50	20.26
OP 28	-28.586010	153.492176	21.72	1.50	23.22
OP 29	-28.586057	153.491538	22.62	1.50	24.12
OP 30	-28.585468	153.491216	21.88	1.50	23.38
OP 31	-28.581021	153.496108	14.99	1.50	16.49
OP 32	-28.578835	153.495690	20.04	1.50	21.54
OP 33	-28.579985	153.492761	26.73	1.50	28.23
OP 34	-28.578101	153.493823	33.66	1.50	35.16
OP 35	-28.577893	153.495304	34.17	1.50	35.67
OP 36	-28.576386	153.513499	37.35	1.50	38.85
OP 37	-28.576273	153.514342	41.54	1.50	43.04
OP 38	-28.575533	153.514100	50.08	1.50	51.58
OP 39	-28.574699	153.513183	45.47	1.50	46.97
OP 40	-28.575175	153.514717	47.62	1.50	49.12
OP 41	-28.574687	153.515519	52.14	1.50	53.64
OP 42	-28.574669	153.516238	57.65	1.50	59.15
OP 43	-28.574793	153.516865	61.60	1.50	63.10
OP 44	-28.578041	153.515971	10.94	1.50	12.44
OP 45	-28.577767	153.520215	18.03	1.50	19.53
OP 46	-28.573009	153.522403	61.12	1.50	62.62
OP 47	-28.576203	153.526287	34.17	1.50	35.67
OP 48	-28.577108	153.526609	28.49	1.50	29.99
OP 49	-28.577541	153.527381	31.27	1.50	32.77
OP 50	-28.578399	153.525118	11.88	1.50	13.38
OP 51	-28.597266	153.489739	30.23	1.50	31.73
OP 52	-28.587381	153.487593	24.14	1.50	25.64
OP 53	-28.586076	153.490093	26.09	1.50	27.59
OP 54	-28.586114	153.487915	31.35	1.50	32.85
OP 55	-28.585600	153.487185	32.39	1.50	33.89
OP 56	-28.586976	153.491246	19.33	1.50	20.83
OP 57	-28.584941	153.486938	29.01	1.50	30.51

OP 58	-28.585610	153.486418	29.51	1.50	31.01
OP 59	-28.581275	153.490131	16.83	1.50	18.33
OP 60	-28.580935	153.490678	17.95	1.50	19.45
OP 61	-28.580766	153.489498	19.81	1.50	21.31
OP 62	-28.581129	153.487025	20.54	1.50	22.04
OP 63	-28.580069	153.486998	30.58	1.50	32.08
OP 64	-28.579503	153.487926	36.09	1.50	37.59
OP 65	-28.579616	153.489168	33.40	1.50	34.90
OP 66	-28.580055	153.489921	26.16	1.50	27.66
OP 67	-28.578542	153.492585	34.21	1.50	35.71

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	20.0	0.0	605	56,280	-	-
PV array 2	20.0	0.0	654	28,978	-	-

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

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

PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	1227
OP: OP 7	0	2338
OP: OP 8	0	2118
OP: OP 9	0	2164
OP: OP 10	0	3130
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	1158
OP: OP 25	4	1564
OP: OP 26	7	1163
OP: OP 27	4	625
OP: OP 28	17	887

OP: OP 29	19	824
OP: OP 30	29	1096
OP: OP 31	0	2678
OP: OP 32	0	671
OP: OP 33	0	2509
OP: OP 34	0	696
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0
OP: OP 46	0	0
OP: OP 47	0	0
OP: OP 48	0	834
OP: OP 49	0	1422
OP: OP 50	0	1296
OP: OP 51	0	0
OP: OP 52	46	252
OP: OP 53	35	731
OP: OP 54	73	596
OP: OP 55	100	711
OP: OP 56	19	465
OP: OP 57	121	946
OP: OP 58	123	650
OP: OP 59	0	3150
OP: OP 60	0	3021
OP: OP 61	0	2964
OP: OP 62	8	2213
OP: OP 63	0	2652
OP: OP 64	0	2641
OP: OP 65	0	2598
OP: OP 66	0	2771
OP: OP 67	0	1519

PV array 1 - OP Receptor (OP 1)

No glare found

PV array 1 - OP Receptor (OP 2)

No glare found

PV array 1 - OP Receptor (OP 3)

No glare found

PV array 1 - OP Receptor (OP 4)

No glare found

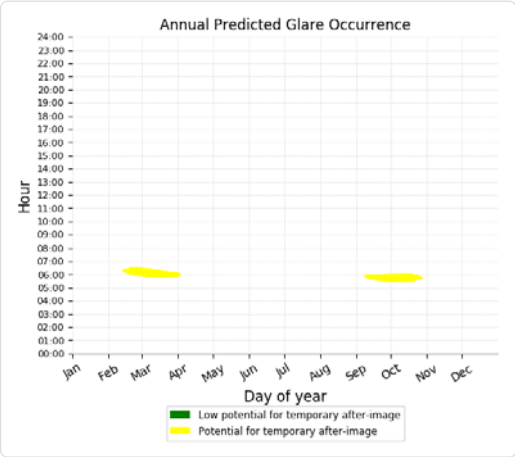
PV array 1 - OP Receptor (OP 5)

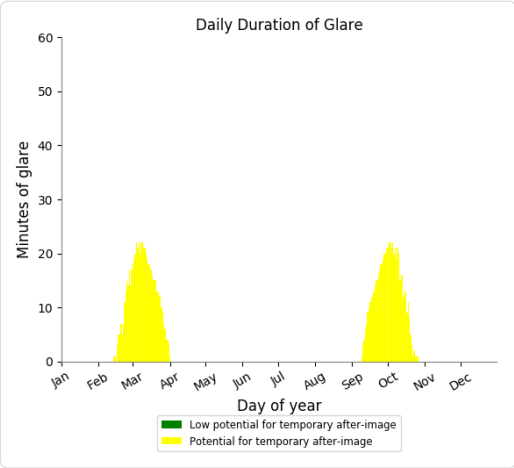
No glare found

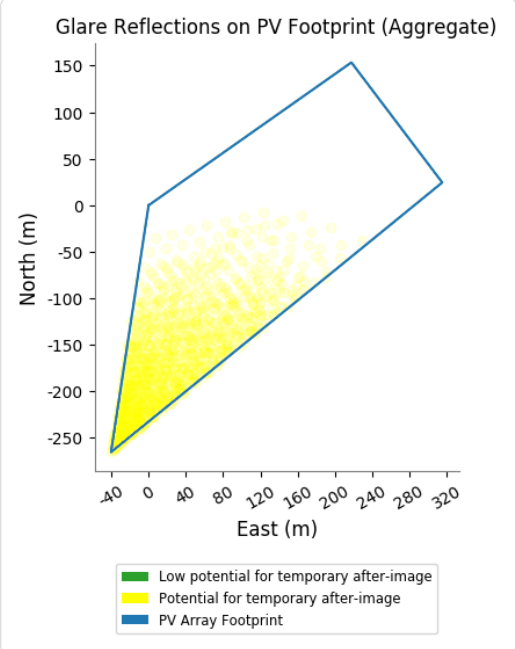
PV array 1 - OP Receptor (OP 6)

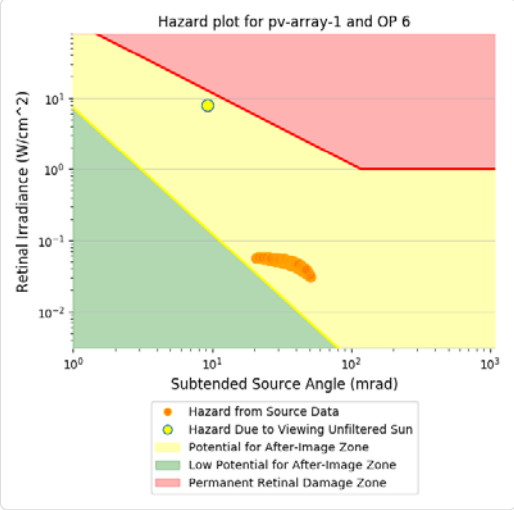
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,227 minutes of "yellow" glare with potential to cause temporary after-image.





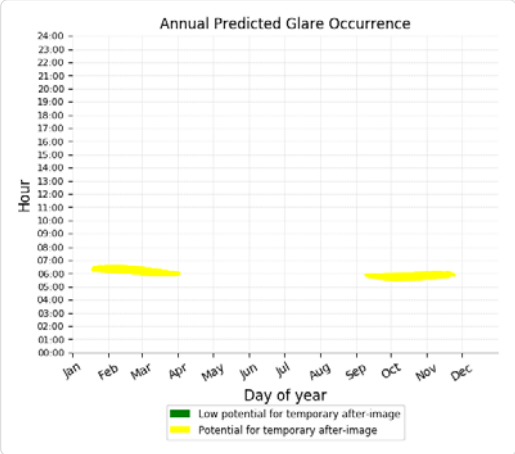


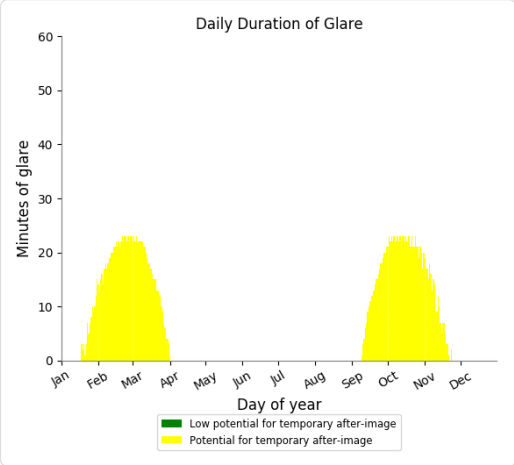


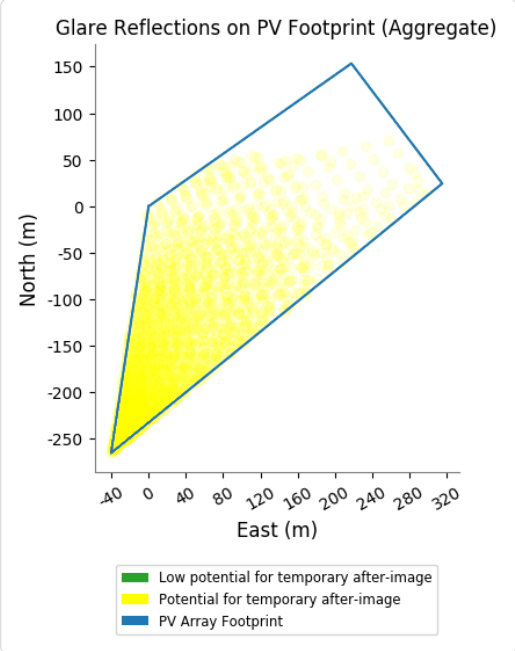
PV array 1 - OP Receptor (OP 7)

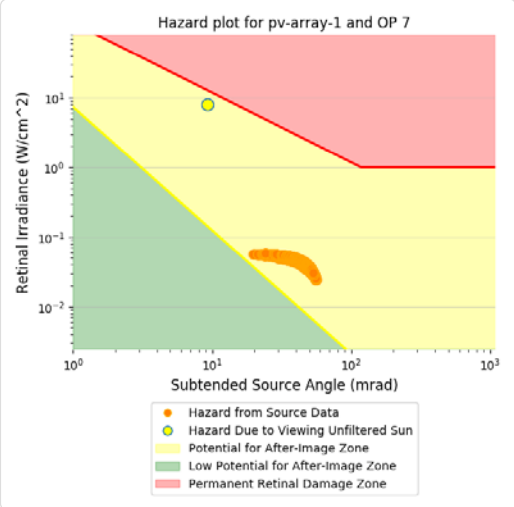
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,338 minutes of "yellow" glare with potential to cause temporary after-image.





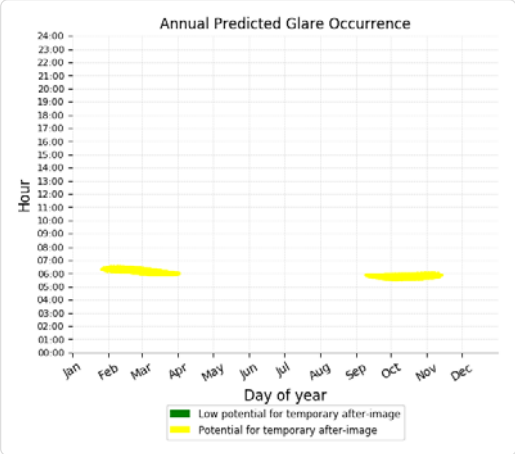


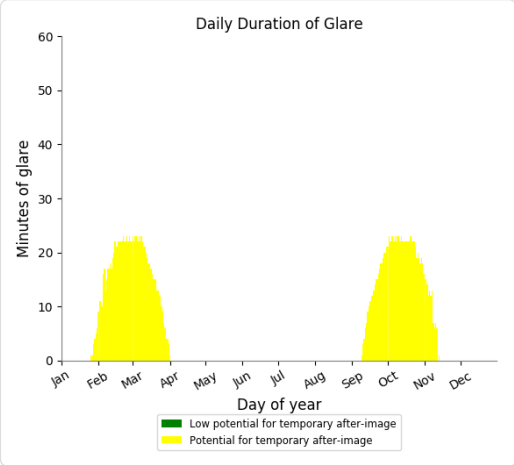


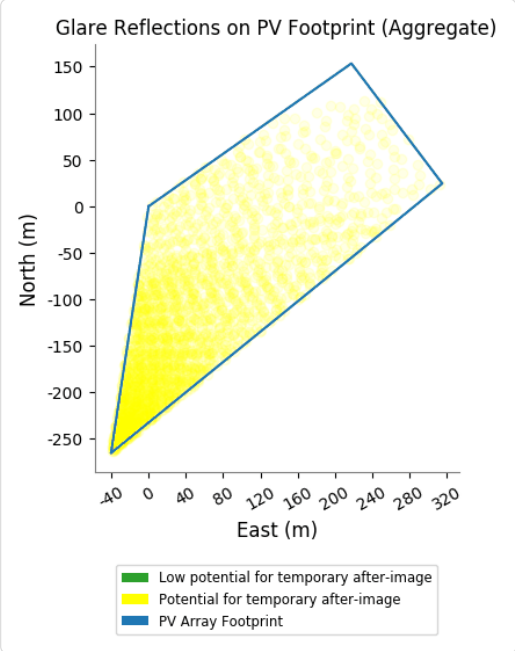
PV array 1 - OP Receptor (OP 8)

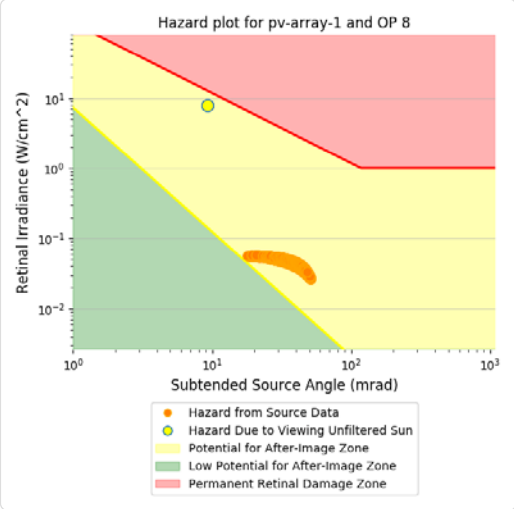
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,118 minutes of "yellow" glare with potential to cause temporary after-image.





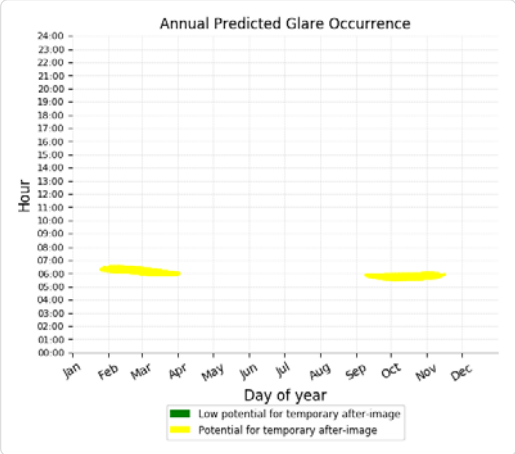


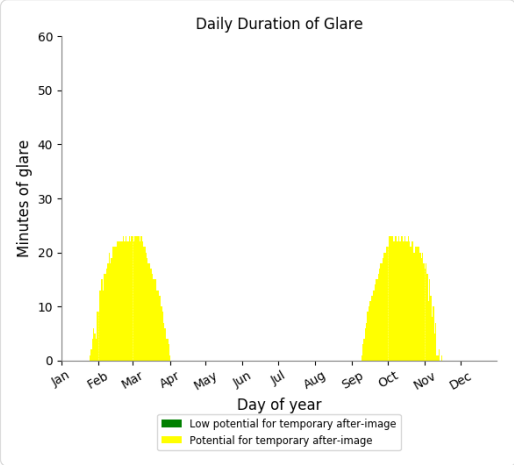


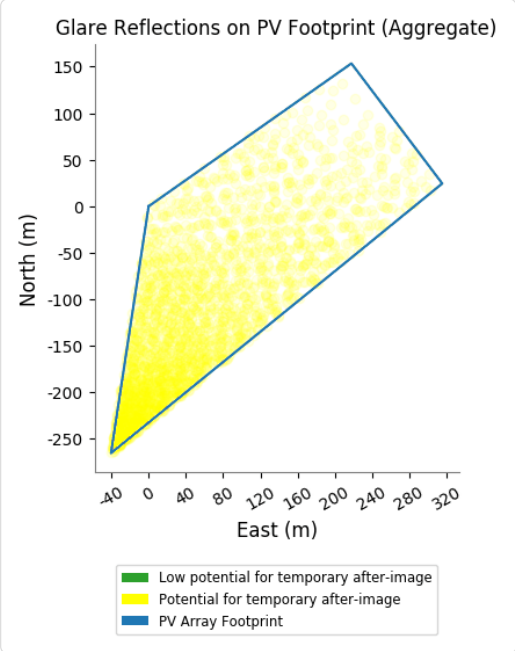
PV array 1 - OP Receptor (OP 9)

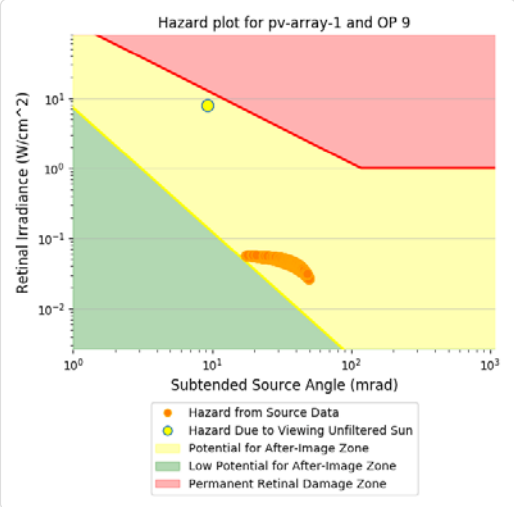
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,164 minutes of "yellow" glare with potential to cause temporary after-image.





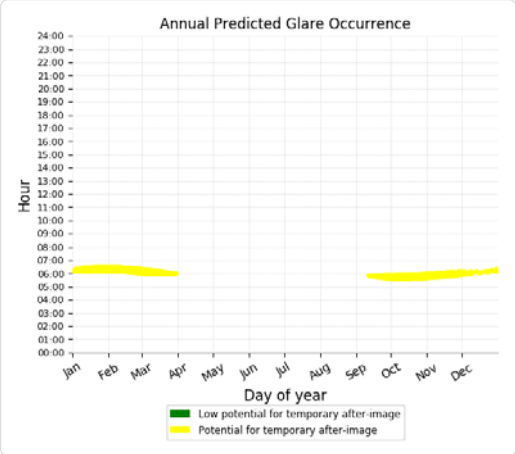


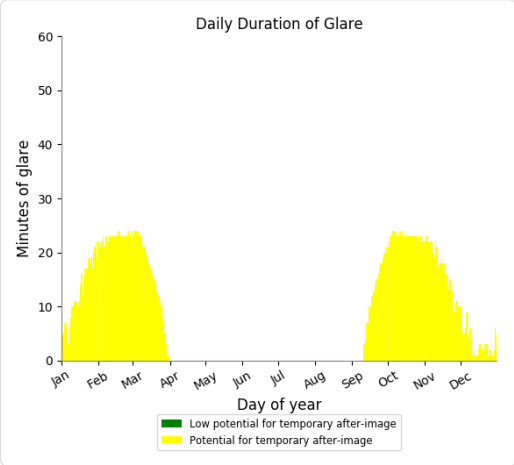


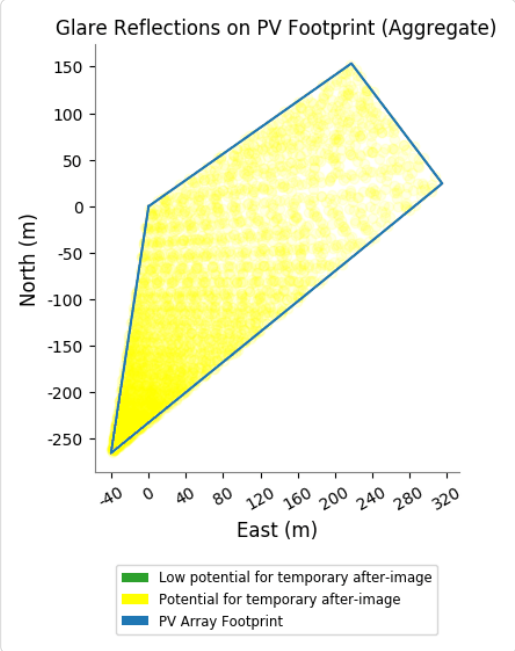
PV array 1 - OP Receptor (OP 10)

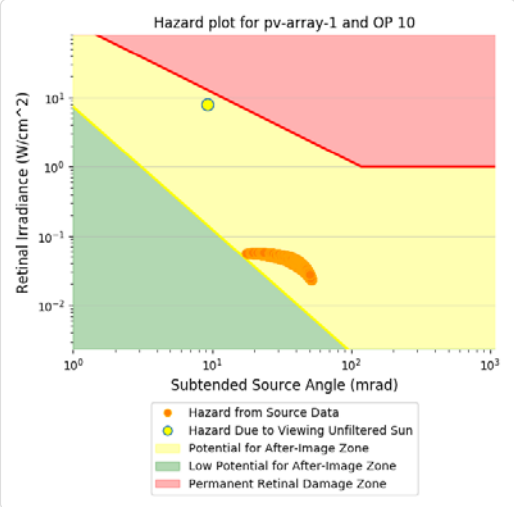
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 3,130 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 1 - OP Receptor (OP 11)

No glare found

PV array 1 - OP Receptor (OP 12)

No glare found

PV array 1 - OP Receptor (OP 13)

No glare found

PV array 1 - OP Receptor (OP 14)

No glare found

PV array 1 - OP Receptor (OP 15)

No glare found

PV array 1 - OP Receptor (OP 16)

No glare found

PV array 1 - OP Receptor (OP 17)

No glare found

PV array 1 - OP Receptor (OP 18)

No glare found

PV array 1 - OP Receptor (OP 19)

No glare found

PV array 1 - OP Receptor (OP 20)

No glare found

PV array 1 - OP Receptor (OP 21)

No glare found

PV array 1 - OP Receptor (OP 22)

No glare found

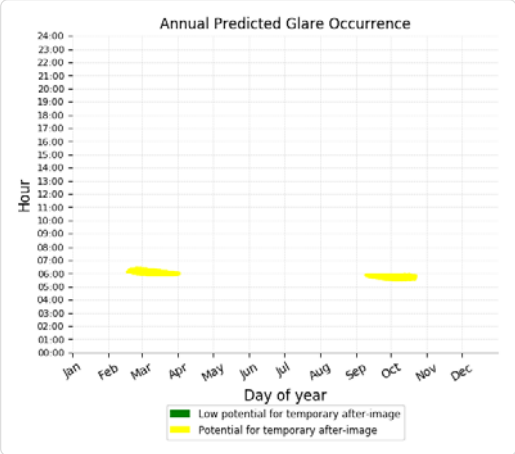
PV array 1 - OP Receptor (OP 23)

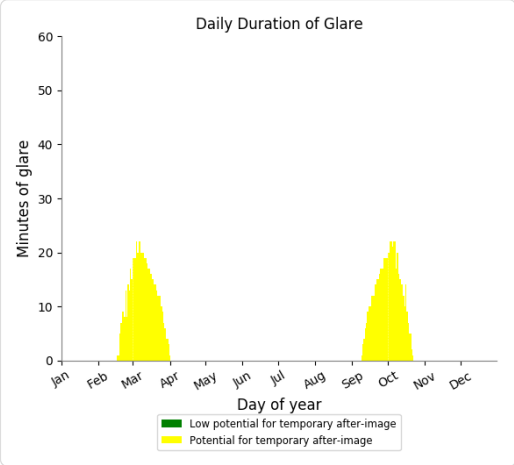
No glare found

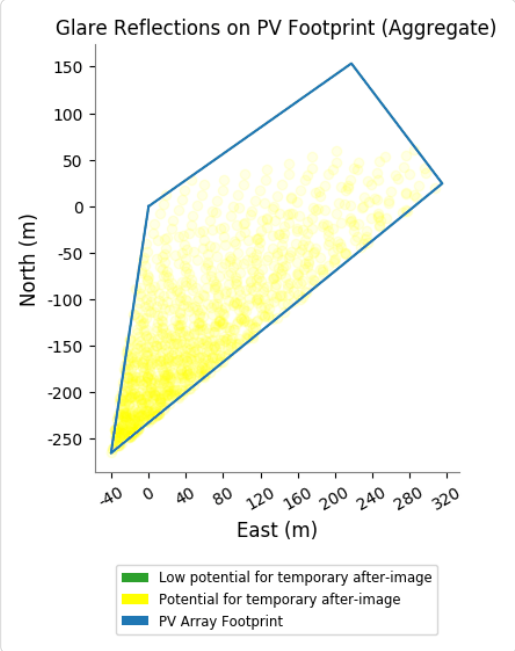
PV array 1 - OP Receptor (OP 24)

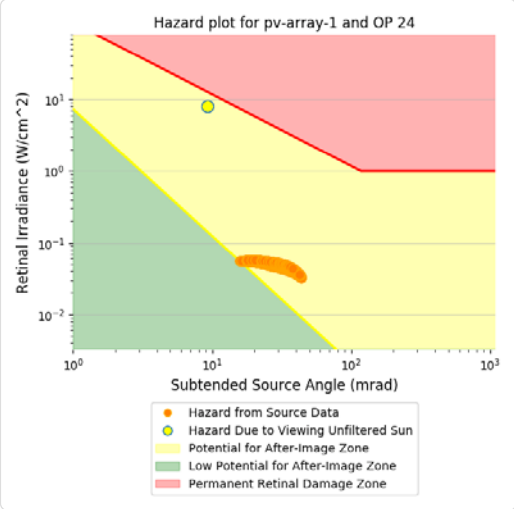
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,158 minutes of "yellow" glare with potential to cause temporary after-image.





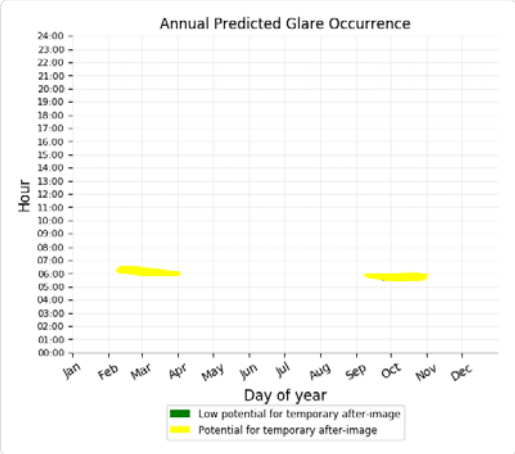


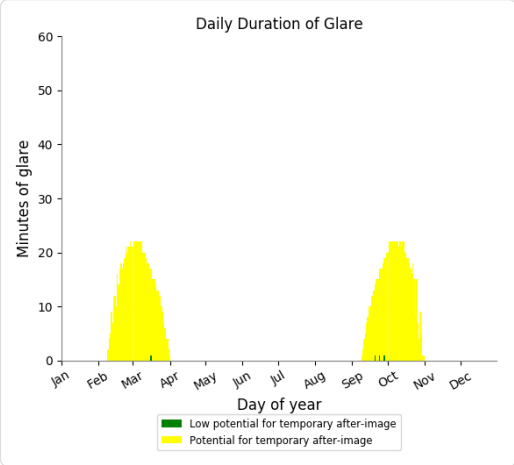


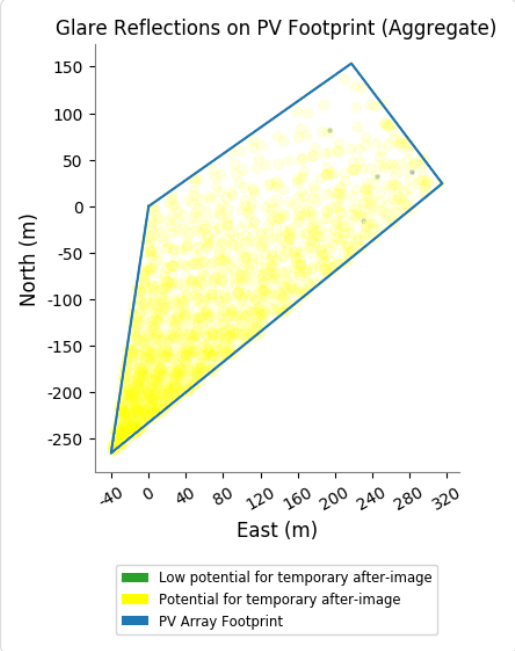
PV array 1 - OP Receptor (OP 25)

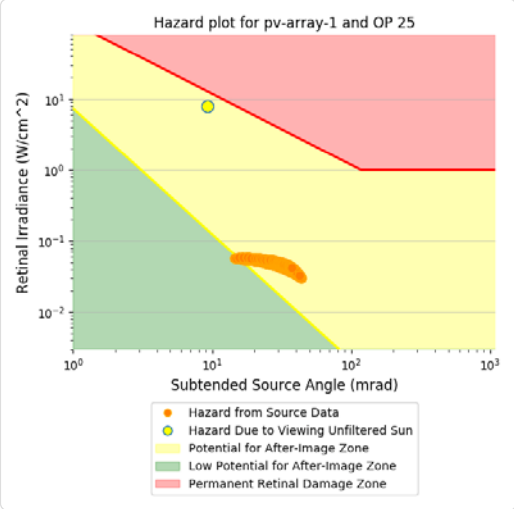
PV array is expected to produce the following glare for receptors at this location:

- 4 minutes of "green" glare with low potential to cause temporary after-image.
- 1,564 minutes of "yellow" glare with potential to cause temporary after-image.





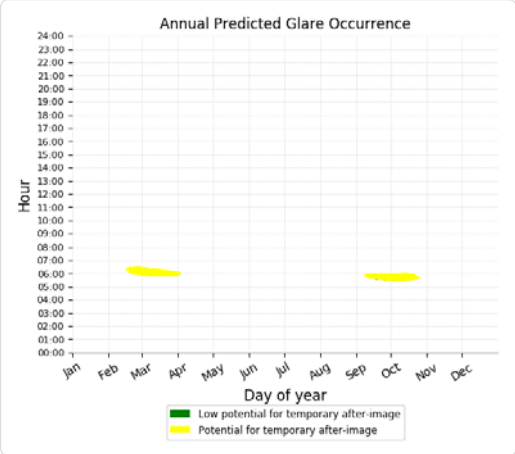


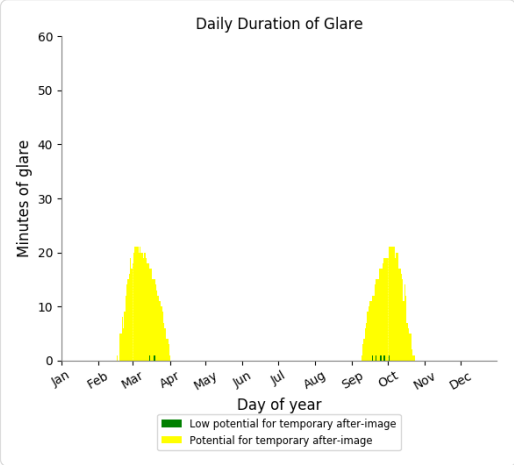


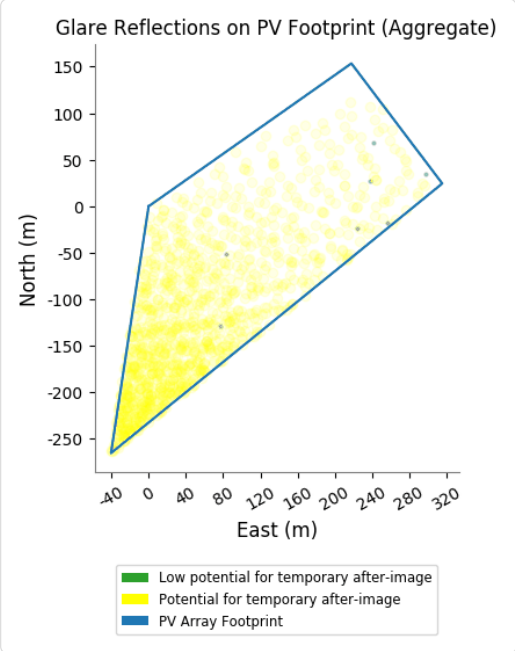
PV array 1 - OP Receptor (OP 26)

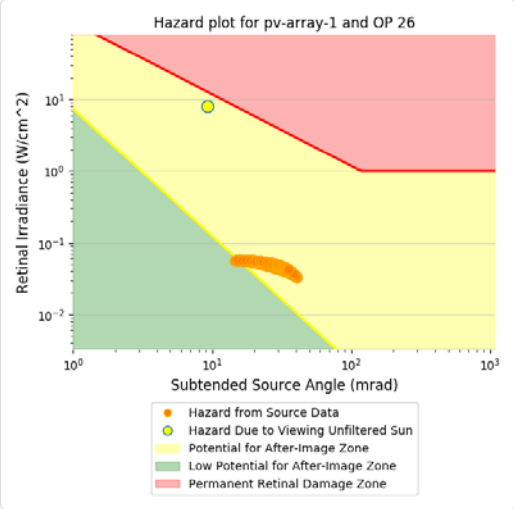
PV array is expected to produce the following glare for receptors at this location:

- 7 minutes of "green" glare with low potential to cause temporary after-image.
- 1,163 minutes of "yellow" glare with potential to cause temporary after-image.





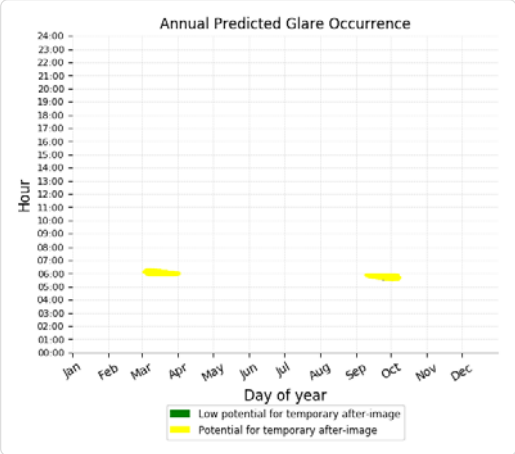


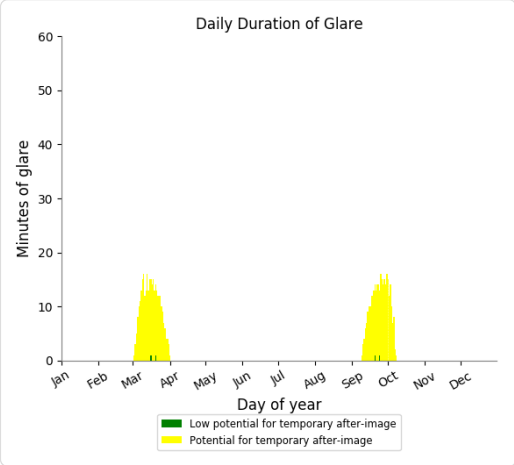


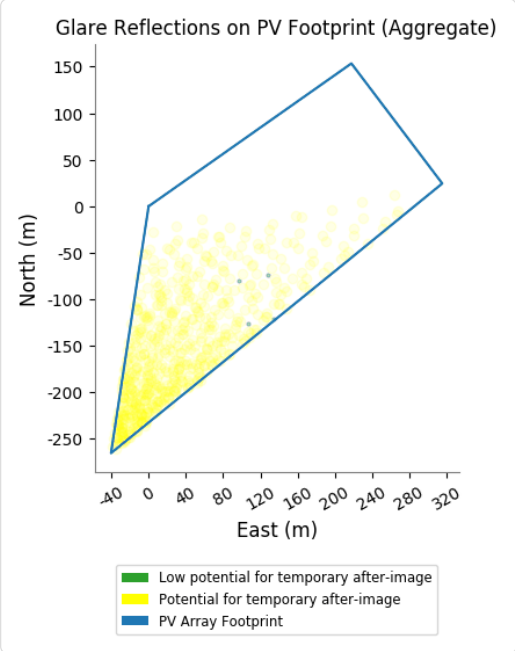
PV array 1 - OP Receptor (OP 27)

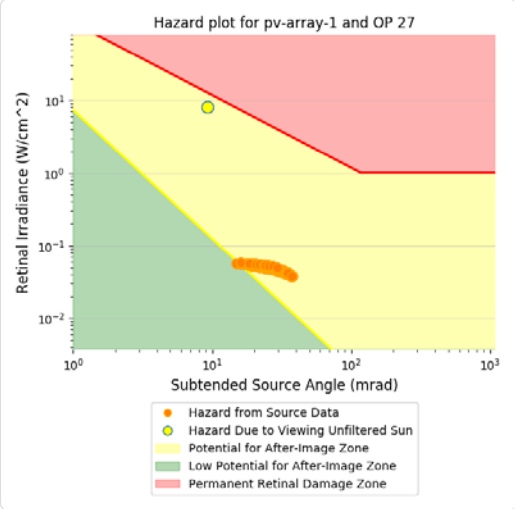
PV array is expected to produce the following glare for receptors at this location:

- 4 minutes of "green" glare with low potential to cause temporary after-image.
- 625 minutes of "yellow" glare with potential to cause temporary after-image.





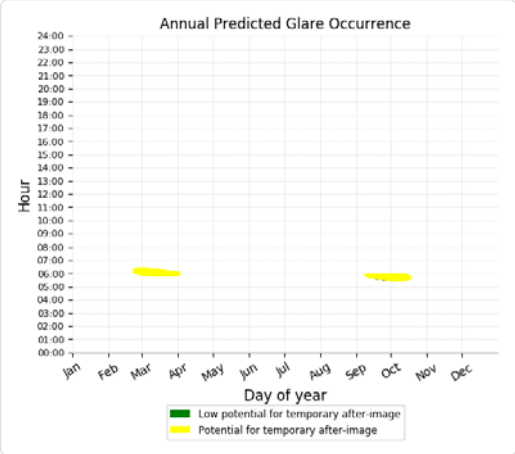


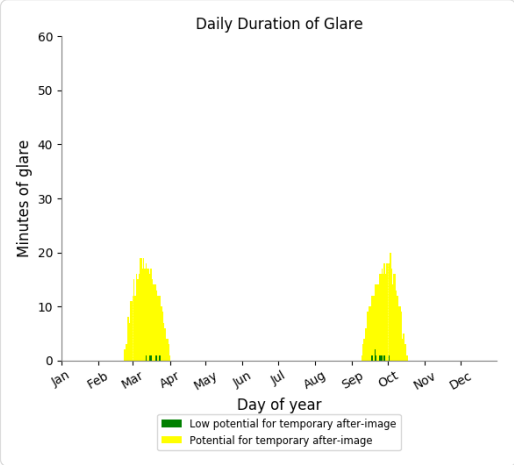


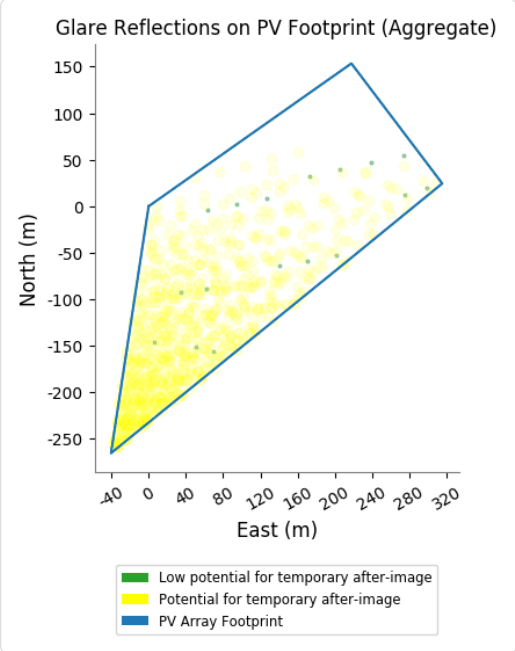
PV array 1 - OP Receptor (OP 28)

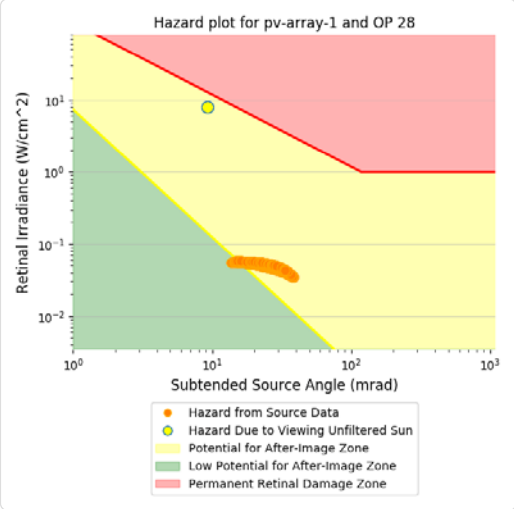
PV array is expected to produce the following glare for receptors at this location:

- 17 minutes of "green" glare with low potential to cause temporary after-image.
- 887 minutes of "yellow" glare with potential to cause temporary after-image.





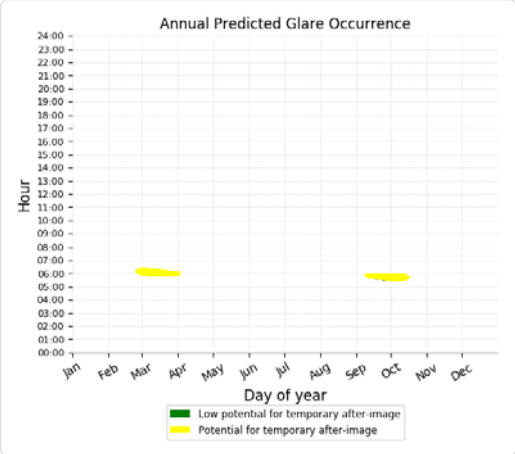


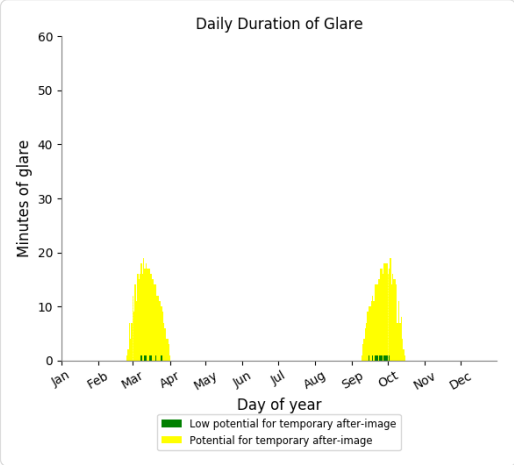


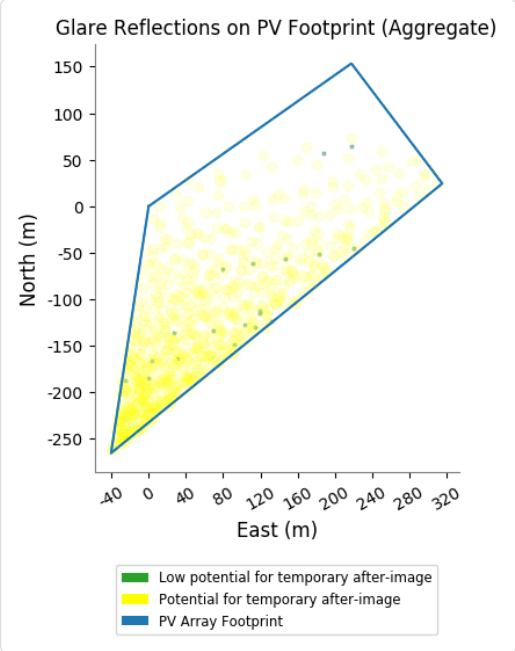
PV array 1 - OP Receptor (OP 29)

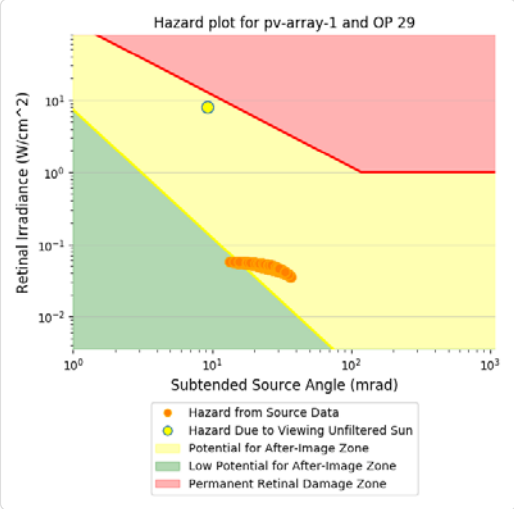
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 824 minutes of "yellow" glare with potential to cause temporary after-image.





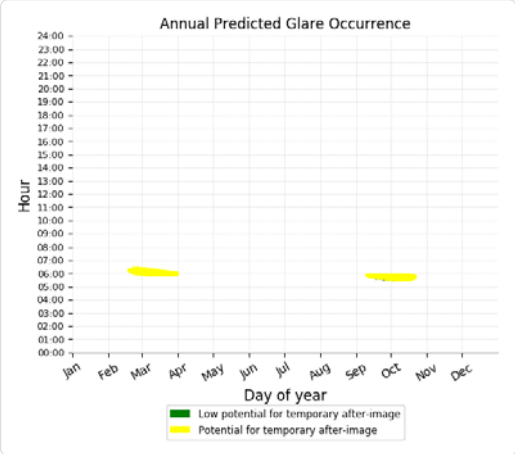


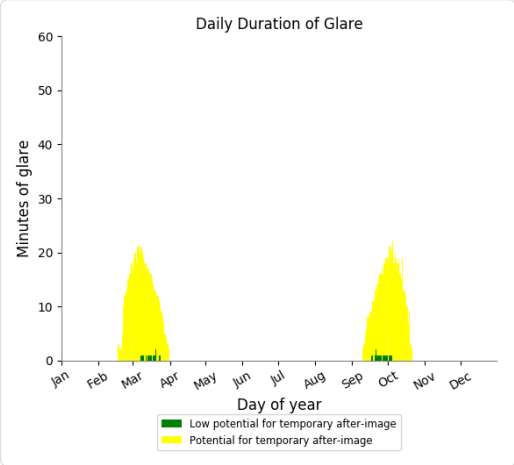


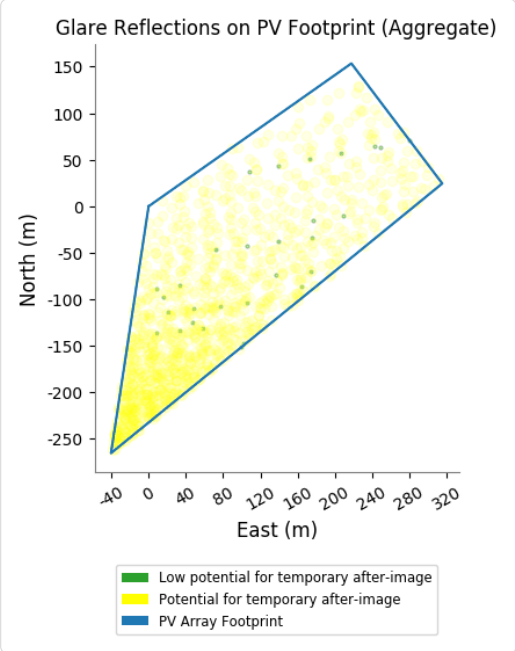
PV array 1 - OP Receptor (OP 30)

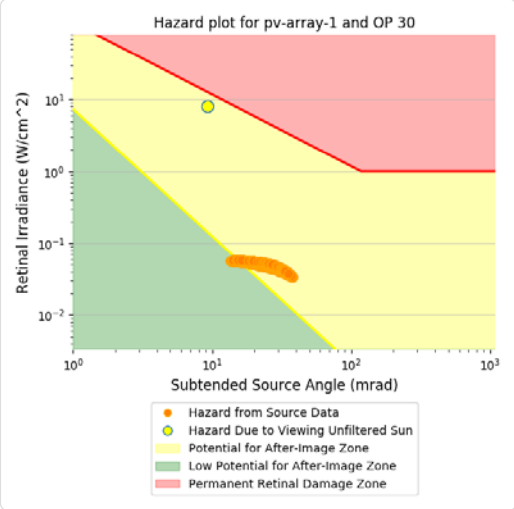
PV array is expected to produce the following glare for receptors at this location:

- 29 minutes of "green" glare with low potential to cause temporary after-image.
- 1,096 minutes of "yellow" glare with potential to cause temporary after-image.





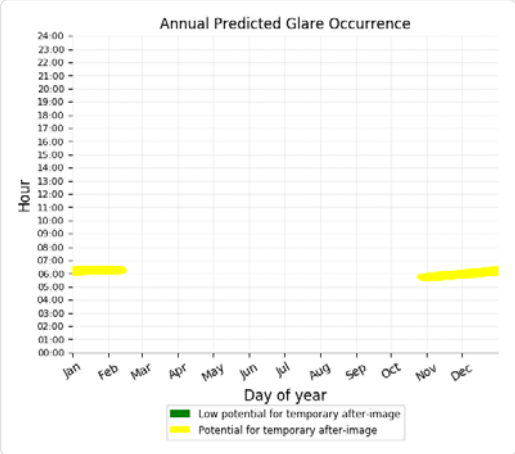


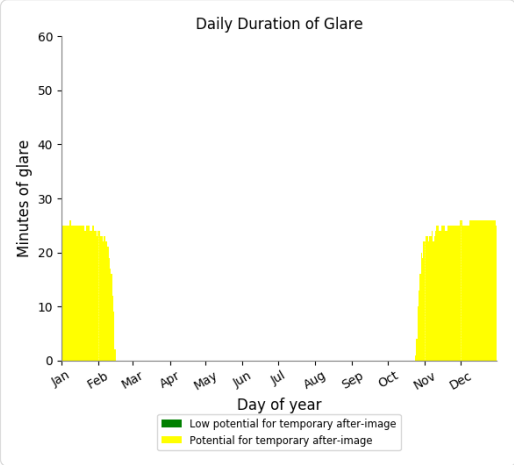


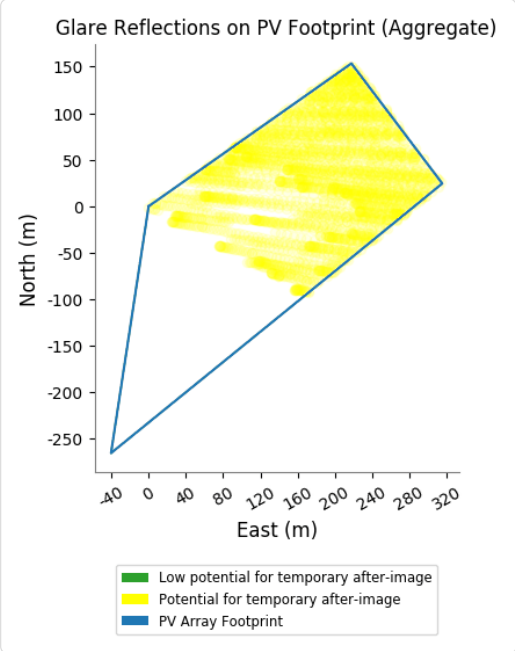
PV array 1 - OP Receptor (OP 31)

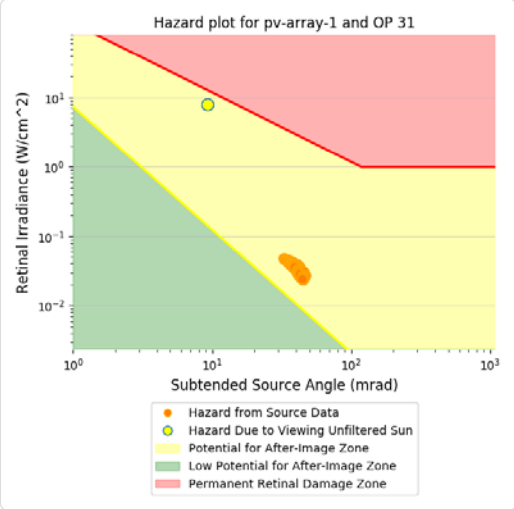
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,678 minutes of "yellow" glare with potential to cause temporary after-image.





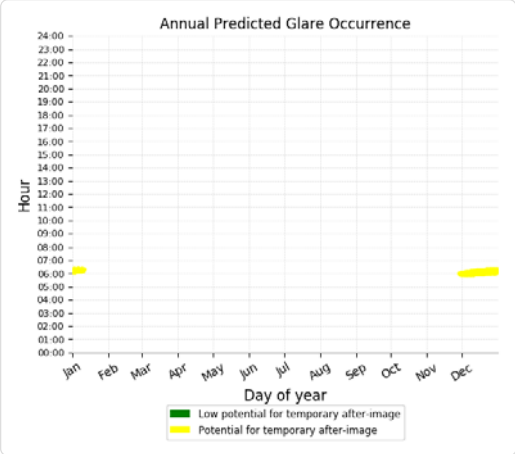


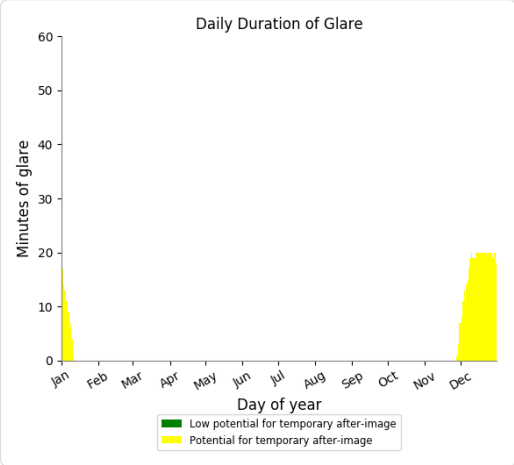


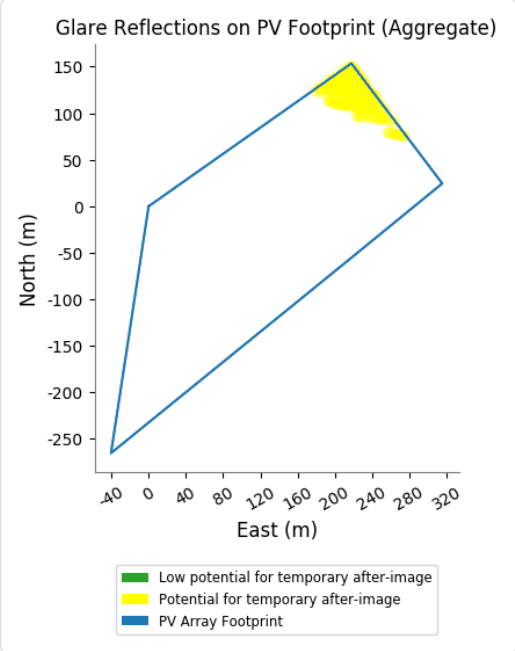
PV array 1 - OP Receptor (OP 32)

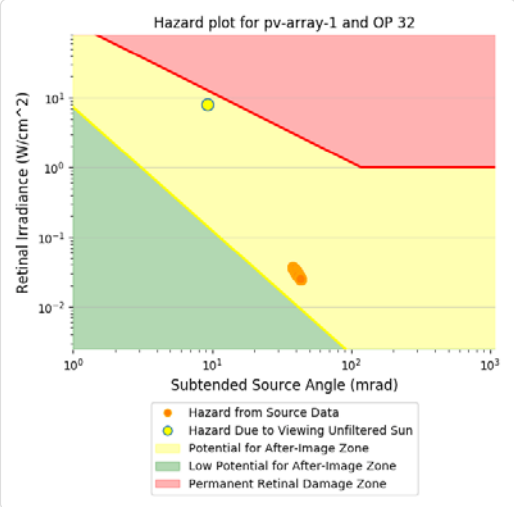
PV array is expected to produce the following glare for receptors at this location:

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





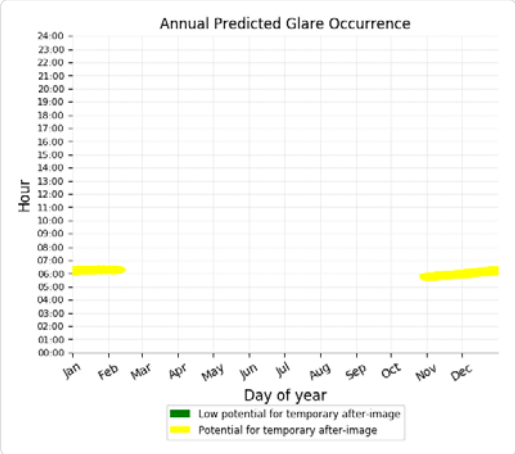


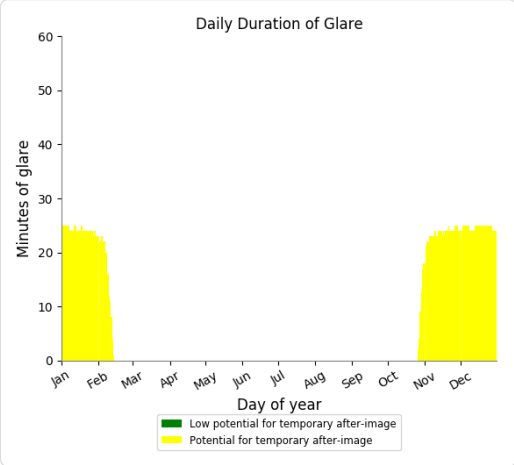


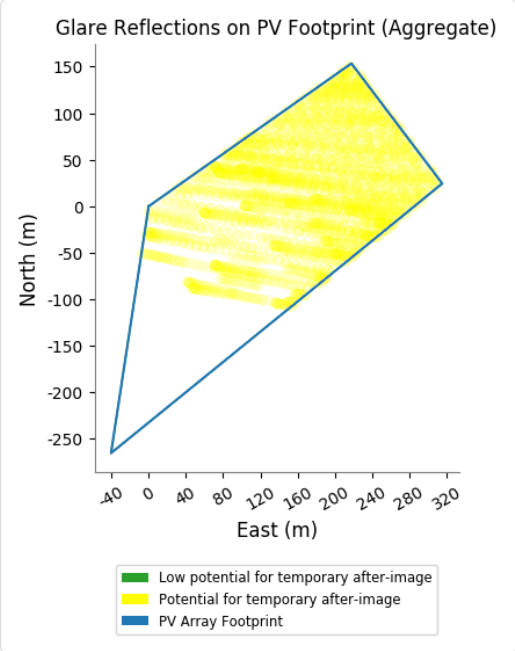
PV array 1 - OP Receptor (OP 33)

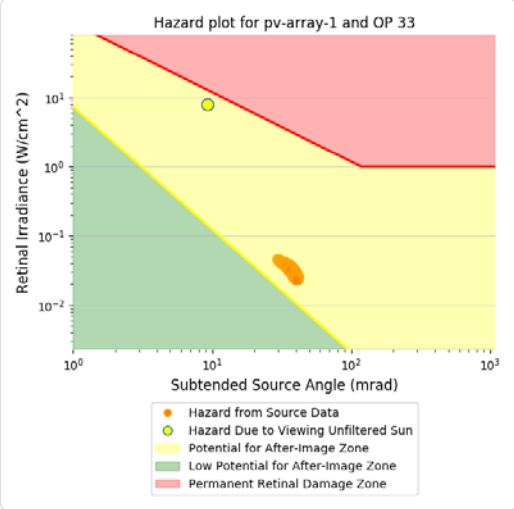
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,509 minutes of "yellow" glare with potential to cause temporary after-image.





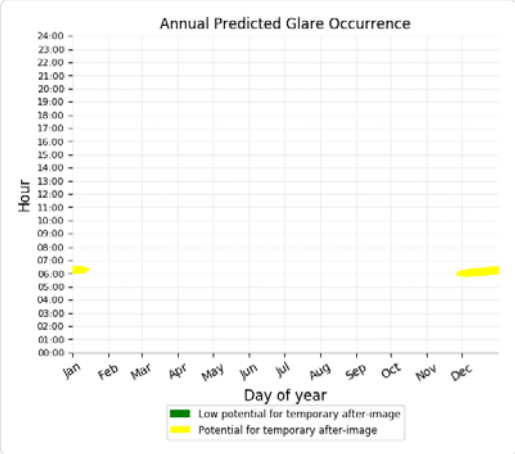


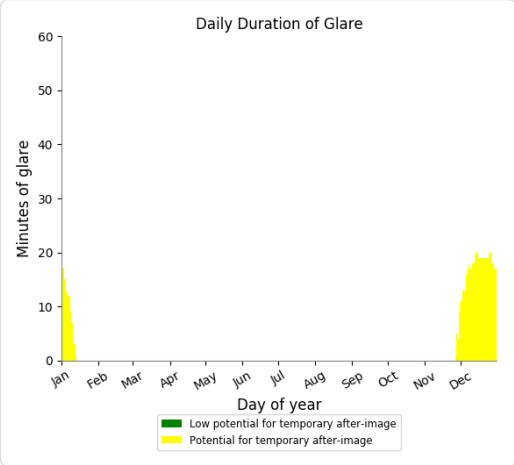


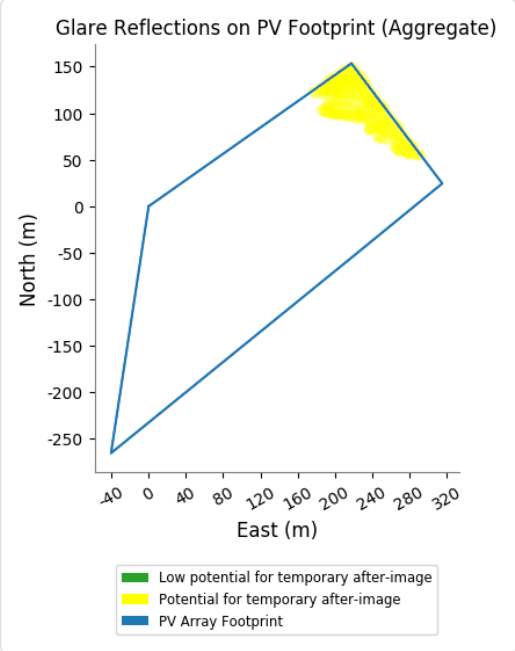
PV array 1 - OP Receptor (OP 34)

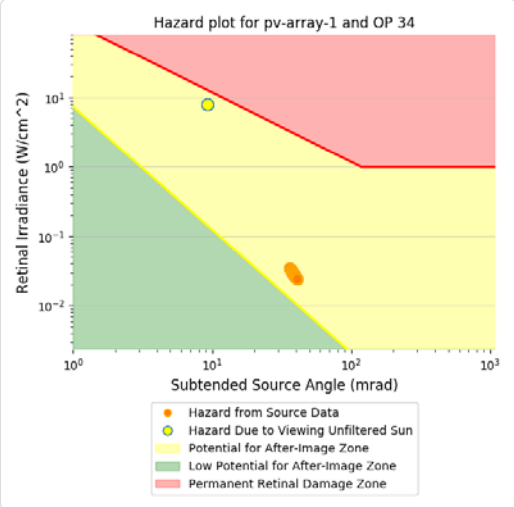
PV array is expected to produce the following glare for receptors at this location:

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









PV array 1 - OP Receptor (OP 35)

No glare found

PV array 1 - OP Receptor (OP 36)

No glare found

PV array 1 - OP Receptor (OP 37)

No glare found

PV array 1 - OP Receptor (OP 38)

No glare found

PV array 1 - OP Receptor (OP 39)

No glare found

PV array 1 - OP Receptor (OP 40)

No glare found

PV array 1 - OP Receptor (OP 41)

No glare found

PV array 1 - OP Receptor (OP 42)

No glare found

PV array 1 - OP Receptor (OP 43)

No glare found

PV array 1 - OP Receptor (OP 44)

No glare found

PV array 1 - OP Receptor (OP 45)

No glare found

PV array 1 - OP Receptor (OP 46)

No glare found

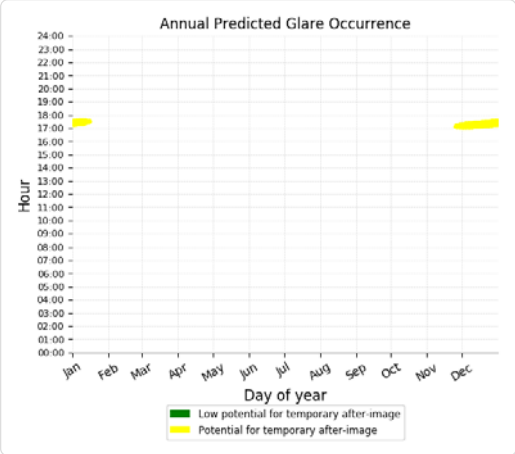
PV array 1 - OP Receptor (OP 47)

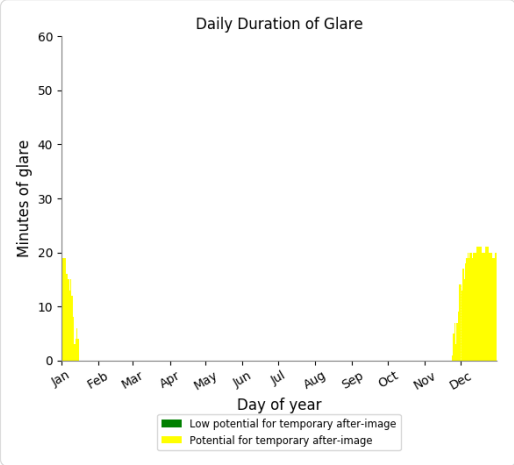
No glare found

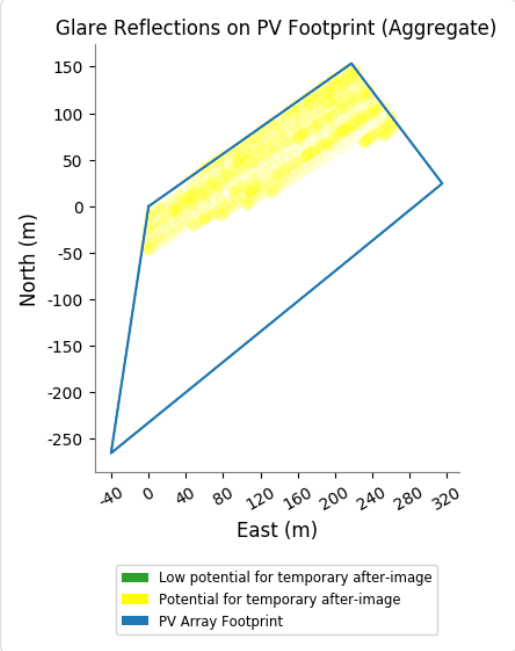
PV array 1 - OP Receptor (OP 48)

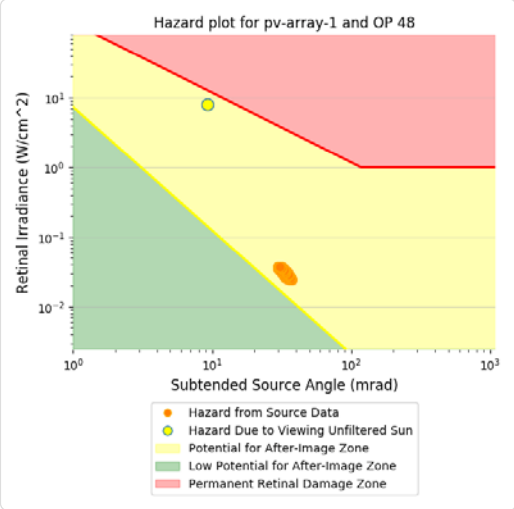
PV array is expected to produce the following glare for receptors at this location:

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





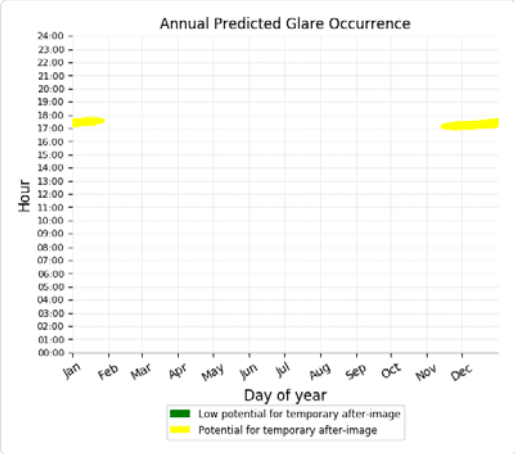


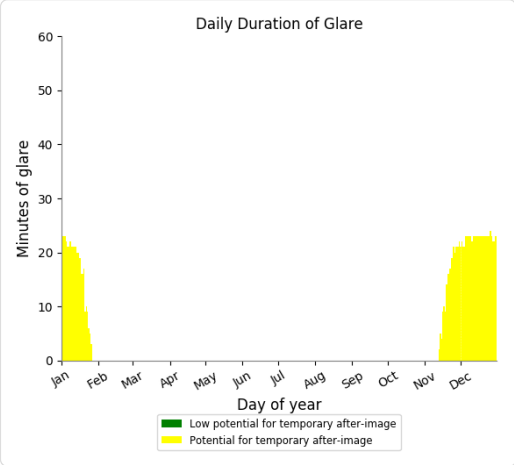


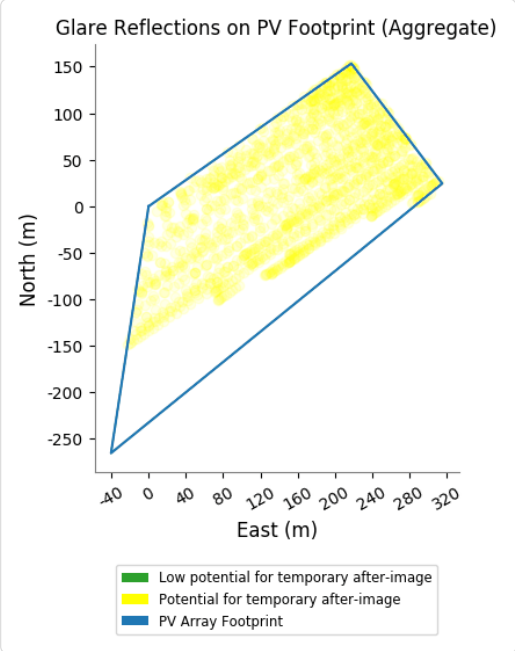
PV array 1 - OP Receptor (OP 49)

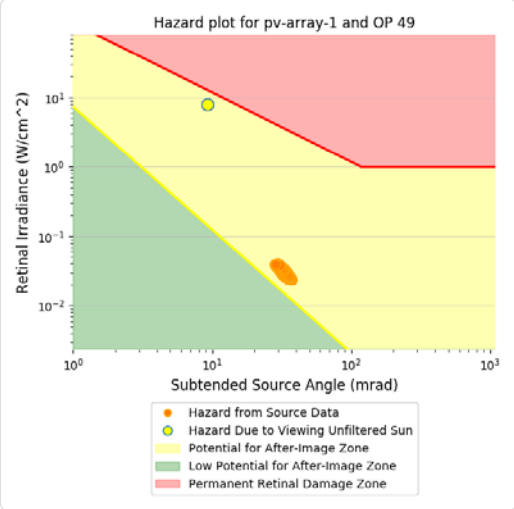
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,422 minutes of "yellow" glare with potential to cause temporary after-image.





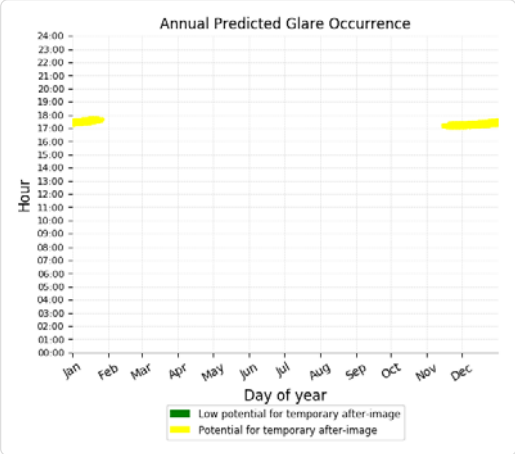


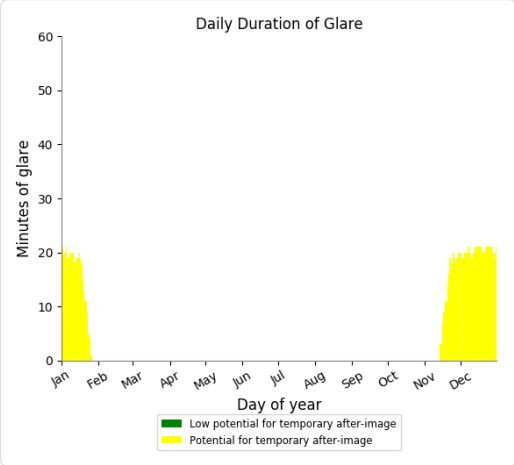


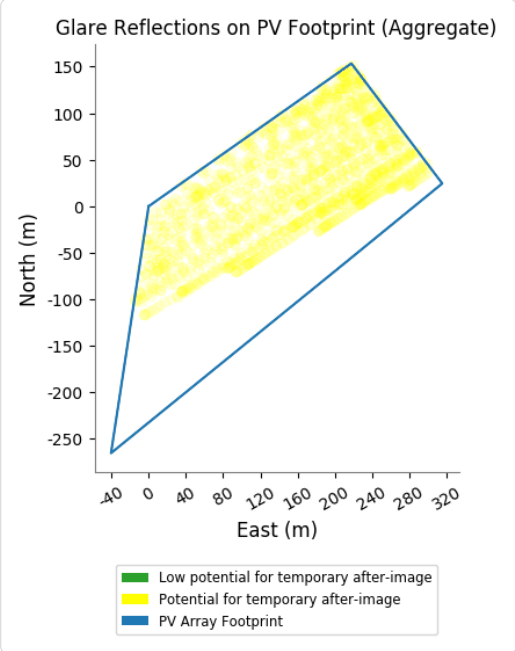
PV array 1 - OP Receptor (OP 50)

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

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,296 minutes of "yellow" glare with potential to cause temporary after-image.







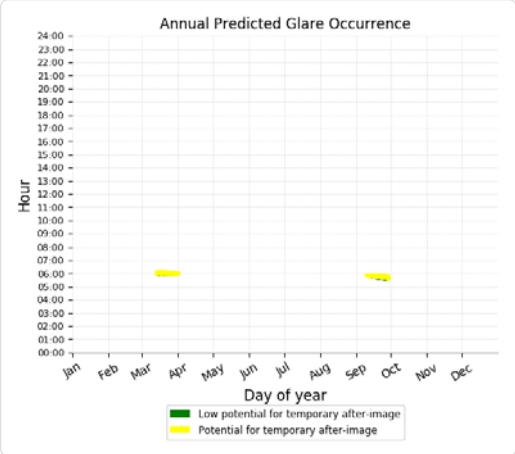
PV array 1 - OP Receptor (OP 51)

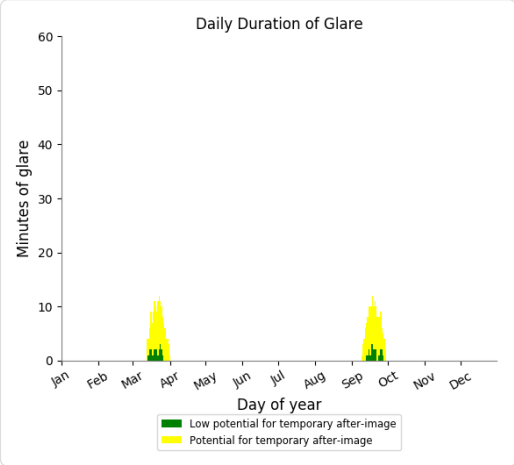
No glare found

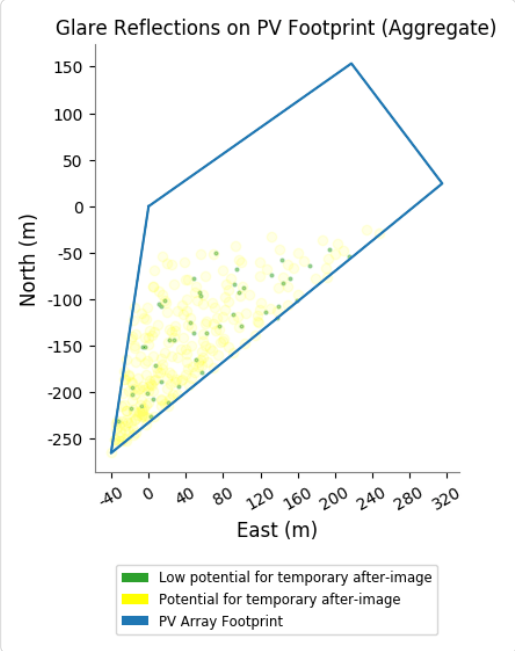
PV array 1 - OP Receptor (OP 52)

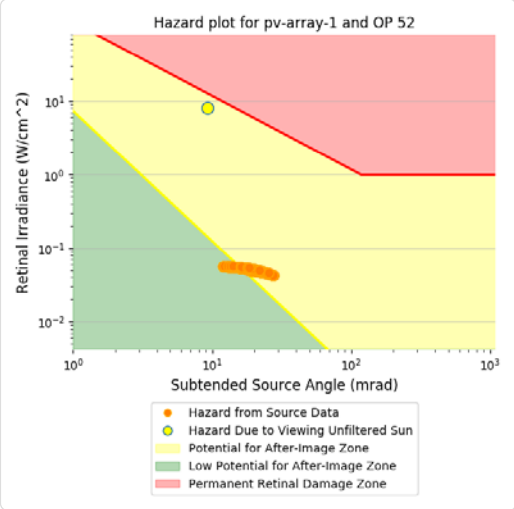
PV array is expected to produce the following glare for receptors at this location:

- 46 minutes of "green" glare with low potential to cause temporary after-image.
- 252 minutes of "yellow" glare with potential to cause temporary after-image.





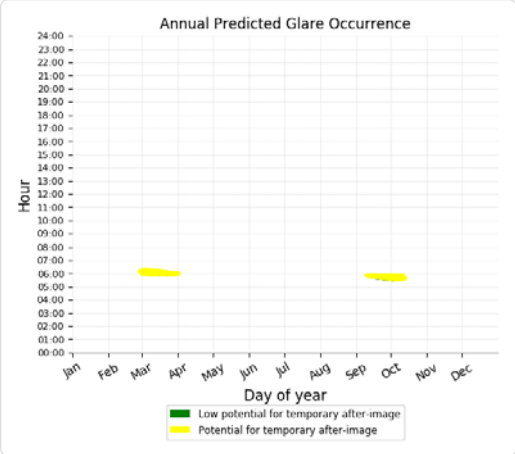


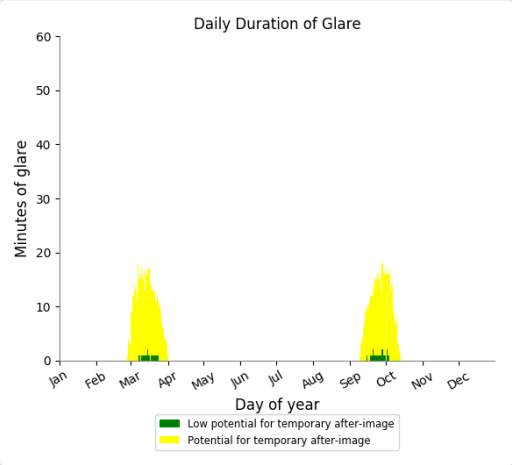


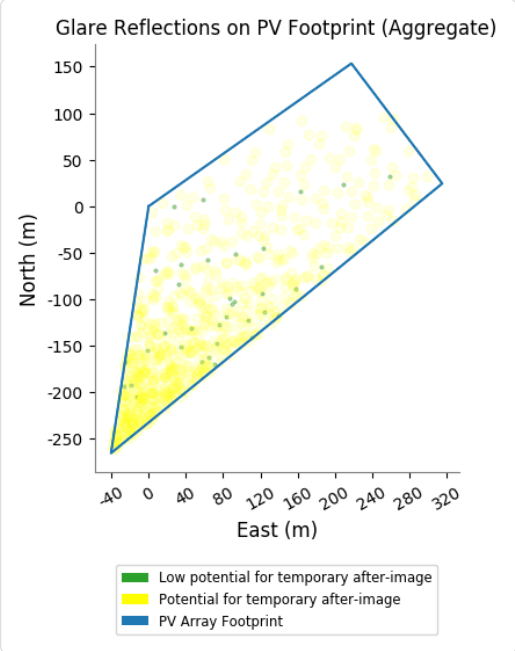
PV array 1 - OP Receptor (OP 53)

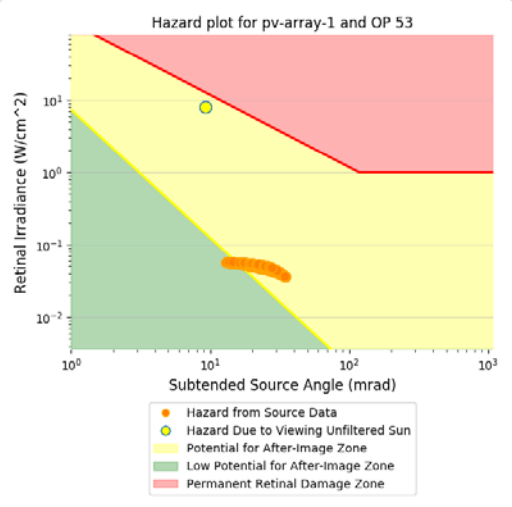
PV array is expected to produce the following glare for receptors at this location:

- 35 minutes of "green" glare with low potential to cause temporary after-image.
- 731 minutes of "yellow" glare with potential to cause temporary after-image.





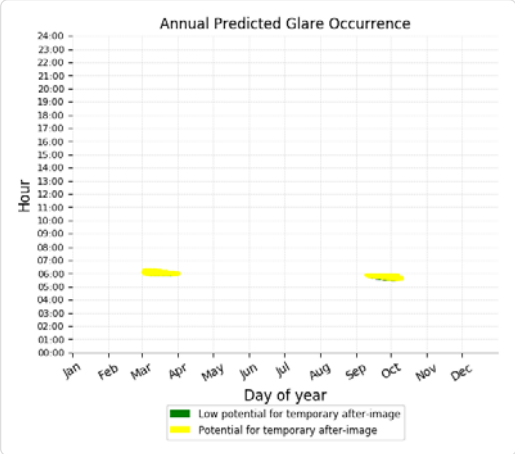


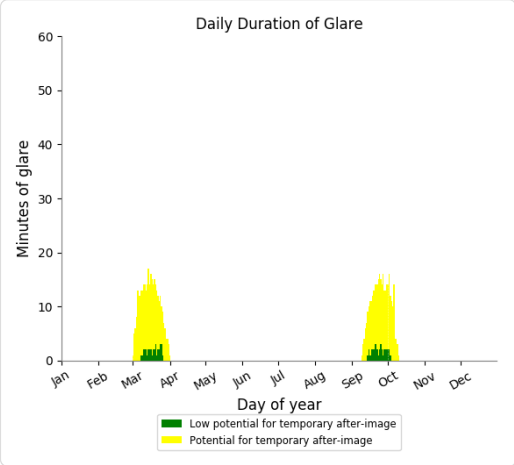


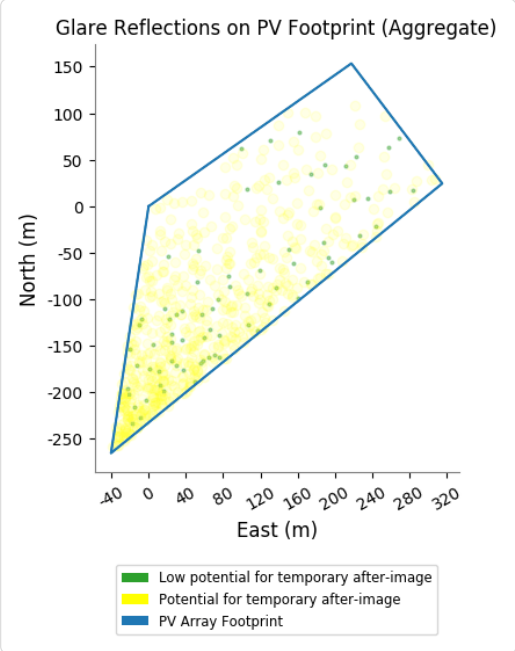
PV array 1 - OP Receptor (OP 54)

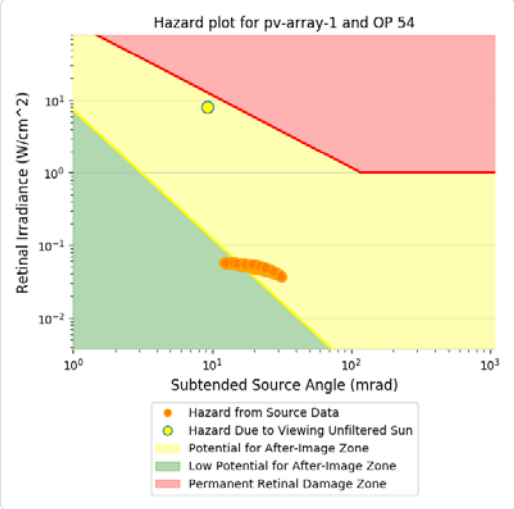
PV array is expected to produce the following glare for receptors at this location:

- 73 minutes of "green" glare with low potential to cause temporary after-image.
- 596 minutes of "yellow" glare with potential to cause temporary after-image.





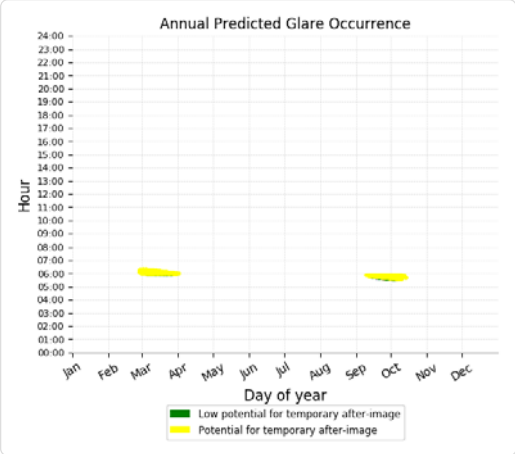


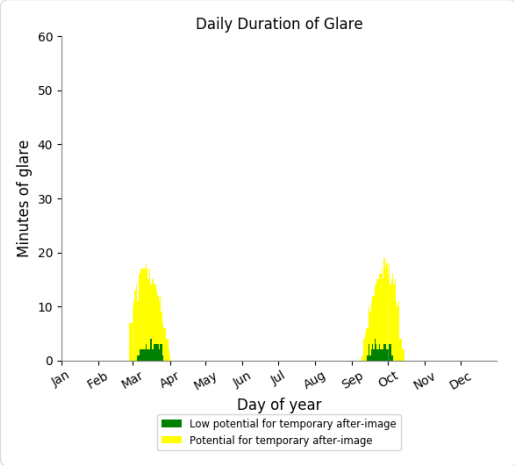


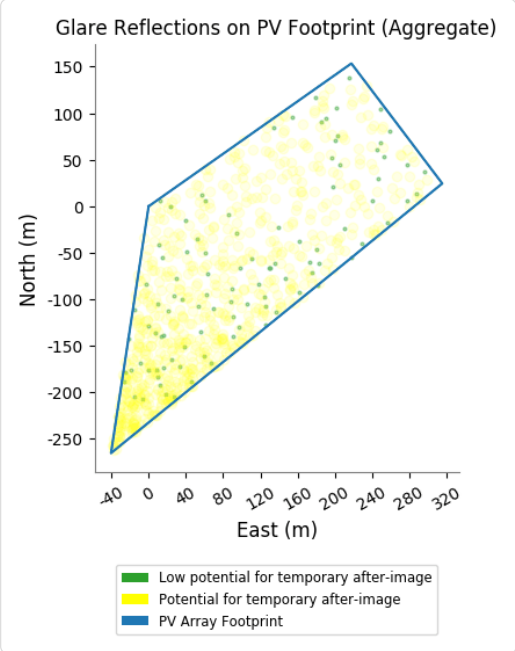
PV array 1 - OP Receptor (OP 55)

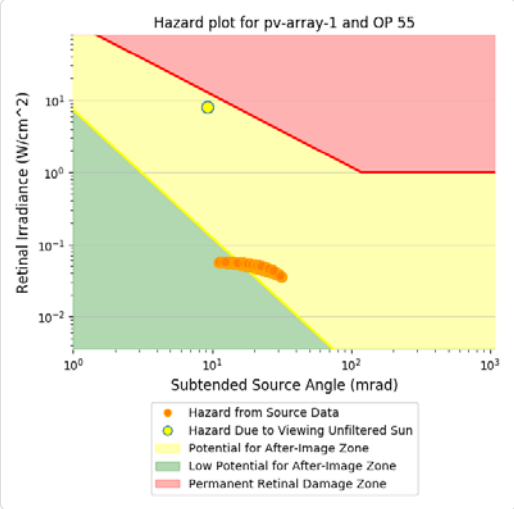
PV array is expected to produce the following glare for receptors at this location:

- 100 minutes of "green" glare with low potential to cause temporary after-image.
- 711 minutes of "yellow" glare with potential to cause temporary after-image.





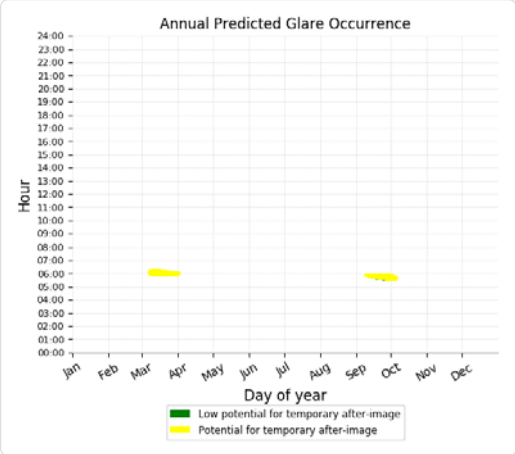


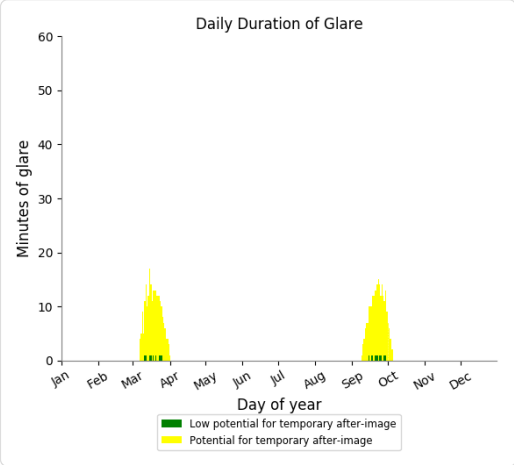


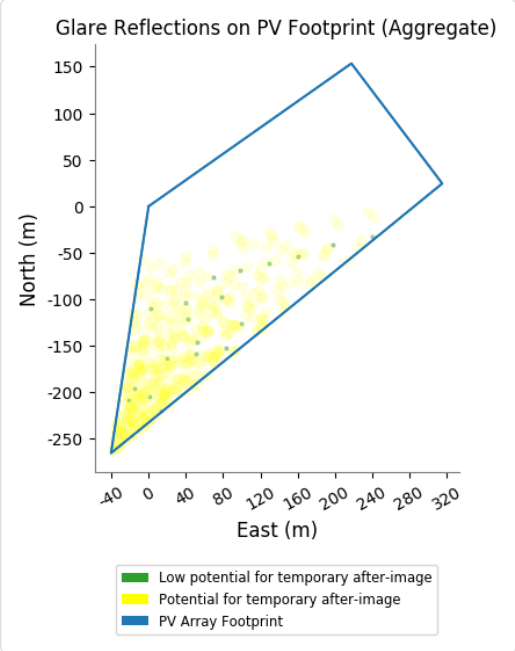
PV array 1 - OP Receptor (OP 56)

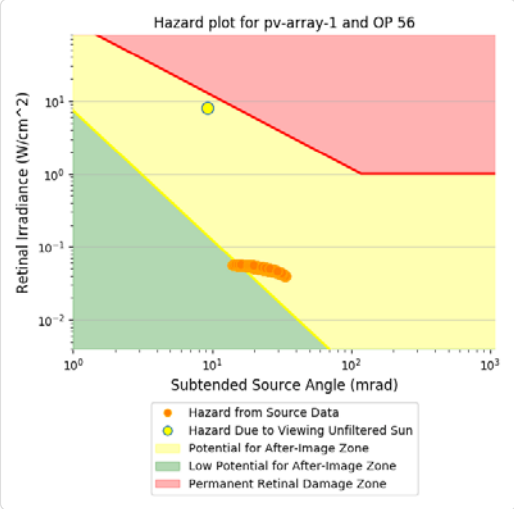
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 465 minutes of "yellow" glare with potential to cause temporary after-image.





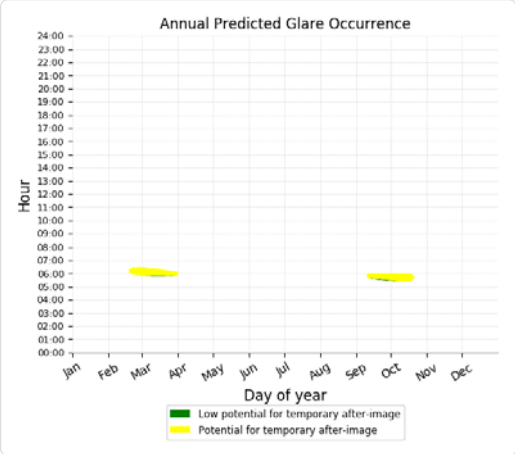


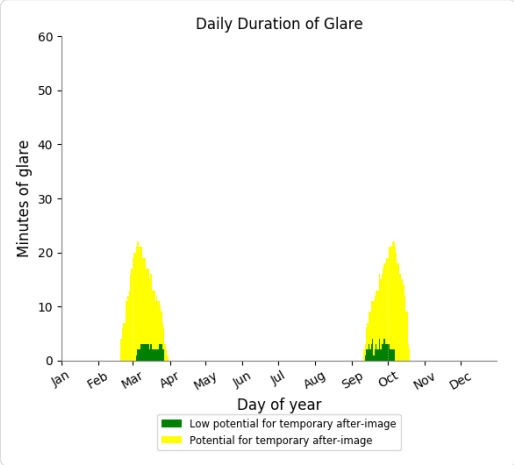


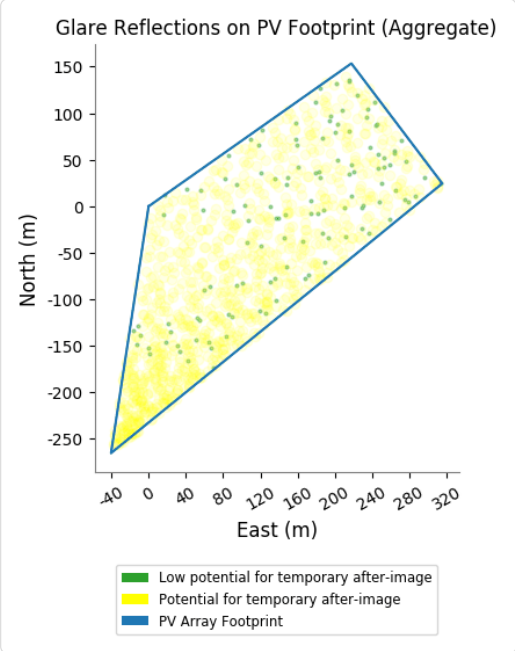
PV array 1 - OP Receptor (OP 57)

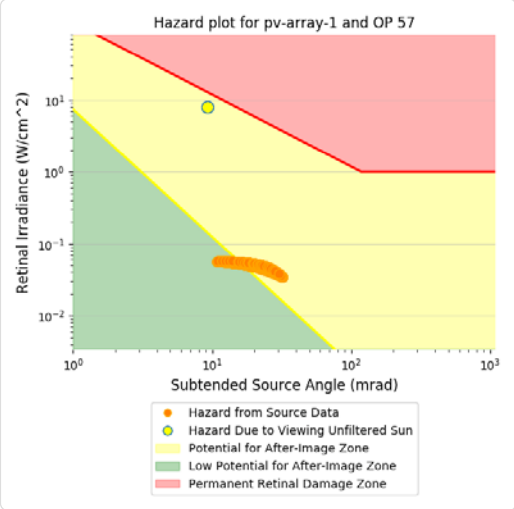
PV array is expected to produce the following glare for receptors at this location:

- 121 minutes of "green" glare with low potential to cause temporary after-image.
- 946 minutes of "yellow" glare with potential to cause temporary after-image.





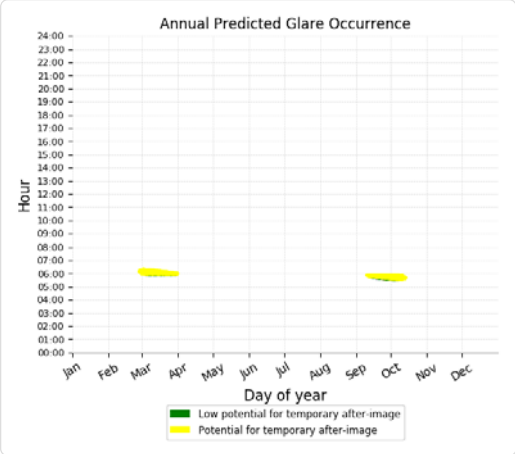


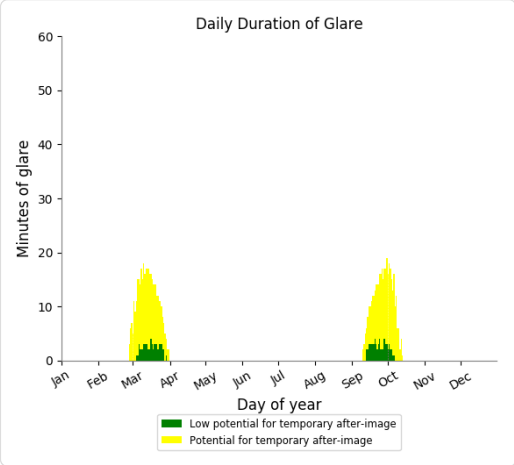


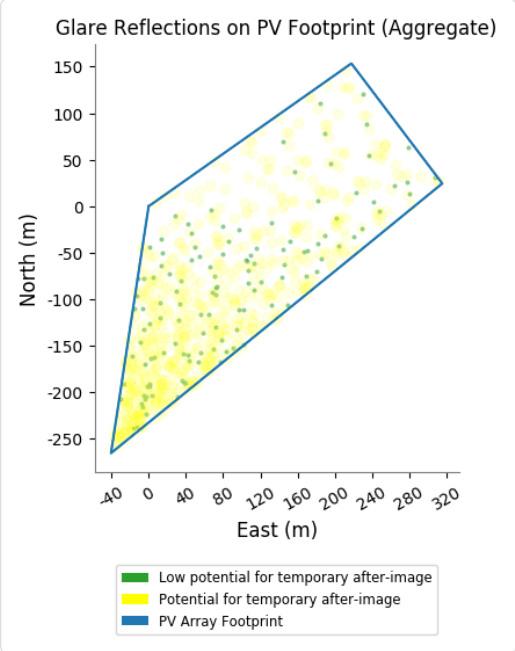
PV array 1 - OP Receptor (OP 58)

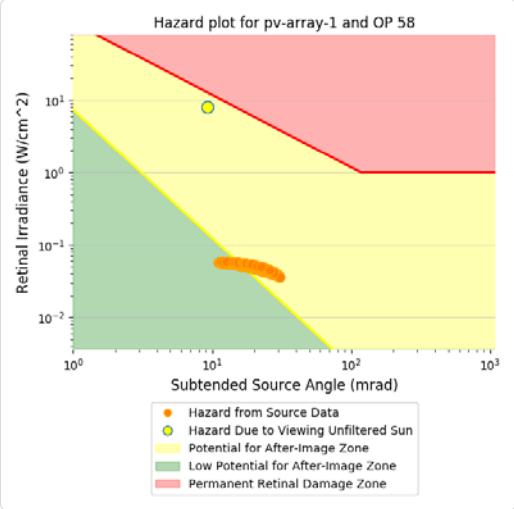
PV array is expected to produce the following glare for receptors at this location:

- 123 minutes of "green" glare with low potential to cause temporary after-image.
- 650 minutes of "yellow" glare with potential to cause temporary after-image.





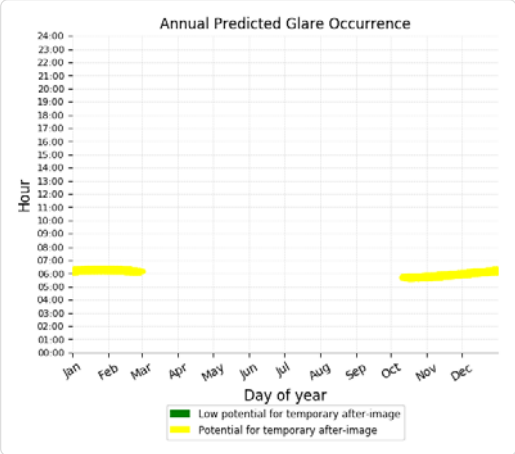


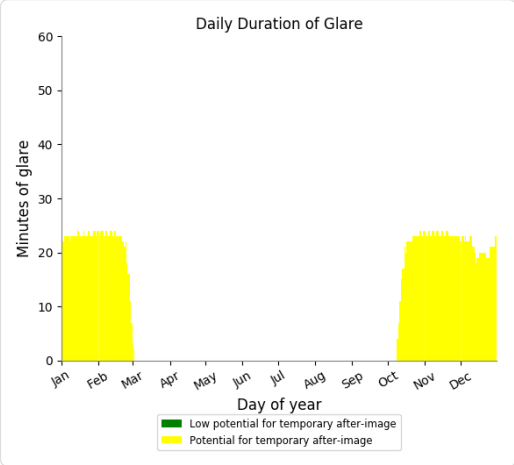


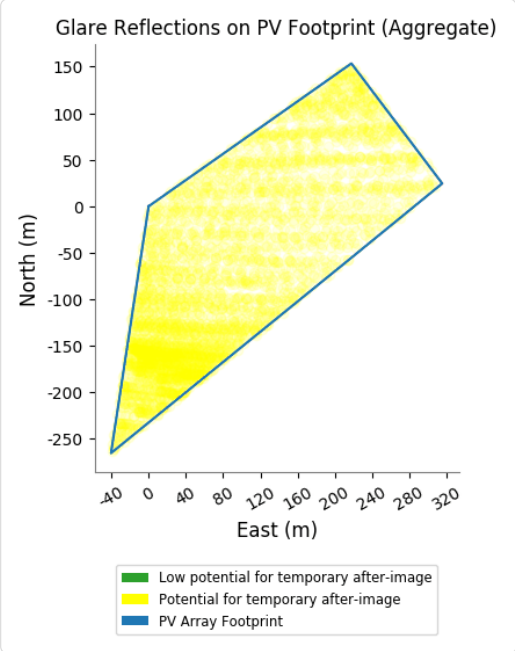
PV array 1 - OP Receptor (OP 59)

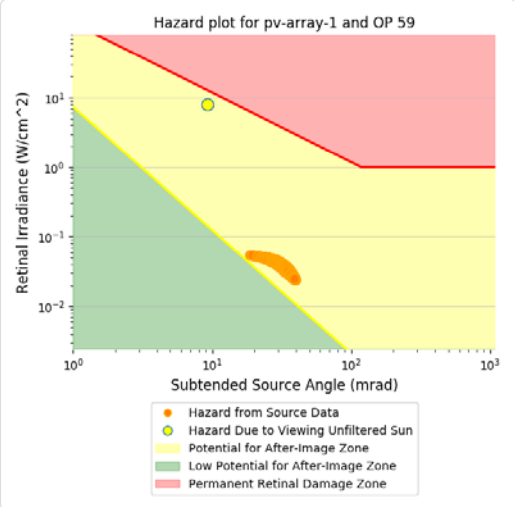
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 3,150 minutes of "yellow" glare with potential to cause temporary after-image.





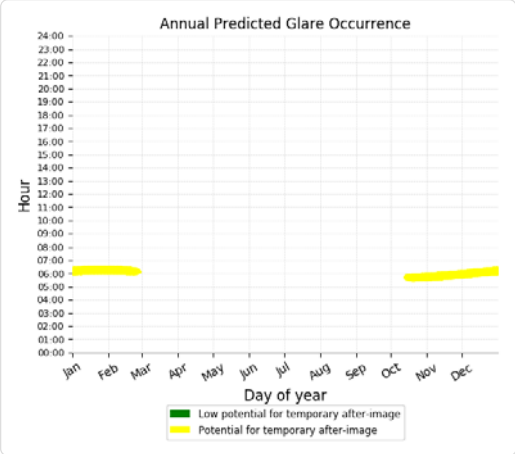


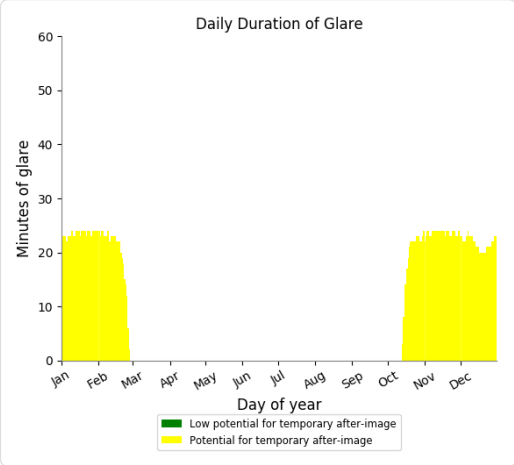


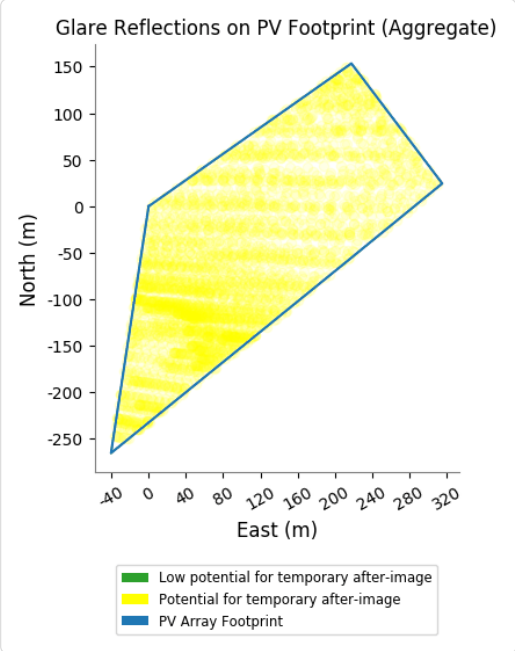
PV array 1 - OP Receptor (OP 60)

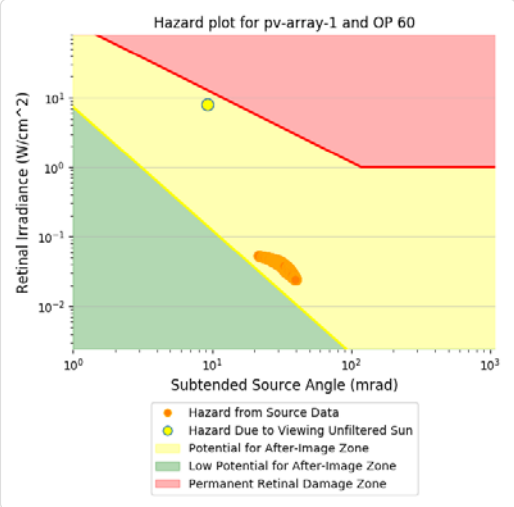
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 3,021 minutes of "yellow" glare with potential to cause temporary after-image.





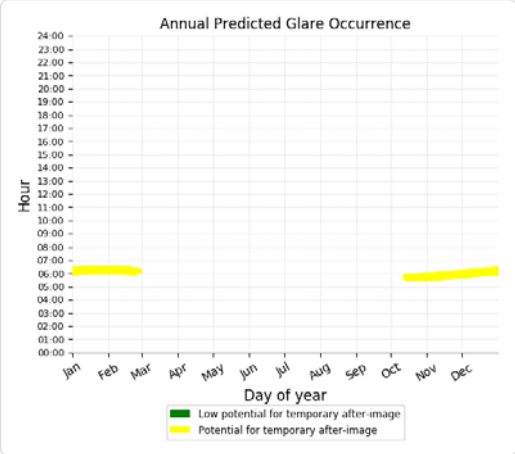


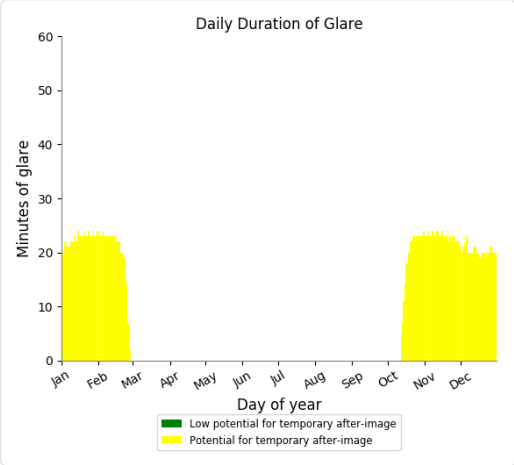


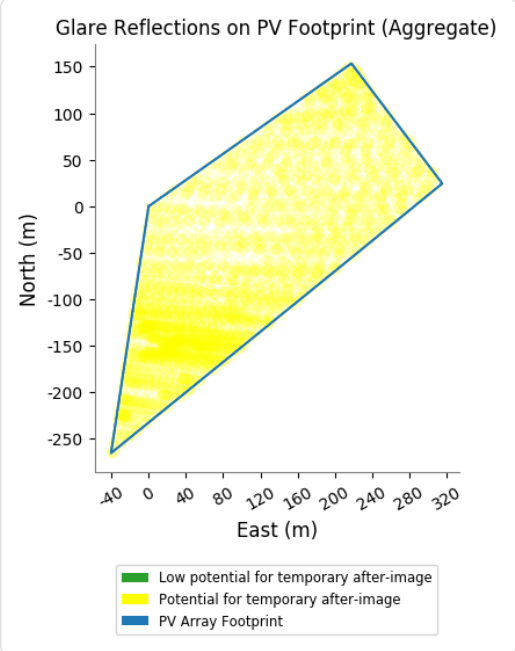
PV array 1 - OP Receptor (OP 61)

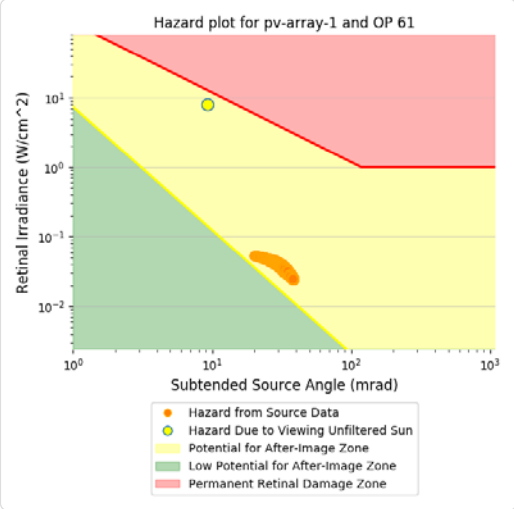
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,964 minutes of "yellow" glare with potential to cause temporary after-image.





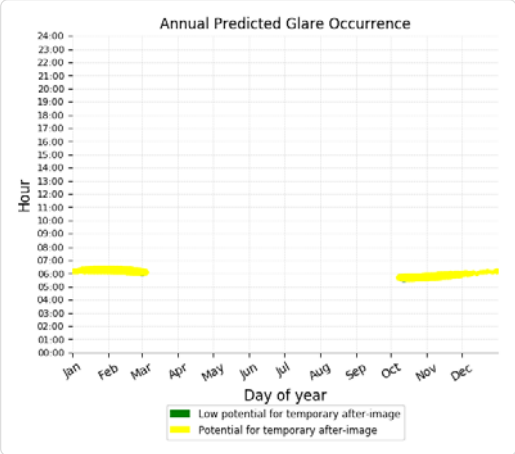


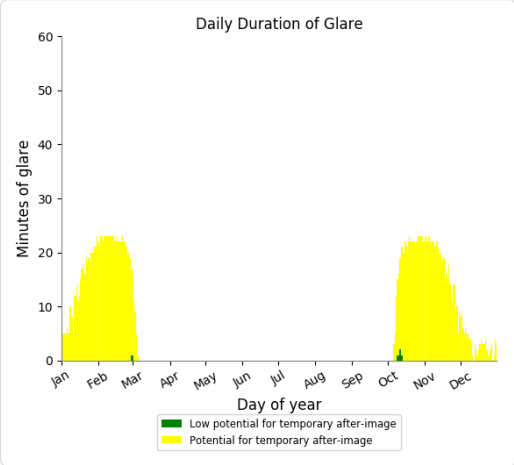


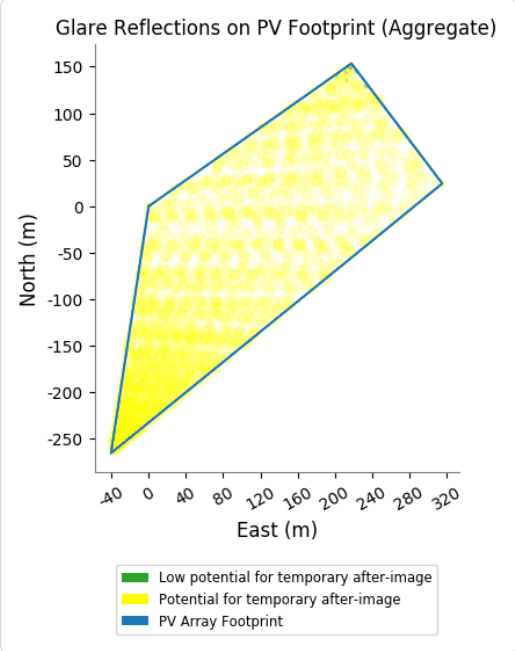
PV array 1 - OP Receptor (OP 62)

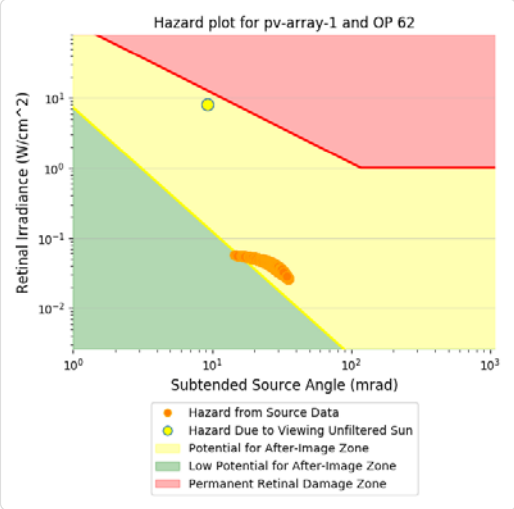
PV array is expected to produce the following glare for receptors at this location:

- 8 minutes of "green" glare with low potential to cause temporary after-image.
- 2,213 minutes of "yellow" glare with potential to cause temporary after-image.





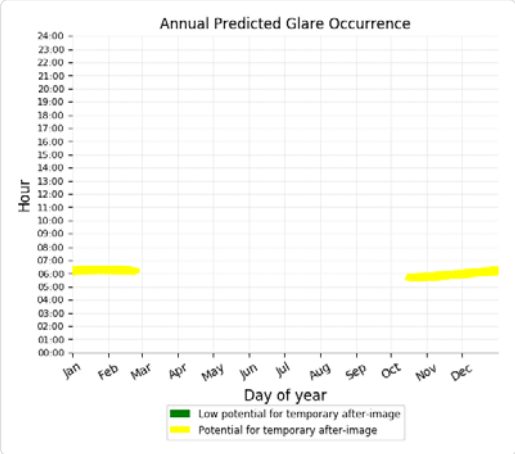


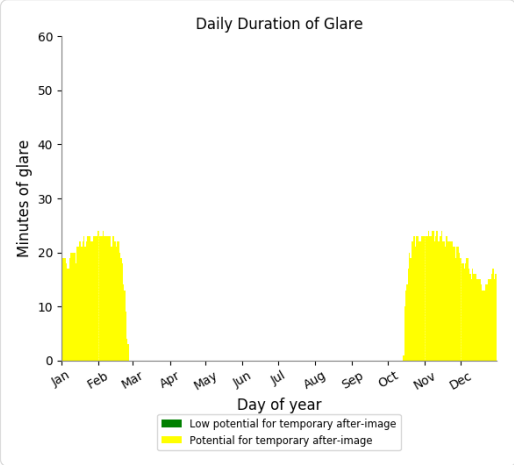


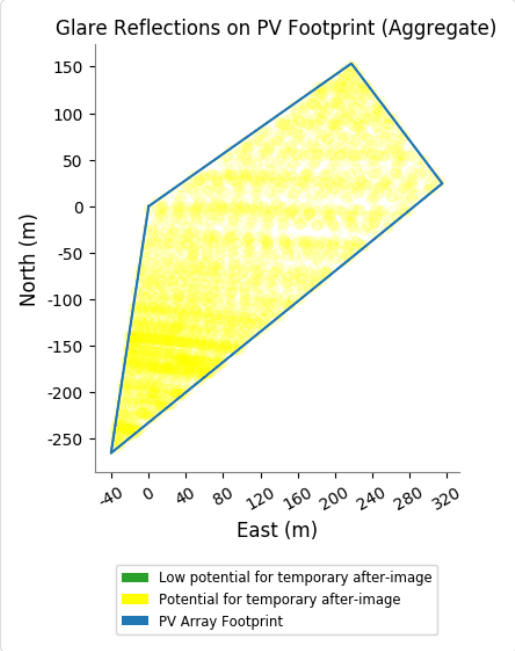
PV array 1 - OP Receptor (OP 63)

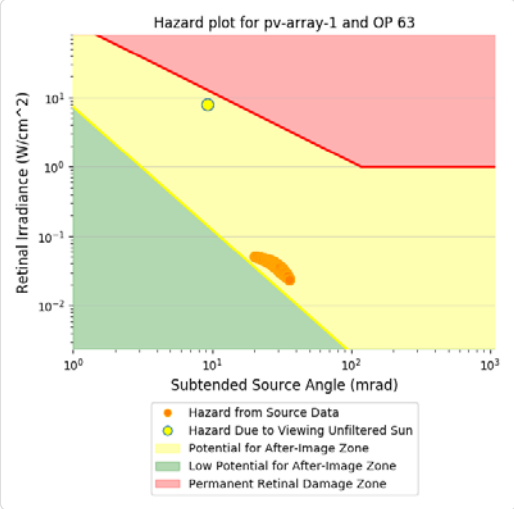
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,652 minutes of "yellow" glare with potential to cause temporary after-image.





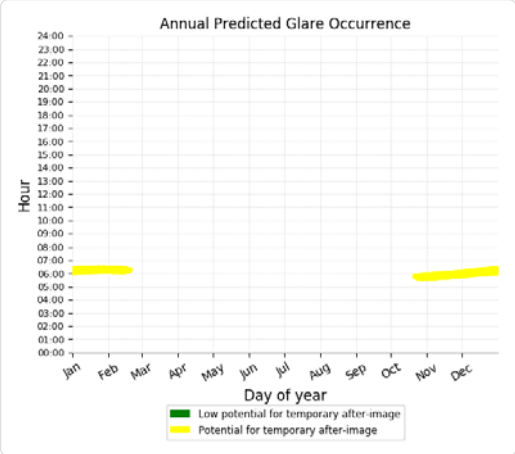


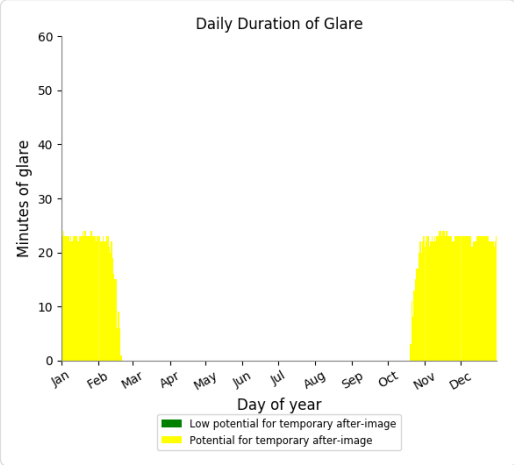


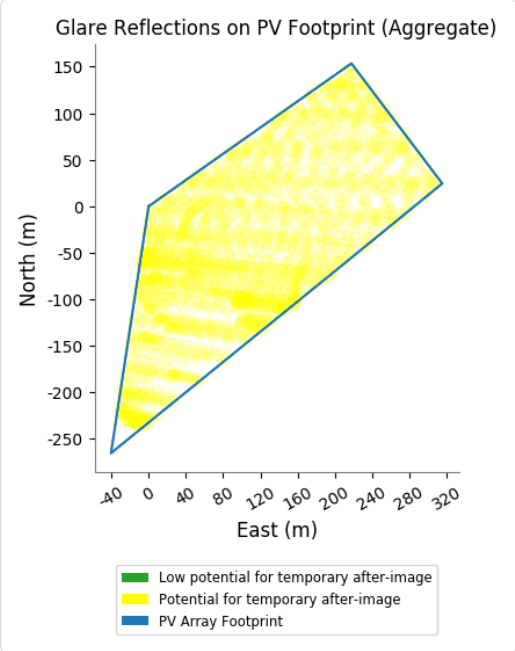
PV array 1 - OP Receptor (OP 64)

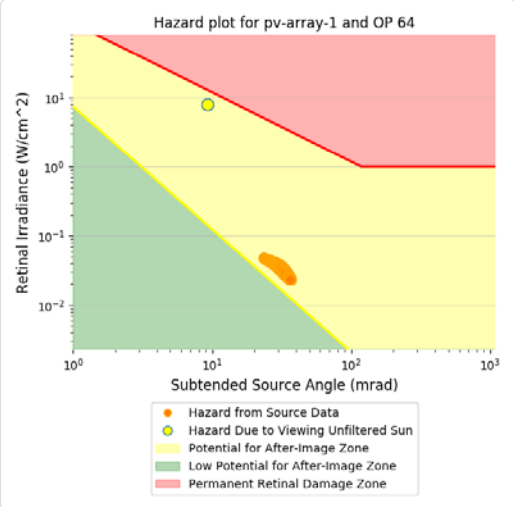
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,641 minutes of "yellow" glare with potential to cause temporary after-image.





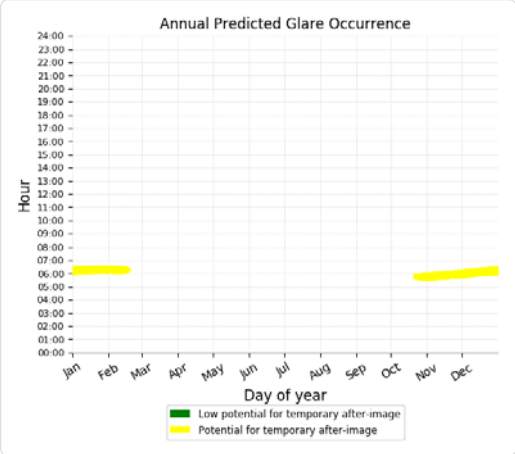


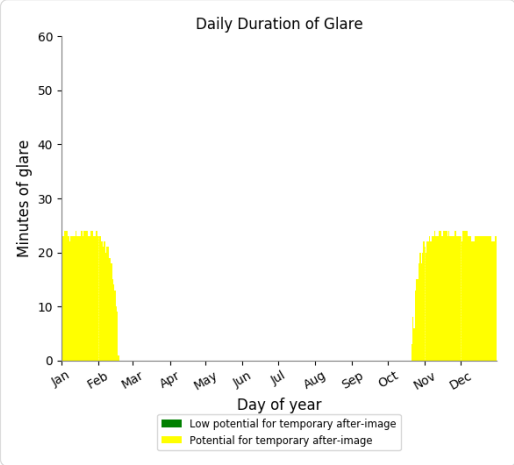


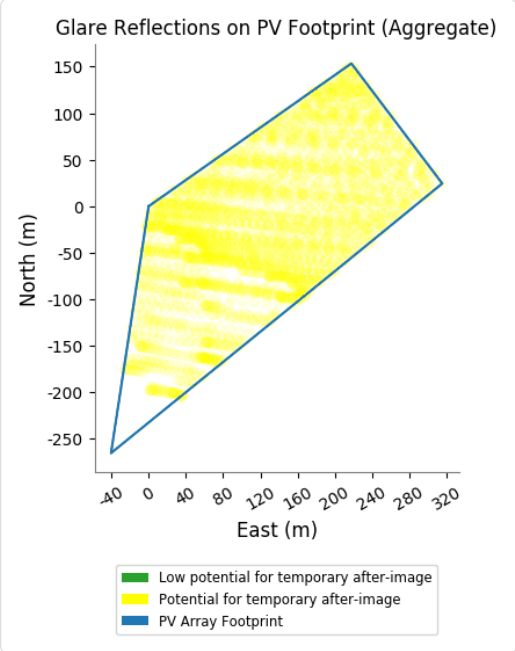
PV array 1 - OP Receptor (OP 65)

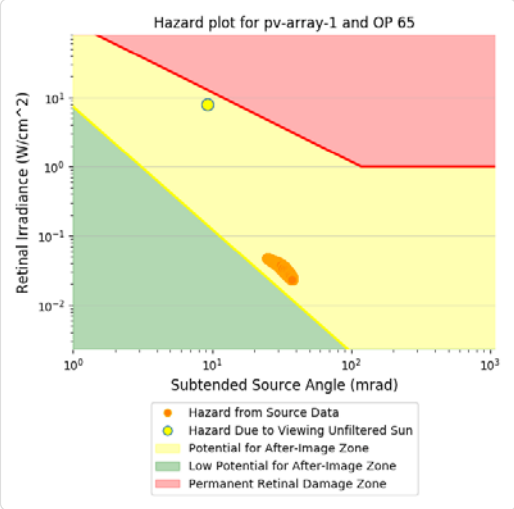
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,598 minutes of "yellow" glare with potential to cause temporary after-image.





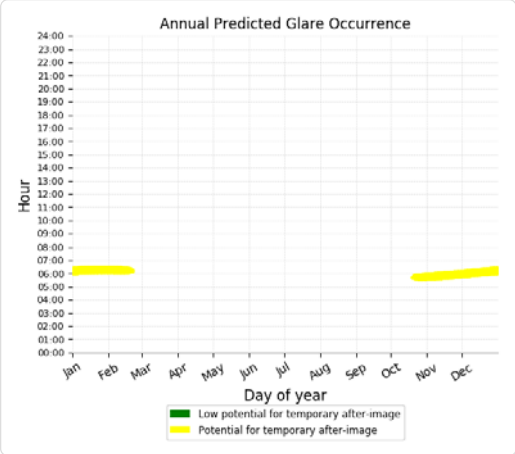


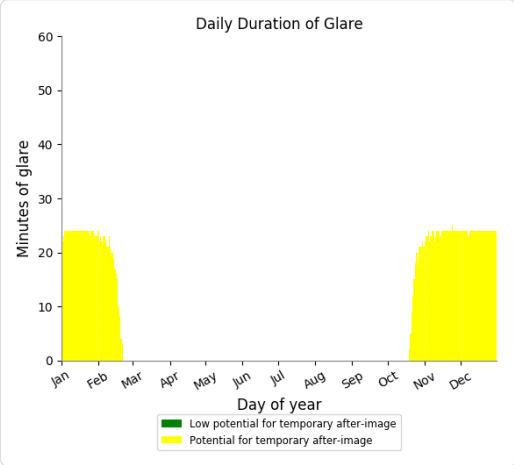


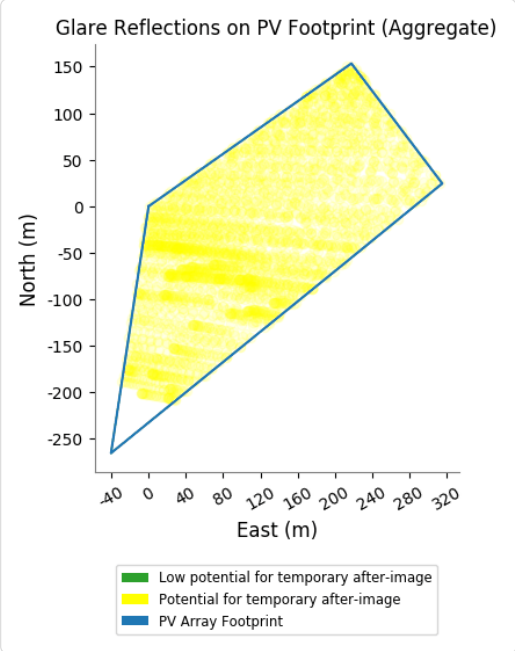
PV array 1 - OP Receptor (OP 66)

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

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,771 minutes of "yellow" glare with potential to cause temporary after-image.



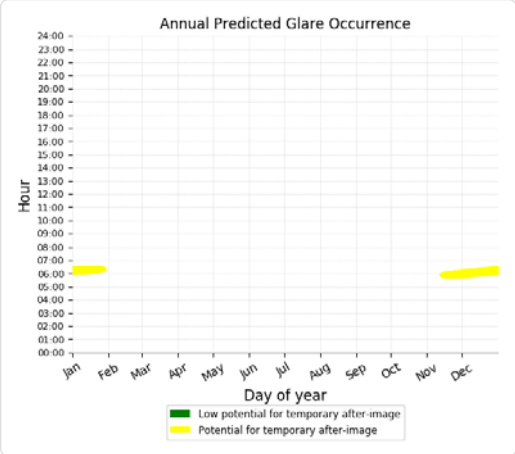


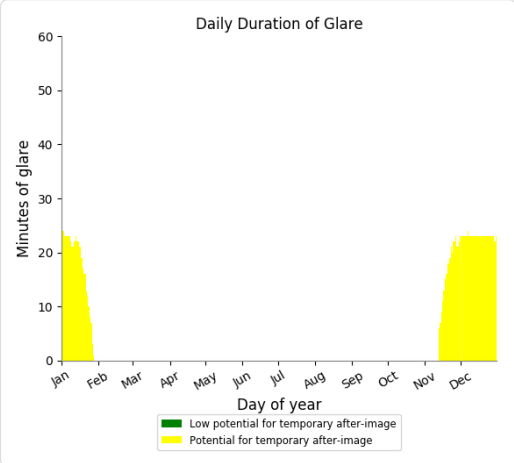


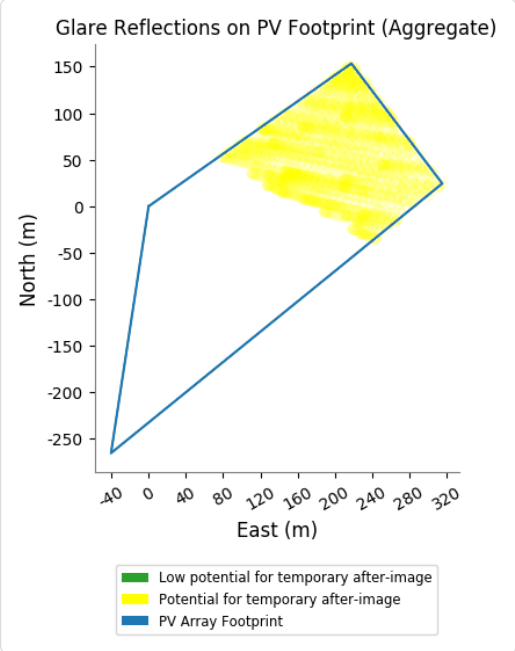
PV array 1 - OP Receptor (OP 67)

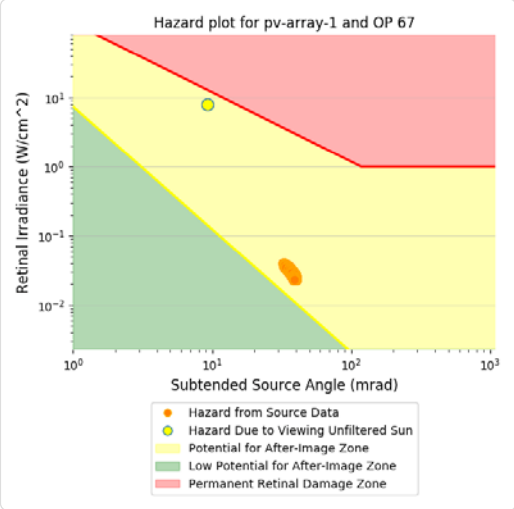
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,519 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 2 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	1889
OP: OP 7	0	2547
OP: OP 8	2	2387
OP: OP 9	1	2077
OP: OP 10	1	2290
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	7	966
OP: OP 25	17	1191
OP: OP 26	19	1122
OP: OP 27	22	662
OP: OP 28	30	765
OP: OP 29	38	747
OP: OP 30	25	703
OP: OP 31	0	529
OP: OP 32	0	0
OP: OP 33	0	582
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	0

OP: OP 46	0	0
OP: OP 47	0	0
OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	99	280
OP: OP 53	52	644
OP: OP 54	74	513
OP: OP 55	81	579
OP: OP 56	36	484
OP: OP 57	54	590
OP: OP 58	96	493
OP: OP 59	0	894
OP: OP 60	0	797
OP: OP 61	0	764
OP: OP 62	0	820
OP: OP 63	0	913
OP: OP 64	0	916
OP: OP 65	0	870
OP: OP 66	0	723
OP: OP 67	0	241

PV array 2 - OP Receptor (OP 1)

No glare found

PV array 2 - OP Receptor (OP 2)

No glare found

PV array 2 - OP Receptor (OP 3)

No glare found

PV array 2 - OP Receptor (OP 4)

No glare found

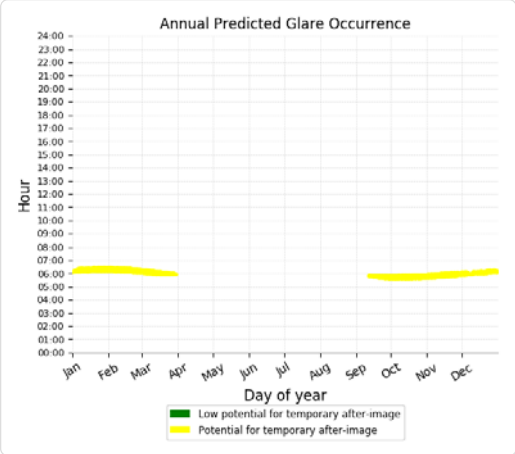
PV array 2 - OP Receptor (OP 5)

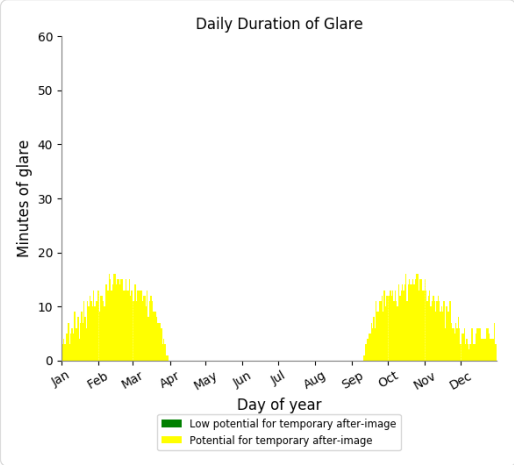
No glare found

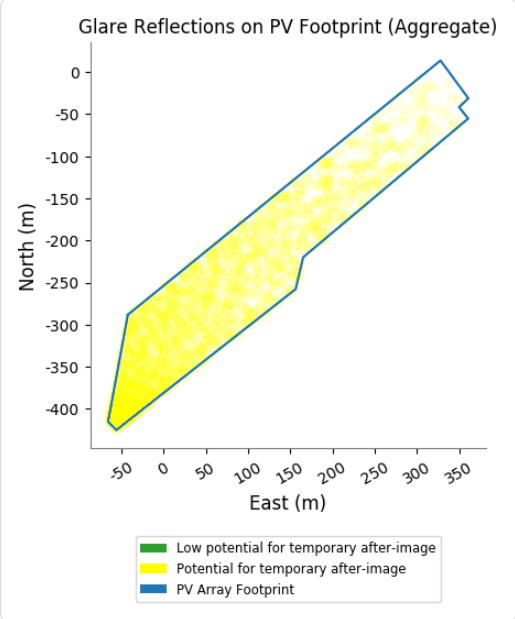
PV array 2 - OP Receptor (OP 6)

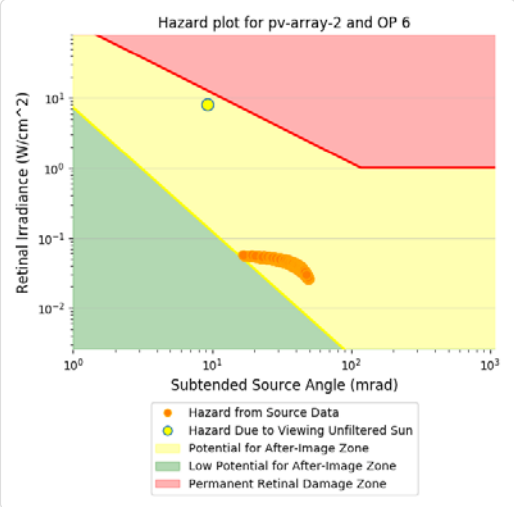
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,889 minutes of "yellow" glare with potential to cause temporary after-image.





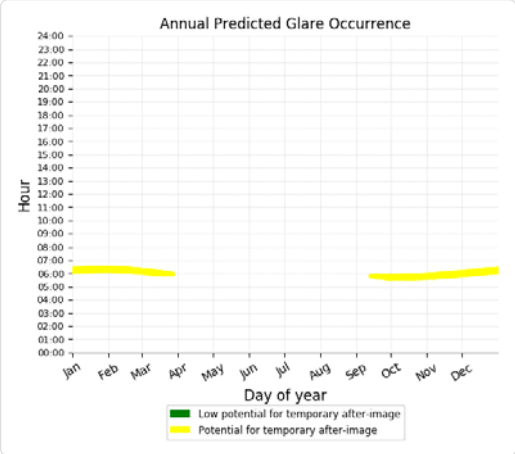


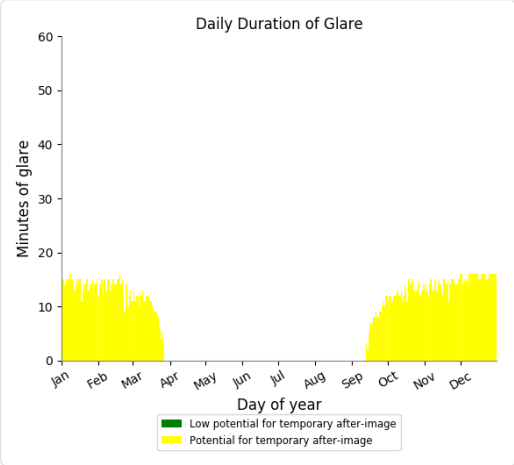


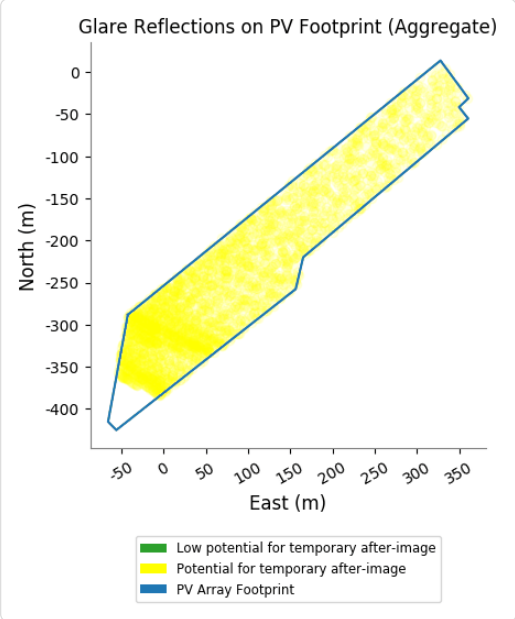
PV array 2 - OP Receptor (OP 7)

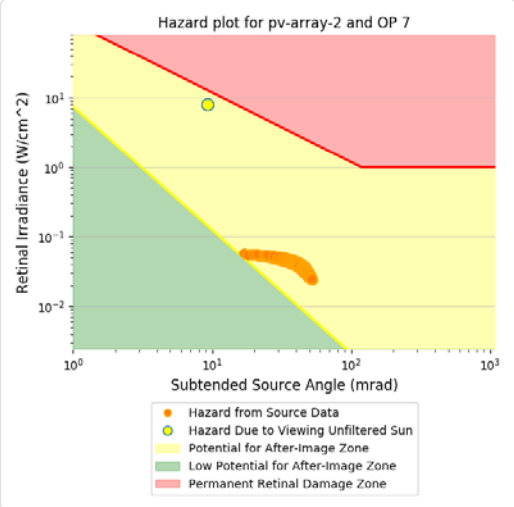
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,547 minutes of "yellow" glare with potential to cause temporary after-image.





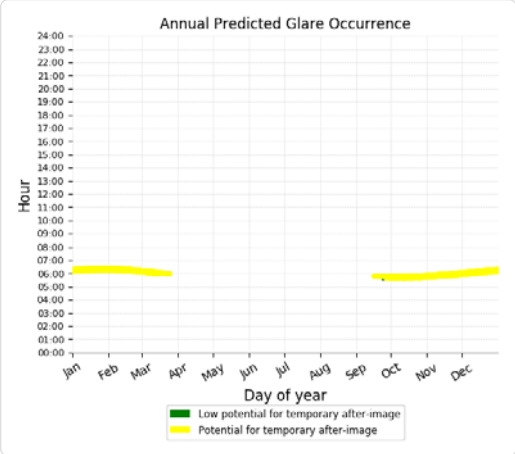


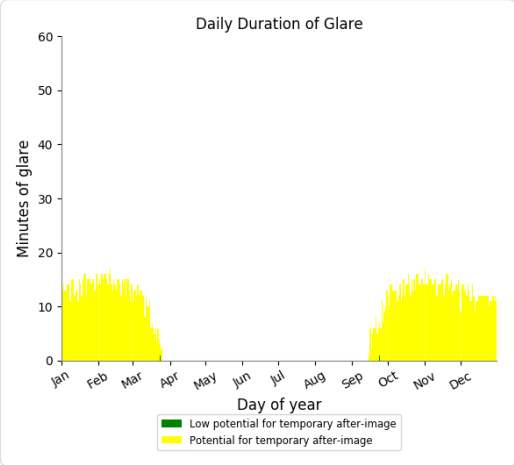


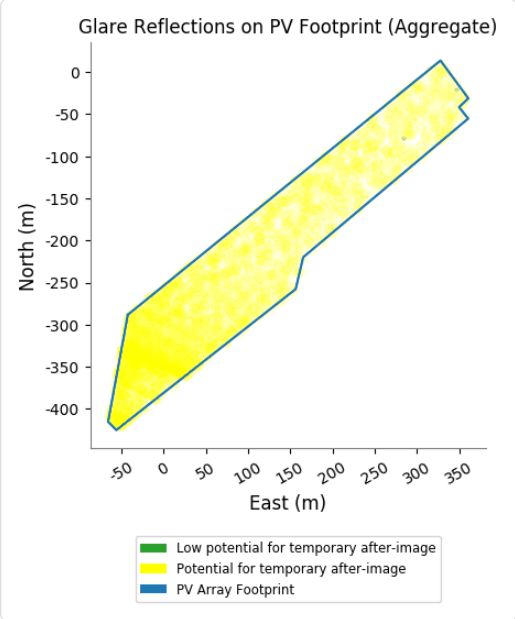
PV array 2 - OP Receptor (OP 8)

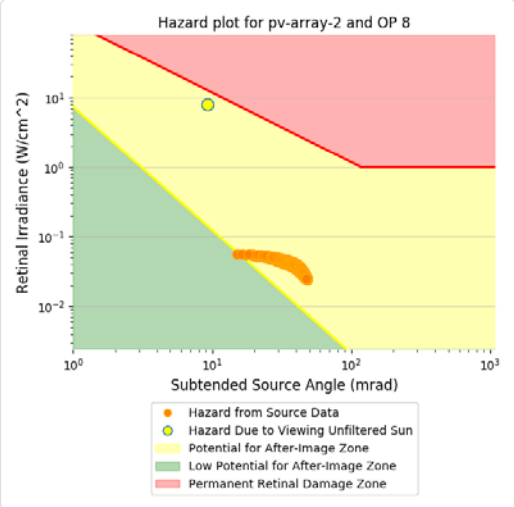
PV array is expected to produce the following glare for receptors at this location:

- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 2,387 minutes of "yellow" glare with potential to cause temporary after-image.





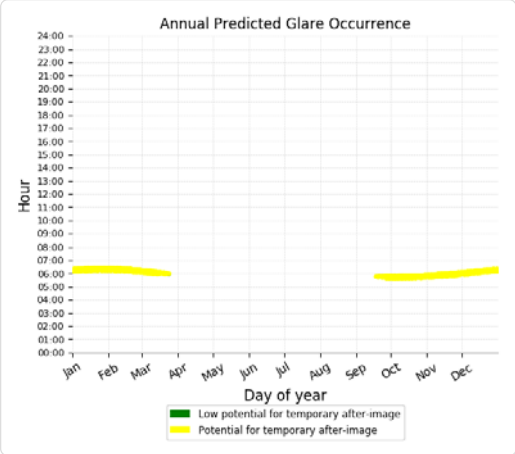


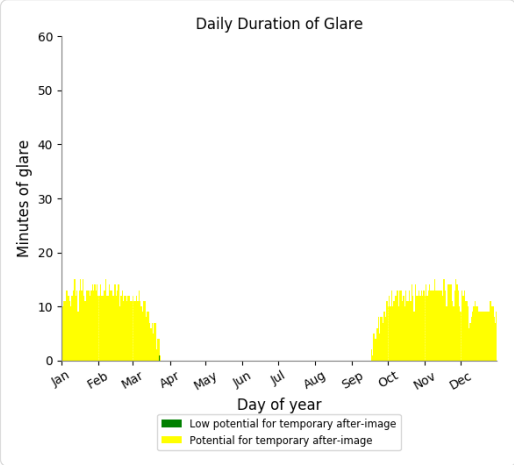


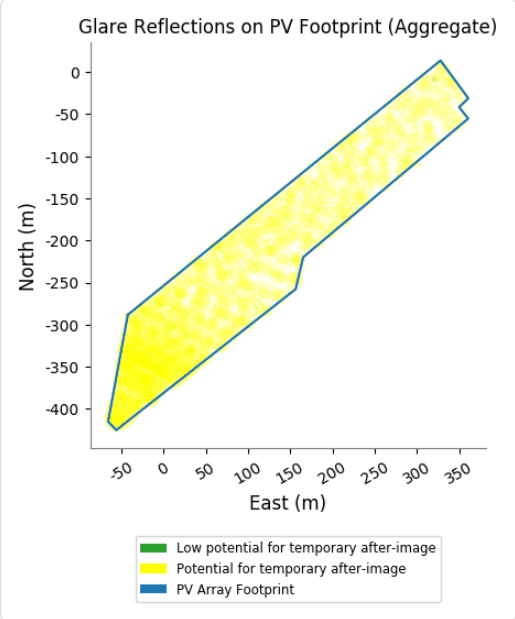
PV array 2 - OP Receptor (OP 9)

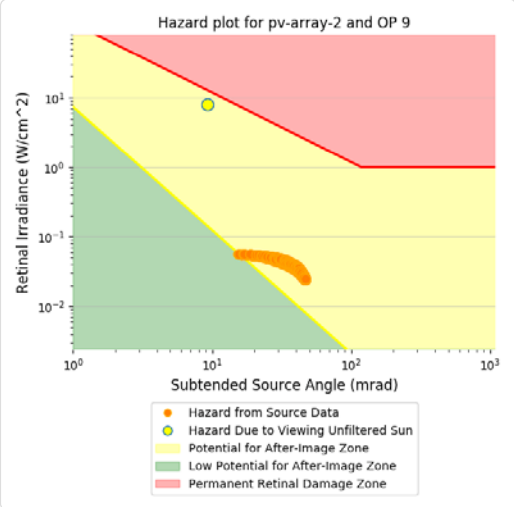
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 2,077 minutes of "yellow" glare with potential to cause temporary after-image.





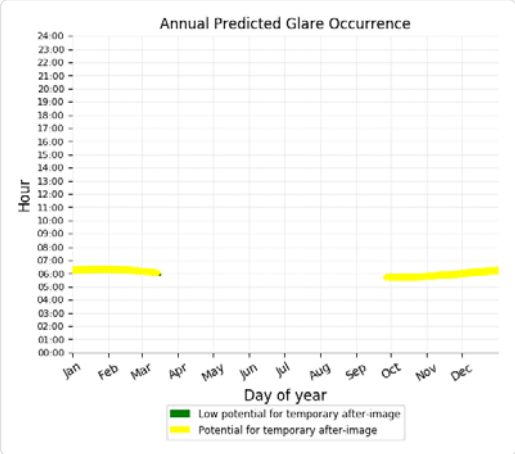


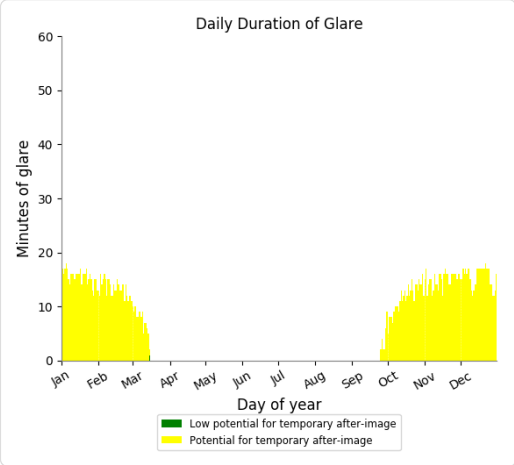


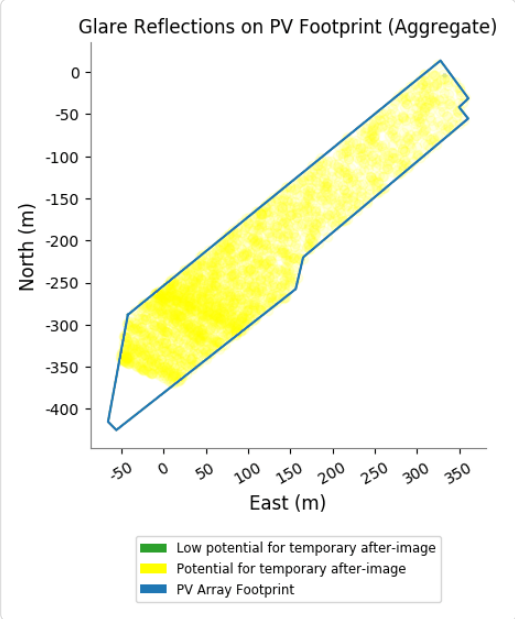
PV array 2 - OP Receptor (OP 10)

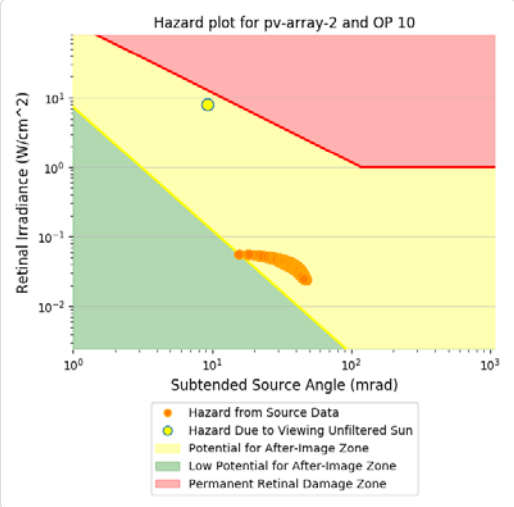
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 2,290 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 2 - OP Receptor (OP 11)

No glare found

PV array 2 - OP Receptor (OP 12)

No glare found

PV array 2 - OP Receptor (OP 13)

No glare found

PV array 2 - OP Receptor (OP 14)

No glare found

PV array 2 - OP Receptor (OP 15)

No glare found

PV array 2 - OP Receptor (OP 16)

No glare found

PV array 2 - OP Receptor (OP 17)

No glare found

PV array 2 - OP Receptor (OP 18)

No glare found

PV array 2 - OP Receptor (OP 19)

No glare found

PV array 2 - OP Receptor (OP 20)

No glare found

PV array 2 - OP Receptor (OP 21)

No glare found

PV array 2 - OP Receptor (OP 22)

No glare found

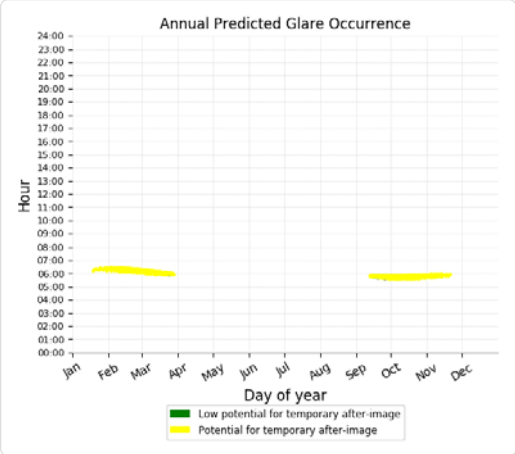
PV array 2 - OP Receptor (OP 23)

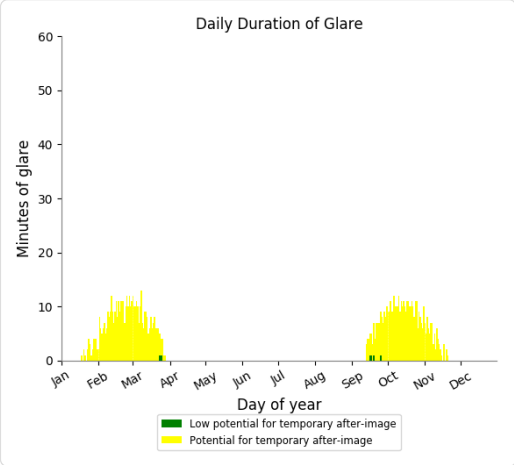
No glare found

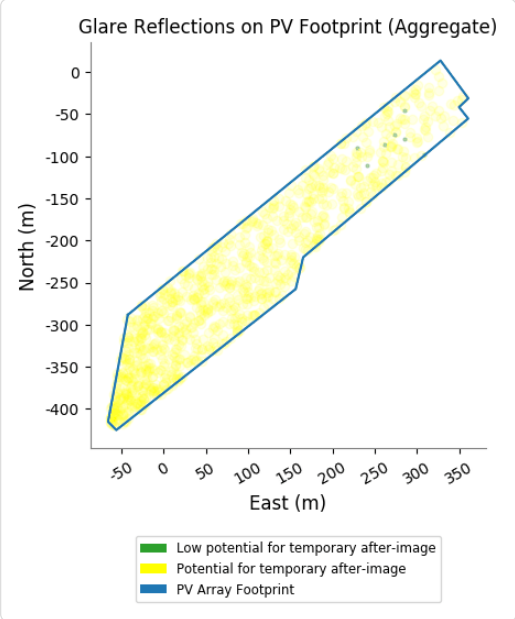
PV array 2 - OP Receptor (OP 24)

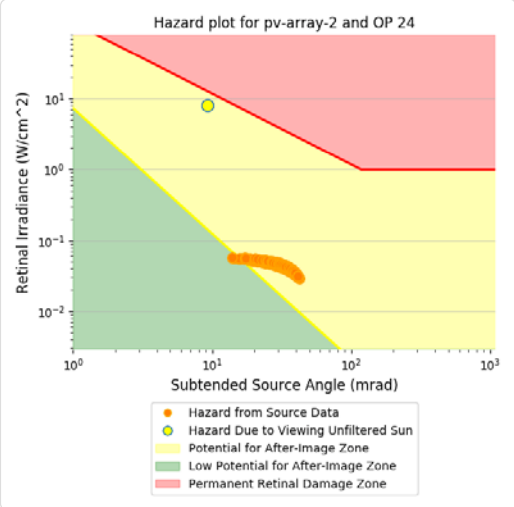
PV array is expected to produce the following glare for receptors at this location:

- 7 minutes of "green" glare with low potential to cause temporary after-image.
- 966 minutes of "yellow" glare with potential to cause temporary after-image.





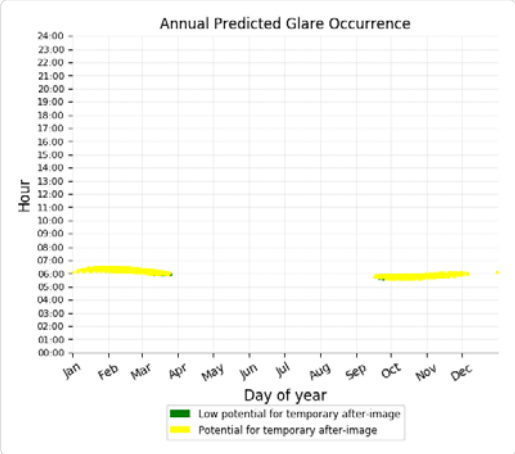


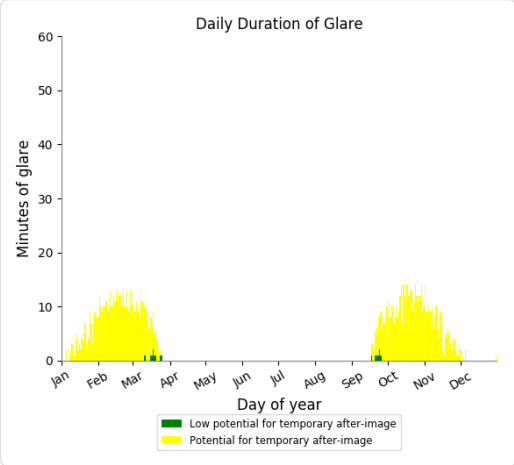


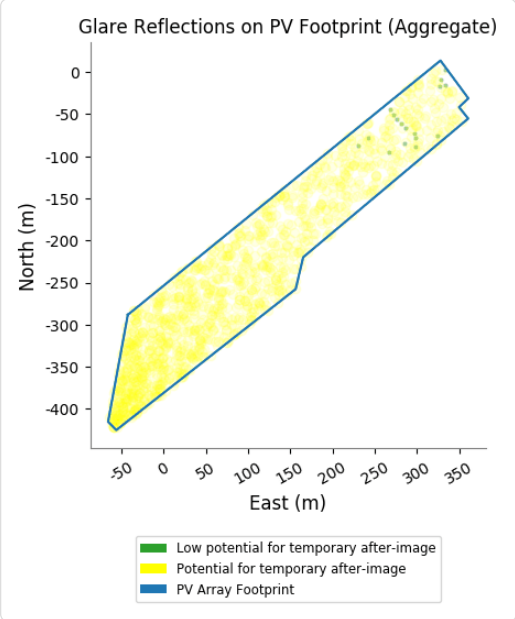
PV array 2 - OP Receptor (OP 25)

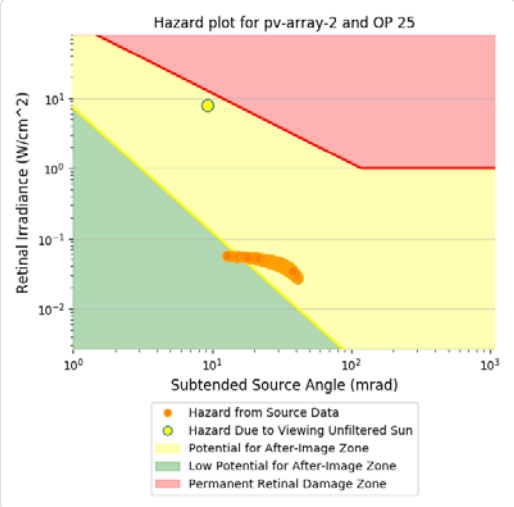
PV array is expected to produce the following glare for receptors at this location:

- 17 minutes of "green" glare with low potential to cause temporary after-image.
- 1,191 minutes of "yellow" glare with potential to cause temporary after-image.





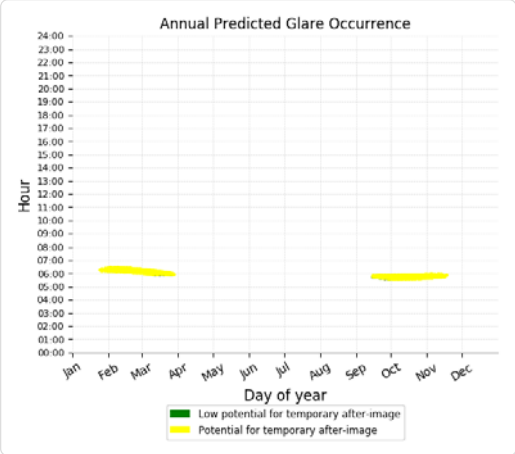


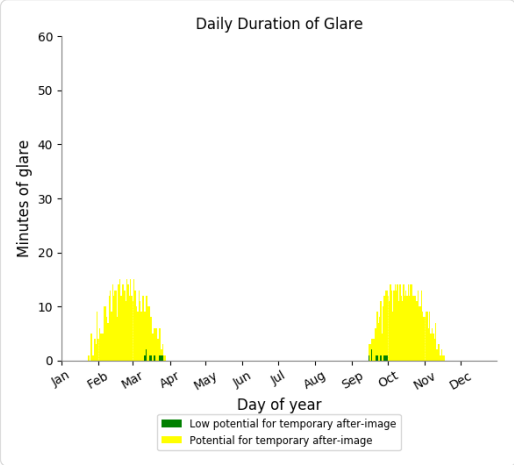


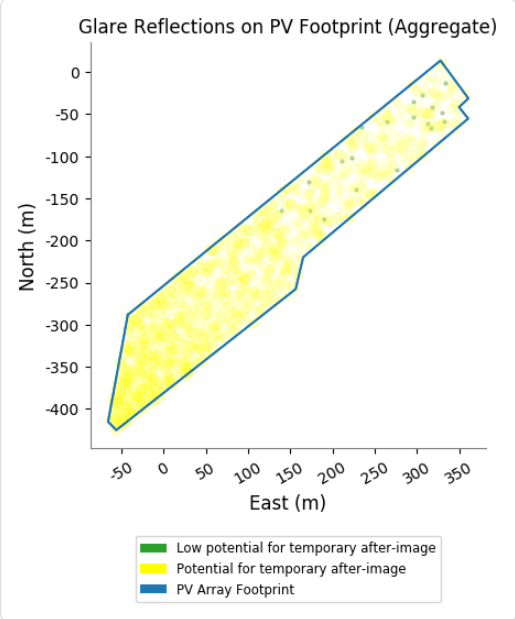
PV array 2 - OP Receptor (OP 26)

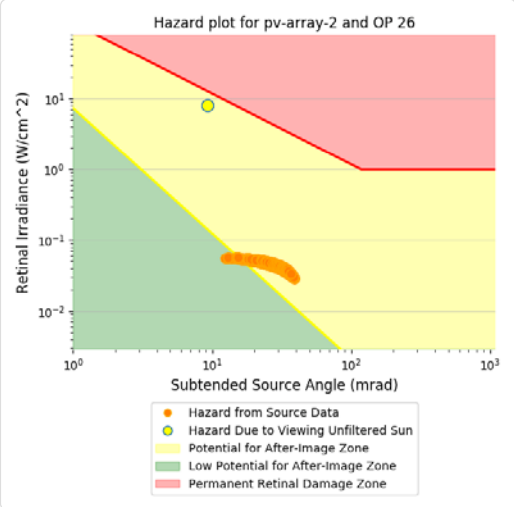
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 1,122 minutes of "yellow" glare with potential to cause temporary after-image.





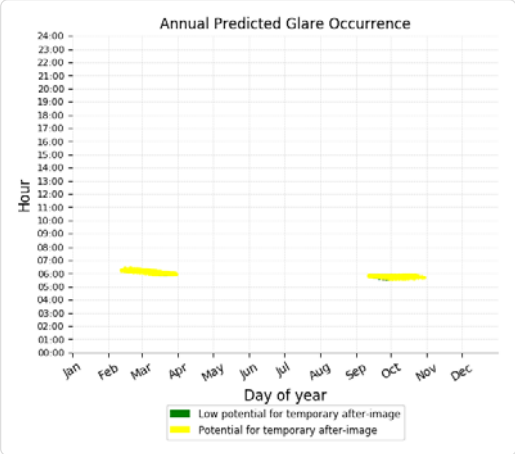


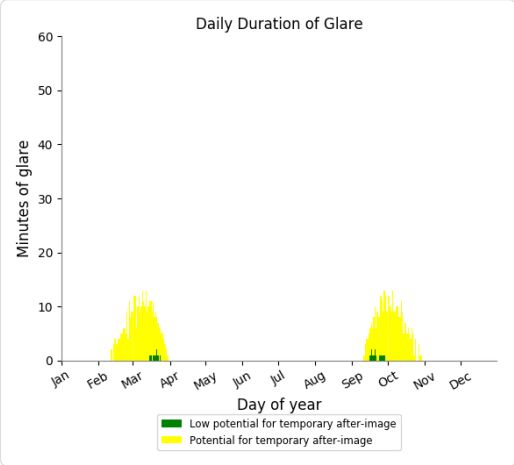


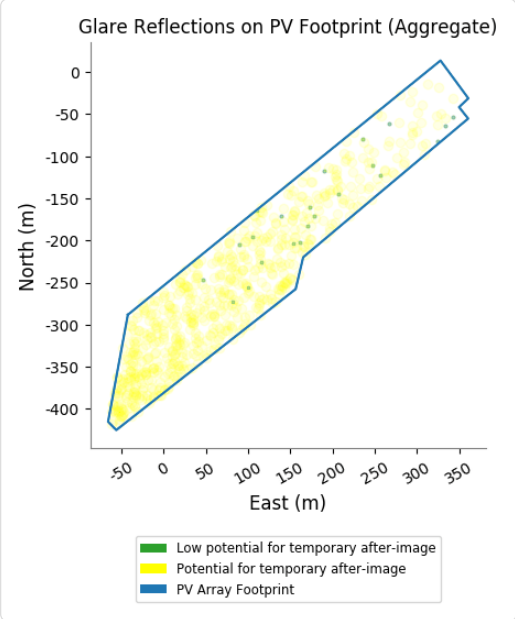
PV array 2 - OP Receptor (OP 27)

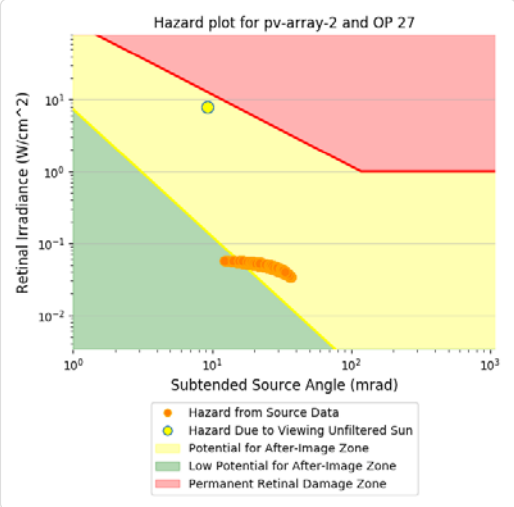
PV array is expected to produce the following glare for receptors at this location:

- 22 minutes of "green" glare with low potential to cause temporary after-image.
- 662 minutes of "yellow" glare with potential to cause temporary after-image.





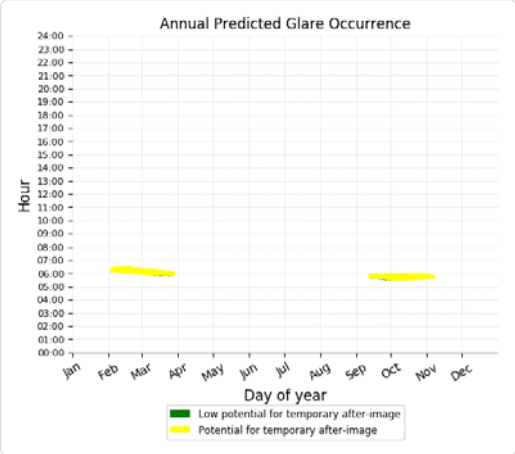


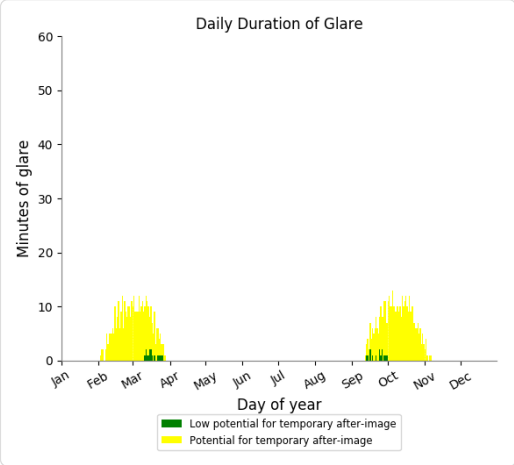


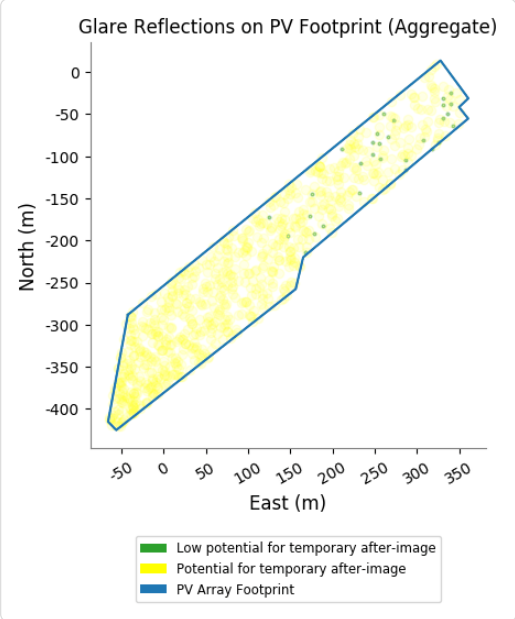
PV array 2 - OP Receptor (OP 28)

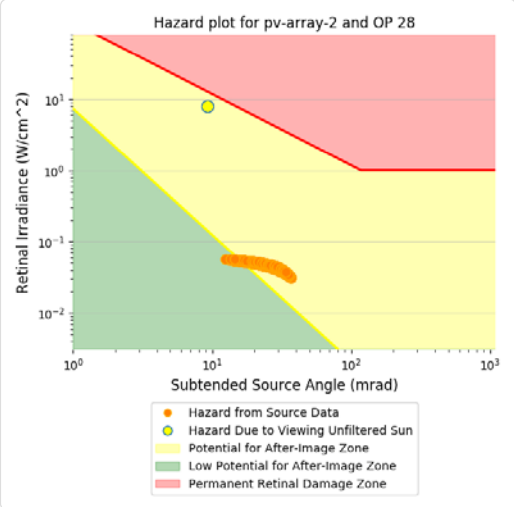
PV array is expected to produce the following glare for receptors at this location:

- 30 minutes of "green" glare with low potential to cause temporary after-image.
- 765 minutes of "yellow" glare with potential to cause temporary after-image.





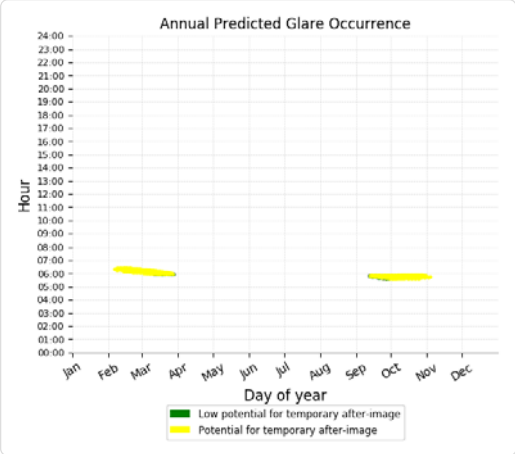


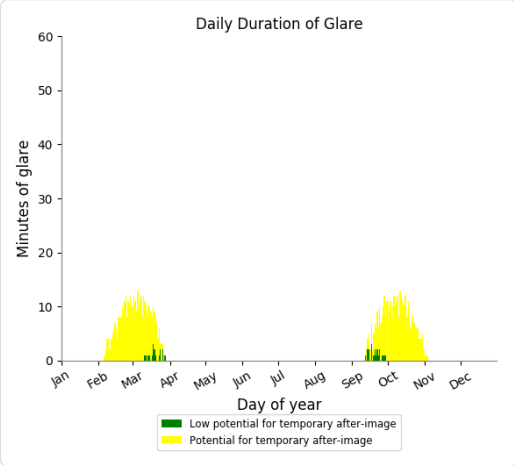


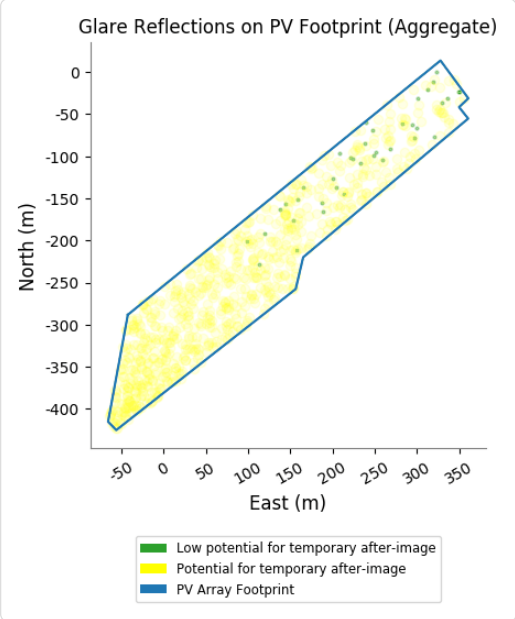
PV array 2 - OP Receptor (OP 29)

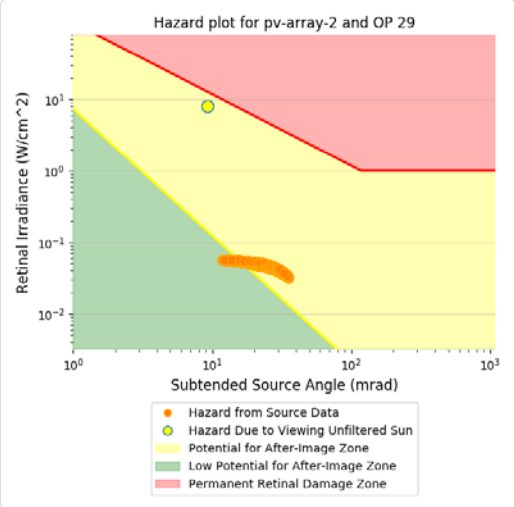
PV array is expected to produce the following glare for receptors at this location:

- 38 minutes of "green" glare with low potential to cause temporary after-image.
- 747 minutes of "yellow" glare with potential to cause temporary after-image.





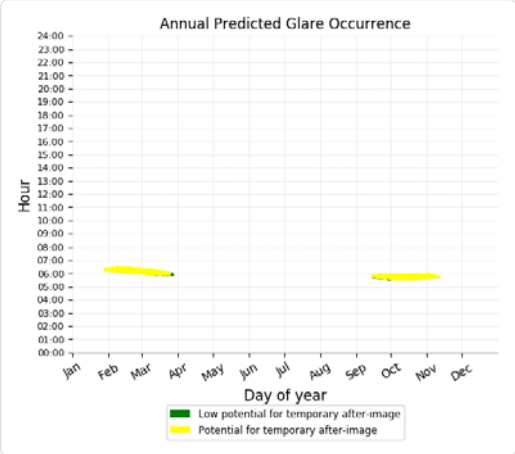


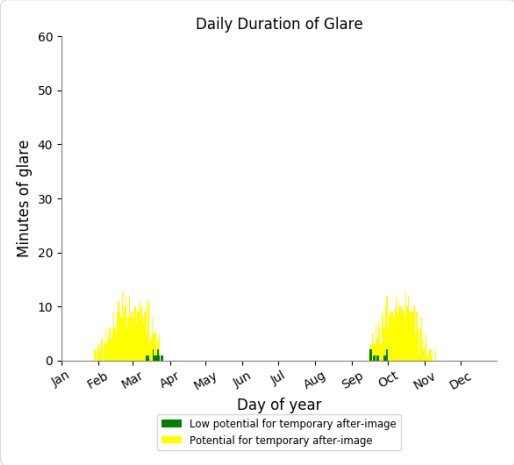


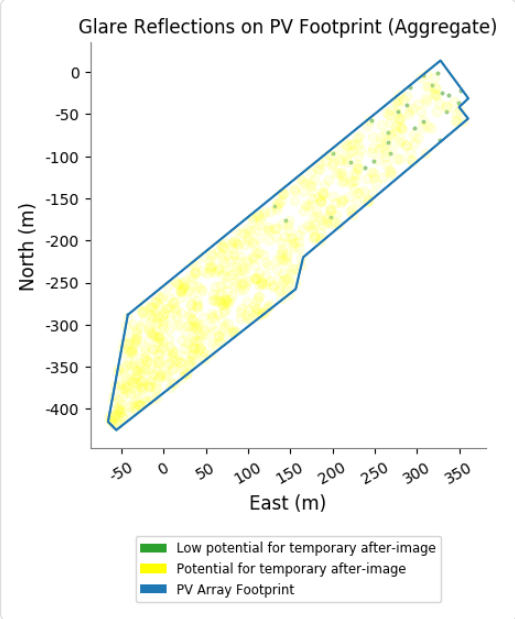
PV array 2 - OP Receptor (OP 30)

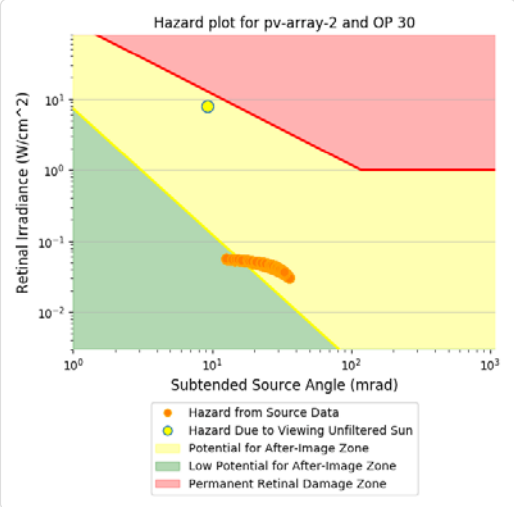
PV array is expected to produce the following glare for receptors at this location:

- 25 minutes of "green" glare with low potential to cause temporary after-image.
- 703 minutes of "yellow" glare with potential to cause temporary after-image.





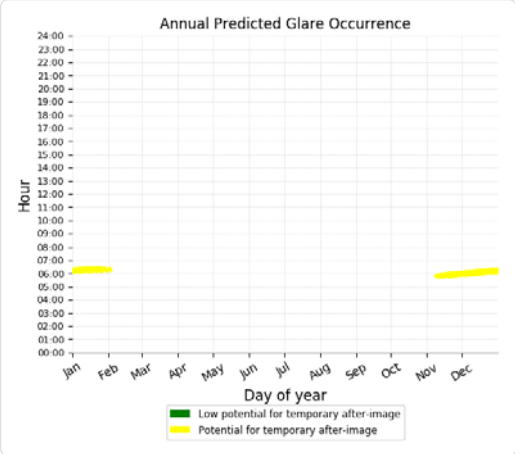


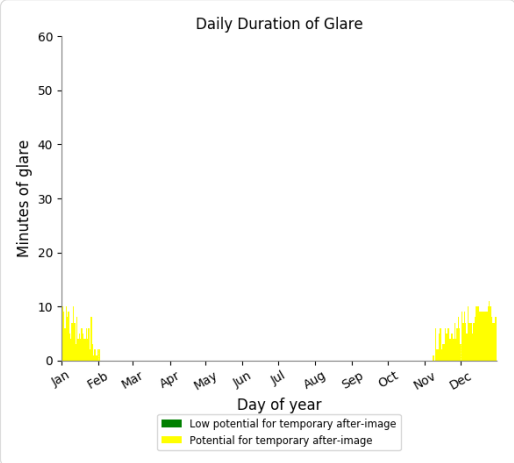


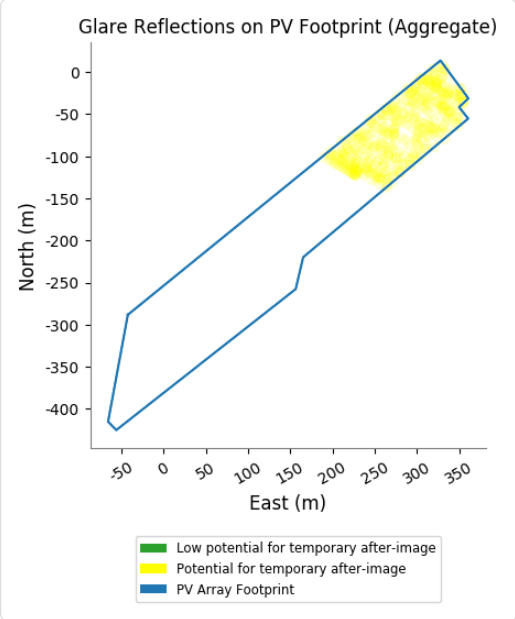
PV array 2 - OP Receptor (OP 31)

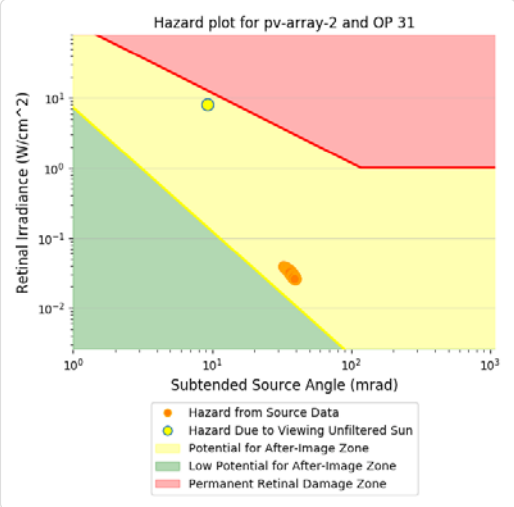
PV array is expected to produce the following glare for receptors at this location:

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









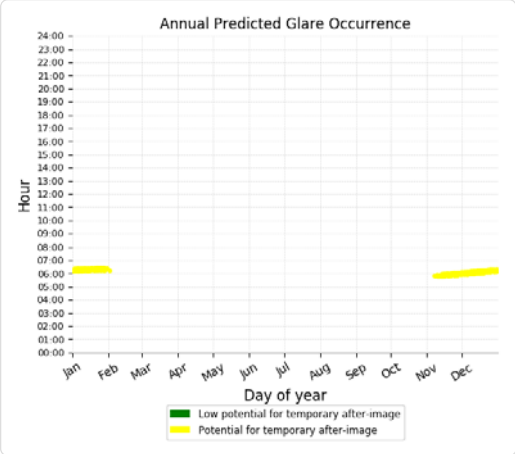
PV array 2 - OP Receptor (OP 32)

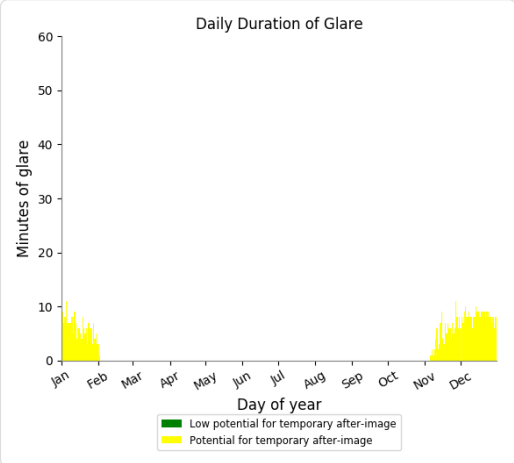
No glare found

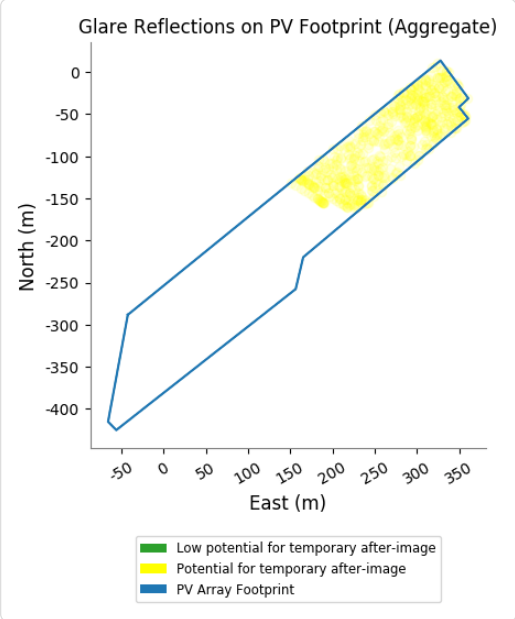
PV array 2 - OP Receptor (OP 33)

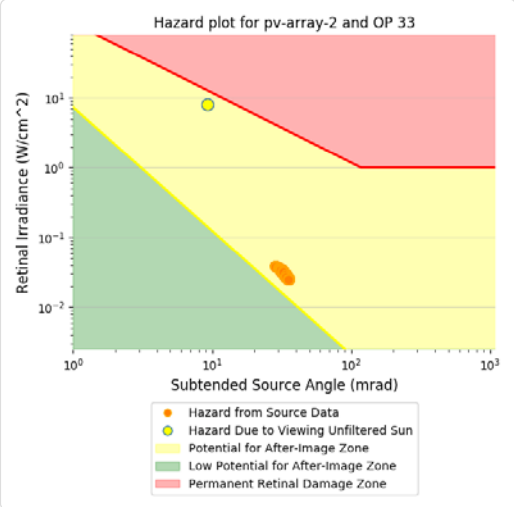
PV array is expected to produce the following glare for receptors at this location:

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









PV array 2 - OP Receptor (OP 34)

No glare found

PV array 2 - OP Receptor (OP 35)

No glare found

PV array 2 - OP Receptor (OP 36)

No glare found

PV array 2 - OP Receptor (OP 37)

No glare found

PV array 2 - OP Receptor (OP 38)

No glare found

PV array 2 - OP Receptor (OP 39)

No glare found

PV array 2 - OP Receptor (OP 40)

No glare found

PV array 2 - OP Receptor (OP 41)

No glare found

PV array 2 - OP Receptor (OP 42)

No glare found

PV array 2 - OP Receptor (OP 43)

No glare found

PV array 2 - OP Receptor (OP 44)

No glare found

PV array 2 - OP Receptor (OP 45)

No glare found

PV array 2 - OP Receptor (OP 46)

No glare found

PV array 2 - OP Receptor (OP 47)

No glare found

PV array 2 - OP Receptor (OP 48)

No glare found

PV array 2 - OP Receptor (OP 49)

No glare found

PV array 2 - OP Receptor (OP 50)

No glare found

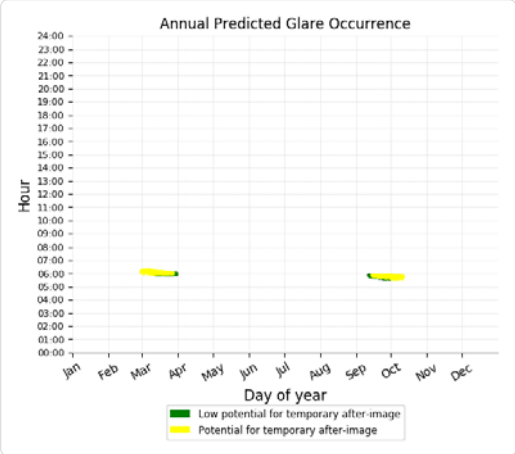
PV array 2 - OP Receptor (OP 51)

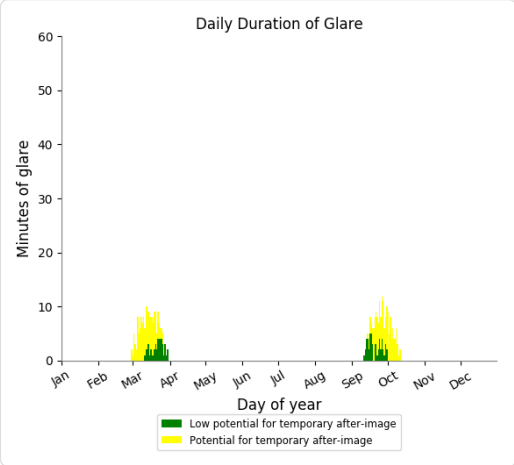
No glare found

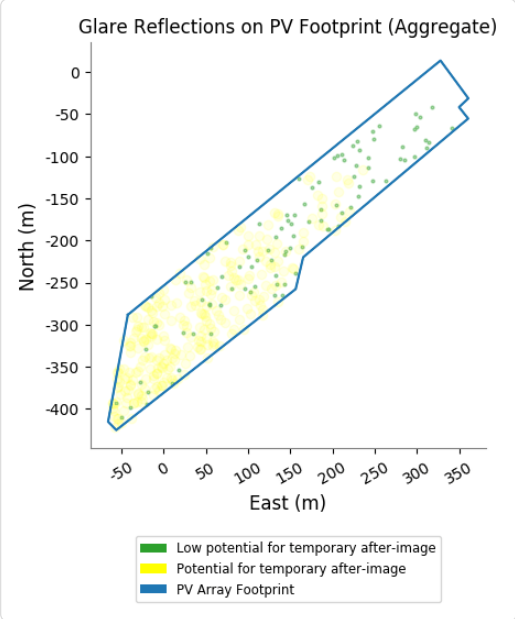
PV array 2 - OP Receptor (OP 52)

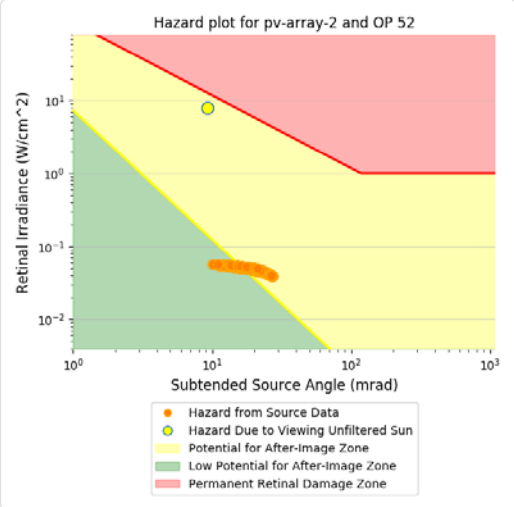
PV array is expected to produce the following glare for receptors at this location:

- 99 minutes of "green" glare with low potential to cause temporary after-image.
- 280 minutes of "yellow" glare with potential to cause temporary after-image.





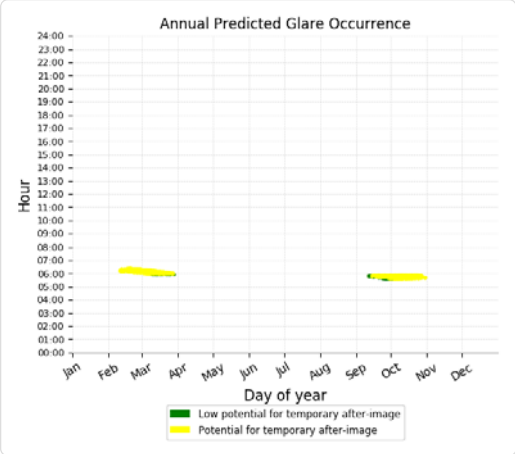


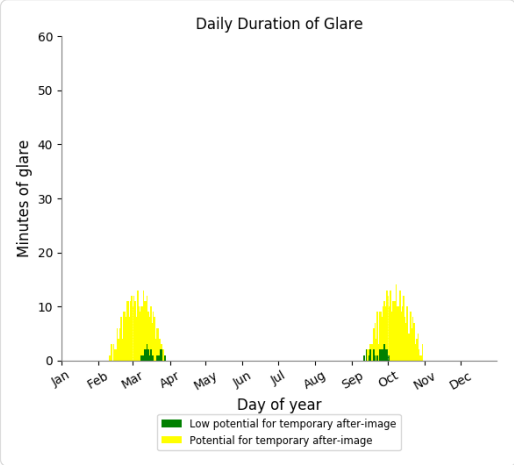


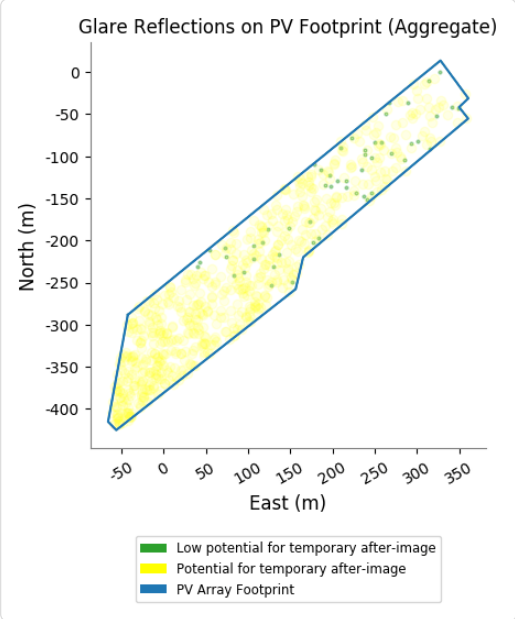
PV array 2 - OP Receptor (OP 53)

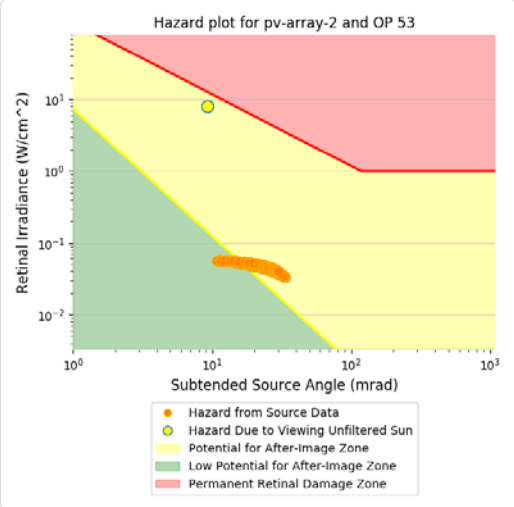
PV array is expected to produce the following glare for receptors at this location:

- 52 minutes of "green" glare with low potential to cause temporary after-image.
- 644 minutes of "yellow" glare with potential to cause temporary after-image.





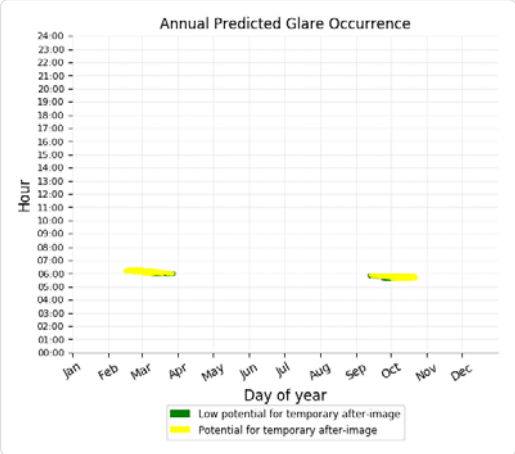


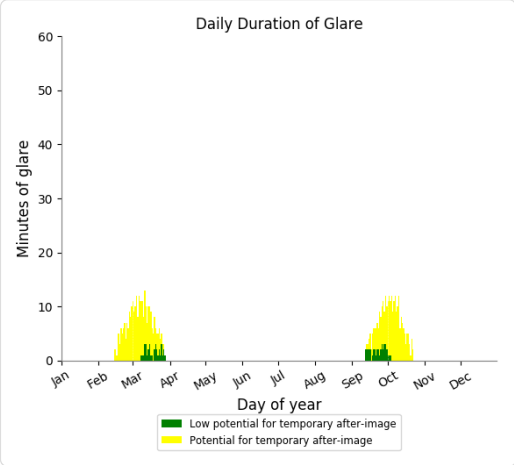


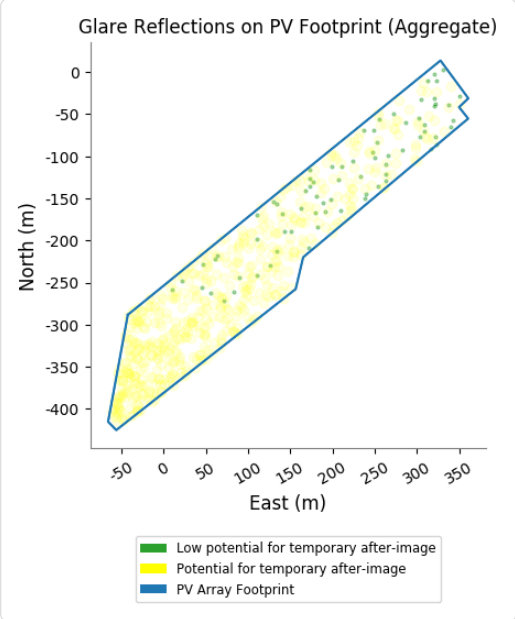
PV array 2 - OP Receptor (OP 54)

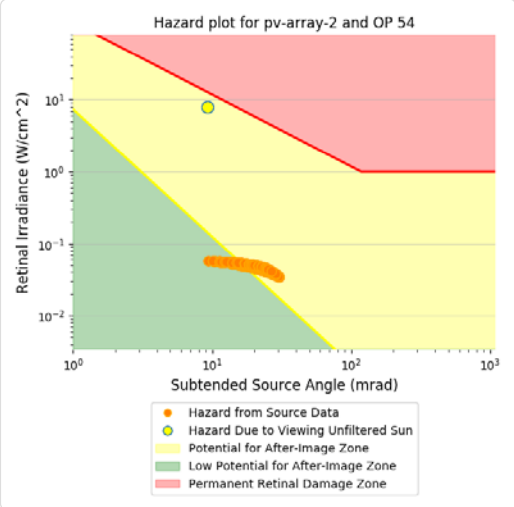
PV array is expected to produce the following glare for receptors at this location:

- 74 minutes of "green" glare with low potential to cause temporary after-image.
- 513 minutes of "yellow" glare with potential to cause temporary after-image.





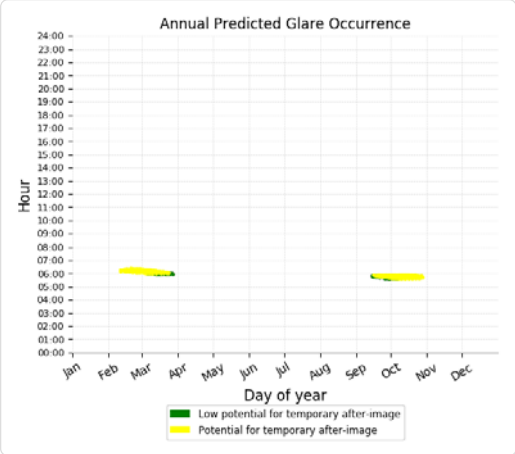


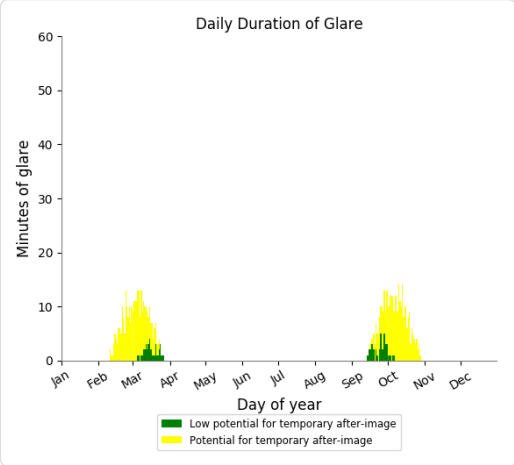


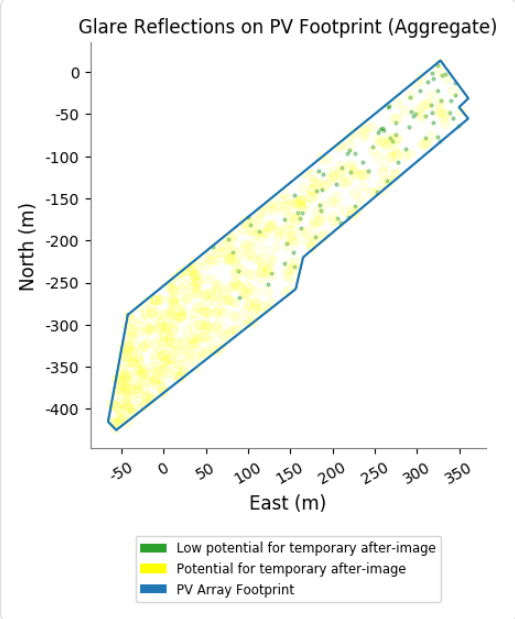
PV array 2 - OP Receptor (OP 55)

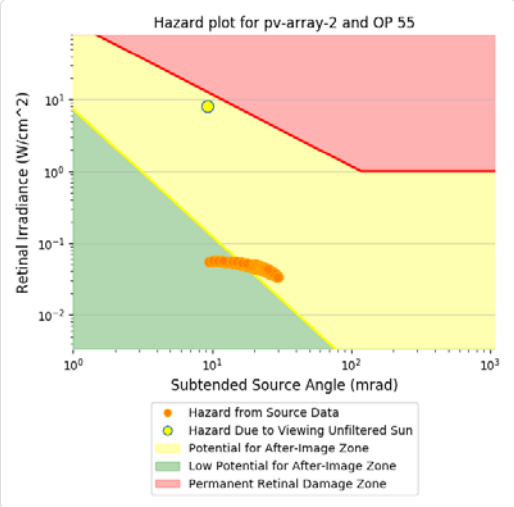
PV array is expected to produce the following glare for receptors at this location:

- 81 minutes of "green" glare with low potential to cause temporary after-image.
- 579 minutes of "yellow" glare with potential to cause temporary after-image.





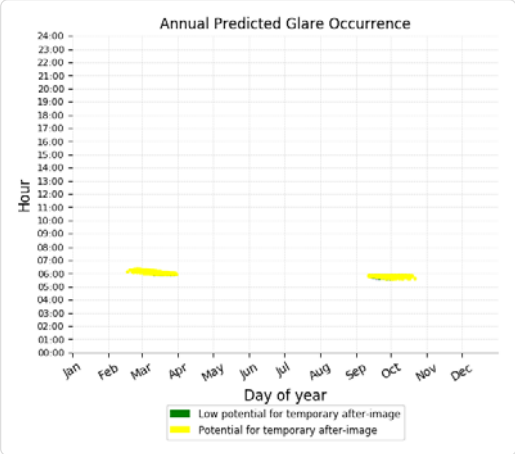


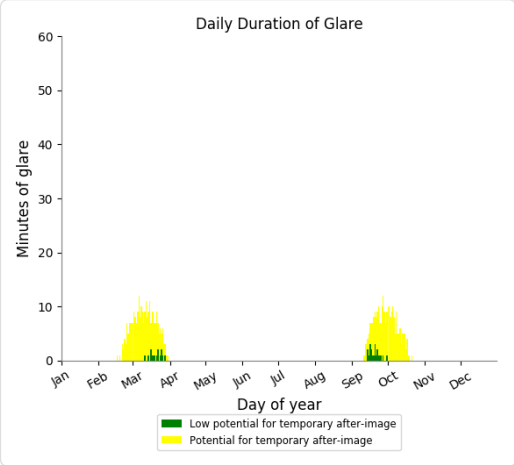


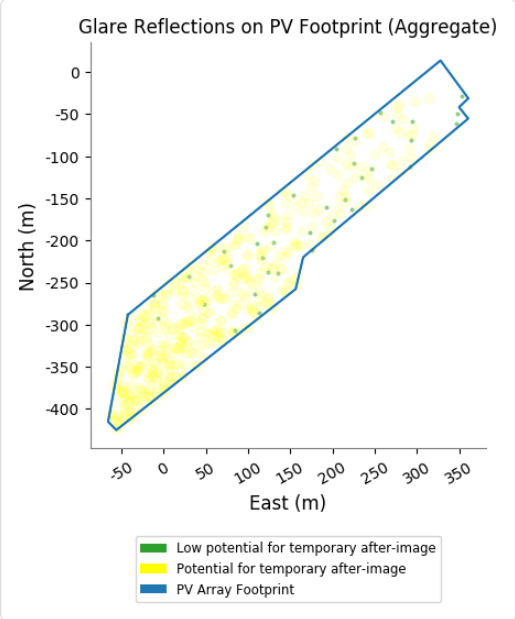
PV array 2 - OP Receptor (OP 56)

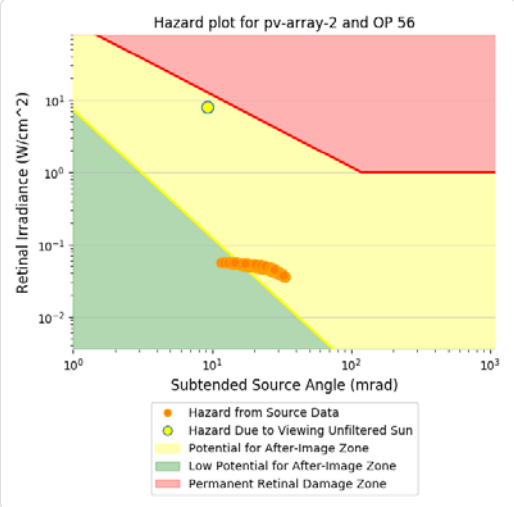
PV array is expected to produce the following glare for receptors at this location:

- 36 minutes of "green" glare with low potential to cause temporary after-image.
- 484 minutes of "yellow" glare with potential to cause temporary after-image.





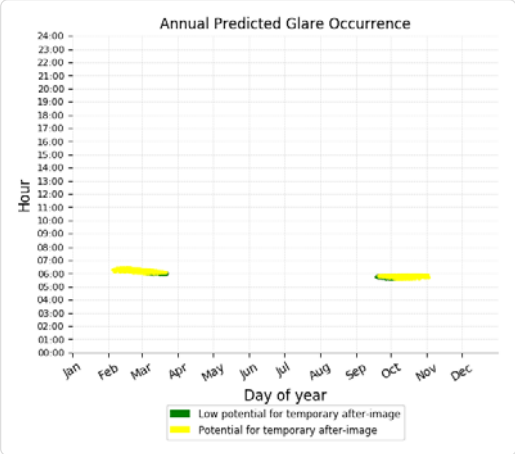


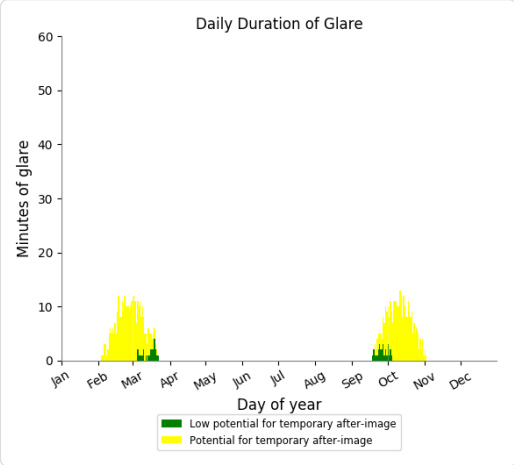


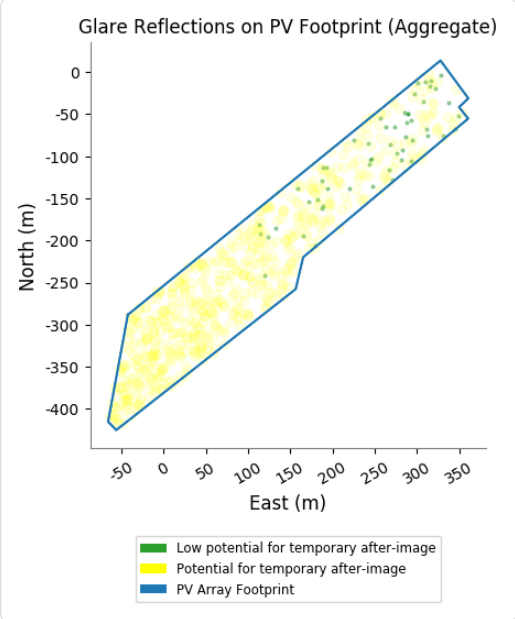
PV array 2 - OP Receptor (OP 57)

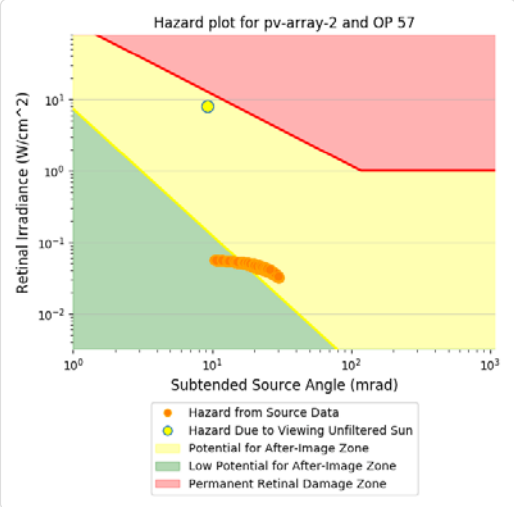
PV array is expected to produce the following glare for receptors at this location:

- 54 minutes of "green" glare with low potential to cause temporary after-image.
- 590 minutes of "yellow" glare with potential to cause temporary after-image.





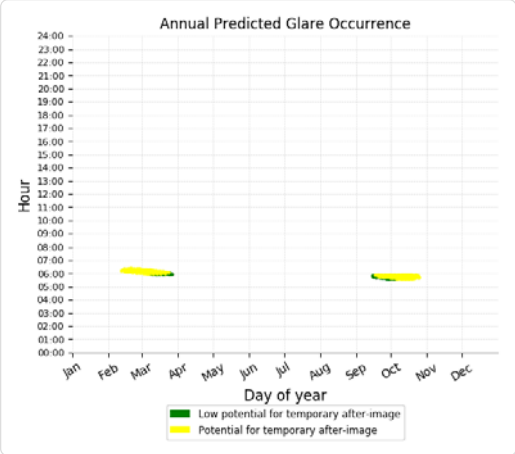


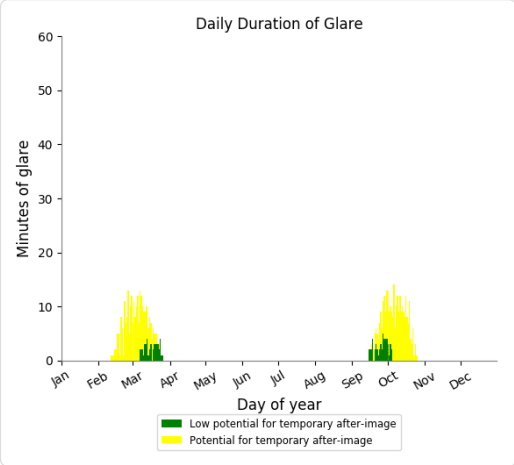


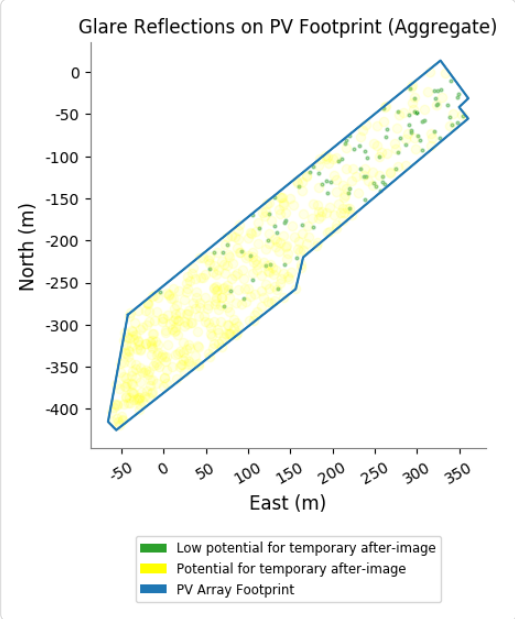
PV array 2 - OP Receptor (OP 58)

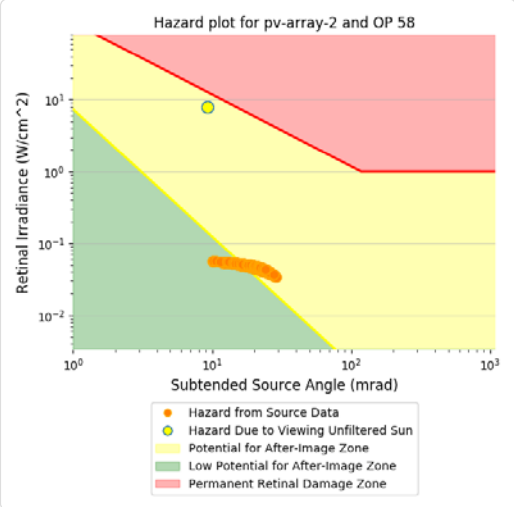
PV array is expected to produce the following glare for receptors at this location:

- 96 minutes of "green" glare with low potential to cause temporary after-image.
- 493 minutes of "yellow" glare with potential to cause temporary after-image.





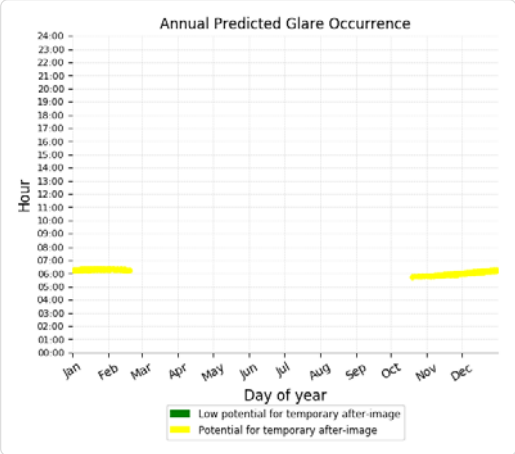


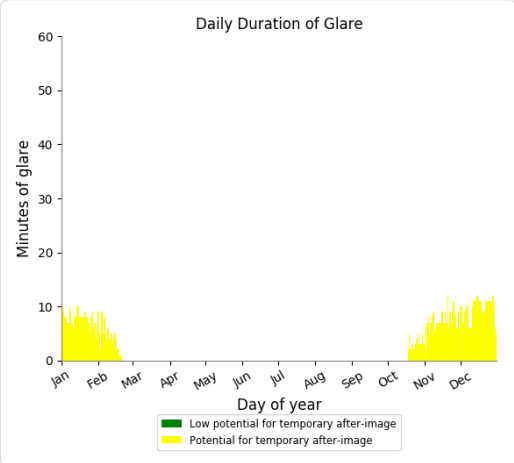


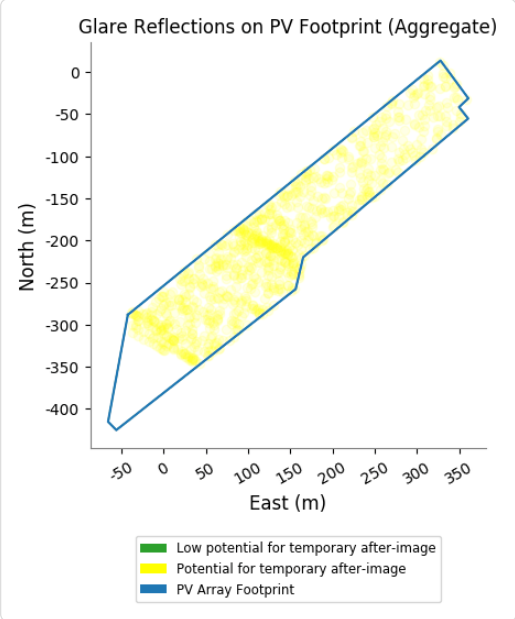
PV array 2 - OP Receptor (OP 59)

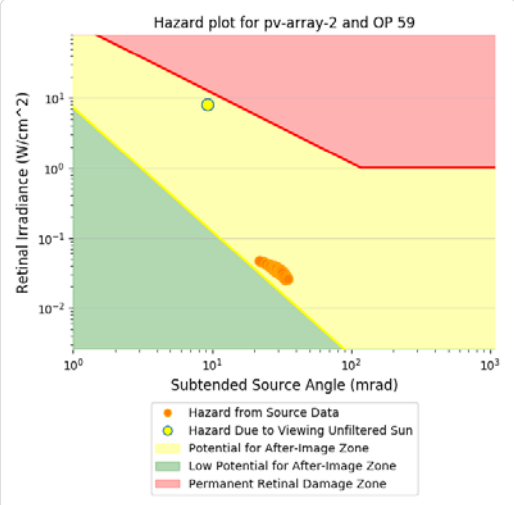
PV array is expected to produce the following glare for receptors at this location:

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





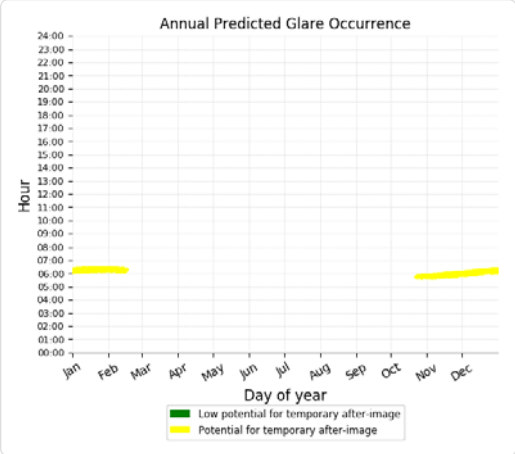


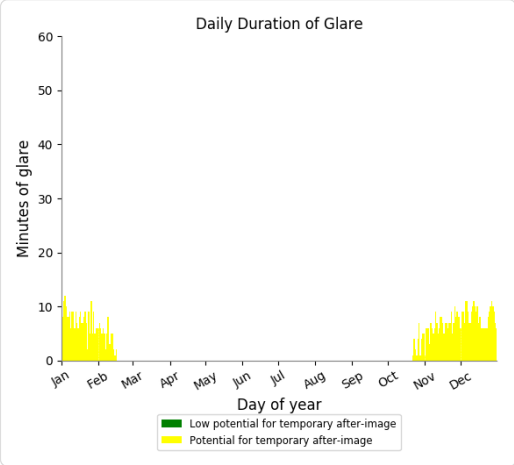


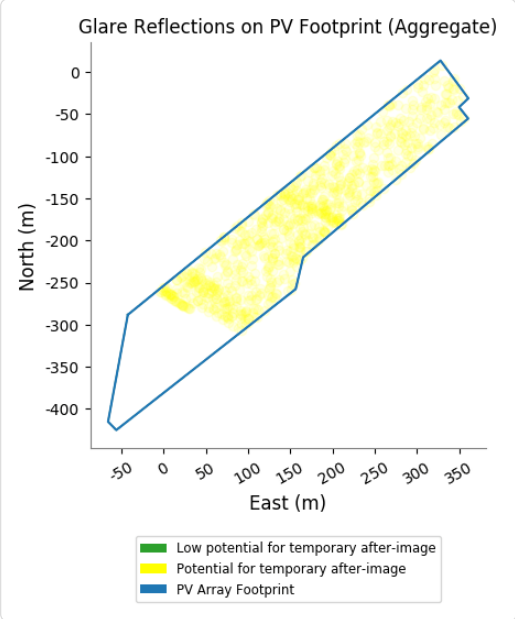
PV array 2 - OP Receptor (OP 60)

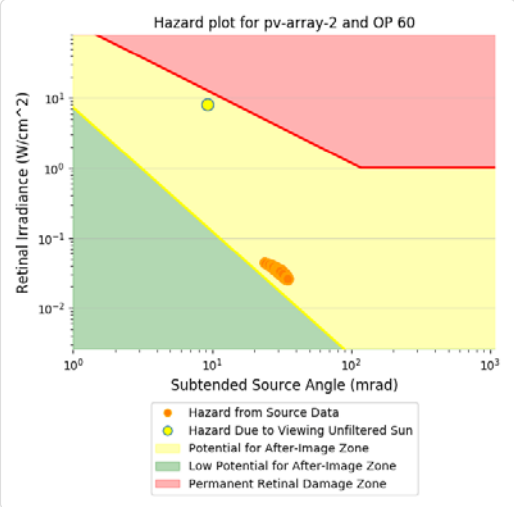
PV array is expected to produce the following glare for receptors at this location:

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





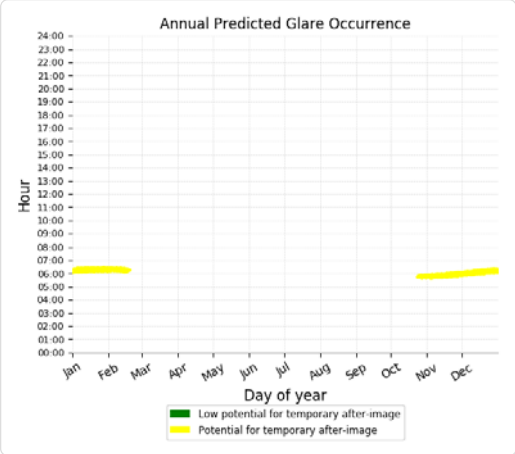


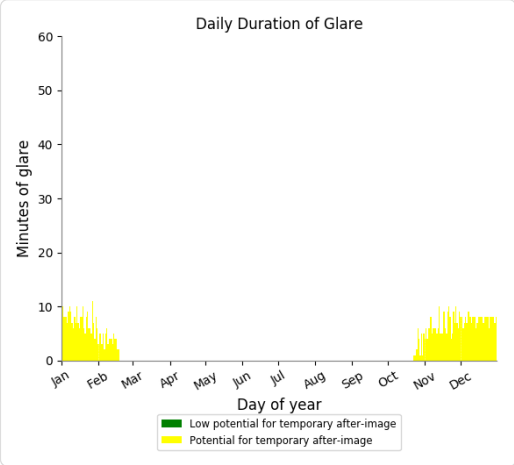


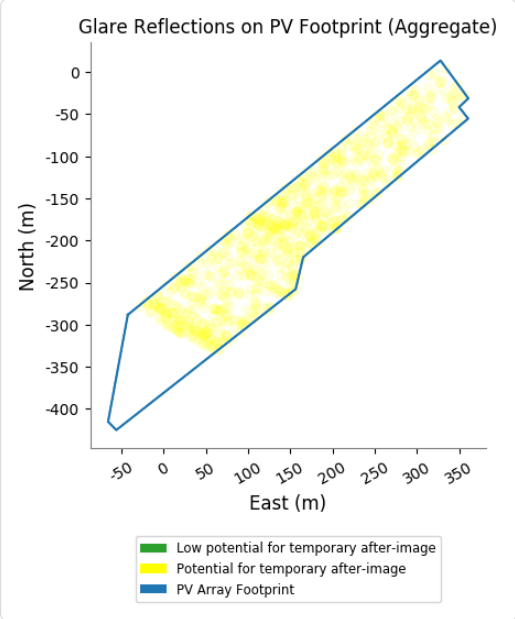
PV array 2 - OP Receptor (OP 61)

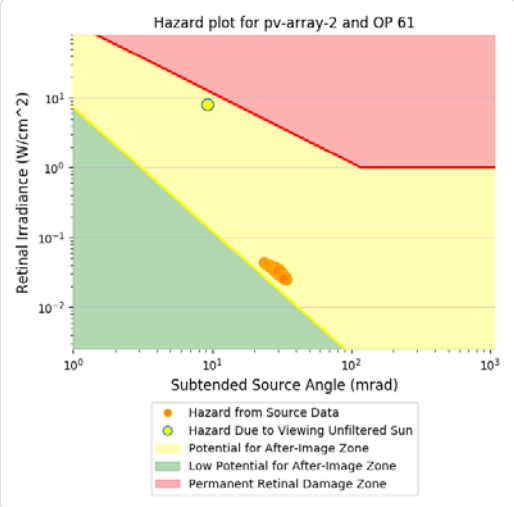
PV array is expected to produce the following glare for receptors at this location:

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





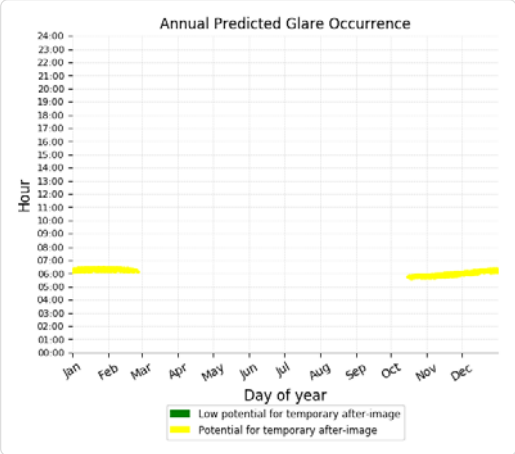


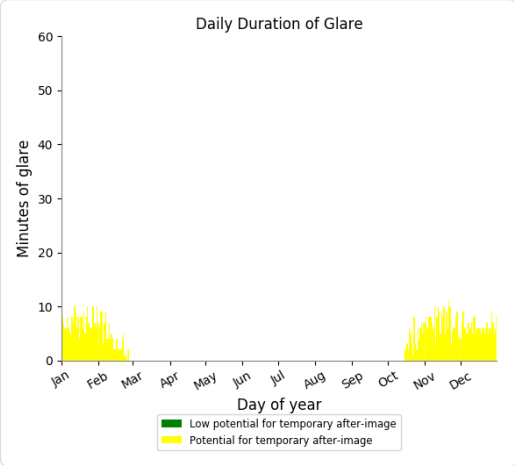


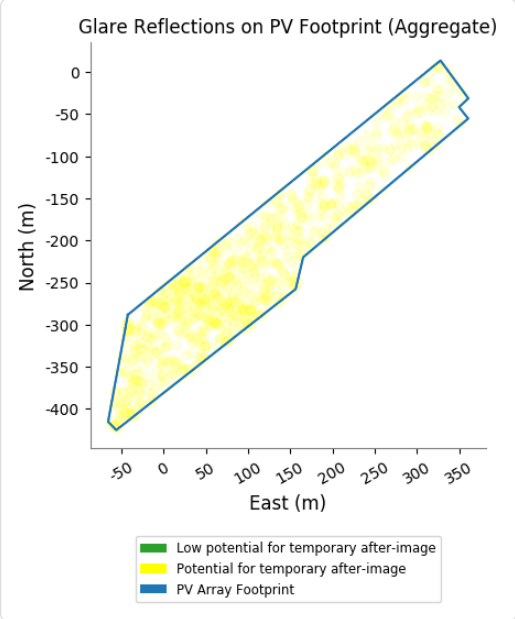
PV array 2 - OP Receptor (OP 62)

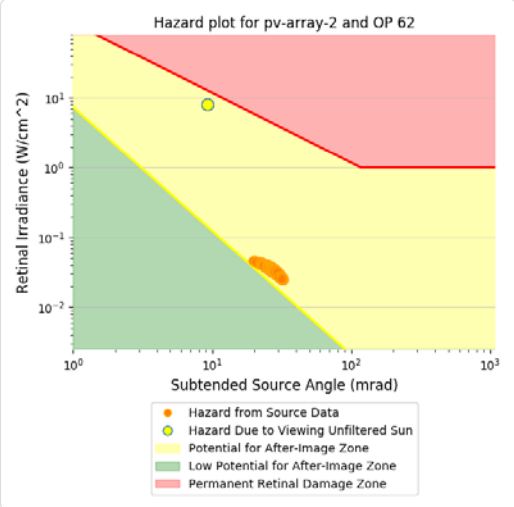
PV array is expected to produce the following glare for receptors at this location:

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





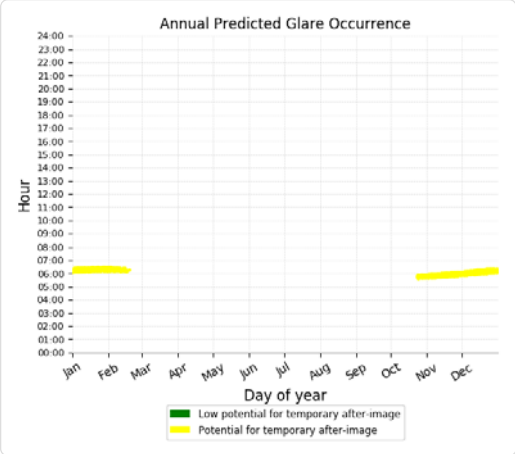


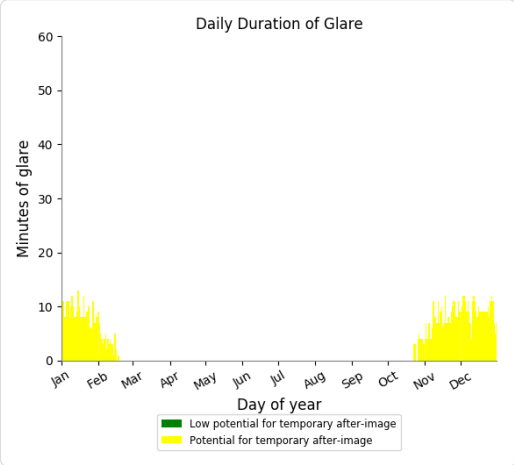


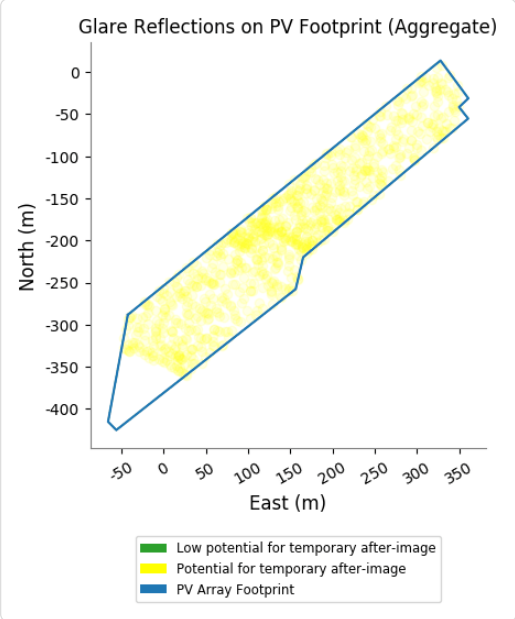
PV array 2 - OP Receptor (OP 63)

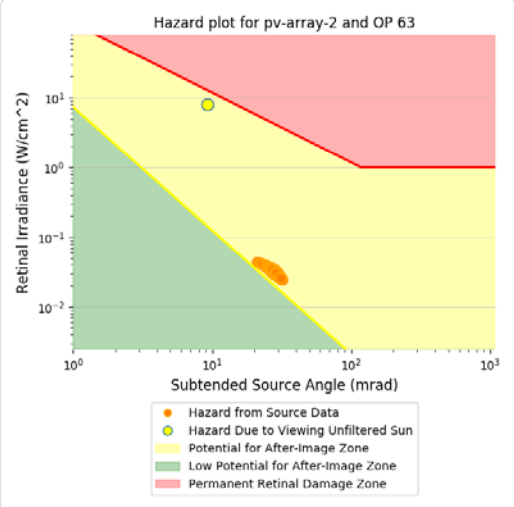
PV array is expected to produce the following glare for receptors at this location:

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





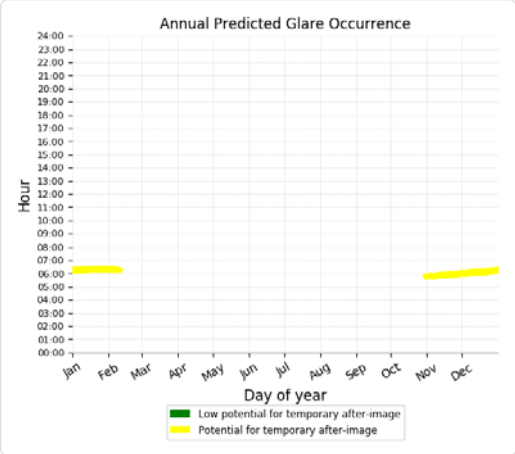


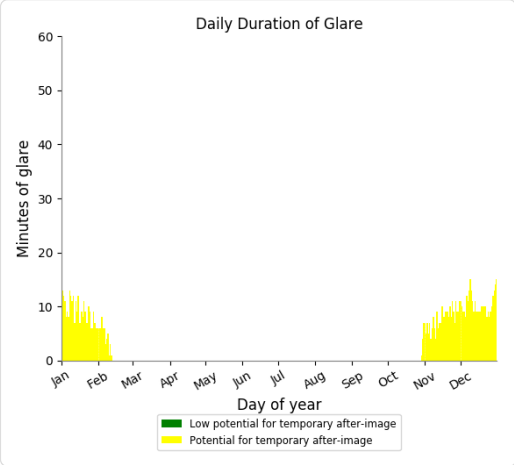


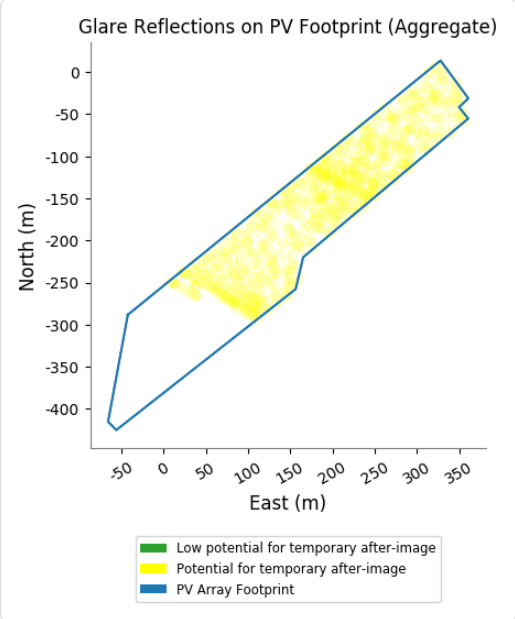
PV array 2 - OP Receptor (OP 64)

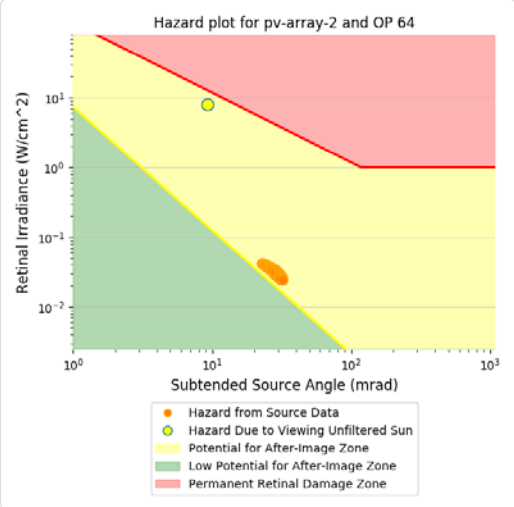
PV array is expected to produce the following glare for receptors at this location:

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





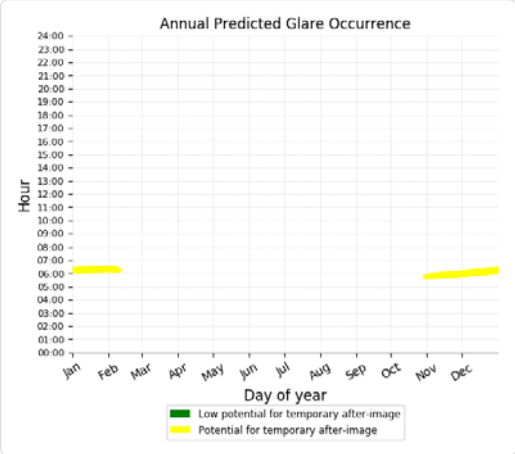


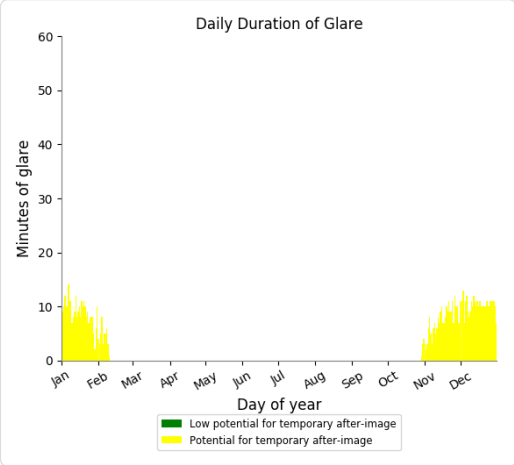


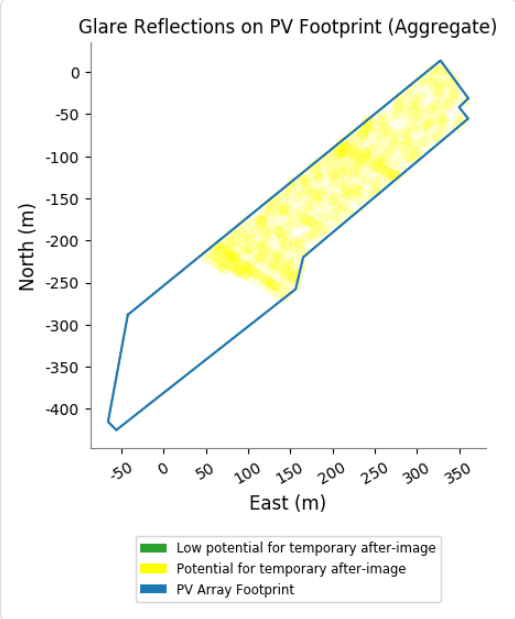
PV array 2 - OP Receptor (OP 65)

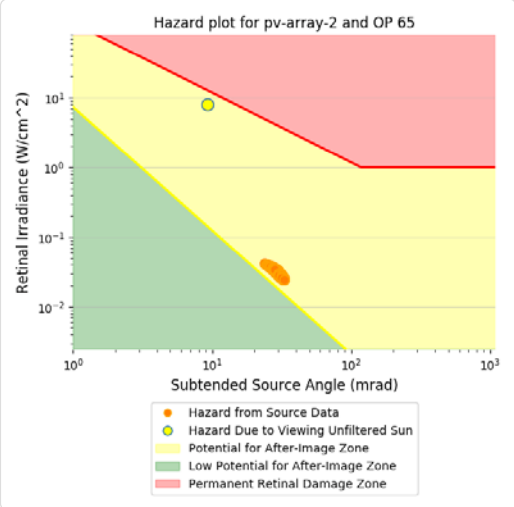
PV array is expected to produce the following glare for receptors at this location:

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





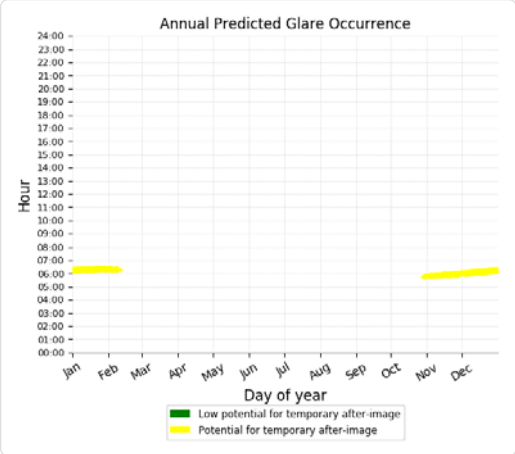


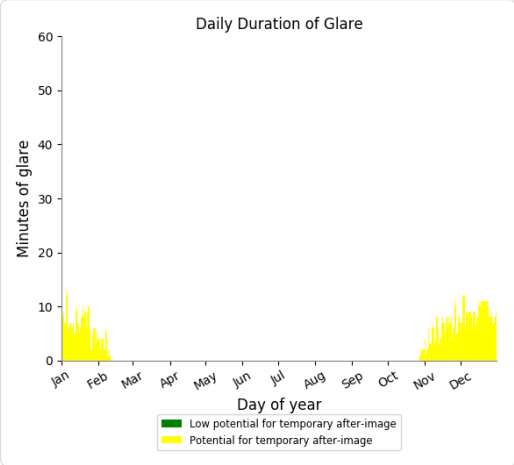


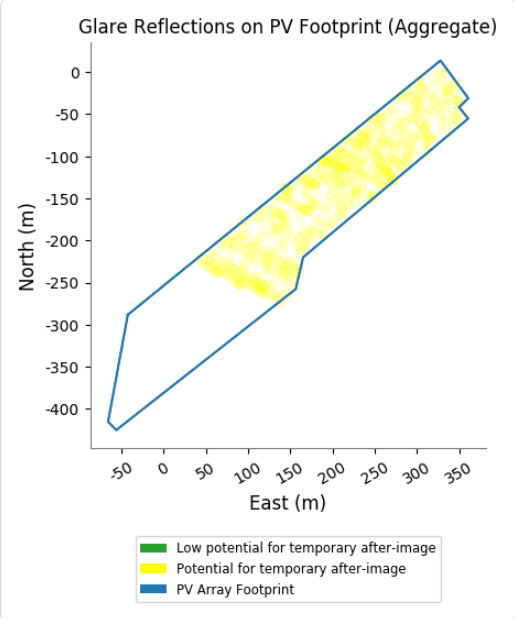
PV array 2 - OP Receptor (OP 66)

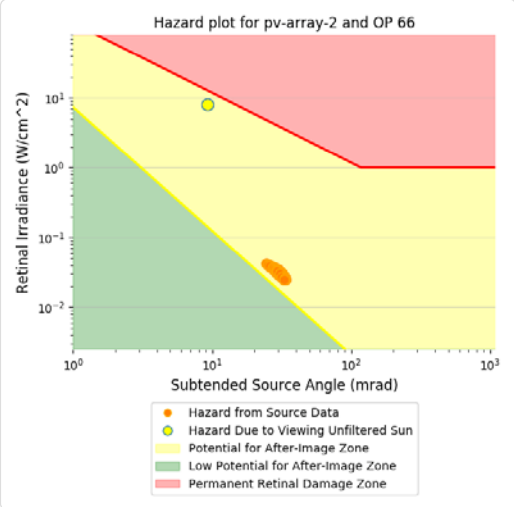
PV array is expected to produce the following glare for receptors at this location:

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





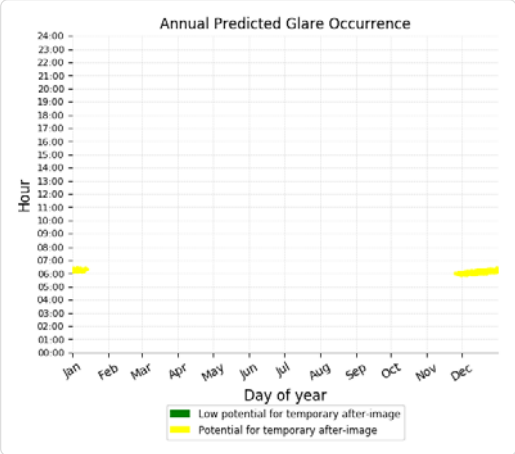


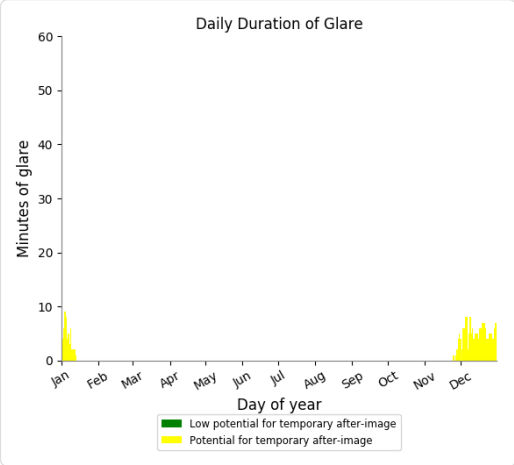


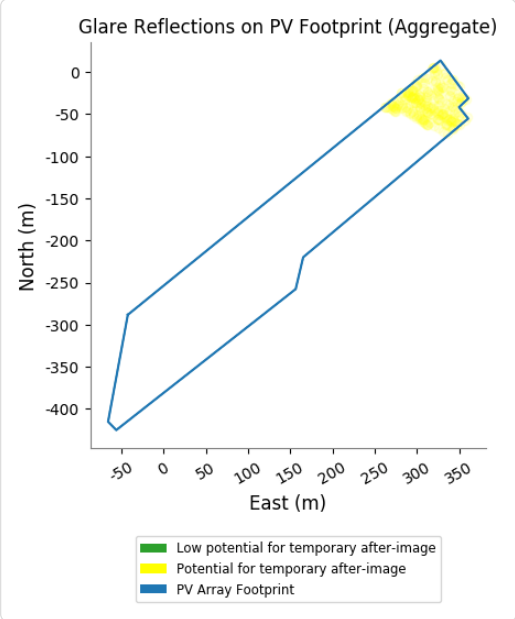
PV array 2 - OP Receptor (OP 67)

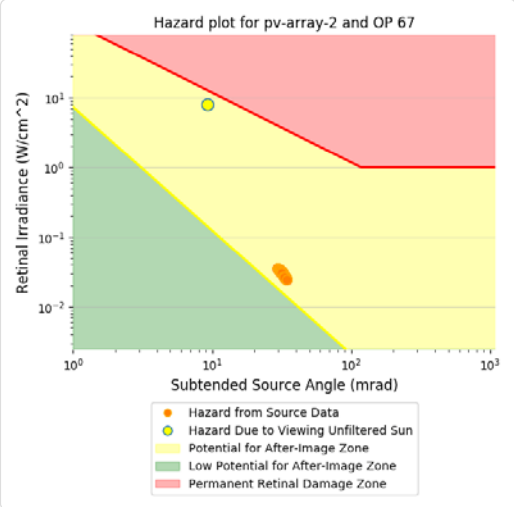
PV array is expected to produce the following glare for receptors at this location:

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









Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

APPENDIX B:

SOLAR GLARE HAZARD ANALYSIS – FIXED FRAME SYSTEM DWELLINGS BETWEEN 2- 4KM

ForgeSolar

Site Configuration: DingoLaneSF_AdditonalOPs_2020

Myocum, NSW

Created **Sept. 20, 2020 11:53 p.m.**
Updated **Sept. 28, 2020 6:13 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43490.6245

Summary of Results Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	20.0	0.0	4,786	11,805	-
PV array 2	20.0	0.0	2,081	1,890	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 58,365 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.584239	153.508731	5.00	2.00	7.00
2	-28.584937	153.509396	6.95	2.00	8.95
3	-28.585342	153.509767	7.87	2.00	9.87
4	-28.587932	153.506199	6.32	2.00	8.32
5	-28.585634	153.506655	5.96	2.00	7.96

Name: PV array 2
Description: Central section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,264 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588141	153.506178	6.21	2.00	8.21
2	-28.585433	153.509917	7.86	2.00	9.86
3	-28.585824	153.510324	8.01	2.00	10.01
4	-28.585937	153.510190	7.67	2.00	9.67
5	-28.586040	153.510292	8.38	2.00	10.38
6	-28.587373	153.508372	5.91	2.00	7.91
7	-28.587790	153.508294	5.66	2.00	7.66
8	-28.589347	153.506097	6.76	2.00	8.76
9	-28.589229	153.505987	6.22	2.00	8.22

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.579688	153.486908	34.66	1.50	36.16
OP 2	-28.579212	153.485819	36.20	1.50	37.70
OP 3	-28.579335	153.484891	40.66	1.50	42.16
OP 4	-28.579094	153.483572	44.35	1.50	45.85
OP 5	-28.578741	153.482070	46.01	1.50	47.51
OP 6	-28.583904	153.483108	32.65	1.50	34.15
OP 7	-28.588388	153.483301	25.82	1.50	27.32
OP 8	-28.589707	153.484567	16.00	1.50	17.50
OP 9	-28.579019	153.480367	52.00	1.50	53.50
OP 10	-28.580013	153.479530	49.33	1.50	50.83
OP 11	-28.581657	153.474332	54.51	1.50	56.01
OP 12	-28.580988	153.473570	70.41	1.50	71.91
OP 13	-28.582053	153.470888	106.92	1.50	108.42
OP 14	-28.585567	153.472250	69.30	1.50	70.80
OP 15	-28.589844	153.477422	32.21	1.50	33.71
OP 16	-28.592491	153.478849	30.87	1.50	32.37
OP 17	-28.590748	153.473913	52.59	1.50	54.09
OP 18	-28.587772	153.470523	102.74	1.50	104.24
OP 19	-28.586424	153.469568	137.37	1.50	138.87
OP 20	-28.584710	153.466425	213.01	1.50	214.51
OP 21	-28.582901	153.466521	203.91	1.50	205.41
OP 22	-28.584446	153.465684	202.66	1.50	204.16
OP 23	-28.591643	153.463077	248.12	1.50	249.62
OP 24	-28.592171	153.464032	243.01	1.50	244.51
OP 25	-28.594422	153.465781	194.26	1.50	195.76
OP 26	-28.595289	153.468227	117.68	1.50	119.18
OP 27	-28.593857	153.471081	54.50	1.50	56.00
OP 28	-28.595920	153.465534	186.52	1.50	188.02
OP 29	-28.597578	153.466275	189.95	1.50	191.45
OP 30	-28.599635	153.470634	140.92	1.50	142.42
OP 31	-28.600652	153.470999	150.96	1.50	152.46
OP 32	-28.597139	153.473349	48.21	1.50	49.71
OP 33	-28.602602	153.473585	146.06	1.50	147.56
OP 34	-28.602847	153.475087	105.51	1.50	107.01
OP 35	-28.604835	153.473102	180.85	1.50	182.35
OP 36	-28.605984	153.475258	178.03	1.50	179.53
OP 37	-28.606954	153.476063	183.39	1.50	184.89
OP 38	-28.606718	153.478144	148.99	1.50	150.49
OP 39	-28.605317	153.485776	104.16	1.50	105.66
OP 40	-28.611491	153.475976	171.42	1.50	172.92
OP 41	-28.612951	153.477183	167.27	1.50	168.77
OP 42	-28.613775	153.477558	168.39	1.50	169.89
OP 43	-28.616516	153.479339	156.12	1.50	157.62
OP 44	-28.576364	153.529878	36.15	1.50	37.65
OP 45	-28.577014	153.529802	33.81	1.50	35.31
OP 46	-28.576053	153.533568	44.28	1.50	45.78
OP 47	-28.575648	153.534362	48.22	1.50	49.72
OP 48	-28.575158	153.534427	47.50	1.50	49.00
OP 49	-28.575356	153.535124	49.31	1.50	50.81

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	20.0	0.0	4,786	11,805	-	-
PV array 2	20.0	0.0	2,081	1,890	-	-

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

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

PV array 1 potential temporary after-image

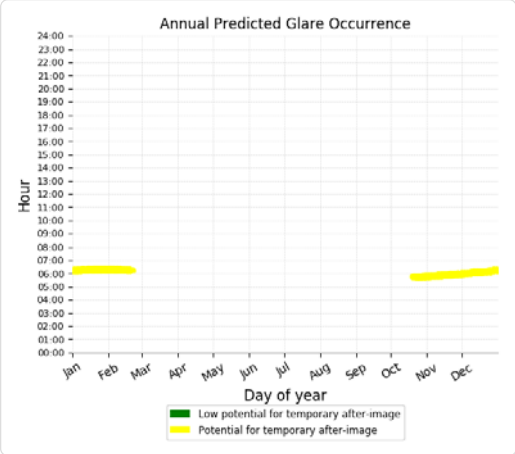
Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	1712
OP: OP 2	0	1747
OP: OP 3	0	1620
OP: OP 4	0	1605
OP: OP 5	0	1379
OP: OP 6	139	551
OP: OP 7	32	26
OP: OP 8	0	0
OP: OP 9	2	1113
OP: OP 10	53	811
OP: OP 11	422	202
OP: OP 12	440	199
OP: OP 13	659	0
OP: OP 14	355	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	208	0
OP: OP 19	421	0
OP: OP 20	640	0
OP: OP 21	684	0
OP: OP 22	656	0
OP: OP 23	50	0
OP: OP 24	25	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0

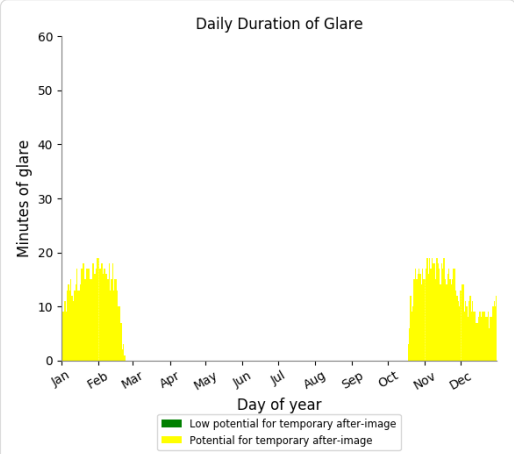
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	137
OP: OP 45	0	208
OP: OP 46	0	162
OP: OP 47	0	110
OP: OP 48	0	106
OP: OP 49	0	117

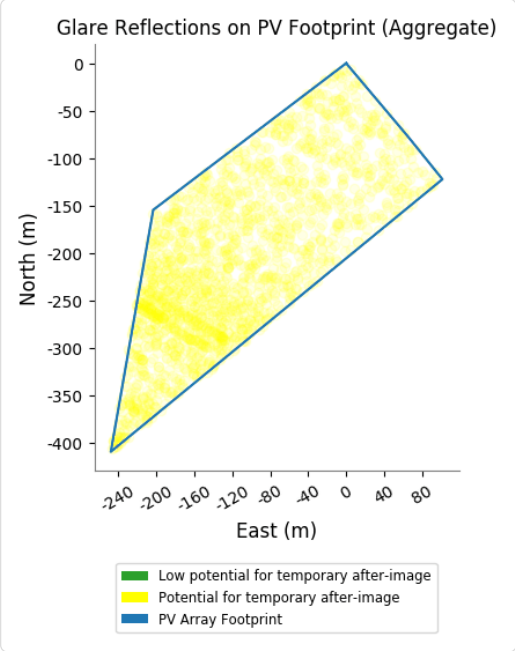
PV array 1 - OP Receptor (OP 1)

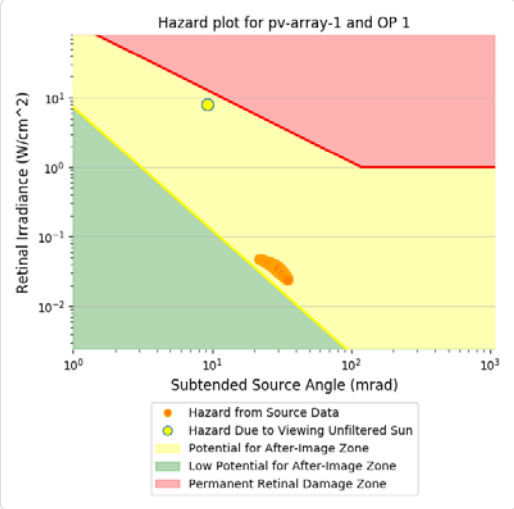
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,712 minutes of "yellow" glare with potential to cause temporary after-image.





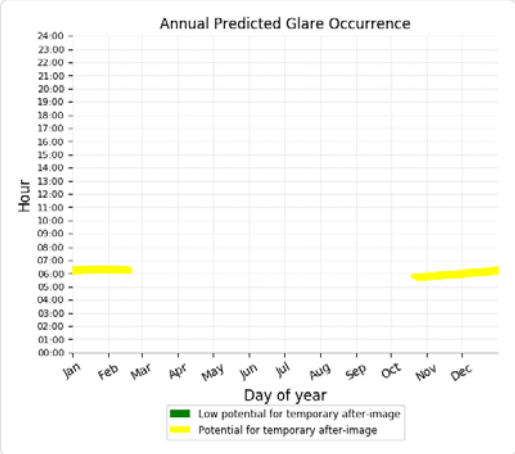


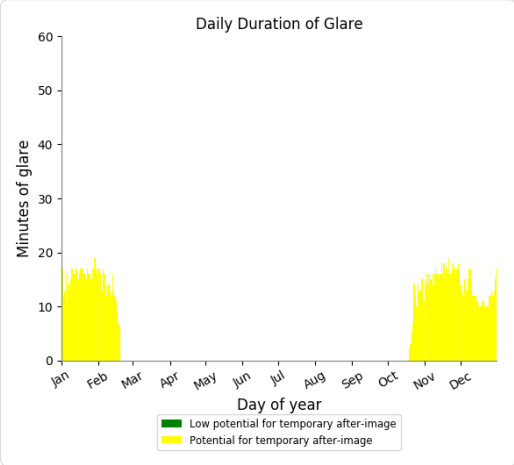


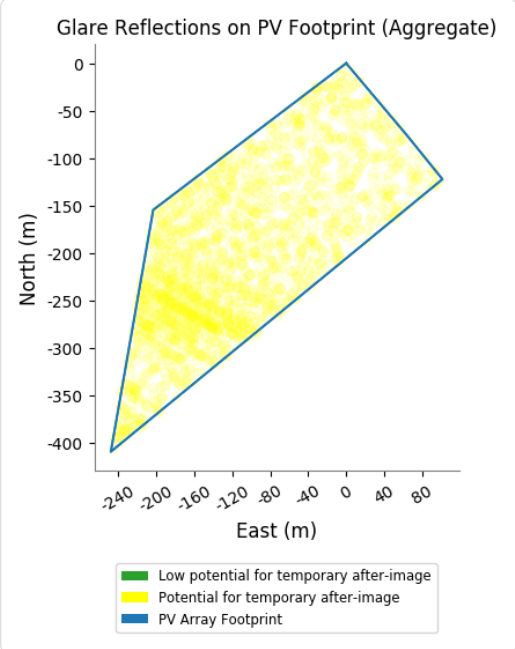
PV array 1 - OP Receptor (OP 2)

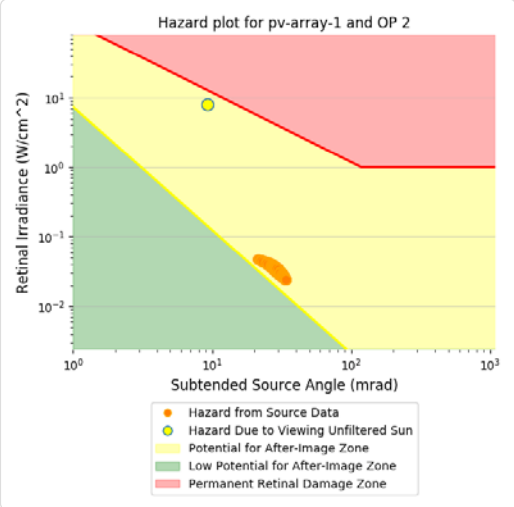
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,747 minutes of "yellow" glare with potential to cause temporary after-image.





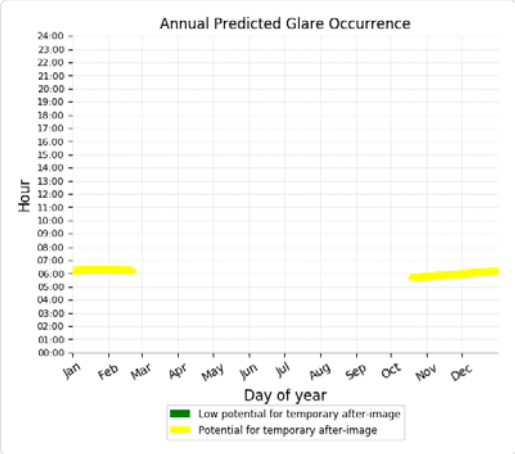


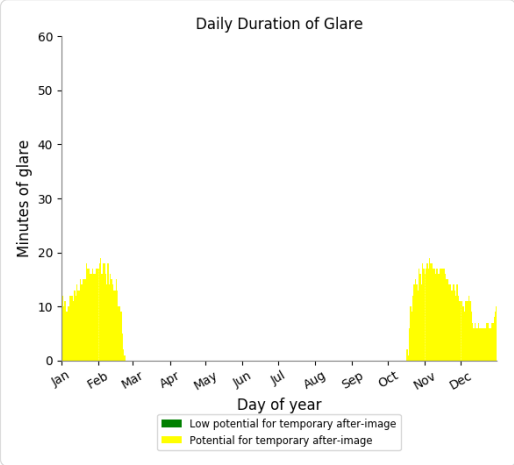


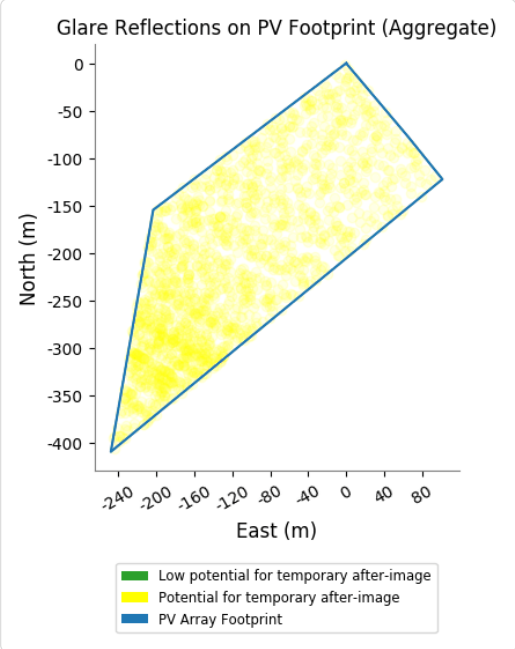
PV array 1 - OP Receptor (OP 3)

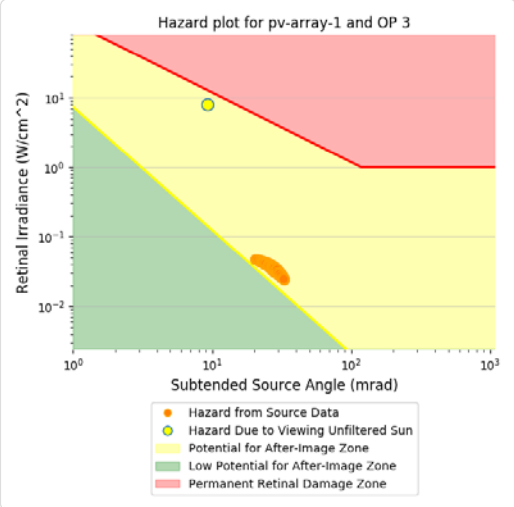
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,620 minutes of "yellow" glare with potential to cause temporary after-image.





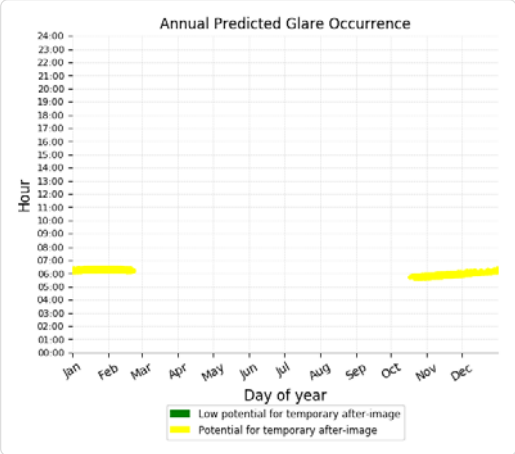


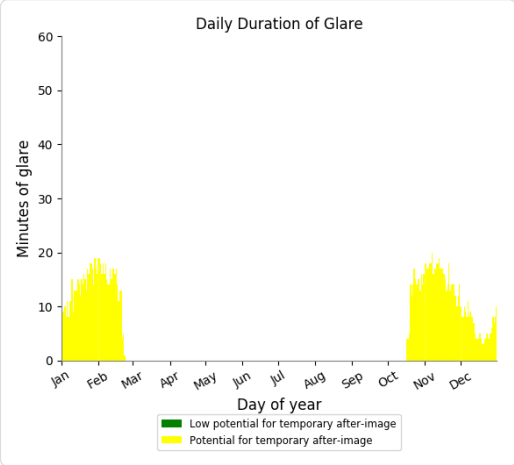


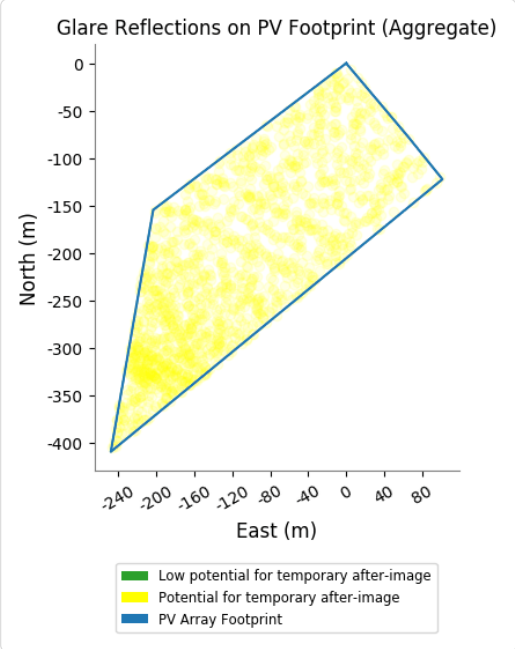
PV array 1 - OP Receptor (OP 4)

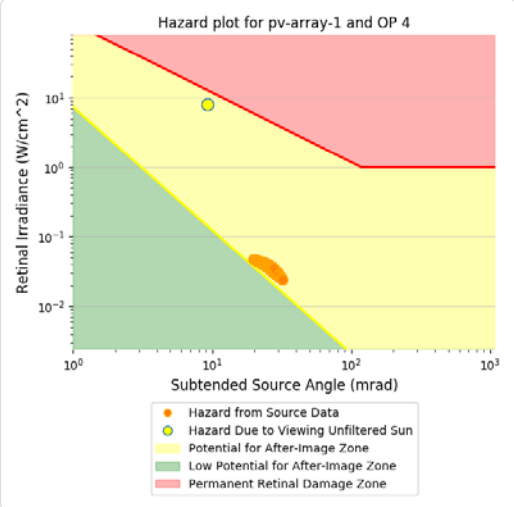
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,605 minutes of "yellow" glare with potential to cause temporary after-image.





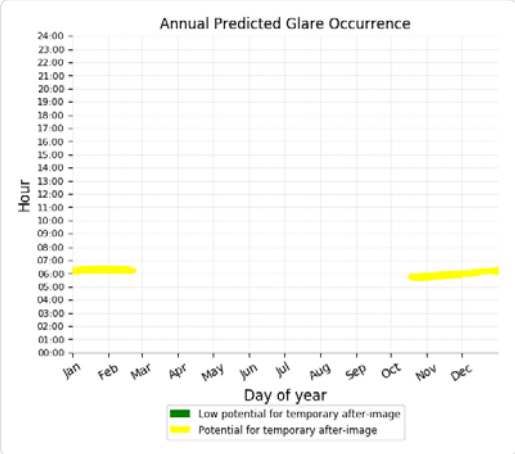


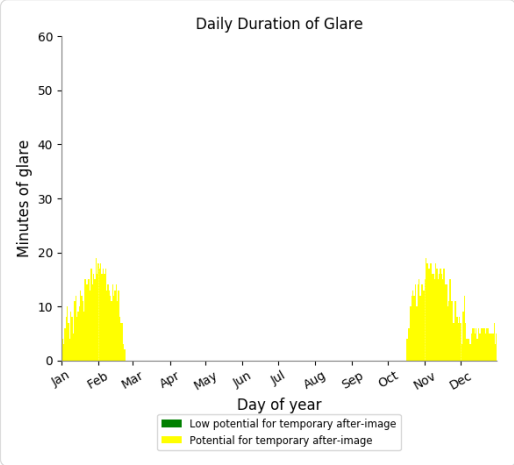


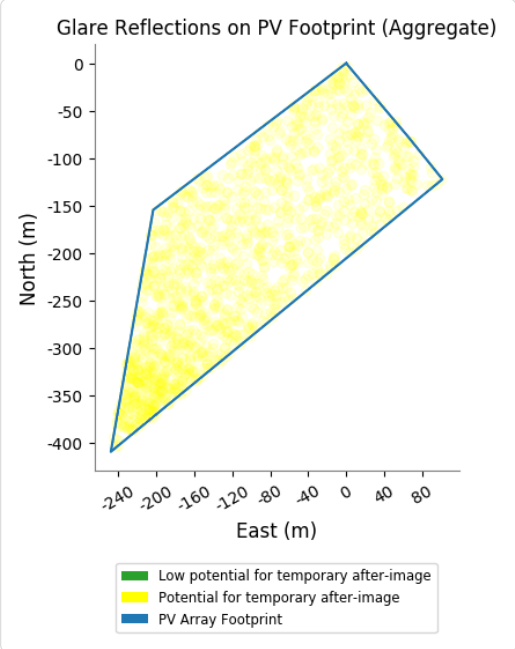
PV array 1 - OP Receptor (OP 5)

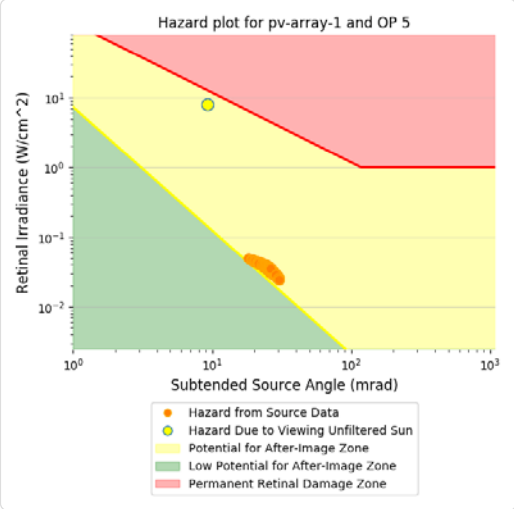
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,379 minutes of "yellow" glare with potential to cause temporary after-image.





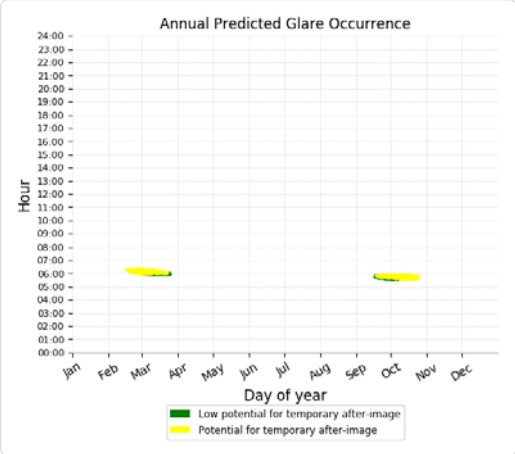


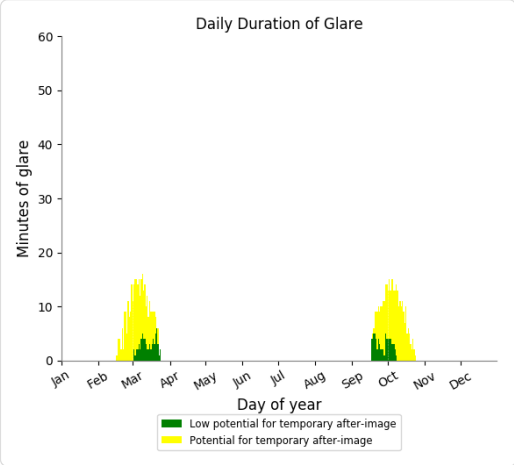


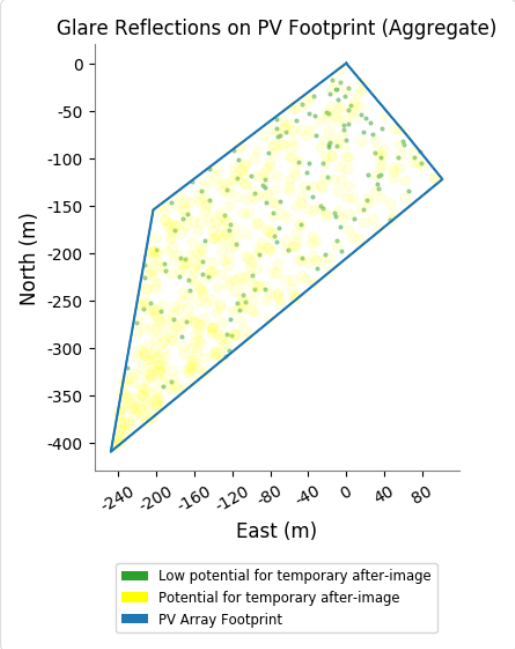
PV array 1 - OP Receptor (OP 6)

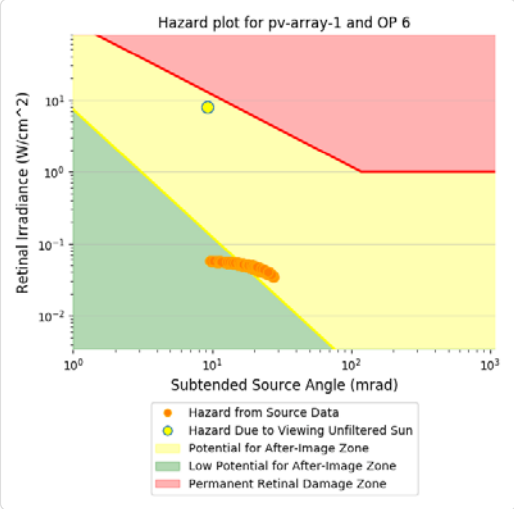
PV array is expected to produce the following glare for receptors at this location:

- 139 minutes of "green" glare with low potential to cause temporary after-image.
- 551 minutes of "yellow" glare with potential to cause temporary after-image.





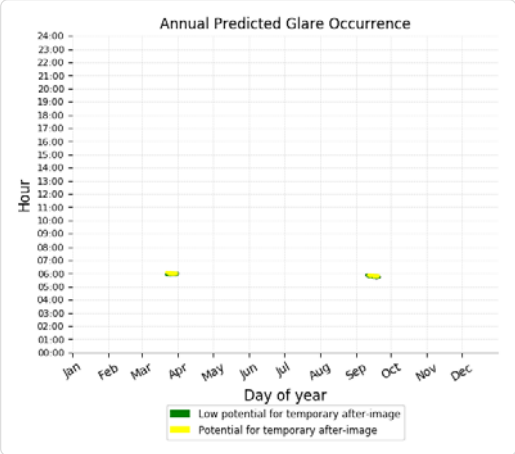


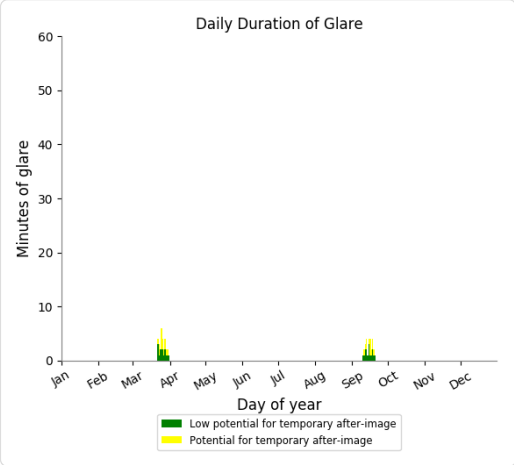


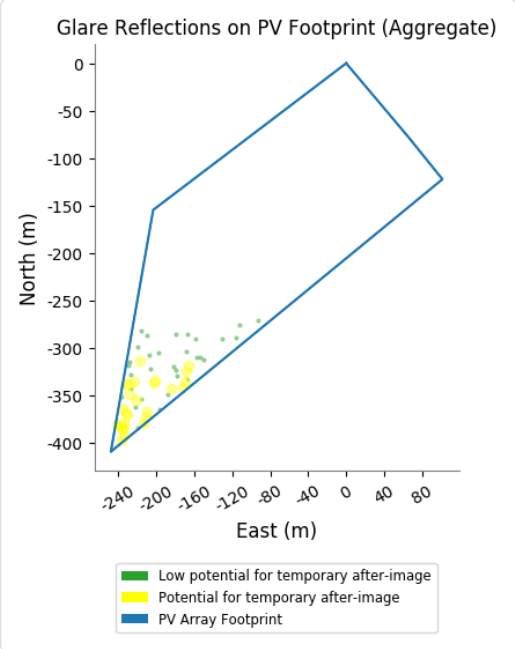
PV array 1 - OP Receptor (OP 7)

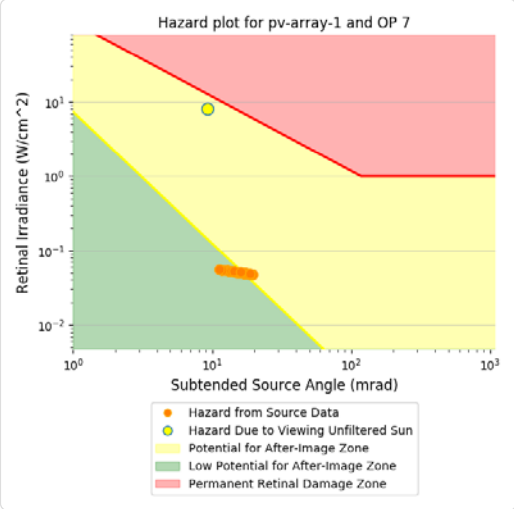
PV array is expected to produce the following glare for receptors at this location:

- 32 minutes of "green" glare with low potential to cause temporary after-image.
- 26 minutes of "yellow" glare with potential to cause temporary after-image.









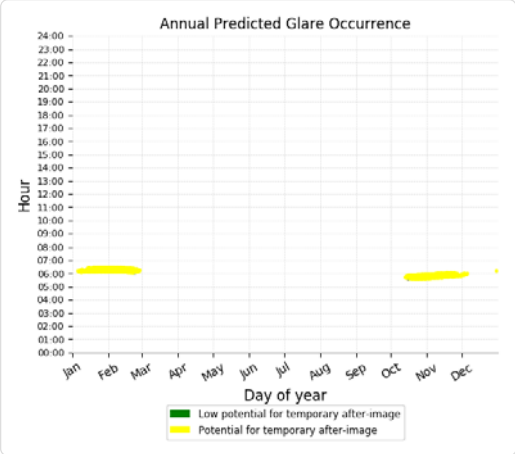
PV array 1 - OP Receptor (OP 8)

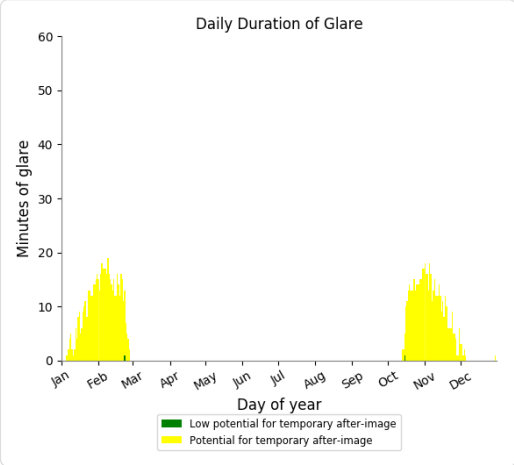
No glare found

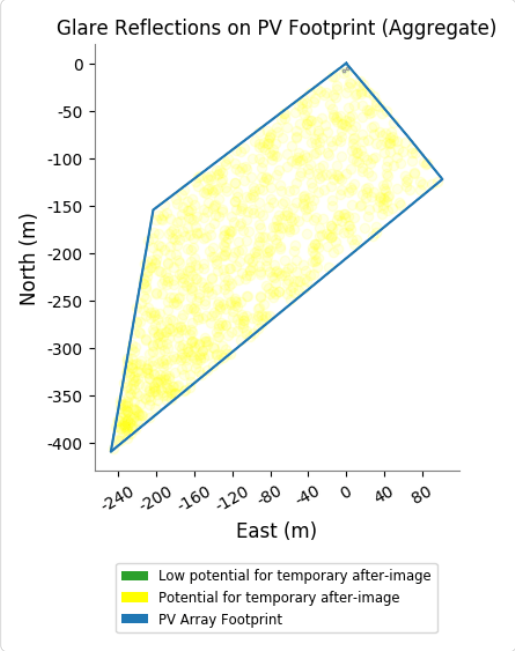
PV array 1 - OP Receptor (OP 9)

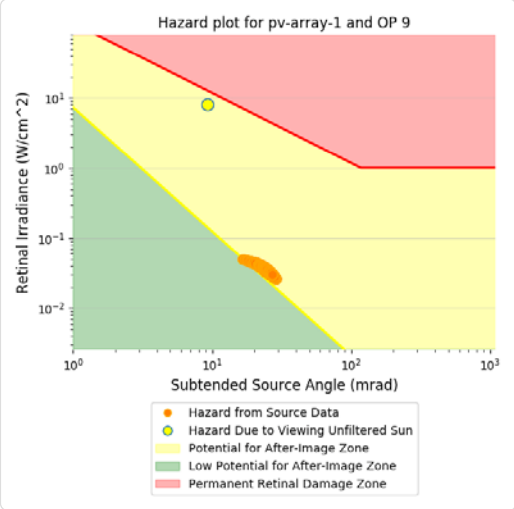
PV array is expected to produce the following glare for receptors at this location:

- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 1,113 minutes of "yellow" glare with potential to cause temporary after-image.





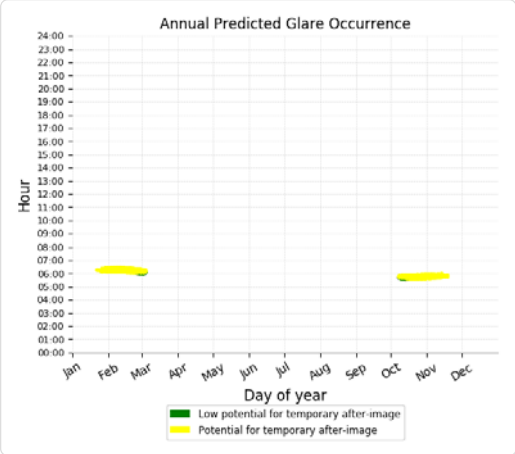


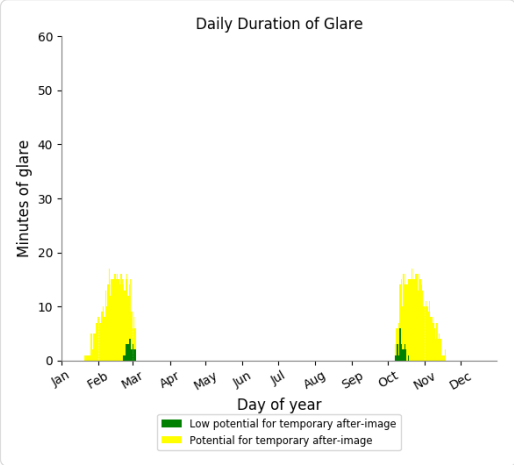


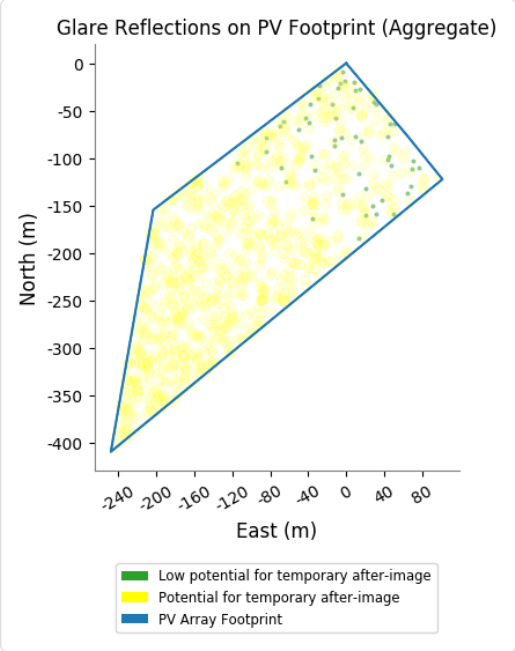
PV array 1 - OP Receptor (OP 10)

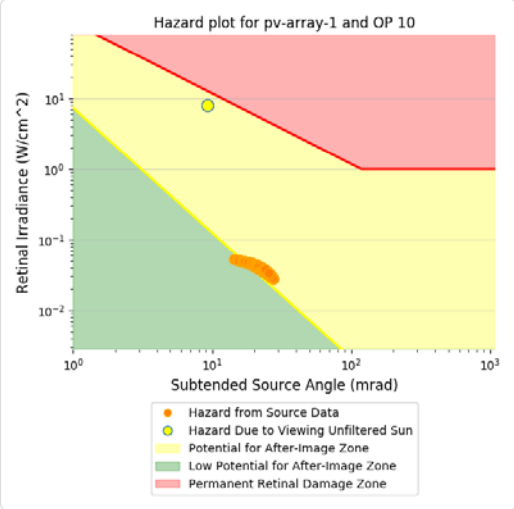
PV array is expected to produce the following glare for receptors at this location:

- 53 minutes of "green" glare with low potential to cause temporary after-image.
- 811 minutes of "yellow" glare with potential to cause temporary after-image.





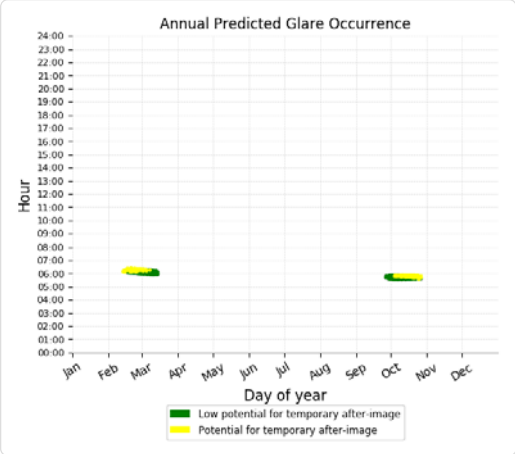


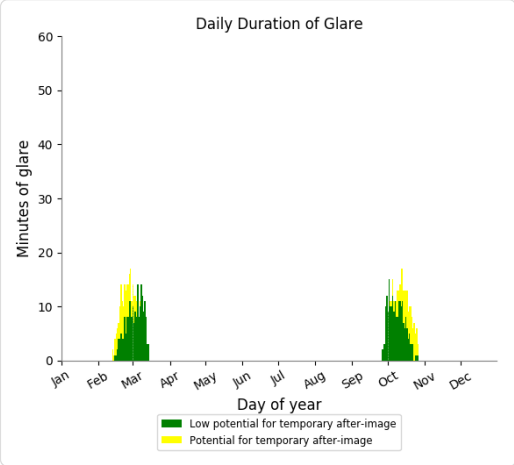


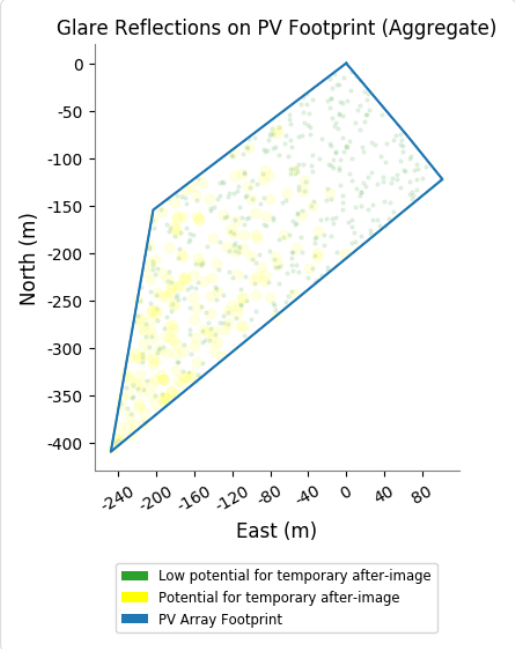
PV array 1 - OP Receptor (OP 11)

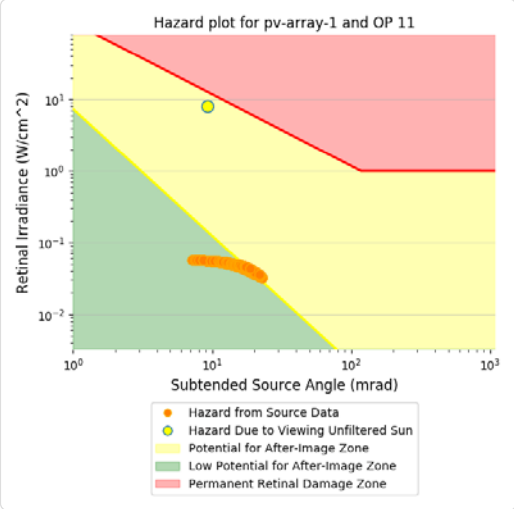
PV array is expected to produce the following glare for receptors at this location:

- 422 minutes of "green" glare with low potential to cause temporary after-image.
- 202 minutes of "yellow" glare with potential to cause temporary after-image.





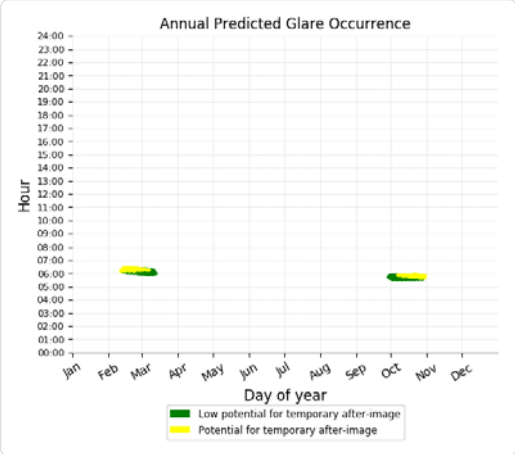


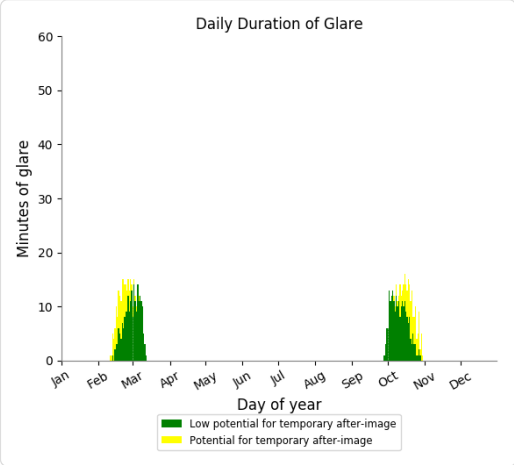


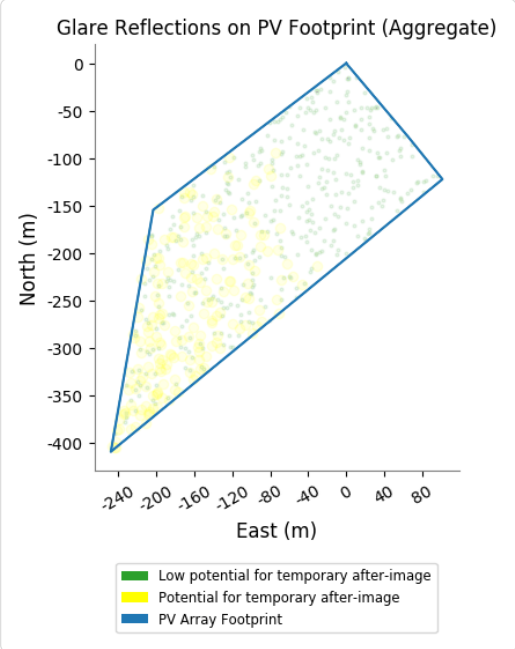
PV array 1 - OP Receptor (OP 12)

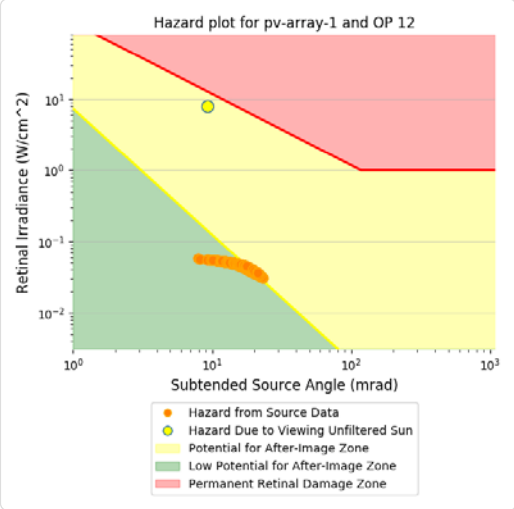
PV array is expected to produce the following glare for receptors at this location:

- 440 minutes of "green" glare with low potential to cause temporary after-image.
- 199 minutes of "yellow" glare with potential to cause temporary after-image.





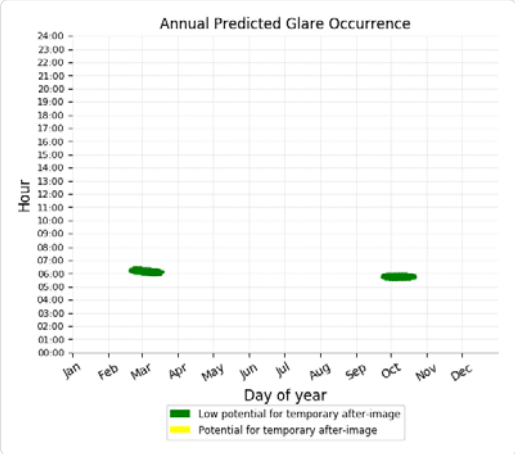


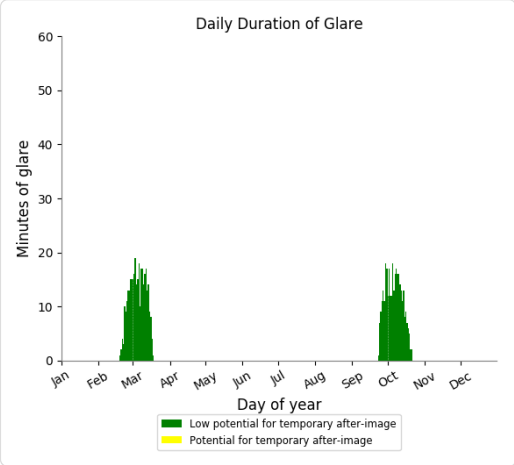


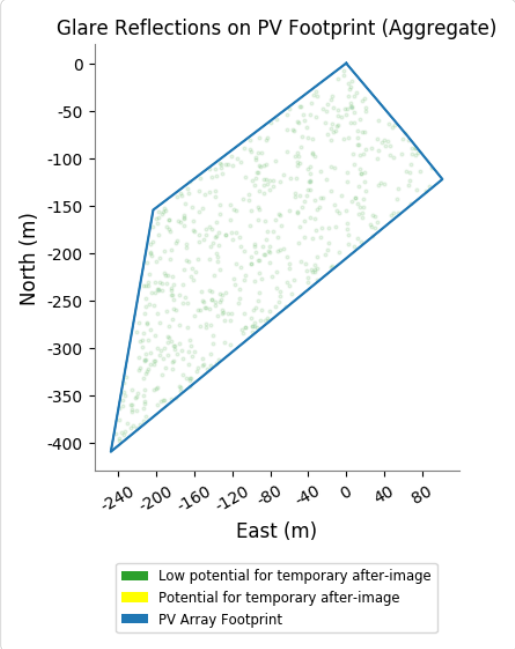
PV array 1 - OP Receptor (OP 13)

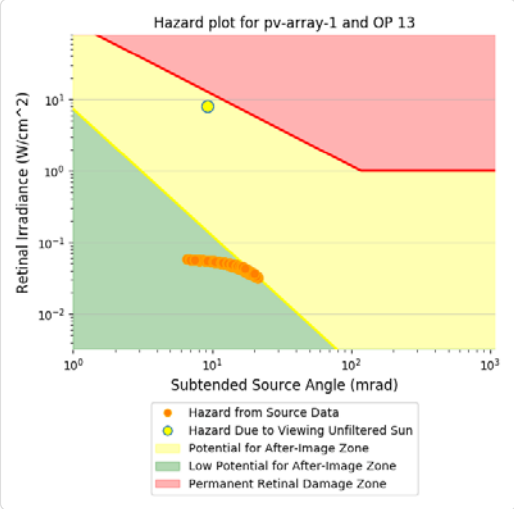
PV array is expected to produce the following glare for receptors at this location:

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





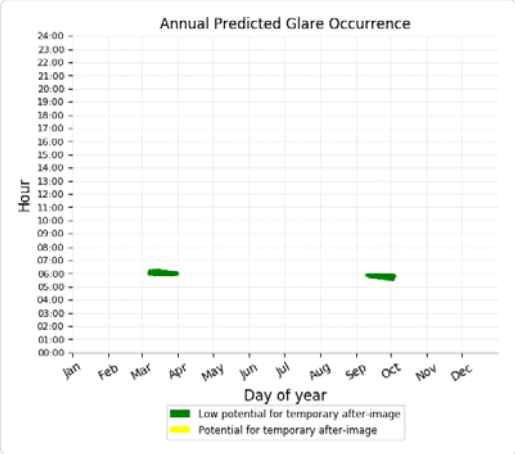


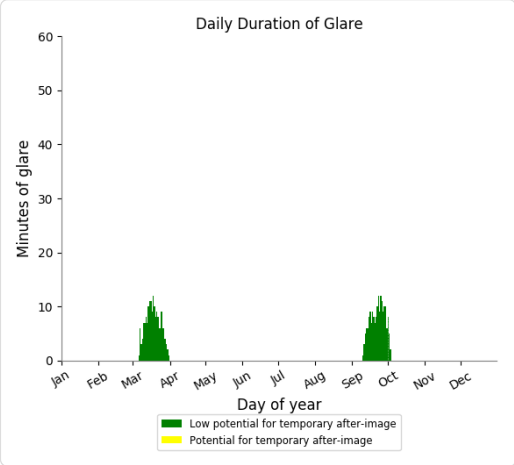


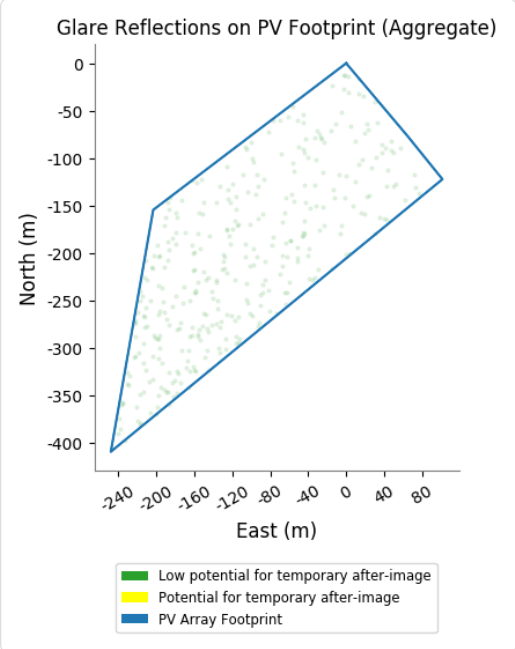
PV array 1 - OP Receptor (OP 14)

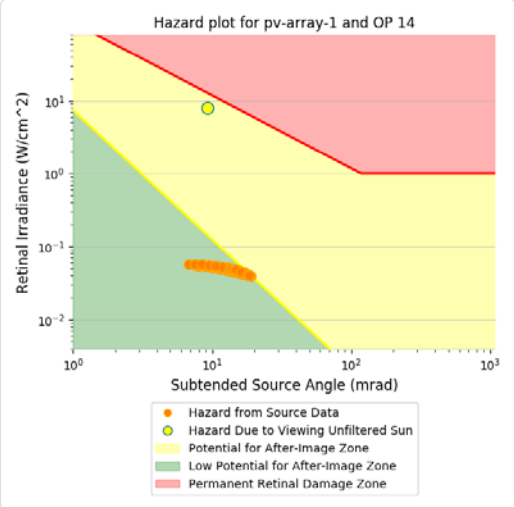
PV array is expected to produce the following glare for receptors at this location:

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









PV array 1 - OP Receptor (OP 15)

No glare found

PV array 1 - OP Receptor (OP 16)

No glare found

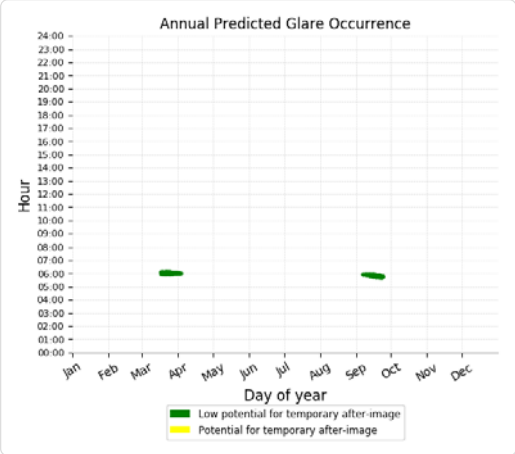
PV array 1 - OP Receptor (OP 17)

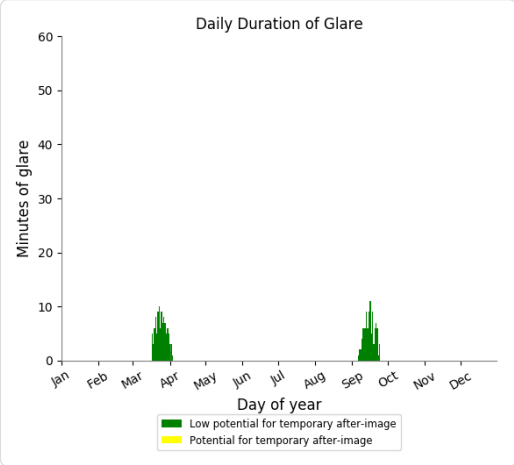
No glare found

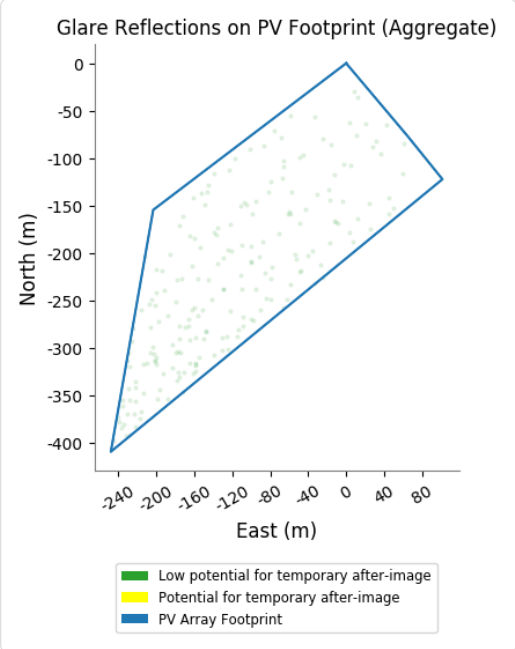
PV array 1 - OP Receptor (OP 18)

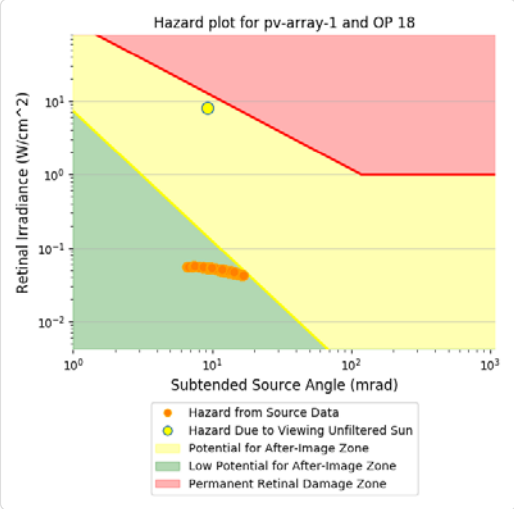
PV array is expected to produce the following glare for receptors at this location:

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





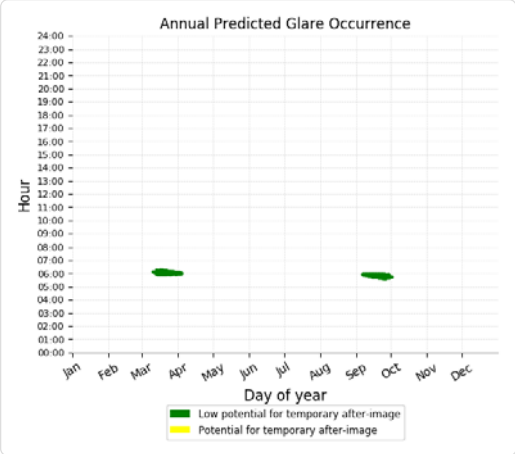


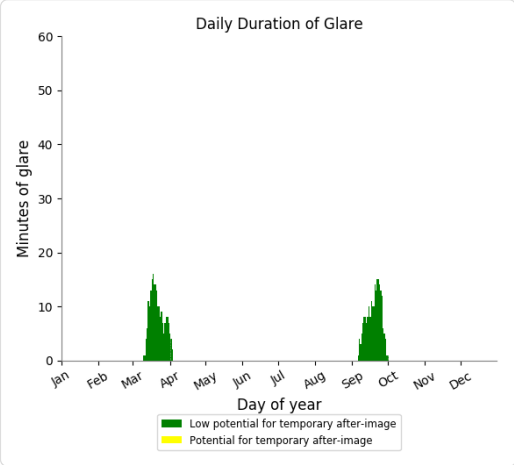


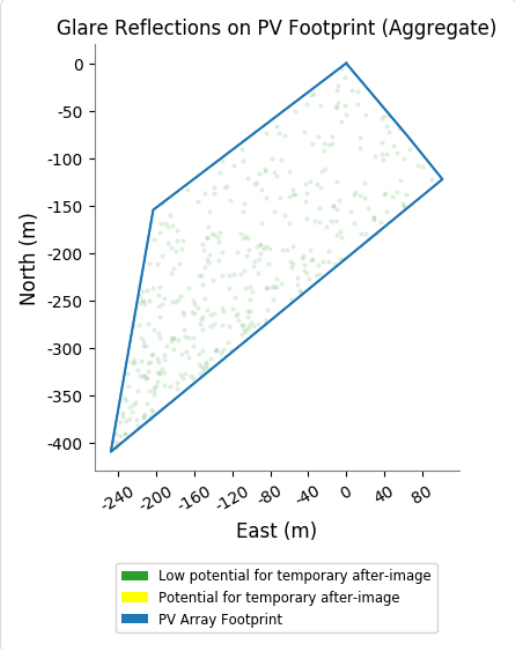
PV array 1 - OP Receptor (OP 19)

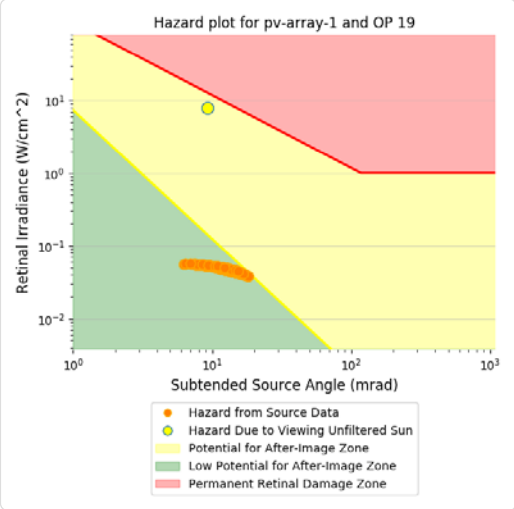
PV array is expected to produce the following glare for receptors at this location:

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





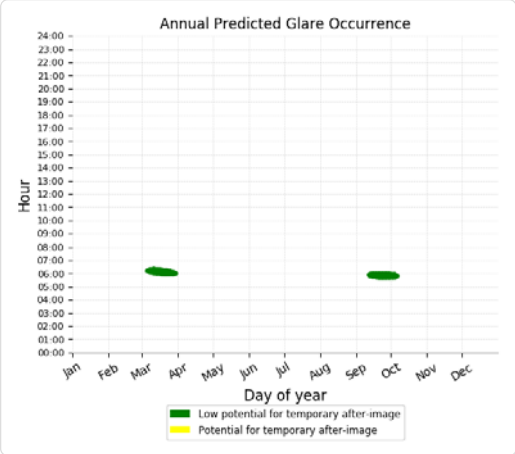


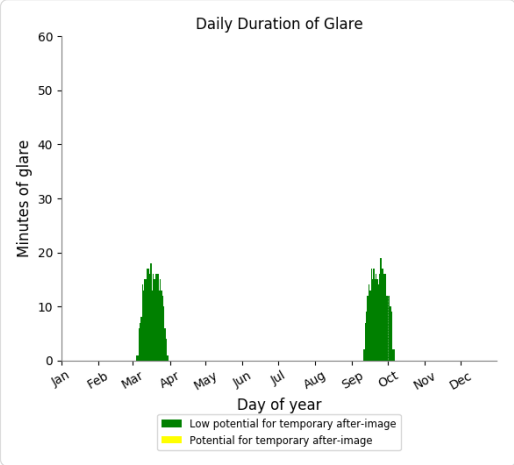


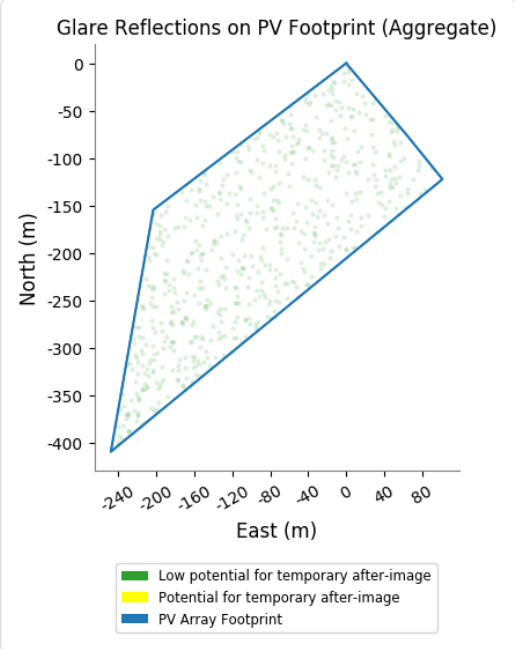
PV array 1 - OP Receptor (OP 20)

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

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



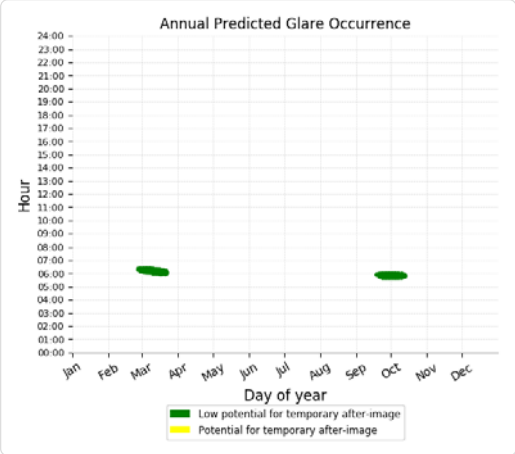


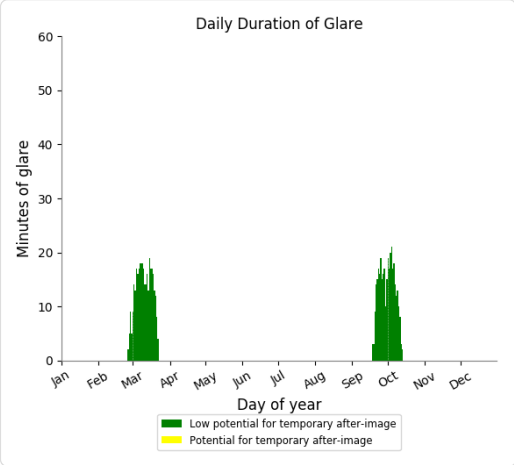


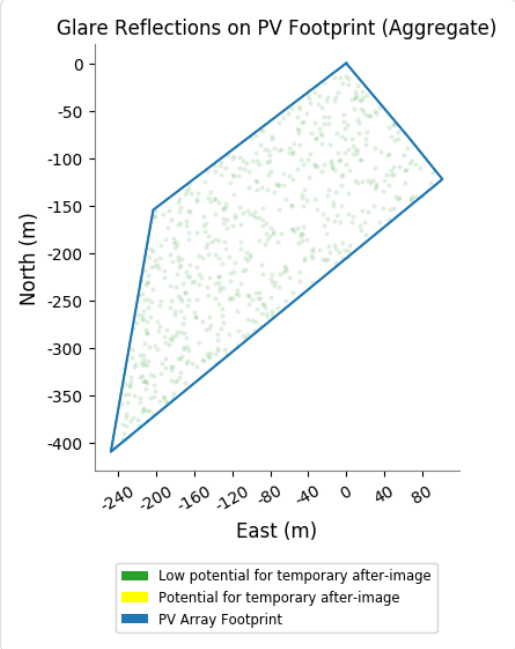
PV array 1 - OP Receptor (OP 21)

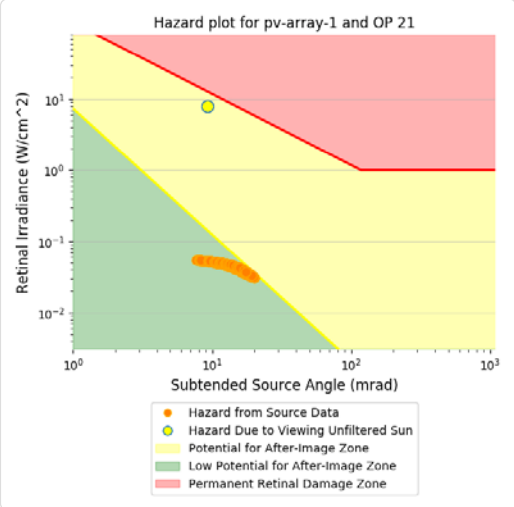
PV array is expected to produce the following glare for receptors at this location:

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





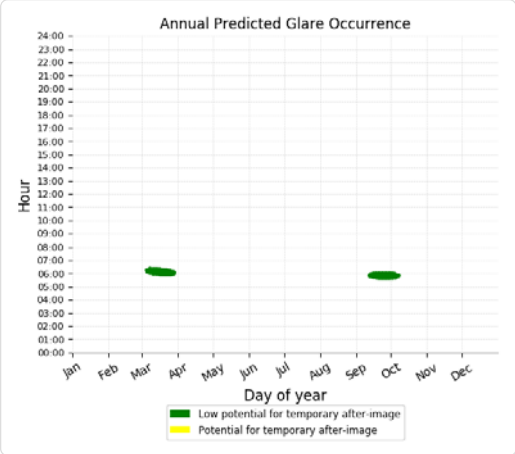


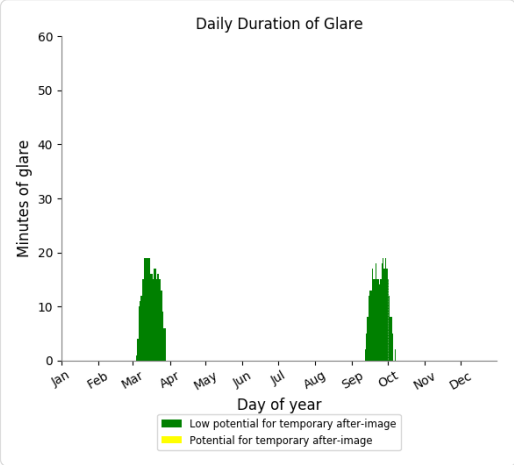


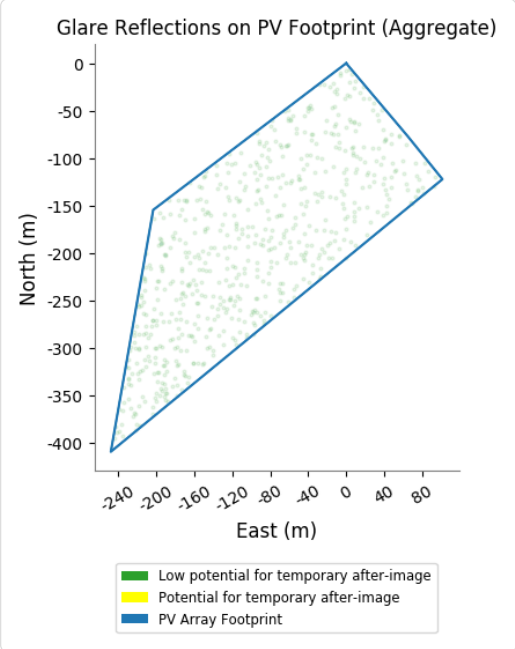
PV array 1 - OP Receptor (OP 22)

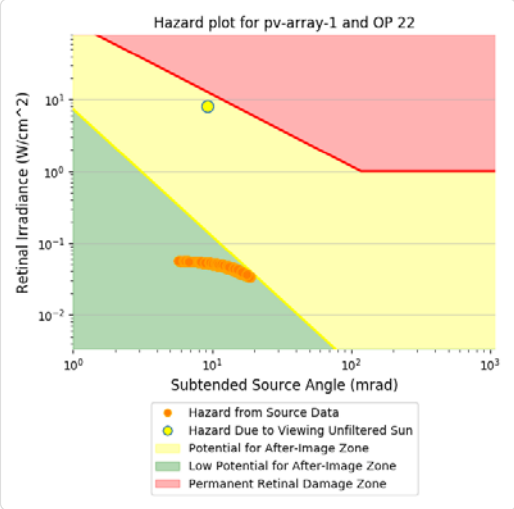
PV array is expected to produce the following glare for receptors at this location:

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





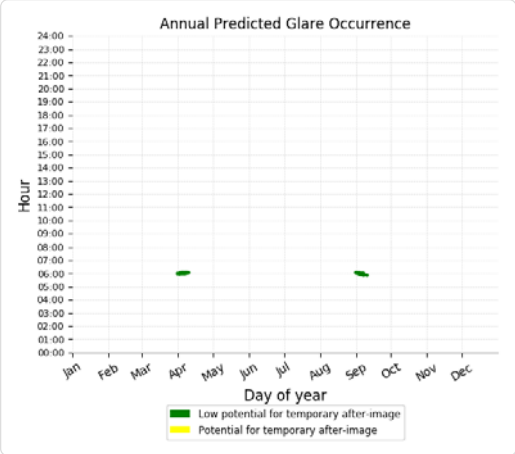


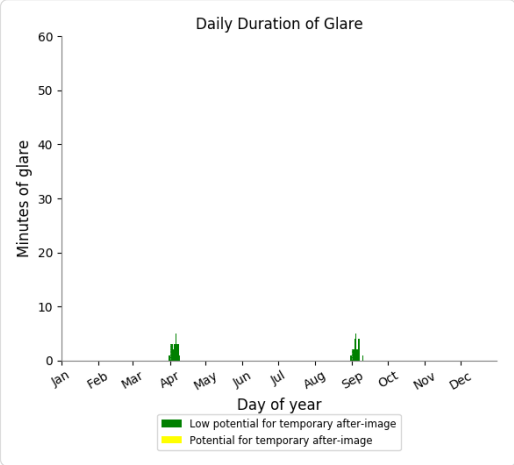


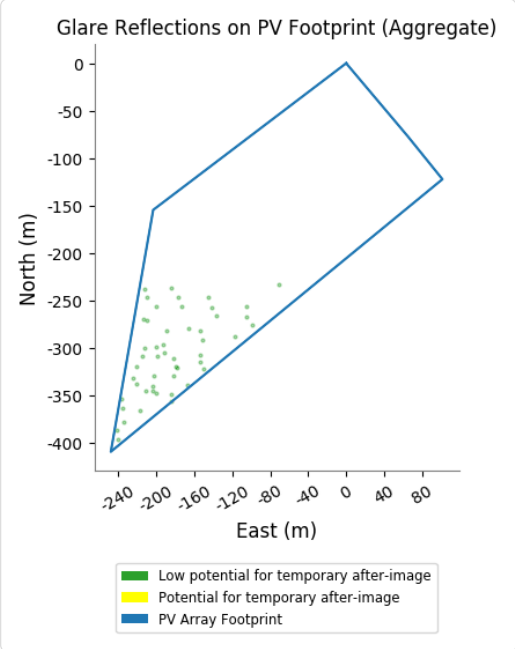
PV array 1 - OP Receptor (OP 23)

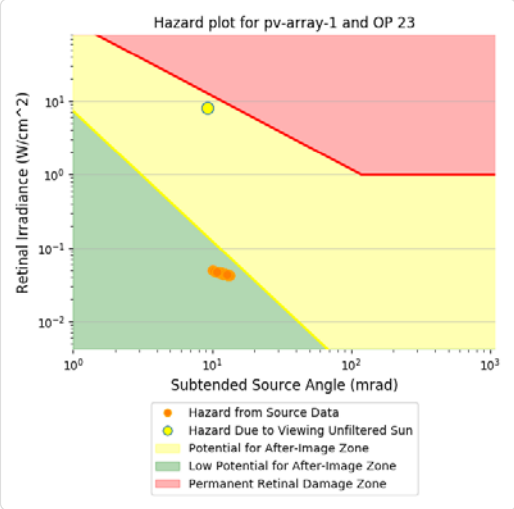
PV array is expected to produce the following glare for receptors at this location:

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





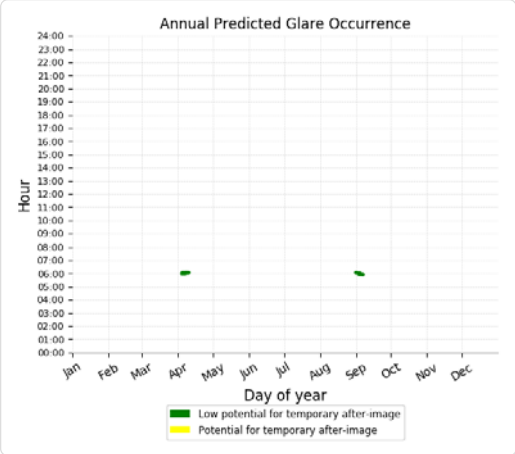


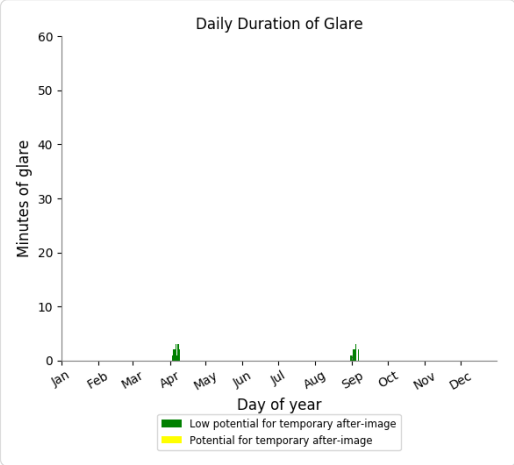


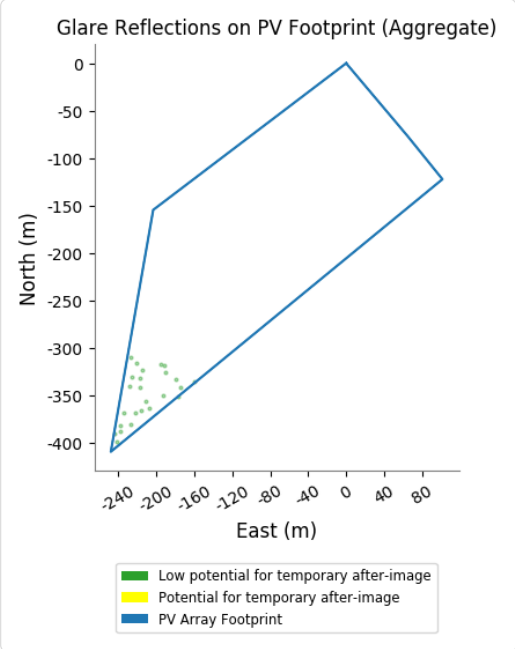
PV array 1 - OP Receptor (OP 24)

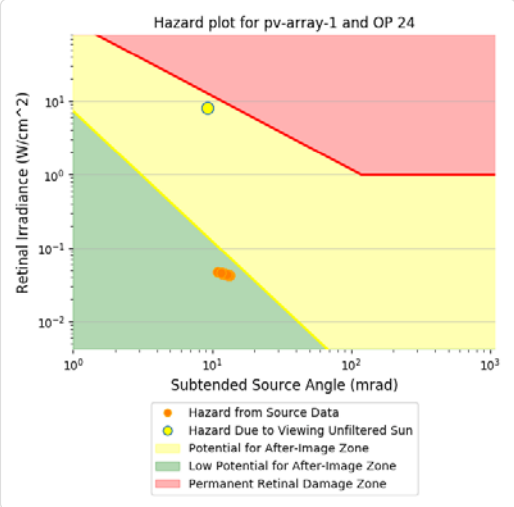
PV array is expected to produce the following glare for receptors at this location:

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









PV array 1 - OP Receptor (OP 25)

No glare found

PV array 1 - OP Receptor (OP 26)

No glare found

PV array 1 - OP Receptor (OP 27)

No glare found

PV array 1 - OP Receptor (OP 28)

No glare found

PV array 1 - OP Receptor (OP 29)

No glare found

PV array 1 - OP Receptor (OP 30)

No glare found

PV array 1 - OP Receptor (OP 31)

No glare found

PV array 1 - OP Receptor (OP 32)

No glare found

PV array 1 - OP Receptor (OP 33)

No glare found

PV array 1 - OP Receptor (OP 34)

No glare found

PV array 1 - OP Receptor (OP 35)

No glare found

PV array 1 - OP Receptor (OP 36)

No glare found

PV array 1 - OP Receptor (OP 37)

No glare found

PV array 1 - OP Receptor (OP 38)

No glare found

PV array 1 - OP Receptor (OP 39)

No glare found

PV array 1 - OP Receptor (OP 40)

No glare found

PV array 1 - OP Receptor (OP 41)

No glare found

PV array 1 - OP Receptor (OP 42)

No glare found

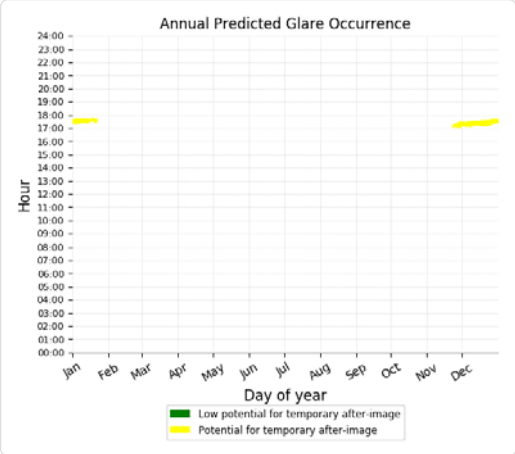
PV array 1 - OP Receptor (OP 43)

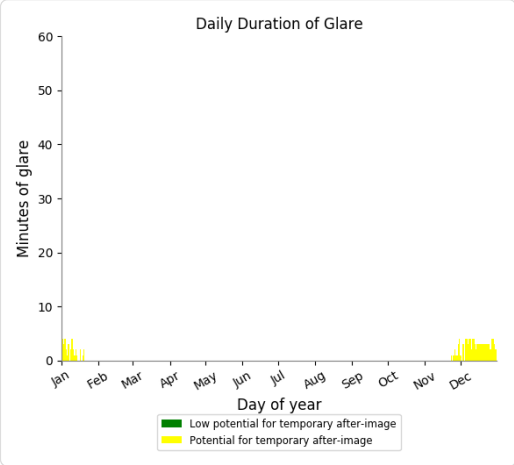
No glare found

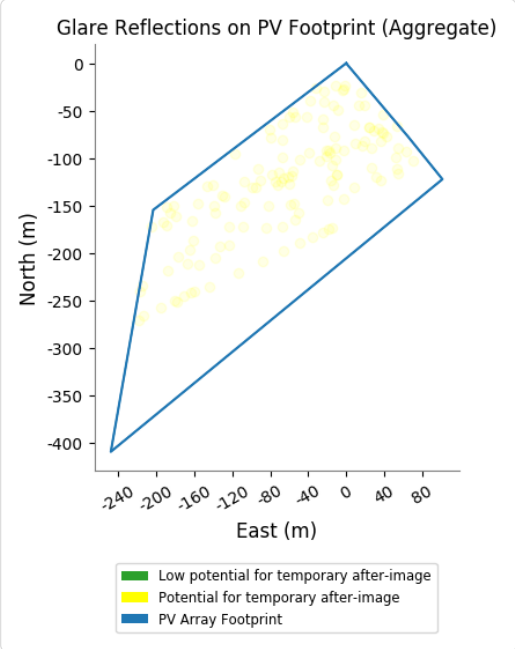
PV array 1 - OP Receptor (OP 44)

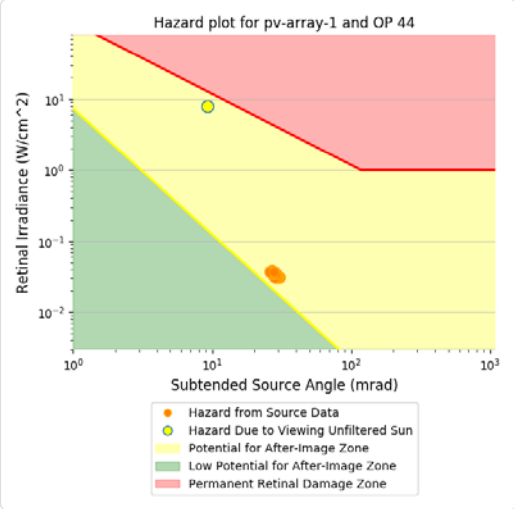
PV array is expected to produce the following glare for receptors at this location:

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





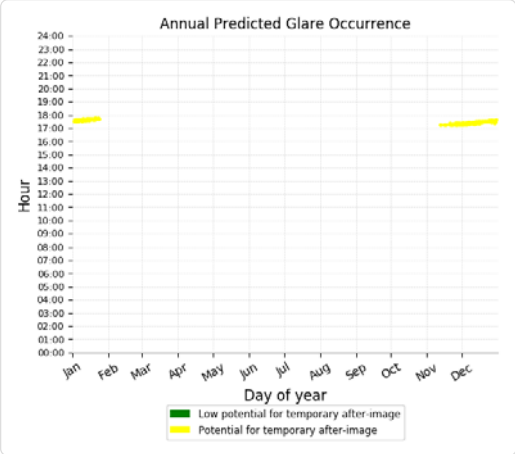


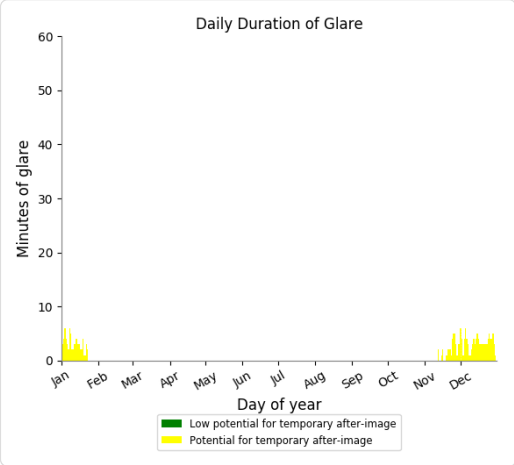


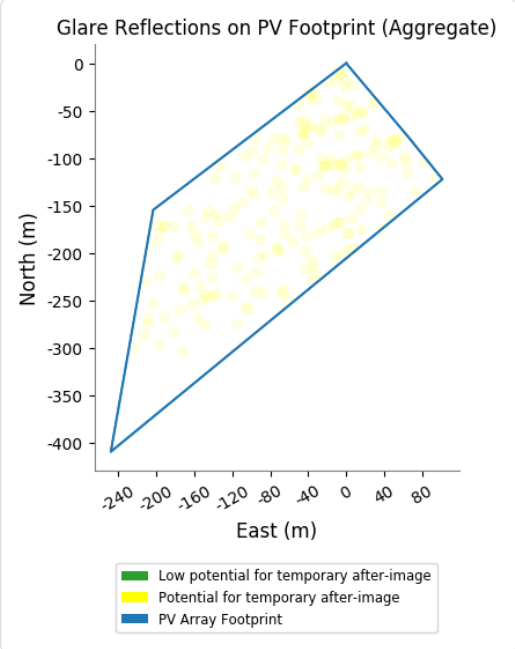
PV array 1 - OP Receptor (OP 45)

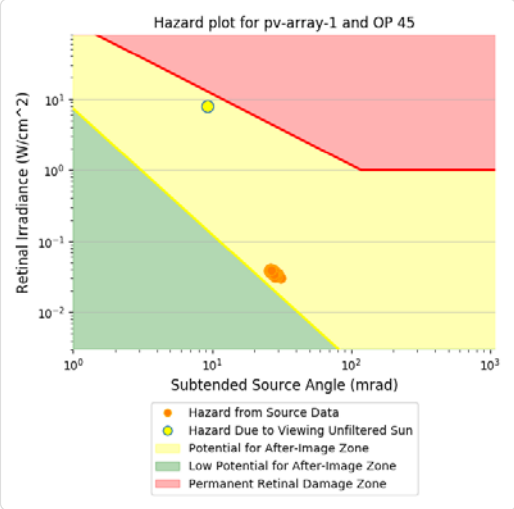
PV array is expected to produce the following glare for receptors at this location:

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





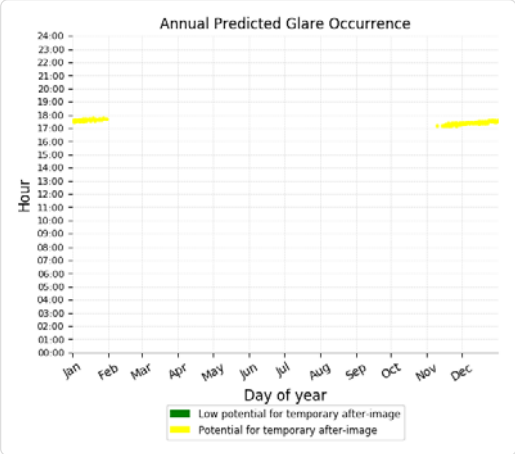


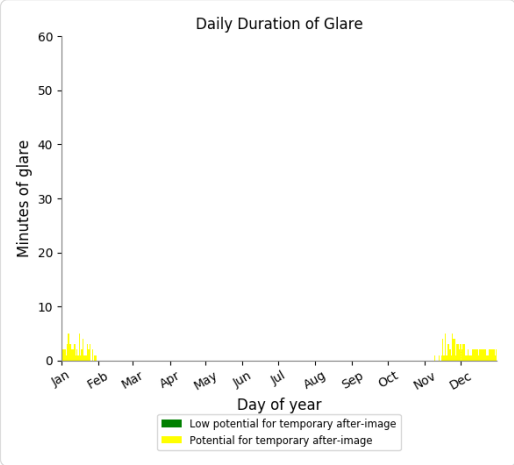


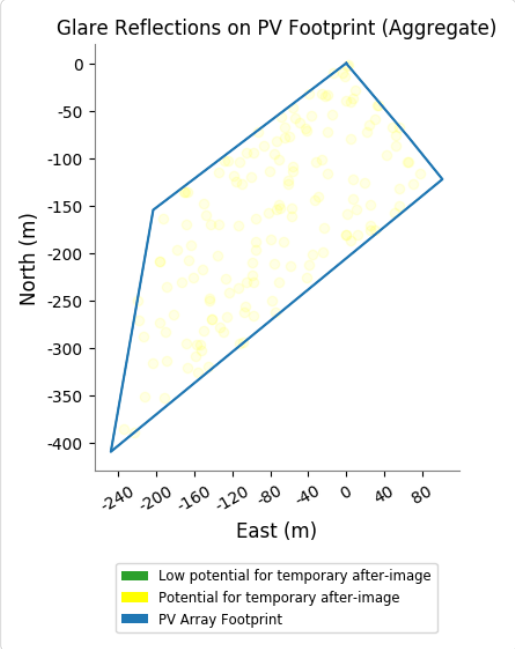
PV array 1 - OP Receptor (OP 46)

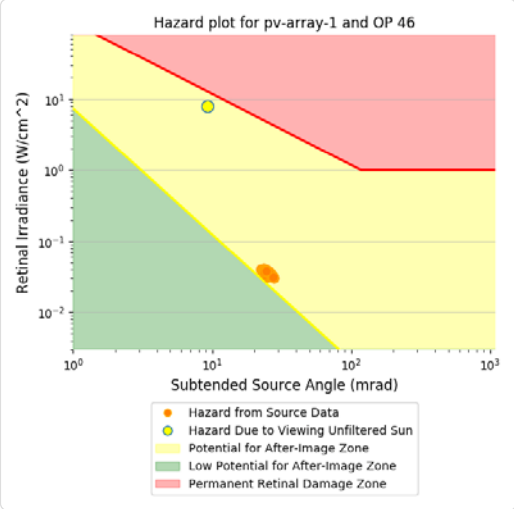
PV array is expected to produce the following glare for receptors at this location:

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





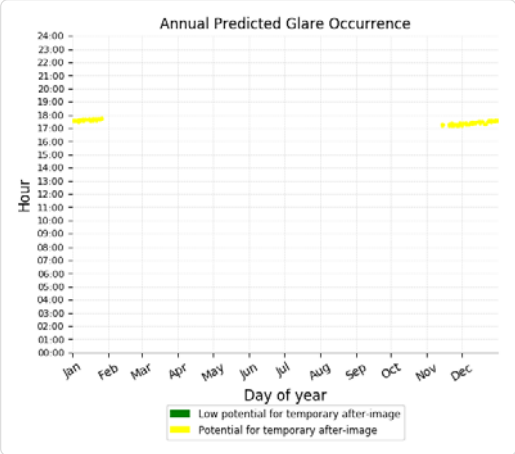


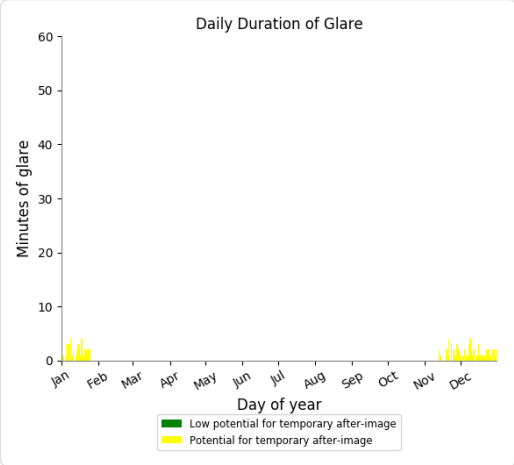


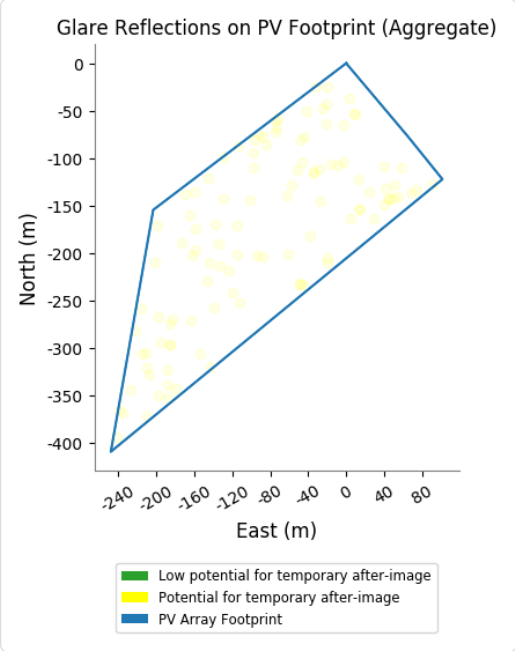
PV array 1 - OP Receptor (OP 47)

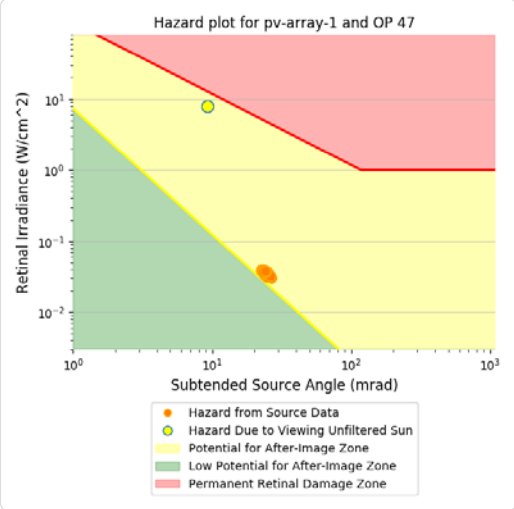
PV array is expected to produce the following glare for receptors at this location:

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





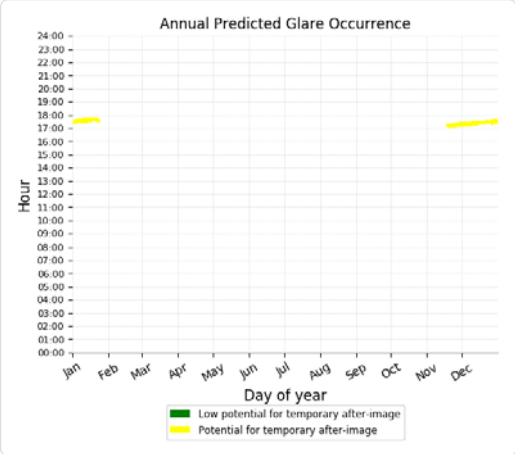


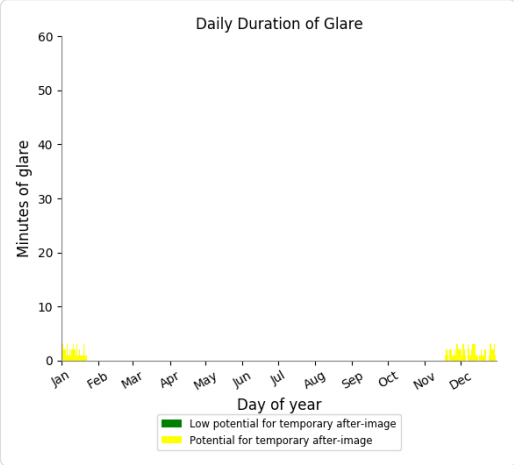


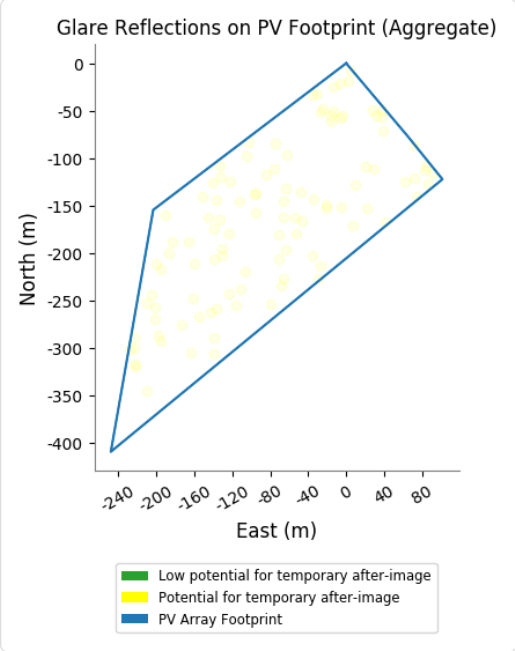
PV array 1 - OP Receptor (OP 48)

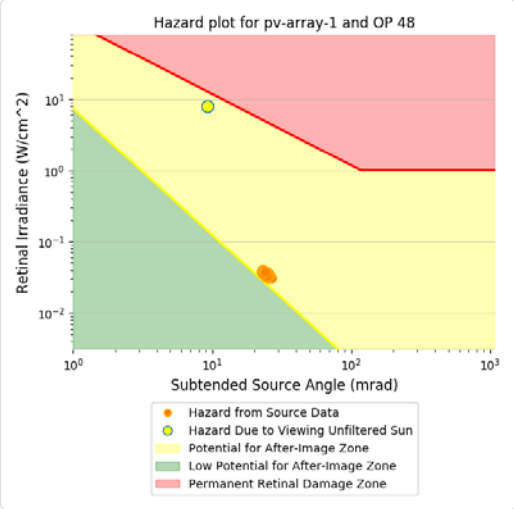
PV array is expected to produce the following glare for receptors at this location:

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





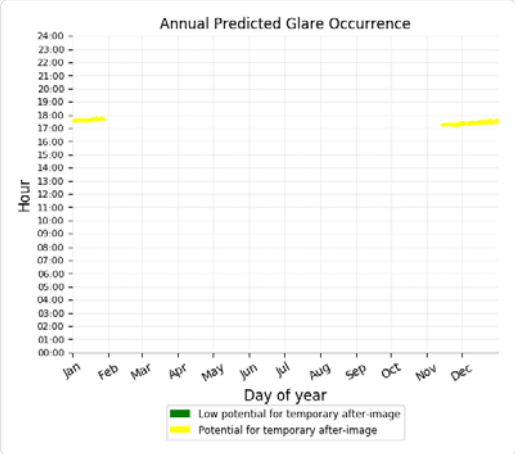


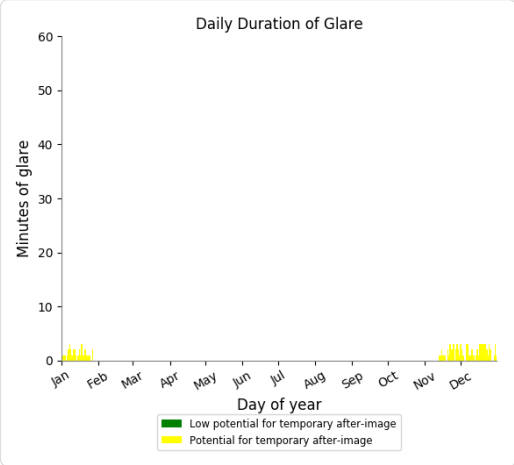


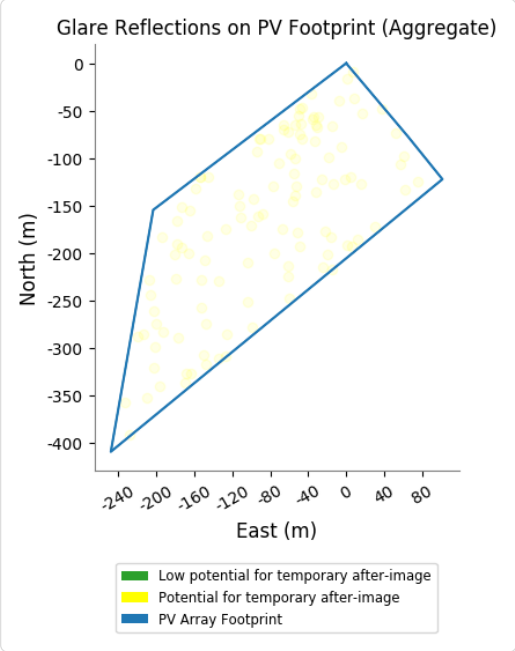
PV array 1 - OP Receptor (OP 49)

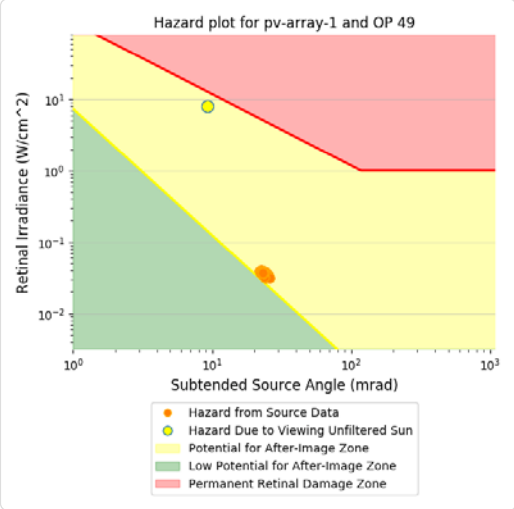
PV array is expected to produce the following glare for receptors at this location:

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









PV array 2 potential temporary after-image

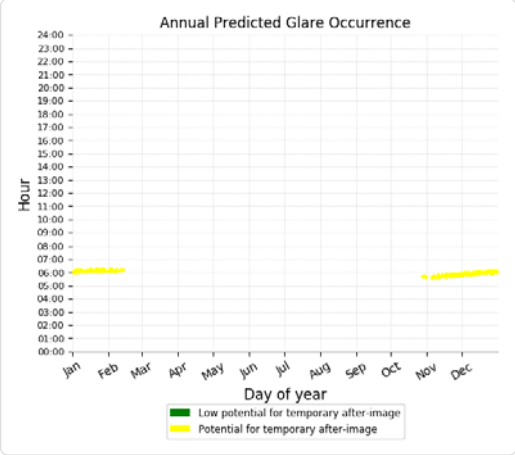
Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	201
OP: OP 2	0	223
OP: OP 3	0	118
OP: OP 4	0	81
OP: OP 5	0	91
OP: OP 6	29	24
OP: OP 7	2	0
OP: OP 8	0	0
OP: OP 9	0	7
OP: OP 10	2	12
OP: OP 11	12	0
OP: OP 12	50	0
OP: OP 13	157	0
OP: OP 14	76	0
OP: OP 15	2	0
OP: OP 16	0	0
OP: OP 17	3	0
OP: OP 18	149	0
OP: OP 19	273	0
OP: OP 20	394	0
OP: OP 21	346	0
OP: OP 22	355	0
OP: OP 23	137	0
OP: OP 24	87	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
OP: OP 29	0	0
OP: OP 30	0	0
OP: OP 31	0	0
OP: OP 32	0	0
OP: OP 33	0	0
OP: OP 34	0	0
OP: OP 35	0	0
OP: OP 36	0	0
OP: OP 37	0	0
OP: OP 38	0	0
OP: OP 39	0	0
OP: OP 40	0	0
OP: OP 41	0	0
OP: OP 42	0	0
OP: OP 43	0	0
OP: OP 44	0	0
OP: OP 45	0	93

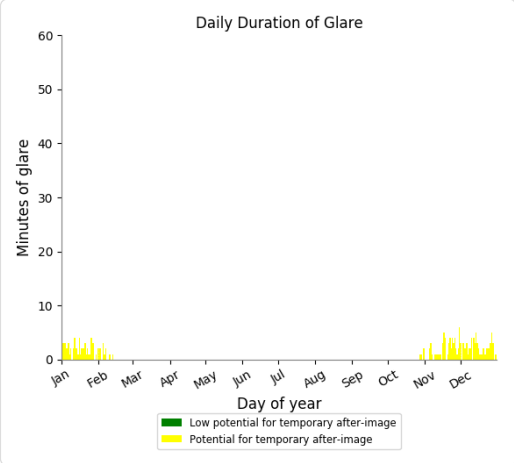
OP: OP 46	0	315
OP: OP 47	0	291
OP: OP 48	0	106
OP: OP 49	7	328

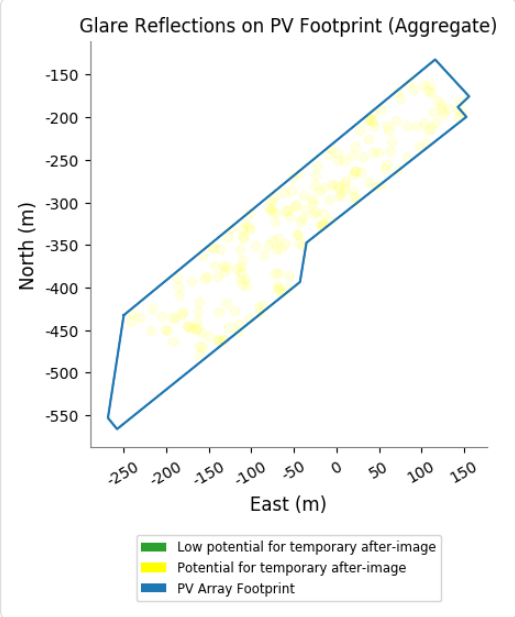
PV array 2 - OP Receptor (OP 1)

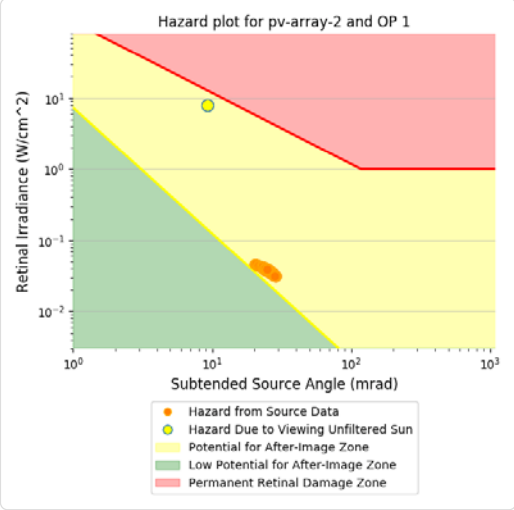
PV array is expected to produce the following glare for receptors at this location:

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





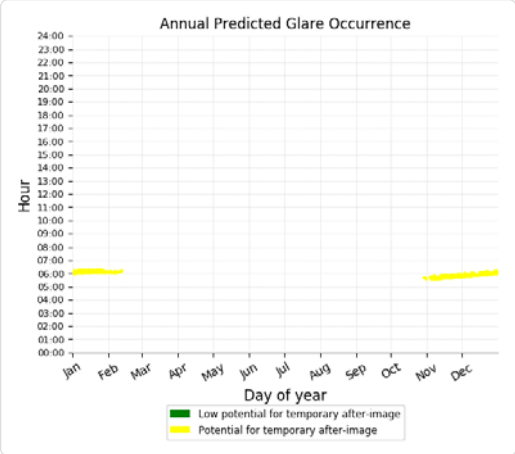


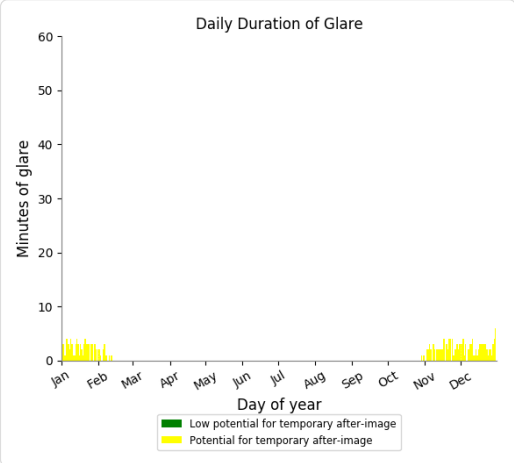


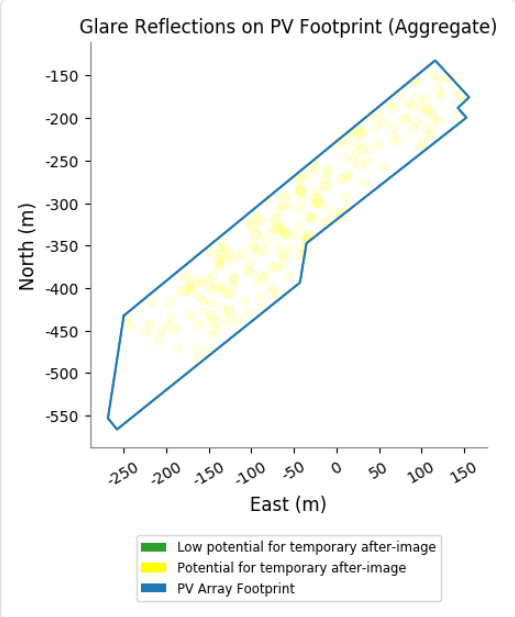
PV array 2 - OP Receptor (OP 2)

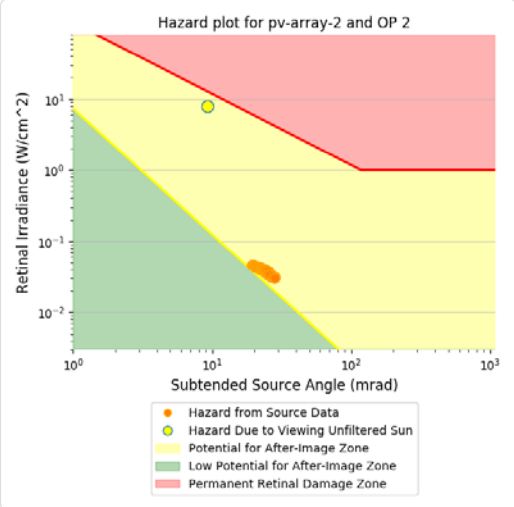
PV array is expected to produce the following glare for receptors at this location:

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





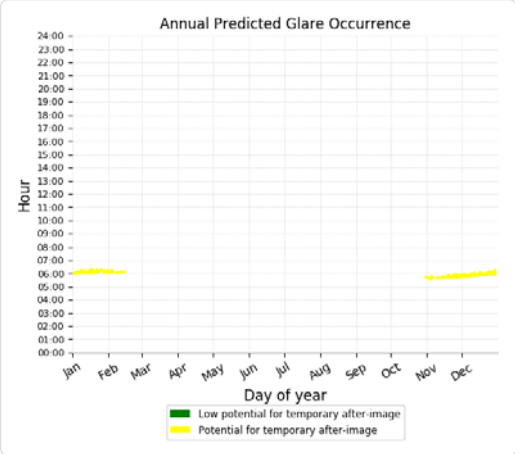


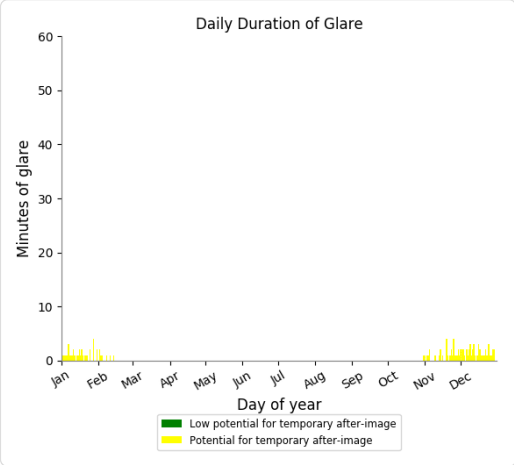


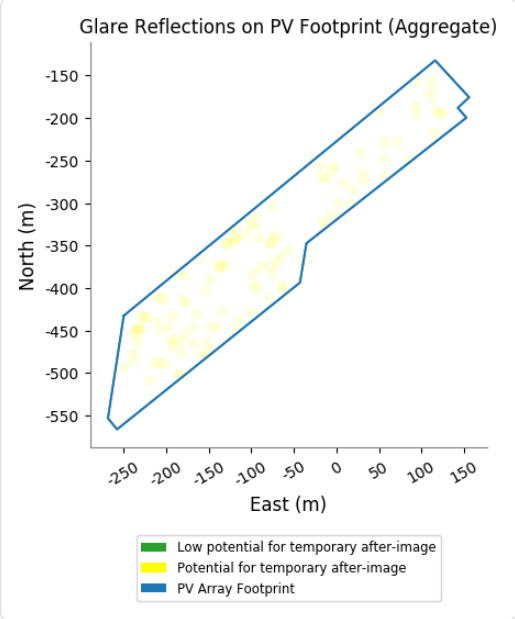
PV array 2 - OP Receptor (OP 3)

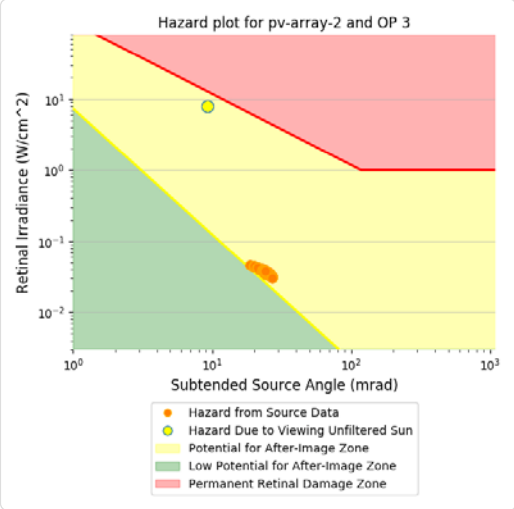
PV array is expected to produce the following glare for receptors at this location:

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





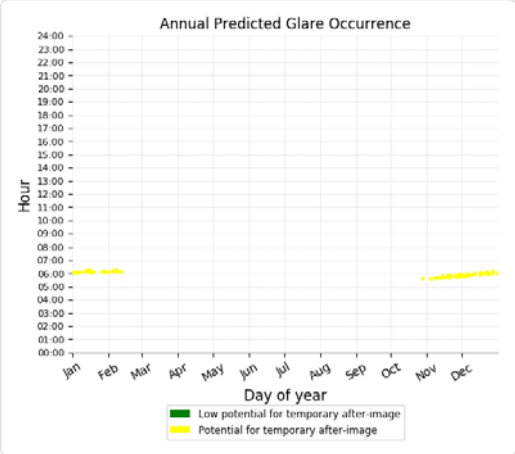


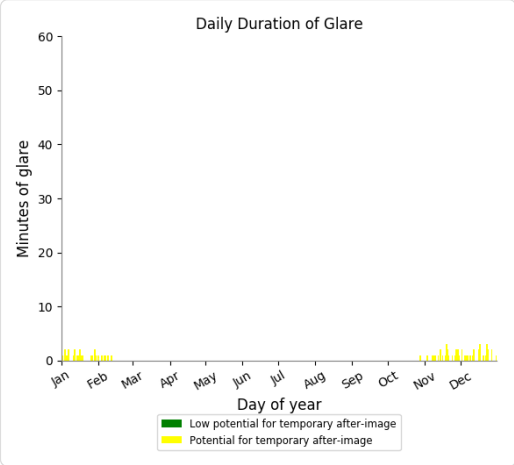


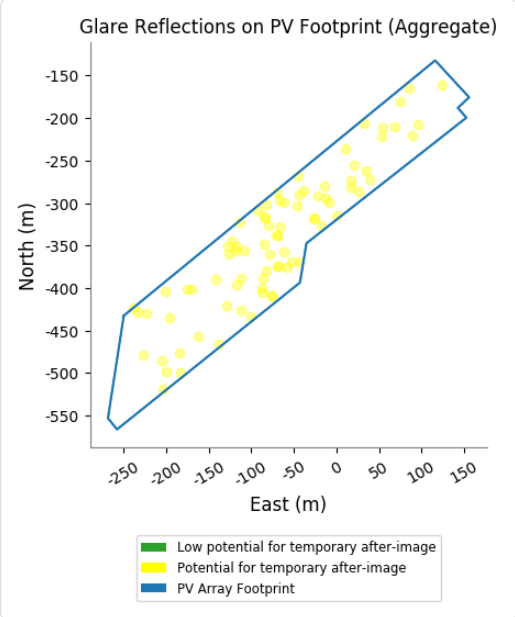
PV array 2 - OP Receptor (OP 4)

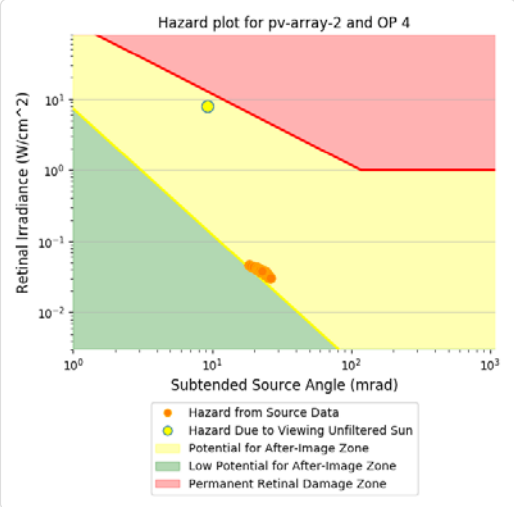
PV array is expected to produce the following glare for receptors at this location:

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





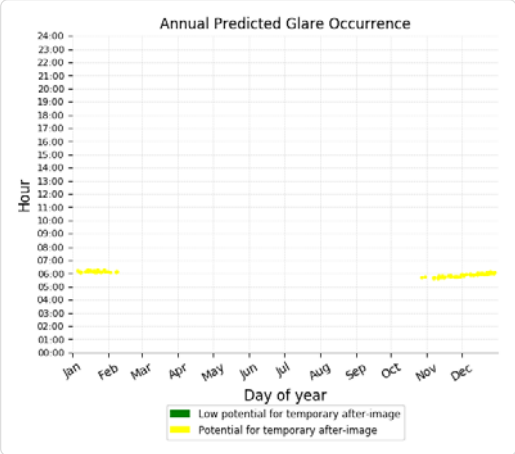


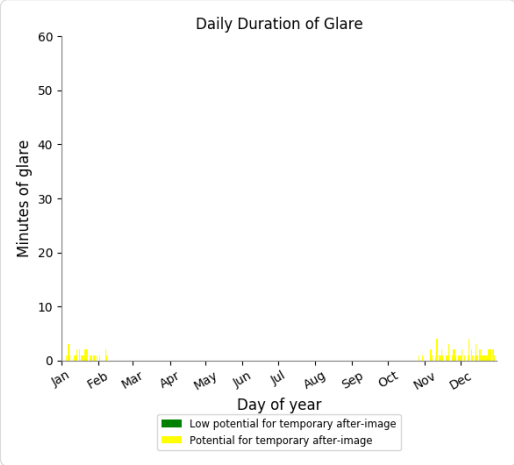


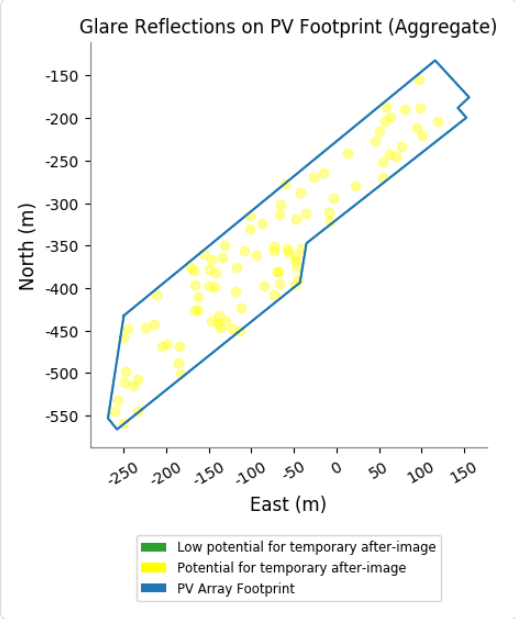
PV array 2 - OP Receptor (OP 5)

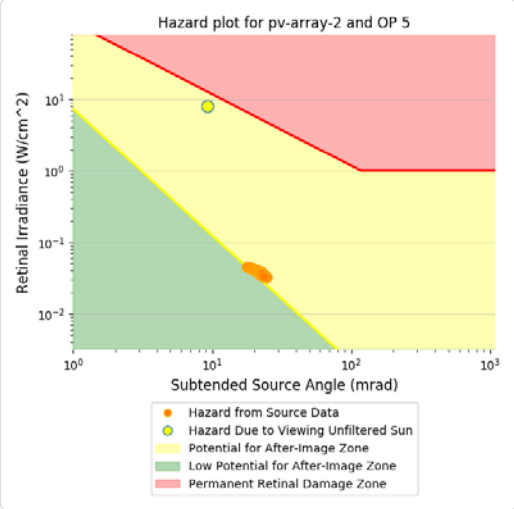
PV array is expected to produce the following glare for receptors at this location:

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





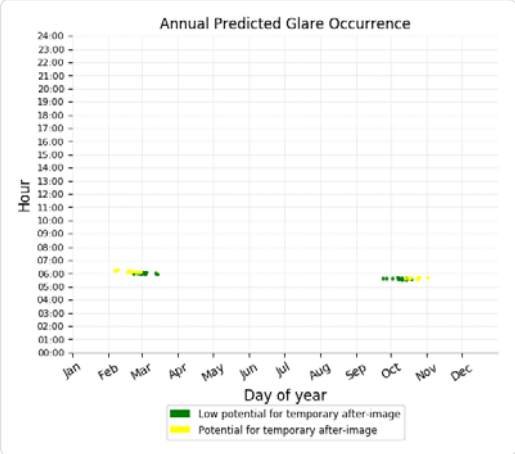


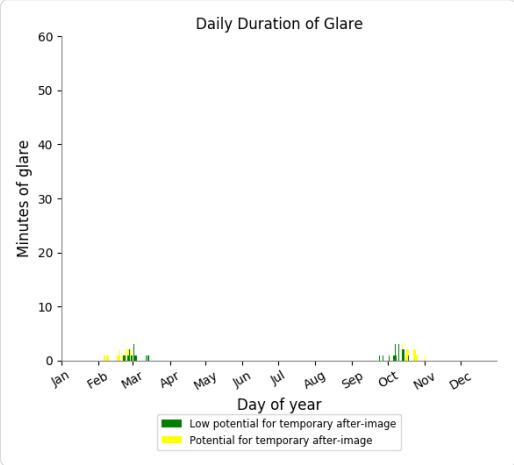


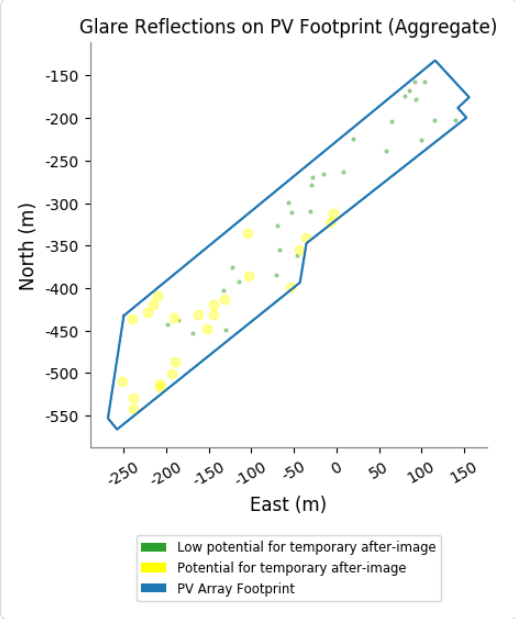
PV array 2 - OP Receptor (OP 6)

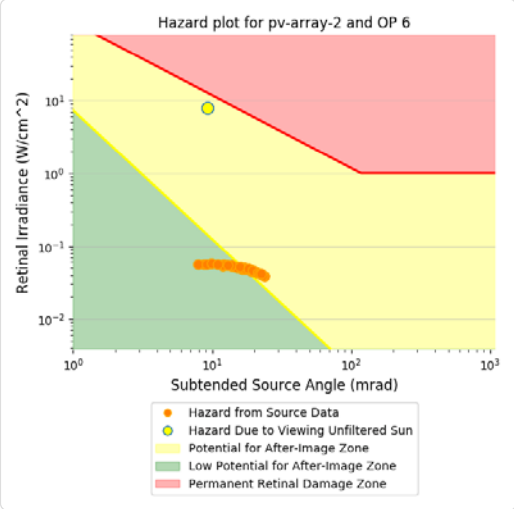
PV array is expected to produce the following glare for receptors at this location:

- 29 minutes of "green" glare with low potential to cause temporary after-image.
- 24 minutes of "yellow" glare with potential to cause temporary after-image.





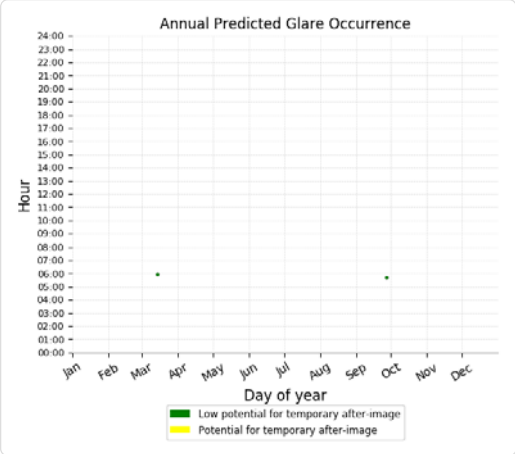


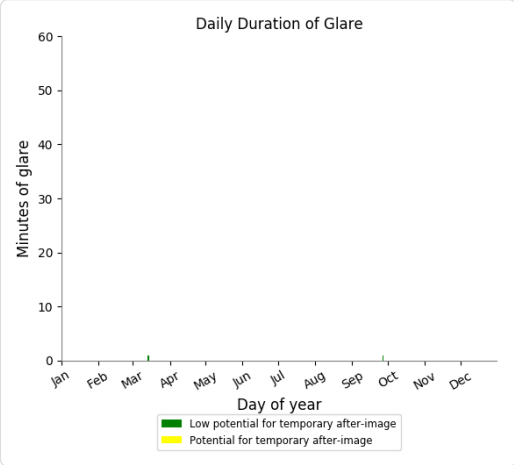


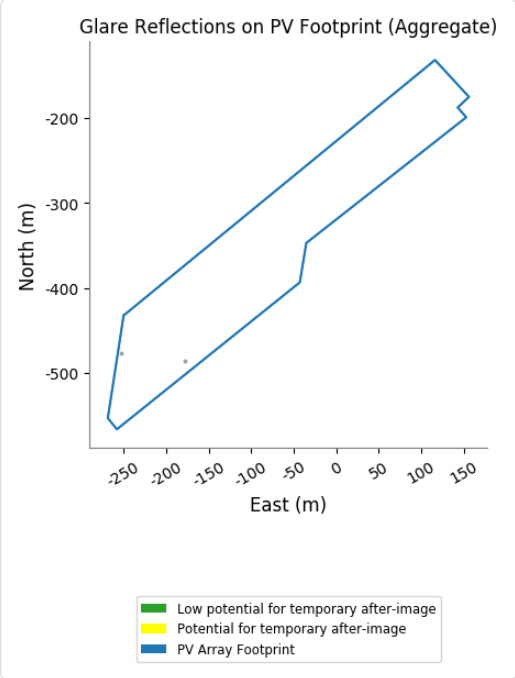
PV array 2 - OP Receptor (OP 7)

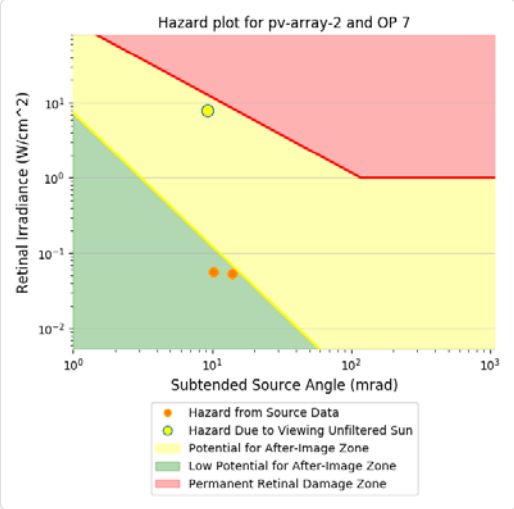
PV array is expected to produce the following glare for receptors at this location:

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









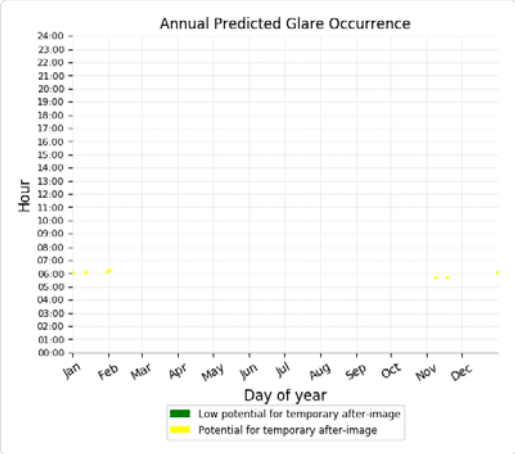
PV array 2 - OP Receptor (OP 8)

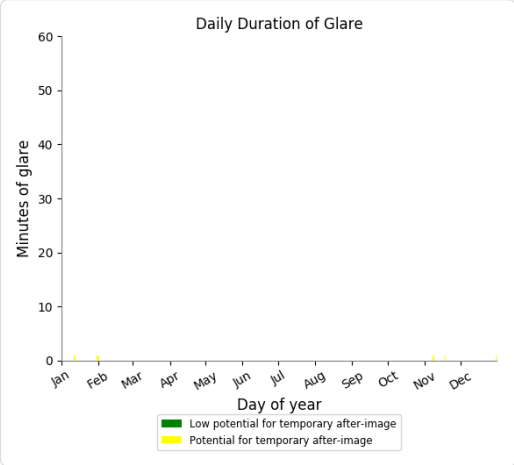
No glare found

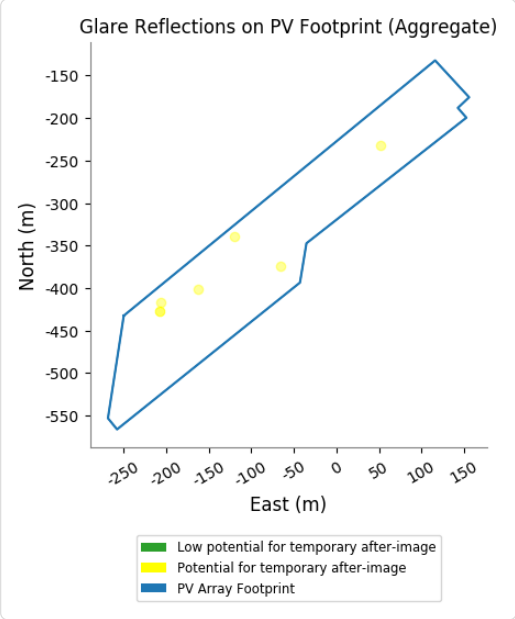
PV array 2 - OP Receptor (OP 9)

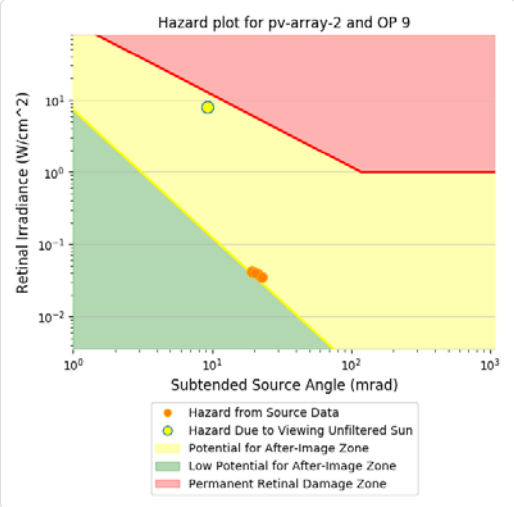
PV array is expected to produce the following glare for receptors at this location:

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





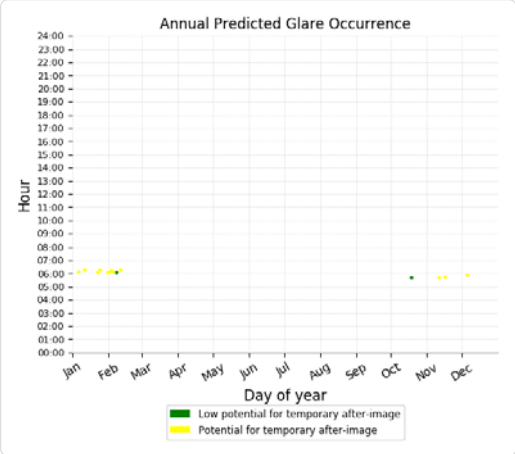


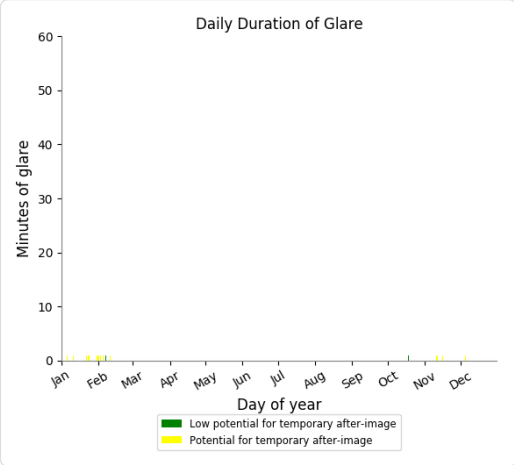


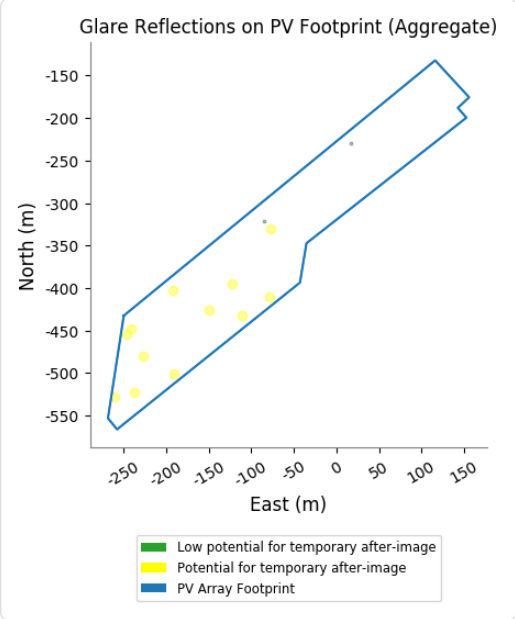
PV array 2 - OP Receptor (OP 10)

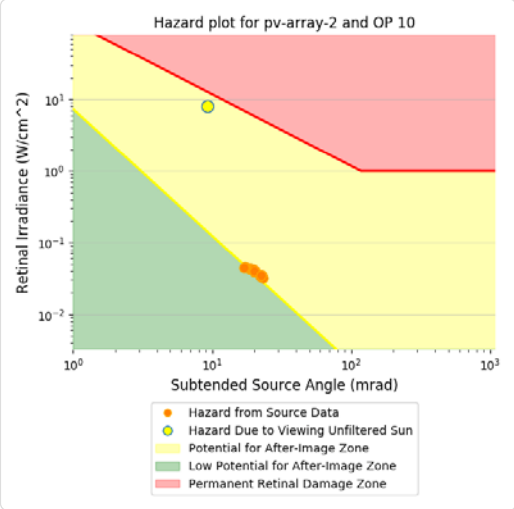
PV array is expected to produce the following glare for receptors at this location:

- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 12 minutes of "yellow" glare with potential to cause temporary after-image.





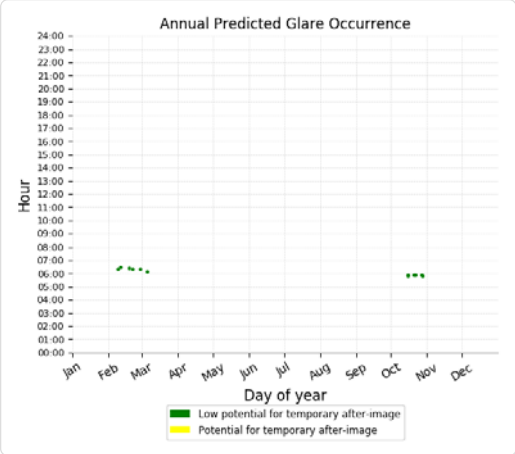


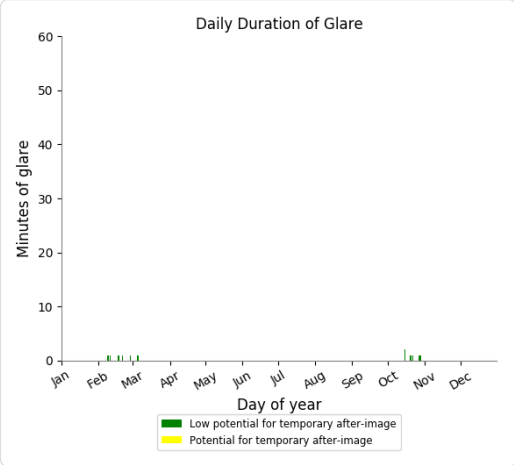


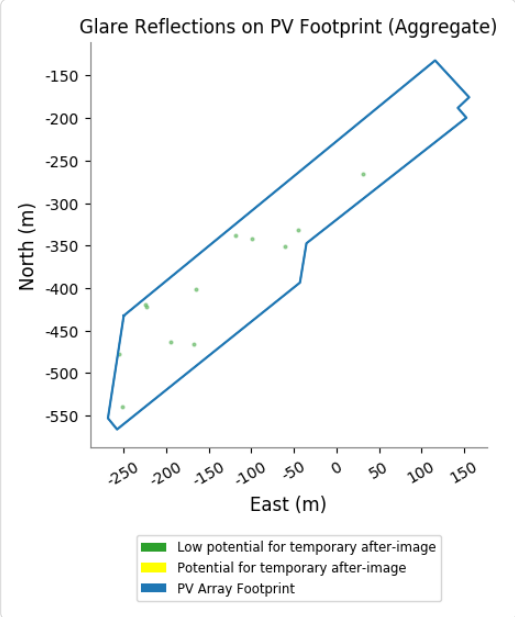
PV array 2 - OP Receptor (OP 11)

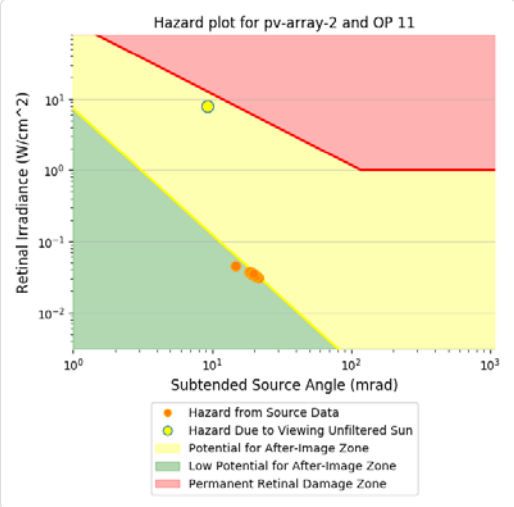
PV array is expected to produce the following glare for receptors at this location:

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





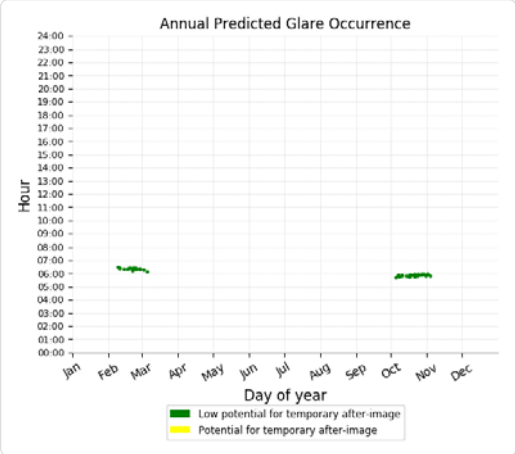


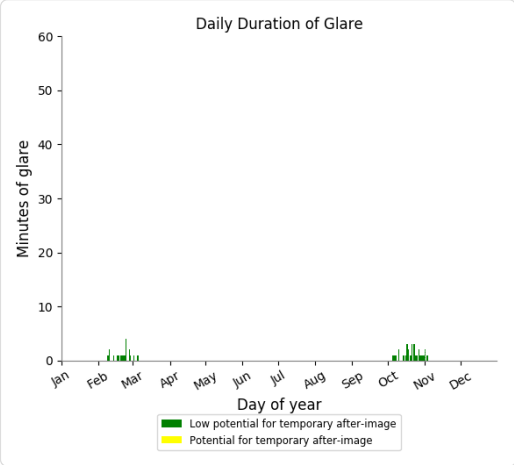


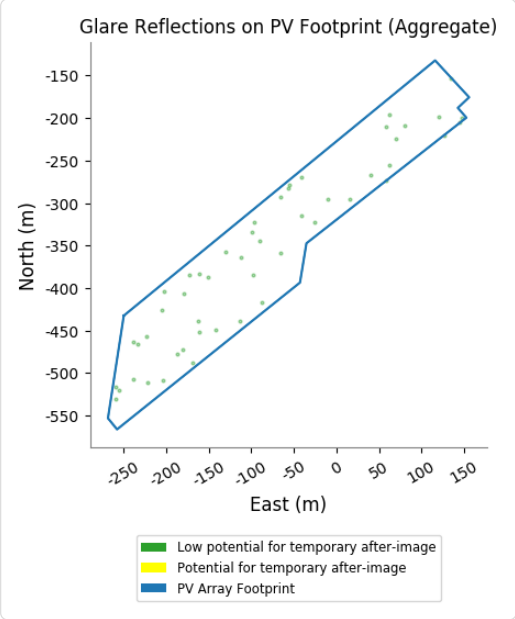
PV array 2 - OP Receptor (OP 12)

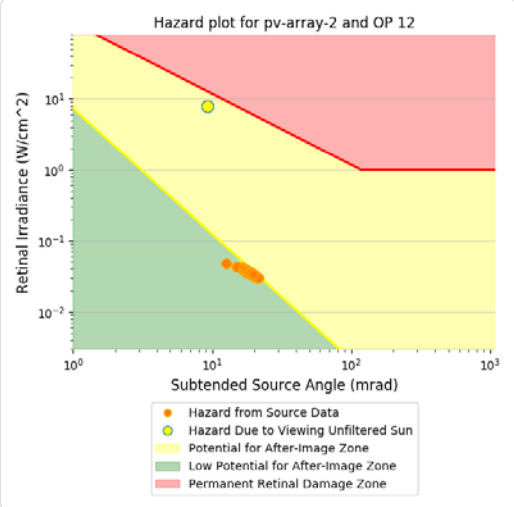
PV array is expected to produce the following glare for receptors at this location:

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





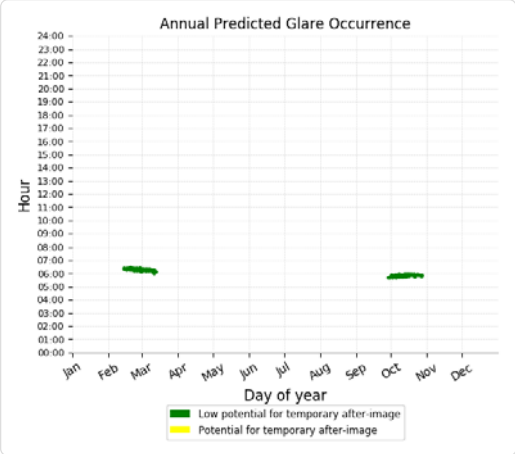


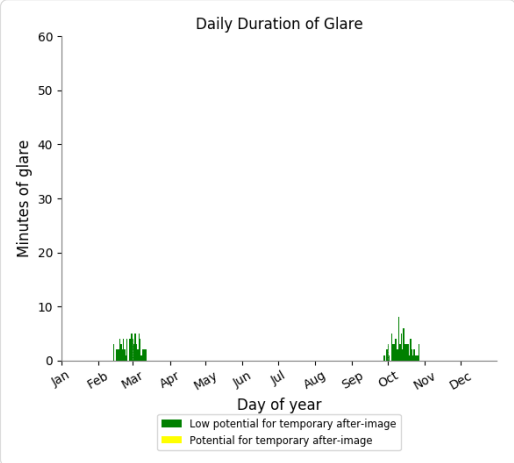


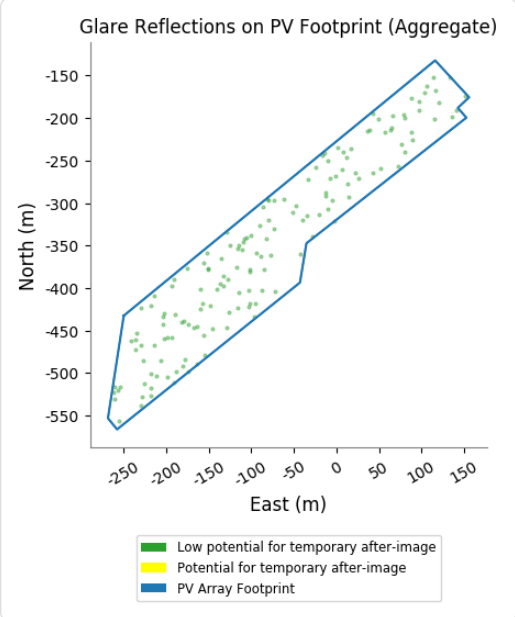
PV array 2 - OP Receptor (OP 13)

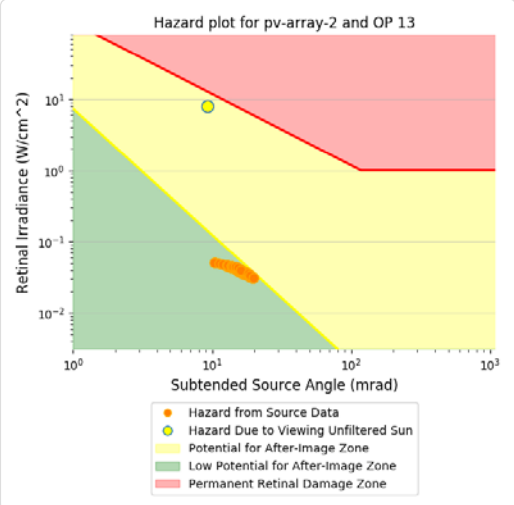
PV array is expected to produce the following glare for receptors at this location:

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





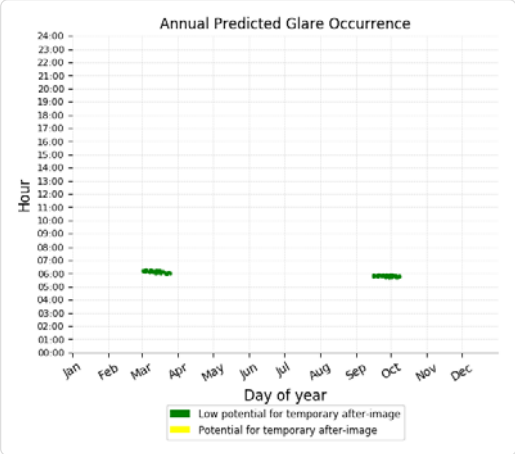


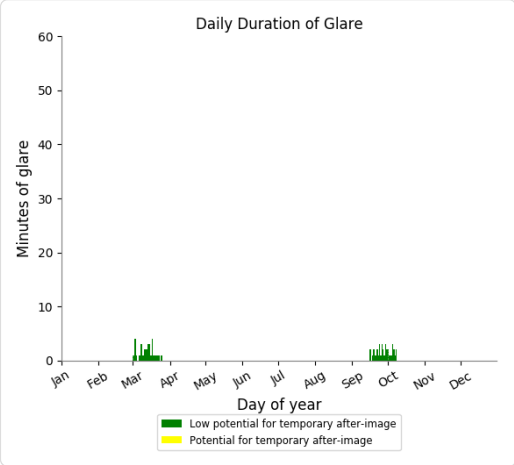


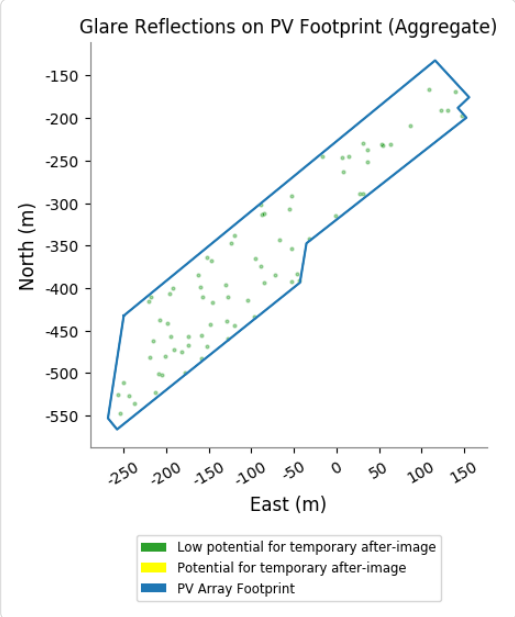
PV array 2 - OP Receptor (OP 14)

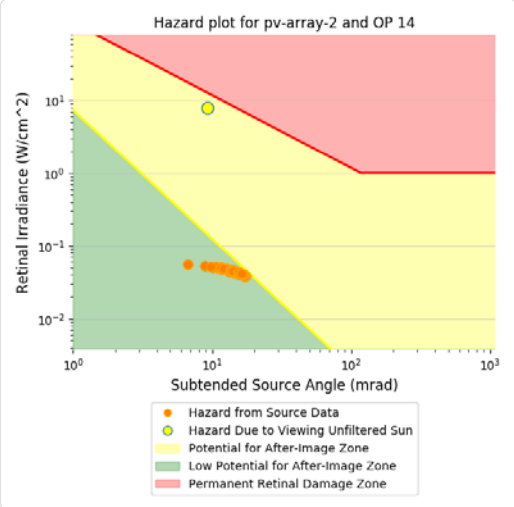
PV array is expected to produce the following glare for receptors at this location:

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





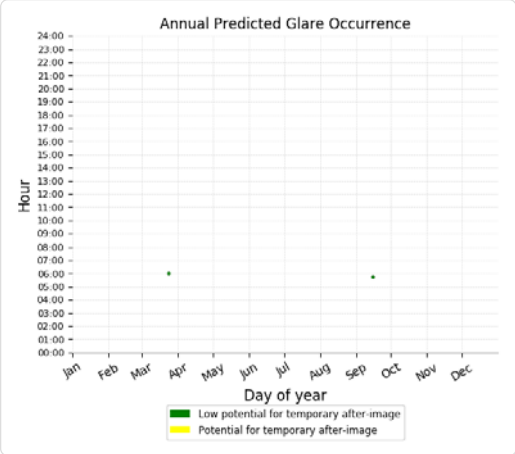


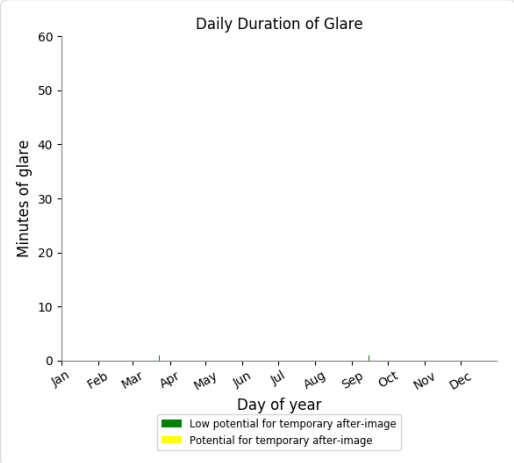


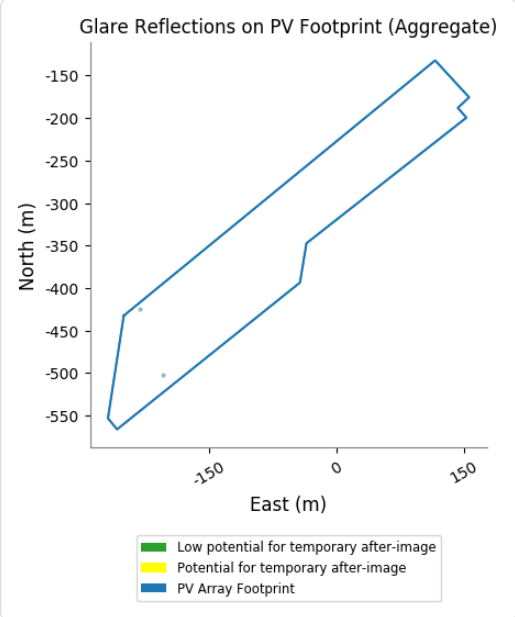
PV array 2 - OP Receptor (OP 15)

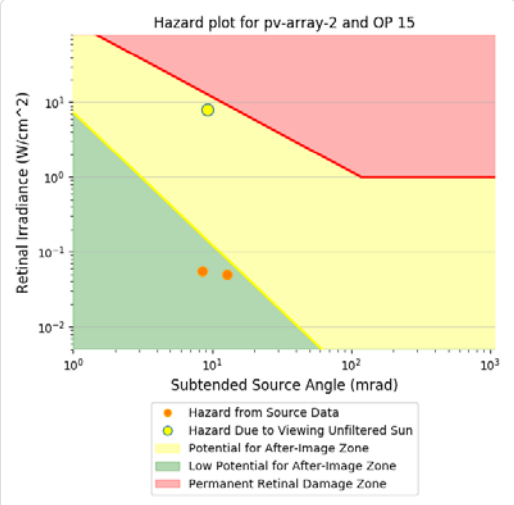
PV array is expected to produce the following glare for receptors at this location:

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









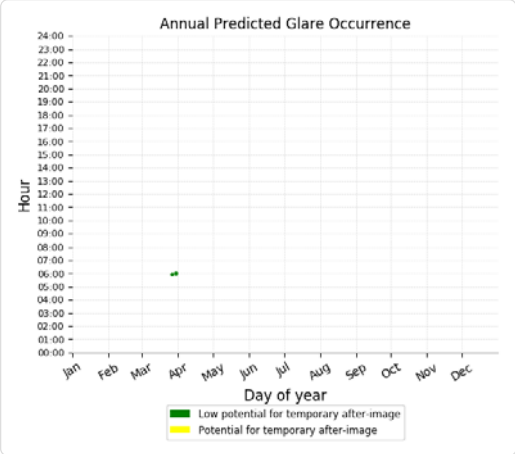
PV array 2 - OP Receptor (OP 16)

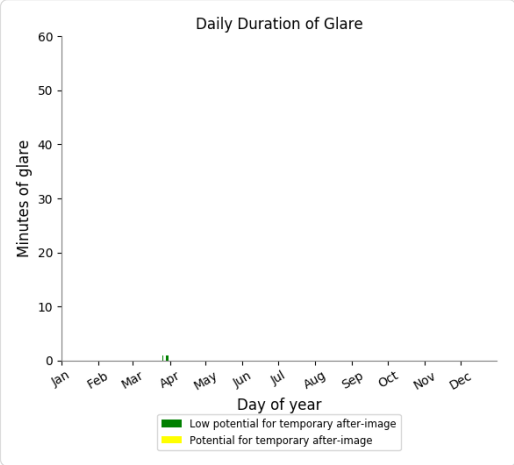
No glare found

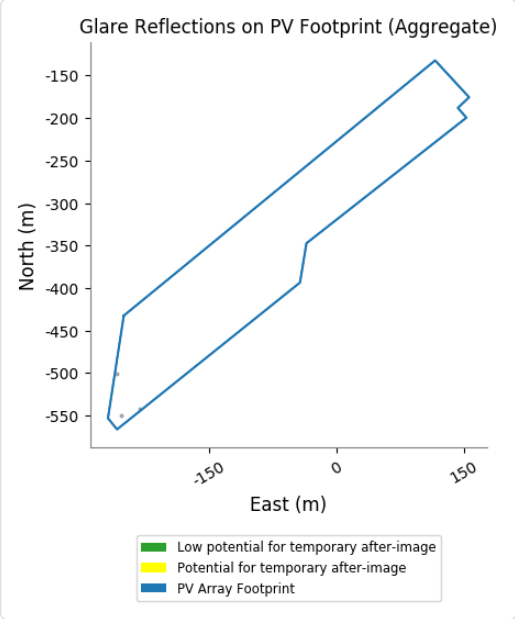
PV array 2 - OP Receptor (OP 17)

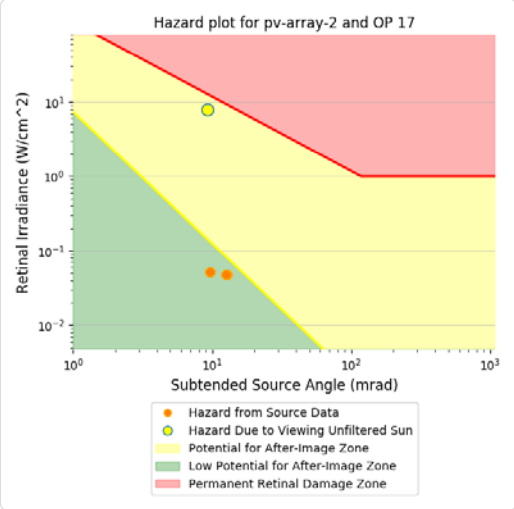
PV array is expected to produce the following glare for receptors at this location:

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





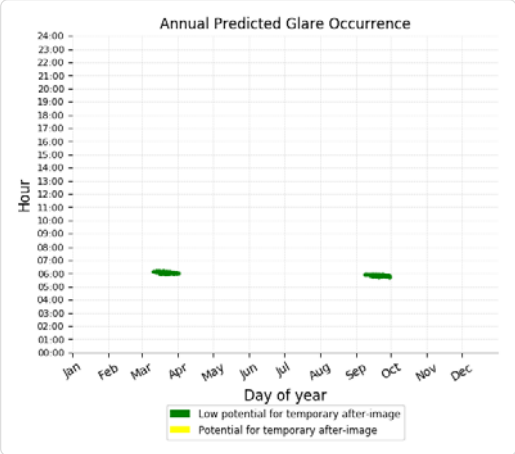


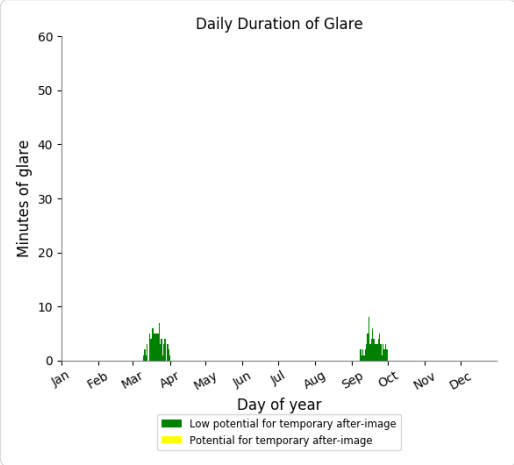


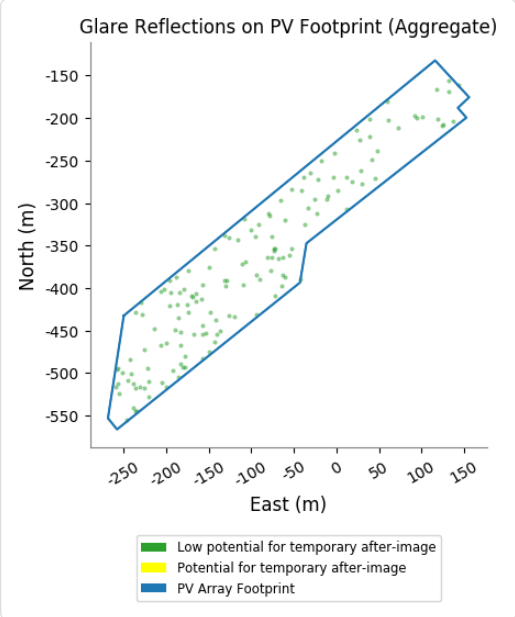
PV array 2 - OP Receptor (OP 18)

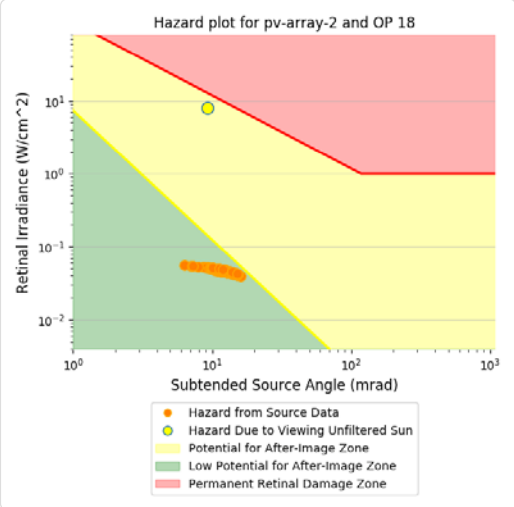
PV array is expected to produce the following glare for receptors at this location:

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





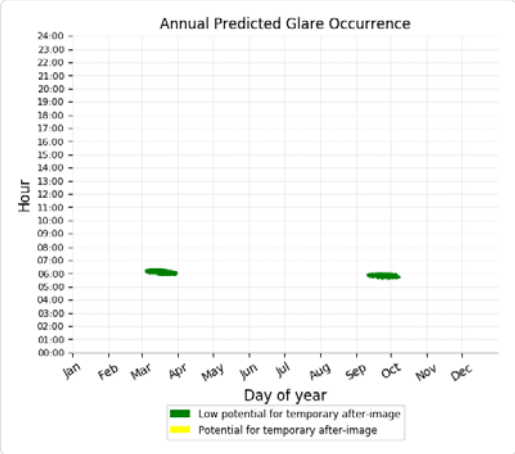


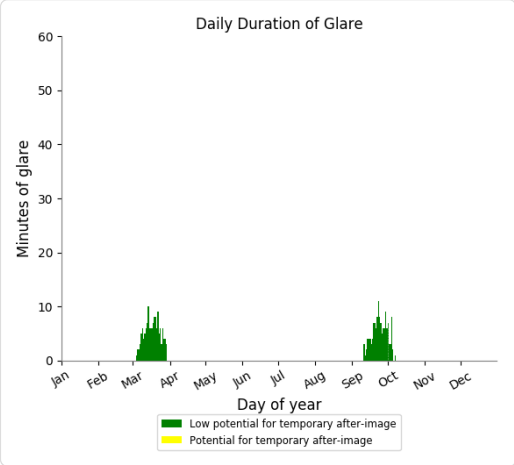


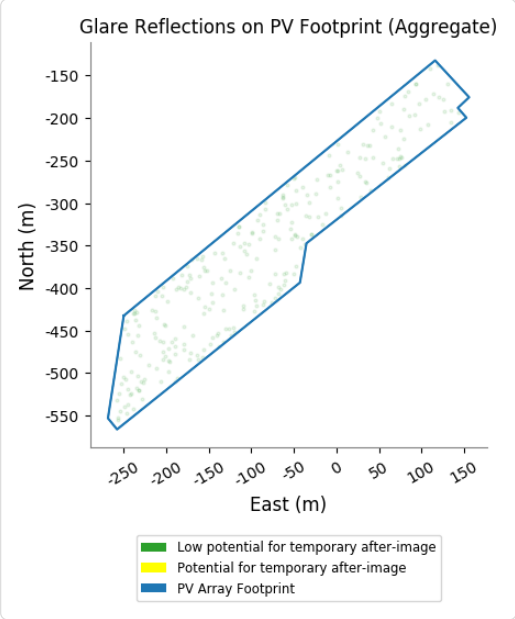
PV array 2 - OP Receptor (OP 19)

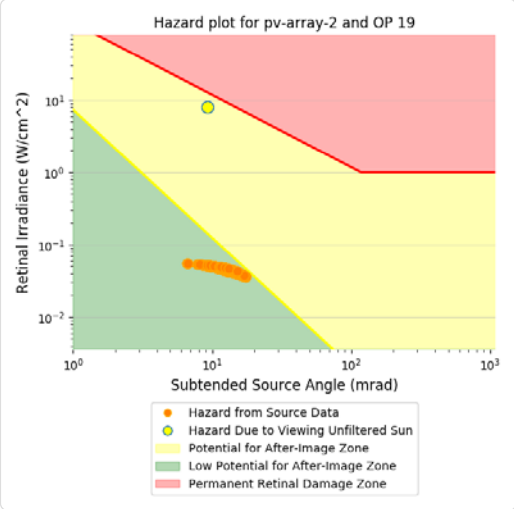
PV array is expected to produce the following glare for receptors at this location:

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





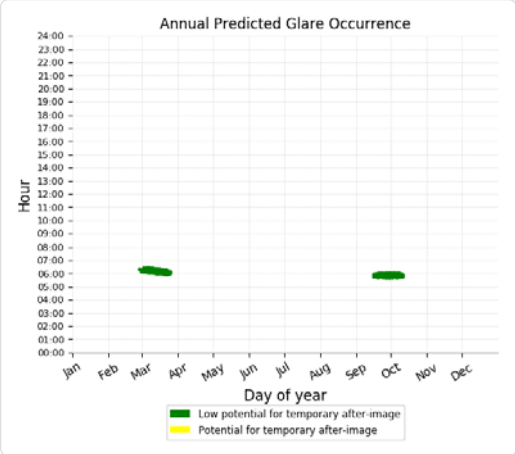


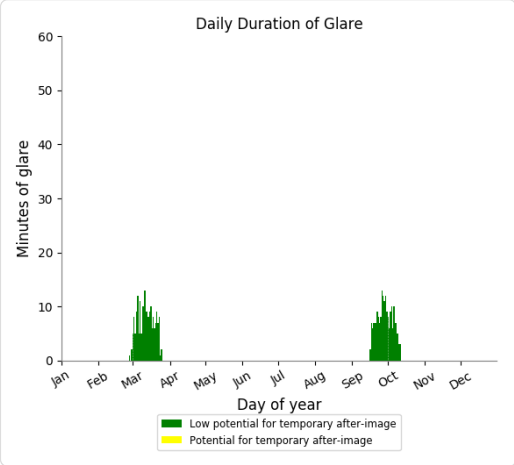


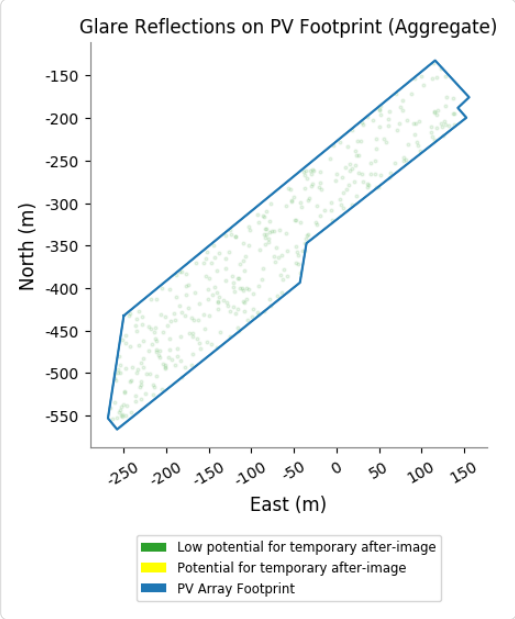
PV array 2 - OP Receptor (OP 20)

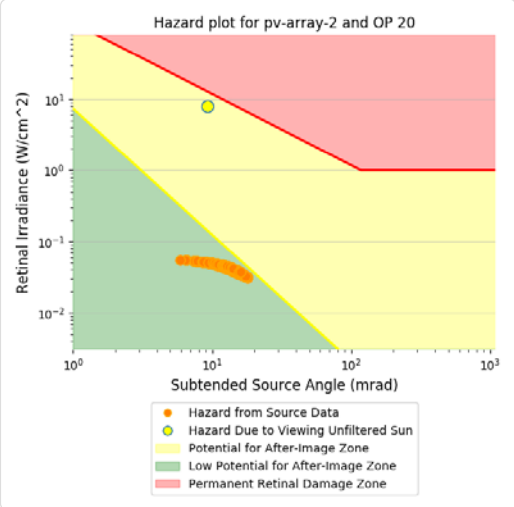
PV array is expected to produce the following glare for receptors at this location:

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





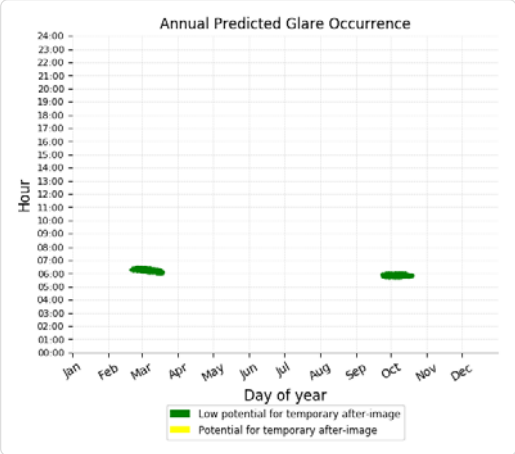


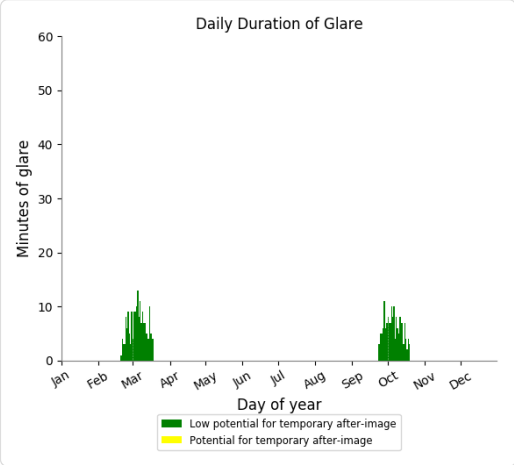


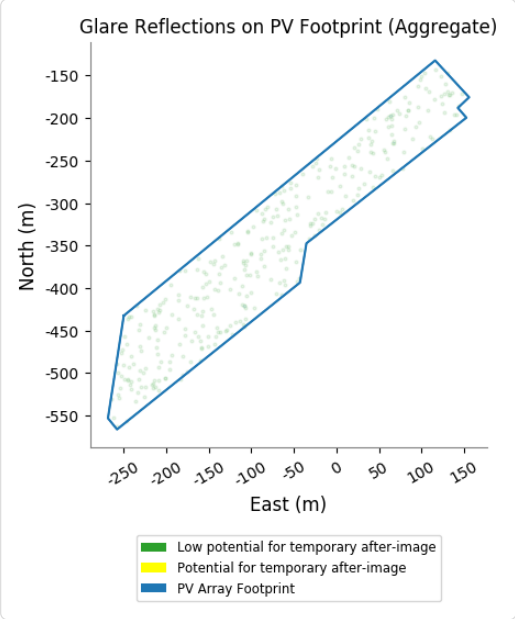
PV array 2 - OP Receptor (OP 21)

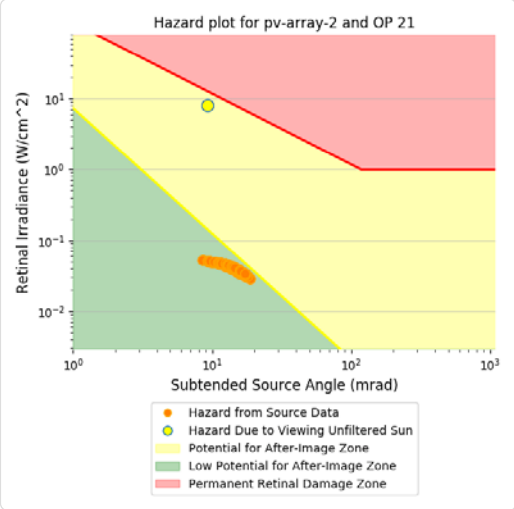
PV array is expected to produce the following glare for receptors at this location:

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





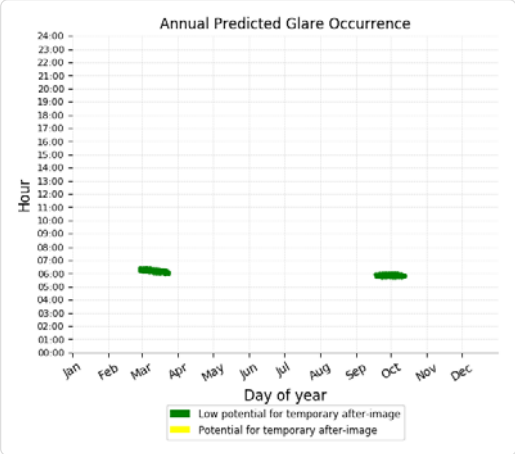


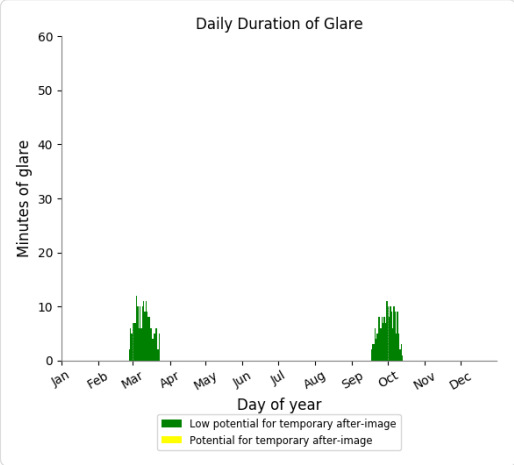


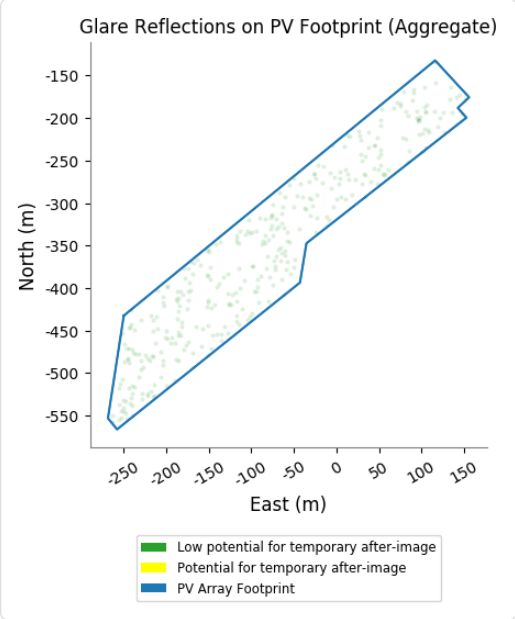
PV array 2 - OP Receptor (OP 22)

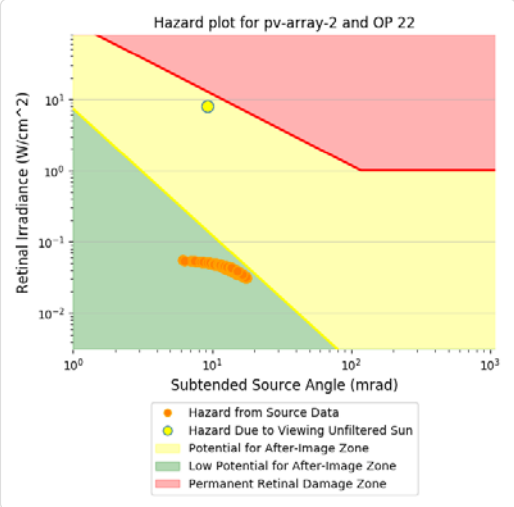
PV array is expected to produce the following glare for receptors at this location:

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





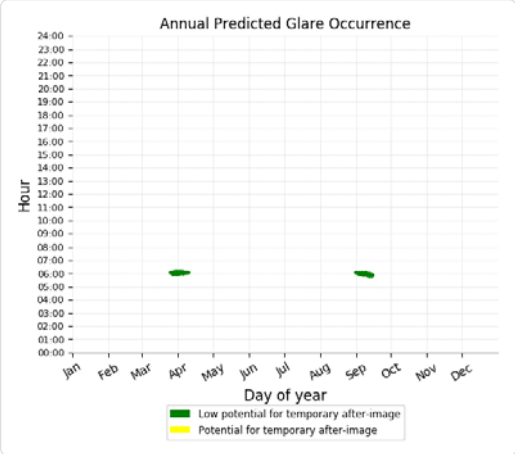


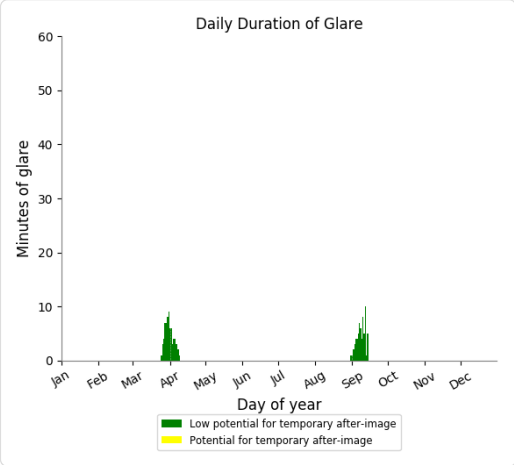


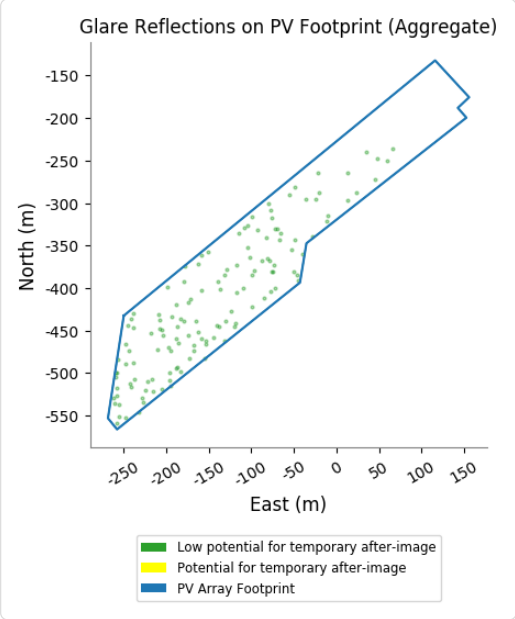
PV array 2 - OP Receptor (OP 23)

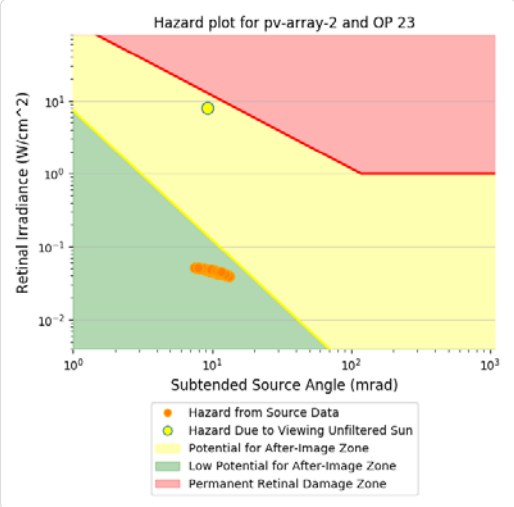
PV array is expected to produce the following glare for receptors at this location:

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





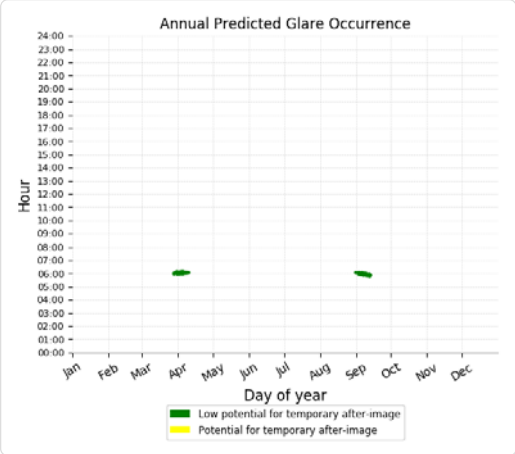


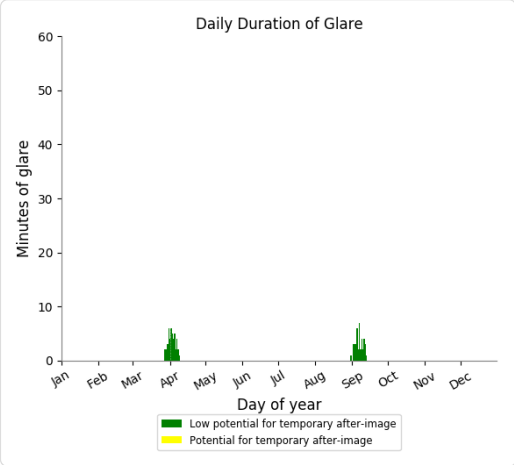


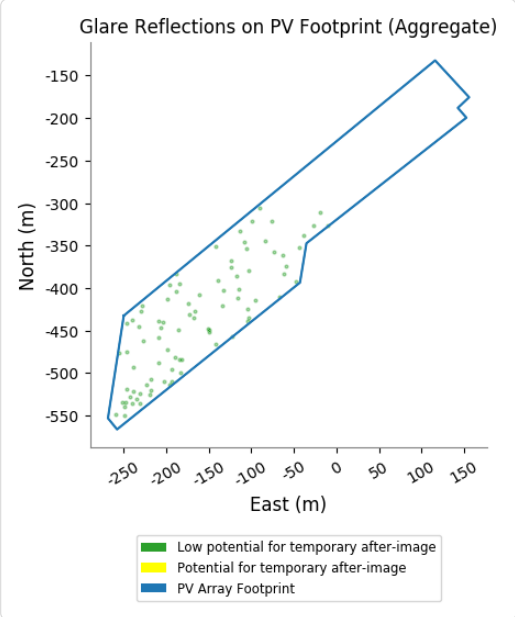
PV array 2 - OP Receptor (OP 24)

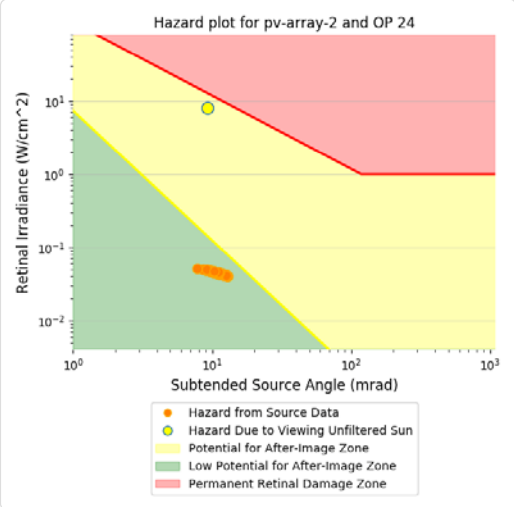
PV array is expected to produce the following glare for receptors at this location:

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









PV array 2 - OP Receptor (OP 25)

No glare found

PV array 2 - OP Receptor (OP 26)

No glare found

PV array 2 - OP Receptor (OP 27)

No glare found

PV array 2 - OP Receptor (OP 28)

No glare found

PV array 2 - OP Receptor (OP 29)

No glare found

PV array 2 - OP Receptor (OP 30)

No glare found

PV array 2 - OP Receptor (OP 31)

No glare found

PV array 2 - OP Receptor (OP 32)

No glare found

PV array 2 - OP Receptor (OP 33)

No glare found

PV array 2 - OP Receptor (OP 34)

No glare found

PV array 2 - OP Receptor (OP 35)

No glare found

PV array 2 - OP Receptor (OP 36)

No glare found

PV array 2 - OP Receptor (OP 37)

No glare found

PV array 2 - OP Receptor (OP 38)

No glare found

PV array 2 - OP Receptor (OP 39)

No glare found

PV array 2 - OP Receptor (OP 40)

No glare found

PV array 2 - OP Receptor (OP 41)

No glare found

PV array 2 - OP Receptor (OP 42)

No glare found

PV array 2 - OP Receptor (OP 43)

No glare found

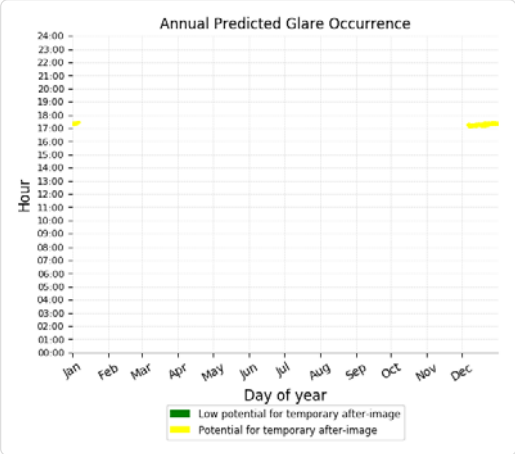
PV array 2 - OP Receptor (OP 44)

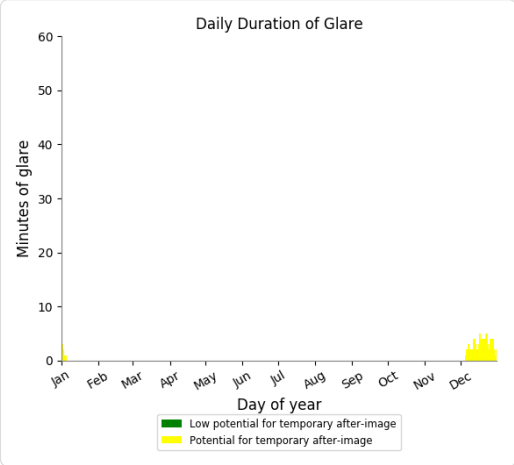
No glare found

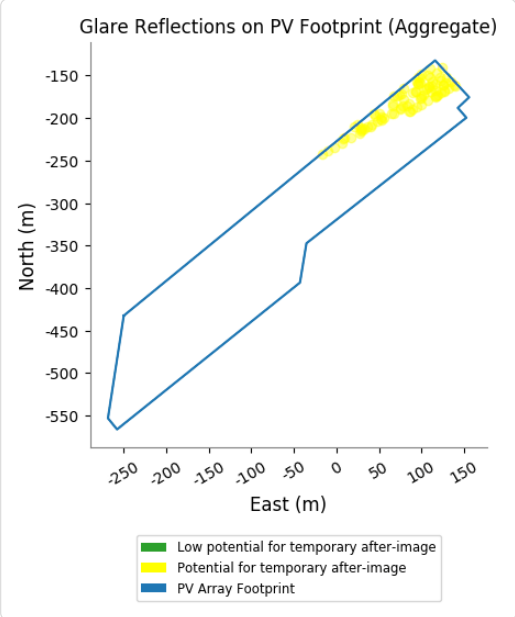
PV array 2 - OP Receptor (OP 45)

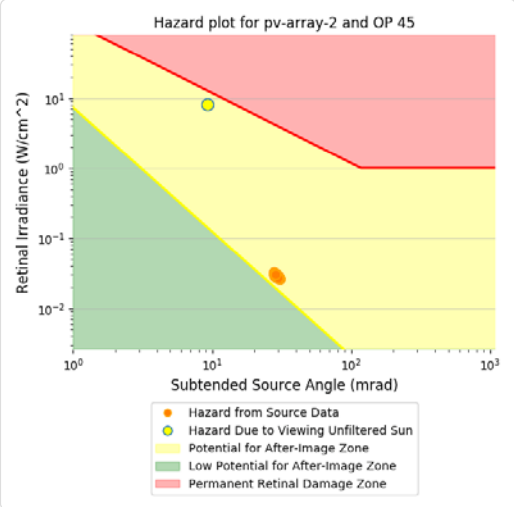
PV array is expected to produce the following glare for receptors at this location:

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





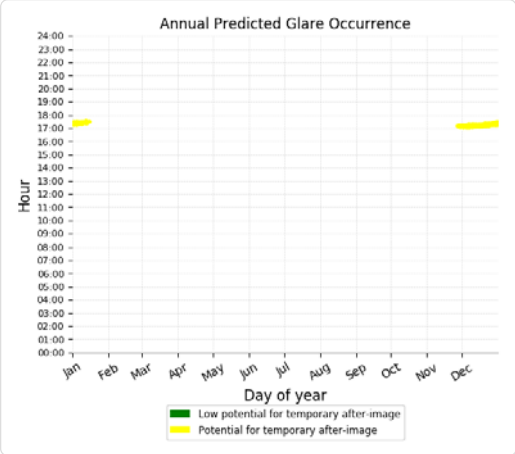


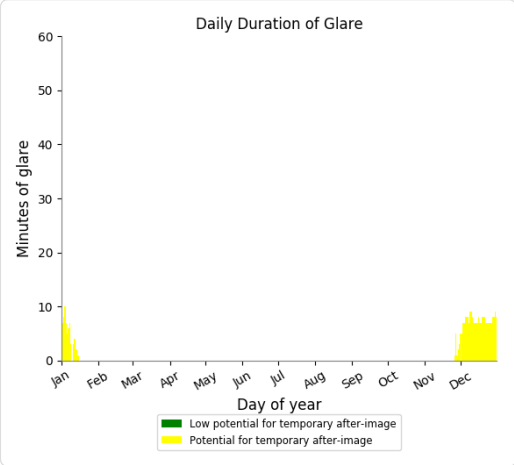


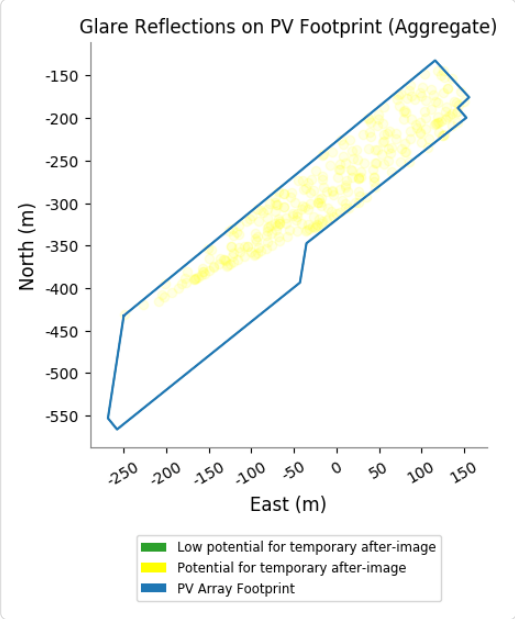
PV array 2 - OP Receptor (OP 46)

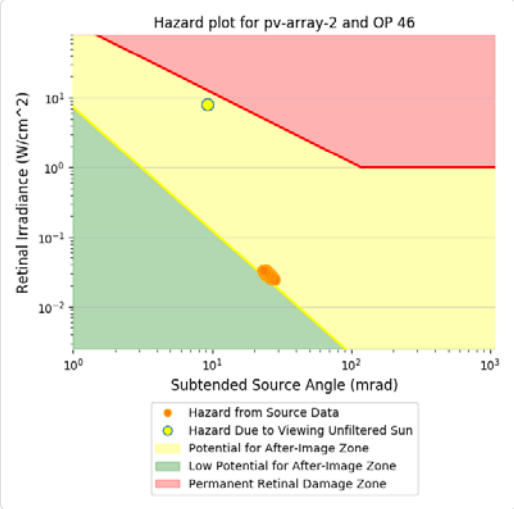
PV array is expected to produce the following glare for receptors at this location:

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





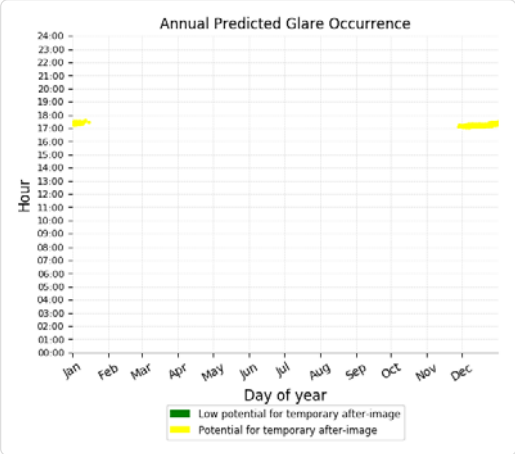


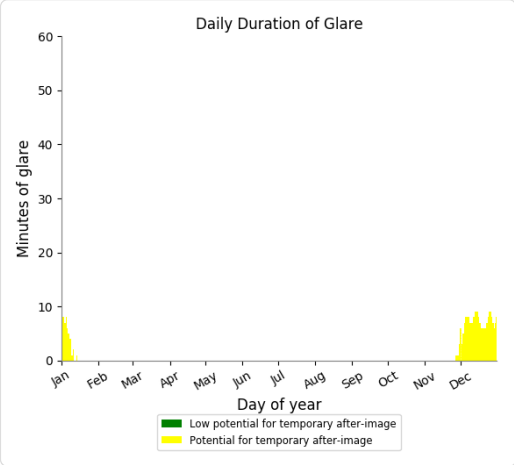


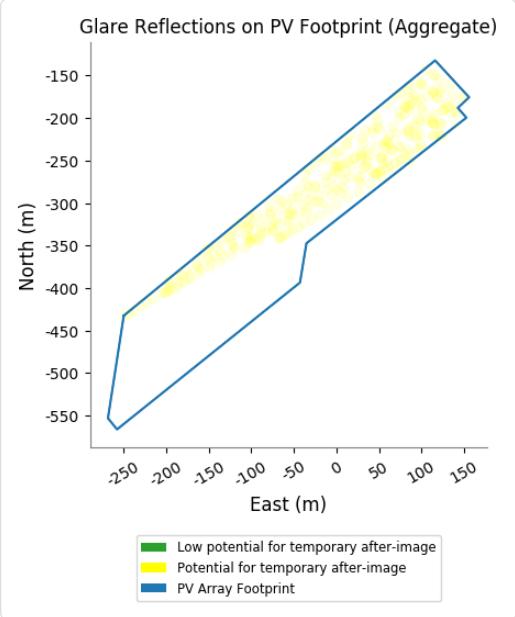
PV array 2 - OP Receptor (OP 47)

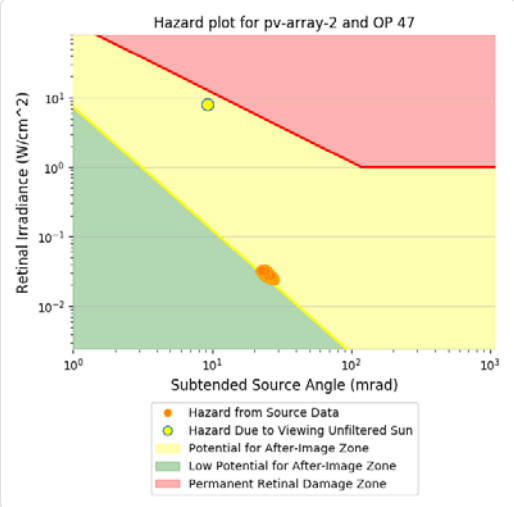
PV array is expected to produce the following glare for receptors at this location:

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





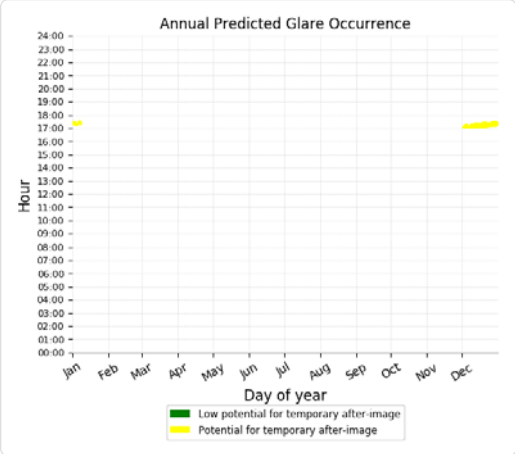


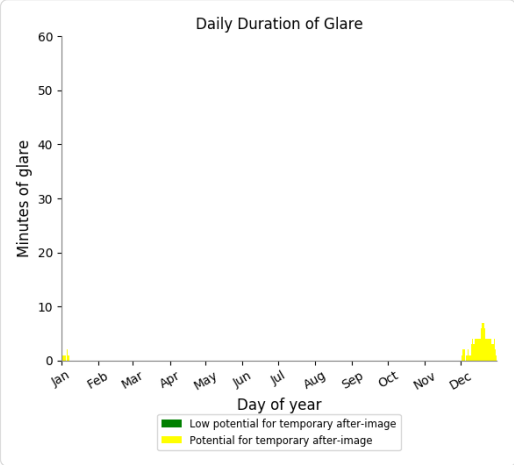


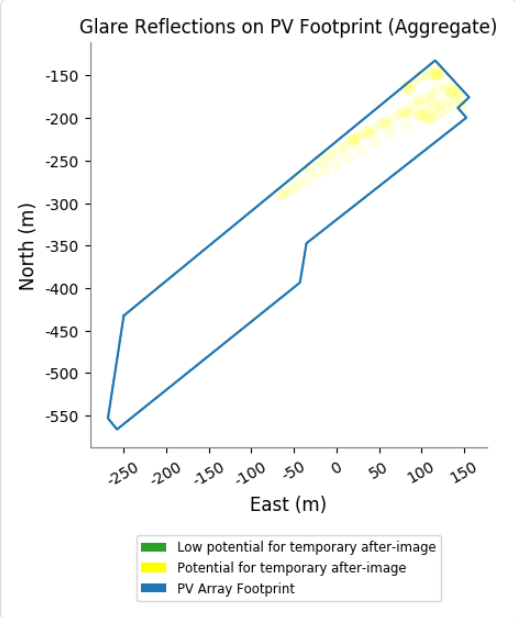
PV array 2 - OP Receptor (OP 48)

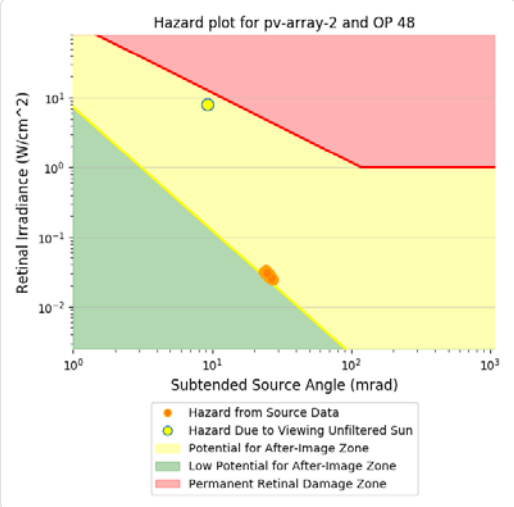
PV array is expected to produce the following glare for receptors at this location:

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





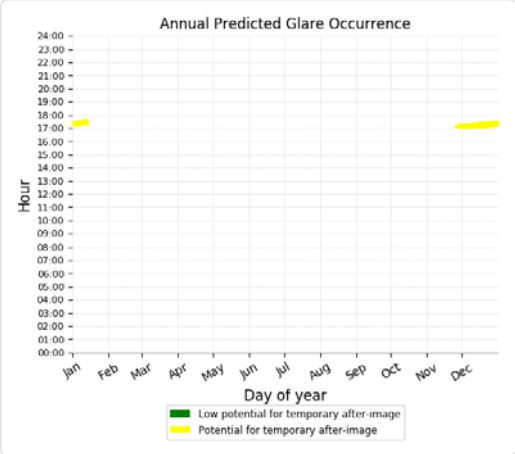


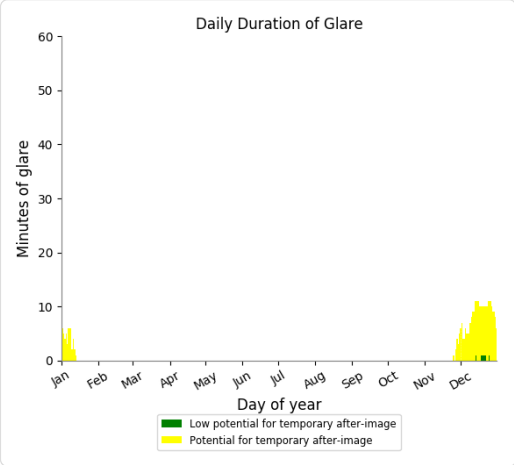


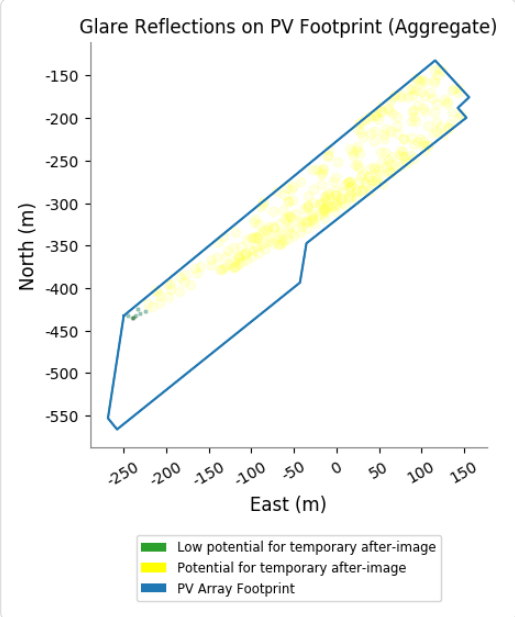
PV array 2 - OP Receptor (OP 49)

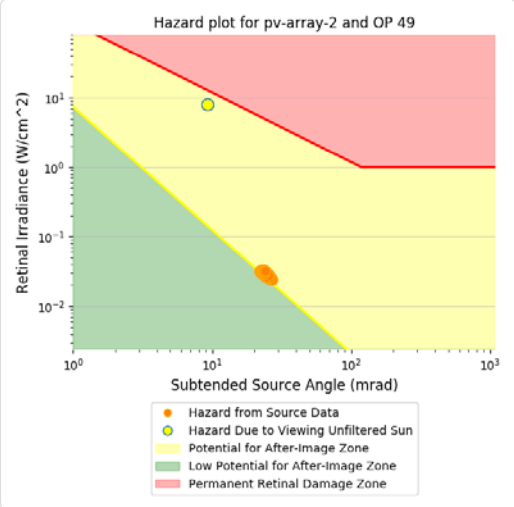
PV array is expected to produce the following glare for receptors at this location:

- 7 minutes of "green" glare with low potential to cause temporary after-image.
- 328 minutes of "yellow" glare with potential to cause temporary after-image.









Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

APPENDIX C:

SOLAR GLARE HAZARD ANALYSIS – FIXED FRAME SYSTEM ROADS

ForgeSolar

Site Configuration: DingoLaneSF_Roads_2020

Myocum, NSW

Created **Sept. 21, 2020 6:04 a.m.**
Updated **Sept. 21, 2020 7 a.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43495.6245

Summary of Results Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	20.0	0.0	0	2,335	-
PV array 2	20.0	0.0	0	1,600	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 51,060 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.584343	153.508715	5.00	2.00	7.00
2	-28.584847	153.509235	5.85	2.00	7.85
3	-28.585328	153.509729	7.78	2.00	9.78
4	-28.587918	153.506167	6.36	2.00	8.36
5	-28.585662	153.506596	5.98	2.00	7.98

Name: PV array 2
Description: Central section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 45,216 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588169	153.506113	6.24	2.00	8.24
2	-28.585433	153.509922	7.86	2.00	9.86
3	-28.585805	153.510265	7.74	2.00	9.74
4	-28.585951	153.510110	7.30	2.00	9.30
5	-28.586062	153.510204	7.97	2.00	9.97
6	-28.587383	153.508431	5.94	2.00	7.94
7	-28.587814	153.508239	5.58	2.00	7.58
8	-28.589342	153.506057	6.69	2.00	8.69
9	-28.589243	153.505899	6.23	2.00	8.23

Route Receptor(s)

Name: Dingo Lane
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588307	153.488542	15.97	2.00	17.97
2	-28.588665	153.491610	10.47	2.00	12.47
3	-28.589023	153.494357	8.92	2.00	10.92
4	-28.589334	153.496342	7.48	2.00	9.48
5	-28.589494	153.498090	8.19	2.00	10.19
6	-28.589607	153.499399	7.70	2.00	9.70
7	-28.589400	153.500043	8.00	2.00	10.00
8	-28.588228	153.501338	8.47	2.00	10.47
9	-28.587229	153.502464	6.17	2.00	8.17
10	-28.586711	153.503097	5.41	2.00	7.41
11	-28.585806	153.504320	5.00	2.00	7.00
12	-28.584921	153.505597	5.93	2.00	7.93
13	-28.583913	153.507045	8.92	2.00	10.92
14	-28.582999	153.508333	5.29	2.00	7.29
15	-28.582726	153.508666	4.70	2.00	6.70
16	-28.582716	153.509020	4.89	2.00	6.89
17	-28.583385	153.510039	6.27	2.00	8.27
18	-28.583932	153.510822	8.54	2.00	10.54
19	-28.584393	153.511101	9.05	2.00	11.05
20	-28.584864	153.511079	9.66	2.00	11.66
21	-28.585562	153.510919	10.47	2.00	12.47
22	-28.586080	153.510758	10.61	2.00	12.61

Name: Myocum Ridge Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.599247	153.498723	31.68	2.00	33.68
2	-28.598173	153.499453	28.37	2.00	30.37
3	-28.597180	153.500123	28.93	2.00	30.93
4	-28.596662	153.500595	31.73	2.00	33.73
5	-28.596572	153.500966	33.82	2.00	35.82
6	-28.596534	153.501121	33.99	2.00	35.99

Name: Myocum road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.586458	153.497343	15.24	2.00	17.24
2	-28.587890	153.496913	8.01	2.00	10.01
3	-28.588823	153.496656	7.49	2.00	9.49
4	-28.589162	153.496634	7.66	2.00	9.66
5	-28.589605	153.496828	8.58	2.00	10.58
6	-28.591150	153.498061	8.28	2.00	10.28
7	-28.592346	153.499048	9.24	2.00	11.24
8	-28.592817	153.499478	11.27	2.00	13.27
9	-28.593260	153.500508	16.47	2.00	18.47
10	-28.593618	153.501355	20.47	2.00	22.47
11	-28.594013	153.501859	26.73	2.00	28.73
12	-28.594626	153.502095	33.17	2.00	35.17
13	-28.595596	153.501688	34.13	2.00	36.13
14	-28.596604	153.501108	34.33	2.00	36.33
15	-28.597489	153.500669	29.92	2.00	31.92

Name: The Manse Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.595163	153.503308	44.56	2.00	46.56
2	-28.594880	153.503887	47.70	2.00	49.70
3	-28.594673	153.504627	51.90	2.00	53.90
4	-28.594164	153.506709	54.58	2.00	56.58
5	-28.593919	153.508254	46.64	2.00	48.64
6	-28.593806	153.509209	45.52	2.00	47.52
7	-28.593553	153.510169	43.94	2.00	45.94
8	-28.593421	153.511157	46.44	2.00	48.44

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	20.0	0.0	0	2,335	-	-
PV array 2	20.0	0.0	0	1,600	-	-

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

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

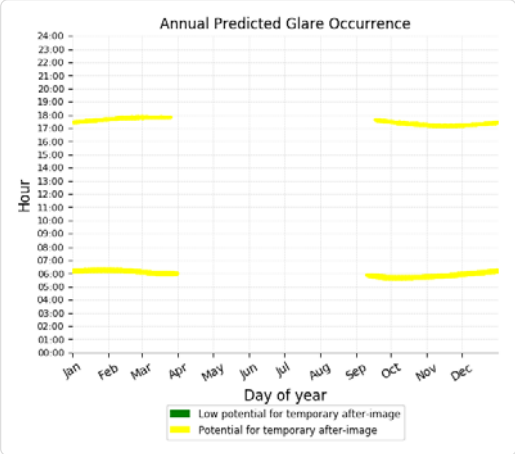
PV array 1 potential temporary after-image

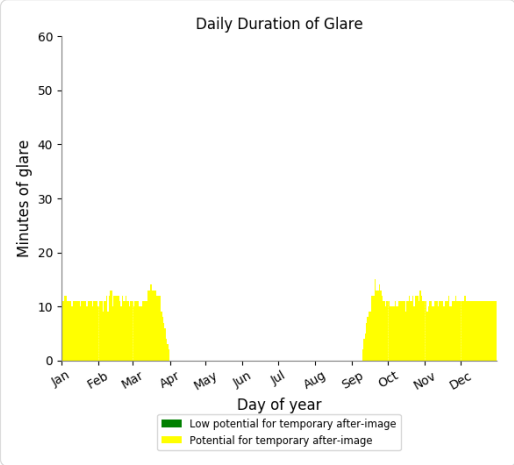
Component	Green glare (min)	Yellow glare (min)
Route: Dingo Lane	0	2202
Route: Myocum Ridge Road	0	0
Route: Myocum road	0	133
Route: The Manse Road	0	0

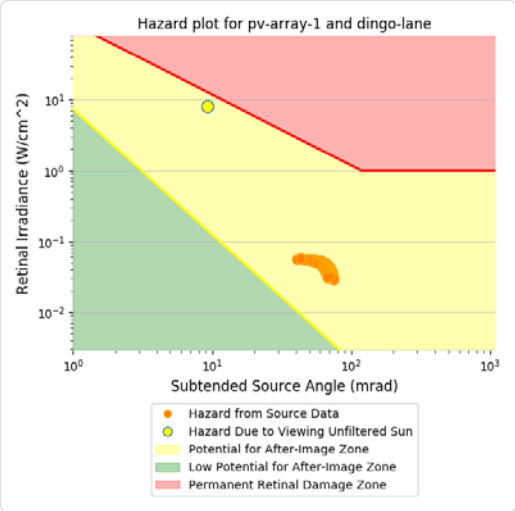
PV array 1 - Route Receptor (Dingo Lane)

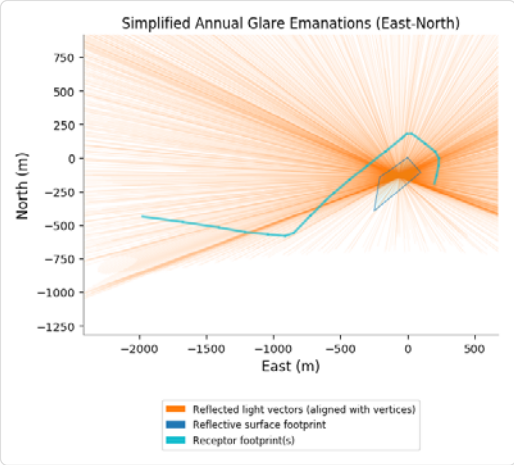
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,202 minutes of "yellow" glare with potential to cause temporary after-image.









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

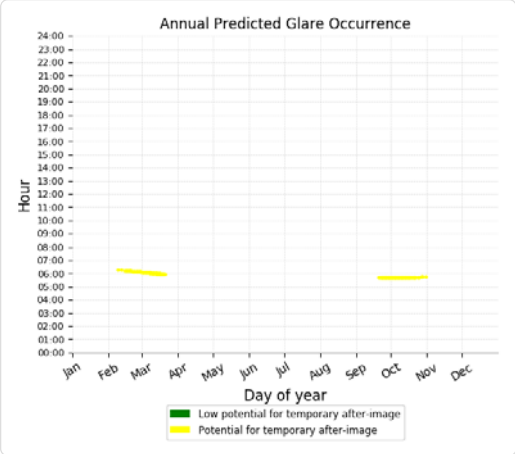
PV array 1 - Route Receptor (Myocum Ridge Road)

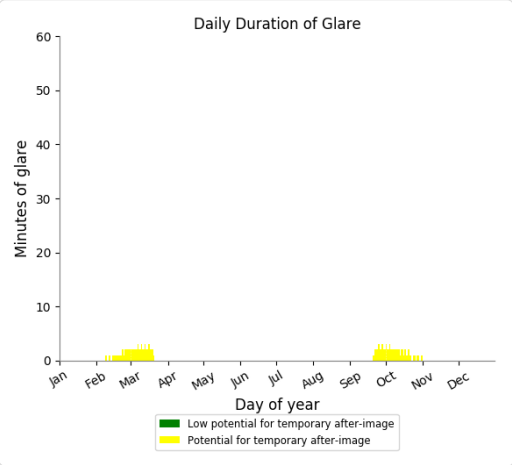
No glare found

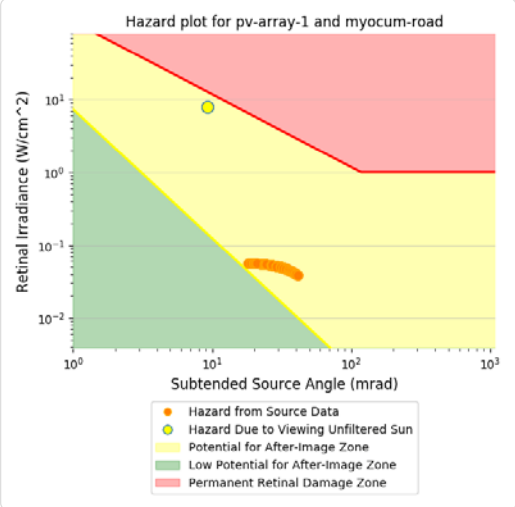
PV array 1 - Route Receptor (Myocum road)

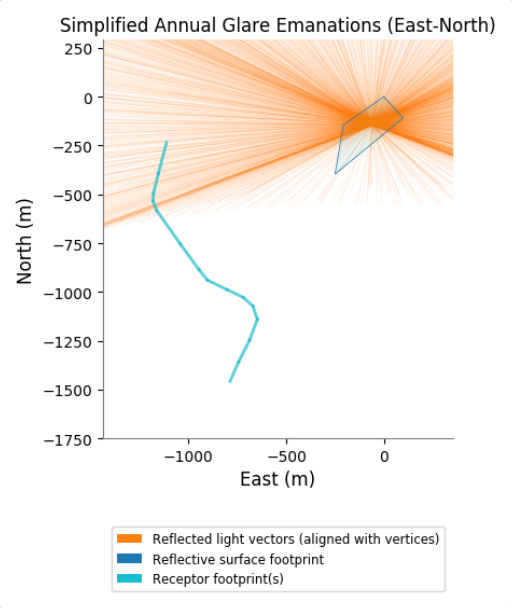
PV array is expected to produce the following glare for receptors at this location:

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









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

PV array 1 - Route Receptor (The Manse Road)

No glare found

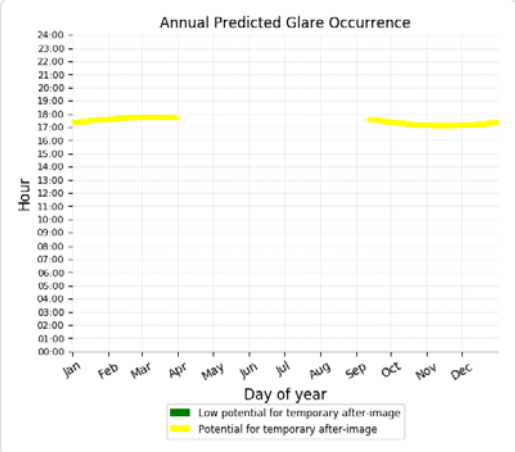
PV array 2 potential temporary after-image

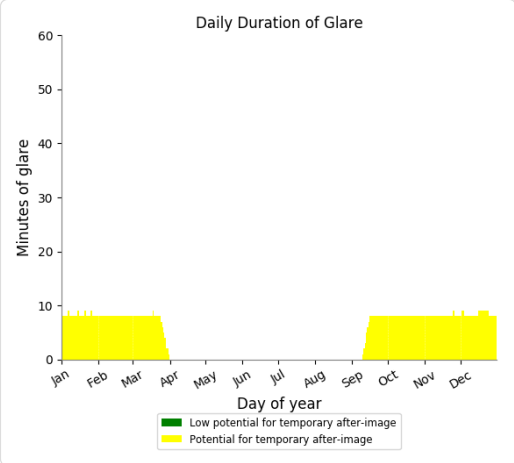
Component	Green glare (min)	Yellow glare (min)
Route: Dingo Lane	0	1596
Route: Myocum Ridge Road	0	0
Route: Myocum road	0	4
Route: The Manse Road	0	0

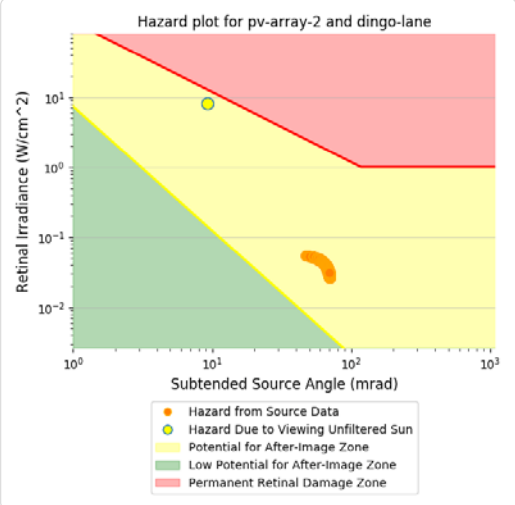
PV array 2 - Route Receptor (Dingo Lane)

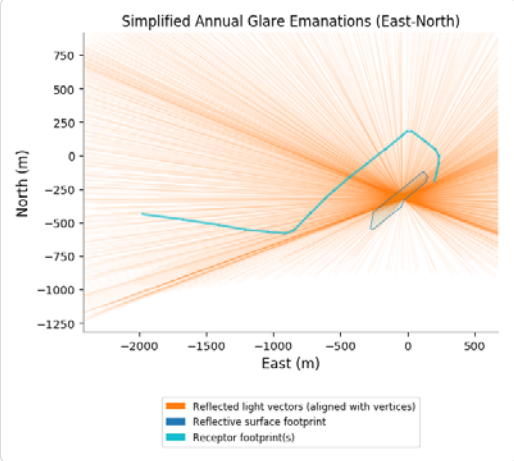
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,596 minutes of "yellow" glare with potential to cause temporary after-image.









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

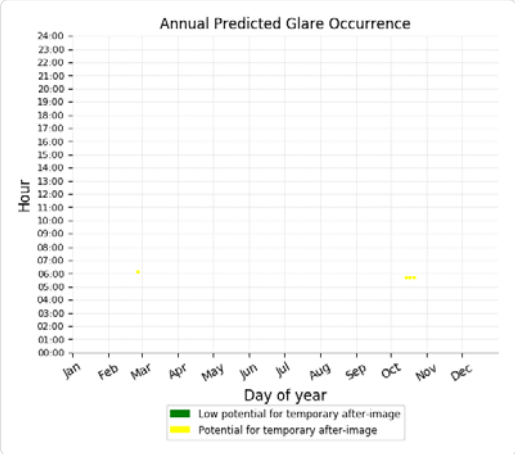
PV array 2 - Route Receptor (Myocum Ridge Road)

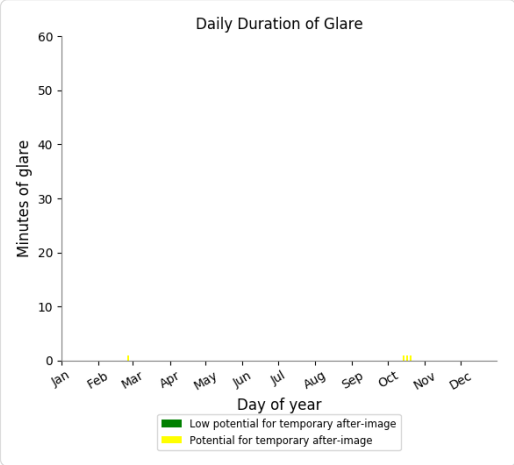
No glare found

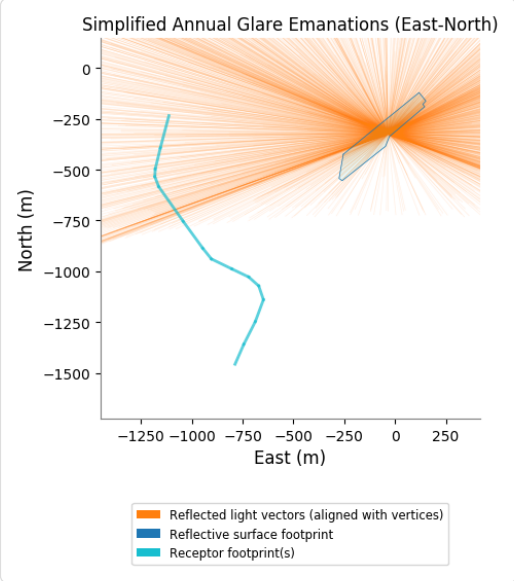
PV array 2 - Route Receptor (Myocum road)

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

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







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

PV array 2 - Route Receptor (The Manse Road)

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_Roads02_2020

Myocum, NSW

Created **Sept. 21, 2020 7:12 a.m.**
Updated **Sept. 30, 2020 9:09 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43500.6245

Summary of Results Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	20.0	0.0	411	4,122	-
PV array 2	20.0	0.0	313	1,265	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,962 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585459	153.506623	5.91	2.00	7.91
2	-28.584117	153.508753	5.00	2.00	7.00
3	-28.585337	153.509777	7.91	2.00	9.91
4	-28.586646	153.507959	6.00	2.00	8.00
5	-28.587942	153.506167	6.35	2.00	8.35

Name: PV array 2
Description: Central section
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 0.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 42,667 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588169	153.506103	6.25	2.00	8.25
2	-28.585466	153.509949	7.75	2.00	9.75
3	-28.585795	153.510244	7.60	2.00	9.60
4	-28.585913	153.510110	7.23	2.00	9.23
5	-28.586038	153.510209	7.98	2.00	9.98
6	-28.587538	153.508163	5.66	2.00	7.66
7	-28.587927	153.508023	5.26	2.00	7.26
8	-28.589408	153.505995	6.91	2.00	8.91
9	-28.589326	153.505899	6.54	2.00	8.54

Route Receptor(s)

Name: Bilin Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576129	153.511470	27.38	2.00	29.38
2	-28.576666	153.512575	27.87	2.00	29.87
3	-28.577213	153.513798	29.39	2.00	31.39
4	-28.577458	153.514581	26.10	2.00	28.10
5	-28.577477	153.515139	20.76	2.00	22.76
6	-28.577307	153.515783	16.58	2.00	18.58
7	-28.576996	153.516222	17.13	2.00	19.13
8	-28.577138	153.516920	19.46	2.00	21.46
9	-28.577401	153.517789	19.33	2.00	21.33
10	-28.577133	153.518513	19.58	2.00	21.58
11	-28.577017	153.519049	17.31	2.00	19.31
12	-28.576984	153.519564	16.39	2.00	18.39
13	-28.576889	153.520192	18.19	2.00	20.19
14	-28.576743	153.520745	20.75	2.00	22.75
15	-28.576828	153.521437	16.15	2.00	18.15
16	-28.577149	153.521936	12.70	2.00	14.70
17	-28.577337	153.522206	10.91	2.00	12.91
18	-28.577422	153.522571	10.40	2.00	12.40
19	-28.577521	153.523129	10.43	2.00	12.43
20	-28.577554	153.523494	11.11	2.00	13.11
21	-28.577328	153.524202	12.68	2.00	14.68
22	-28.577365	153.524620	11.72	2.00	13.72
23	-28.577483	153.525350	12.61	2.00	14.61
24	-28.577210	153.525813	18.09	2.00	20.09
25	-28.577177	153.525952	19.99	2.00	21.99
26	-28.577398	153.526097	20.37	2.00	22.37
27	-28.577714	153.526129	20.32	2.00	22.32
28	-28.577817	153.526387	22.58	2.00	24.58
29	-28.577921	153.526885	24.68	2.00	26.68
30	-28.578081	153.527095	23.35	2.00	25.35
31	-28.578251	153.527245	20.85	2.00	22.85
32	-28.578265	153.527604	19.70	2.00	21.70
33	-28.578100	153.527974	20.30	2.00	22.30
34	-28.577841	153.528318	22.44	2.00	24.44
35	-28.577714	153.528755	22.28	2.00	24.28
36	-28.578223	153.529184	13.24	2.00	15.24
37	-28.578710	153.529574	14.32	2.00	16.32
38	-28.578880	153.529971	14.77	2.00	16.77

Name: Coolalon Scenic Drive North
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579092	153.479146	52.38	2.00	54.38
2	-28.579167	153.478138	54.30	2.00	56.30
3	-28.579733	153.475863	58.44	2.00	60.44
4	-28.579770	153.474919	64.35	2.00	66.35
5	-28.581259	153.471529	93.44	2.00	95.44
6	-28.581975	153.470713	113.28	2.00	115.28
7	-28.582385	153.470300	125.89	2.00	127.89
8	-28.583369	153.470171	121.88	2.00	123.88
9	-28.583614	153.469903	126.85	2.00	128.85
10	-28.584097	153.469065	146.34	2.00	148.34
11	-28.584370	153.468914	148.44	2.00	150.44
12	-28.584709	153.468882	151.87	2.00	153.87
13	-28.585237	153.469011	152.24	2.00	154.24
14	-28.585906	153.469161	151.23	2.00	153.23
15	-28.586405	153.468775	154.08	2.00	156.08

Name: Coolamon Scenic Drive South
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.614184	153.477226	166.92	2.00	168.92
2	-28.615257	153.477859	165.32	2.00	167.32
3	-28.616039	153.478353	162.87	2.00	164.87
4	-28.616585	153.478846	160.10	2.00	162.10
5	-28.617216	153.479619	158.00	2.00	160.00
6	-28.617894	153.480541	161.69	2.00	163.69
7	-28.618478	153.481668	155.19	2.00	157.19
8	-28.618959	153.482644	157.32	2.00	159.32
9	-28.619345	153.483288	162.53	2.00	164.53
10	-28.619750	153.484125	165.47	2.00	167.47

Name: Dingo Lane
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588115	153.484130	22.20	2.00	24.20
2	-28.587767	153.484301	22.92	2.00	24.92
3	-28.588200	153.488217	17.55	2.00	19.55
4	-28.588812	153.493324	9.08	2.00	11.08
5	-28.589321	153.496650	7.91	2.00	9.91
6	-28.589566	153.499547	7.92	2.00	9.92
7	-28.588341	153.501178	8.70	2.00	10.70
8	-28.586570	153.503216	5.21	2.00	7.21
9	-28.585666	153.504504	5.12	2.00	7.12
10	-28.584083	153.506864	9.03	2.00	11.03
11	-28.582613	153.508795	4.66	2.00	6.66
12	-28.583329	153.510083	6.11	2.00	8.11
13	-28.584008	153.510941	8.41	2.00	10.41
14	-28.584629	153.511113	9.26	2.00	11.26
15	-28.585911	153.510834	10.46	2.00	12.46

Name: Lagoon Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579639	153.484167	43.31	2.00	45.31
2	-28.579940	153.485497	36.68	2.00	38.68
3	-28.580590	153.486238	27.92	2.00	29.92
4	-28.580826	153.486806	23.85	2.00	25.85
5	-28.580911	153.487600	20.21	2.00	22.21
6	-28.580788	153.487997	20.56	2.00	22.56
7	-28.580458	153.488888	23.23	2.00	25.23
8	-28.580496	153.489252	22.46	2.00	24.46
9	-28.580553	153.490068	21.54	2.00	23.54
10	-28.580016	153.490711	23.50	2.00	25.50
11	-28.579846	153.491216	23.70	2.00	25.70
12	-28.579899	153.492042	22.53	2.00	24.53
13	-28.579603	153.492793	26.08	2.00	28.08
14	-28.579358	153.493404	24.76	2.00	26.76
15	-28.579329	153.493893	22.06	2.00	24.06
16	-28.579527	153.494509	20.04	2.00	22.04
17	-28.579796	153.494874	19.11	2.00	21.11
18	-28.580281	153.495464	16.73	2.00	18.73
19	-28.580573	153.495974	17.24	2.00	19.24
20	-28.580498	153.496387	19.28	2.00	21.28

Name: Mcauldeys Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576819	153.496761	11.61	2.00	13.61
2	-28.577592	153.499217	12.80	2.00	14.80
3	-28.578035	153.500784	12.47	2.00	14.47
4	-28.578025	153.501235	12.47	2.00	14.47
5	-28.577488	153.502833	13.79	2.00	15.79
6	-28.577243	153.503477	15.34	2.00	17.34
7	-28.576951	153.503863	12.72	2.00	14.72
8	-28.577149	153.504646	16.56	2.00	18.56
9	-28.577338	153.505236	15.17	2.00	17.17
10	-28.577761	153.505746	11.84	2.00	13.84
11	-28.578534	153.507151	19.46	2.00	21.46
12	-28.578283	153.507416	22.13	2.00	24.13
13	-28.578146	153.508028	24.97	2.00	26.97
14	-28.577393	153.508666	19.89	2.00	21.89
15	-28.577190	153.509348	19.91	2.00	21.91
16	-28.576714	153.510335	20.60	2.00	22.60
17	-28.576078	153.511258	25.90	2.00	27.90
18	-28.575829	153.511719	29.79	2.00	31.79
19	-28.575645	153.512604	39.88	2.00	41.88
20	-28.575186	153.513299	46.74	2.00	48.74
21	-28.575139	153.513857	48.06	2.00	50.06
22	-28.574969	153.514511	47.19	2.00	49.19
23	-28.574366	153.515766	50.92	2.00	52.92
24	-28.574027	153.516319	54.34	2.00	56.34
25	-28.573980	153.516748	59.23	2.00	61.23
26	-28.573315	153.517360	56.86	2.00	58.86
27	-28.573196	153.517349	56.99	2.00	58.99

Name: Myocum Downs Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585323	153.483228	37.05	2.00	39.05
2	-28.585276	153.484473	30.48	2.00	32.48
3	-28.585210	153.485471	29.31	2.00	31.31
4	-28.585182	153.487692	31.37	2.00	33.37
5	-28.585323	153.488904	28.95	2.00	30.95
6	-28.585625	153.489687	27.89	2.00	29.89
7	-28.585813	153.490202	27.38	2.00	29.38
8	-28.585842	153.490953	25.32	2.00	27.32
9	-28.585484	153.491865	20.38	2.00	22.38
10	-28.585173	153.492520	19.67	2.00	21.67
11	-28.585082	153.493925	22.45	2.00	24.45
12	-28.585082	153.495352	20.66	2.00	22.66
13	-28.585035	153.496468	24.27	2.00	26.27
14	-28.584931	153.497079	23.52	2.00	25.52
15	-28.584978	153.497777	21.58	2.00	23.58

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	20.0	0.0	411	4,122	-	-
PV array 2	20.0	0.0	313	1,265	-	-

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

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

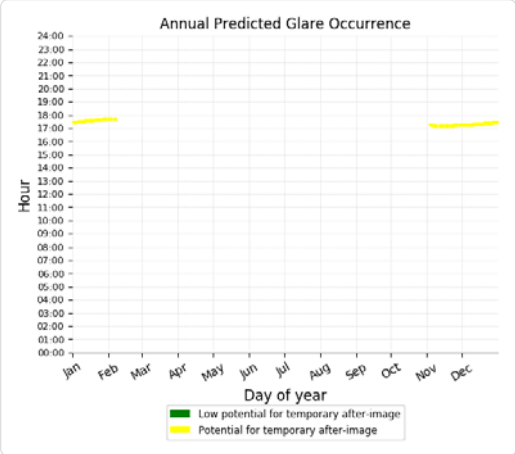
PV array 1 potential temporary after-image

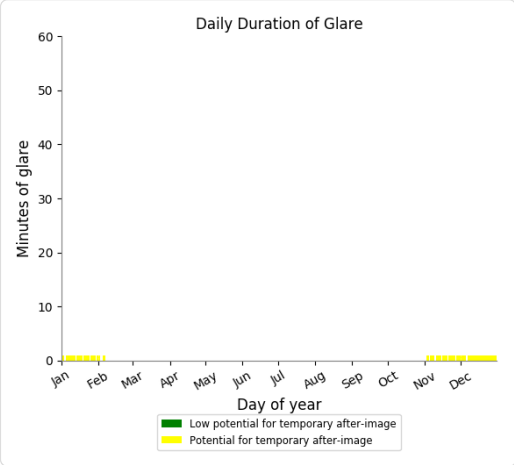
Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	82
Route: Coolalon Scenic Drive North	408	137
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	3085
Route: Lagoon Drive	0	413
Route: Mcauldeys Road	0	87
Route: Myocum Downs Drive	3	318

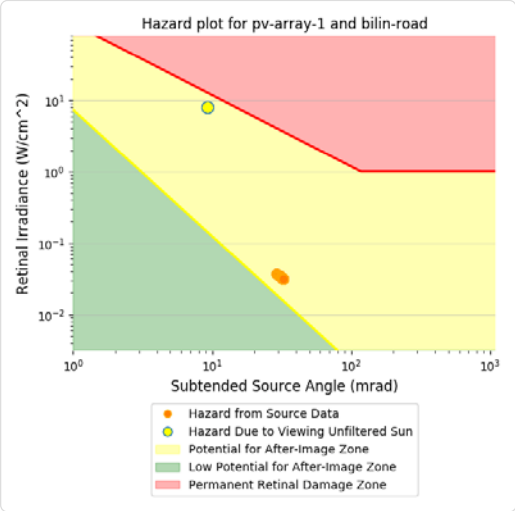
PV array 1 - Route Receptor (Bilin Road)

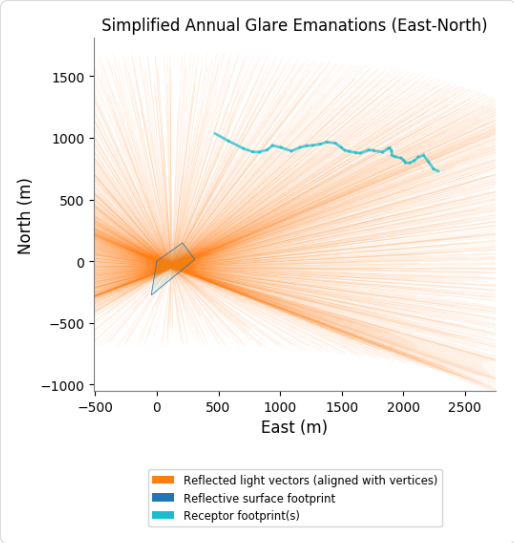
PV array is expected to produce the following glare for receptors at this location:

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







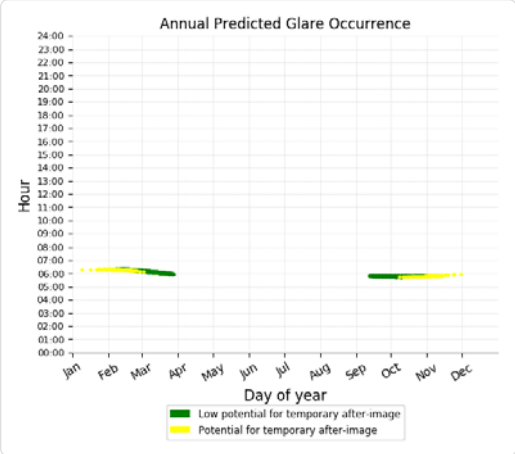


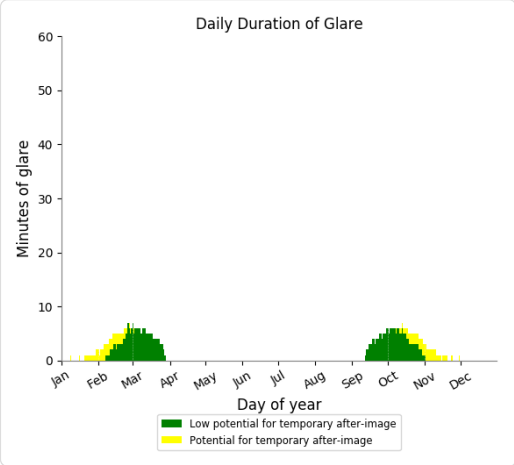
re vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

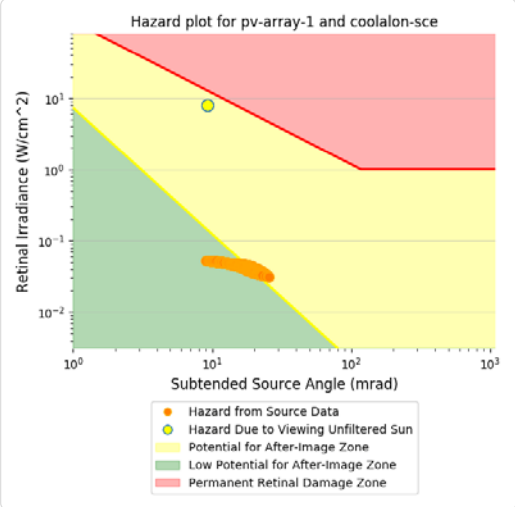
PV array 1 - Route Receptor (Coolalon Scenic Drive North)

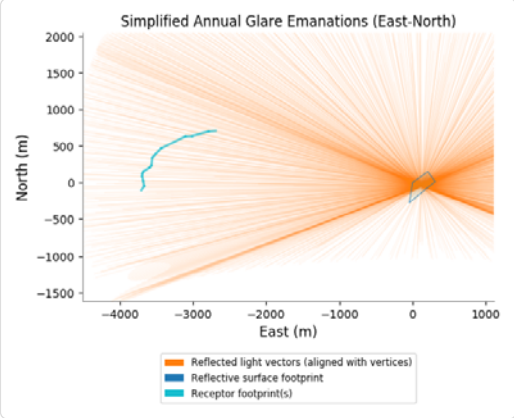
PV array is expected to produce the following glare for receptors at this location:

- 408 minutes of "green" glare with low potential to cause temporary after-image.
- 137 minutes of "yellow" glare with potential to cause temporary after-image.









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

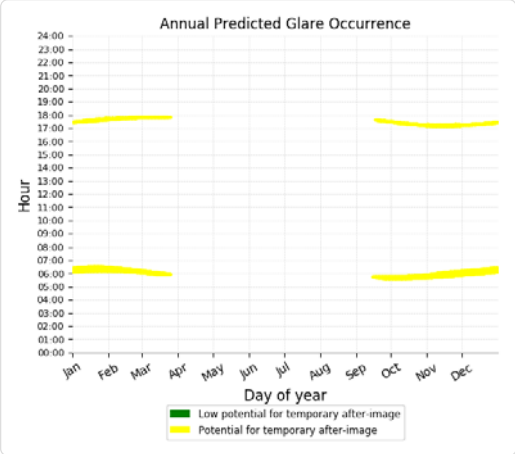
PV array 1 - Route Receptor (Coolamon Scenic Drive South)

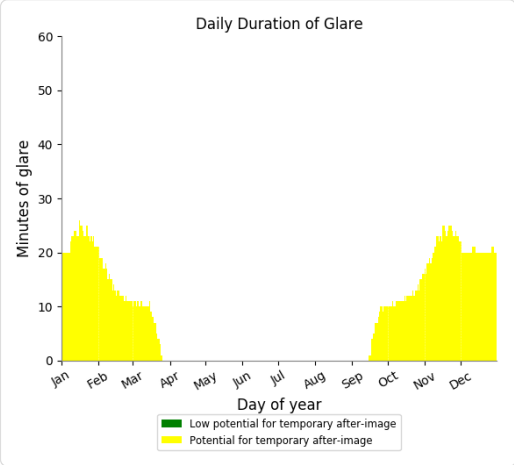
No glare found

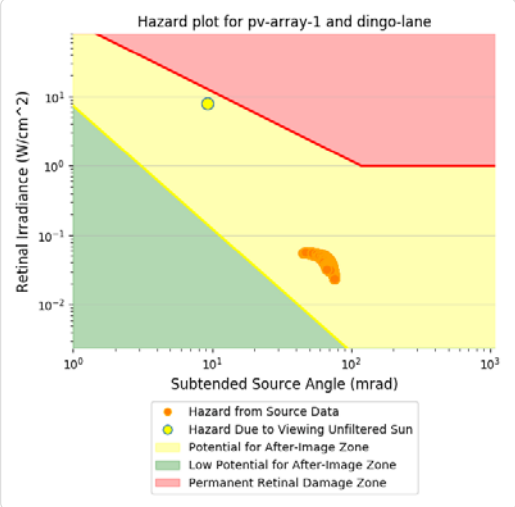
PV array 1 - Route Receptor (Dingo Lane)

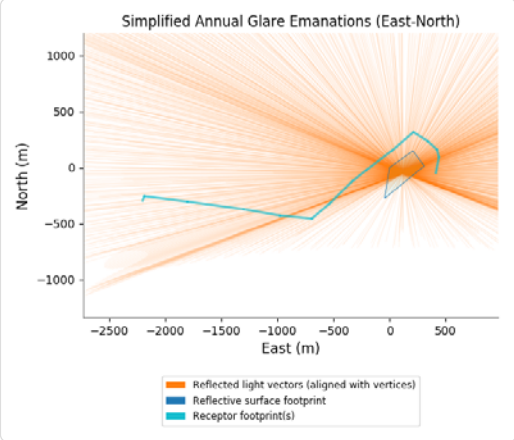
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 3,085 minutes of "yellow" glare with potential to cause temporary after-image.







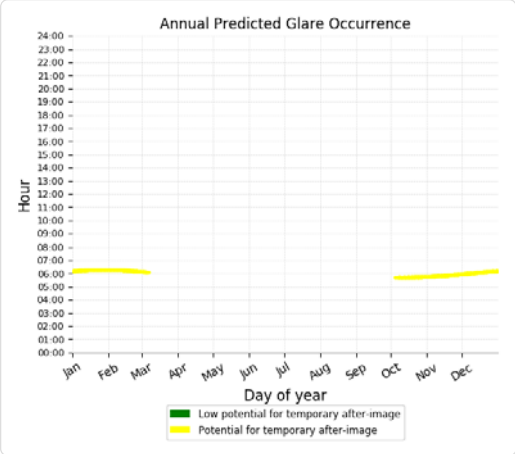


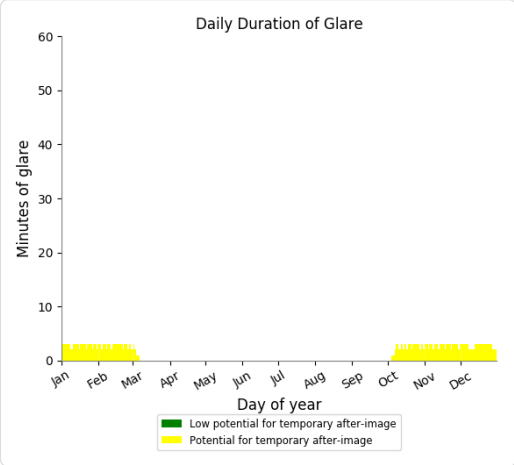
Glare vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

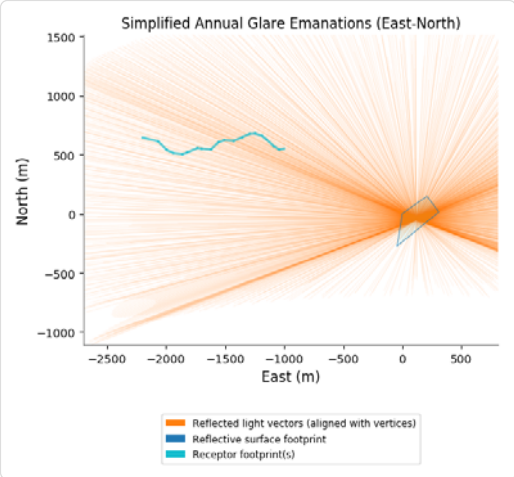
PV array 1 - Route Receptor (Lagoon Drive)

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

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





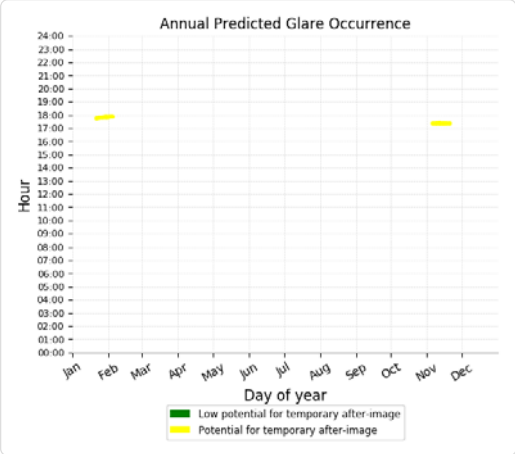


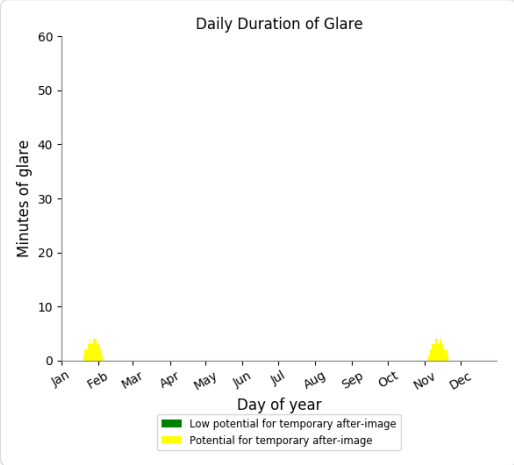
Glare vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

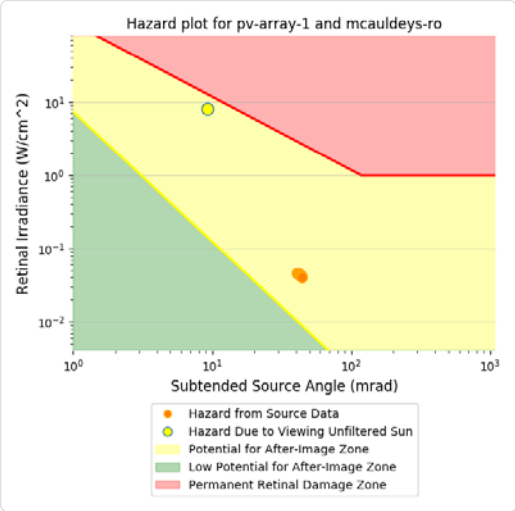
PV array 1 - Route Receptor (Mcauldeys Road)

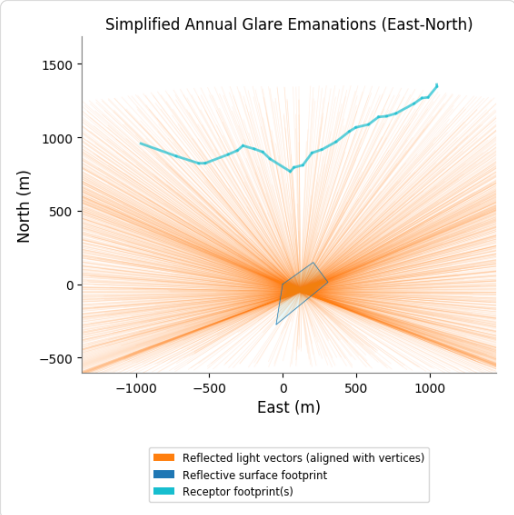
PV array is expected to produce the following glare for receptors at this location:

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







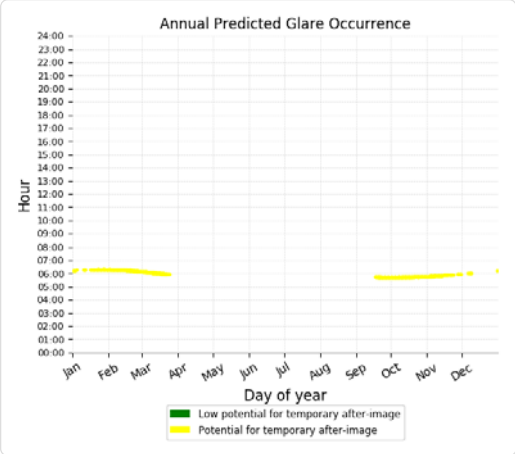


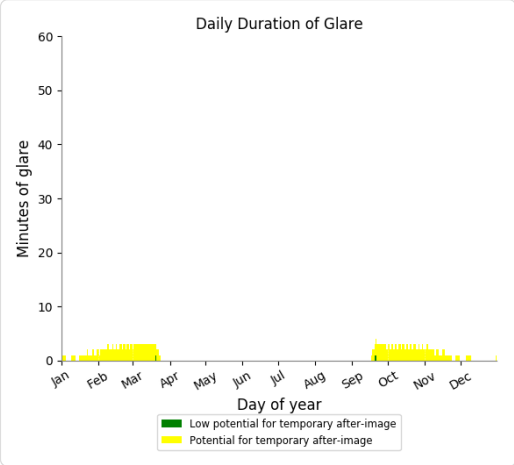
re vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

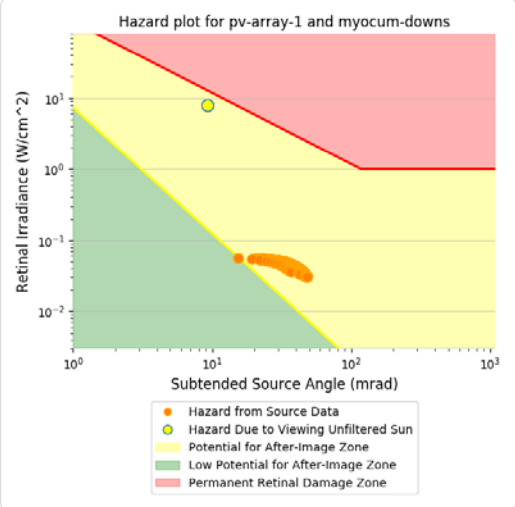
PV array 1 - Route Receptor (Myocum Downs Drive)

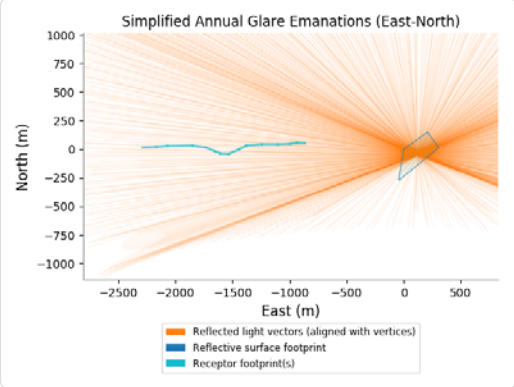
PV array is expected to produce the following glare for receptors at this location:

- 3 minutes of "green" glare with low potential to cause temporary after-image.
- 318 minutes of "yellow" glare with potential to cause temporary after-image.









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

PV array 2 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	313	1
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	1165
Route: Lagoon Drive	0	15
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	84

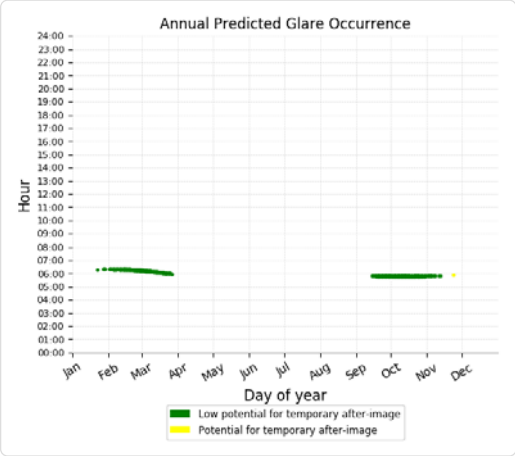
PV array 2 - Route Receptor (Bilin Road)

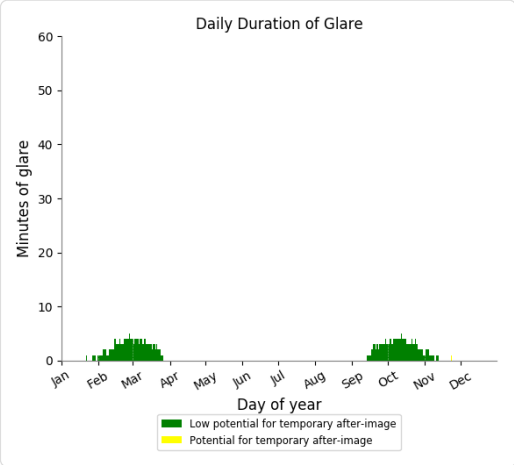
No glare found

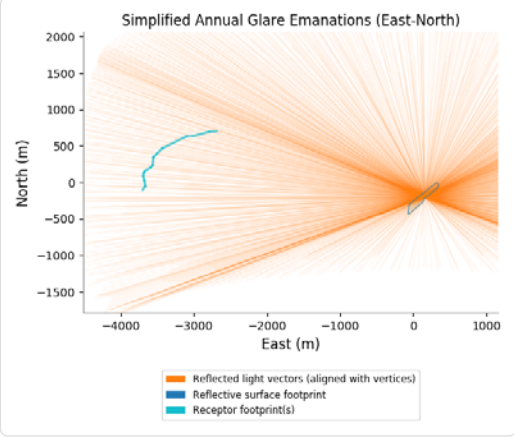
PV array 2 - Route Receptor (Coolalon Scenic Drive North)

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

- 313 minutes of "green" glare with low potential to cause temporary after-image.
- 1 minutes of "yellow" glare with potential to cause temporary after-image.







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

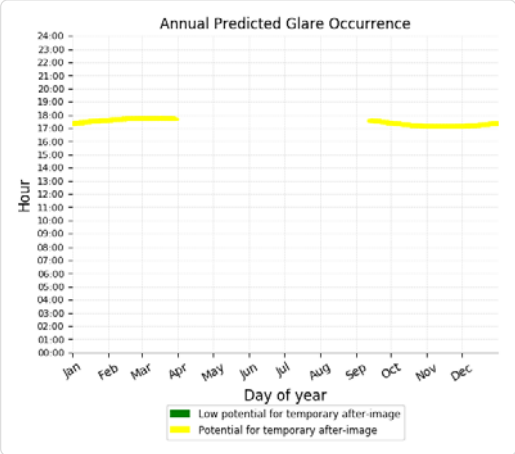
PV array 2 - Route Receptor (Coolamon Scenic Drive South)

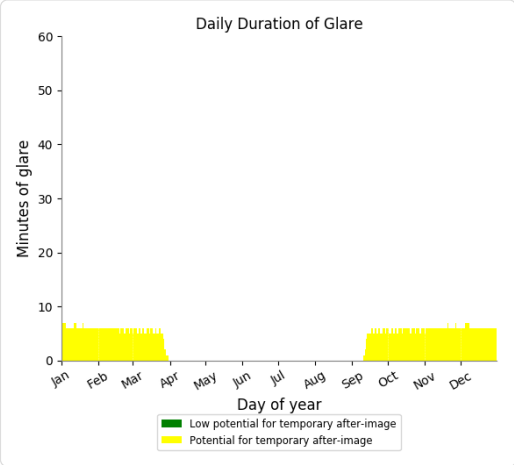
No glare found

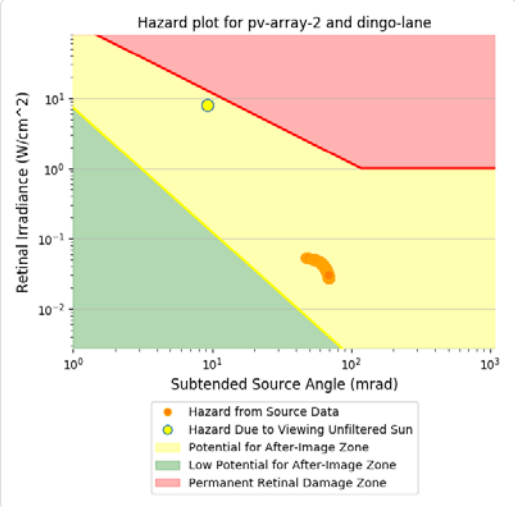
PV array 2 - Route Receptor (Dingo Lane)

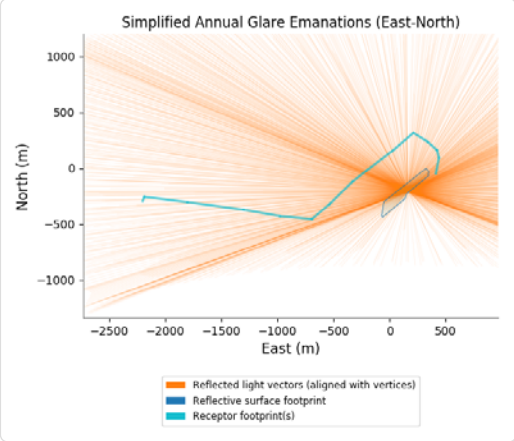
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,165 minutes of "yellow" glare with potential to cause temporary after-image.







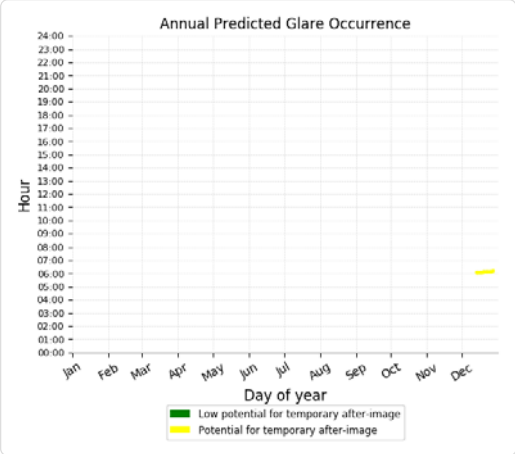


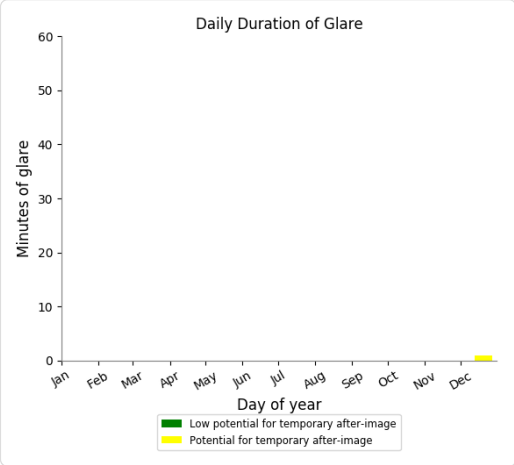
Glare vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

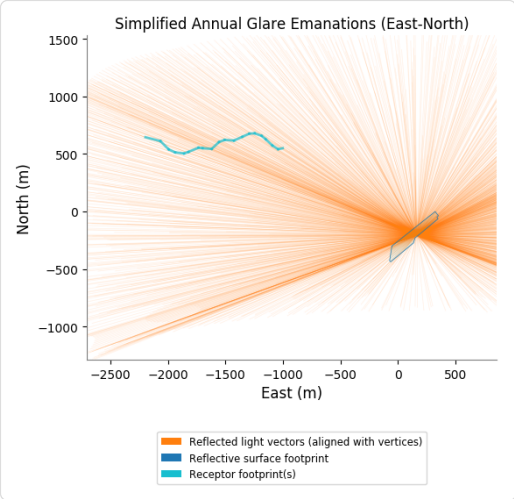
PV array 2 - Route Receptor (Lagoon Drive)

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

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







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

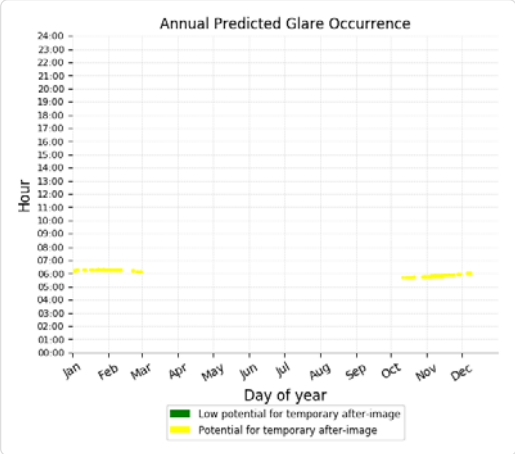
PV array 2 - Route Receptor (Mcauldeys Road)

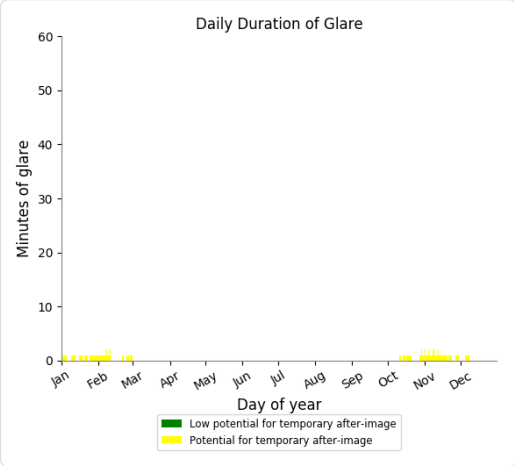
No glare found

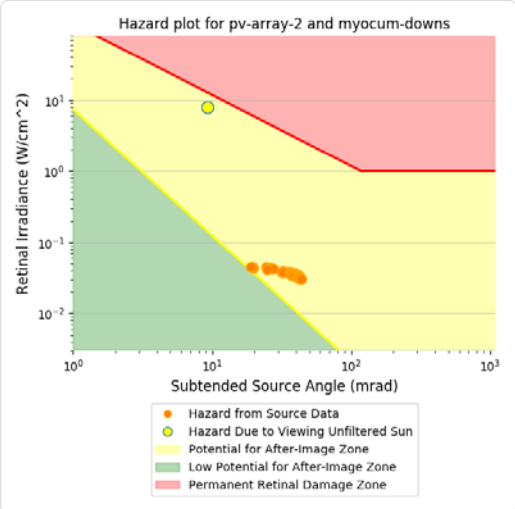
PV array 2 - Route Receptor (Myocum Downs Drive)

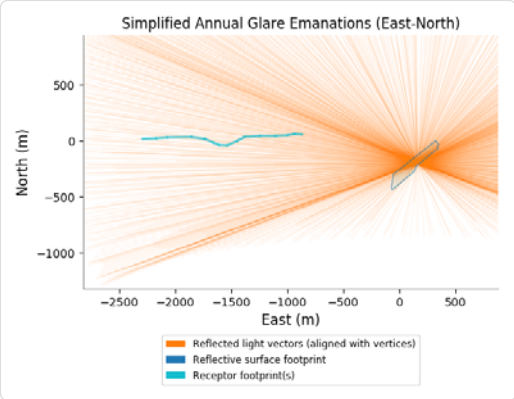
PV array is expected to produce the following glare for receptors at this location:

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









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

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

APPENDIX D:

SOLAR GLARE HAZARD ANALYSIS – SINGLE AXIS TRACKING SYSTEM

ForgeSolar

Site Configuration: DingoLaneSF_OPs_HSTv2

Myocum, NSW

Created **Sept. 28, 2020 7:45 p.m.**
Updated **Sept. 28, 2020 8:01 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43830.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,233 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585558	153.506564	5.97	3.00	8.97
2	-28.584173	153.508790	5.00	3.00	8.00
3	-28.585337	153.509788	7.94	3.00	10.94
4	-28.586100	153.508731	5.85	3.00	8.85
5	-28.587951	153.506151	6.36	3.00	9.36

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,764 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588160	153.506129	6.23	3.00	9.23
2	-28.585437	153.509917	7.81	3.00	10.81
3	-28.585843	153.510255	7.74	3.00	10.74
4	-28.585937	153.510142	7.43	3.00	10.43
5	-28.586059	153.510252	8.22	3.00	11.22
6	-28.587543	153.508254	5.75	3.00	8.75
7	-28.587885	153.508163	5.46	3.00	8.46
8	-28.589394	153.505990	6.82	3.00	9.82
9	-28.589305	153.505891	6.43	3.00	9.43

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.593460	153.503778	41.29	1.50	42.79
OP 2	-28.593828	153.506122	57.28	1.50	58.78
OP 3	-28.593988	153.512023	48.98	1.50	50.48
OP 4	-28.592500	153.514104	55.73	1.50	57.23
OP 5	-28.592434	153.500930	12.23	1.50	13.73
OP 6	-28.586404	153.497894	15.63	1.50	17.13
OP 7	-28.585698	153.498988	17.66	1.50	19.16
OP 8	-28.585463	153.497203	20.74	1.50	22.24
OP 9	-28.585247	153.496559	22.55	1.50	24.05
OP 10	-28.584625	153.497010	21.54	1.50	23.04
OP 11	-28.580969	153.503264	11.87	1.50	13.37
OP 12	-28.578633	153.500561	14.86	1.50	16.36
OP 13	-28.577917	153.504037	23.06	1.50	24.56
OP 14	-28.578407	153.505324	12.17	1.50	13.67
OP 15	-28.579980	153.507041	13.42	1.50	14.92
OP 16	-28.577634	153.506955	18.07	1.50	19.57
OP 17	-28.578350	153.508468	25.41	1.50	26.91
OP 18	-28.580602	153.510485	22.21	1.50	23.71
OP 19	-28.579924	153.513006	10.98	1.50	12.48
OP 20	-28.577540	153.514004	28.59	1.50	30.09
OP 21	-28.599198	153.498495	32.23	1.50	33.73
OP 22	-28.594017	153.496591	15.96	1.50	17.46
OP 23	-28.595284	153.492101	28.42	1.50	29.92
OP 24	-28.586033	153.494976	15.50	1.50	17.00
OP 25	-28.585303	153.494054	21.49	1.50	22.99
OP 26	-28.585680	153.492986	22.87	1.50	24.37
OP 27	-28.586726	153.492895	18.76	1.50	20.26
OP 28	-28.586010	153.492176	21.72	1.50	23.22
OP 29	-28.586057	153.491538	22.62	1.50	24.12
OP 30	-28.585468	153.491216	21.88	1.50	23.38
OP 31	-28.581021	153.496108	14.99	1.50	16.49
OP 32	-28.578835	153.495690	20.04	1.50	21.54
OP 33	-28.579985	153.492761	26.73	1.50	28.23
OP 34	-28.578101	153.493823	33.66	1.50	35.16
OP 35	-28.577893	153.495304	34.17	1.50	35.67
OP 36	-28.576386	153.513499	37.35	1.50	38.85
OP 37	-28.576273	153.514342	41.54	1.50	43.04
OP 38	-28.575533	153.514100	50.08	1.50	51.58
OP 39	-28.574699	153.513183	45.47	1.50	46.97
OP 40	-28.575175	153.514717	47.62	1.50	49.12
OP 41	-28.574687	153.515519	52.14	1.50	53.64
OP 42	-28.574669	153.516238	57.65	1.50	59.15
OP 43	-28.574793	153.516865	61.60	1.50	63.10
OP 44	-28.578041	153.515971	10.94	1.50	12.44
OP 45	-28.577767	153.520215	18.03	1.50	19.53
OP 46	-28.573009	153.522403	61.12	1.50	62.62
OP 47	-28.576203	153.526287	34.17	1.50	35.67
OP 48	-28.577108	153.526609	28.49	1.50	29.99
OP 49	-28.577541	153.527381	31.27	1.50	32.77
OP 50	-28.578399	153.525118	11.88	1.50	13.38
OP 51	-28.597266	153.489739	30.23	1.50	31.73
OP 52	-28.587381	153.487593	24.14	1.50	25.64
OP 53	-28.586076	153.490093	26.09	1.50	27.59
OP 54	-28.586114	153.487915	31.35	1.50	32.85
OP 55	-28.585600	153.487185	32.39	1.50	33.89
OP 56	-28.586976	153.491246	19.33	1.50	20.83
OP 57	-28.584941	153.486938	29.01	1.50	30.51

OP 58	-28.585610	153.486418	29.51	1.50	31.01
OP 59	-28.581275	153.490131	16.83	1.50	18.33
OP 60	-28.580935	153.490678	17.95	1.50	19.45
OP 61	-28.580766	153.489498	19.81	1.50	21.31
OP 62	-28.581129	153.487025	20.54	1.50	22.04
OP 63	-28.580069	153.486998	30.58	1.50	32.08
OP 64	-28.579503	153.487926	36.09	1.50	37.59
OP 65	-28.579616	153.489168	33.40	1.50	34.90
OP 66	-28.580055	153.489921	26.16	1.50	27.66
OP 67	-28.578542	153.492585	34.21	1.50	35.71

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_OPs_HSTv2

Myocum, NSW

Created **Sept. 28, 2020 7:45 p.m.**
Updated **Sept. 28, 2020 8:35 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43830.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,233 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585558	153.506564	5.97	3.00	8.97
2	-28.584173	153.508790	5.00	3.00	8.00
3	-28.585337	153.509788	7.94	3.00	10.94
4	-28.586100	153.508731	5.85	3.00	8.85
5	-28.587951	153.506151	6.36	3.00	9.36

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,764 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588160	153.506129	6.23	3.00	9.23
2	-28.585437	153.509917	7.81	3.00	10.81
3	-28.585843	153.510255	7.74	3.00	10.74
4	-28.585937	153.510142	7.43	3.00	10.43
5	-28.586059	153.510252	8.22	3.00	11.22
6	-28.587543	153.508254	5.75	3.00	8.75
7	-28.587885	153.508163	5.46	3.00	8.46
8	-28.589394	153.505990	6.82	3.00	9.82
9	-28.589305	153.505891	6.43	3.00	9.43

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.593460	153.503778	41.29	1.50	42.79
OP 2	-28.593828	153.506122	57.28	1.50	58.78
OP 3	-28.593988	153.512023	48.98	1.50	50.48
OP 4	-28.592500	153.514104	55.73	1.50	57.23
OP 5	-28.592434	153.500930	12.23	1.50	13.73
OP 6	-28.586404	153.497894	15.63	1.50	17.13
OP 7	-28.585698	153.498988	17.66	1.50	19.16
OP 8	-28.585463	153.497203	20.74	1.50	22.24
OP 9	-28.585247	153.496559	22.55	1.50	24.05
OP 10	-28.584625	153.497010	21.54	1.50	23.04
OP 11	-28.580969	153.503264	11.87	1.50	13.37
OP 12	-28.578633	153.500561	14.86	1.50	16.36
OP 13	-28.577917	153.504037	23.06	1.50	24.56
OP 14	-28.578407	153.505324	12.17	1.50	13.67
OP 15	-28.579980	153.507041	13.42	1.50	14.92
OP 16	-28.577634	153.506955	18.07	1.50	19.57
OP 17	-28.578350	153.508468	25.41	1.50	26.91
OP 18	-28.580602	153.510485	22.21	1.50	23.71
OP 19	-28.579924	153.513006	10.98	1.50	12.48
OP 20	-28.577540	153.514004	28.59	1.50	30.09
OP 21	-28.599198	153.498495	32.23	1.50	33.73
OP 22	-28.594017	153.496591	15.96	1.50	17.46
OP 23	-28.595284	153.492101	28.42	1.50	29.92
OP 24	-28.586033	153.494976	15.50	1.50	17.00
OP 25	-28.585303	153.494054	21.49	1.50	22.99
OP 26	-28.585680	153.492986	22.87	1.50	24.37
OP 27	-28.586726	153.492895	18.76	1.50	20.26
OP 28	-28.586010	153.492176	21.72	1.50	23.22
OP 29	-28.586057	153.491538	22.62	1.50	24.12
OP 30	-28.585468	153.491216	21.88	1.50	23.38
OP 31	-28.581021	153.496108	14.99	1.50	16.49
OP 32	-28.578835	153.495690	20.04	1.50	21.54
OP 33	-28.579985	153.492761	26.73	1.50	28.23
OP 34	-28.578101	153.493823	33.66	1.50	35.16
OP 35	-28.577893	153.495304	34.17	1.50	35.67
OP 36	-28.576386	153.513499	37.35	1.50	38.85
OP 37	-28.576273	153.514342	41.54	1.50	43.04
OP 38	-28.575533	153.514100	50.08	1.50	51.58
OP 39	-28.574699	153.513183	45.47	1.50	46.97
OP 40	-28.575175	153.514717	47.62	1.50	49.12
OP 41	-28.574687	153.515519	52.14	1.50	53.64
OP 42	-28.574669	153.516238	57.65	1.50	59.15
OP 43	-28.574793	153.516865	61.60	1.50	63.10
OP 44	-28.578041	153.515971	10.94	1.50	12.44
OP 45	-28.577767	153.520215	18.03	1.50	19.53
OP 46	-28.573009	153.522403	61.12	1.50	62.62
OP 47	-28.576203	153.526287	34.17	1.50	35.67
OP 48	-28.577108	153.526609	28.49	1.50	29.99
OP 49	-28.577541	153.527381	31.27	1.50	32.77
OP 50	-28.578399	153.525118	11.88	1.50	13.38
OP 51	-28.597266	153.489739	30.23	1.50	31.73
OP 52	-28.587381	153.487593	24.14	1.50	25.64
OP 53	-28.586076	153.490093	26.09	1.50	27.59
OP 54	-28.586114	153.487915	31.35	1.50	32.85
OP 55	-28.585600	153.487185	32.39	1.50	33.89
OP 56	-28.586976	153.491246	19.33	1.50	20.83
OP 57	-28.584941	153.486938	29.01	1.50	30.51

OP 58	-28.585610	153.486418	29.51	1.50	31.01
OP 59	-28.581275	153.490131	16.83	1.50	18.33
OP 60	-28.580935	153.490678	17.95	1.50	19.45
OP 61	-28.580766	153.489498	19.81	1.50	21.31
OP 62	-28.581129	153.487025	20.54	1.50	22.04
OP 63	-28.580069	153.486998	30.58	1.50	32.08
OP 64	-28.579503	153.487926	36.09	1.50	37.59
OP 65	-28.579616	153.489168	33.40	1.50	34.90
OP 66	-28.580055	153.489921	26.16	1.50	27.66
OP 67	-28.578542	153.492585	34.21	1.50	35.71

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_OPs_HSTv2

Myocum, NSW

Created **Sept. 28, 2020 7:45 p.m.**
Updated **Sept. 28, 2020 9:09 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43830.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,233 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585558	153.506564	5.97	3.00	8.97
2	-28.584173	153.508790	5.00	3.00	8.00
3	-28.585337	153.509788	7.94	3.00	10.94
4	-28.586100	153.508731	5.85	3.00	8.85
5	-28.587951	153.506151	6.36	3.00	9.36

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,764 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588160	153.506129	6.23	3.00	9.23
2	-28.585437	153.509917	7.81	3.00	10.81
3	-28.585843	153.510255	7.74	3.00	10.74
4	-28.585937	153.510142	7.43	3.00	10.43
5	-28.586059	153.510252	8.22	3.00	11.22
6	-28.587543	153.508254	5.75	3.00	8.75
7	-28.587885	153.508163	5.46	3.00	8.46
8	-28.589394	153.505990	6.82	3.00	9.82
9	-28.589305	153.505891	6.43	3.00	9.43

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.593460	153.503778	41.29	1.50	42.79
OP 2	-28.593828	153.506122	57.28	1.50	58.78
OP 3	-28.593988	153.512023	48.98	1.50	50.48
OP 4	-28.592500	153.514104	55.73	1.50	57.23
OP 5	-28.592434	153.500930	12.23	1.50	13.73
OP 6	-28.586404	153.497894	15.63	1.50	17.13
OP 7	-28.585698	153.498988	17.66	1.50	19.16
OP 8	-28.585463	153.497203	20.74	1.50	22.24
OP 9	-28.585247	153.496559	22.55	1.50	24.05
OP 10	-28.584625	153.497010	21.54	1.50	23.04
OP 11	-28.580969	153.503264	11.87	1.50	13.37
OP 12	-28.578633	153.500561	14.86	1.50	16.36
OP 13	-28.577917	153.504037	23.06	1.50	24.56
OP 14	-28.578407	153.505324	12.17	1.50	13.67
OP 15	-28.579980	153.507041	13.42	1.50	14.92
OP 16	-28.577634	153.506955	18.07	1.50	19.57
OP 17	-28.578350	153.508468	25.41	1.50	26.91
OP 18	-28.580602	153.510485	22.21	1.50	23.71
OP 19	-28.579924	153.513006	10.98	1.50	12.48
OP 20	-28.577540	153.514004	28.59	1.50	30.09
OP 21	-28.599198	153.498495	32.23	1.50	33.73
OP 22	-28.594017	153.496591	15.96	1.50	17.46
OP 23	-28.595284	153.492101	28.42	1.50	29.92
OP 24	-28.586033	153.494976	15.50	1.50	17.00
OP 25	-28.585303	153.494054	21.49	1.50	22.99
OP 26	-28.585680	153.492986	22.87	1.50	24.37
OP 27	-28.586726	153.492895	18.76	1.50	20.26
OP 28	-28.586010	153.492176	21.72	1.50	23.22
OP 29	-28.586057	153.491538	22.62	1.50	24.12
OP 30	-28.585468	153.491216	21.88	1.50	23.38
OP 31	-28.581021	153.496108	14.99	1.50	16.49
OP 32	-28.578835	153.495690	20.04	1.50	21.54
OP 33	-28.579985	153.492761	26.73	1.50	28.23
OP 34	-28.578101	153.493823	33.66	1.50	35.16
OP 35	-28.577893	153.495304	34.17	1.50	35.67
OP 36	-28.576386	153.513499	37.35	1.50	38.85
OP 37	-28.576273	153.514342	41.54	1.50	43.04
OP 38	-28.575533	153.514100	50.08	1.50	51.58
OP 39	-28.574699	153.513183	45.47	1.50	46.97
OP 40	-28.575175	153.514717	47.62	1.50	49.12
OP 41	-28.574687	153.515519	52.14	1.50	53.64
OP 42	-28.574669	153.516238	57.65	1.50	59.15
OP 43	-28.574793	153.516865	61.60	1.50	63.10
OP 44	-28.578041	153.515971	10.94	1.50	12.44
OP 45	-28.577767	153.520215	18.03	1.50	19.53
OP 46	-28.573009	153.522403	61.12	1.50	62.62
OP 47	-28.576203	153.526287	34.17	1.50	35.67
OP 48	-28.577108	153.526609	28.49	1.50	29.99
OP 49	-28.577541	153.527381	31.27	1.50	32.77
OP 50	-28.578399	153.525118	11.88	1.50	13.38
OP 51	-28.597266	153.489739	30.23	1.50	31.73
OP 52	-28.587381	153.487593	24.14	1.50	25.64
OP 53	-28.586076	153.490093	26.09	1.50	27.59
OP 54	-28.586114	153.487915	31.35	1.50	32.85
OP 55	-28.585600	153.487185	32.39	1.50	33.89
OP 56	-28.586976	153.491246	19.33	1.50	20.83
OP 57	-28.584941	153.486938	29.01	1.50	30.51

OP 58	-28.585610	153.486418	29.51	1.50	31.01
OP 59	-28.581275	153.490131	16.83	1.50	18.33
OP 60	-28.580935	153.490678	17.95	1.50	19.45
OP 61	-28.580766	153.489498	19.81	1.50	21.31
OP 62	-28.581129	153.487025	20.54	1.50	22.04
OP 63	-28.580069	153.486998	30.58	1.50	32.08
OP 64	-28.579503	153.487926	36.09	1.50	37.59
OP 65	-28.579616	153.489168	33.40	1.50	34.90
OP 66	-28.580055	153.489921	26.16	1.50	27.66
OP 67	-28.578542	153.492585	34.21	1.50	35.71

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0
OP: OP 50	0	0
OP: OP 51	0	0
OP: OP 52	0	0
OP: OP 53	0	0
OP: OP 54	0	0
OP: OP 55	0	0
OP: OP 56	0	0
OP: OP 57	0	0
OP: OP 58	0	0
OP: OP 59	0	0
OP: OP 60	0	0
OP: OP 61	0	0
OP: OP 62	0	0
OP: OP 63	0	0
OP: OP 64	0	0
OP: OP 65	0	0
OP: OP 66	0	0
OP: OP 67	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_AdditionalOPsv2_HST

Myocum, NSW

Created **Sept. 28, 2020 6:34 p.m.**
Updated **Sept. 28, 2020 6:48 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43826.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 58,365 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.584239	153.508731	5.00	3.00	8.00
2	-28.584937	153.509396	6.95	3.00	9.95
3	-28.585342	153.509767	7.87	3.00	10.87
4	-28.587932	153.506199	6.32	3.00	9.32
5	-28.585634	153.506655	5.96	3.00	8.96

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,264 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588141	153.506178	6.21	3.00	9.21
2	-28.585433	153.509917	7.86	3.00	10.86
3	-28.585824	153.510324	8.01	3.00	11.01
4	-28.585937	153.510190	7.67	3.00	10.67
5	-28.586040	153.510292	8.38	3.00	11.38
6	-28.587373	153.508372	5.91	3.00	8.91
7	-28.587790	153.508294	5.66	3.00	8.66
8	-28.589347	153.506097	6.76	3.00	9.76
9	-28.589229	153.505987	6.22	3.00	9.22

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.579688	153.486908	34.66	1.50	36.16
OP 2	-28.579212	153.485819	36.20	1.50	37.70
OP 3	-28.579335	153.484891	40.66	1.50	42.16
OP 4	-28.579094	153.483572	44.35	1.50	45.85
OP 5	-28.578741	153.482070	46.01	1.50	47.51
OP 6	-28.583904	153.483108	32.65	1.50	34.15
OP 7	-28.588388	153.483301	25.82	1.50	27.32
OP 8	-28.589707	153.484567	16.00	1.50	17.50
OP 9	-28.579019	153.480367	52.00	1.50	53.50
OP 10	-28.580013	153.479530	49.33	1.50	50.83
OP 11	-28.581657	153.474332	54.51	1.50	56.01
OP 12	-28.580988	153.473570	70.41	1.50	71.91
OP 13	-28.582053	153.470888	106.92	1.50	108.42
OP 14	-28.585567	153.472250	69.30	1.50	70.80
OP 15	-28.589844	153.477422	32.21	1.50	33.71
OP 16	-28.592491	153.478849	30.87	1.50	32.37
OP 17	-28.590748	153.473913	52.59	1.50	54.09
OP 18	-28.587772	153.470523	102.74	1.50	104.24
OP 19	-28.586424	153.469568	137.37	1.50	138.87
OP 20	-28.584710	153.466425	213.01	1.50	214.51
OP 21	-28.582901	153.466521	203.91	1.50	205.41
OP 22	-28.584446	153.465684	202.66	1.50	204.16
OP 23	-28.591643	153.463077	248.12	1.50	249.62
OP 24	-28.592171	153.464032	243.01	1.50	244.51
OP 25	-28.594422	153.465781	194.26	1.50	195.76
OP 26	-28.595289	153.468227	117.68	1.50	119.18
OP 27	-28.593857	153.471081	54.50	1.50	56.00
OP 28	-28.595920	153.465534	186.52	1.50	188.02
OP 29	-28.597578	153.466275	189.95	1.50	191.45
OP 30	-28.599635	153.470634	140.92	1.50	142.42
OP 31	-28.600652	153.470999	150.96	1.50	152.46
OP 32	-28.597139	153.473349	48.21	1.50	49.71
OP 33	-28.602602	153.473585	146.06	1.50	147.56
OP 34	-28.602847	153.475087	105.51	1.50	107.01
OP 35	-28.604835	153.473102	180.85	1.50	182.35
OP 36	-28.605984	153.475258	178.03	1.50	179.53
OP 37	-28.606954	153.476063	183.39	1.50	184.89
OP 38	-28.606718	153.478144	148.99	1.50	150.49
OP 39	-28.605317	153.485776	104.16	1.50	105.66
OP 40	-28.611491	153.475976	171.42	1.50	172.92
OP 41	-28.612951	153.477183	167.27	1.50	168.77
OP 42	-28.613775	153.477558	168.39	1.50	169.89
OP 43	-28.616516	153.479339	156.12	1.50	157.62
OP 44	-28.576364	153.529878	36.15	1.50	37.65
OP 45	-28.577014	153.529802	33.81	1.50	35.31
OP 46	-28.576053	153.533568	44.28	1.50	45.78
OP 47	-28.575648	153.534362	48.22	1.50	49.72
OP 48	-28.575158	153.534427	47.50	1.50	49.00
OP 49	-28.575356	153.535124	49.31	1.50	50.81

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_AdditionalOPsv2_HST-temp-10

Myocum, NSW

Created **Sept. 28, 2020 6:52 p.m.**
Updated **Sept. 28, 2020 7:08 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43827.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 58,365 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.584239	153.508731	5.00	3.00	8.00
2	-28.584937	153.509396	6.95	3.00	9.95
3	-28.585342	153.509767	7.87	3.00	10.87
4	-28.587932	153.506199	6.32	3.00	9.32
5	-28.585634	153.506655	5.96	3.00	8.96

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,264 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588141	153.506178	6.21	3.00	9.21
2	-28.585433	153.509917	7.86	3.00	10.86
3	-28.585824	153.510324	8.01	3.00	11.01
4	-28.585937	153.510190	7.67	3.00	10.67
5	-28.586040	153.510292	8.38	3.00	11.38
6	-28.587373	153.508372	5.91	3.00	8.91
7	-28.587790	153.508294	5.66	3.00	8.66
8	-28.589347	153.506097	6.76	3.00	9.76
9	-28.589229	153.505987	6.22	3.00	9.22

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.579688	153.486908	34.66	1.50	36.16
OP 2	-28.579212	153.485819	36.20	1.50	37.70
OP 3	-28.579335	153.484891	40.66	1.50	42.16
OP 4	-28.579094	153.483572	44.35	1.50	45.85
OP 5	-28.578741	153.482070	46.01	1.50	47.51
OP 6	-28.583904	153.483108	32.65	1.50	34.15
OP 7	-28.588388	153.483301	25.82	1.50	27.32
OP 8	-28.589707	153.484567	16.00	1.50	17.50
OP 9	-28.579019	153.480367	52.00	1.50	53.50
OP 10	-28.580013	153.479530	49.33	1.50	50.83
OP 11	-28.581657	153.474332	54.51	1.50	56.01
OP 12	-28.580988	153.473570	70.41	1.50	71.91
OP 13	-28.582053	153.470888	106.92	1.50	108.42
OP 14	-28.585567	153.472250	69.30	1.50	70.80
OP 15	-28.589844	153.477422	32.21	1.50	33.71
OP 16	-28.592491	153.478849	30.87	1.50	32.37
OP 17	-28.590748	153.473913	52.59	1.50	54.09
OP 18	-28.587772	153.470523	102.74	1.50	104.24
OP 19	-28.586424	153.469568	137.37	1.50	138.87
OP 20	-28.584710	153.466425	213.01	1.50	214.51
OP 21	-28.582901	153.466521	203.91	1.50	205.41
OP 22	-28.584446	153.465684	202.66	1.50	204.16
OP 23	-28.591643	153.463077	248.12	1.50	249.62
OP 24	-28.592171	153.464032	243.01	1.50	244.51
OP 25	-28.594422	153.465781	194.26	1.50	195.76
OP 26	-28.595289	153.468227	117.68	1.50	119.18
OP 27	-28.593857	153.471081	54.50	1.50	56.00
OP 28	-28.595920	153.465534	186.52	1.50	188.02
OP 29	-28.597578	153.466275	189.95	1.50	191.45
OP 30	-28.599635	153.470634	140.92	1.50	142.42
OP 31	-28.600652	153.470999	150.96	1.50	152.46
OP 32	-28.597139	153.473349	48.21	1.50	49.71
OP 33	-28.602602	153.473585	146.06	1.50	147.56
OP 34	-28.602847	153.475087	105.51	1.50	107.01
OP 35	-28.604835	153.473102	180.85	1.50	182.35
OP 36	-28.605984	153.475258	178.03	1.50	179.53
OP 37	-28.606954	153.476063	183.39	1.50	184.89
OP 38	-28.606718	153.478144	148.99	1.50	150.49
OP 39	-28.605317	153.485776	104.16	1.50	105.66
OP 40	-28.611491	153.475976	171.42	1.50	172.92
OP 41	-28.612951	153.477183	167.27	1.50	168.77
OP 42	-28.613775	153.477558	168.39	1.50	169.89
OP 43	-28.616516	153.479339	156.12	1.50	157.62
OP 44	-28.576364	153.529878	36.15	1.50	37.65
OP 45	-28.577014	153.529802	33.81	1.50	35.31
OP 46	-28.576053	153.533568	44.28	1.50	45.78
OP 47	-28.575648	153.534362	48.22	1.50	49.72
OP 48	-28.575158	153.534427	47.50	1.50	49.00
OP 49	-28.575356	153.535124	49.31	1.50	50.81

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_AdditionalOPsv2_HST

Myocum, NSW

Created **Sept. 28, 2020 6:34 p.m.**
Updated **Sept. 28, 2020 7:37 p.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43826.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 58,365 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.584239	153.508731	5.00	3.00	8.00
2	-28.584937	153.509396	6.95	3.00	9.95
3	-28.585342	153.509767	7.87	3.00	10.87
4	-28.587932	153.506199	6.32	3.00	9.32
5	-28.585634	153.506655	5.96	3.00	8.96

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 44,264 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588141	153.506178	6.21	3.00	9.21
2	-28.585433	153.509917	7.86	3.00	10.86
3	-28.585824	153.510324	8.01	3.00	11.01
4	-28.585937	153.510190	7.67	3.00	10.67
5	-28.586040	153.510292	8.38	3.00	11.38
6	-28.587373	153.508372	5.91	3.00	8.91
7	-28.587790	153.508294	5.66	3.00	8.66
8	-28.589347	153.506097	6.76	3.00	9.76
9	-28.589229	153.505987	6.22	3.00	9.22

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-28.579688	153.486908	34.66	1.50	36.16
OP 2	-28.579212	153.485819	36.20	1.50	37.70
OP 3	-28.579335	153.484891	40.66	1.50	42.16
OP 4	-28.579094	153.483572	44.35	1.50	45.85
OP 5	-28.578741	153.482070	46.01	1.50	47.51
OP 6	-28.583904	153.483108	32.65	1.50	34.15
OP 7	-28.588388	153.483301	25.82	1.50	27.32
OP 8	-28.589707	153.484567	16.00	1.50	17.50
OP 9	-28.579019	153.480367	52.00	1.50	53.50
OP 10	-28.580013	153.479530	49.33	1.50	50.83
OP 11	-28.581657	153.474332	54.51	1.50	56.01
OP 12	-28.580988	153.473570	70.41	1.50	71.91
OP 13	-28.582053	153.470888	106.92	1.50	108.42
OP 14	-28.585567	153.472250	69.30	1.50	70.80
OP 15	-28.589844	153.477422	32.21	1.50	33.71
OP 16	-28.592491	153.478849	30.87	1.50	32.37
OP 17	-28.590748	153.473913	52.59	1.50	54.09
OP 18	-28.587772	153.470523	102.74	1.50	104.24
OP 19	-28.586424	153.469568	137.37	1.50	138.87
OP 20	-28.584710	153.466425	213.01	1.50	214.51
OP 21	-28.582901	153.466521	203.91	1.50	205.41
OP 22	-28.584446	153.465684	202.66	1.50	204.16
OP 23	-28.591643	153.463077	248.12	1.50	249.62
OP 24	-28.592171	153.464032	243.01	1.50	244.51
OP 25	-28.594422	153.465781	194.26	1.50	195.76
OP 26	-28.595289	153.468227	117.68	1.50	119.18
OP 27	-28.593857	153.471081	54.50	1.50	56.00
OP 28	-28.595920	153.465534	186.52	1.50	188.02
OP 29	-28.597578	153.466275	189.95	1.50	191.45
OP 30	-28.599635	153.470634	140.92	1.50	142.42
OP 31	-28.600652	153.470999	150.96	1.50	152.46
OP 32	-28.597139	153.473349	48.21	1.50	49.71
OP 33	-28.602602	153.473585	146.06	1.50	147.56
OP 34	-28.602847	153.475087	105.51	1.50	107.01
OP 35	-28.604835	153.473102	180.85	1.50	182.35
OP 36	-28.605984	153.475258	178.03	1.50	179.53
OP 37	-28.606954	153.476063	183.39	1.50	184.89
OP 38	-28.606718	153.478144	148.99	1.50	150.49
OP 39	-28.605317	153.485776	104.16	1.50	105.66
OP 40	-28.611491	153.475976	171.42	1.50	172.92
OP 41	-28.612951	153.477183	167.27	1.50	168.77
OP 42	-28.613775	153.477558	168.39	1.50	169.89
OP 43	-28.616516	153.479339	156.12	1.50	157.62
OP 44	-28.576364	153.529878	36.15	1.50	37.65
OP 45	-28.577014	153.529802	33.81	1.50	35.31
OP 46	-28.576053	153.533568	44.28	1.50	45.78
OP 47	-28.575648	153.534362	48.22	1.50	49.72
OP 48	-28.575158	153.534427	47.50	1.50	49.00
OP 49	-28.575356	153.535124	49.31	1.50	50.81

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

PV array 2 no glare found

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

OP: OP 48	0	0
OP: OP 49	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_Roads_2020v2_HTS

Myocum, NSW

Created **Oct. 1, 2020 1:05 a.m.**
Updated **Oct. 1, 2020 1:18 a.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43933.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,962 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585459	153.506623	5.91	3.00	8.91
2	-28.584117	153.508753	5.00	3.00	8.00
3	-28.585337	153.509777	7.91	3.00	10.91
4	-28.586646	153.507959	6.00	3.00	9.00
5	-28.587942	153.506167	6.35	3.00	9.35

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 42,667 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588169	153.506103	6.25	3.00	9.25
2	-28.585466	153.509949	7.75	3.00	10.75
3	-28.585795	153.510244	7.60	3.00	10.60
4	-28.585913	153.510110	7.23	3.00	10.23
5	-28.586038	153.510209	7.98	3.00	10.98
6	-28.587538	153.508163	5.66	3.00	8.66
7	-28.587927	153.508023	5.26	3.00	8.26
8	-28.589408	153.505995	6.91	3.00	9.91
9	-28.589326	153.505899	6.54	3.00	9.54

Route Receptor(s)

Name: Bilin Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576129	153.511470	27.38	2.00	29.38
2	-28.576666	153.512575	27.87	2.00	29.87
3	-28.577213	153.513798	29.39	2.00	31.39
4	-28.577458	153.514581	26.10	2.00	28.10
5	-28.577477	153.515139	20.76	2.00	22.76
6	-28.577307	153.515783	16.58	2.00	18.58
7	-28.576996	153.516222	17.13	2.00	19.13
8	-28.577138	153.516920	19.46	2.00	21.46
9	-28.577401	153.517789	19.33	2.00	21.33
10	-28.577133	153.518513	19.58	2.00	21.58
11	-28.577017	153.519049	17.31	2.00	19.31
12	-28.576984	153.519564	16.39	2.00	18.39
13	-28.576889	153.520192	18.19	2.00	20.19
14	-28.576743	153.520745	20.75	2.00	22.75
15	-28.576828	153.521437	16.15	2.00	18.15
16	-28.577149	153.521936	12.70	2.00	14.70
17	-28.577337	153.522206	10.91	2.00	12.91
18	-28.577422	153.522571	10.40	2.00	12.40
19	-28.577521	153.523129	10.43	2.00	12.43
20	-28.577554	153.523494	11.11	2.00	13.11
21	-28.577328	153.524202	12.68	2.00	14.68
22	-28.577365	153.524620	11.72	2.00	13.72
23	-28.577483	153.525350	12.61	2.00	14.61
24	-28.577210	153.525813	18.09	2.00	20.09
25	-28.577177	153.525952	19.99	2.00	21.99
26	-28.577398	153.526097	20.37	2.00	22.37
27	-28.577714	153.526129	20.32	2.00	22.32
28	-28.577817	153.526387	22.58	2.00	24.58
29	-28.577921	153.526885	24.68	2.00	26.68
30	-28.578081	153.527095	23.35	2.00	25.35
31	-28.578251	153.527245	20.85	2.00	22.85
32	-28.578265	153.527604	19.70	2.00	21.70
33	-28.578100	153.527974	20.30	2.00	22.30
34	-28.577841	153.528318	22.44	2.00	24.44
35	-28.577714	153.528755	22.28	2.00	24.28
36	-28.578223	153.529184	13.24	2.00	15.24
37	-28.578710	153.529574	14.32	2.00	16.32
38	-28.578880	153.529971	14.77	2.00	16.77

Name: Coolalon Scenic Drive North
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579092	153.479146	52.38	2.00	54.38
2	-28.579167	153.478138	54.30	2.00	56.30
3	-28.579733	153.475863	58.44	2.00	60.44
4	-28.579770	153.474919	64.35	2.00	66.35
5	-28.581259	153.471529	93.44	2.00	95.44
6	-28.581975	153.470713	113.28	2.00	115.28
7	-28.582385	153.470300	125.89	2.00	127.89
8	-28.583369	153.470171	121.88	2.00	123.88
9	-28.583614	153.469903	126.85	2.00	128.85
10	-28.584097	153.469065	146.34	2.00	148.34
11	-28.584370	153.468914	148.44	2.00	150.44
12	-28.584709	153.468882	151.87	2.00	153.87
13	-28.585237	153.469011	152.24	2.00	154.24
14	-28.585906	153.469161	151.23	2.00	153.23
15	-28.586405	153.468775	154.08	2.00	156.08

Name: Coolamon Scenic Drive South
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.614184	153.477226	166.92	2.00	168.92
2	-28.615257	153.477859	165.32	2.00	167.32
3	-28.616039	153.478353	162.87	2.00	164.87
4	-28.616585	153.478846	160.10	2.00	162.10
5	-28.617216	153.479619	158.00	2.00	160.00
6	-28.617894	153.480541	161.69	2.00	163.69
7	-28.618478	153.481668	155.19	2.00	157.19
8	-28.618959	153.482644	157.32	2.00	159.32
9	-28.619345	153.483288	162.53	2.00	164.53
10	-28.619750	153.484125	165.47	2.00	167.47

Name: Dingo Lane
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588115	153.484130	22.20	2.00	24.20
2	-28.587767	153.484301	22.92	2.00	24.92
3	-28.588200	153.488217	17.55	2.00	19.55
4	-28.588812	153.493324	9.08	2.00	11.08
5	-28.589321	153.496650	7.91	2.00	9.91
6	-28.589566	153.499547	7.92	2.00	9.92
7	-28.588341	153.501178	8.70	2.00	10.70
8	-28.586570	153.503216	5.21	2.00	7.21
9	-28.585666	153.504504	5.12	2.00	7.12
10	-28.584083	153.506864	9.03	2.00	11.03
11	-28.582613	153.508795	4.66	2.00	6.66
12	-28.583329	153.510083	6.11	2.00	8.11
13	-28.584008	153.510941	8.41	2.00	10.41
14	-28.584629	153.511113	9.26	2.00	11.26
15	-28.585911	153.510834	10.46	2.00	12.46

Name: Lagoon Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579639	153.484167	43.31	2.00	45.31
2	-28.579940	153.485497	36.68	2.00	38.68
3	-28.580590	153.486238	27.92	2.00	29.92
4	-28.580826	153.486806	23.85	2.00	25.85
5	-28.580911	153.487600	20.21	2.00	22.21
6	-28.580788	153.487997	20.56	2.00	22.56
7	-28.580458	153.488888	23.23	2.00	25.23
8	-28.580496	153.489252	22.46	2.00	24.46
9	-28.580553	153.490068	21.54	2.00	23.54
10	-28.580016	153.490711	23.50	2.00	25.50
11	-28.579846	153.491216	23.70	2.00	25.70
12	-28.579899	153.492042	22.53	2.00	24.53
13	-28.579603	153.492793	26.08	2.00	28.08
14	-28.579358	153.493404	24.76	2.00	26.76
15	-28.579329	153.493893	22.06	2.00	24.06
16	-28.579527	153.494509	20.04	2.00	22.04
17	-28.579796	153.494874	19.11	2.00	21.11
18	-28.580281	153.495464	16.73	2.00	18.73
19	-28.580573	153.495974	17.24	2.00	19.24
20	-28.580498	153.496387	19.28	2.00	21.28

Name: Mcauldeys Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576819	153.496761	11.61	2.00	13.61
2	-28.577592	153.499217	12.80	2.00	14.80
3	-28.578035	153.500784	12.47	2.00	14.47
4	-28.578025	153.501235	12.47	2.00	14.47
5	-28.577488	153.502833	13.79	2.00	15.79
6	-28.577243	153.503477	15.34	2.00	17.34
7	-28.576951	153.503863	12.72	2.00	14.72
8	-28.577149	153.504646	16.56	2.00	18.56
9	-28.577338	153.505236	15.17	2.00	17.17
10	-28.577761	153.505746	11.84	2.00	13.84
11	-28.578534	153.507151	19.46	2.00	21.46
12	-28.578283	153.507416	22.13	2.00	24.13
13	-28.578146	153.508028	24.97	2.00	26.97
14	-28.577393	153.508666	19.89	2.00	21.89
15	-28.577190	153.509348	19.91	2.00	21.91
16	-28.576714	153.510335	20.60	2.00	22.60
17	-28.576078	153.511258	25.90	2.00	27.90
18	-28.575829	153.511719	29.79	2.00	31.79
19	-28.575645	153.512604	39.88	2.00	41.88
20	-28.575186	153.513299	46.74	2.00	48.74
21	-28.575139	153.513857	48.06	2.00	50.06
22	-28.574969	153.514511	47.19	2.00	49.19
23	-28.574366	153.515766	50.92	2.00	52.92
24	-28.574027	153.516319	54.34	2.00	56.34
25	-28.573980	153.516748	59.23	2.00	61.23
26	-28.573315	153.517360	56.86	2.00	58.86
27	-28.573196	153.517349	56.99	2.00	58.99

Name: Myocum Downs Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585323	153.483228	37.05	2.00	39.05
2	-28.585276	153.484473	30.48	2.00	32.48
3	-28.585210	153.485471	29.31	2.00	31.31
4	-28.585182	153.487692	31.37	2.00	33.37
5	-28.585323	153.488904	28.95	2.00	30.95
6	-28.585625	153.489687	27.89	2.00	29.89
7	-28.585813	153.490202	27.38	2.00	29.38
8	-28.585842	153.490953	25.32	2.00	27.32
9	-28.585484	153.491865	20.38	2.00	22.38
10	-28.585173	153.492520	19.67	2.00	21.67
11	-28.585082	153.493925	22.45	2.00	24.45
12	-28.585082	153.495352	20.66	2.00	22.66
13	-28.585035	153.496468	24.27	2.00	26.27
14	-28.584931	153.497079	23.52	2.00	25.52
15	-28.584978	153.497777	21.58	2.00	23.58

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

PV array 2 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_Roads_2020v2_HTS

Myocum, NSW

Created **Oct. 1, 2020 1:56 a.m.**
Updated **Oct. 1, 2020 2:09 a.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43936.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,962 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585459	153.506623	5.91	3.00	8.91
2	-28.584117	153.508753	5.00	3.00	8.00
3	-28.585337	153.509777	7.91	3.00	10.91
4	-28.586646	153.507959	6.00	3.00	9.00
5	-28.587942	153.506167	6.35	3.00	9.35

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 45.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 42,667 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588169	153.506103	6.25	3.00	9.25
2	-28.585466	153.509949	7.75	3.00	10.75
3	-28.585795	153.510244	7.60	3.00	10.60
4	-28.585913	153.510110	7.23	3.00	10.23
5	-28.586038	153.510209	7.98	3.00	10.98
6	-28.587538	153.508163	5.66	3.00	8.66
7	-28.587927	153.508023	5.26	3.00	8.26
8	-28.589408	153.505995	6.91	3.00	9.91
9	-28.589326	153.505899	6.54	3.00	9.54

Route Receptor(s)

Name: Bilin Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576129	153.511470	27.38	2.00	29.38
2	-28.576666	153.512575	27.87	2.00	29.87
3	-28.577213	153.513798	29.39	2.00	31.39
4	-28.577458	153.514581	26.10	2.00	28.10
5	-28.577477	153.515139	20.76	2.00	22.76
6	-28.577307	153.515783	16.58	2.00	18.58
7	-28.576996	153.516222	17.13	2.00	19.13
8	-28.577138	153.516920	19.46	2.00	21.46
9	-28.577401	153.517789	19.33	2.00	21.33
10	-28.577133	153.518513	19.58	2.00	21.58
11	-28.577017	153.519049	17.31	2.00	19.31
12	-28.576984	153.519564	16.39	2.00	18.39
13	-28.576889	153.520192	18.19	2.00	20.19
14	-28.576743	153.520745	20.75	2.00	22.75
15	-28.576828	153.521437	16.15	2.00	18.15
16	-28.577149	153.521936	12.70	2.00	14.70
17	-28.577337	153.522206	10.91	2.00	12.91
18	-28.577422	153.522571	10.40	2.00	12.40
19	-28.577521	153.523129	10.43	2.00	12.43
20	-28.577554	153.523494	11.11	2.00	13.11
21	-28.577328	153.524202	12.68	2.00	14.68
22	-28.577365	153.524620	11.72	2.00	13.72
23	-28.577483	153.525350	12.61	2.00	14.61
24	-28.577210	153.525813	18.09	2.00	20.09
25	-28.577177	153.525952	19.99	2.00	21.99
26	-28.577398	153.526097	20.37	2.00	22.37
27	-28.577714	153.526129	20.32	2.00	22.32
28	-28.577817	153.526387	22.58	2.00	24.58
29	-28.577921	153.526885	24.68	2.00	26.68
30	-28.578081	153.527095	23.35	2.00	25.35
31	-28.578251	153.527245	20.85	2.00	22.85
32	-28.578265	153.527604	19.70	2.00	21.70
33	-28.578100	153.527974	20.30	2.00	22.30
34	-28.577841	153.528318	22.44	2.00	24.44
35	-28.577714	153.528755	22.28	2.00	24.28
36	-28.578223	153.529184	13.24	2.00	15.24
37	-28.578710	153.529574	14.32	2.00	16.32
38	-28.578880	153.529971	14.77	2.00	16.77

Name: Coolalon Scenic Drive North
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579092	153.479146	52.38	2.00	54.38
2	-28.579167	153.478138	54.30	2.00	56.30
3	-28.579733	153.475863	58.44	2.00	60.44
4	-28.579770	153.474919	64.35	2.00	66.35
5	-28.581259	153.471529	93.44	2.00	95.44
6	-28.581975	153.470713	113.28	2.00	115.28
7	-28.582385	153.470300	125.89	2.00	127.89
8	-28.583369	153.470171	121.88	2.00	123.88
9	-28.583614	153.469903	126.85	2.00	128.85
10	-28.584097	153.469065	146.34	2.00	148.34
11	-28.584370	153.468914	148.44	2.00	150.44
12	-28.584709	153.468882	151.87	2.00	153.87
13	-28.585237	153.469011	152.24	2.00	154.24
14	-28.585906	153.469161	151.23	2.00	153.23
15	-28.586405	153.468775	154.08	2.00	156.08

Name: Coolamon Scenic Drive South
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.614184	153.477226	166.92	2.00	168.92
2	-28.615257	153.477859	165.32	2.00	167.32
3	-28.616039	153.478353	162.87	2.00	164.87
4	-28.616585	153.478846	160.10	2.00	162.10
5	-28.617216	153.479619	158.00	2.00	160.00
6	-28.617894	153.480541	161.69	2.00	163.69
7	-28.618478	153.481668	155.19	2.00	157.19
8	-28.618959	153.482644	157.32	2.00	159.32
9	-28.619345	153.483288	162.53	2.00	164.53
10	-28.619750	153.484125	165.47	2.00	167.47

Name: Dingo Lane
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588115	153.484130	22.20	2.00	24.20
2	-28.587767	153.484301	22.92	2.00	24.92
3	-28.588200	153.488217	17.55	2.00	19.55
4	-28.588812	153.493324	9.08	2.00	11.08
5	-28.589321	153.496650	7.91	2.00	9.91
6	-28.589566	153.499547	7.92	2.00	9.92
7	-28.588341	153.501178	8.70	2.00	10.70
8	-28.586570	153.503216	5.21	2.00	7.21
9	-28.585666	153.504504	5.12	2.00	7.12
10	-28.584083	153.506864	9.03	2.00	11.03
11	-28.582613	153.508795	4.66	2.00	6.66
12	-28.583329	153.510083	6.11	2.00	8.11
13	-28.584008	153.510941	8.41	2.00	10.41
14	-28.584629	153.511113	9.26	2.00	11.26
15	-28.585911	153.510834	10.46	2.00	12.46

Name: Lagoon Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579639	153.484167	43.31	2.00	45.31
2	-28.579940	153.485497	36.68	2.00	38.68
3	-28.580590	153.486238	27.92	2.00	29.92
4	-28.580826	153.486806	23.85	2.00	25.85
5	-28.580911	153.487600	20.21	2.00	22.21
6	-28.580788	153.487997	20.56	2.00	22.56
7	-28.580458	153.488888	23.23	2.00	25.23
8	-28.580496	153.489252	22.46	2.00	24.46
9	-28.580553	153.490068	21.54	2.00	23.54
10	-28.580016	153.490711	23.50	2.00	25.50
11	-28.579846	153.491216	23.70	2.00	25.70
12	-28.579899	153.492042	22.53	2.00	24.53
13	-28.579603	153.492793	26.08	2.00	28.08
14	-28.579358	153.493404	24.76	2.00	26.76
15	-28.579329	153.493893	22.06	2.00	24.06
16	-28.579527	153.494509	20.04	2.00	22.04
17	-28.579796	153.494874	19.11	2.00	21.11
18	-28.580281	153.495464	16.73	2.00	18.73
19	-28.580573	153.495974	17.24	2.00	19.24
20	-28.580498	153.496387	19.28	2.00	21.28

Name: Mcauldeys Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576819	153.496761	11.61	2.00	13.61
2	-28.577592	153.499217	12.80	2.00	14.80
3	-28.578035	153.500784	12.47	2.00	14.47
4	-28.578025	153.501235	12.47	2.00	14.47
5	-28.577488	153.502833	13.79	2.00	15.79
6	-28.577243	153.503477	15.34	2.00	17.34
7	-28.576951	153.503863	12.72	2.00	14.72
8	-28.577149	153.504646	16.56	2.00	18.56
9	-28.577338	153.505236	15.17	2.00	17.17
10	-28.577761	153.505746	11.84	2.00	13.84
11	-28.578534	153.507151	19.46	2.00	21.46
12	-28.578283	153.507416	22.13	2.00	24.13
13	-28.578146	153.508028	24.97	2.00	26.97
14	-28.577393	153.508666	19.89	2.00	21.89
15	-28.577190	153.509348	19.91	2.00	21.91
16	-28.576714	153.510335	20.60	2.00	22.60
17	-28.576078	153.511258	25.90	2.00	27.90
18	-28.575829	153.511719	29.79	2.00	31.79
19	-28.575645	153.512604	39.88	2.00	41.88
20	-28.575186	153.513299	46.74	2.00	48.74
21	-28.575139	153.513857	48.06	2.00	50.06
22	-28.574969	153.514511	47.19	2.00	49.19
23	-28.574366	153.515766	50.92	2.00	52.92
24	-28.574027	153.516319	54.34	2.00	56.34
25	-28.573980	153.516748	59.23	2.00	61.23
26	-28.573315	153.517360	56.86	2.00	58.86
27	-28.573196	153.517349	56.99	2.00	58.99

Name: Myocum Downs Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585323	153.483228	37.05	2.00	39.05
2	-28.585276	153.484473	30.48	2.00	32.48
3	-28.585210	153.485471	29.31	2.00	31.31
4	-28.585182	153.487692	31.37	2.00	33.37
5	-28.585323	153.488904	28.95	2.00	30.95
6	-28.585625	153.489687	27.89	2.00	29.89
7	-28.585813	153.490202	27.38	2.00	29.38
8	-28.585842	153.490953	25.32	2.00	27.32
9	-28.585484	153.491865	20.38	2.00	22.38
10	-28.585173	153.492520	19.67	2.00	21.67
11	-28.585082	153.493925	22.45	2.00	24.45
12	-28.585082	153.495352	20.66	2.00	22.66
13	-28.585035	153.496468	24.27	2.00	26.27
14	-28.584931	153.497079	23.52	2.00	25.52
15	-28.584978	153.497777	21.58	2.00	23.58

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

PV array 2 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.

ForgeSolar

Site Configuration: DingoLaneSF_Roads_2020v2_HTS

Myocum, NSW

Created **Oct. 1, 2020 2:42 a.m.**
Updated **Oct. 1, 2020 2:55 a.m.**
DNI **varies** and peaks at **2,000.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 43937.6245

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Name: PV array 1
Description: Northern section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 57,962 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585459	153.506623	5.91	3.00	8.91
2	-28.584117	153.508753	5.00	3.00	8.00
3	-28.585337	153.509777	7.91	3.00	10.91
4	-28.586646	153.507959	6.00	3.00	9.00
5	-28.587942	153.506167	6.35	3.00	9.35

Name: PV array 2
Description: Central section
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 5.0 deg
Rated power: -
Panel material: Smooth glass without AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 6.55 mrad
Approx. area: 42,667 sq-m

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588169	153.506103	6.25	3.00	9.25
2	-28.585466	153.509949	7.75	3.00	10.75
3	-28.585795	153.510244	7.60	3.00	10.60
4	-28.585913	153.510110	7.23	3.00	10.23
5	-28.586038	153.510209	7.98	3.00	10.98
6	-28.587538	153.508163	5.66	3.00	8.66
7	-28.587927	153.508023	5.26	3.00	8.26
8	-28.589408	153.505995	6.91	3.00	9.91
9	-28.589326	153.505899	6.54	3.00	9.54

Route Receptor(s)

Name: Bilin Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576129	153.511470	27.38	2.00	29.38
2	-28.576666	153.512575	27.87	2.00	29.87
3	-28.577213	153.513798	29.39	2.00	31.39
4	-28.577458	153.514581	26.10	2.00	28.10
5	-28.577477	153.515139	20.76	2.00	22.76
6	-28.577307	153.515783	16.58	2.00	18.58
7	-28.576996	153.516222	17.13	2.00	19.13
8	-28.577138	153.516920	19.46	2.00	21.46
9	-28.577401	153.517789	19.33	2.00	21.33
10	-28.577133	153.518513	19.58	2.00	21.58
11	-28.577017	153.519049	17.31	2.00	19.31
12	-28.576984	153.519564	16.39	2.00	18.39
13	-28.576889	153.520192	18.19	2.00	20.19
14	-28.576743	153.520745	20.75	2.00	22.75
15	-28.576828	153.521437	16.15	2.00	18.15
16	-28.577149	153.521936	12.70	2.00	14.70
17	-28.577337	153.522206	10.91	2.00	12.91
18	-28.577422	153.522571	10.40	2.00	12.40
19	-28.577521	153.523129	10.43	2.00	12.43
20	-28.577554	153.523494	11.11	2.00	13.11
21	-28.577328	153.524202	12.68	2.00	14.68
22	-28.577365	153.524620	11.72	2.00	13.72
23	-28.577483	153.525350	12.61	2.00	14.61
24	-28.577210	153.525813	18.09	2.00	20.09
25	-28.577177	153.525952	19.99	2.00	21.99
26	-28.577398	153.526097	20.37	2.00	22.37
27	-28.577714	153.526129	20.32	2.00	22.32
28	-28.577817	153.526387	22.58	2.00	24.58
29	-28.577921	153.526885	24.68	2.00	26.68
30	-28.578081	153.527095	23.35	2.00	25.35
31	-28.578251	153.527245	20.85	2.00	22.85
32	-28.578265	153.527604	19.70	2.00	21.70
33	-28.578100	153.527974	20.30	2.00	22.30
34	-28.577841	153.528318	22.44	2.00	24.44
35	-28.577714	153.528755	22.28	2.00	24.28
36	-28.578223	153.529184	13.24	2.00	15.24
37	-28.578710	153.529574	14.32	2.00	16.32
38	-28.578880	153.529971	14.77	2.00	16.77

Name: Coolalon Scenic Drive North
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579092	153.479146	52.38	2.00	54.38
2	-28.579167	153.478138	54.30	2.00	56.30
3	-28.579733	153.475863	58.44	2.00	60.44
4	-28.579770	153.474919	64.35	2.00	66.35
5	-28.581259	153.471529	93.44	2.00	95.44
6	-28.581975	153.470713	113.28	2.00	115.28
7	-28.582385	153.470300	125.89	2.00	127.89
8	-28.583369	153.470171	121.88	2.00	123.88
9	-28.583614	153.469903	126.85	2.00	128.85
10	-28.584097	153.469065	146.34	2.00	148.34
11	-28.584370	153.468914	148.44	2.00	150.44
12	-28.584709	153.468882	151.87	2.00	153.87
13	-28.585237	153.469011	152.24	2.00	154.24
14	-28.585906	153.469161	151.23	2.00	153.23
15	-28.586405	153.468775	154.08	2.00	156.08

Name: Coolamon Scenic Drive South
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.614184	153.477226	166.92	2.00	168.92
2	-28.615257	153.477859	165.32	2.00	167.32
3	-28.616039	153.478353	162.87	2.00	164.87
4	-28.616585	153.478846	160.10	2.00	162.10
5	-28.617216	153.479619	158.00	2.00	160.00
6	-28.617894	153.480541	161.69	2.00	163.69
7	-28.618478	153.481668	155.19	2.00	157.19
8	-28.618959	153.482644	157.32	2.00	159.32
9	-28.619345	153.483288	162.53	2.00	164.53
10	-28.619750	153.484125	165.47	2.00	167.47

Name: Dingo Lane
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.588115	153.484130	22.20	2.00	24.20
2	-28.587767	153.484301	22.92	2.00	24.92
3	-28.588200	153.488217	17.55	2.00	19.55
4	-28.588812	153.493324	9.08	2.00	11.08
5	-28.589321	153.496650	7.91	2.00	9.91
6	-28.589566	153.499547	7.92	2.00	9.92
7	-28.588341	153.501178	8.70	2.00	10.70
8	-28.586570	153.503216	5.21	2.00	7.21
9	-28.585666	153.504504	5.12	2.00	7.12
10	-28.584083	153.506864	9.03	2.00	11.03
11	-28.582613	153.508795	4.66	2.00	6.66
12	-28.583329	153.510083	6.11	2.00	8.11
13	-28.584008	153.510941	8.41	2.00	10.41
14	-28.584629	153.511113	9.26	2.00	11.26
15	-28.585911	153.510834	10.46	2.00	12.46

Name: Lagoon Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.579639	153.484167	43.31	2.00	45.31
2	-28.579940	153.485497	36.68	2.00	38.68
3	-28.580590	153.486238	27.92	2.00	29.92
4	-28.580826	153.486806	23.85	2.00	25.85
5	-28.580911	153.487600	20.21	2.00	22.21
6	-28.580788	153.487997	20.56	2.00	22.56
7	-28.580458	153.488888	23.23	2.00	25.23
8	-28.580496	153.489252	22.46	2.00	24.46
9	-28.580553	153.490068	21.54	2.00	23.54
10	-28.580016	153.490711	23.50	2.00	25.50
11	-28.579846	153.491216	23.70	2.00	25.70
12	-28.579899	153.492042	22.53	2.00	24.53
13	-28.579603	153.492793	26.08	2.00	28.08
14	-28.579358	153.493404	24.76	2.00	26.76
15	-28.579329	153.493893	22.06	2.00	24.06
16	-28.579527	153.494509	20.04	2.00	22.04
17	-28.579796	153.494874	19.11	2.00	21.11
18	-28.580281	153.495464	16.73	2.00	18.73
19	-28.580573	153.495974	17.24	2.00	19.24
20	-28.580498	153.496387	19.28	2.00	21.28

Name: Mcauldeys Road
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.576819	153.496761	11.61	2.00	13.61
2	-28.577592	153.499217	12.80	2.00	14.80
3	-28.578035	153.500784	12.47	2.00	14.47
4	-28.578025	153.501235	12.47	2.00	14.47
5	-28.577488	153.502833	13.79	2.00	15.79
6	-28.577243	153.503477	15.34	2.00	17.34
7	-28.576951	153.503863	12.72	2.00	14.72
8	-28.577149	153.504646	16.56	2.00	18.56
9	-28.577338	153.505236	15.17	2.00	17.17
10	-28.577761	153.505746	11.84	2.00	13.84
11	-28.578534	153.507151	19.46	2.00	21.46
12	-28.578283	153.507416	22.13	2.00	24.13
13	-28.578146	153.508028	24.97	2.00	26.97
14	-28.577393	153.508666	19.89	2.00	21.89
15	-28.577190	153.509348	19.91	2.00	21.91
16	-28.576714	153.510335	20.60	2.00	22.60
17	-28.576078	153.511258	25.90	2.00	27.90
18	-28.575829	153.511719	29.79	2.00	31.79
19	-28.575645	153.512604	39.88	2.00	41.88
20	-28.575186	153.513299	46.74	2.00	48.74
21	-28.575139	153.513857	48.06	2.00	50.06
22	-28.574969	153.514511	47.19	2.00	49.19
23	-28.574366	153.515766	50.92	2.00	52.92
24	-28.574027	153.516319	54.34	2.00	56.34
25	-28.573980	153.516748	59.23	2.00	61.23
26	-28.573315	153.517360	56.86	2.00	58.86
27	-28.573196	153.517349	56.99	2.00	58.99

Name: Myocum Downs Drive
Route type Two-way
View angle: 90.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-28.585323	153.483228	37.05	2.00	39.05
2	-28.585276	153.484473	30.48	2.00	32.48
3	-28.585210	153.485471	29.31	2.00	31.31
4	-28.585182	153.487692	31.37	2.00	33.37
5	-28.585323	153.488904	28.95	2.00	30.95
6	-28.585625	153.489687	27.89	2.00	29.89
7	-28.585813	153.490202	27.38	2.00	29.38
8	-28.585842	153.490953	25.32	2.00	27.32
9	-28.585484	153.491865	20.38	2.00	22.38
10	-28.585173	153.492520	19.67	2.00	21.67
11	-28.585082	153.493925	22.45	2.00	24.45
12	-28.585082	153.495352	20.66	2.00	22.66
13	-28.585035	153.496468	24.27	2.00	26.27
14	-28.584931	153.497079	23.52	2.00	25.52
15	-28.584978	153.497777	21.58	2.00	23.58

PV Array Results

Summary of PV Glare Analysis PV configuration and predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	-
PV array 2	SA tracking	SA tracking	0	0	-	-

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

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

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

PV array 2 no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Bilin Road	0	0
Route: Coolalon Scenic Drive North	0	0
Route: Coolamon Scenic Drive South	0	0
Route: Dingo Lane	0	0
Route: Lagoon Drive	0	0
Route: Mcauldeys Road	0	0
Route: Myocum Downs Drive	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographi obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Addition analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on relate limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Glare analysis methods used: OP V1, FP V1, Route V1
- Refer to the **Help page** for assumptions and limitations not listed here.