

# **REHBEIN AIRPORT CONSULTING**

DATE 20 July 2023

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## **Proposed Hazelwood North Solar Farm Aviation Impact Assessment For Manthos Investment Pty Ltd**

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## APPENDIX A

FIGURES

## APPENDIX B

NASF GUIDELINE C – ATTACHMENT 1

## APPENDIX C

FORGESOLAR GLAREGAUGE REPORTS

Revision	Date	Description	Author	Verifier	Approver
0	4.10.2022	Draft	BMW	BJH	
1	17.05.2023	Final	BMW	BJH	
2	20.07.2023	Final	BMW	BJH	

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## 1.0 INTRODUCTION

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Mathos Investment Pty Ltd via Robert Luxmoore Project Management has engaged REHBEIN Airport Consulting to undertake an aviation assessment for the proposed Hazelwood North Solar Farm against the National Airports Safeguarding Framework (NASF) Guidelines.

Robert Luxmoore Project Management provided the following drawings for assessment:

- FTC Solar drawing no 0063I00000oAYTLAA4/A-100/Rev E - Site Plan (PDF Only)
- Martec Aerial Services Plan of Contour & Features V. 01 (GDA 2020) 29/01/2022
- Moir Landscape Architecture *Hazelwood North Solar Farm – Landscape and Visual Impact Assessment* - Draft Landscape Plan Pages 38 – 40 (PDF Only)
- Urban Fold *Hazelwood North Solar Farm – Preliminary Concept* Rev 09 (22 June 2023)

Robert Luxmoore advises that the northern and central transmission easements as illustrated on the Urban Fold *Hazelwood North Solar Farm – Preliminary Concept* Rev 09 are existing. Additional or modified transmission infrastructure, as well as the 'Other Components' listed are subject to separate assessments and are not the subject of this report.

The proposed Hazelwood North Solar Farm solar panel layout has been assessed against the NASF Guidelines as they relate to the adjacent Latrobe Regional Airport.

The power module dimensions were obtained from the Preliminary design IDEEMATEC Deutschland GmbH drawing no 6322-Hazelwood/P1-02/LTEC-1V\_27M (2022-02-28).

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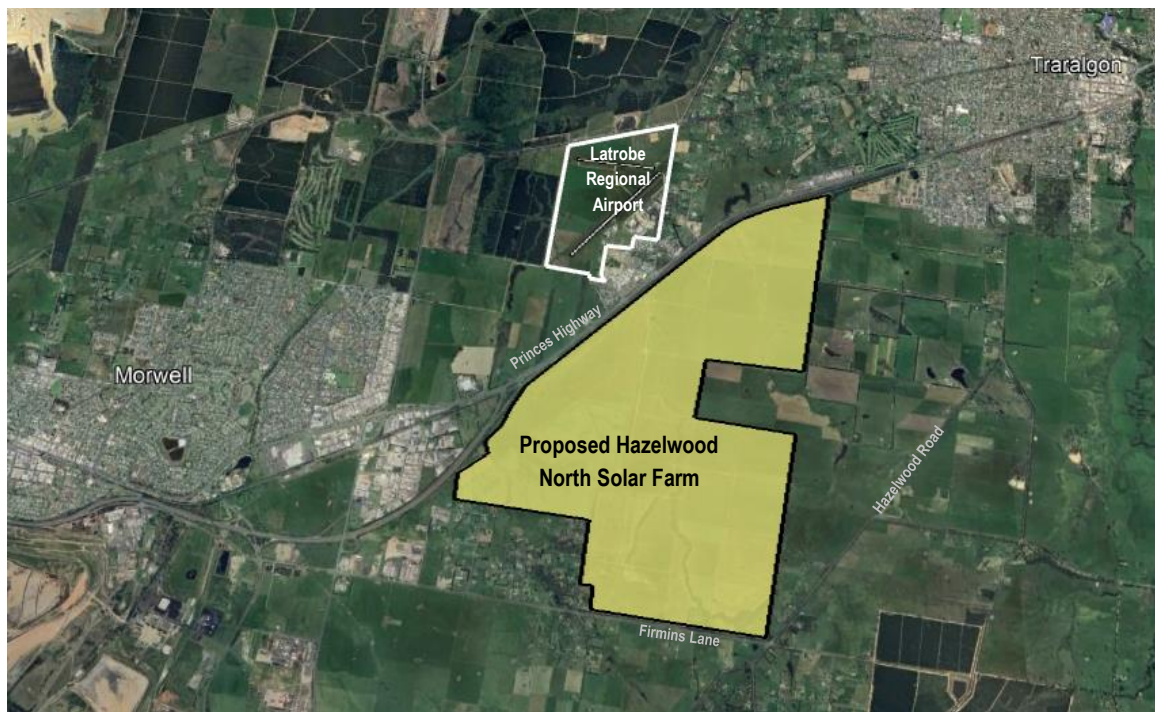
## 2.0 PROPOSED HAZELWOOD NORTH SOLAR FARM

The proposed Hazelwood North Solar Farm is a large-scale solar farm and battery storage facility (1,079 ha) with associated infrastructure such as inverter stations and access roads as shown on FTC Solar drawing no 0063I00000oAYTLAA4/A-100/RevE – Site Plan. The site is currently used for livestock grazing which is intended to remain.

The proposed Solar Farm is located to the south of Latrobe Regional Airport on the eastern side of the Princes Highway as illustrated below on **Figure 1**. The proposed solar panels are a ground mounted structure. Each proposed solar panel is 4.6 m wide and will rotate on a central axis which is approximately 1.6 m above the ground. The maximum height of the solar panel is therefore assumed at 4 m high (2.3 panel + 1.6 mount = 3.9 m). The land rises from the north to the south from between approximately 50 m AHD rising to about 99 m AHD at the southern end of the subject area. The elevation of the solar panels across the site therefore ranges from approximately 54 m AHD to 103 m AHD.

Any change to the solar panel installation as described above is likely to change the outcome of this assessment.

**Figure 1: Location Plan**



Source: Google Earth

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### 3.0 LATROBE REGIONAL AIRPORT

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Latrobe Regional Airport is a general aviation airport, owned and operated by the Latrobe City Council. The *Latrobe Regional Airport Master Plan 2015 (Updated 2019)* estimates in the order of 30,000 aircraft movements per year (pre-covid - 2019) of which 34% are made up of private, sports and recreational users, almost a third consists of flight training and the remainder is emergency services, helicopters, charter, business and warbird activity.

The airport consists of one main runway 03/21 (sealed), a gravel cross runway 09/27 and a grass strip 03L/24R<sup>1</sup>. Operators at the airport include<sup>2</sup>:

- Mahindra/GippsAero;
- Bandicoot Adventure Flights;
- Latrobe Flying Museum;
- East Coast Aviation;
- Latrobe Valley Airframes and Welding;
- Helimed 1 – Ambulance Air Rescue;
- Regional Fire Base - Department of Environment and Primary Industries;
- Latrobe Valley Aero Club; and
- Aerial Extras.

The *Latrobe Regional Airport Master Plan 2015 (Updated 2019)* adopted vision is:

*To promote the development and expansion of the Latrobe Regional Airport as a regionally significant airport providing a hub for aviation services and employment thereby adding economic and social benefit to the region whilst maintaining options for future passenger transport services.*

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<sup>1</sup> Aeronautical Information Publication Australia FAC YLTV – 1 (08 Sep 2022)

<sup>2</sup> Latrobe Regional Airport Master Plan 2015 (Updated 2019)

## 4.0 NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

The National Airports Safeguarding Framework (NASF) is a national land use planning framework that aims to:

- Improve community amenity by minimising aircraft noise-sensitive developments near airports including through the use of additional noise metrics and improved noise-disclosure mechanisms; and
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety related issues.

The National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australian Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA), has developed the National Airports Safeguarding Framework.

Commonwealth, State and Territory Ministers considered NASF at the Standing Council on Transport and Infrastructure meeting on 18 May 2012. Ministers agreed to the NASF, noting reservations from New South Wales on the format of Guideline A on measures for managing impacts of aircraft noise. The agreement represents a collective commitment from Governments to ensure that an appropriate balance is maintained between the social, economic and environmental needs of the community and the effective use of airport sites<sup>3</sup>.

NASF currently consists of seven principles and a set of nine guidelines. All Guidelines can be found at [www.infrastructure.gov.au](http://www.infrastructure.gov.au). Each has been summarised in the following sub-sections for its relevance to the subject land and likely implications the proposed Hazelwood North Solar Farm.

### 4.1 GUIDELINE A: MEASURES FOR MANAGING IMPACTS OF AIRCRAFT NOISE

NASF Guideline A is to provide guidance to Commonwealth, State, Territory and Local Government decision makers to manage the impacts of noise around airports including assessing the suitability of developments.

The proposed development would not be considered a noise sensitive use, therefore Guideline A is not relevant to the proposal and no further action in relation to Guideline A is expected.

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<sup>3</sup> [https://www.transportinfrastructurecouncil.gov.au/sites/default/files/SCOTI\\_2nd\\_Communique\\_FINAL.pdf](https://www.transportinfrastructurecouncil.gov.au/sites/default/files/SCOTI_2nd_Communique_FINAL.pdf)

## **4.2 GUIDELINE B: MANAGING THE RISK OF BUILDING GENERATED WINDSHEAR AND TURBULENCE AT AIRPORTS**

The purpose of this Guideline is to assist land use planners and airport operators in their planning and development processes to reduce the risk of building generated windshear and turbulence near runways. Applicability of this Guideline is initially determined by the location of the 'assessment trigger area' around the runway, that is:

- 1200 m or closer perpendicular from the runway centreline (or extended runway centreline);
- 900 m or closer in front of runway threshold (towards the landside of the airport); and
- 500 m or closer from the runway threshold along the runway.

Should any building developments be proposed within the assessment trigger area, Guideline B refers to the mitigation of risk by use of a 'height multiplier' (that is, the 1 in 35 rule) determining that buildings meeting this rule are not expected to create unsafe wind effects.

A portion of the north-eastern side of the subject site, along Princes Highway, is within the windshear and turbulence assessment trigger area for Runway 03/21 and Runway 09/27 as illustrated on **Figure M22057/01** (refer Appendix A). The land elevations are in the order of 60 m AHD within the assessment trigger areas. At approximately 800 m (closest point) from the runway centreline this would allow for buildings approximately 22 m ( $800 / 35 = 22.8$ ) high above the runway centreline. We have estimated the runway centreline at approximately 54 m AHD. As a result, structures up 76 m AHD ( $22 \text{ m} + 54 \text{ m AHD}$ ) would be acceptable in this area in accordance with Guideline B.

The proposed solar panels at 4 m high would not infringe the 1 in 35 rule and therefore as per Guideline B no further assessment is required.

## **4.3 GUIDELINE C: MANAGING THE RISK OF WILDLIFE STRIKES IN THE VICINITY OF AIRPORTS**

Guideline C pertains to the way in which existing land use is managed in the vicinity of airports with respect to the attraction of wildlife, particularly birds and bats. Guideline C establishes buffer areas of 3 km, 8 km and 13 km from an airport, where the Aerodrome Reference Point (ARP) is generally used as the point of origin. However, the Guideline acknowledges there may be some circumstances where multiple points of origin may be appropriate. In the case of Latrobe Regional Airport, buffer zones have been applied from the centre of each runway threshold.

### **4.3.1 WILDLIFE BUFFER ZONES**

The subject land straddles the 3 km and 8 km Wildlife buffer zone as illustrated on **Figure M22057/02** (refer Appendix A). Attachment 1 to Guideline C (Refer to Appendix B) provides guidance on the land uses that present a risk of attracting wildlife and triggers (based on distance from the airport) for

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adopting active measures to mitigate that risk. Robert Luxmoore advised that the subject land is currently used for livestock grazing which will continue upon installation of the solar farm.

The proposed activity on the subject land does not relate to any land use that Attachment 1 to Guideline C identifies as either 'high' or 'moderate' wildlife attraction risk, which are as follows:

- HIGH wildlife attraction risk:
  - Agricultural - Turf farm, Piggery, Fruit tree farm, Fish processing/packaging plant
  - Conservation - Wildlife sanctuary / conservation area – wetland
  - Recreation - Showground
  - Commercial food processing plant
  - Utilities – food/organic waste facility and putrescible waste facility (landfill and transfer station; and
- MODERATE wildlife attraction risk:
  - Agriculture – Cattle / dairy farm and poultry farm
  - Conservation – Wildlife sanctuary / conservation area – dryland
  - Recreation – Racetrack/horse riding school, Golf course, sports facility, park/playground and picnic/camping ground
  - Utilities – non-putrescible waste facility (both landfill and transfer station) and sewage/wastewater treatment facility.

#### 4.3.2 DRAFT LANDSCAPE PLAN

Australian civil aviation safety legislation includes provisions to meet Australia's international obligations. Part 139 of the Civil Aviation Safety Regulations 1998 (the Regulations) imposes an obligation on airports to reduce the risks of wildlife strikes. These regulations are administered by CASA. All Certified Airports are required to document procedures for wildlife hazard management. Often airports in putting together wildlife hazard management plans can include a list of vegetation species that are permitted/not permitted in the vicinity of the airport to assist in management of attraction of bird wildlife.

Robert Luxmoore provided pages 38 to 40 comprising the Draft Landscape Plan of the Moir Landscape Architecture *Hazelwood North Solar Farm | Landscape and Visual Impact Assessment*. The plan illustrates that the existing vegetation along Princess Highway, the southwest boundary of the site and along Hazelwood Road to the east of the site, is proposed to be retained. The Draft Landscape Plan includes additional perimeter planning along Firmins Lane, the south-eastern corner and along the eastern boundary of the site, to filter views of the project. An indicative planting schedule is provided as follows:

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Table 1: Indicative Planting Schedule

	Botanical Name	Common Name	Mature Height
Trees	<i>Allocasuarina littoralis</i>	Black Sheoak	12 m
	<i>Acacia implexa</i>	Lightwood	5 m
	<i>Acacia pycnantha</i>	Golden Wattle	8 m
	<i>Melaleuca ericifolia</i>	Swamp Paperbark	9 m
Shrubs	<i>Acacia paradoxa</i>	Hedge Wattle	4 m
	<i>Banksia marginata</i>	Silver Banksia	5 m
	<i>Bursaria spinosa</i>	Sweet Bursaria	4 m
	<i>Hakea nodosa</i>	Yellow Hakea	3 m
	<i>Indigofera australis</i>	Austral Indigo	2 m

With respect to attraction of wildlife, particularly birds, the landscape proposal when developed in detail must be submitted to Latrobe Regional Airport operator for review against Wildlife Hazard Management Plan and approval of vegetation species.

In addition, the mature vegetation maximum height will need to be considered in relation to the OLS and PANS-OPS as discussed in **Section 4.6.3**.

#### 4.4 GUIDELINE D: MANAGING THE RISK OF WIND TURBINE FARMS AS PHYSICAL OBSTACLES TO AIR NAVIGATION

Guideline D provides guidance to State/Territory and local government decision makers, airport operators and developers of wind farms to jointly address the risk to civil aviation arising from development, presence and use of wind farms and wind monitoring towers.

The proposed solar farm does not include any proposal for wind turbines or wind monitoring towers as such no further action with respect to Guideline D is required.

#### 4.5 GUIDELINE E: MANAGING THE RISK OF DISTRACTION TO PILOTS FROM LIGHTING IN THE VICINITY OF AIRPORTS

NASF Guideline E provides guidance on the risk of distractions to pilots of aircraft from lighting and light fixtures near airports. Advice for the guidance of designers and installation contractors is

provided for situations where lights are to be installed within a 6 km radius (applied from the centre point of each runway) of a known aerodrome.

The CASA *Part 139 (Aerodromes) Manual of Standards 2019*, Section 9.144: *Lights – requirements for zones*, sets out the restrictions and degree of interference ground lights can cause as a pilot approaches. Within the 6 km radius is a primary area which is divided into four light control zones: A, B, C and D. These zones reflect the varying degrees of interference ground lights may cause to pilots. The subject land is within the 6 km radius of Latrobe Regional Airport and outside the lateral extents of the primary area (light control zones A, B, C and D) as illustrated on **Figure M22057/03** (refer Appendix A).

Any lighting that may be proposed within this area should not infringe the provisions of regulation 94 of the Civil Aviation Regulations 1988 (CAR 1988). The regulations allow for CASA to authorise notice upon the owner of the place to remove or screen effectually the light where the light is likely to endanger the safety of aircraft, whether by reason of glare, or by causing confusion.

Glare caused by reflective surfaces can also be a source of distraction to pilots. As a proposed large scale solar panel installation, particular consideration must be given to any glare/reflectivity affecting aircraft in various stages of flight as well as ATC operations. A solar glare hazard analysis has been undertaken (refer **Section 5.0**) to assist Latrobe Regional Airport operators and CASA in their review of the proposal.

## 4.6 GUIDELINE F: MANAGING THE RISK OF INTRUSIONS INTO THE PROTECTED OPERATIONAL AIRSPACE OF AIRPORTS

NASF Guideline F is designed to address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings and cranes as well as trees in the vicinity of airports. The Guideline also addresses activities that could cause air turbulence and/or emissions of steam, gas, smoke, dust or other particulate matter that could affect the normal flight of aircraft operating in the prescribed airspace in accordance with Visual Flight Rules (VFR).

### 4.6.1 OBSTACLE LIMITATION SURFACES (OLS)

The Obstacle Limitation Surfaces (OLS) is the protection for aircraft operating by visual reference in visual meteorological conditions. It is a series of virtual surfaces around a runway, which together establish the height limits for objects in and around an airport.

The proposed solar farm is within the lateral extents of the Latrobe Regional Airport OLS inner horizontal and conical surfaces as illustrated on **Figure M22057/04** (refer Appendix A).

Most of the land lies below of the OLS inner horizontal surface at 96.5 m AHD. The ground level beneath the OLS inner horizontal surface is less than 90 m AHD. The solar panels are proposed to

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extend to a maximum 4 m above the ground. A maximum elevation of 94 m AHD would remain below the OLS inner horizontal surface at 96.5 m AHD.

The OLS conical surface lies over the south-eastern end of the land. The maximum ground level under the OLS is of 99 m AHD. The maximum elevation of the solar panels in this area at 103 m AHD would also remain below the OLS conical surface at 104.5 m AHD.

With the solar panel installation as described above, there is no infringement of the Latrobe Regional Airport OLS. The proposal, however, should be provided to the airport operator to advise of the installation and that the OLS is not infringed.

#### 4.6.2 PANS-OPS AIRSPACE

The PANS-OPS protective surfaces are for the protection of aircraft operating under instrument flight rules. The subject land is within the lateral extents of the following existing PANS-OPS procedure areas:

- RNAV GNSS Runway 03
- RNAV GNSS Runway 21
- NDB-A
- NDB-B
- Circling Cat A/B; and
- Circling C

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The most restrictive PANS-OPS procedure over the site we have estimated to be the RNAV GNSS Runway 21 estimated at 121.6 m AHD. The proposed solar panel installation at a maximum elevation of 103 m AHD would remain below the existing PANS-OPS surfaces as illustrated on **Figure M22057/05** (refer Appendix A).

The proposal should be submitted to Airservices Australia for confirmation of PANS-OPS limits over the site, as well as assessment against all existing and any planned Airservices procedures and all Communication, Navigation and Surveillance (CNS) facilities.

#### 4.6.3 DRAFT LANDSCAPING PLAN

As discussed in **Section 4.3** the proposed planting schedule will need to be considered in relation to the Latrobe Regional Airport airspace as it relates to mature vegetation height. The indicative planting schedule as shown in Table 1 identifies the maximum mature height of vegetation to be the Black Sheoak (*Allocasuarina littoralis*) at 12 m high. Based on the ground contours, the areas identified as perimeter planting on page 38 of the Draft Landscape Plan, trees at a maximum mature height of 12 m appear to remain below the OLS and the PANS-OPS as shown on **Figures M22057/04** and **M22057/05**. Once the Draft Landscape Plan is developed in detail all vegetation should be confirmed to remain below the OLS and PANS-OPS.

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## 4.7 GUIDELINE G: PROTECTING AVIATION FACILITIES – COMMUNICATION, NAVIGATION AND SURVEILLANCE (CNS)

The purpose of Guideline G is to formalise the protection of CNS facilities in land use planning decisions. This Guideline provides land use planning guidance to better protect CNS facilities which support the system and processes in place by various agencies to safely manage the flow of aircraft into, out of and across Australian airspace. The Guideline also informs procedures which ensure development associated activities within Building Restricted Areas (BRA) of CNS facilities do not adversely affect the facility or cause interference for air traffic controllers or aircraft in transit.

Airservices Australia operates a Non-Directional Beacon (NDB) navigation aid at Latrobe Regional Airport which provides lateral guidance to aircraft operating in marginal weather conditions. The NDB is located on the north side of Runway 09/27. Building Restricted Areas are set out in NASF Guideline G for navigation aids, to prevent interference with the performance and integrity of the navigation aid's signal.

The Building Restricted Area for the NDB extend to a radius of 300 m from the NDB antenna. The subject land is approximately 1,400 m south of the NDB and is therefore outside the lateral extents of the NDB building restricted area as set out in Guideline G.

In accordance with Guideline G the installation of the solar farm will not interfere with the performance and integrity of the NDB and as such no further assessment or investigation is required. However, the proposal should be submitted to Airservices Australia for assessment against all existing and any planned CNS facilities.

## 4.8 GUIDELINE H: PROTECTING STRATEGICALLY IMPORTANT HELICOPTER LANDING SITES

Guideline H provides guidance to State/Territory and local government decision makers as well as the owners/operators of identified strategically important Helicopter Landing Sites (SHLS) for the ongoing operations and to ensure SHLS are not compromised by any propose development. For the purposes of this Guideline, an SHLS is an area not located on an aerodrome.

A SHLS is that as identified as being of strategic importance as well as associated with a hospital, elevated in a populated area and/or subject to instrument flight procedures. The flight path protection areas extend 3.5 km from the SHLS. The Latrobe Regional Hospital is adjacent the proposed solar farm on north side of Princes Highway and includes a Helicopter Landing Site (HLS).

The Latrobe Planning Scheme Map 85 DDO identifies DDO5 and DDO6 partially within the subject land. Both DDO5 and DDO6 relate to the Latrobe Regional Hospital Emergency Medical Services Helicopter Flight Path Protection as illustrated below on **Figure 2**

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The objective of Latrobe Planning Scheme Schedule 5 and Schedule 6 to clause 43.02 Design and Development Overlay (DDO5 & DDO6) is to ensure that the height of all buildings and works are constrained within specified limits to avoid creating a hazard to aircraft in the vicinity of the Latrobe Regional Hospital and to facilitate safe Emergency Medical Service (EMS) helicopter operations. A permit is not required to construct a building or carry out works with the height of less than 56.44 m AHD within DDO5 and 68.4 m AHD within DDO6.

The subject land within DDO5 appears to be the buffer area and the concept layout does not illustrate solar panels in this area. The subject land within the DD06 area is estimated to be between 60 - 65 m AHD. Should solar panels in this area exceed the elevation of 68.4 m AHD the permit process and decision guidelines will need to be followed. Due to the proximity of site to the Latrobe Regional Hospital HLS, any construction that may take place either in close proximity to the DDO or within the extents of the DDO, we recommend consultation with the Department of Health to ensure there is no impact to helicopter operations to and from the Latrobe Regional Hospital HLS.

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#### 4.9 GUIDELINE I: MANAGING THE RISK IN PUBLIC SAFETY ZONES AT THE ENDS OF RUNWAYS

Guideline I provides guidance on approaches for the application of Public Safety Areas (PSA) planning framework in Australian jurisdictions. The Guideline is intended to ensure there is no increase in risk from new development and assist land-use planners to better consider public safety when assessing development proposals, rezoning requirements and when developing strategic land use plans.

Latrobe Regional Airport Master Plan 2015 (Updated 2019) has identified Public Safety Areas at the ends of Runway 03/21. The proposed solar farm is not within the extents of the public safety areas as illustrated on **Figure M22057/06** (refer Appendix A).

No further assessment in relation to the Latrobe Regional Airport PSA is therefore required.

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## 5.0 SOLAR GLARE HAZARD ANALYSIS

### 5.1 ASSESSMENT METHODOLOGY

A Solar glare hazards analysis was undertaken using the ForgeSolar GlareGauge tool, which analyses the location, duration and extent of glare from solar panel installations against aircraft flight paths at airports and other defined observation points, such as air traffic control towers. The tool classifies glare into three levels:

- 'Green' Glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time;
- 'Yellow' Glare is glare with potential for after-image (flash blindness) when observed prior to a typical blink response time; and
- Glare with potential for permanent eye damage (retinal burn).

These glare hazard zone boundaries approximate actual ocular impact outcomes which encompass a continuous spectrum. According to ForgeSolar, "after image" is the term applied to a common retinal phenomenon that most people have experienced at some point or other, such as the effect that occurs when a photo with flash is taken in front of a person who then sees spots in front of their eyes for a few seconds. A more extreme example of "after-image" occurs when staring at the sun.

### 5.2 SITE CONFIGURATION & COMPONENTS

REHBEIN Airport Consulting, using ForgeSolar GlareGauge software, has completed three (3) photovoltaic glare analyses on the proposed Hazelwood North solar panel installation. Each analysis was completed using the below component inputs, as shown in on **Table 2**.

**Table 2: Component Inputs & Assumptions**

Component	Setting	Source
Solar Panel Installation Layout	16 PV Arrays	FTC Solar drg no 0063I00000oAYTLAA4/A-100/RevE (FTC Solar Preliminary Drawing)  The layout was estimated in sections broadly around the access road arrangement and within the limits of the allowable PV array and max. vertices within the ForgeSolar tool. The PV Array are identified as shown below on <b>Figure 3</b>
Axis Tracking	Single Axis	Sections were based on the Voyager Trackers Specification Sheet (DOC: 06-02-DS-001-H) which states the design specifications.
Backtracking Method	Shade-slope	

Tracking Axis Orientation	0°	Typical/assumed setting for the Southern Hemisphere
Maximum Tracking Angle	50°	FTC Solar Drawing tracker description
Resting Angle	0°	The final east/west rotation angle when sun is outside the rotation range during backtracking angle is a typical/default program setting.
Ground Coverage Ratio	45%	FTC Solar Drawing tracker description
Panel Material	Smooth glass with Anti-Reflective Coating	Documentation provided on various solar panels in the Hazelwood NSF – Documentation suggest glass with anti-reflective coatings
Vary reflectivity with sun position	Yes	Program default setting
Corelate slope error with surface type	Yes	Program default setting
Slope Error	8.43 mrad	Program default setting

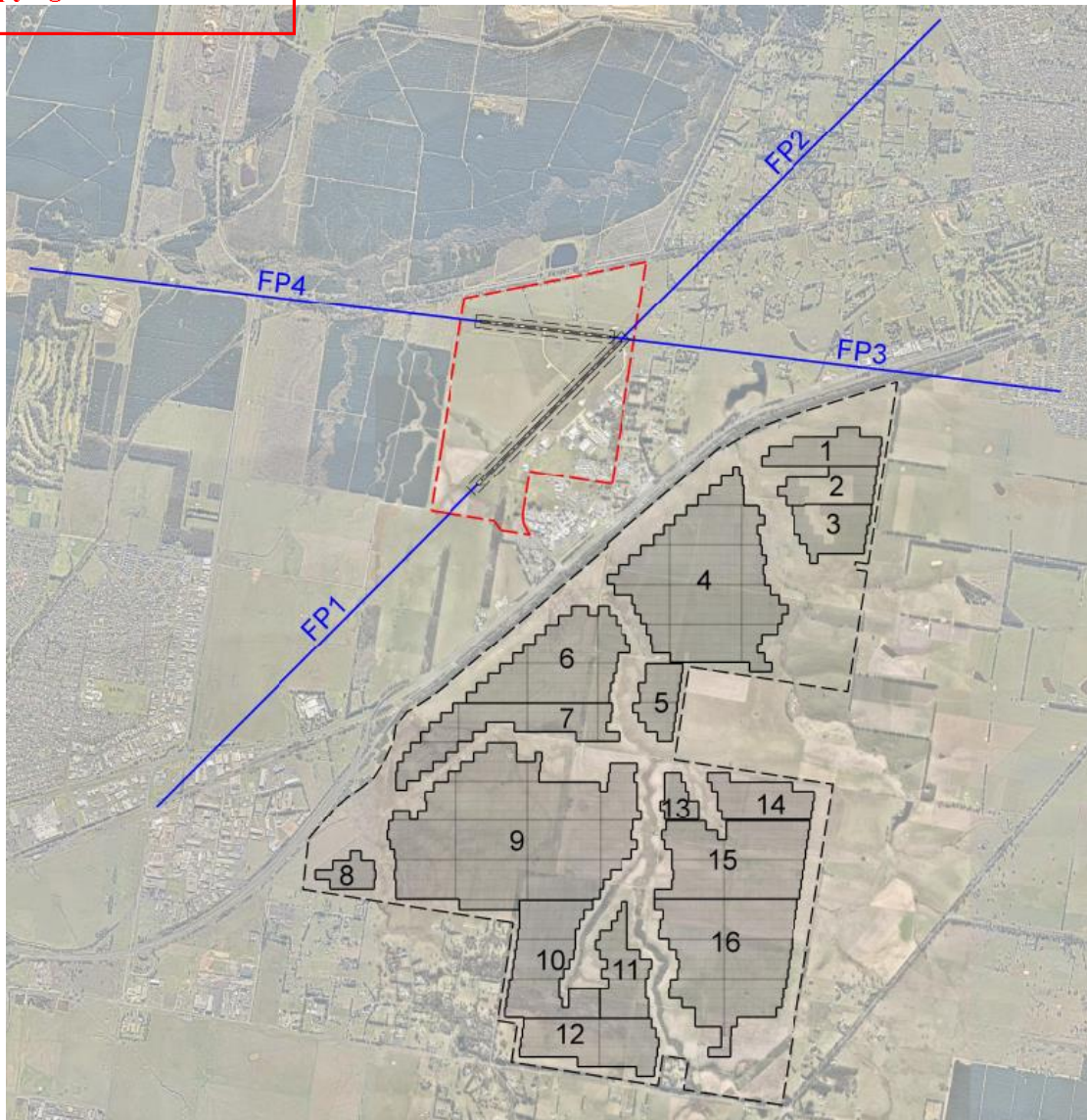
As the software only allows a maximum of 20 arrays to be defined within each analysis project, for the purposes of analysis, the site was divided into 16 PV arrays configured broadly on the site access roads and the waterway divisions as shown on **Figure 3** below. These arrays/footprints are defined by a latitude, longitude, elevation and height and are the areas that are approximated to be filled with PV modules by the software.

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Figure 3. Flight Paths and PV Arrays



The ForgeSolar GlareGuage tool modifies the vertex elevations where they do not initially reside on a single planar surface. The user guidance suggests that for more accuracy, the user should perform runs using minimum and maximum values for the vertex heights to bound the height of the plane containing the solar array.

As such, REHBEIN Airport Consulting has conducted three (3) analyses as follows:

- *Hazelwood – 1* – where each PV array is aligned with a plane defined by the total heights of the coordinates outlined in the Google map;
- *Hazelwood – 1\_Min* – where each PV array is bound to the minimum vertex height of the plane; and

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Hazelwood - 1\_Max – where each PV array is bound to the maximum vertex height of the plane.

### 5.3 RESULTS

Each of the three (3) analysis were conducted on the same component inputs. The results are summarised below in **Table 3** with each ForgeSolar report provided in **Appendix C**.

**Table 3: Summary of Results**

	Hazelwood - 1	Hazelwood - 1_Min	Hazelwood - 1_Max	Hazelwood - 1	Hazelwood - 1_Min	Hazelwood - 1_Max
	"Green" Glare (minutes)			"Yellow" Glare (minutes)		
PV array 1	1,922	2,426	2,361	1,822	1,881	1,848
PV array 2	2,013	2,552	2,326	1,473	1,403	1,371
PV array 3	2,012	2,499	2,432	105	180	172
PV array 4	1,489	1,755	1,653	2,827	2,590	2,402
PV array 5	123	1,049	1,030	0	35	28
PV array 6	1,559	1,459	1,472	487	1,342	1,324
PV array 7	1,433	1,057	982	172	1,093	1,068
PV array 8	174	160	178	0	0	0
PV array 9	511	496	517	538	506	521
PV array 10	0	0	0	0	0	0
PV array 11	48	28	26	0	0	0
PV array 12	0	0	0	0	0	0
PV array 13	0	430	418	0	0	0
PV array 14	763	358	352	321	17	14
PV array 15	58	173	164	0	0	0
PV array 16	0	0	0	0	0	0

Generally, the ForgeSolar GlareGauge results predicts both 'green glare' and 'yellow glare' could be encountered by pilots on approach to Latrobe Regional Airport Runway 03 (FP1), Runway 27 (FP3) and Runway 09 (FP4) as a result of the proposed Hazelwood North Solar Farm.

### 5.4 EVALUATION

The Civil Aviation Safety Authority (CASA) currently has no criteria for assessing the acceptability of solar glare with respect to solar panel installations using theoretical glare analysis tool(s). In REHBEIN Airport Consulting's experience CASA may provide comment to the airport operator should the airport operator submit the solar glare analysis to CASA. However, the responsibility lies with the airport operator to make the decision on acceptability of solar installations within the context of the airport.



Under the civil aviation legislation, CASA may instruct removal of solar panels and other reflective surfaces should any safety impacts or concerns be apparent after the installation, at the responsibility of the owner of the facility causing the hazard. As such it is prudent that the analysis of the glare results are understood by the airport operator as the risk, should the impact be adverse to the safety of aircraft operations, is that the owner of the facility will need to remove or alter the sections causing the hazard.

While CASA will not approve (or refuse) proposals for installation of solar panels, it will provide comment, should an airport operator submit a solar glare analysis to CASA. In providing comment, CASA has previously advised that it would be guided by the US Federal Aviation Administration (FAA) approach to determining likely acceptability of solar panel installations. In May 2021, the FAA replaced its Interim Policy (published on 23 October 2013) which had provided clear criteria for acceptability of the installation of solar panels based on the nature of glare predicted using GlareGauge analysis. The current FAA Policy<sup>4</sup> states that the FAA have now

*... concluded that in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass-façade buildings, parking lots and similar features.*

However, the FAA encourages proponents of such systems to consider ocular impact for proposed systems and coordinate with the local airport authority to ensure no impact to the safety of airport operations.

The results summarised in **Section 5.3** show that 'yellow glare' is predicted to be encountered at points along the 2 nautical mile final of Runway 03 and 27 as well Runway 09. As the responsibility lies with the airport operator, in this case Latrobe Regional Council, in consultation with CASA to make a decision on the acceptability of the solar panel installation, it may be beneficial to detail further the specifics of the 'yellow glare' identifying matters such as predicted locations along flight paths, time of year and duration of glare occurrence. Robert Luxmoore has advised that this detail is to be undertaken at a later stage, if required, to assist in discussions with the airport operator and CASA to inform a decision of the impact to the safety of aircraft operations.

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<sup>4</sup> Rules and Regulations. Federal Register Vol.86, No.89 Tuesday May 11, 2021 Department of Transportation Federal Aviation Administration 14 CFR Part 77 *Federal Aviation Administration Policy: Review of Solar Energy System Projects on Federally-Obligated Airports*

## 6.0 CONCLUSION

---

REHBEIN Airport Consulting has conducted a NASF Guidelines assessment and a ForgeSolar glare analysis on the proposed Hazelwood North Solar Farm located south of Latrobe Regional Airport.

The results of the aviation impact assessment are summarised below:

- Would remain below the 1 in 35 surfaces as per Guideline B: Managing The Risk Of Building Generated Windshear And Turbulence At Airports. No further assessment is required in accordance with Guideline B.
- The solar farm as a land use does not relate to land uses with 'high' or 'moderate' wildlife attraction risk as per Guideline C: Managing The Risk Of Wildlife Strikes In The Vicinity Of Airports. However, the Draft Landscaping Plan in particular the planned vegetation to be planted on the perimeter of the solar farm site must be submitted to the airport operator to ensure the proposed vegetation is not a wildlife (in particular bird) attraction.
- Is within the 6 km radius of the Latrobe Regional Airport and as such any lighting that may be proposed within this area should not infringe the provision of regulation 94 of the Civil Aviation Regulations 1988
- The proposed solar panels as identified in this report would not infringe the Latrobe Regional Airport Obstacle Limitation Surfaces or the PANS-OPS surfaces ;
- Proposed perimeter planting vegetation mature height at maximum 12 m must remain below the Latrobe Regional Airport Obstacle Limitation Surfaces and the PANS-OPS surfaces.
- Is outside the lateral extents of the public safety areas for Latrobe Regional Airport as per Guideline I: Managing The Risk In Public Safety Zones At The Ends Of Runways, as such no further assessment in accordance with Guideline I is required.
- Solar glare hazard analysis predicts 'yellow glare' (glare with potential for temporary after image) may be produced on the approach paths to Runway 03, Runway 27 and Runway 09. The analysis results should be submitted to the airport operator and the local planning authority. As advised by Robert Luxmoore, further detail of the 'yellow glare' predicted will be provided in due course to assist in discussions with the Latrobe Regional Airport operator and decision making on the acceptability of the solar installations within the context of the airport.

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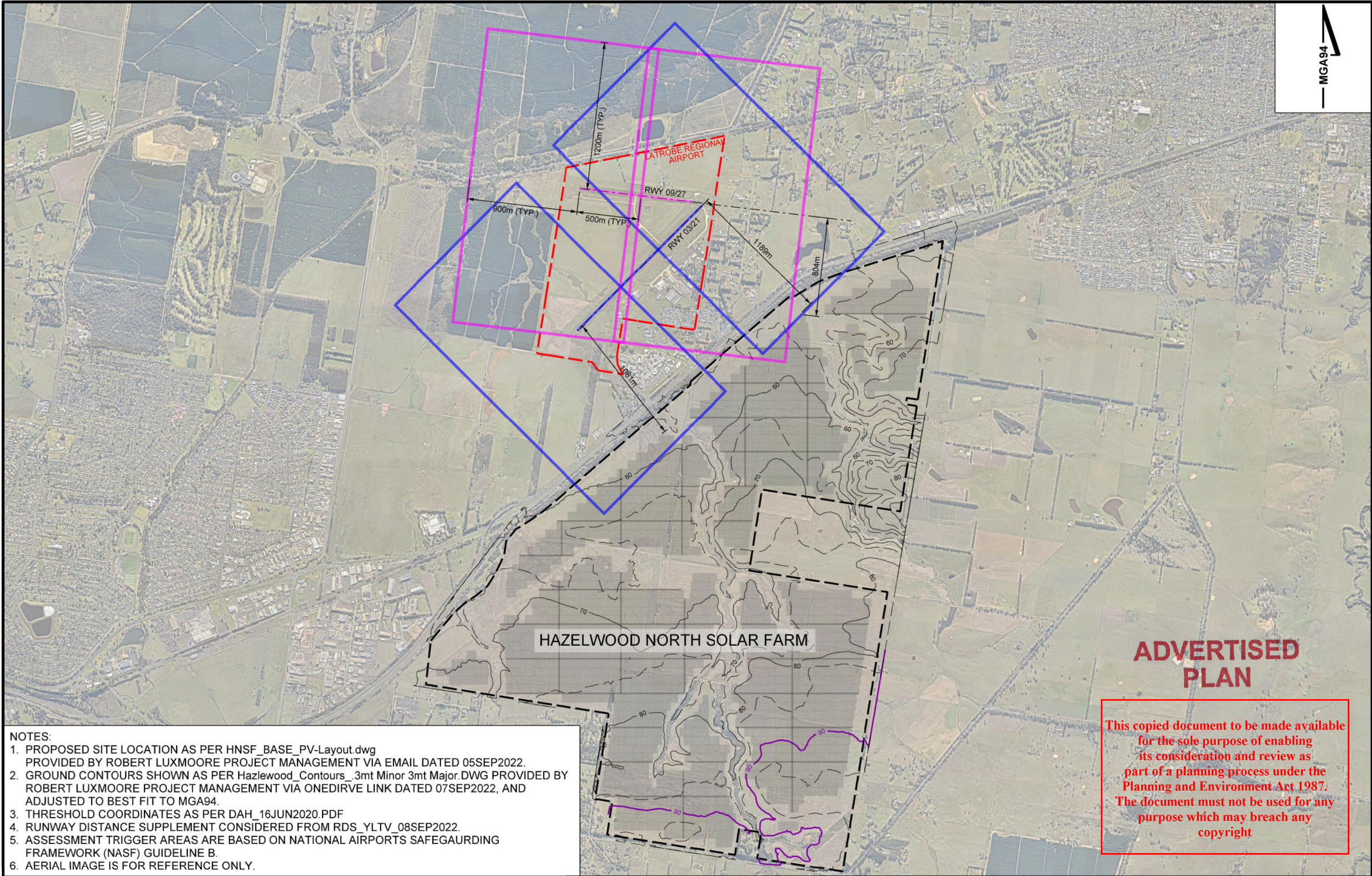
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## APPENDIX A



### FIGURES





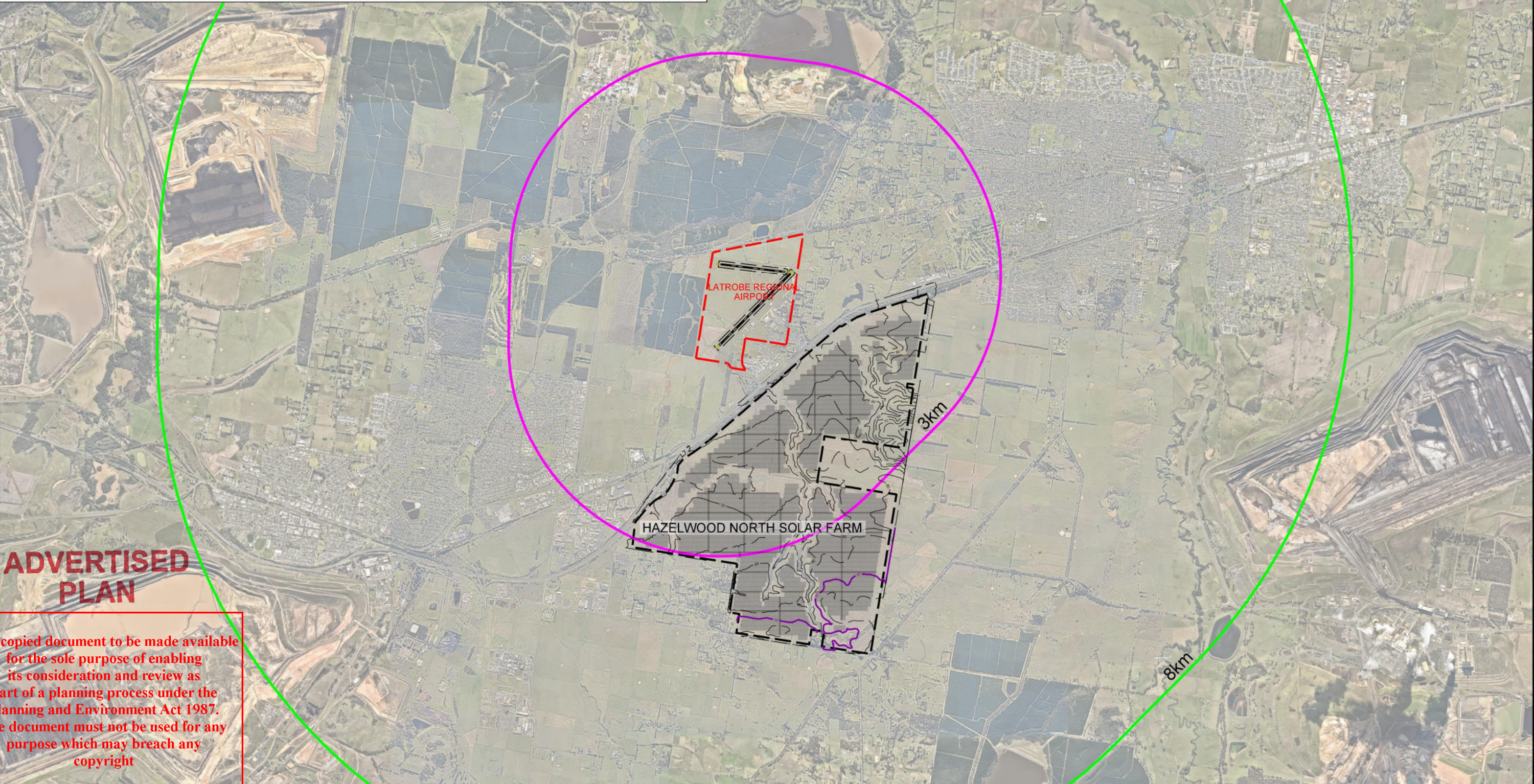
- NOTES:
1. PROPOSED SITE LOCATION AS PER HNSF\_BASE\_PV-Layout.dwg PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA EMAIL DATED 05SEP2022.
  2. GROUND CONTOURS SHOWN AS PER Hazelwood\_Contours\_3mt Minor 3mt Major.DWG PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK DATED 07SEP2022, AND ADJUSTED TO BEST FIT TO MGA94.
  3. THRESHOLD COORDINATES AS PER DAH\_16JUN2020.PDF
  4. RUNWAY DISTANCE SUPPLEMENT CONSIDERED FROM RDS\_YLTV\_08SEP2022.
  5. ASSESSMENT TRIGGER AREAS ARE BASED ON NATIONAL AIRPORTS SAFEGAURDING FRAMEWORK (NASF) GUIDELINE B.
  6. AERIAL IMAGE IS FOR REFERENCE ONLY.

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Project	PROPOSED HAZELWOOD NORTH SOLAR FARM AVIATION ASSESSMENT	Client	MANTHOS INVESTMENTS PTY LTD		 <div>SUITE 1, GROUND FLOOR 55 WALSH STREET WEST MELBOURNE VIC 3003 TELEPHONE (03) 9328 4166 EMAIL info@rehbein.aero WEB www.rehbein.aero</div>			Figure No		M22057/01	Scale 128,000	A3
			Title	NASF GUIDELINE B BUILDING GENERATED WINDSHEAR & TURBULENCE ASSESSMENT TRIGGER AREAS			0	04 10 22	Rev			
Drawn MK		Checked BMW		Approved BJH								



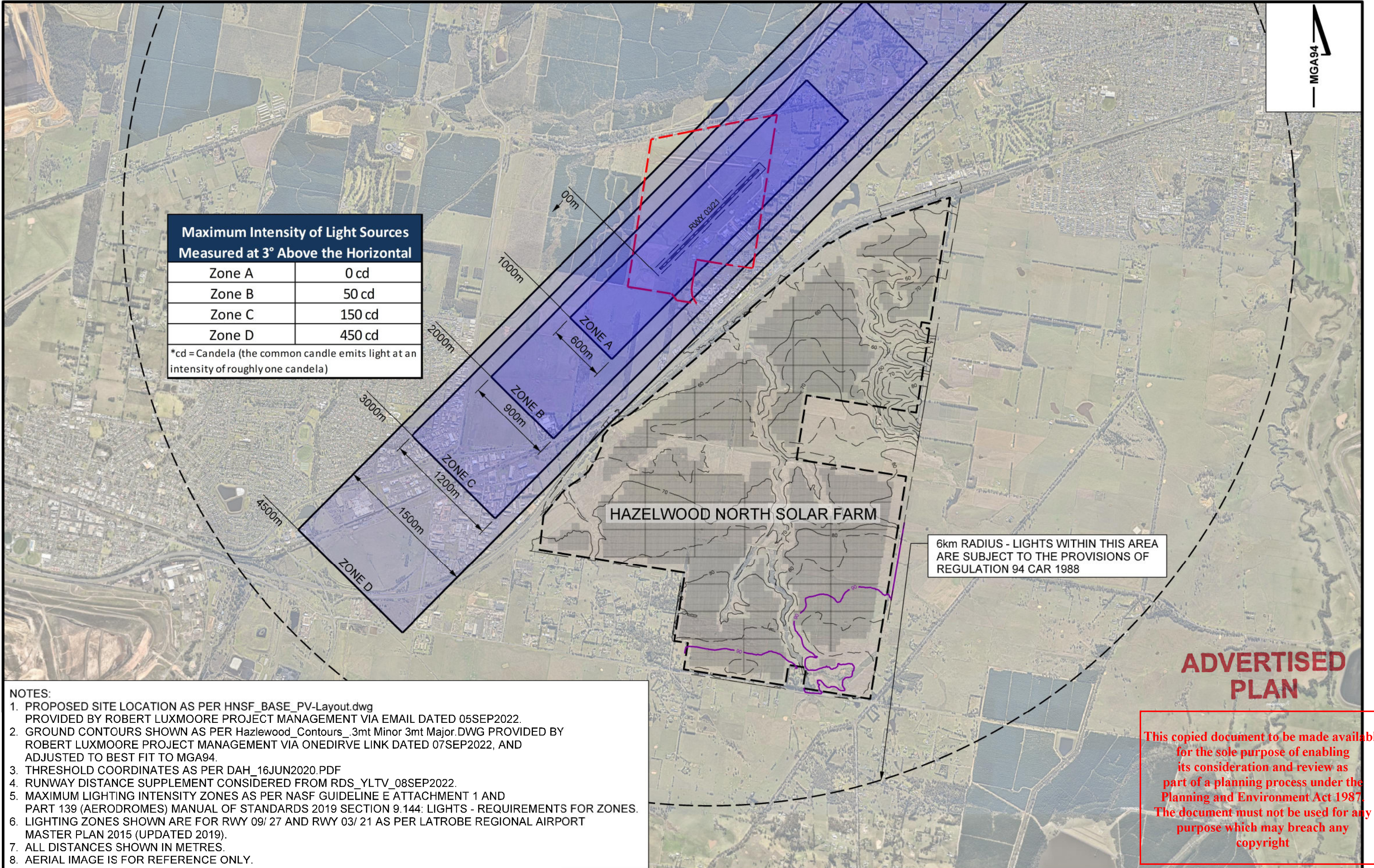
- NOTES:
- 1. PROPOSED SITE LOCATION AS PER HNSF\_BASE\_PV-Layout.dwg PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA EMAIL DATED 05SEP2022.
  - 2. GROUND CONTOURS SHOWN AS PER Hazlewood\_Contours\_3mt Minor 3mt Major.DWG PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK DATED 07SEP2022, AND ADJUSTED TO BEST FIT TO MGA94.
  - 3. THRESHOLD COORDINATES AS PER DAH\_16JUN2020.PDF
  - 4. RUNWAY DISTANCE SUPPLEMENT CONSIDERED FROM RDS\_YLTV\_08SEP2022.
  - 5. WILDLIFE STRIKES AIRPORT BUFFER ZONES ARE BASED ON NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK (NASF) GUIDELINE C VERSION 3.1.4
  - 6. THE LIMITS OF THE AREA IS DEFINED BY AN ARC DRAWN FROM THE CENTRE OF THE THRESHOLD OF EACH USABLE RUNWAY WITH A RADIUS APPROPRIATE TO THE BUFFER ZONE, AND TANGENT LINES DRAWN FROM THE EXTREMITIES OF THE ADJACENT ARCS.



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Project	PROPOSED HAZELWOOD NORTH SOLAR FARM AVIATION ASSESSMENT	Client	MANTHOS INVESTMENTS PTY LTD	<div><div>REHBEIN</div><div> Airport Consulting</div></div> <div><div> CONSULT AUSTRALIA</div><div>SUITE 1, GROUND FLOOR 55 WALSH STREET WEST MELBOURNE VIC 3003 TELEPHONE (03) 9328 4166 EMAIL info@rehbein.aero WEB www.rehbein.aero</div></div>			Figure No  M22057/02	Scale: 155,000	A3			
			Title		NASF GUIDELINE C WILDLIFE STRIKE AIRPORT BUFFER ZONES	0				04 10 22	Rev	Date
		Drawn MK		Checked BMW	Approved BJH							





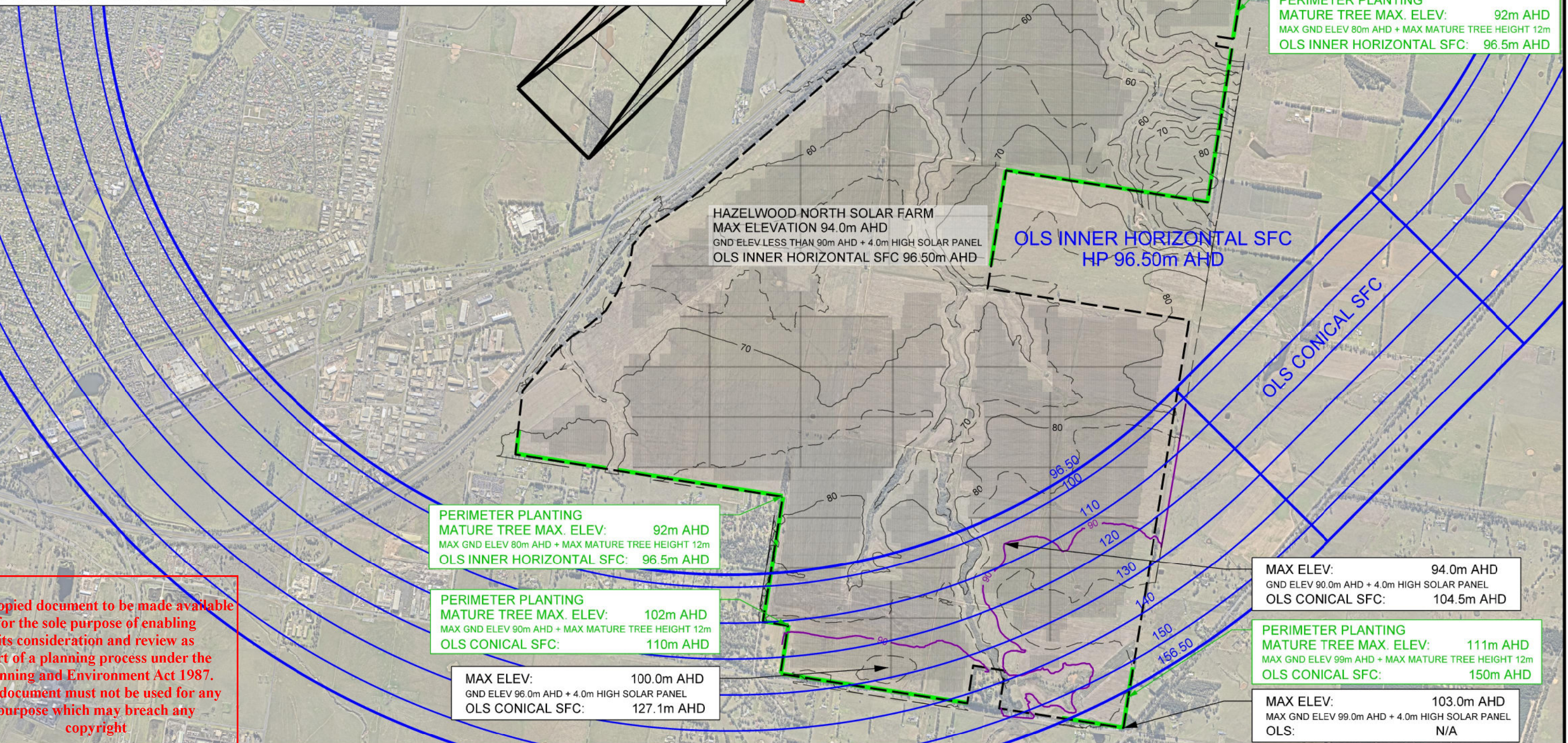
Maximum Intensity of Light Sources Measured at 3° Above the Horizontal	
Zone A	0 cd
Zone B	50 cd
Zone C	150 cd
Zone D	450 cd
*cd = Candela (the common candle emits light at an intensity of roughly one candela)	

- NOTES:
1. PROPOSED SITE LOCATION AS PER HNSF\_BASE\_PV-Layout.dwg PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA EMAIL DATED 05SEP2022.
  2. GROUND CONTOURS SHOWN AS PER Hazlewood\_Contours\_3mt Minor 3mt Major.DWG PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK DATED 07SEP2022, AND ADJUSTED TO BEST FIT TO MGA94.
  3. THRESHOLD COORDINATES AS PER DAH\_16JUN2020.PDF
  4. RUNWAY DISTANCE SUPPLEMENT CONSIDERED FROM RDS\_YLTV\_08SEP2022.
  5. MAXIMUM LIGHTING INTENSITY ZONES AS PER NASF GUIDELINE E ATTACHMENT 1 AND PART 139 (AERODROMES) MANUAL OF STANDARDS 2019 SECTION 9.144: LIGHTS - REQUIREMENTS FOR ZONES.
  6. LIGHTING ZONES SHOWN ARE FOR RWY 09/ 27 AND RWY 03/ 21 AS PER LATROBE REGIONAL AIRPORT MASTER PLAN 2015 (UPDATED 2019).
  7. ALL DISTANCES SHOWN IN METRES.
  8. AERIAL IMAGE IS FOR REFERENCE ONLY.


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		Title	NASF GUIDELINE E MAXIMUM LIGHTING INTENSITY ZONES		0	04 10 22	Rev	Date	File Ref M22057	Sheet Size	
				Drawn MK	Checked BMW	Approved BJH					



- NOTES:
1. PROPOSED SITE LOCATION AS PER HNSF\_BASE\_PV-Layout.dwg PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA EMAIL DATED 05SEP2022.
  2. PROPOSED SOLAR PANEL HEIGHT CALCULATED AS PER OTG Energy-6322\_Hazelwood-LTEC-1P\_27M-P-02.PDF PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK.
  3. GROUND CONTOURS SHOWN AS PER Hazlewood\_Contours\_3mt Minor 3mt Major.DWG PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK DATED 07SEP2022, AND ADJUSTED TO BEST FIT TO MGA94.
  4. PERIMETER PLANTING ELEVATION AS PER 2228\_LVIA\_Rev2\_20230306 Landscape Plans.PDF
  5. THRESHOLD COORDINATES AS PER DAH\_16JUN2020.PDF
  6. RUNWAY DISTANCE SUPPLEMENT CONSIDERED FROM RDS\_YLTV\_08SEP2022.
  7. OBSTACLE LIMITATION SURFACES AS PER LATROBE REGIONAL AIRPORT MASTER PLAN 2015 (UPDATED 2019).
  8. ELEVATIONS SHOWN ARE MEASURED AS METRES ABOVE THE AUSTRALIAN HEIGHT DATUM (m AHD) UNLESS OTHERWISE NOTED.
  9. HP DENOTES HORIZONTAL PLANE.
  10. COORDINATES SHOWN ARE TO THE MAP GRID OF AUSTRALIA (MGA94 ZONE 56).
  11. AERIAL IMAGE IS FOR REFERENCE ONLY.

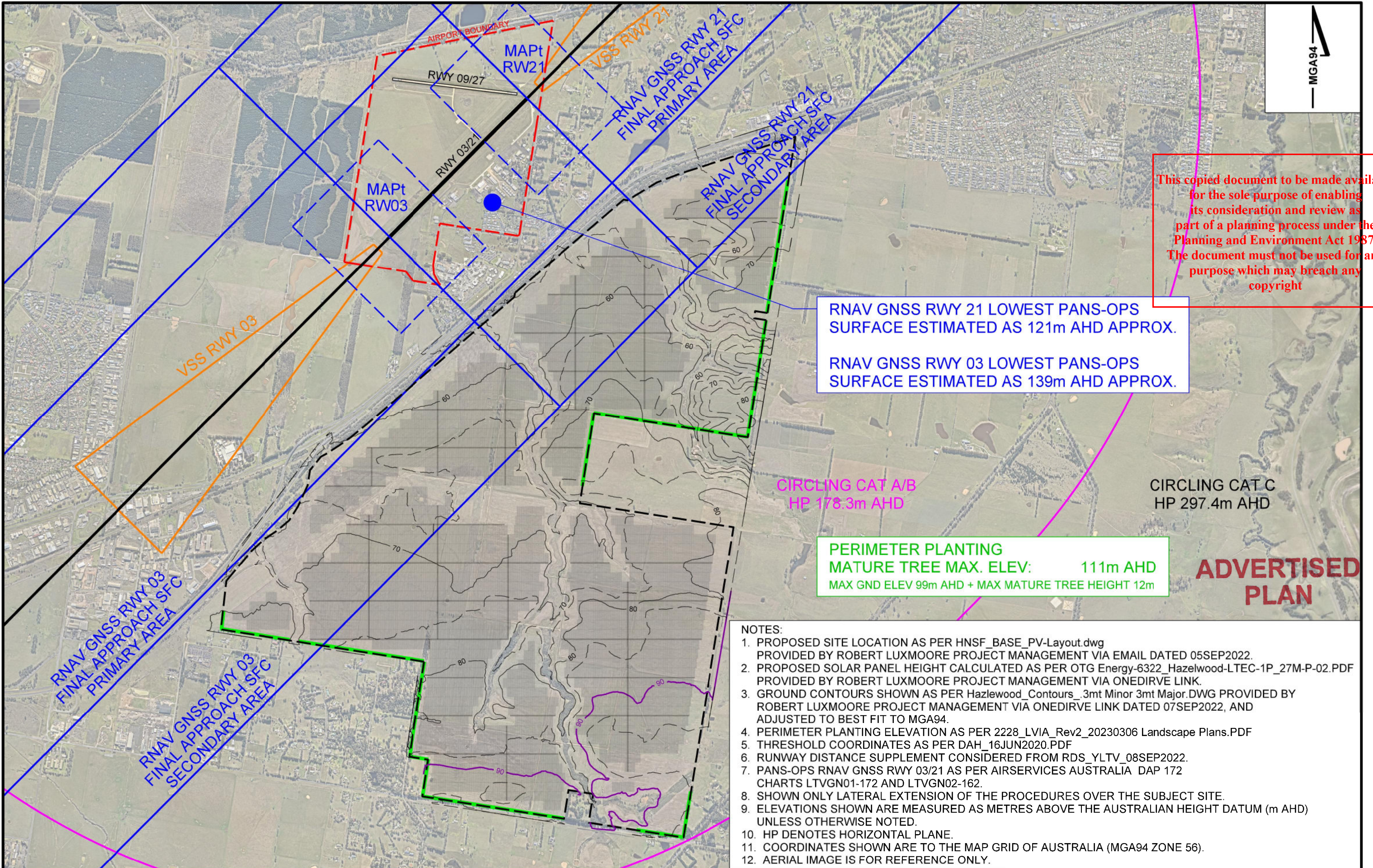


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Project	PROPOSED HAZELWOOD	Client	MANTHOS INVESTMENTS PTY LTD	REHBEIN  SUITE 1, GROUND FLOOR 55 WALSH STREET WEST MELBOURNE VIC 3003 TELEPHONE (03) 9328 4166 EMAIL info@rehbein.aero WEB www.rehbein.aero			Figure No.		
	NORTH SOLAR FARM		Title		OBSTACLE LIMITATION SURFACES LATROBE REGIONAL AIRPORT MASTER PLAN 2015 (UPDATED 2019)			M22057/04	
	AVIATION ASSESSMENT								
						1	17 05 23	Scale 1:22,000	A3
						0	04 10 22	File Ref M22057	
	Drawn MK	Checked BMW	Approved BJH	Rev	Date				

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- NOTES:
1. PROPOSED SITE LOCATION AS PER HNSF\_BASE\_PV-Layout.dwg PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA EMAIL DATED 05SEP2022.
  2. PROPOSED SOLAR PANEL HEIGHT CALCULATED AS PER OTG Energy-6322\_Hazelwood-LTEC-1P\_27M-P-02.PDF PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK.
  3. GROUND CONTOURS SHOWN AS PER Hazlewood\_Contours\_3mt Minor 3mt Major.DWG PROVIDED BY ROBERT LUXMOORE PROJECT MANAGEMENT VIA ONEDIRVE LINK DATED 07SEP2022, AND ADJUSTED TO BEST FIT TO MGA94.
  4. PERIMETER PLANTING ELEVATION AS PER 2228\_LVIA\_Rev2\_20230306 Landscape Plans.PDF
  5. THRESHOLD COORDINATES AS PER DAH\_16JUN2020.PDF
  6. RUNWAY DISTANCE SUPPLEMENT CONSIDERED FROM RDS\_YLTV\_08SEP2022.
  7. PANS-OPS RNAV GNSS RWY 03/21 AS PER AIRSERVICES AUSTRALIA DAP 172 CHARTS LTVGN01-172 AND LTVGN02-162.
  8. SHOWN ONLY LATERAL EXTENSION OF THE PROCEDURES OVER THE SUBJECT SITE.
  9. ELEVATIONS SHOWN ARE MEASURED AS METRES ABOVE THE AUSTRALIAN HEIGHT DATUM (m AHD) UNLESS OTHERWISE NOTED.
  10. HP DENOTES HORIZONTAL PLANE.
  11. COORDINATES SHOWN ARE TO THE MAP GRID OF AUSTRALIA (MGA94 ZONE 56).
  12. AERIAL IMAGE IS FOR REFERENCE ONLY.

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								M22057/05			
		Title	LATROBE REGIONAL AIRPORT PANS-OPS RNAV GNSS RWY 03/RWY 21 PANS-OPS CIRCLING CAT A/B AND CAT C					1	17 05 23		Scale 1:25,000
								0	04 10 22		File Ref M22057
								Rev	Date		
								Drawn MK	Checked BMW		Approved BJH







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## APPENDIX B

### NASF GUIDELINE C – ATTACHMENT 1

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Land Use	Wildlife Attraction Risk	Actions for Existing Developments			Actions for Proposed Developments/ Changes to Existing Developments		
		3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)	3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)
<b>Agriculture</b>							
Turf farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Piggery	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fruit tree farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fish processing /packing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Cattle /dairy farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Poultry farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Forestry	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Plant nursery	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
<b>Conservation</b>							
Wildlife sanctuary / conservation area - wetland	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Wildlife sanctuary / conservation area - dryland	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
<b>Recreation</b>							
Showground	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Racetrack / horse riding school	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Golf course	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sports facility (tennis, bowls, etc)	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Park / Playground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Picnic / camping ground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
<b>Commercial</b>							
Food processing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Warehouse (food storage)	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Fast food / drive-in / outdoor restaurant	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Shopping centre	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Office building	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Hotel / motel	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Car park	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Cinemas	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Warehouse (non-food storage)	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Petrol station	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
<b>Utilities</b>							
Food / organic waste facility	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - landfill	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - transfer station	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Non-putrescible waste facility - landfill	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Non-putrescible waste facility - transfer station	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sewage / wastewater treatment facility	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Potable water treatment facility	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action

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## APPENDIX C

### FORGESOLAR GLAREGAUGE REPORTS



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ForgeSolar

# Hazelwood North Solar Farm

## Hazelwood 1

Created Sept. 28, 2022  
 Updated Sept. 29, 2022  
 Time-step 1 minute  
 Timezone offset UTC10  
 Site ID 76761.13552

Project type Advanced  
 Project status: active  
 Category 100 MW to 1 GW



### Misc. Analysis Settings

DNI: varies (1,000.0 W/m<sup>2</sup> peak)  
 Ocular transmission coefficient: 0.5  
 Pupil diameter: 0.002 m  
 Eye focal length: 0.017 m  
 Sun subtended angle: 9.3 mrad

Analysis Methodology: **Version 2**  
 Enhanced subtended angle calculation: **On**

### 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	SA tracking	SA tracking	1,922	1,822	-
PV array 10	SA tracking	SA tracking	0	0	-
PV array 11	SA tracking	SA tracking	48	0	-
PV array 12	SA tracking	SA tracking	0	0	-
PV array 13	SA tracking	SA tracking	0	0	-
PV array 14	SA tracking	SA tracking	763	321	-
PV array 15	SA tracking	SA tracking	58	0	-
PV array 16	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	2,013	1,473	-
PV array 3	SA tracking	SA tracking	2,012	105	-
PV array 4	SA tracking	SA tracking	1,489	2,827	-
PV array 5	SA tracking	SA tracking	123	0	-
PV array 6	SA tracking	SA tracking	1,559	487	-
PV array 7	SA tracking	SA tracking	1,433	172	-
PV array 8	SA tracking	SA tracking	174	0	-
PV array 9	SA tracking	SA tracking	511	538	-

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## Component Data

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PV Array(s)

Total PV footprint area: 8,117,225 m^2

**Name:** PV array 1  
**Footprint area:** 143,285 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.211219	146.498454	72.51	3.90	76.41
2	-38.210848	146.492961	67.98	3.90	71.88
3	-38.212736	146.489785	66.20	3.90	70.10
4	-38.213377	146.497939	70.35	3.90	74.25

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**Name:** PV array 10  
**Footprint area:** 353,381 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.243180	146.468384	83.72	3.90	87.62
2	-38.249651	146.466882	92.88	3.90	96.78
3	-38.250460	146.474478	94.39	3.90	98.29
4	-38.247730	146.474907	88.11	3.90	92.01
5	-38.247528	146.473191	87.01	3.90	90.91
6	-38.248505	146.473105	88.43	3.90	92.33
7	-38.248235	146.471302	87.00	3.90	90.90
8	-38.246988	146.471517	88.00	3.90	91.90
9	-38.245842	146.472676	87.40	3.90	91.30
10	-38.243820	146.473105	85.14	3.90	89.04

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**Name:** PV array 11  
**Footprint area:** 335,504 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.241393	146.477396	79.89	3.90	83.79
2	-38.241259	146.476495	80.77	3.90	84.67
3	-38.244461	146.473877	84.58	3.90	88.48
4	-38.245438	146.473877	86.01	3.90	89.91
5	-38.245842	146.474092	86.35	3.90	90.25
6	-38.247730	146.475079	88.21	3.90	92.11
7	-38.250527	146.474521	94.86	3.90	98.76
8	-38.251269	146.480014	94.85	3.90	98.75
9	-38.247932	146.478555	89.59	3.90	93.49
10	-38.246146	146.479413	86.89	3.90	90.79
11	-38.244528	146.477053	85.69	3.90	89.59
12	-38.242742	146.477353	81.93	3.90	85.83

**Name:** PV array 12  
**Footprint area:** 310,038 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.249853	146.468127	93.36	3.90	97.26
2	-38.252414	146.467783	98.96	3.90	102.86
3	-38.253965	146.479585	100.04	3.90	103.94
4	-38.251269	146.480100	94.59	3.90	98.49

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**Name:** PV array 13  
**Footprint area:** 197,783 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233873	146.481715	78.34	3.90	82.24
2	-38.233738	146.479483	75.61	3.90	79.51
3	-38.234817	146.479312	76.49	3.90	80.39
4	-38.236840	146.479784	79.20	3.90	83.10
5	-38.237952	146.479440	79.62	3.90	83.52
6	-38.238693	146.479655	80.74	3.90	84.64
7	-38.239502	146.485406	84.19	3.90	88.09
8	-38.238795	146.485792	82.67	3.90	86.57
9	-38.237042	146.483346	83.61	3.90	87.51

**Name:** PV array 14  
**Footprint area:** 459,443 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233941	146.483947	80.50	3.90	84.40
2	-38.235222	146.493645	87.02	3.90	90.92
3	-38.240750	146.492444	89.18	3.90	93.08
4	-38.239570	146.485449	84.39	3.90	88.29
5	-38.238727	146.485749	82.52	3.90	86.42
6	-38.236873	146.484333	84.41	3.90	88.31
7	-38.235525	146.483861	83.75	3.90	87.65
8	-38.234547	146.483560	82.31	3.90	86.21

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**Name:** PV array 15  
**Footprint area:** 631,932 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238716	146.479651	80.64	3.90	84.54
2	-38.239541	146.480252	82.92	3.90	86.82
3	-38.240637	146.479287	81.77	3.90	85.67
4	-38.244412	146.478750	84.82	3.90	88.72
5	-38.245204	146.491238	95.47	3.90	99.37
6	-38.240738	146.492397	89.21	3.90	93.11

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**Name:** PV array 16  
**Footprint area:** 663,843 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.245259	146.491299	95.29	3.90	99.19
2	-38.244467	146.478767	84.96	3.90	88.86
3	-38.245765	146.480698	90.51	3.90	94.41
4	-38.246624	146.480677	90.49	3.90	94.39
5	-38.247652	146.479905	89.95	3.90	93.85
6	-38.251949	146.481879	95.09	3.90	98.99
7	-38.252017	146.486857	94.35	3.90	98.25
8	-38.250433	146.490161	104.14	3.90	108.04

**Name:** PV array 2  
**Footprint area:** 277,441 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213410	146.497896	70.56	3.90	74.46
2	-38.212736	146.489613	66.38	3.90	70.28
3	-38.216951	146.490686	72.93	3.90	76.83
4	-38.216816	146.497424	78.47	3.90	82.37

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**Name:** PV array 3  
**Footprint area:** 233,139 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



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Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.216816	146.497510	78.04	3.90	81.94
2	-38.220558	146.496608	80.54	3.90	84.44
3	-38.220862	146.490858	75.42	3.90	79.32
4	-38.216951	146.490686	72.93	3.90	76.83

**Name:** PV array 4  
**Footprint area:** 1,285,554 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213511	146.485665	59.53	3.90	63.43
2	-38.216243	146.486867	64.63	3.90	68.53
3	-38.217962	146.488283	66.88	3.90	70.78
4	-38.219277	146.488111	68.54	3.90	72.44
5	-38.220120	146.488626	69.49	3.90	73.39
6	-38.221738	146.488712	70.14	3.90	74.04
7	-38.222581	146.489570	72.00	3.90	75.90
8	-38.222682	146.490600	72.56	3.90	76.46
9	-38.223559	146.490815	72.70	3.90	76.60
10	-38.225144	146.489656	73.01	3.90	76.91
11	-38.227268	146.489012	75.87	3.90	79.77
12	-38.228211	146.490171	72.27	3.90	76.17
13	-38.226863	146.479056	76.49	3.90	80.39
14	-38.224301	146.478455	74.16	3.90	78.06
15	-38.222750	146.477339	71.17	3.90	75.07
16	-38.222143	146.475666	65.29	3.90	69.19
17	-38.219716	146.475966	64.33	3.90	68.23

**Name:** PV array 5  
**Footprint area:** 201,837 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



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Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.227335	146.481931	81.55	3.90	85.45
2	-38.232594	146.480773	82.57	3.90	86.47
3	-38.232358	146.478756	77.16	3.90	81.06
4	-38.230605	146.477168	77.58	3.90	81.48
5	-38.229391	146.477039	75.27	3.90	79.17
6	-38.227470	146.477726	75.44	3.90	79.34
7	-38.226762	146.478241	75.15	3.90	79.05

**Name:** PV array 6  
**Footprint area:** 605,385 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228854	146.462419	66.16	3.90	70.06
2	-38.222280	146.472719	63.02	3.90	66.92
3	-38.223325	146.473706	64.34	3.90	68.24
4	-38.223190	146.475079	65.02	3.90	68.92
5	-38.224808	146.476838	72.03	3.90	75.93
6	-38.226089	146.477268	73.80	3.90	77.70
7	-38.226629	146.477139	74.09	3.90	77.99
8	-38.226898	146.476409	74.56	3.90	78.46
9	-38.229899	146.475808	77.47	3.90	81.37

**Name:** PV array 7  
**Footprint area:** 509,058 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228887	146.462419	66.22	3.90	70.12
2	-38.231584	146.458342	68.32	3.90	72.22
3	-38.235832	146.457527	74.17	3.90	78.07
4	-38.231079	146.465638	69.91	3.90	73.81
5	-38.232730	146.477997	75.36	3.90	79.26
6	-38.229966	146.475851	77.51	3.90	81.41

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**Name:** PV array 8  
**Footprint area:** 153,897 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238023	146.455166	72.31	3.90	76.21
2	-38.240214	146.451175	74.98	3.90	78.88
3	-38.241360	146.450918	75.22	3.90	79.12
4	-38.241966	146.457140	76.03	3.90	79.93
5	-38.239270	146.456883	74.03	3.90	77.93

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**Name:** PV array 9  
**Footprint area:** 1,755,707 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233539	146.478126	77.15	3.90	81.05
2	-38.231989	146.466324	70.08	3.90	73.98
3	-38.236877	146.457913	76.67	3.90	80.57
4	-38.242000	146.457956	78.59	3.90	82.49
5	-38.243787	146.473362	84.71	3.90	88.61
6	-38.238832	146.477396	80.10	3.90	84.00
7	-38.236843	146.478169	78.57	3.90	82.47



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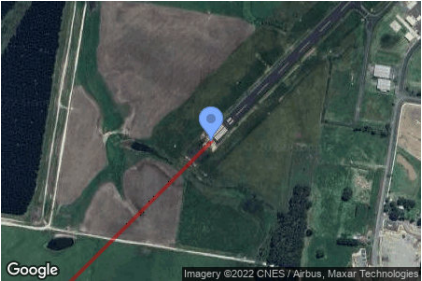
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## 2-Mile Flight Path Receptor(s)

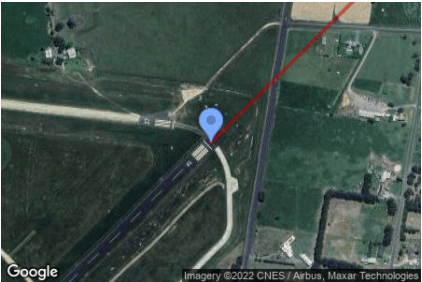
**Name:** FP 1  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 45.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.215525	146.465053	51.19	15.24	66.43
2-mile point	-38.235919	146.438938	66.15	168.97	235.11



**Name:** FP 2  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 225.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

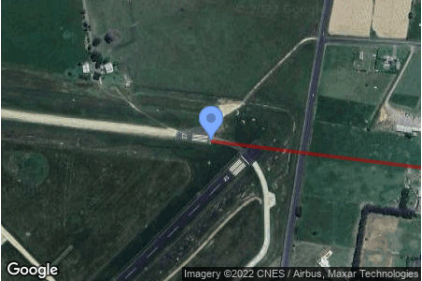
Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206436	146.476628	57.79	15.24	73.03
2-mile point	-38.186038	146.502735	52.47	189.25	241.72



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**Name:** FP 3  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 277.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206142	146.475786	55.28	15.24	70.52
2-mile point	-38.209736	146.512338	69.94	169.27	239.20



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**Name:** FP 4  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 97.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.205111	146.465369	50.98	15.24	66.22
2-mile point	-38.201512	146.428819	94.82	140.09	234.91



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Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	1,922	1,822	-	-
PV array 10	SA tracking	SA tracking	0	0	-	
PV array 11	SA tracking	SA tracking	48	0	-	-
PV array 12	SA tracking	SA tracking	0	0	-	
PV array 13	SA tracking	SA tracking	0	0	-	
PV array 14	SA tracking	SA tracking	763	321	-	-
PV array 15	SA tracking	SA tracking	58	0	-	-
PV array 16	SA tracking	SA tracking	0	0	-	
PV array 2	SA tracking	SA tracking	2,013	1,473	-	-
PV array 3	SA tracking	SA tracking	2,012	105	-	-
PV array 4	SA tracking	SA tracking	1,489	2,827	-	-
PV array 5	SA tracking	SA tracking	123	0	-	-
PV array 6	SA tracking	SA tracking	1,559	487	-	-
PV array 7	SA tracking	SA tracking	1,433	172	-	-
PV array 8	SA tracking	SA tracking	174	0	-	-
PV array 9	SA tracking	SA tracking	511	538	-	-

Distinct glare per month

Excludes overlapping glare from PV array for multiple receptors at matching time(s)

PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
pv-array-1 (green)	165	238	167	72	148	173	169	102	48	300	168	172
pv-array-1 (yellow)	440	281	24	0	0	0	0	0	0	208	400	469
pv-array-11 (green)	0	0	23	0	0	0	0	0	0	25	0	0
pv-array-11 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-14 (green)	0	0	381	1	0	0	0	0	322	59	0	0
pv-array-14 (yellow)	0	15	144	0	0	0	0	0	0	162	0	0
pv-array-15 (green)	0	0	28	0	0	0	0	0	10	20	0	0
pv-array-15 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-2 (green)	290	367	95	61	65	59	68	68	54	336	285	265
pv-array-2 (yellow)	410	177	0	3	0	0	0	0	3	77	368	435
pv-array-3 (green)	528	123	50	82	73	0	41	95	65	64	421	470
pv-array-3 (yellow)	8	0	0	0	0	0	0	0	0	0	0	97
pv-array-4 (green)	69	604	40	0	0	0	0	0	0	546	155	75
pv-array-4 (yellow)	917	169	0	0	0	0	0	0	0	10	773	958
pv-array-5 (green)	6	0	0	0	0	0	0	1	0	0	0	116
pv-array-5 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-6 (green)	560	61	23	0	0	0	0	0	13	9	466	427
pv-array-6 (yellow)	93	0	9	0	0	0	0	0	1	9	13	362
pv-array-7 (green)	448	0	22	33	0	0	0	29	28	6	273	594
pv-array-7 (yellow)	0	0	71	15	0	0	0	2	61	23	0	0
pv-array-8 (green)	10	0	28	0	0	0	0	0	0	31	0	105
pv-array-8 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-9 (green)	25	0	46	118	0	0	0	37	117	13	1	154
pv-array-9 (yellow)	0	0	256	14	0	0	0	0	181	87	0	0

# PV & Receptor Analysis Results

Results for each PV array and receptor

## PV array 1 potential temporary after-image

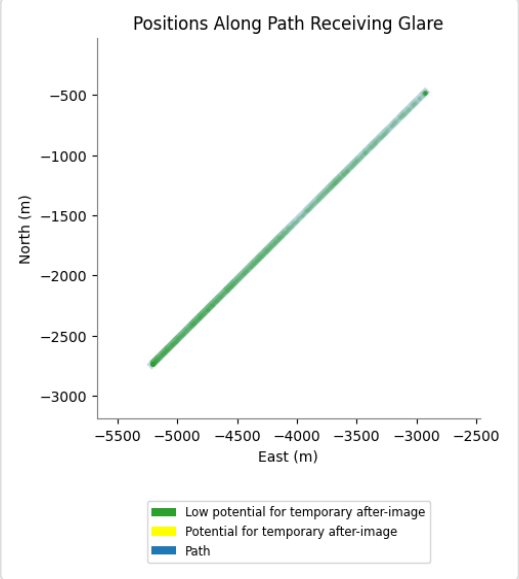
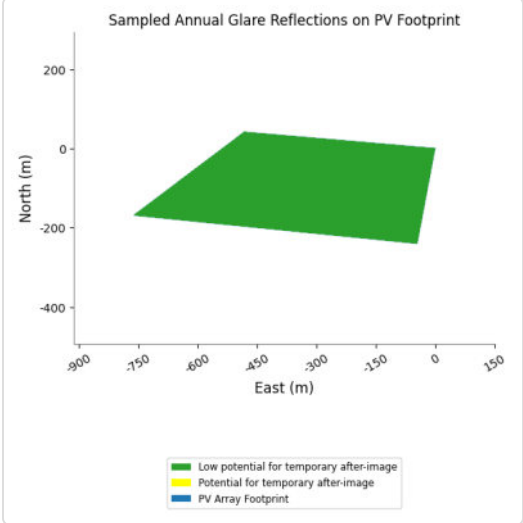
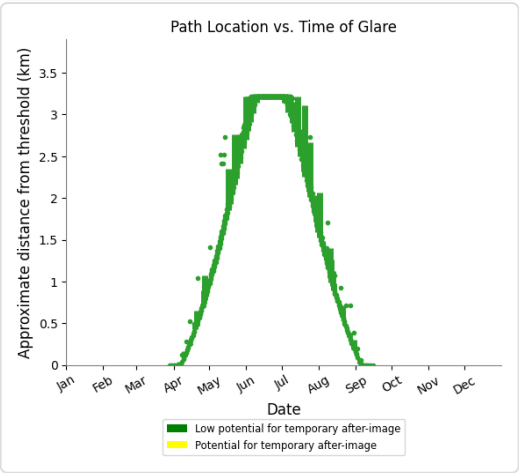
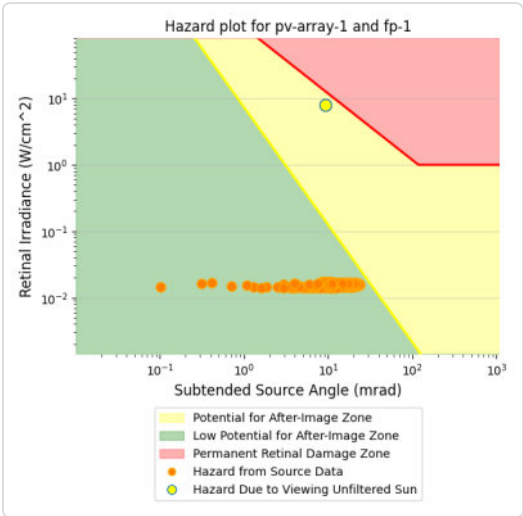
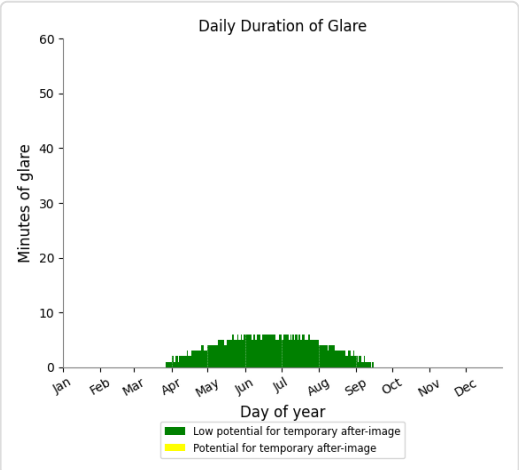
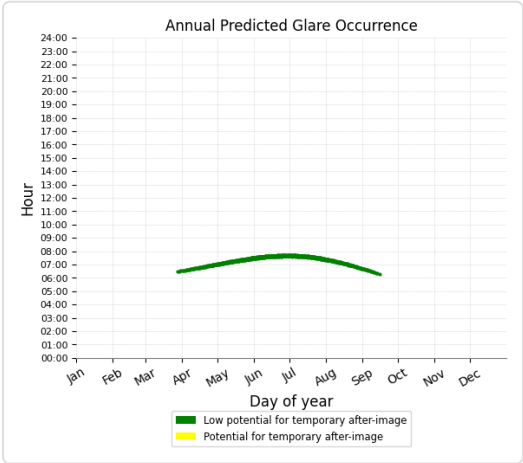
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	687	0
FP: FP 2	0	0
FP: FP 3	1053	1822
FP: FP 4	182	0

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PV array 1 - Receptor (FP 1)

- PV array is expected to produce the following glare for observers on this flight path:
- 687 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 - Receptor (FP 2)

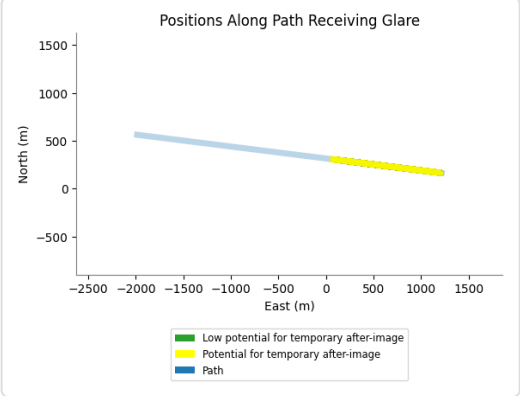
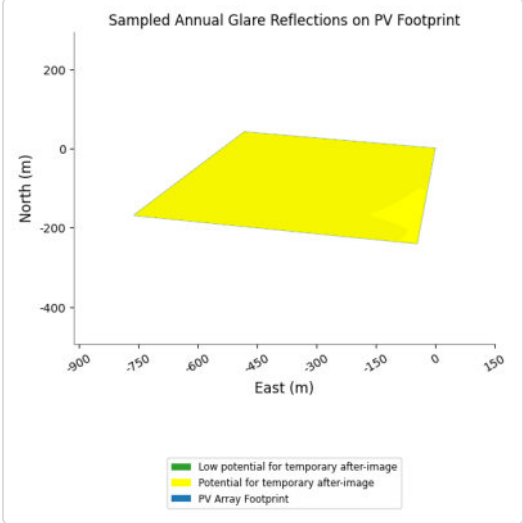
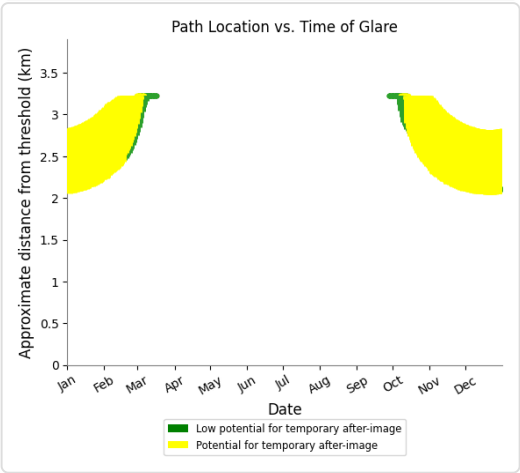
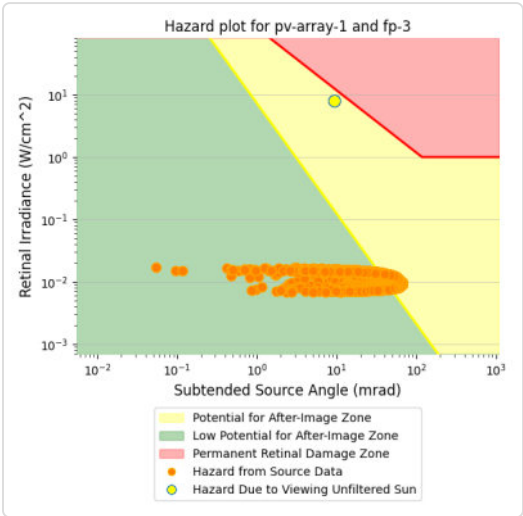
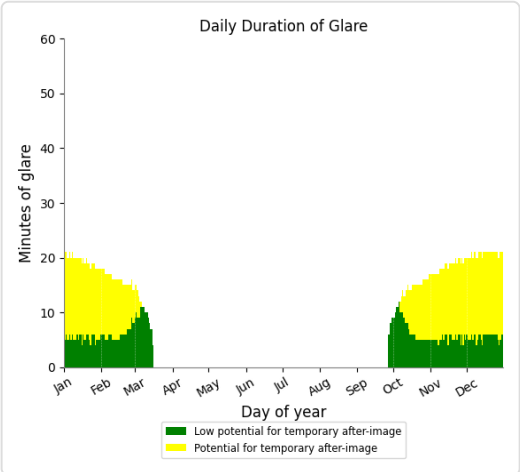
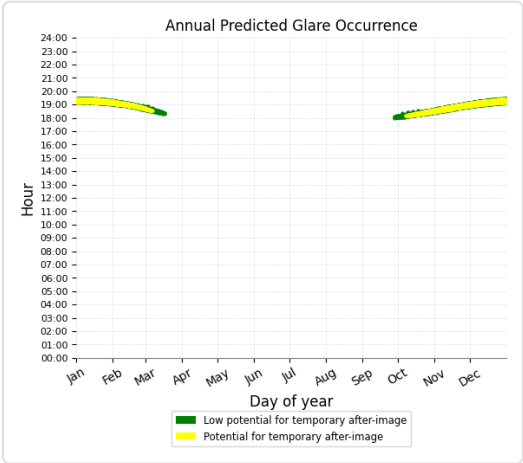
No glare found

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PV array 1 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 1,053 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,822 minutes of "yellow" glare with potential to cause temporary after-image.



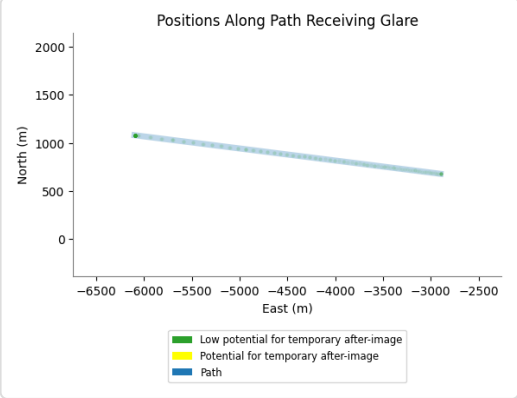
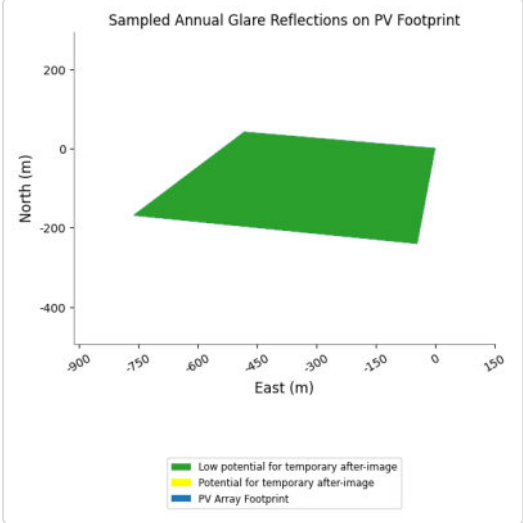
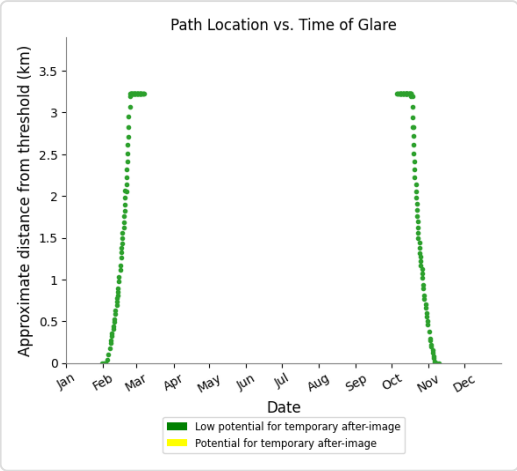
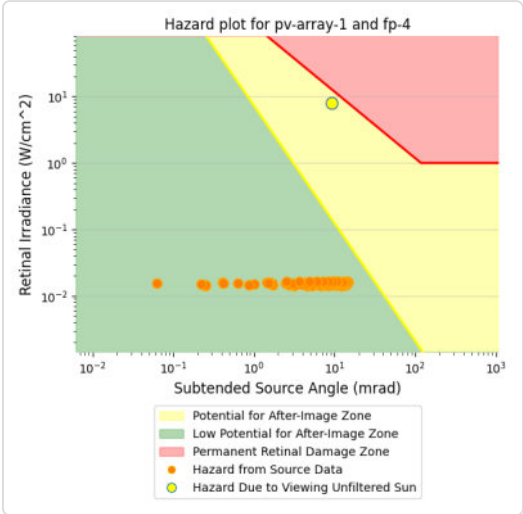
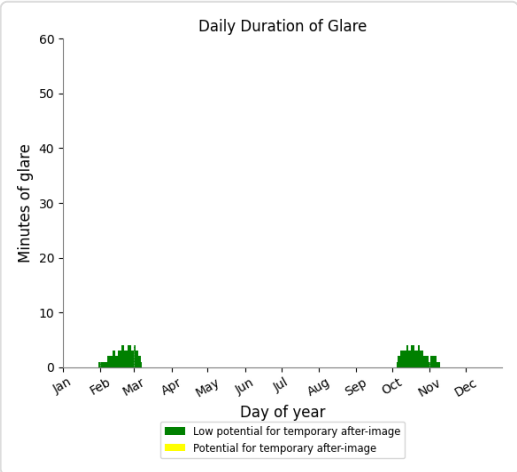
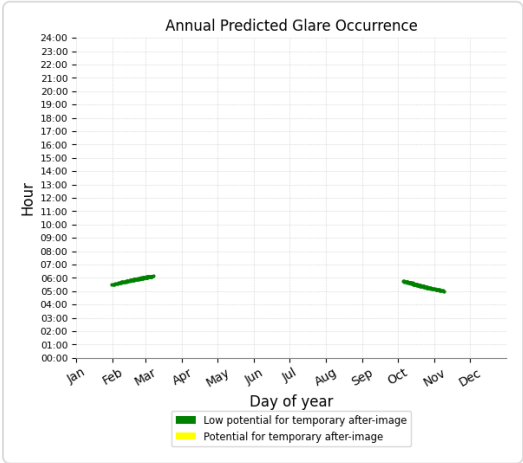
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PV array 1 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

- 182 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 10 no glare found

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Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found



PV array 11 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	48	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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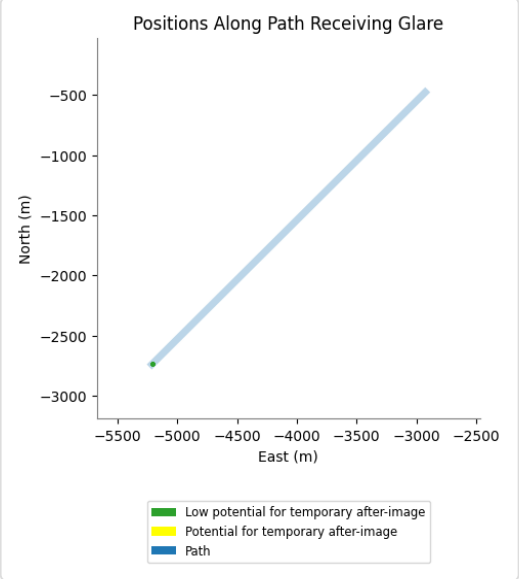
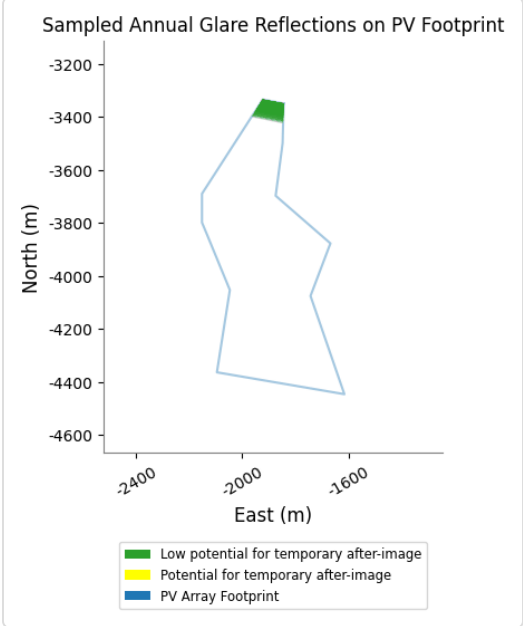
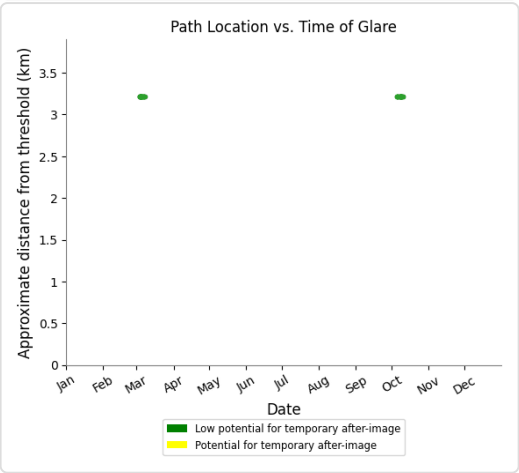
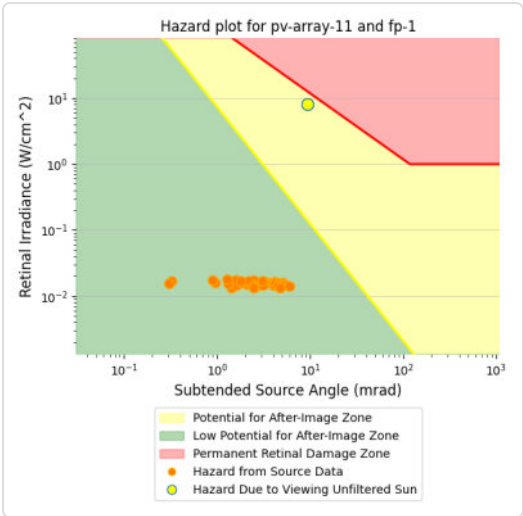
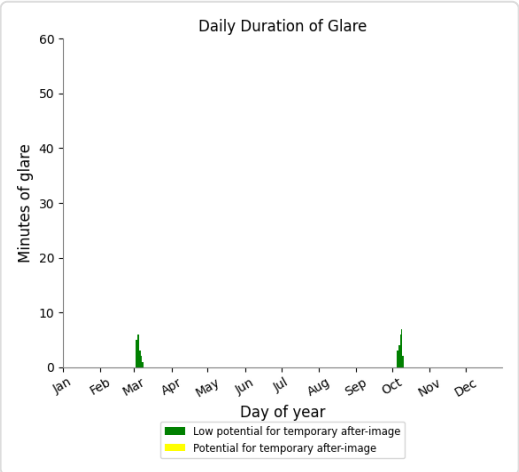
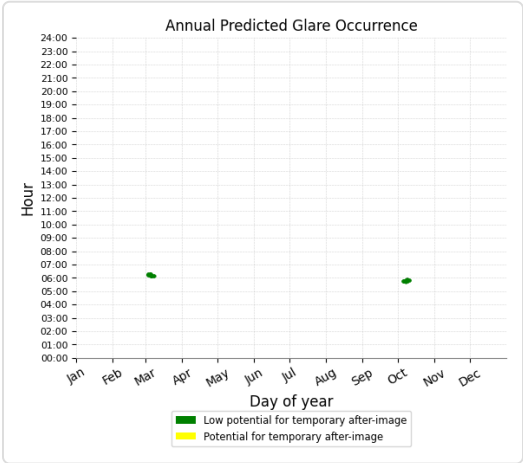


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PV array 11 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 48 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 11 - Receptor (FP 2)

No glare found

PV array 11 - Receptor (FP 3)

No glare found

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PV array 11 - Receptor (FP 4)

No glare found

PV array 12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 13 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 14 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	763	321
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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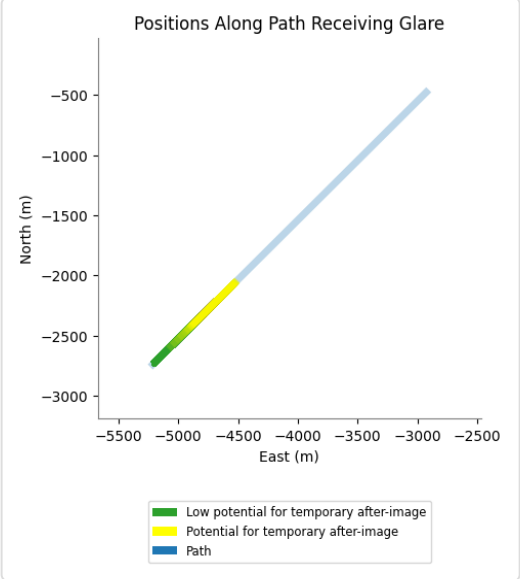
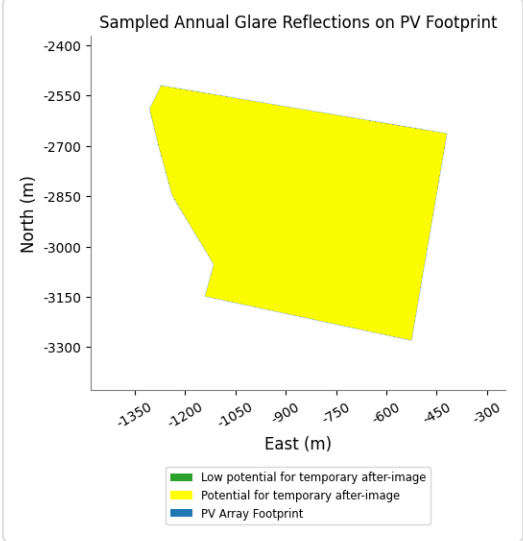
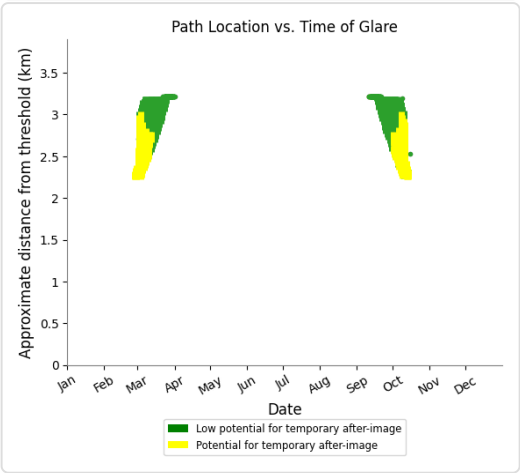
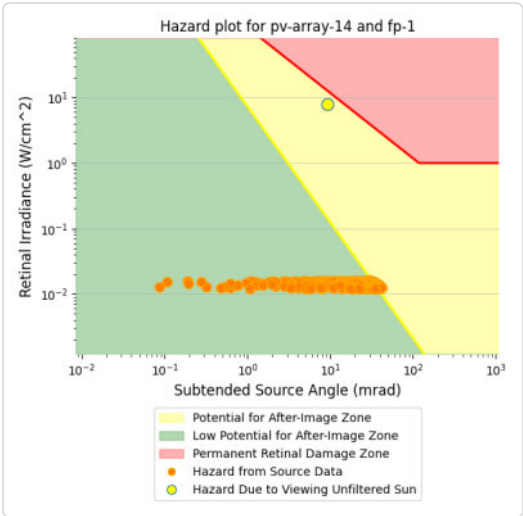
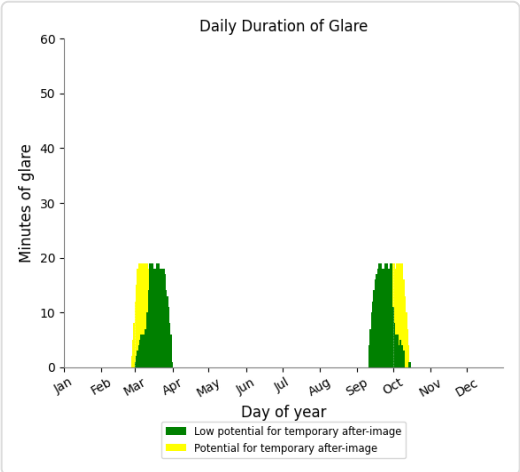
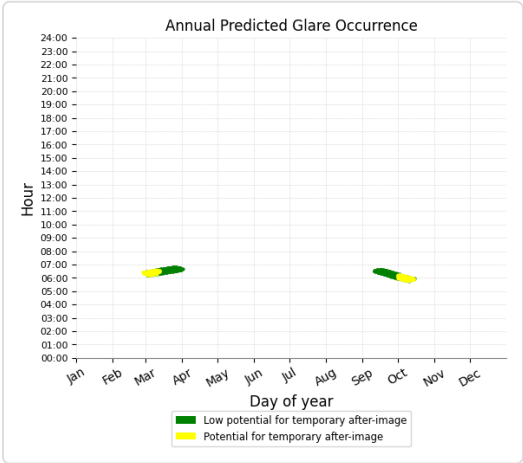
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PV array 14 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 14 - Receptor (FP 2)

No glare found

PV array 14 - Receptor (FP 3)

No glare found

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PV array 14 - Receptor (FP 4)

No glare found

PV array 15 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	58	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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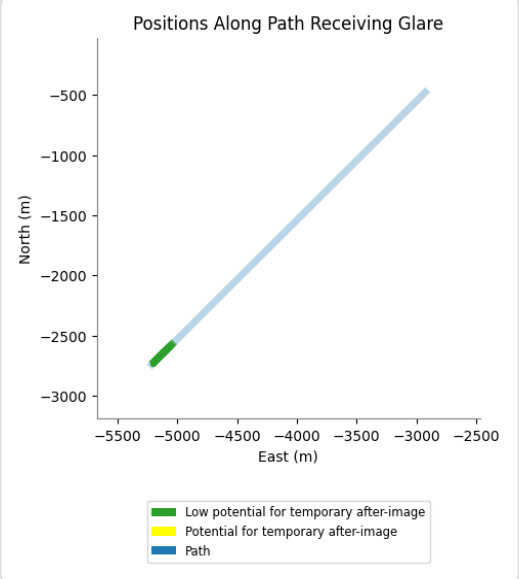
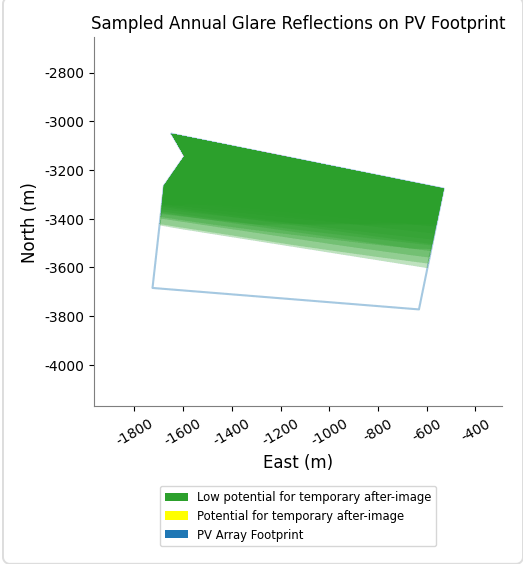
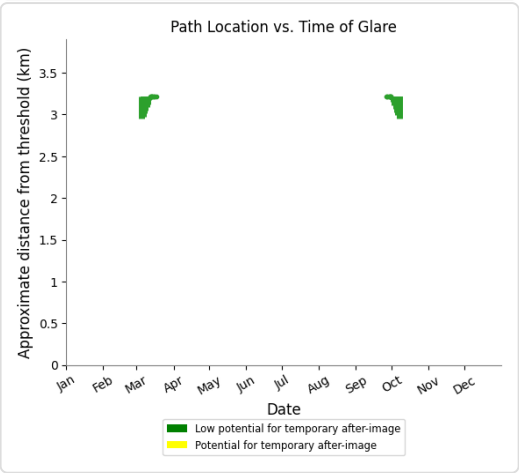
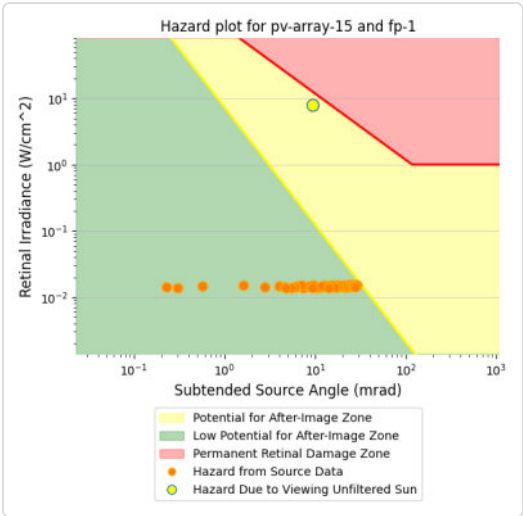
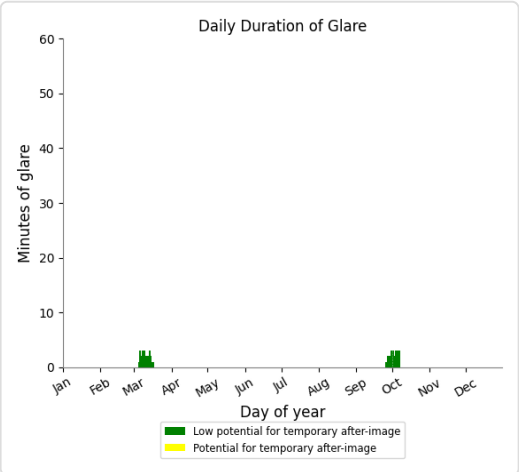
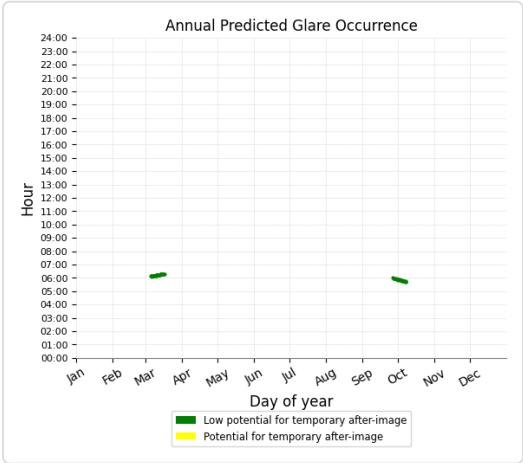


PV array 15 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 15 - Receptor (FP 2)

No glare found

PV array 15 - Receptor (FP 3)

No glare found

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PV array 15 - Receptor (FP 4)

No glare found

PV array 16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 2 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	415	6
FP: FP 2	0	0
FP: FP 3	881	1467
FP: FP 4	717	0

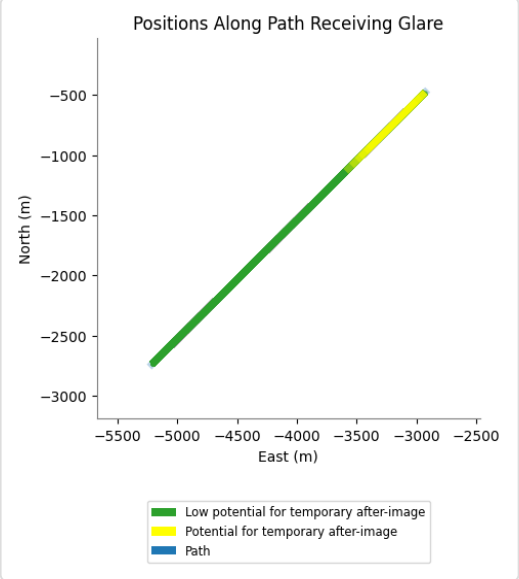
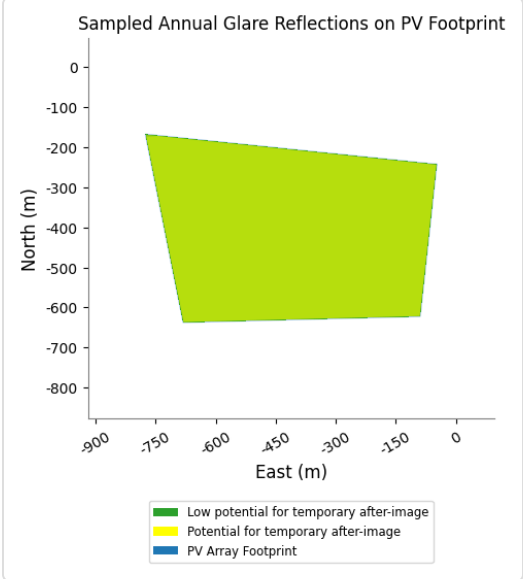
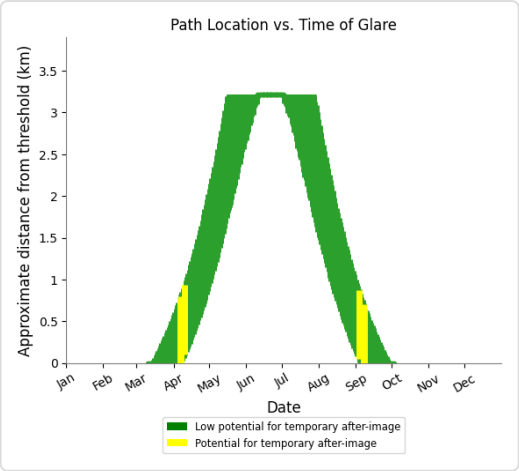
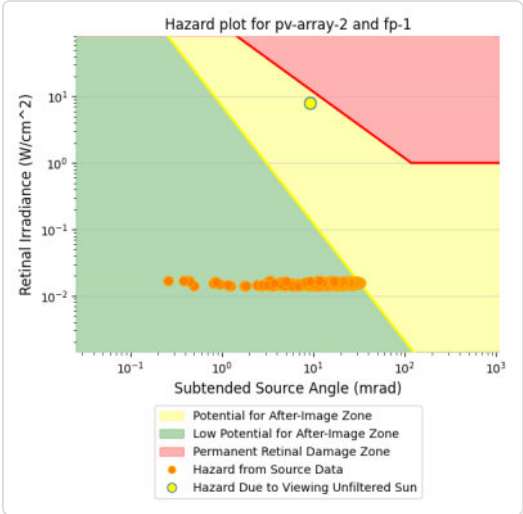
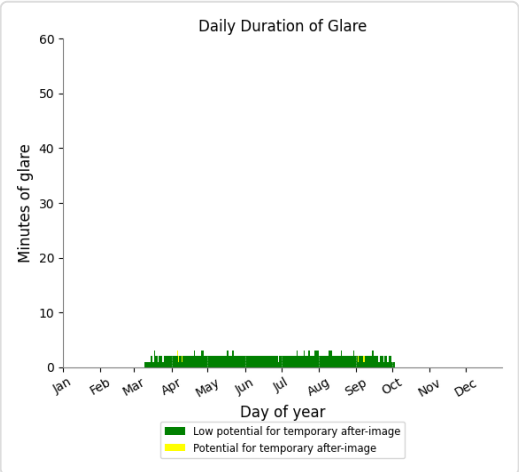
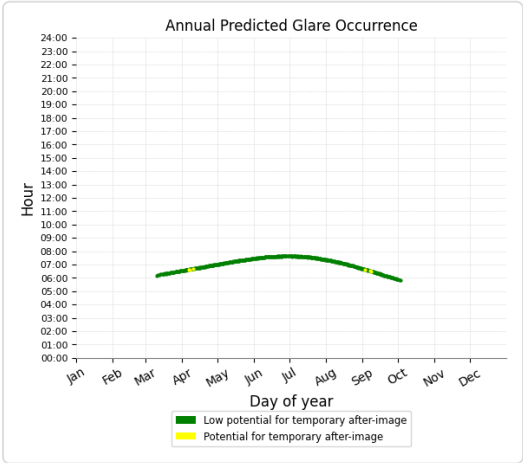
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PV array 2 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 2 - Receptor (FP 2)

No glare found

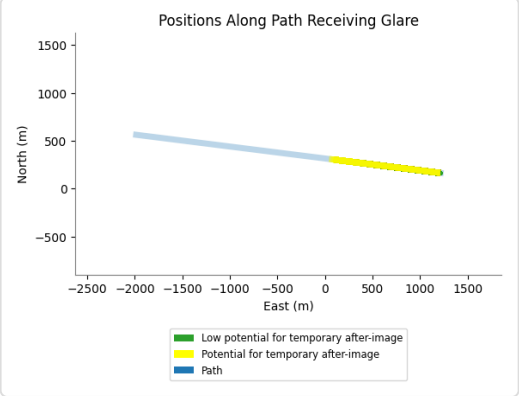
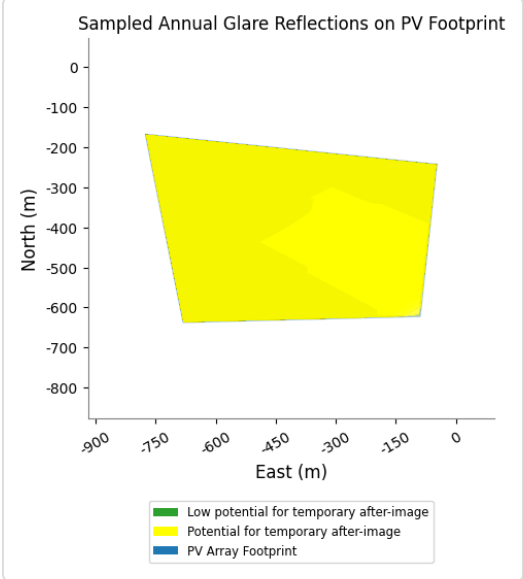
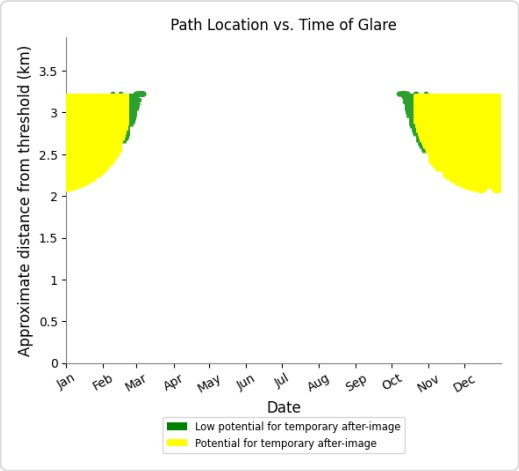
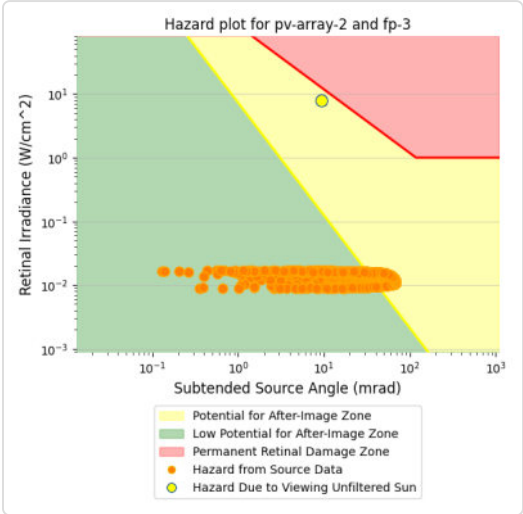
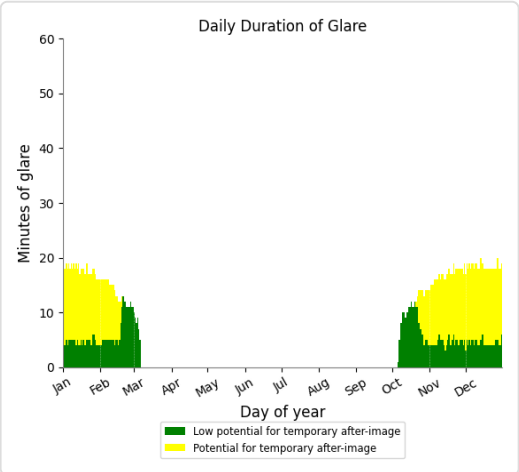
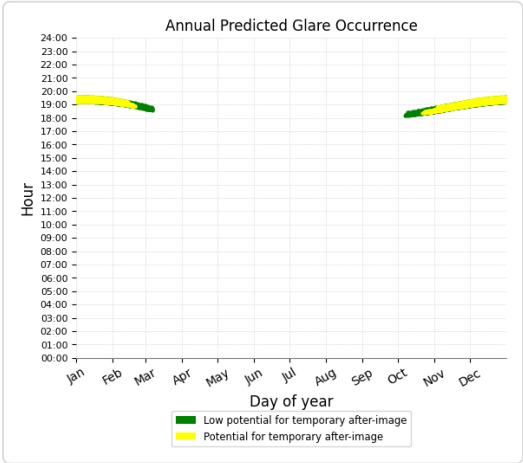
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PV array 2 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 881 minutes of "green" glare with low potential to cause temporary after-image.
- 1,467 minutes of "yellow" glare with potential to cause temporary after-image.



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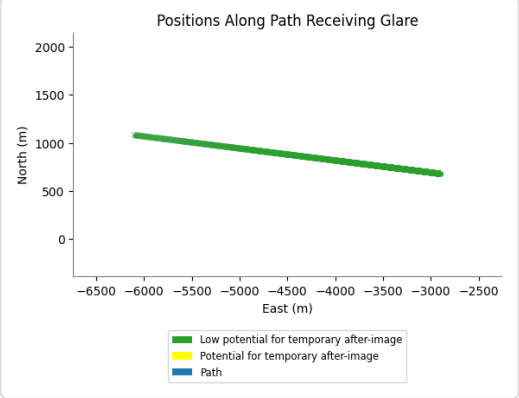
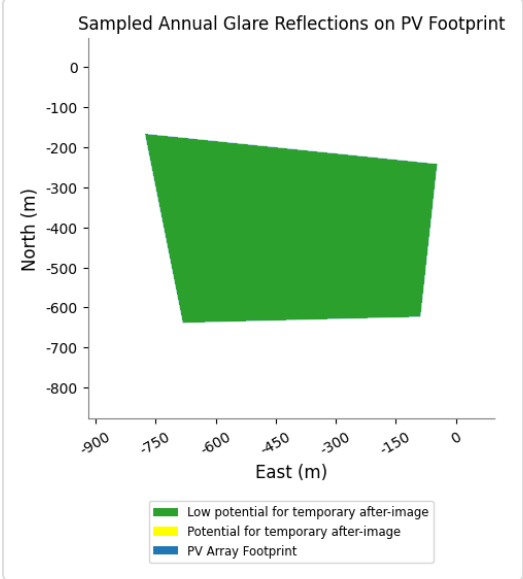
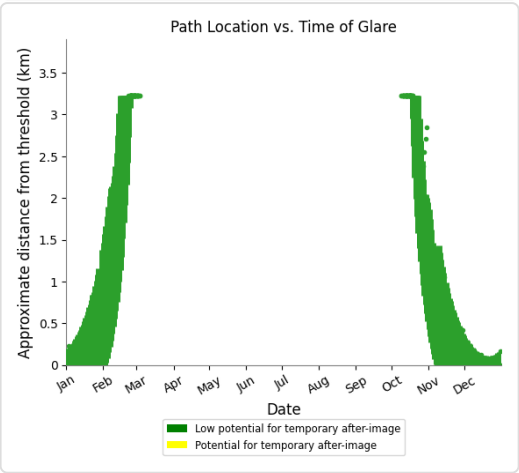
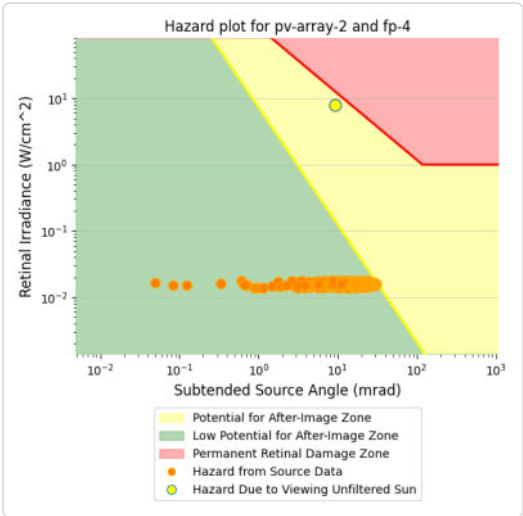
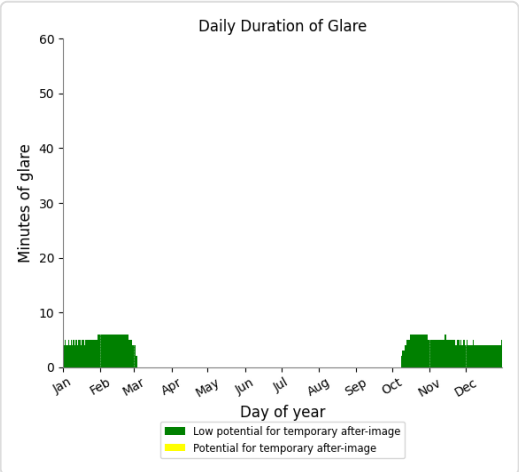
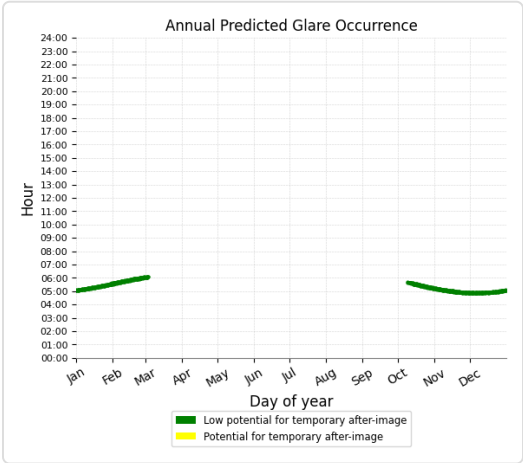
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PV array 2 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 3 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	418	0
FP: FP 2	0	0

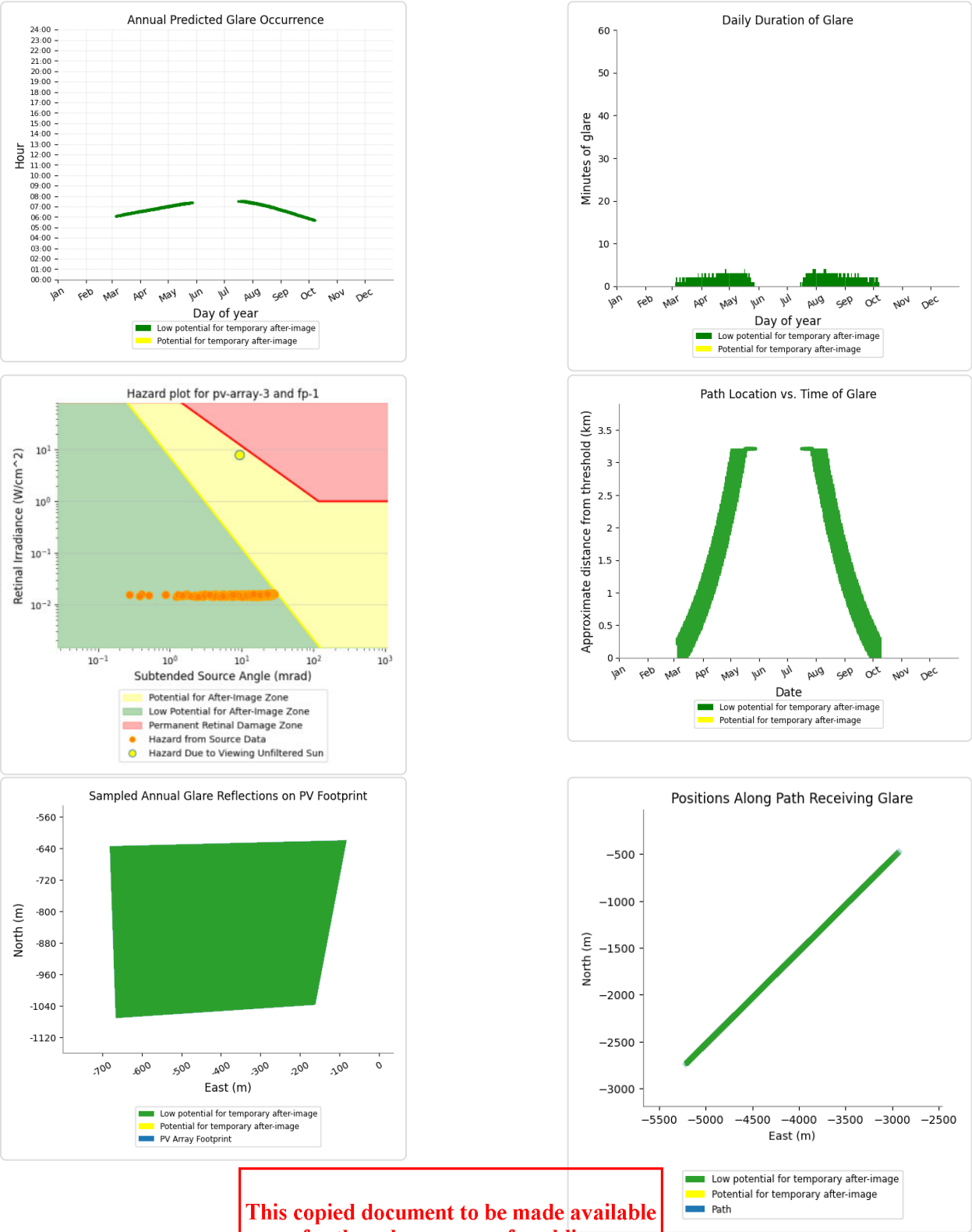


FP: FP 3	1027	105
FP: FP 4	567	0

PV array 3 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 418 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 3 - Receptor (FP 2)

No glare found

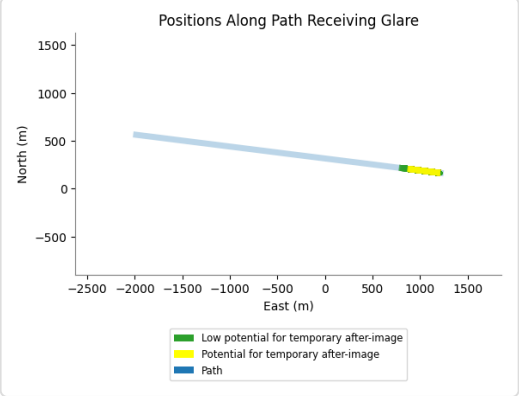
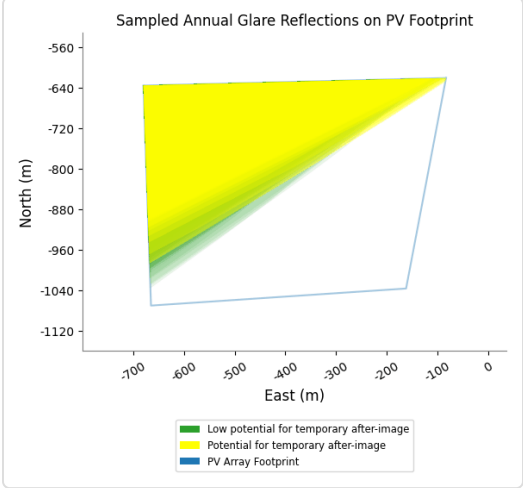
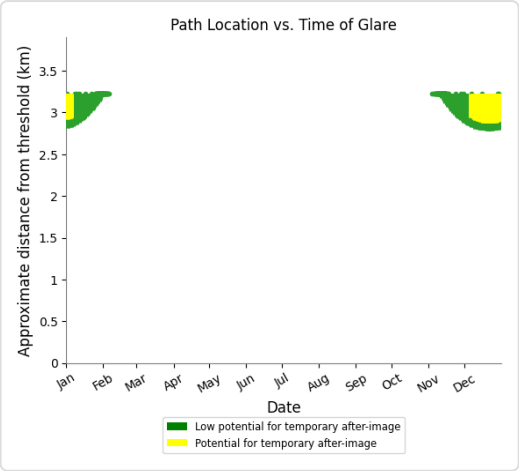
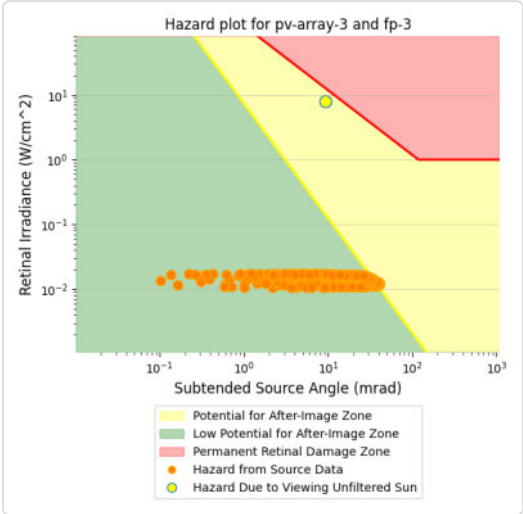
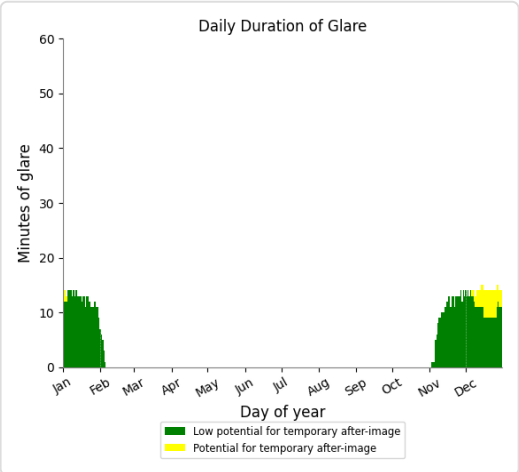
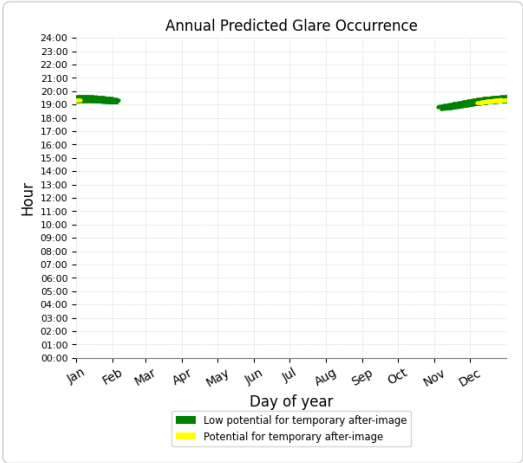
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PV array 3 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 1,027 minutes of "green" glare with low potential to cause temporary after-image.
- 105 minutes of "yellow" glare with potential to cause temporary after-image.



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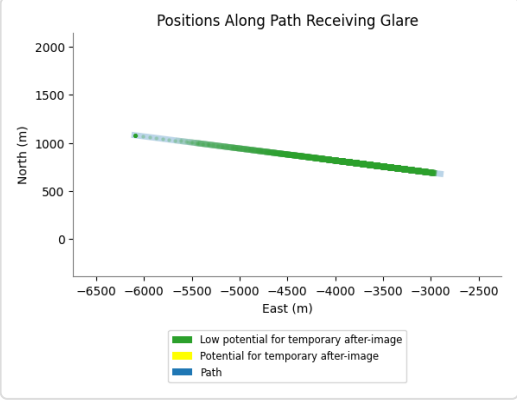
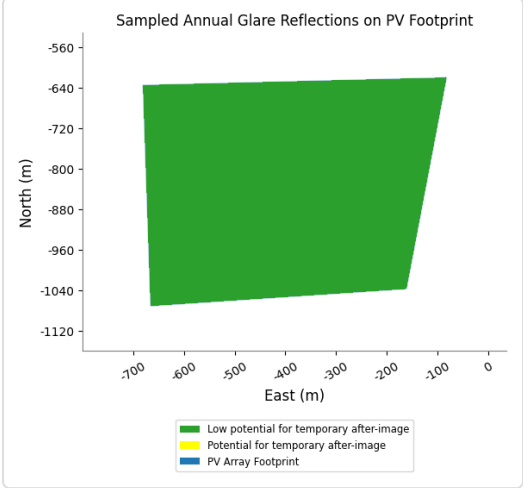
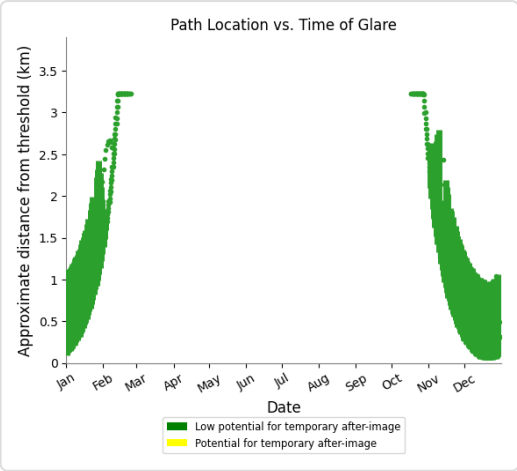
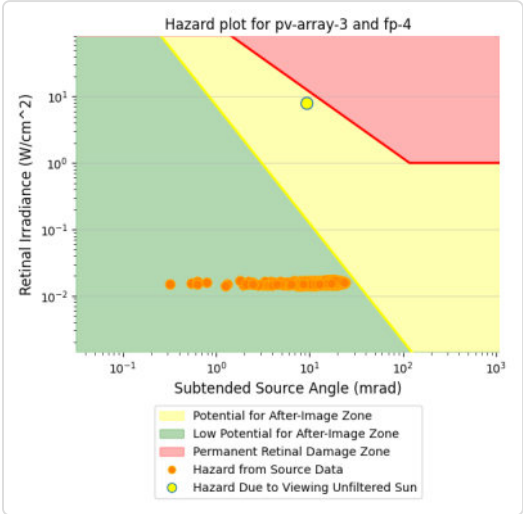
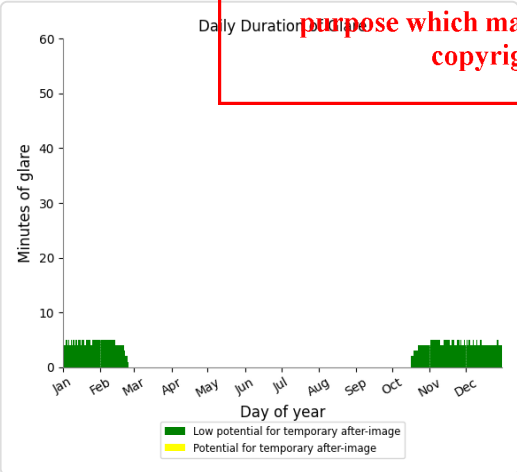
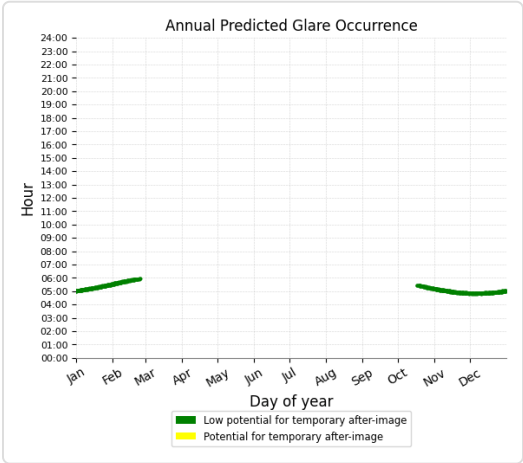
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PV array 3 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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



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PV array 4 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	1489	2827
FP: FP 4	0	0

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PV array 4 - Receptor (FP 1)

No glare found

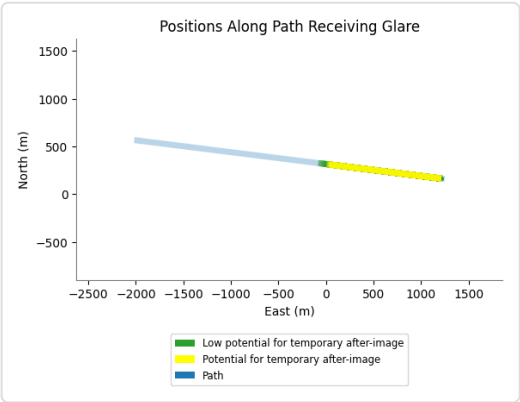
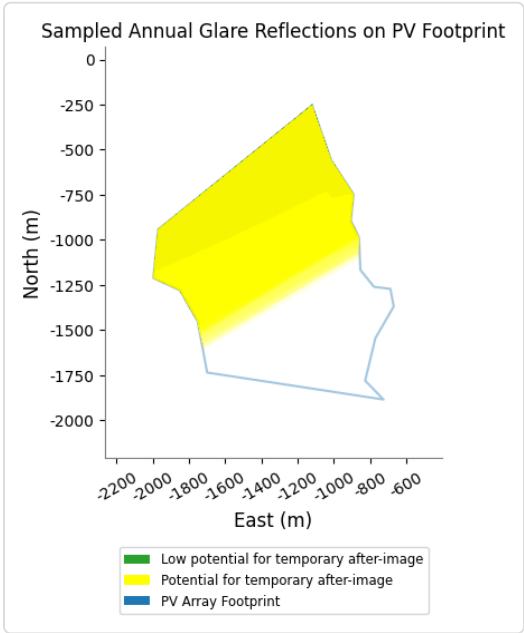
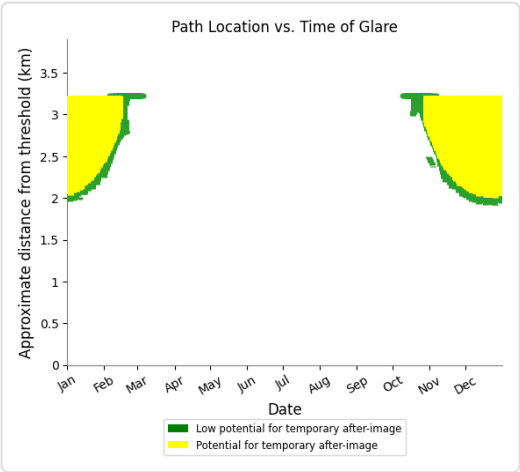
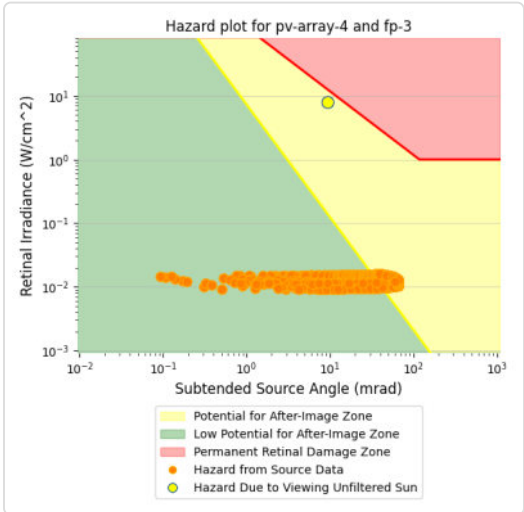
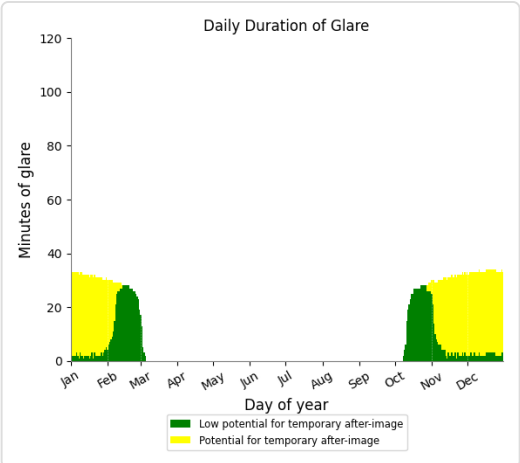
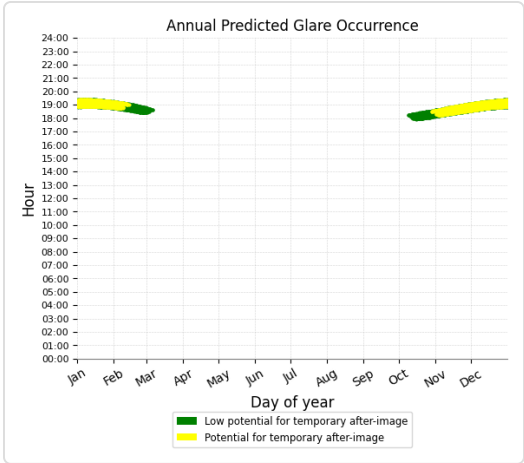
PV array 4 - Receptor (FP 2)

No glare found

PV array 4 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 1,489 minutes of "green" glare with low potential to cause temporary after-image.
- 2,827 minutes of "yellow" glare with potential to cause temporary after-image.



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PV array 4 - Receptor (FP 4)

No glare found

PV array 5 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	1	0
FP: FP 2	0	0
FP: FP 3	99	0
FP: FP 4	23	0

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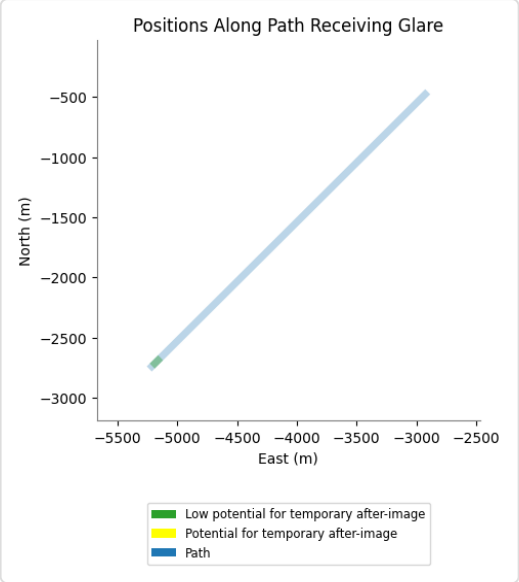
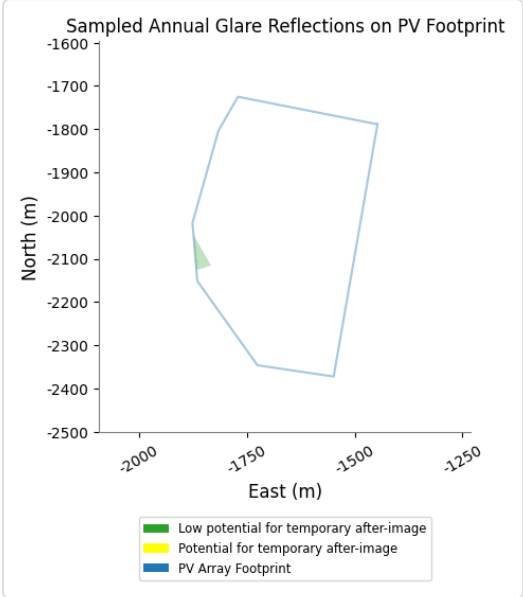
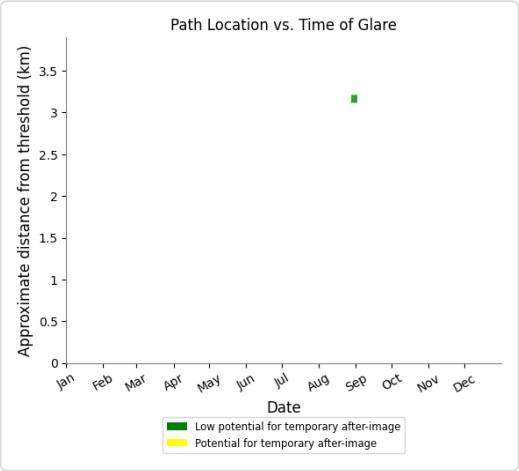
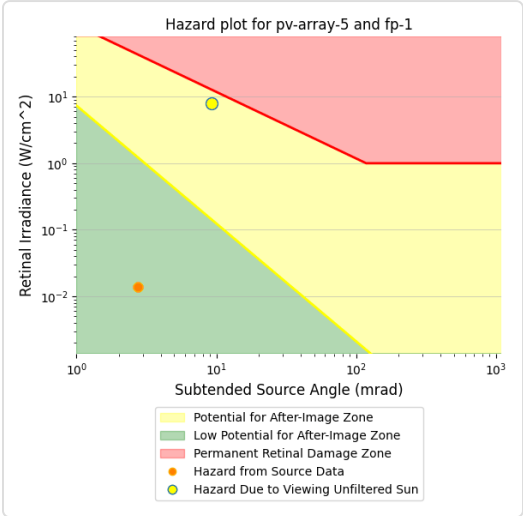
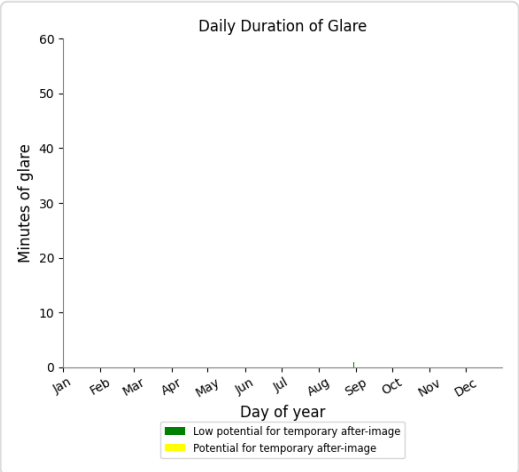
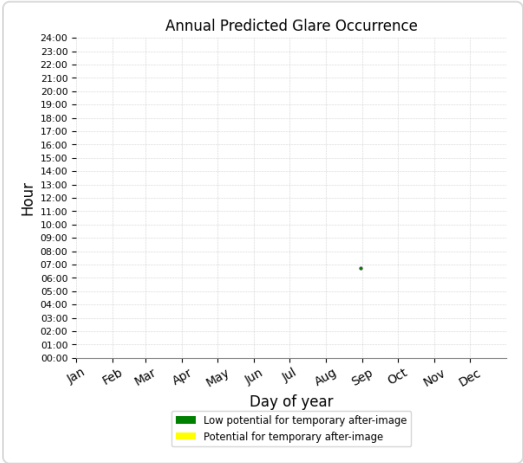
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PV array 5 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 1 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 5 - Receptor (FP 2)

No glare found

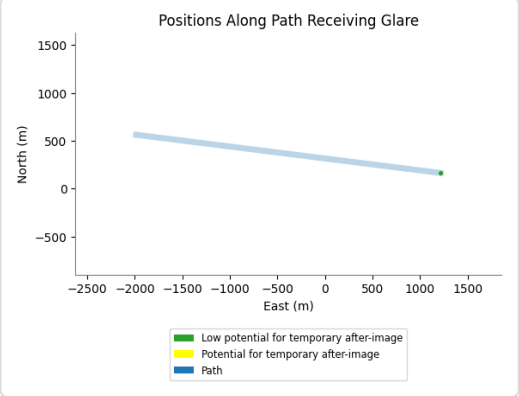
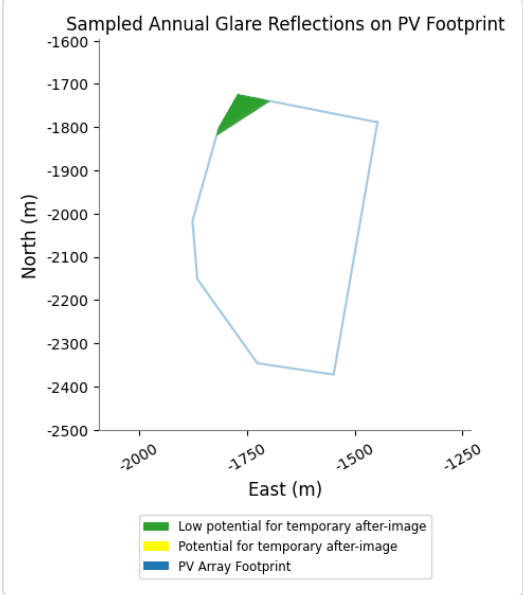
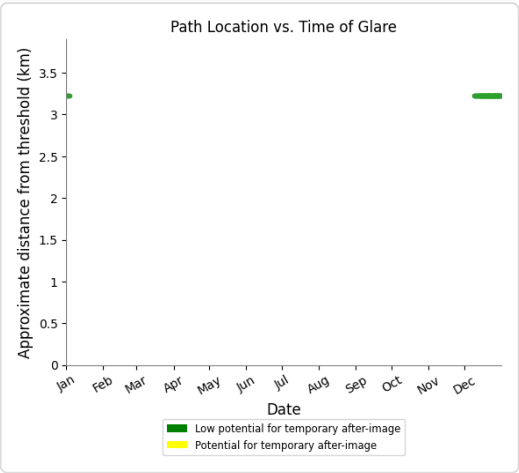
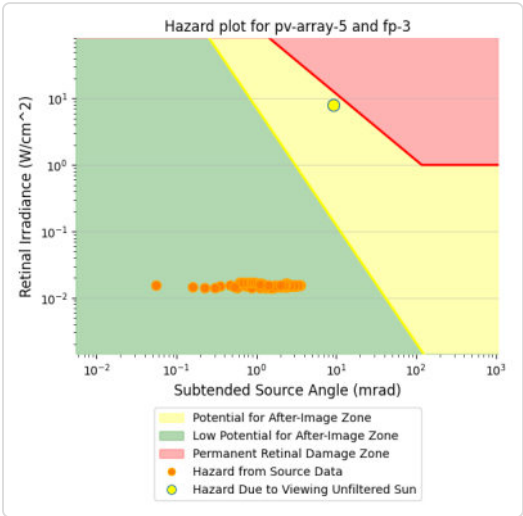
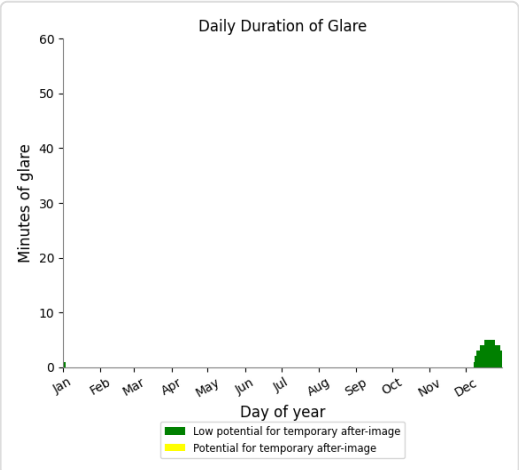
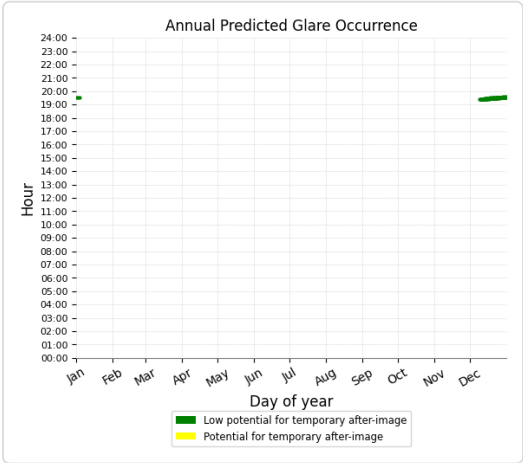
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PV array 5 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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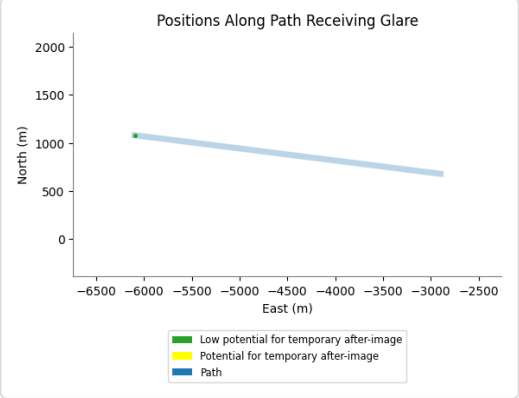
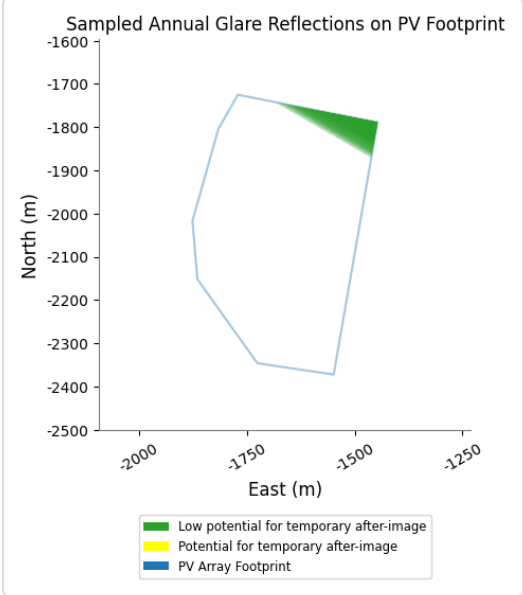
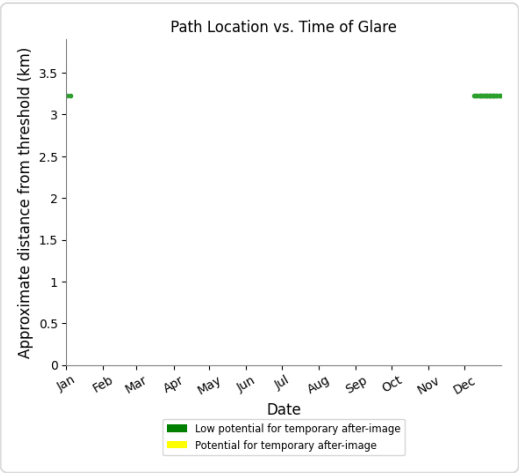
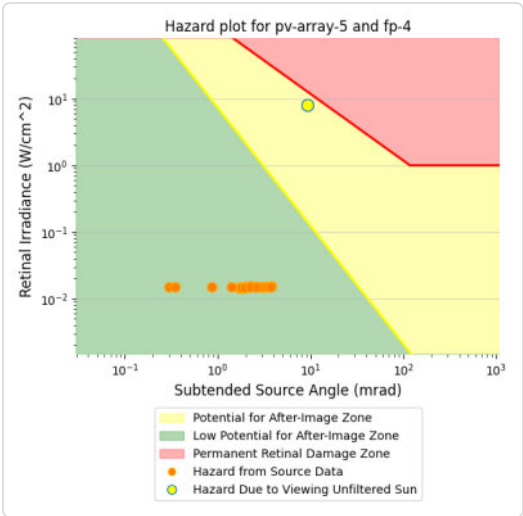
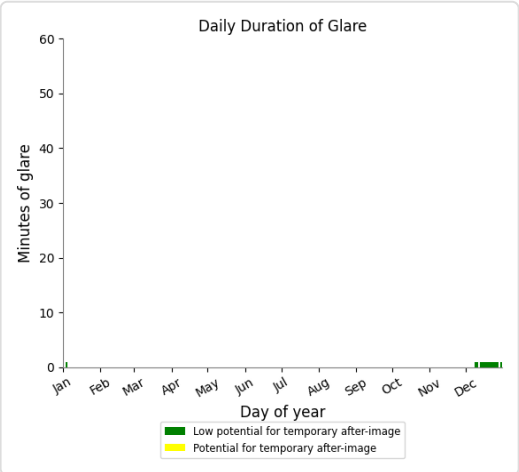
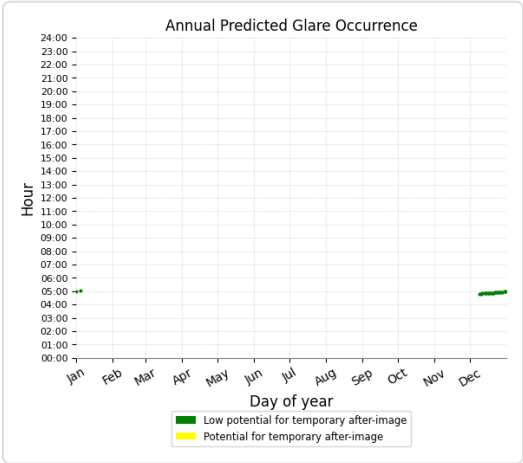
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PV array 5 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 6 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	45	19
FP: FP 2	0	0

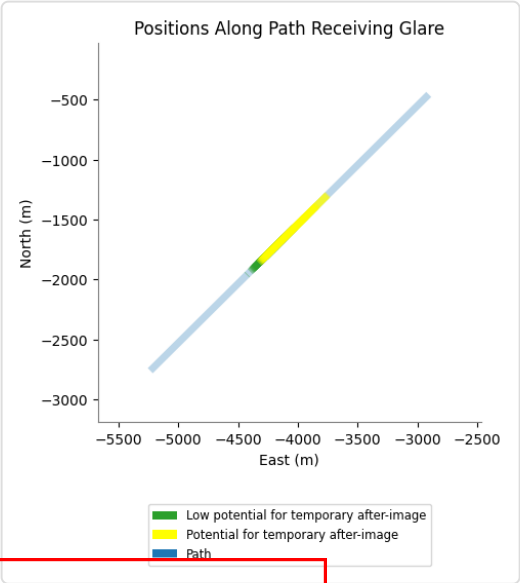
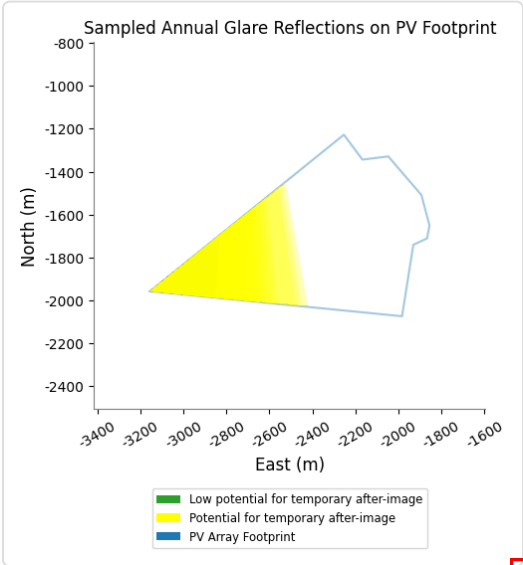
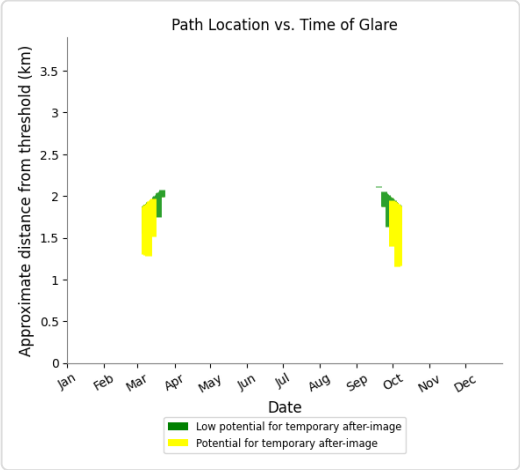
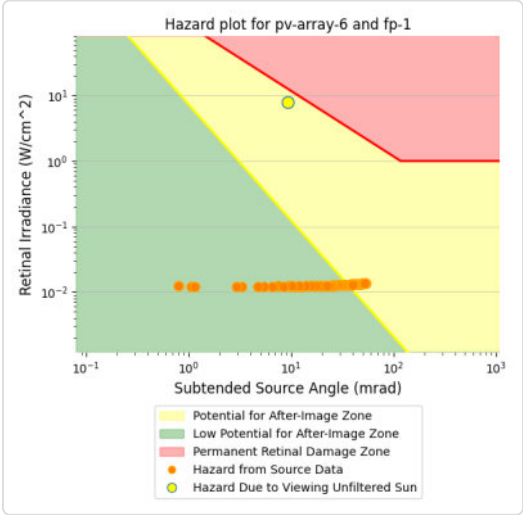
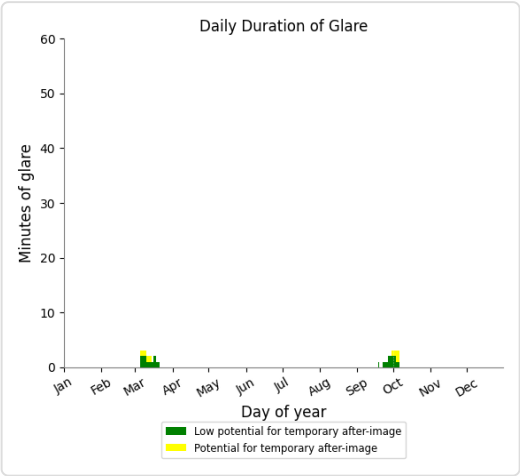
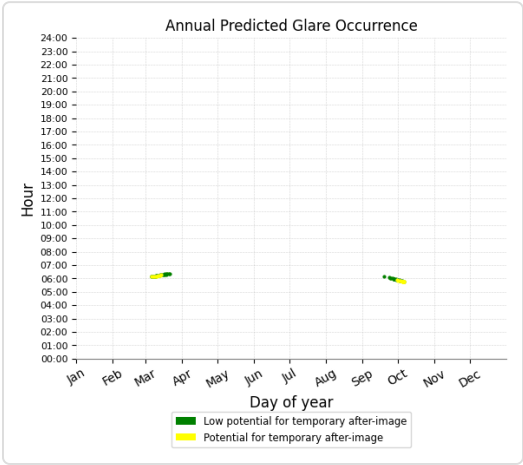
9/29/22, 7:06 PM	Hazelwood 1 Site Config   ForgeSolar	
FP: FP 3	1237	468
FP: FP 4	277	0

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## PV array 6 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



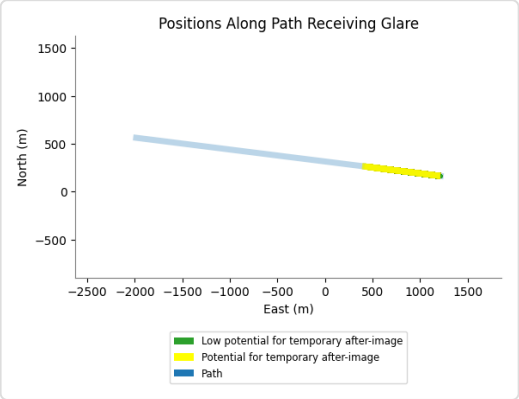
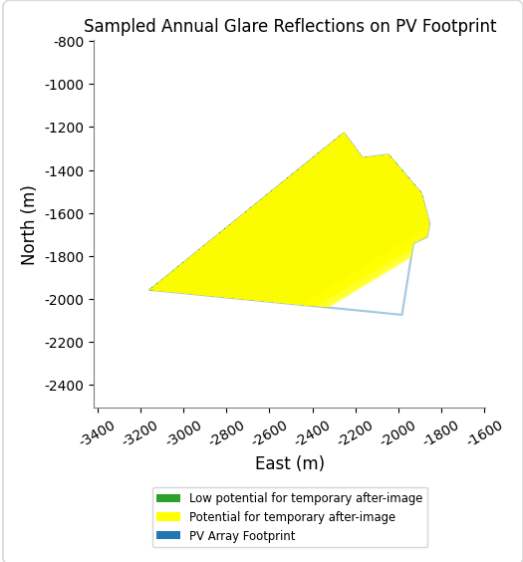
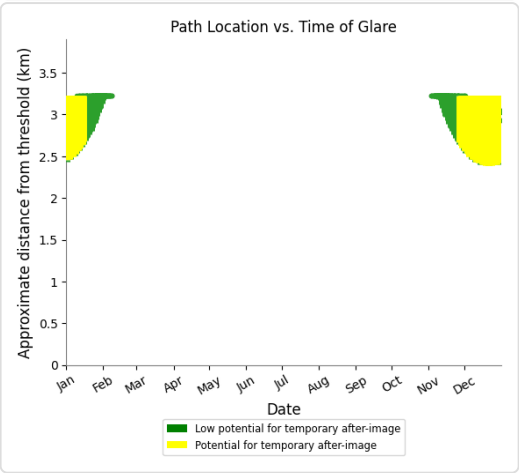
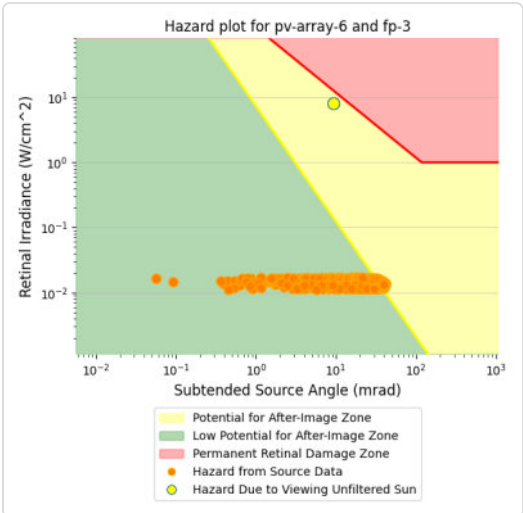
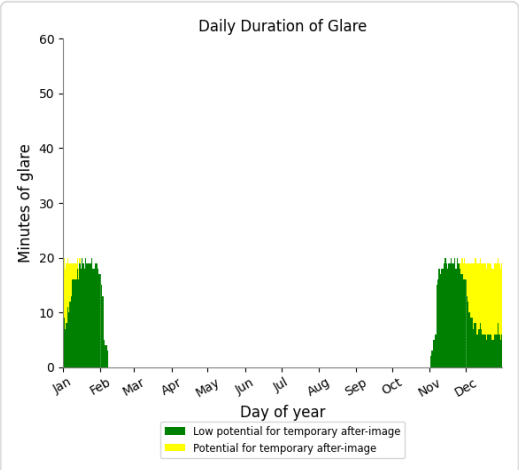
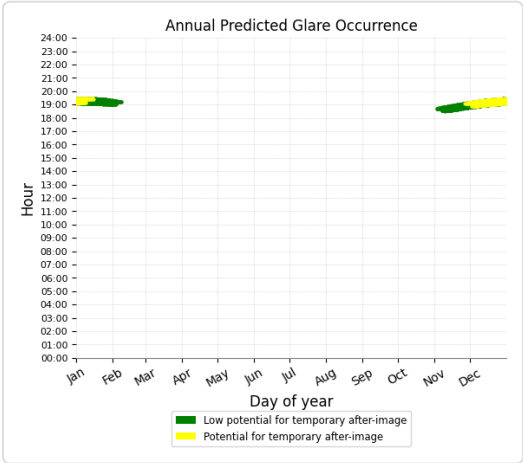
## PV array 6 - Receptor (FP 2)

No glare found

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PV array 6 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 1,237 minutes of "green" glare with low potential to cause temporary after-image.
  - 468 minutes of "yellow" glare with potential to cause temporary after-image.



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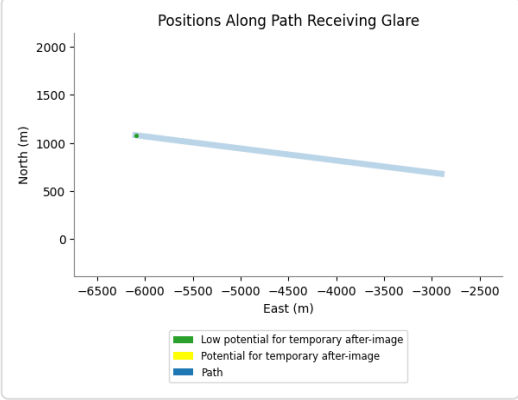
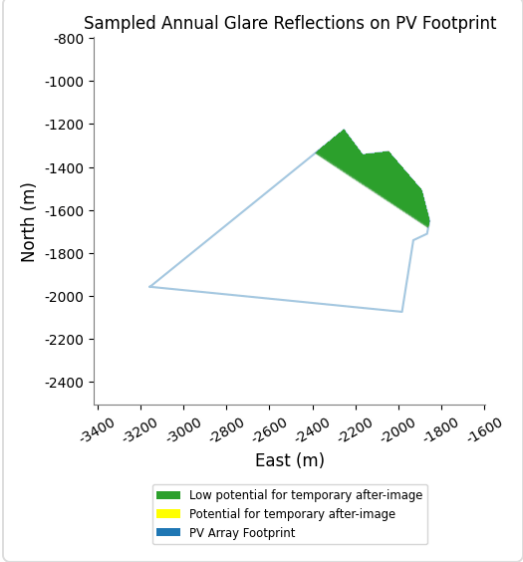
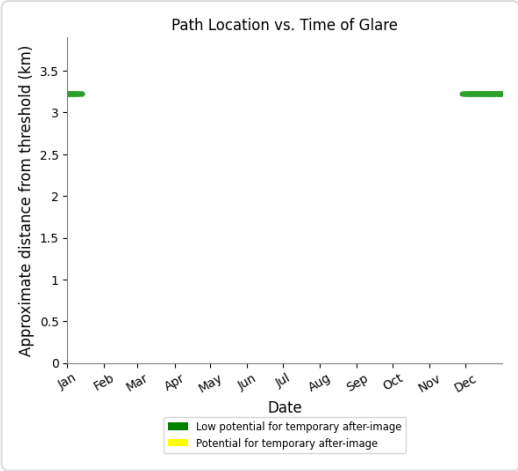
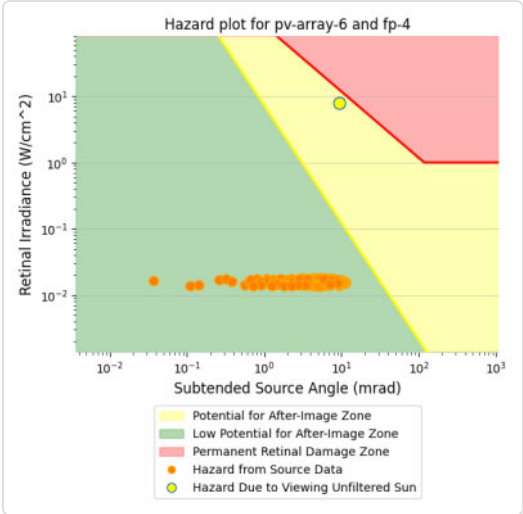
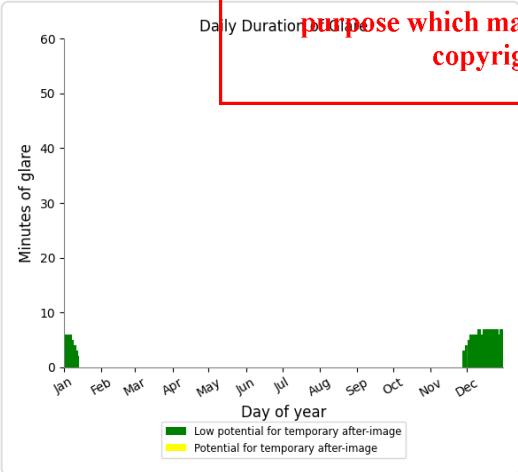
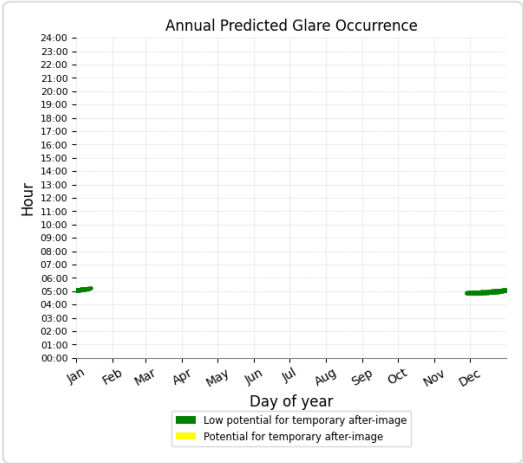


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PV array 6 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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



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PV array 7 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	118	172
FP: FP 2	0	0
FP: FP 3	1315	0

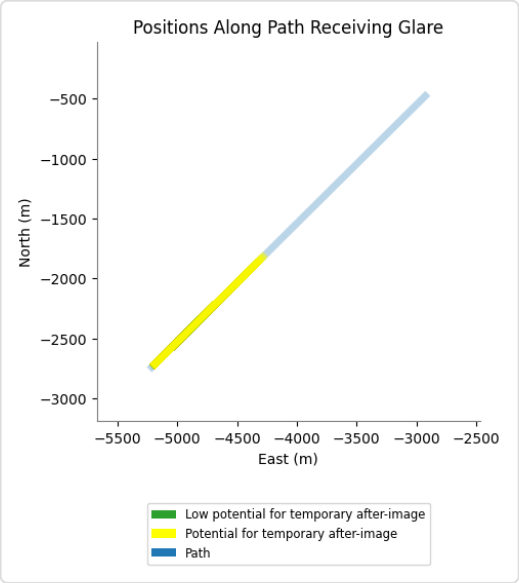
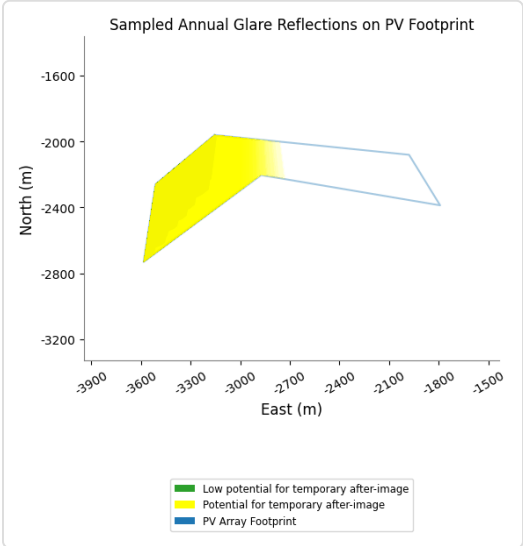
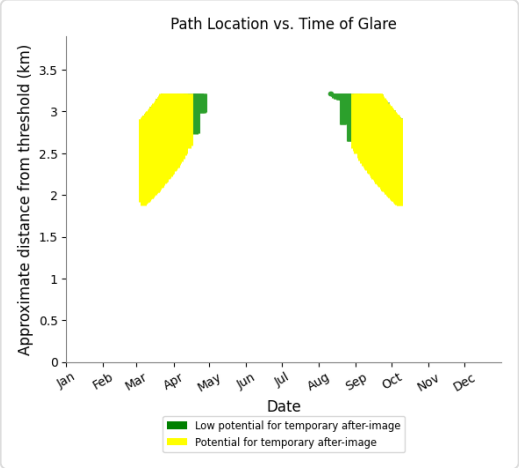
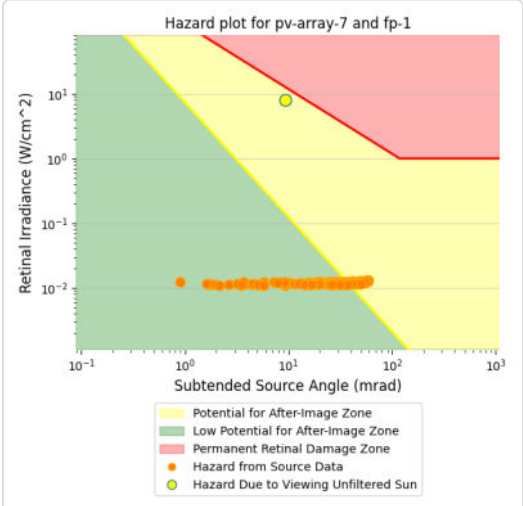
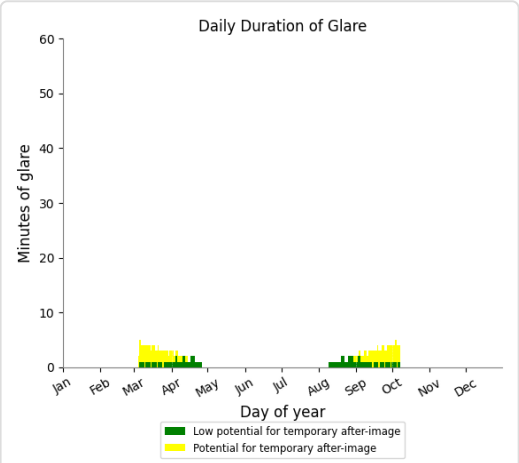
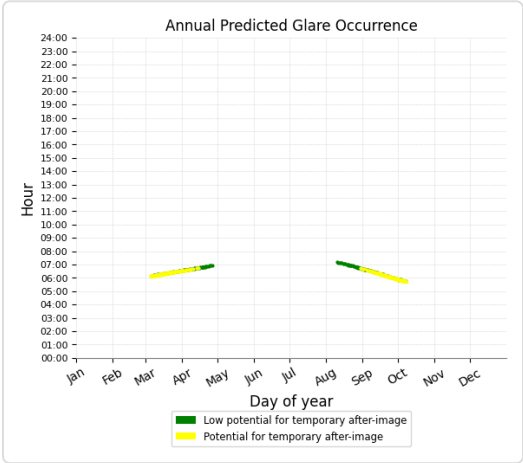
FP: FP 4	0	0
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PV array 7 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 7 - Receptor (FP 2)

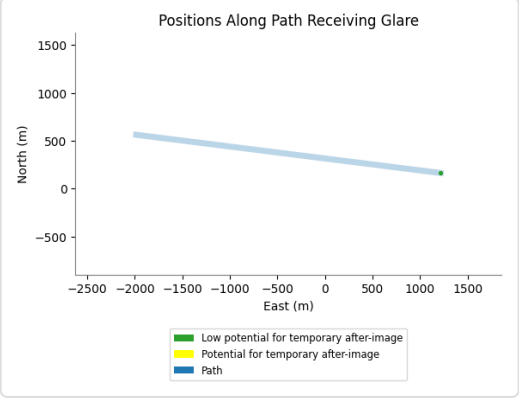
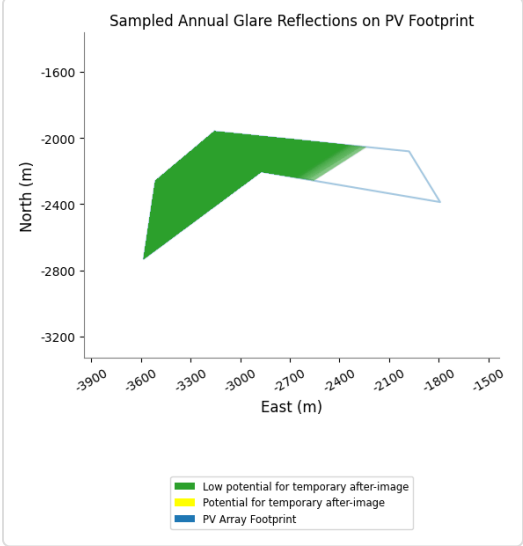
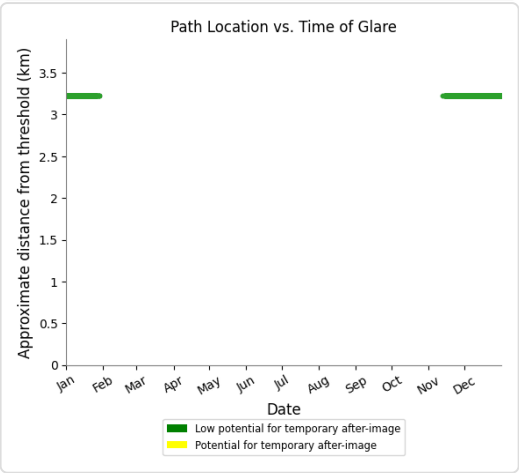
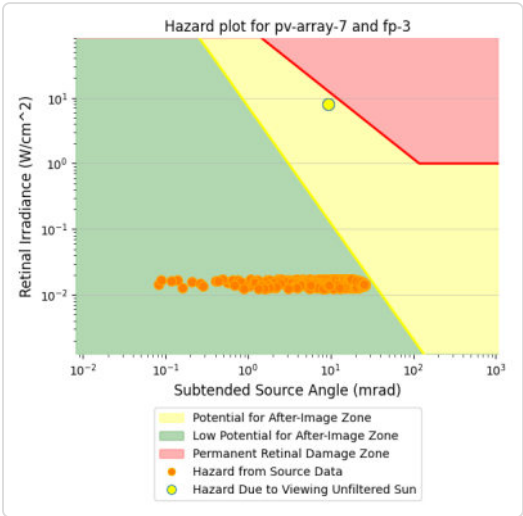
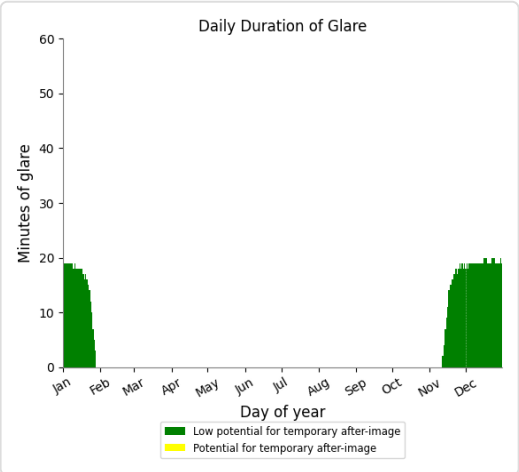
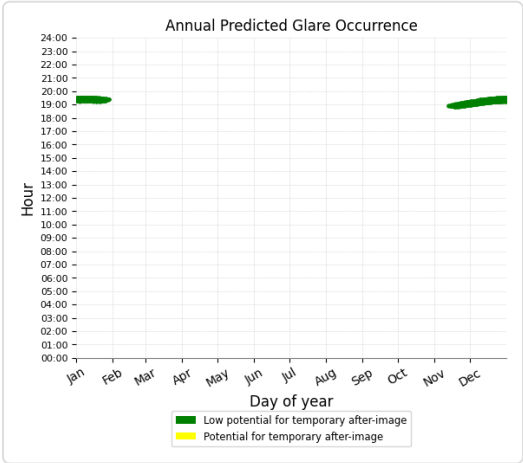
No glare found

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PV array 7 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 1,315 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 7 - Receptor (FP 4)

No glare found

PV array 8 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
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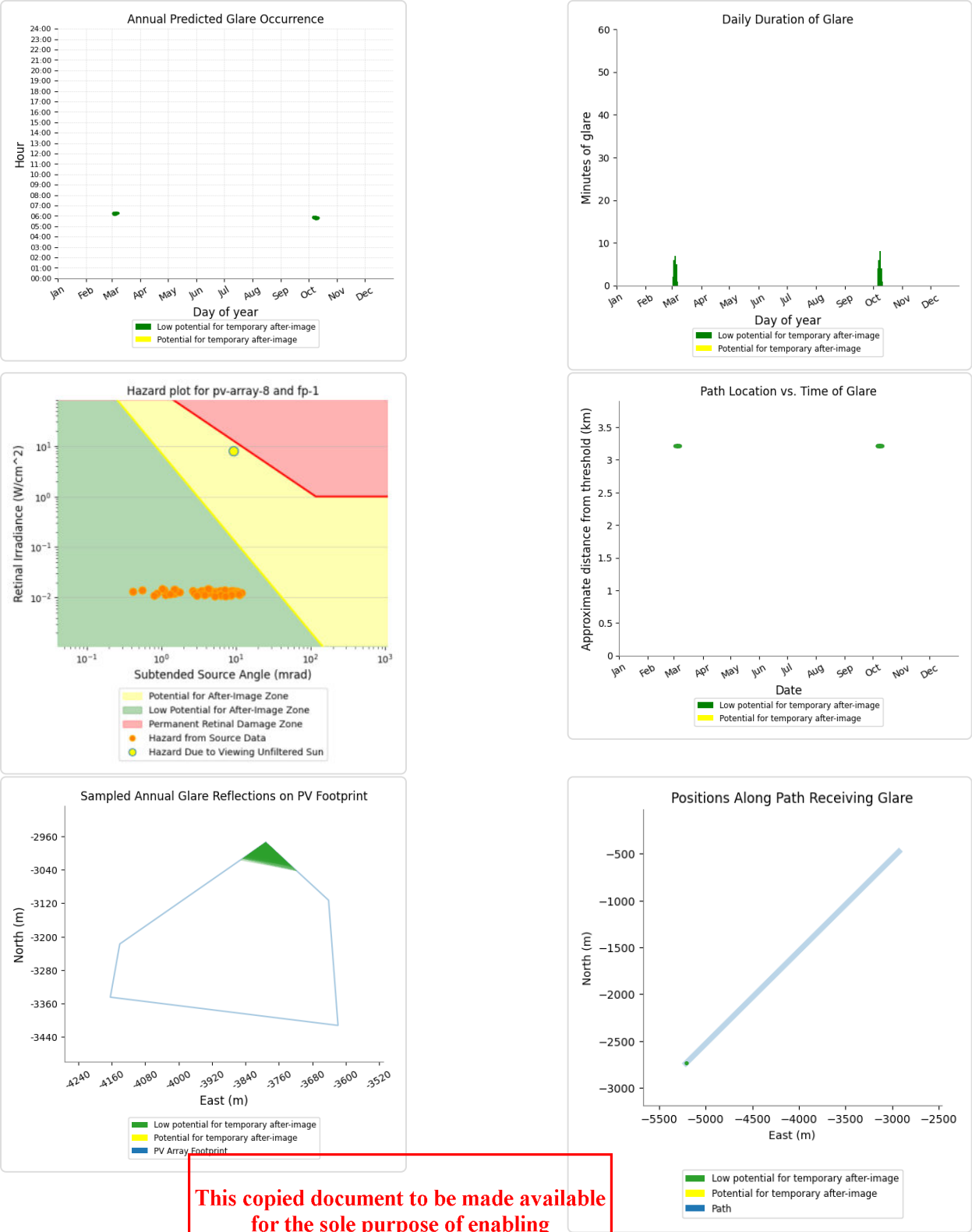


FP: FP 1	59	0
FP: FP 2	0	0
FP: FP 3	115	0
FP: FP 4	0	0

PV array 8 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



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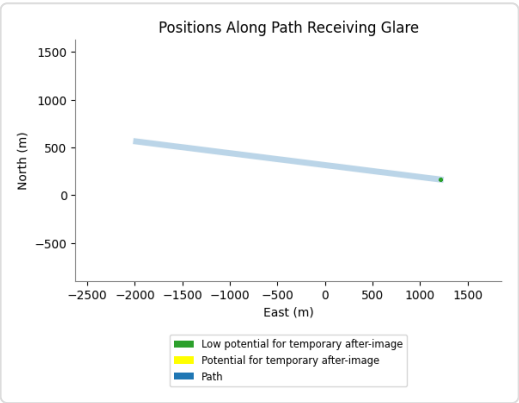
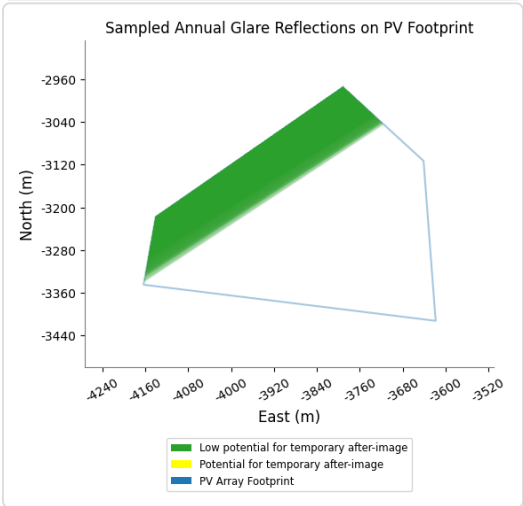
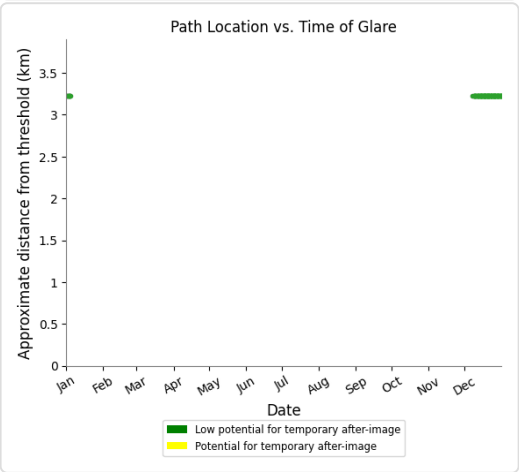
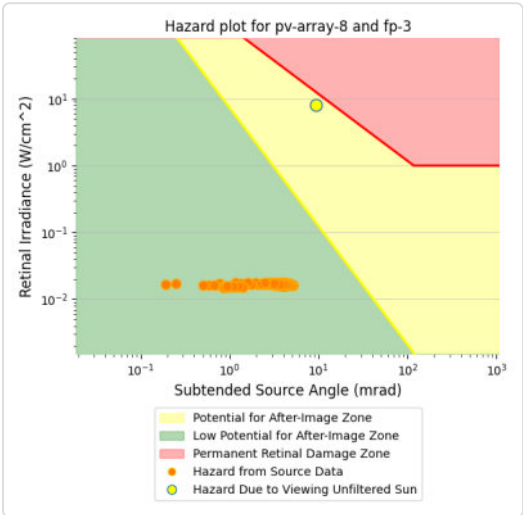
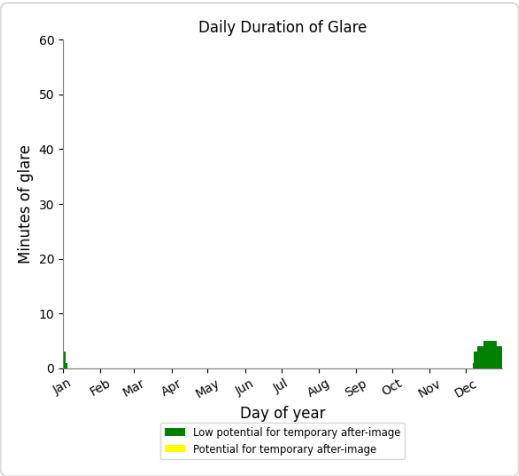
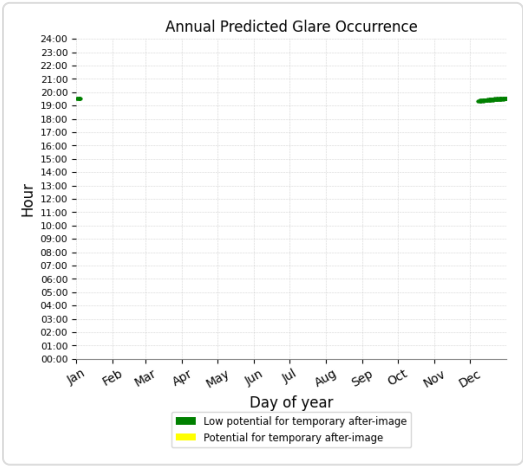
PV array 8 - Receptor (FP 2)

No glare found

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PV array 8 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 115 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 8 - Receptor (FP 4)

No glare found

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PV array 9 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	331	538
FP: FP 2	0	0
FP: FP 3	180	0
FP: FP 4	0	0

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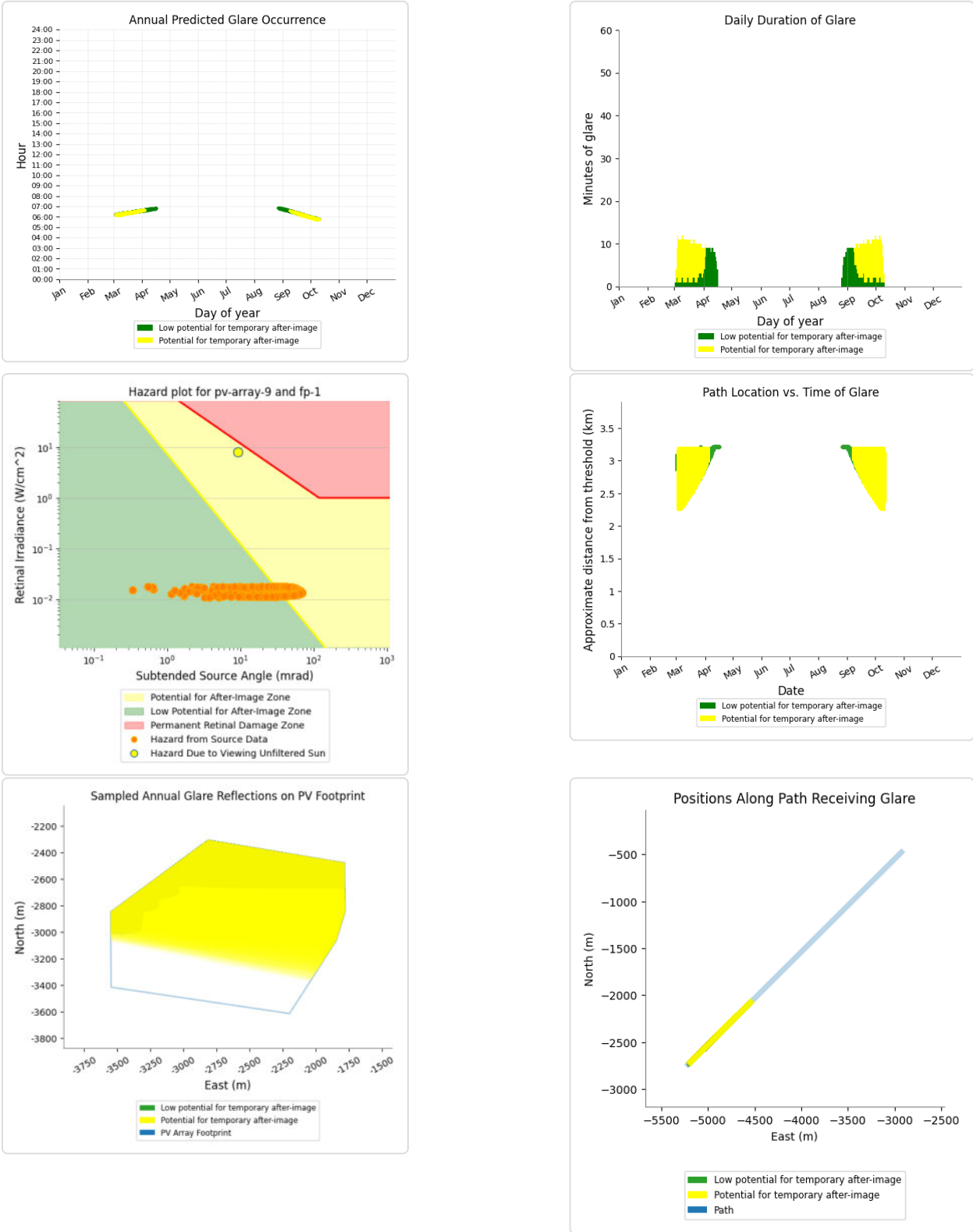
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PV array 9 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 9 - Receptor (FP 2)

No glare found

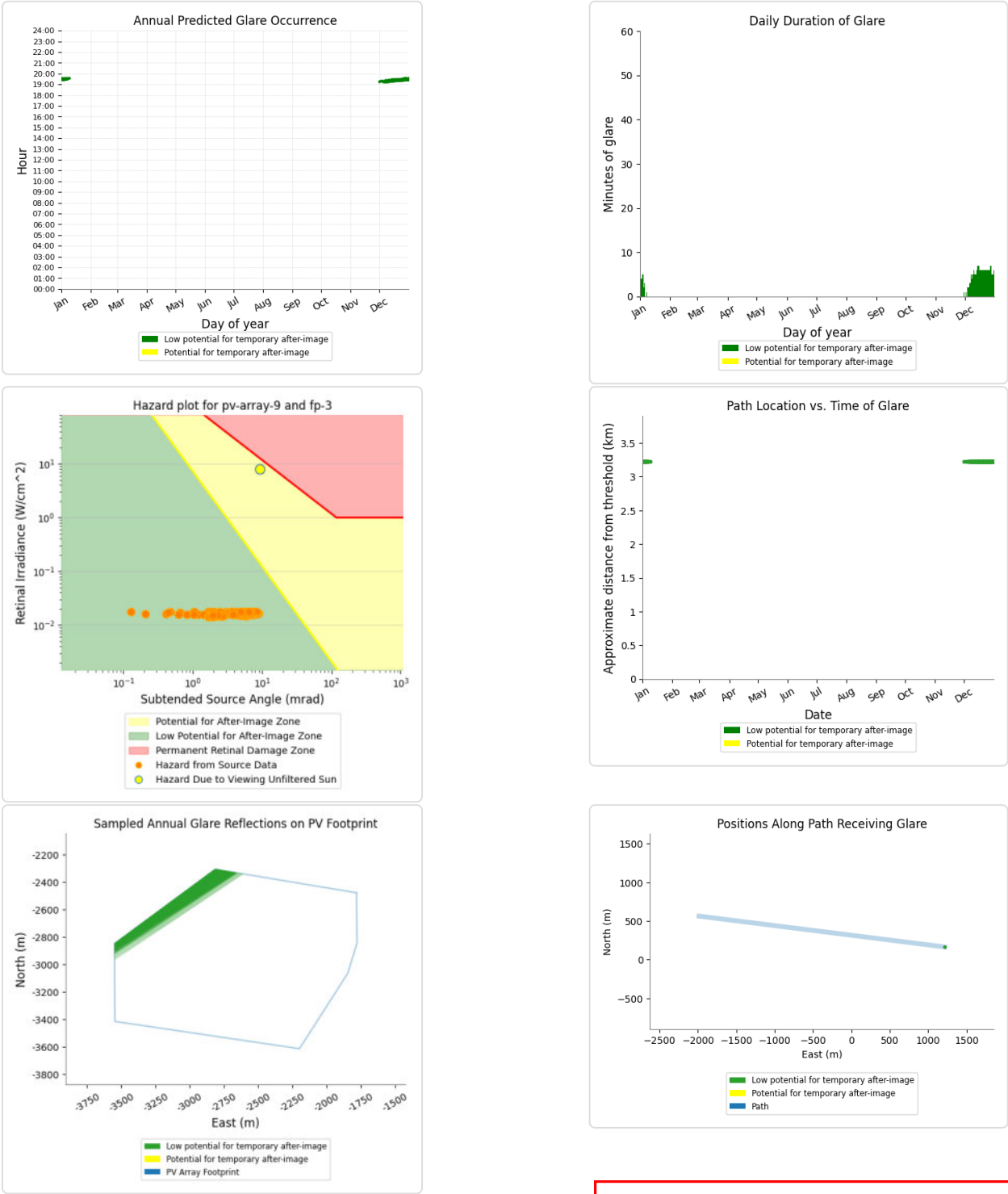
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PV array 9 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 180 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 9 - Receptor (FP 4)

No glare found

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Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

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

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ForgeSolar

# Hazelwood North Solar Farm

## Hazelwood 1\_Max

Created Sept. 29, 2022  
 Updated Sept. 29, 2022  
 Time-step 1 minute  
 Timezone offset UTC10  
 Site ID 76765.13552

Project type Advanced  
 Project status: active  
 Category 100 MW to 1 GW



### Misc. Analysis Settings

DNI: varies (1,000.0 W/m<sup>2</sup> peak)  
 Ocular transmission coefficient: 0.5  
 Pupil diameter: 0.002 m  
 Eye focal length: 0.017 m  
 Sun subtended angle: 9.3 mrad

Analysis Methodology: **Version 2**  
 Enhanced subtended angle calculation: **On**

### 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	SA tracking	SA tracking	2,361	1,848	-
PV array 10	SA tracking	SA tracking	0	0	-
PV array 11	SA tracking	SA tracking	26	0	-
PV array 12	SA tracking	SA tracking	0	0	-
PV array 13	SA tracking	SA tracking	418	0	-
PV array 14	SA tracking	SA tracking	352	14	-
PV array 15	SA tracking	SA tracking	164	0	-
PV array 16	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	2,326	1,371	-
PV array 3	SA tracking	SA tracking	2,432	172	-
PV array 4	SA tracking	SA tracking	1,653	2,402	-
PV array 5	SA tracking	SA tracking	1,030	28	-
PV array 6	SA tracking	SA tracking	1,472	1,324	-
PV array 7	SA tracking	SA tracking	982	1,068	-
PV array 8	SA tracking	SA tracking	178	0	-
PV array 9	SA tracking	SA tracking	517	521	-

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## Component Data

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PV Array(s)

Total PV footprint area: 8,125,069 m^2

**Name:** PV array 1  
**Description:** Ground Max 72\_505  
**Footprint area:** 143,282 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45

**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.211219	146.498454	72.51	3.90	76.41
2	-38.210848	146.492961	72.50	3.90	76.41
3	-38.212736	146.489785	72.50	3.90	76.41
4	-38.213377	146.497939	72.50	3.90	76.41




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**Name:** PV array 10  
**Description:** Ground Max 94\_385  
**Footprint area:** 353,819 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45

**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.243180	146.468384	94.39	3.90	98.29
2	-38.249651	146.466882	94.39	3.90	98.29
3	-38.250460	146.474478	94.39	3.90	98.29
4	-38.247730	146.474907	94.39	3.90	98.29
5	-38.247528	146.473191	94.39	3.90	98.29
6	-38.248505	146.473105	94.39	3.90	98.29
7	-38.248235	146.471302	94.39	3.90	98.29
8	-38.246988	146.471517	94.39	3.90	98.29
9	-38.245842	146.472676	94.39	3.90	98.29
10	-38.243820	146.473105	94.39	3.90	98.29



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**Name:** PV array 11  
**Description:** Ground Max 94\_864  
**Footprint area:** 336,526 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.241393	146.477396	94.86	3.90	98.76
2	-38.241259	146.476495	94.86	3.90	98.76
3	-38.244461	146.473877	94.86	3.90	98.76
4	-38.245438	146.473877	94.86	3.90	98.76
5	-38.245842	146.474092	94.86	3.90	98.76
6	-38.247730	146.475079	94.86	3.90	98.76
7	-38.250527	146.474521	94.86	3.90	98.76
8	-38.251269	146.480014	94.86	3.90	98.76
9	-38.247932	146.478555	94.86	3.90	98.76
10	-38.246146	146.479413	94.86	3.90	98.76
11	-38.244528	146.477053	94.86	3.90	98.76
12	-38.242742	146.477353	94.86	3.90	98.76

**Name:** PV array 12  
**Description:** Ground Max 100\_037  
**Footprint area:** 309,979 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.249853	146.468127	100.04	3.90	103.94
2	-38.252414	146.467783	100.04	3.90	103.94
3	-38.253965	146.479585	100.04	3.90	103.94
4	-38.251269	146.480100	100.04	3.90	103.94

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**Name:** PV array 13  
**Description:** Ground Max 84\_194  
**Footprint area:** 197,878 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233873	146.481715	84.19	3.90	88.09
2	-38.233738	146.479483	84.19	3.90	88.09
3	-38.234817	146.479312	84.19	3.90	88.09
4	-38.236840	146.479784	84.19	3.90	88.09
5	-38.237952	146.479440	84.19	3.90	88.09
6	-38.238693	146.479655	84.19	3.90	88.09
7	-38.239502	146.485406	84.19	3.90	88.09
8	-38.238795	146.485792	84.19	3.90	88.09
9	-38.237042	146.483346	84.19	3.90	88.09

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**Name:** PV array 14  
**Description:** Ground Max 89\_179  
**Footprint area:** 460,156 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233941	146.483947	89.18	3.90	93.08
2	-38.235222	146.493645	89.18	3.90	93.08
3	-38.240750	146.492444	89.18	3.90	93.08
4	-38.239570	146.485449	89.18	3.90	93.08
5	-38.238727	146.485749	89.18	3.90	93.08
6	-38.236873	146.484333	89.18	3.90	93.08
7	-38.235525	146.483861	89.18	3.90	93.08
8	-38.234547	146.483560	89.18	3.90	93.08

**Name:** PV array 15  
**Description:** Ground Max 95\_467  
**Footprint area:** 631,952 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238716	146.479651	95.47	3.90	99.37
2	-38.239541	146.480252	95.47	3.90	99.37
3	-38.240637	146.479287	95.47	3.90	99.37
4	-38.244412	146.478750	95.47	3.90	99.37
5	-38.245204	146.491238	95.47	3.90	99.37
6	-38.240738	146.492397	95.47	3.90	99.37

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**Name:** PV array 16  
**Description:** Ground Max 104\_141  
**Footprint area:** 664,065 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.245259	146.491299	104.14	3.90	108.04
2	-38.244467	146.478767	104.14	3.90	108.04
3	-38.245765	146.480698	104.14	3.90	108.04
4	-38.246624	146.480677	104.14	3.90	108.04
5	-38.247652	146.479905	104.14	3.90	108.04
6	-38.251949	146.481879	104.14	3.90	108.04
7	-38.252017	146.486857	104.14	3.90	108.04
8	-38.250433	146.490161	104.14	3.90	108.04

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**Name:** PV array 2  
**Description:** Ground Max 78\_47  
**Footprint area:** 277,401 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213410	146.497896	78.47	3.90	82.37
2	-38.212736	146.489613	78.47	3.90	82.37
3	-38.216951	146.490686	78.47	3.90	82.37
4	-38.216816	146.497424	78.47	3.90	82.37

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**Name:** PV array 3  
**Description:** Ground Max 80\_544  
**Footprint area:** 233,124 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.216816	146.497510	80.54	3.90	84.44
2	-38.220558	146.496608	80.54	3.90	84.44
3	-38.220862	146.490858	80.54	3.90	84.44
4	-38.216951	146.490686	80.54	3.90	84.44

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**Name:** PV array 4  
**Description:** Ground Max 76\_493  
**Footprint area:** 1,289,644 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213511	146.485665	76.49	3.90	80.39
2	-38.216243	146.486867	76.49	3.90	80.39
3	-38.217962	146.488283	76.49	3.90	80.39
4	-38.219277	146.488111	76.49	3.90	80.39
5	-38.220120	146.488626	76.49	3.90	80.39
6	-38.221738	146.488712	76.49	3.90	80.39
7	-38.222581	146.489570	76.49	3.90	80.39
8	-38.222682	146.490600	76.49	3.90	80.39
9	-38.223559	146.490815	76.49	3.90	80.39
10	-38.225144	146.489656	76.49	3.90	80.39
11	-38.227268	146.489012	76.49	3.90	80.39
12	-38.228211	146.490171	76.49	3.90	80.39
13	-38.226863	146.479056	76.49	3.90	80.39
14	-38.224301	146.478455	76.49	3.90	80.39
15	-38.222750	146.477339	76.49	3.90	80.39
16	-38.222143	146.475666	76.49	3.90	80.39
17	-38.219716	146.475966	76.49	3.90	80.39



**Name:** PV array 5  
**Description:** Ground Max 82\_567  
**Footprint area:** 201,837 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.227335	146.481931	82.57	3.90	86.47
2	-38.232594	146.480773	82.57	3.90	86.47
3	-38.232358	146.478756	82.57	3.90	86.47
4	-38.230605	146.477168	82.57	3.90	86.47
5	-38.229391	146.477039	82.57	3.90	86.47
6	-38.227470	146.477726	82.57	3.90	86.47
7	-38.226762	146.478241	82.57	3.90	86.47

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**Name:** PV array 6  
**Description:** Ground Max 77\_468  
**Footprint area:** 606,570 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228854	146.462419	77.47	3.90	81.37
2	-38.222280	146.472719	77.47	3.90	81.37
3	-38.223325	146.473706	77.47	3.90	81.37
4	-38.223190	146.475079	77.47	3.90	81.37
5	-38.224808	146.476838	77.47	3.90	81.37
6	-38.226089	146.477268	77.47	3.90	81.37
7	-38.226629	146.477139	77.47	3.90	81.37
8	-38.226898	146.476409	77.47	3.90	81.37
9	-38.229899	146.475808	77.47	3.90	81.37

**Name:** PV array 7  
**Description:** Ground Max 77\_511  
**Footprint area:** 509,280 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228887	146.462419	77.51	3.90	81.41
2	-38.231584	146.458342	77.51	3.90	81.41
3	-38.235832	146.457527	77.51	3.90	81.41
4	-38.231079	146.465638	77.51	3.90	81.41
5	-38.232730	146.477997	77.51	3.90	81.41
6	-38.229966	146.475851	77.51	3.90	81.41

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**Name:** PV array 8  
**Description:** Ground Max 76\_031  
**Footprint area:** 153,895 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238023	146.455166	76.03	3.90	79.93
2	-38.240214	146.451175	76.03	3.90	79.93
3	-38.241360	146.450918	76.03	3.90	79.93
4	-38.241966	146.457140	76.03	3.90	79.93
5	-38.239270	146.456883	76.03	3.90	79.93

**Name:** PV array 9  
**Description:** Ground Max 84\_708  
**Footprint area:** 1,755,661 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



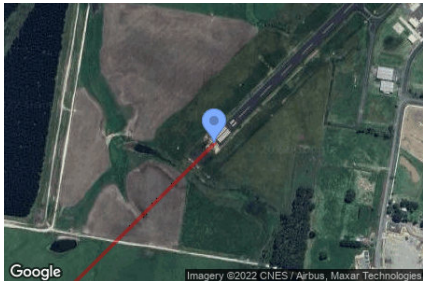
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233539	146.478126	84.71	3.90	88.61
2	-38.231989	146.466324	84.71	3.90	88.61
3	-38.236877	146.457913	84.71	3.90	88.61
4	-38.242000	146.457956	84.71	3.90	88.61
5	-38.243787	146.473362	84.71	3.90	88.61
6	-38.238832	146.477396	84.71	3.90	88.61
7	-38.236843	146.478169	84.71	3.90	88.61

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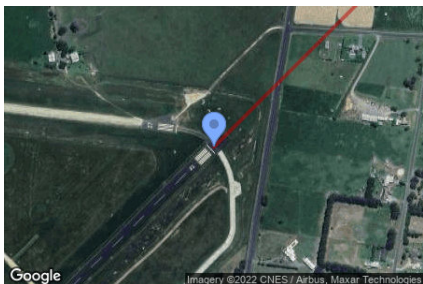
**Name:** FP 1  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 45.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.215525	146.465053	51.19	15.24	66.43
2-mile point	-38.235919	146.438938	66.15	168.97	235.11



**Name:** FP 2  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 225.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

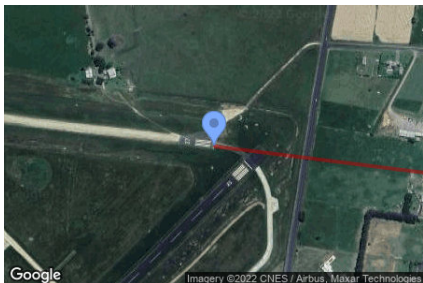
Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206436	146.476628	57.79	15.24	73.03
2-mile point	-38.186038	146.502735	52.47	189.25	241.72



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**Name:** FP 3  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 277.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206142	146.475786	55.28	15.24	70.52
2-mile point	-38.209736	146.512338	69.94	169.27	239.20



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**Name:** FP 4  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 97.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.205111	146.465369	50.98	15.24	66.22
2-mile point	-38.201512	146.428819	94.82	140.09	234.91



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## Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	2,361	1,848	-	-
PV array 10	SA tracking	SA tracking	0	0	-	
PV array 11	SA tracking	SA tracking	26	0	-	-
PV array 12	SA tracking	SA tracking	0	0	-	
PV array 13	SA tracking	SA tracking	418	0	-	-
PV array 14	SA tracking	SA tracking	352	14	-	-
PV array 15	SA tracking	SA tracking	164	0	-	-
PV array 16	SA tracking	SA tracking	0	0	-	
PV array 2	SA tracking	SA tracking	2,326	1,371	-	-
PV array 3	SA tracking	SA tracking	2,432	172	-	-
PV array 4	SA tracking	SA tracking	1,653	2,402	-	-
PV array 5	SA tracking	SA tracking	1,030	28	-	-
PV array 6	SA tracking	SA tracking	1,472	1,324	-	-
PV array 7	SA tracking	SA tracking	982	1,068	-	-
PV array 8	SA tracking	SA tracking	178	0	-	-
PV array 9	SA tracking	SA tracking	517	521	-	-

### Distinct glare per month

Excludes overlapping glare from PV array for multiple receptors at matching time(s)

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PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
pv-array-1 (green)	181	309	185	106	198	199	214	158	52	370	200	189
pv-array-1 (yellow)	445	286	29	0	0	0	0	0	0	216	401	471
pv-array-11 (green)	0	0	12	0	0	0	0	0	0	14	0	0
pv-array-11 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-13 (green)	0	0	192	15	0	0	0	0	153	58	0	0
pv-array-13 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-14 (green)	0	0	169	6	0	0	0	0	132	45	0	0
pv-array-14 (yellow)	0	0	7	0	0	0	0	0	0	7	0	0
pv-array-15 (green)	0	0	81	0	0	0	0	0	28	55	0	0
pv-array-15 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-2 (green)	218	336	77	147	212	195	213	176	61	316	240	135
pv-array-2 (yellow)	377	170	0	0	0	0	0	0	0	82	344	398
pv-array-3 (green)	502	164	91	173	162	0	81	192	137	86	443	401
pv-array-3 (yellow)	23	0	0	0	0	0	0	0	0	0	0	149
pv-array-4 (green)	158	298	60	15	117	221	195	21	14	277	201	76
pv-array-4 (yellow)	406	130	160	203	127	0	48	213	185	96	334	500
pv-array-5 (green)	26	0	172	209	0	0	0	136	209	43	0	235
pv-array-5 (yellow)	0	0	15	0	0	0	0	0	2	11	0	0
pv-array-6 (green)	243	55	42	48	208	32	192	83	42	18	216	293
pv-array-6 (yellow)	54	0	243	253	63	0	0	224	258	72	10	147
pv-array-7 (green)	191	0	22	117	84	0	0	190	27	5	121	225
pv-array-7 (yellow)	0	0	318	215	0	0	0	111	322	102	0	0
pv-array-8 (green)	13	0	32	0	0	0	0	0	0	31	0	102
pv-array-8 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-9 (green)	31	0	47	119	0	0	0	35	118	14	0	153
pv-array-9 (yellow)	0	0	250	10	0	0	0	0	176	85	0	0

## PV & Receptor Analysis Results

Results for each PV array and receptor

### PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	887	0
FP: FP 2	0	0
FP: FP 3	1136	1848
FP: FP 4	338	0

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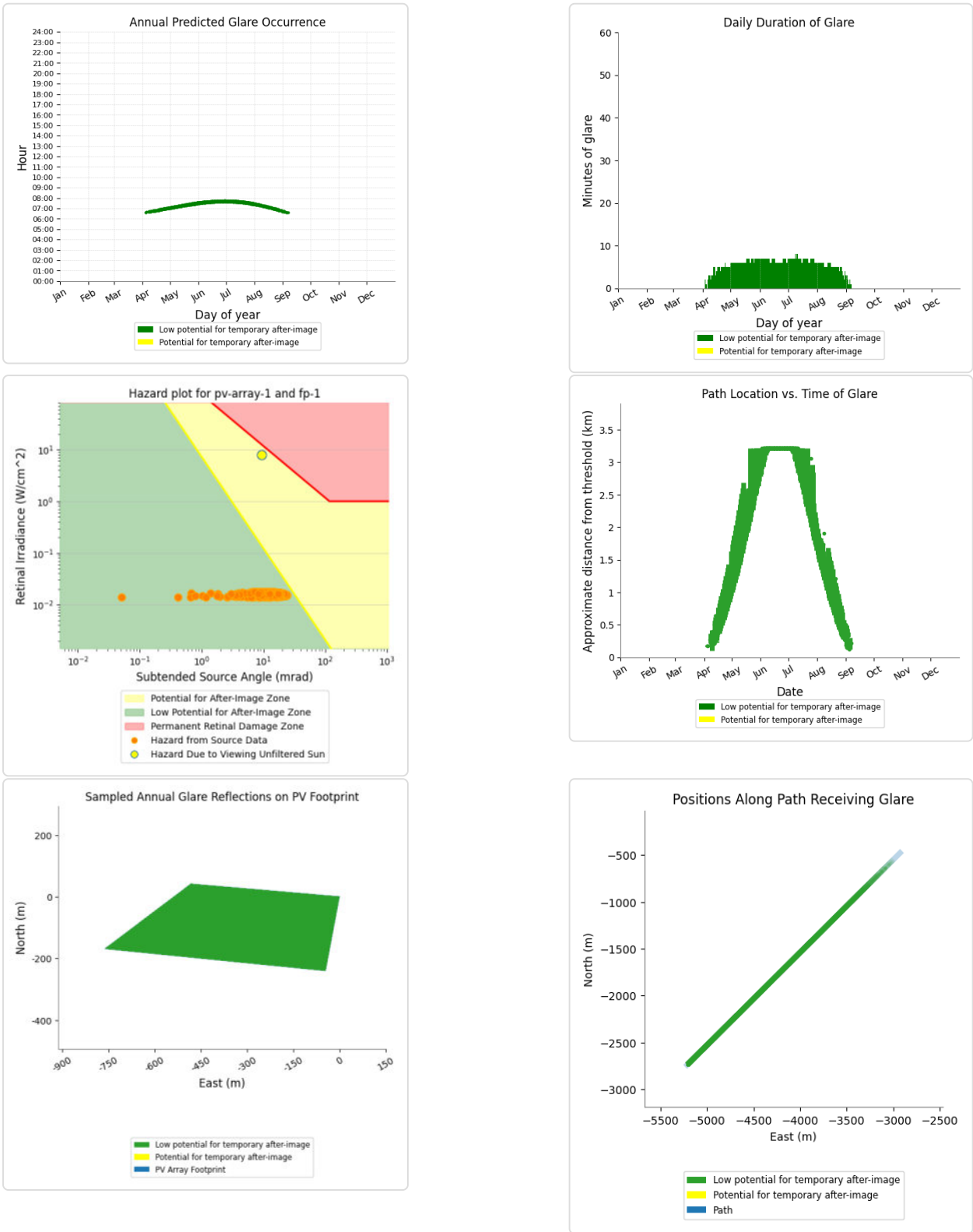
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PV array 1 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 887 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 - Receptor (FP 2)

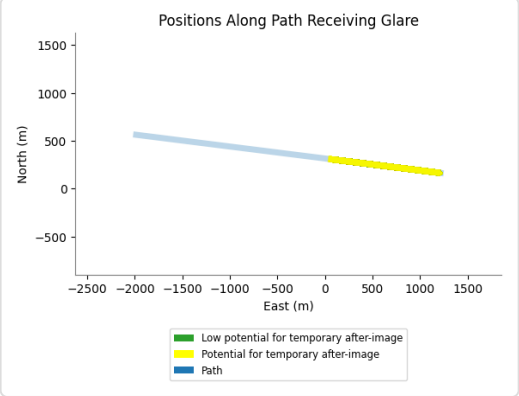
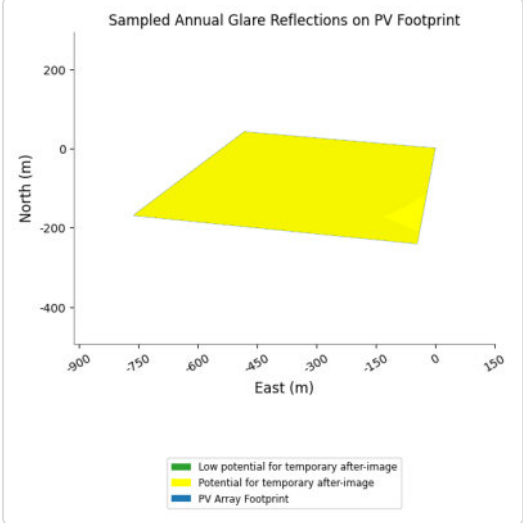
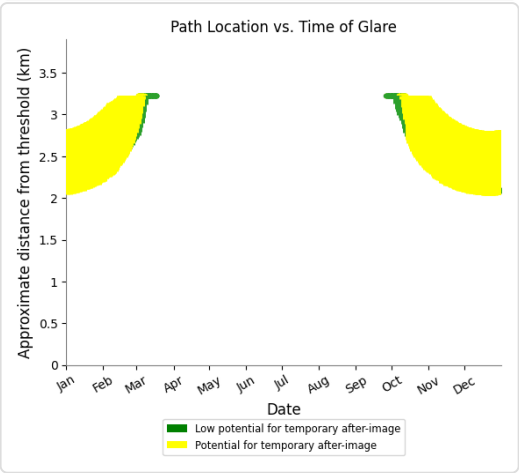
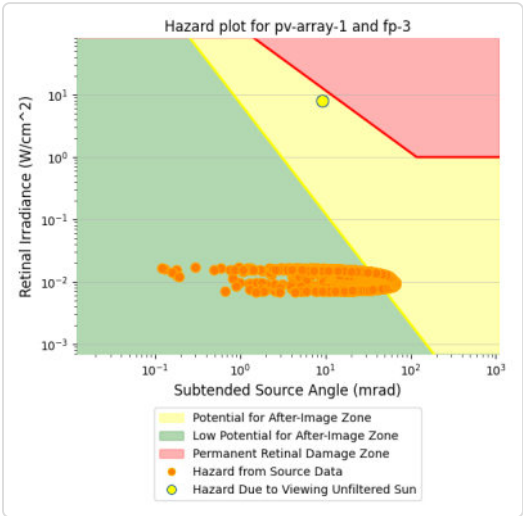
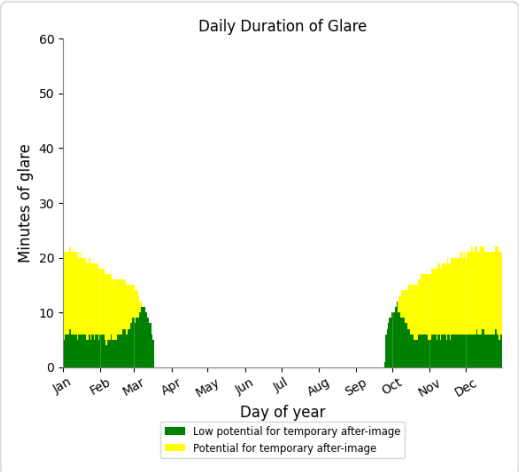
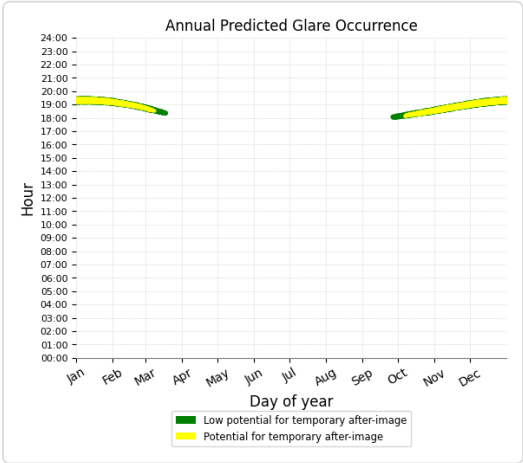
No glare found

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PV array 1 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 1,136 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,848 minutes of "yellow" glare with potential to cause temporary after-image.

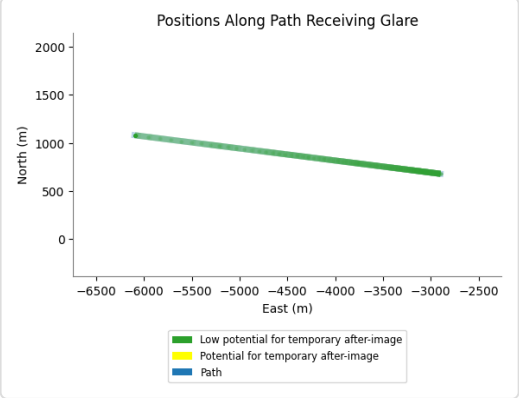
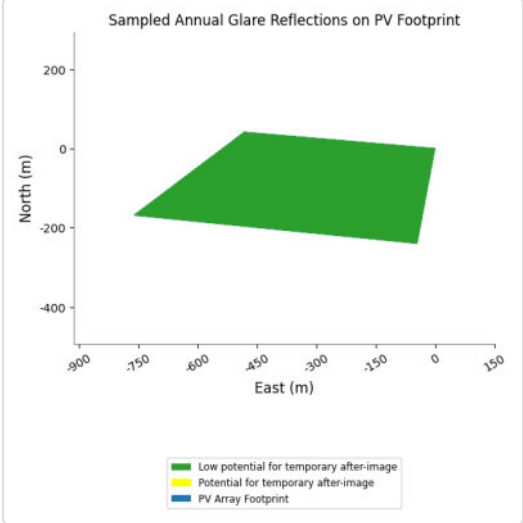
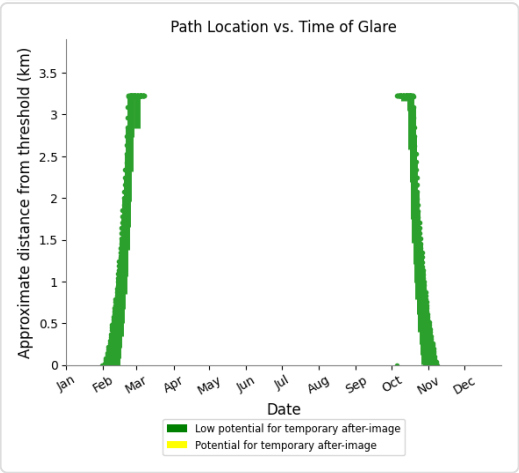
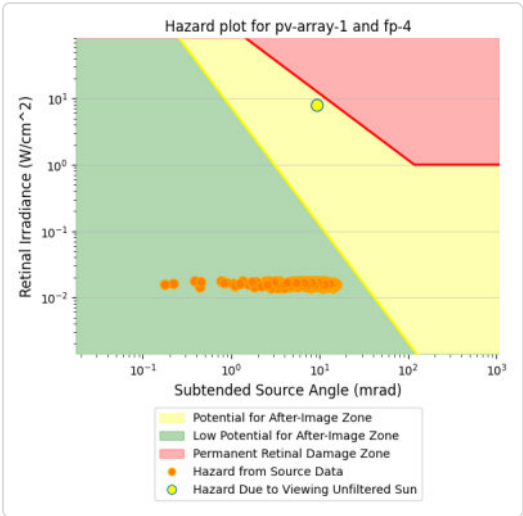
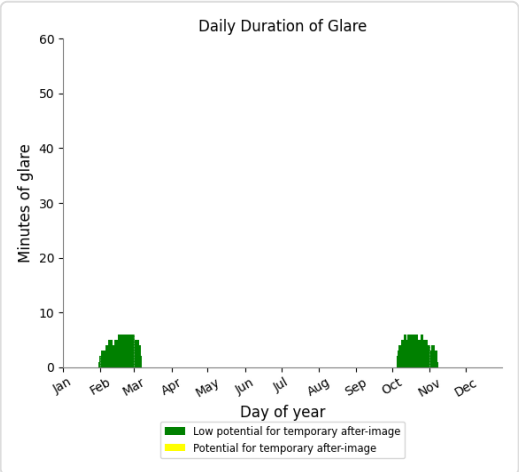
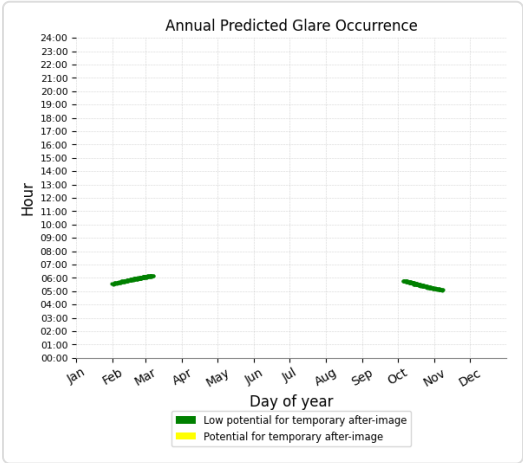


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PV array 1 - Receptor (FP 4)

- PV array is expected to produce the following glare for observers on this flight path:
- 338 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 10 no glare found

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Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found



PV array 11 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	26	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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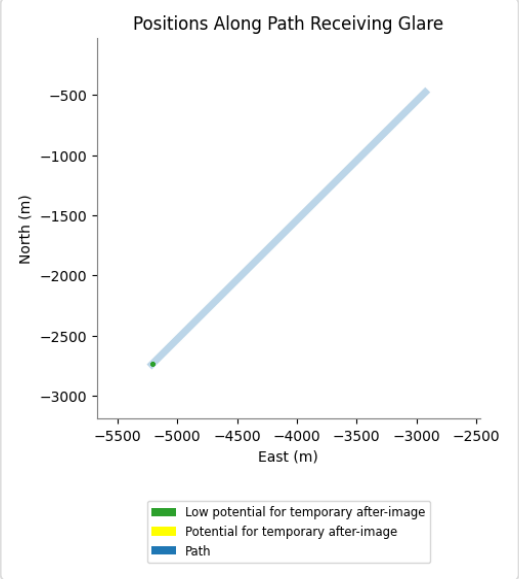
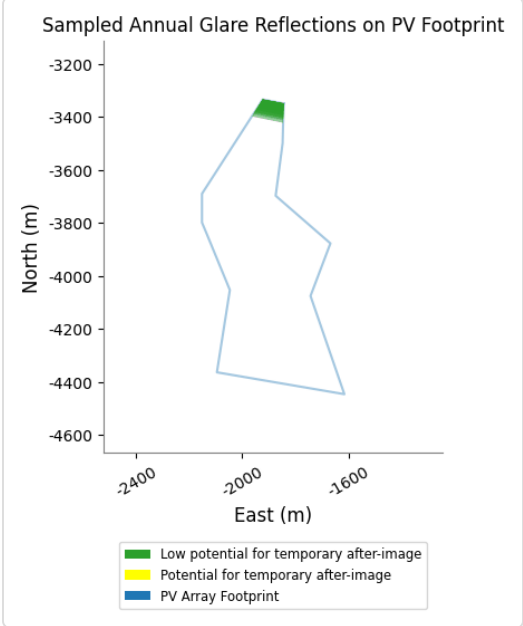
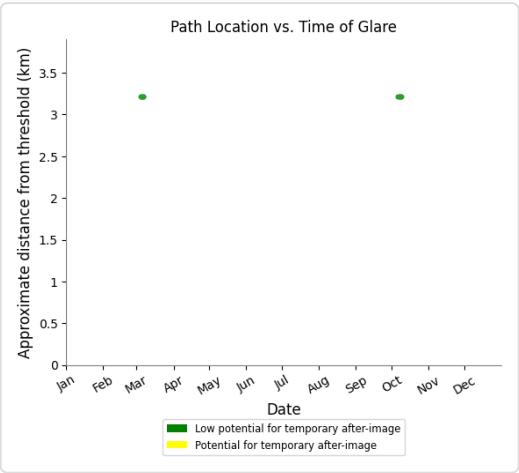
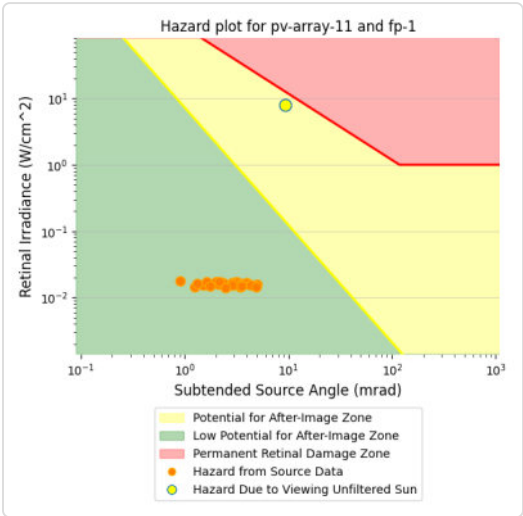
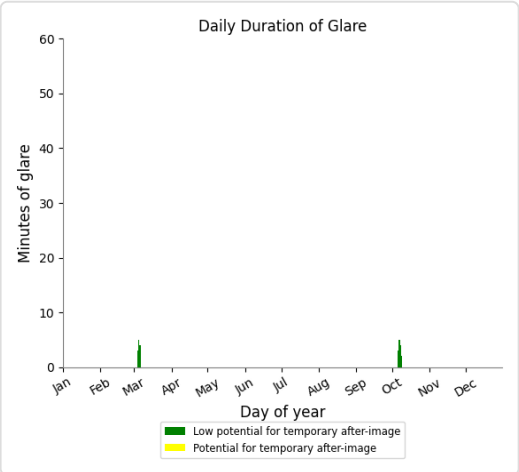
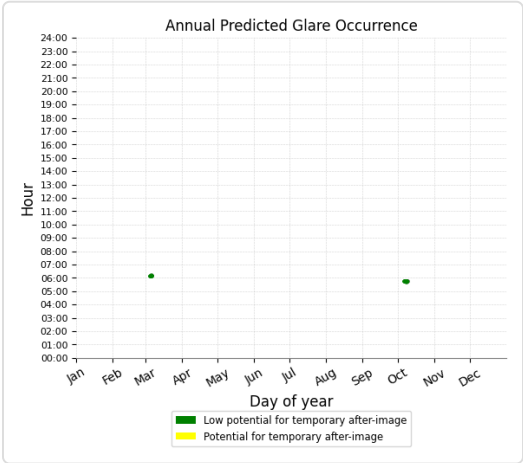
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PV array 11 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 26 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 11 - Receptor (FP 2)

No glare found

PV array 11 - Receptor (FP 3)

No glare found

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PV array 11 - Receptor (FP 4)

No glare found

PV array 12

no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 13

low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	418	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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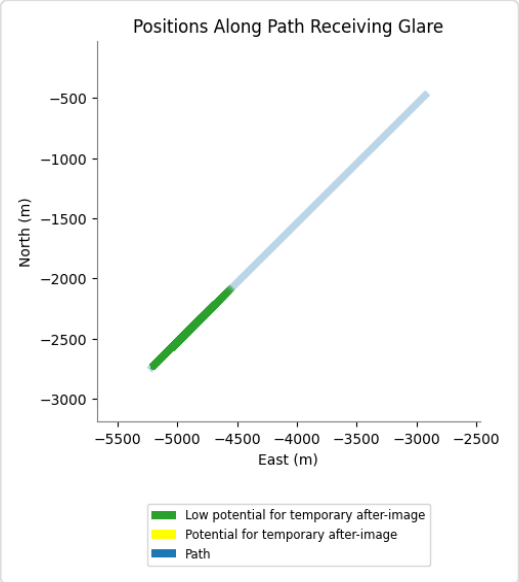
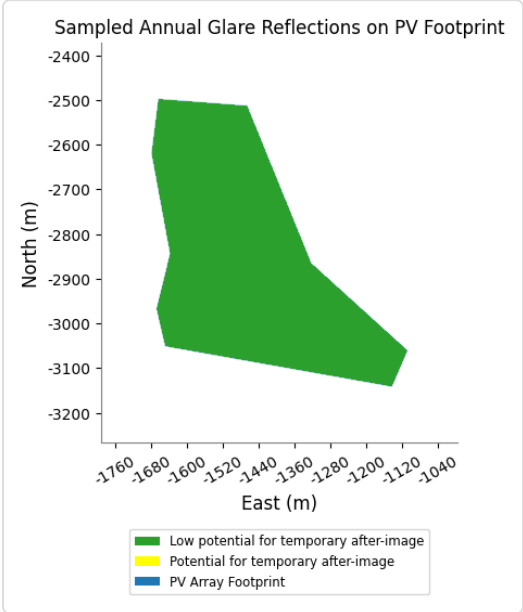
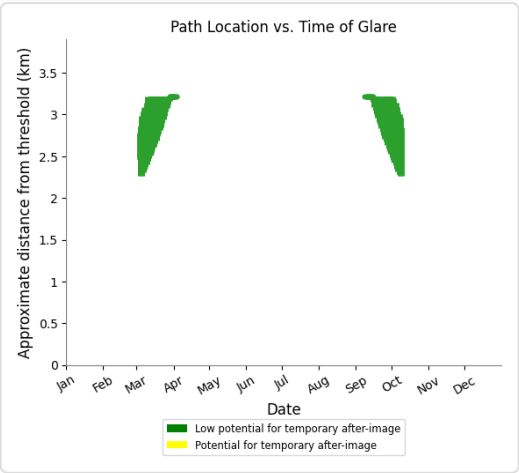
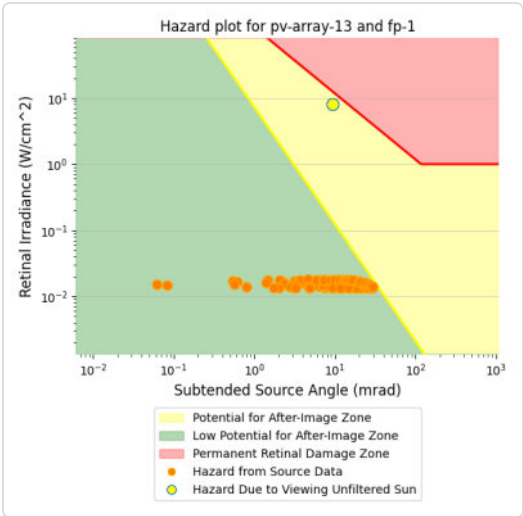
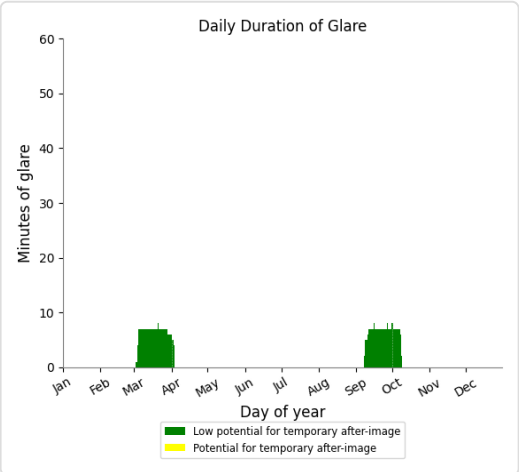
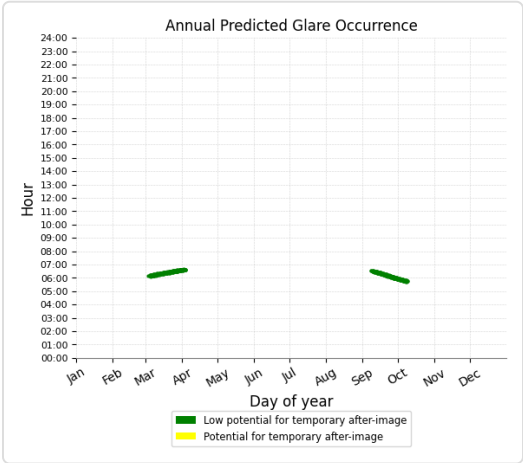


PV array 13 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 13 - Receptor (FP 2)

No glare found

PV array 13 - Receptor (FP 3)

No glare found

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PV array 13 - Receptor (FP 4)

No glare found

PV array 14 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	352	14
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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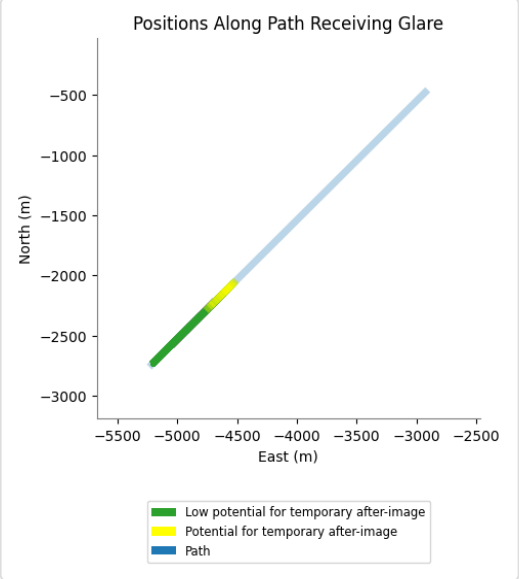
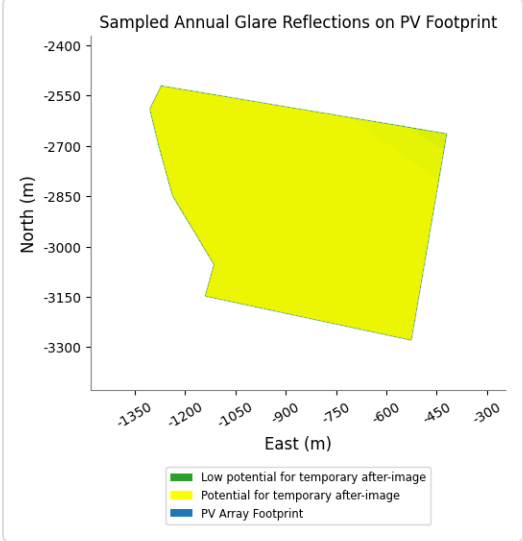
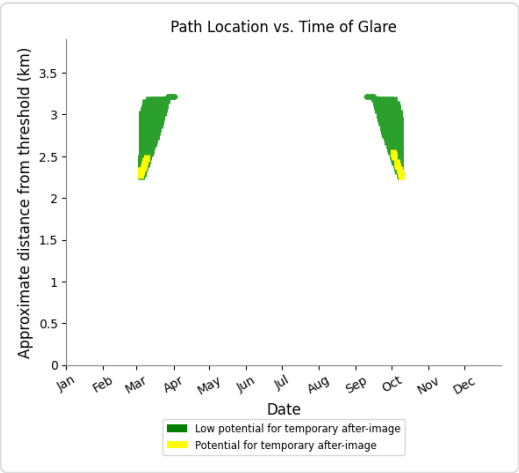
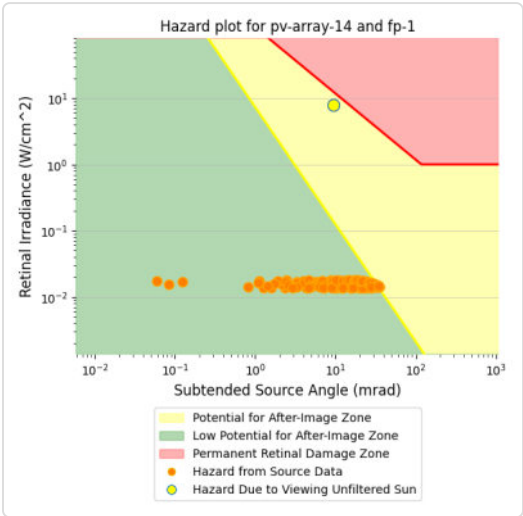
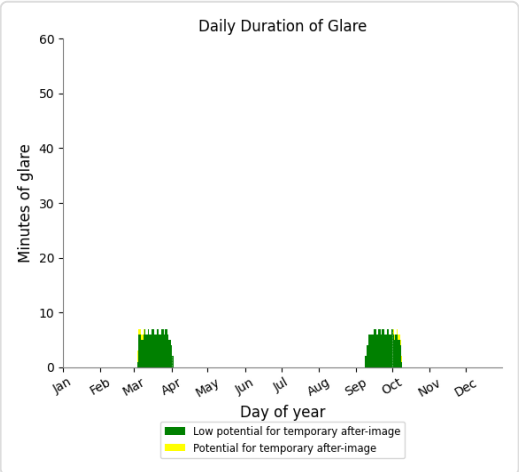
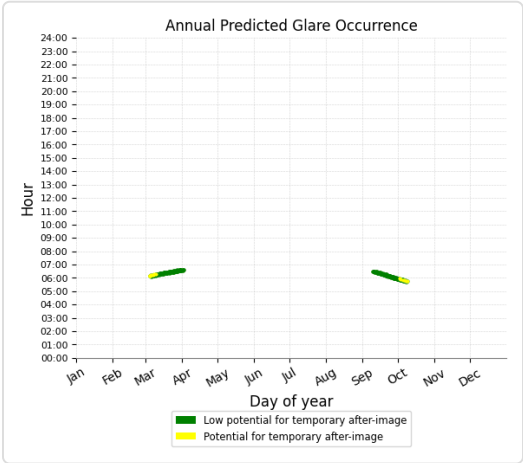
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PV array 14 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 14 - Receptor (FP 2)

No glare found

PV array 14 - Receptor (FP 3)

No glare found

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PV array 14 - Receptor (FP 4)

No glare found

PV array 15 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	164	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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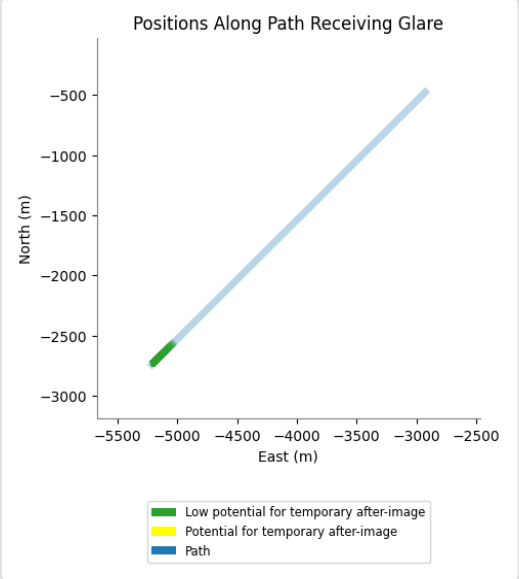
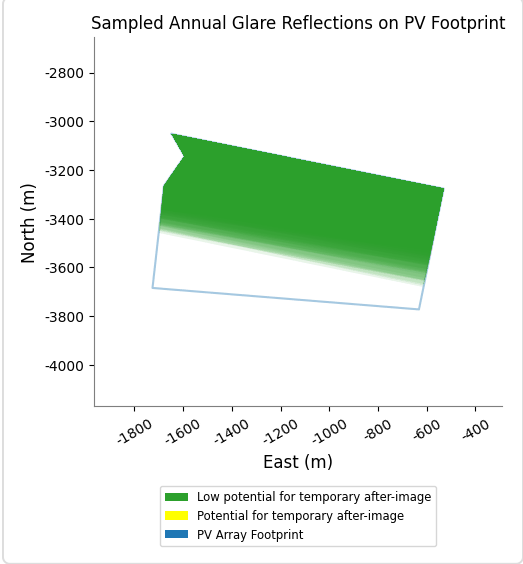
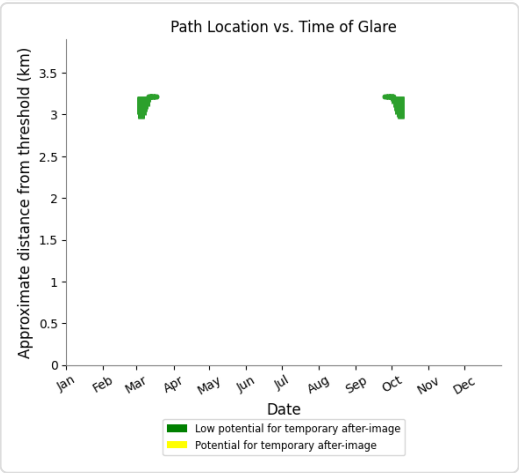
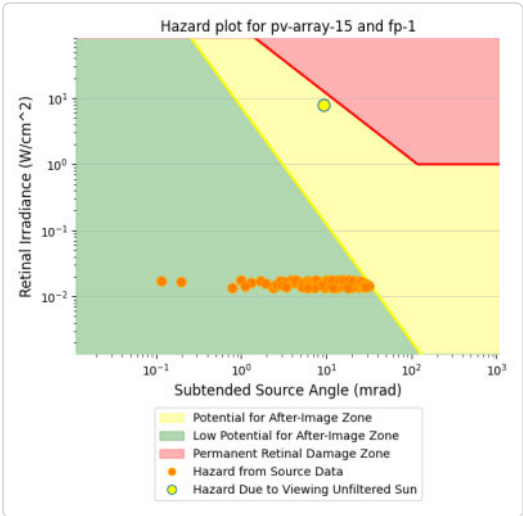
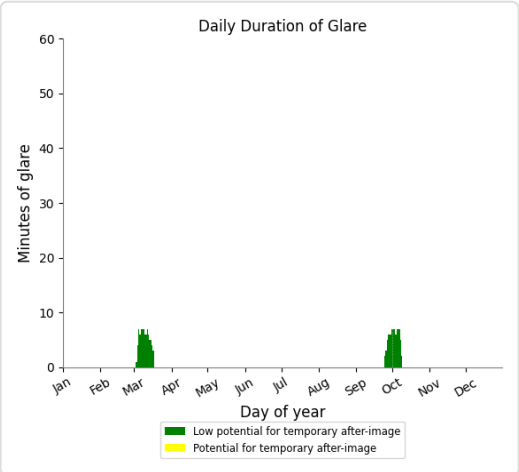
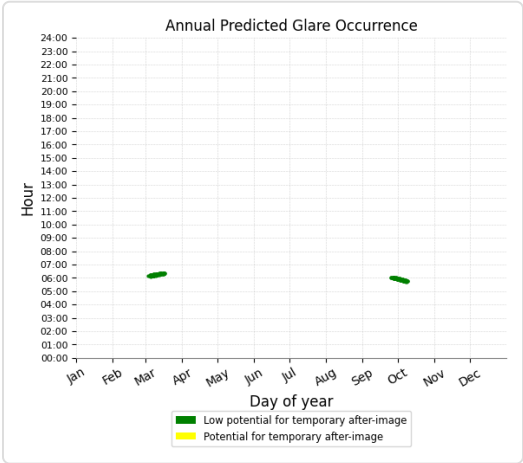
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PV array 15 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 15 - Receptor (FP 2)

No glare found

PV array 15 - Receptor (FP 3)

No glare found

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PV array 15 - Receptor (FP 4)

No glare found

PV array 16

no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 2

potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	1022	0
FP: FP 2	0	0
FP: FP 3	726	1371
FP: FP 4	578	0

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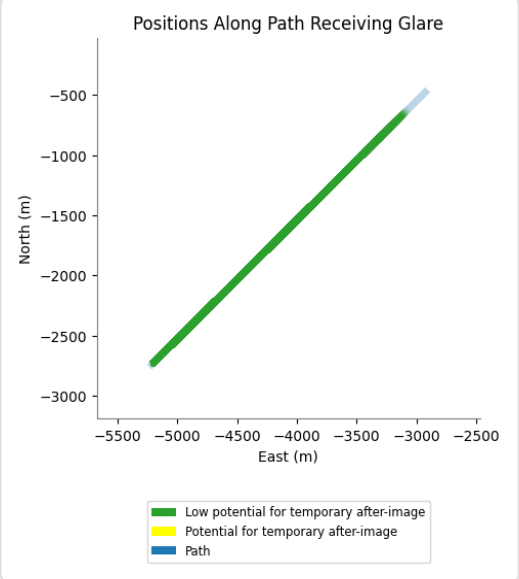
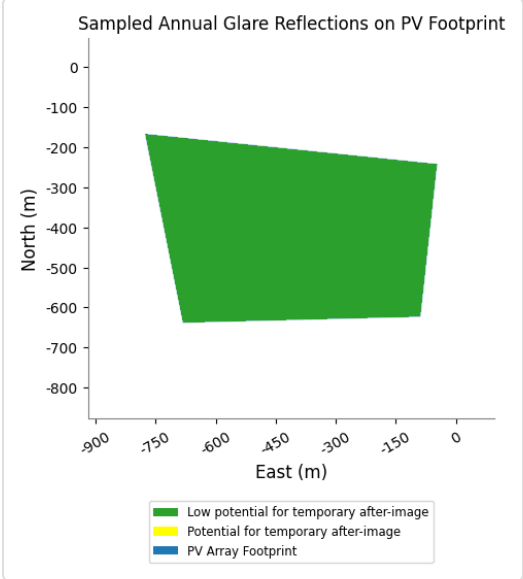
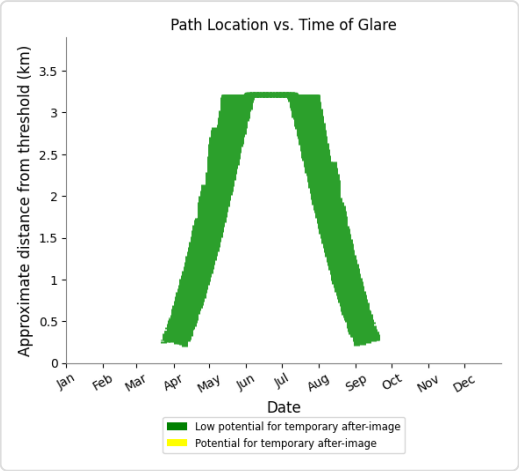
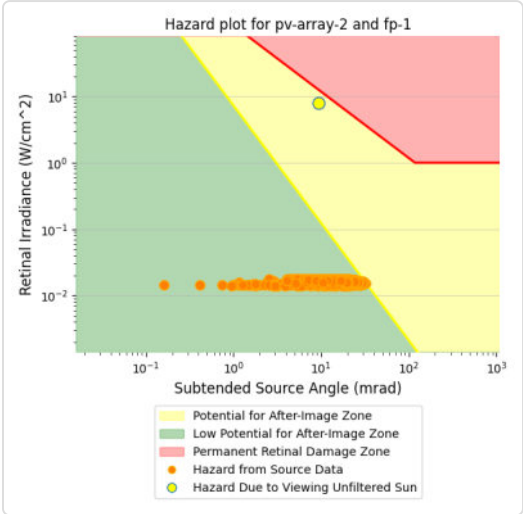
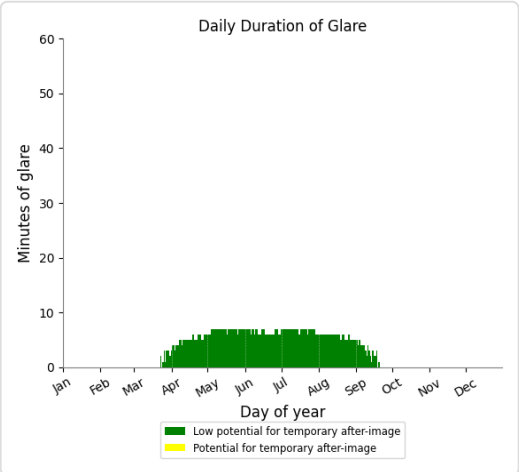
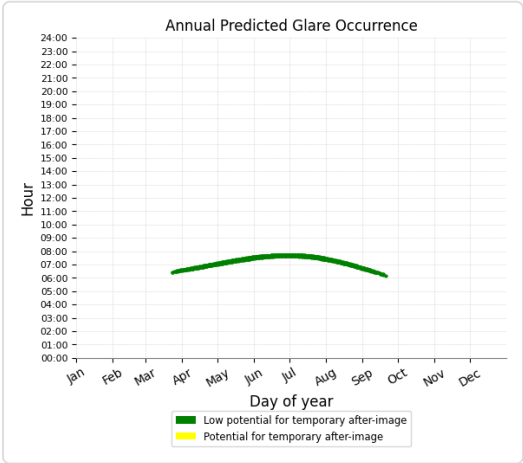
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PV array 2 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 1,022 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 - Receptor (FP 2)

No glare found

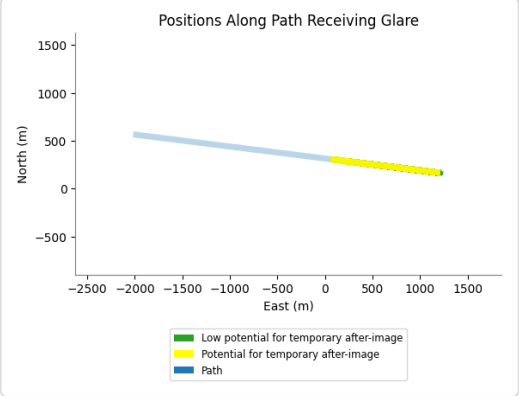
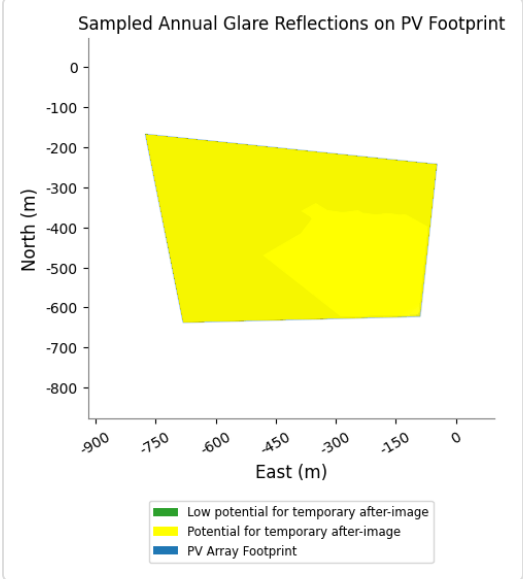
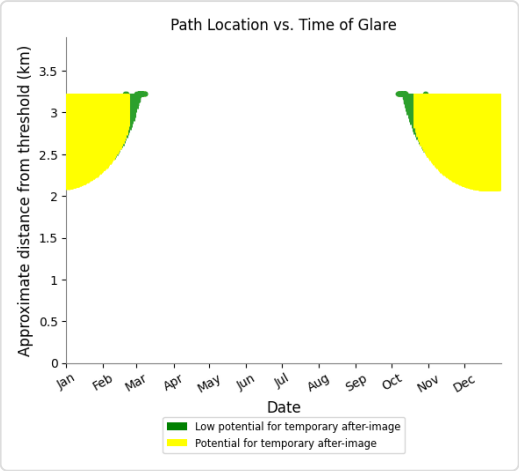
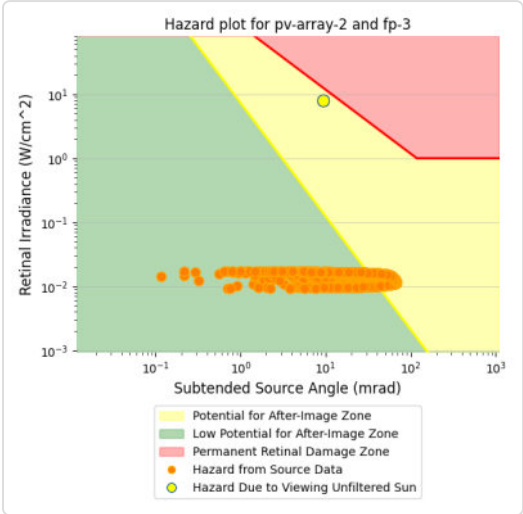
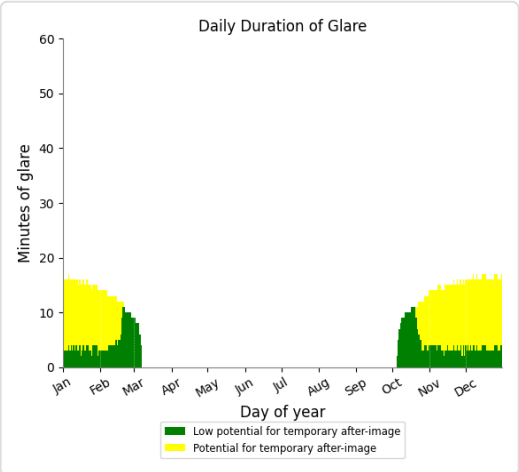
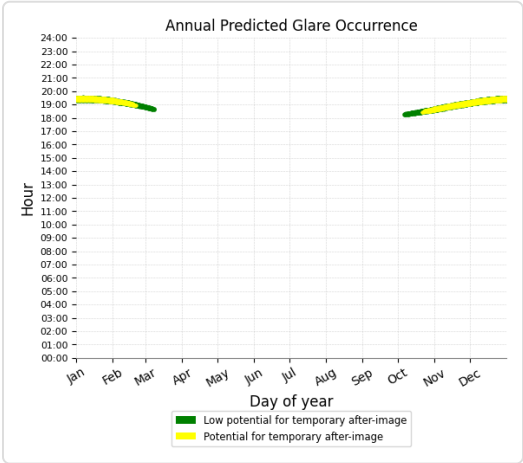
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PV array 2 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 726 minutes of "green" glare with low potential to cause temporary after-image.
- 1,371 minutes of "yellow" glare with potential to cause temporary after-image.



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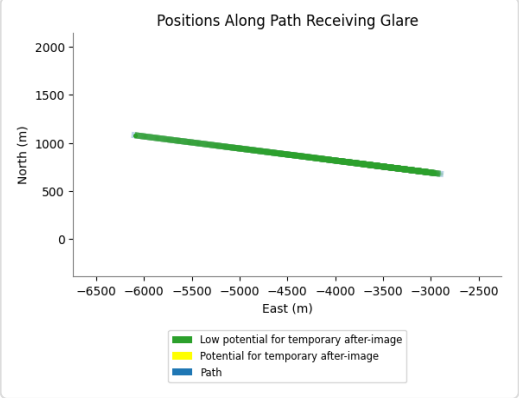
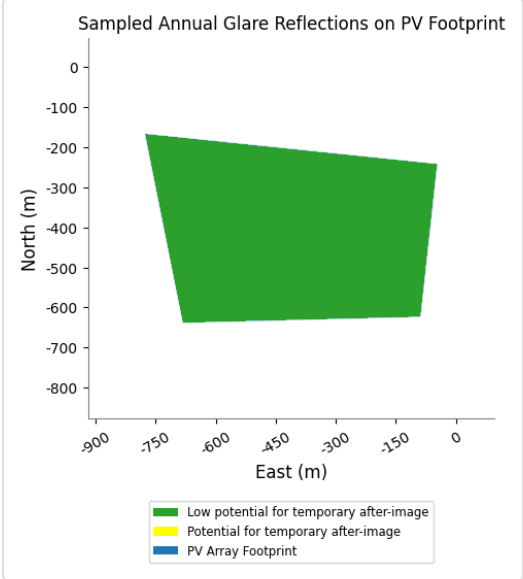
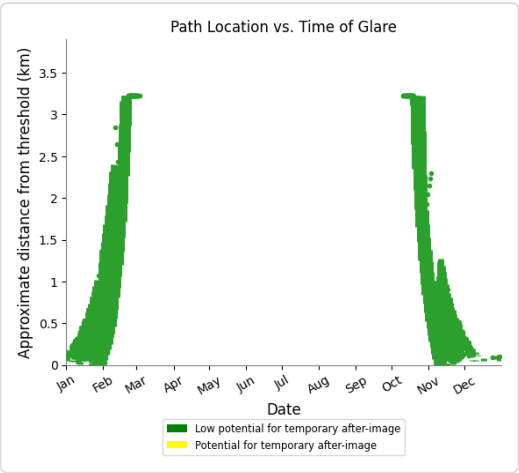
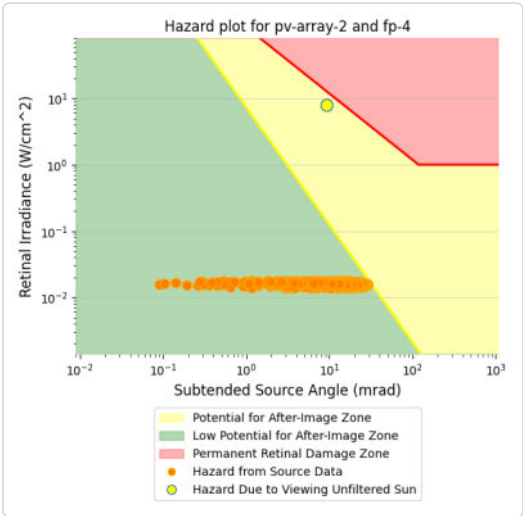
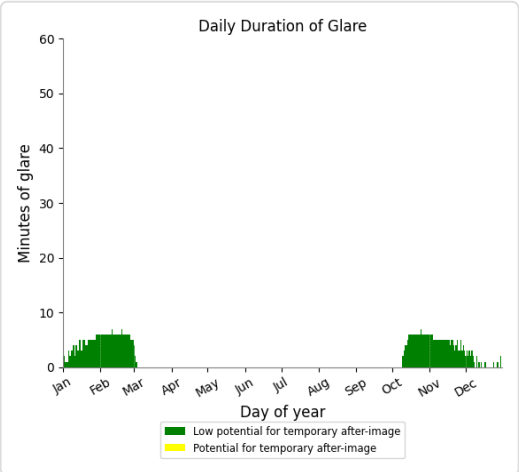
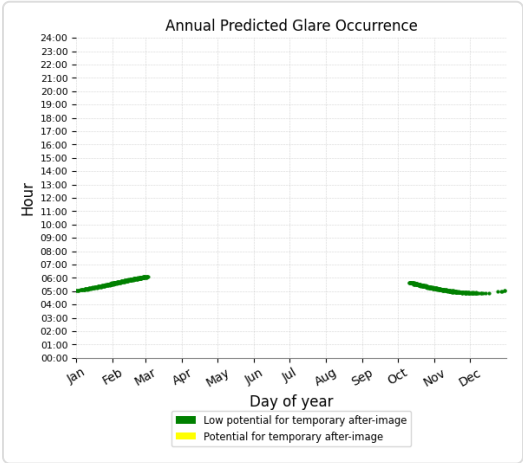
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PV array 2 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 3 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	846	0
FP: FP 2	0	0

9/29/22, 4:19 PM

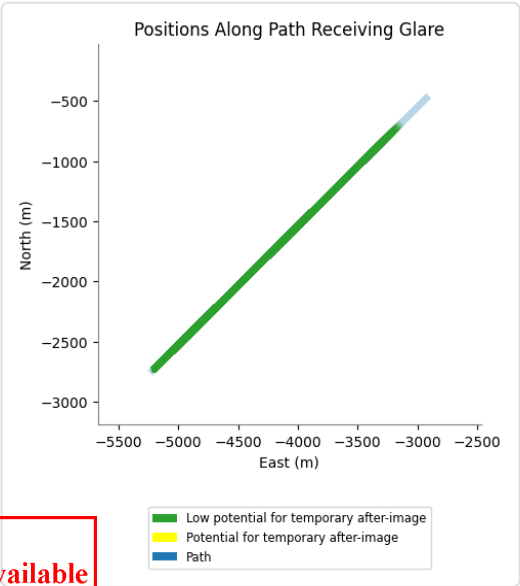
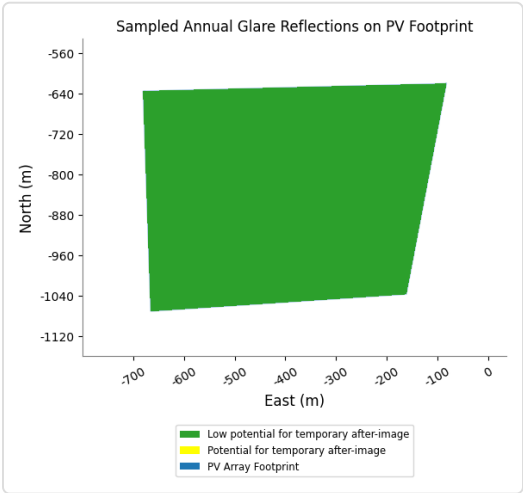
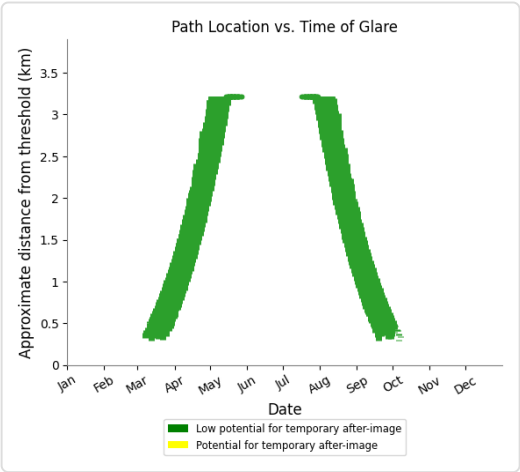
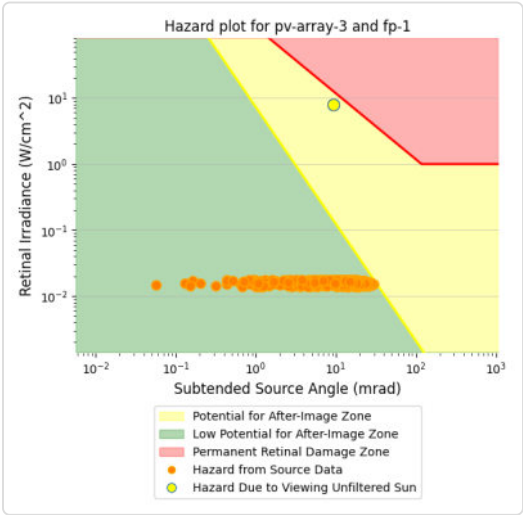
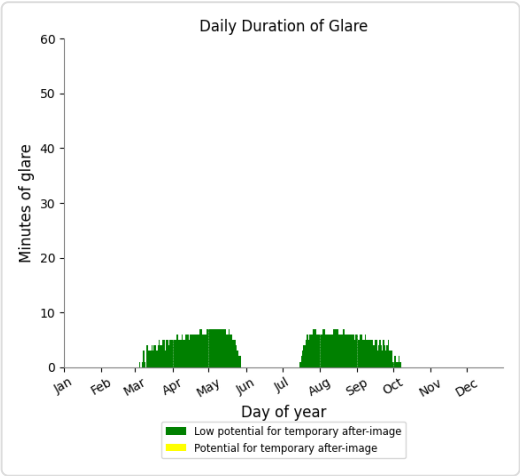
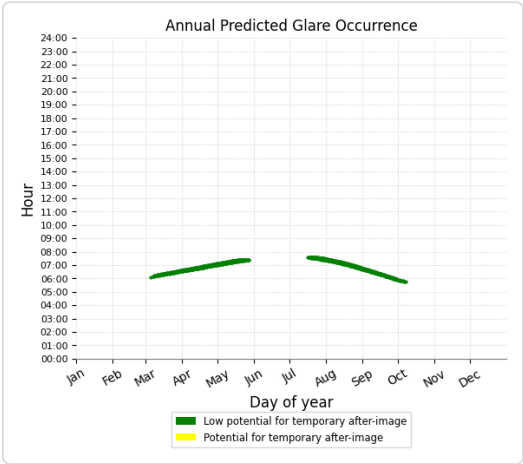
Hazelwood 1\_Max Site Config | ForgeSolar

FP: FP 3	873	172
FP: FP 4	713	0

PV array 3 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 846 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 3 - Receptor (FP 2)

No glare found

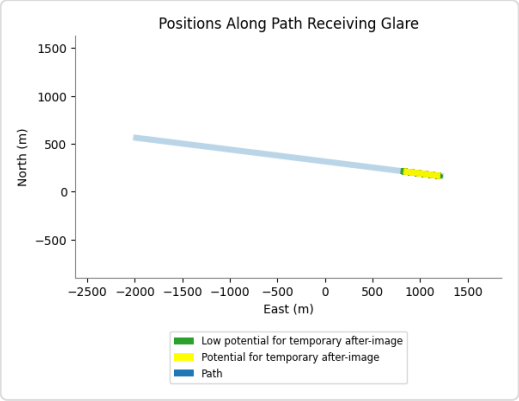
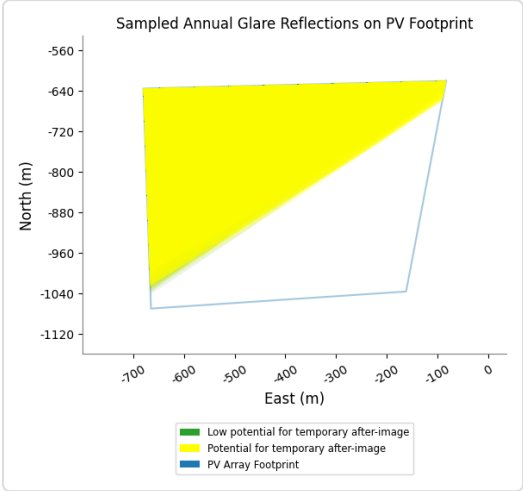
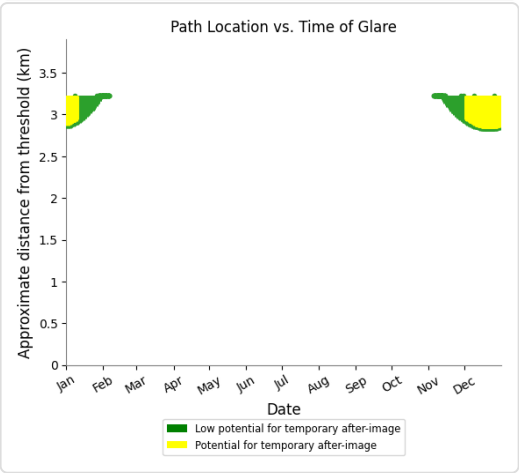
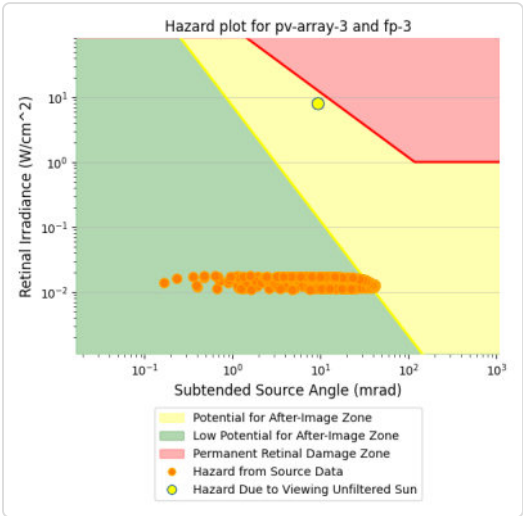
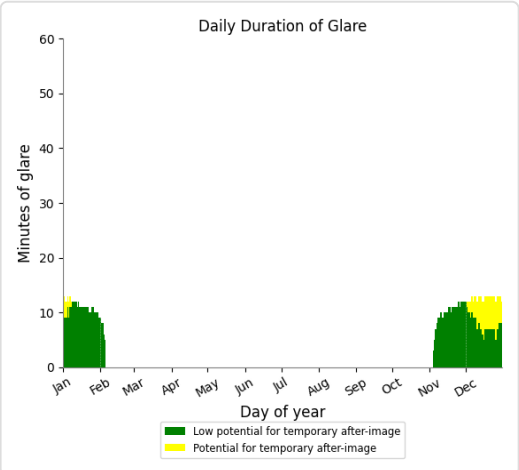
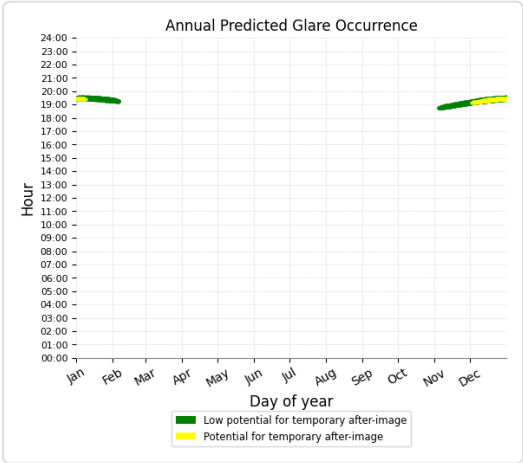
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PV array 3 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 873 minutes of "green" glare with low potential to cause temporary after-image.
  - 172 minutes of "yellow" glare with potential to cause temporary after-image.



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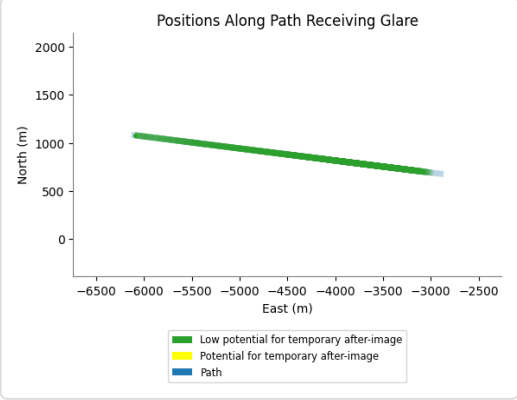
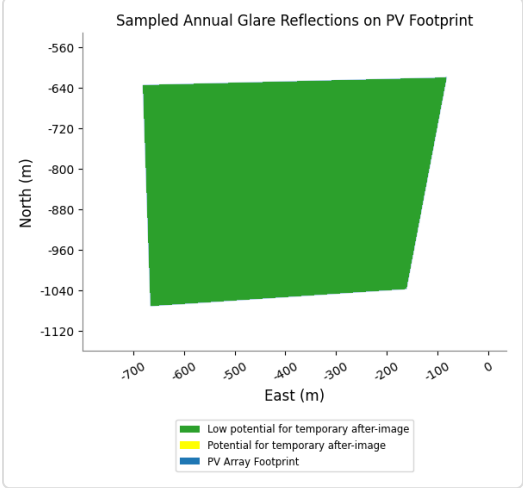
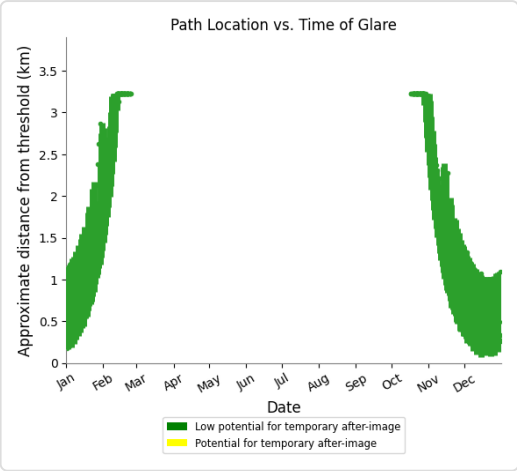
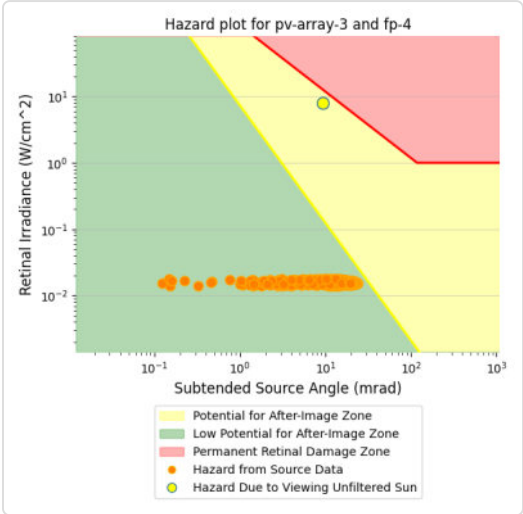
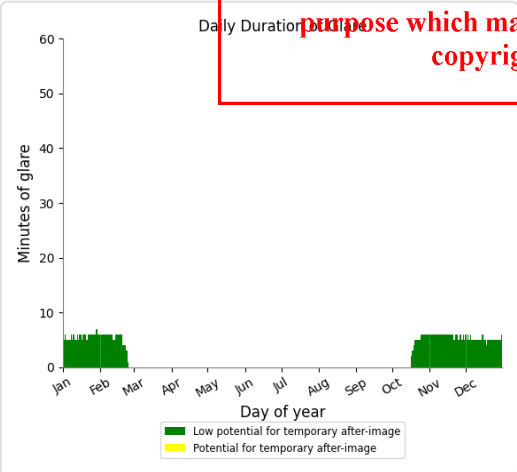
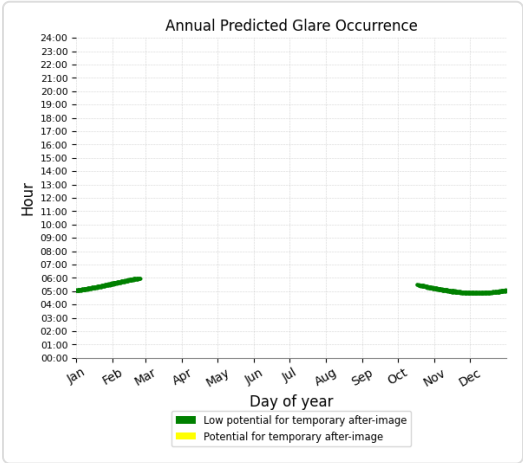
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PV array 3 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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



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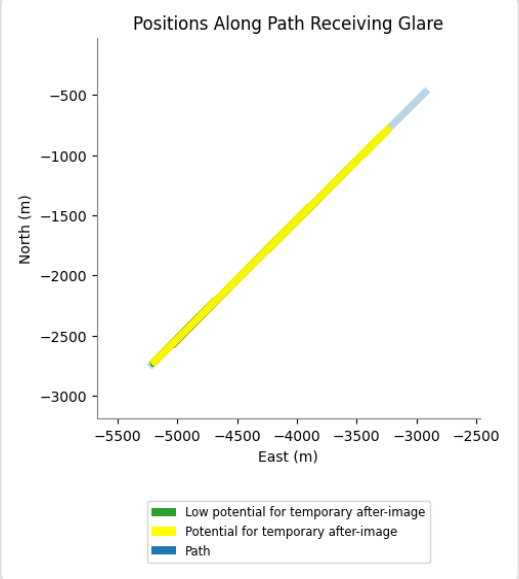
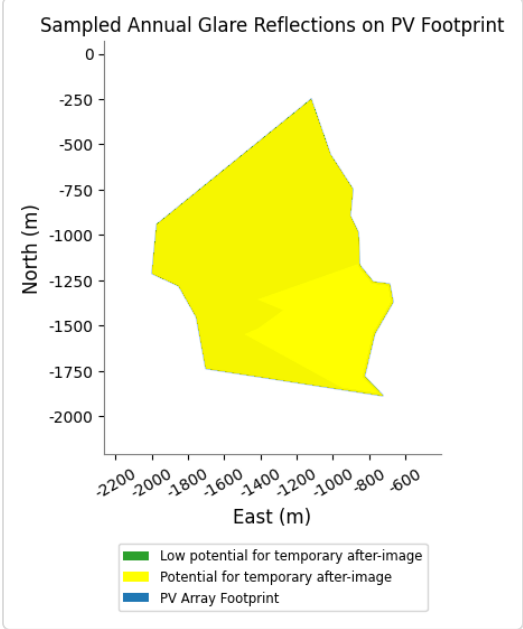
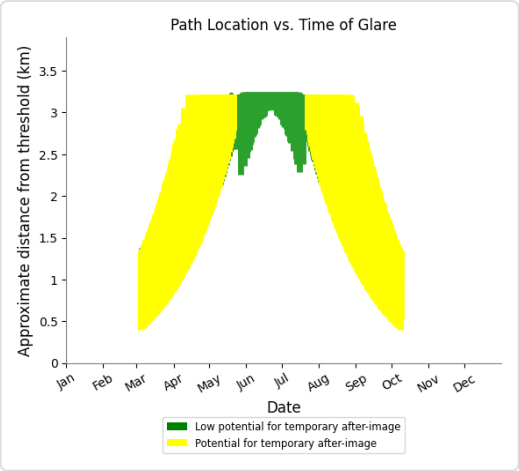
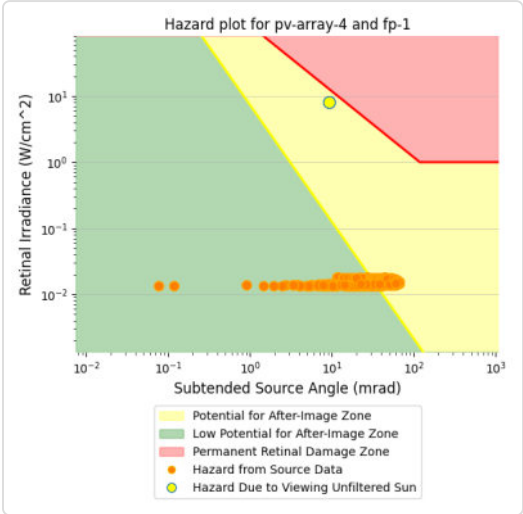
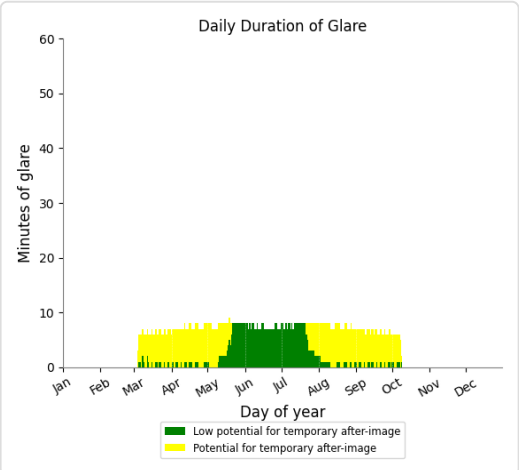
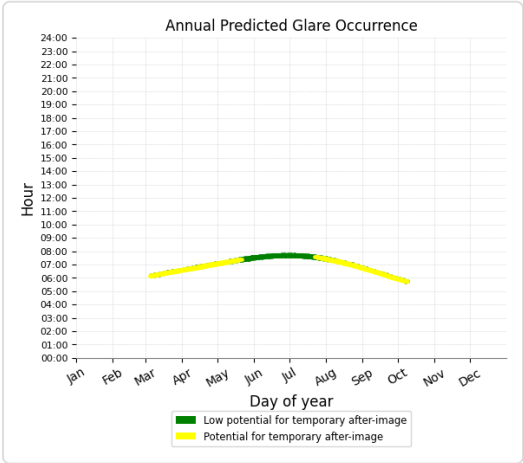
PV array 4 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	605	979
FP: FP 2	0	0
FP: FP 3	437	1118
FP: FP 4	611	305

PV array 4 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 4 - Receptor (FP 2)

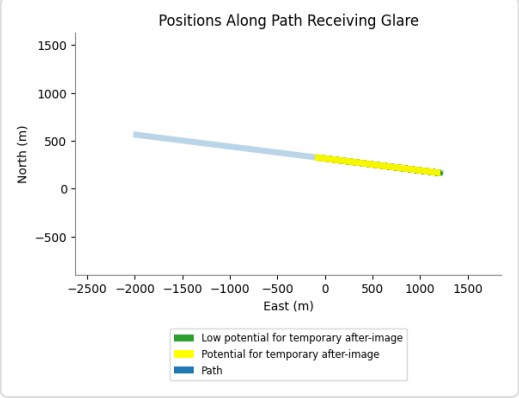
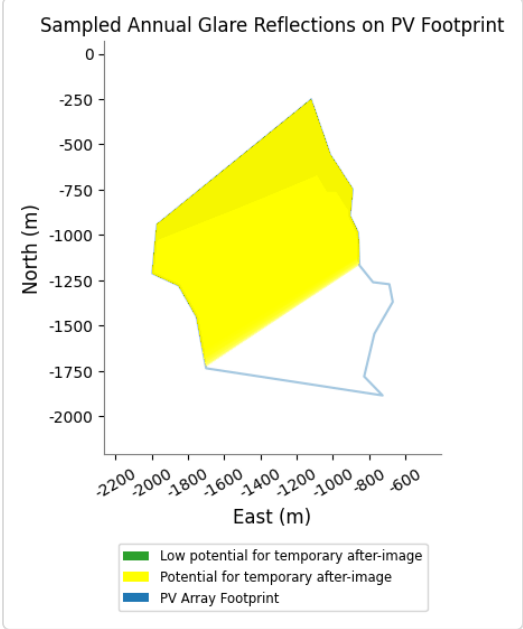
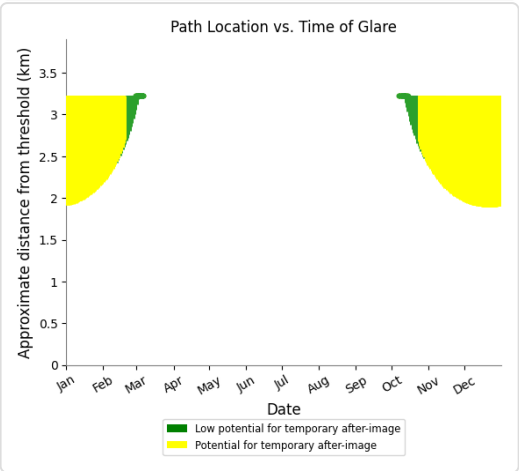
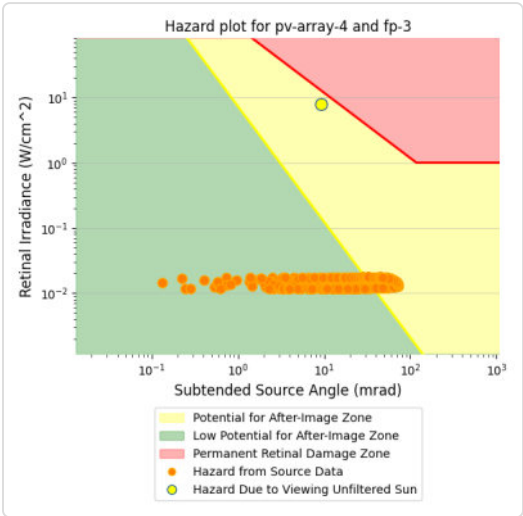
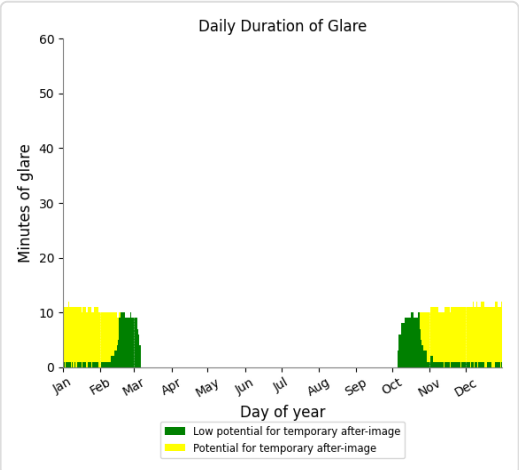
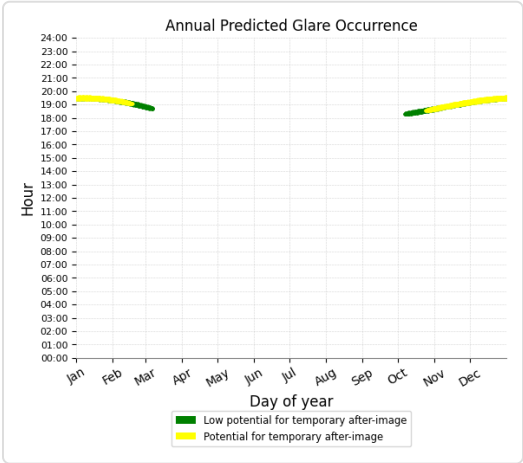
No glare found

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PV array 4 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 437 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,118 minutes of "yellow" glare with potential to cause temporary after-image.



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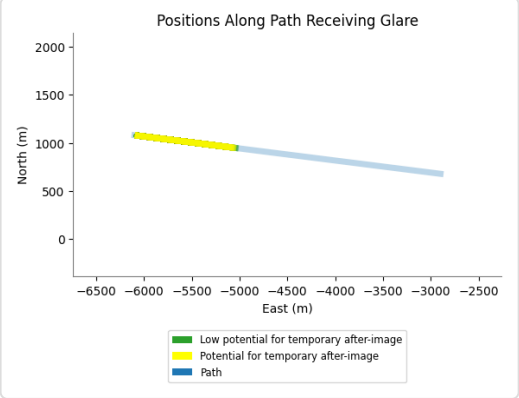
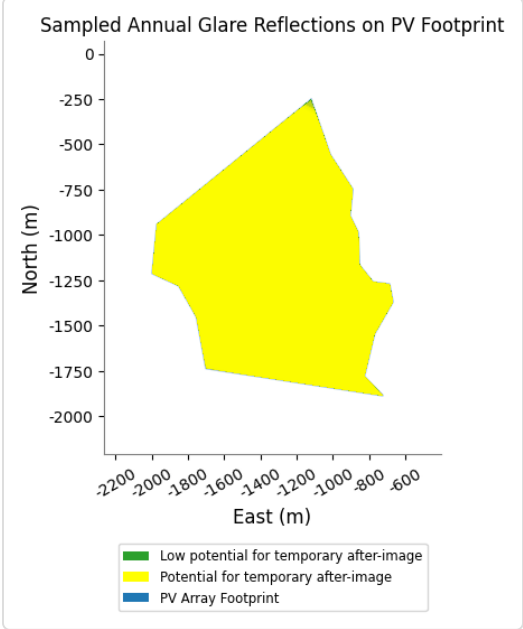
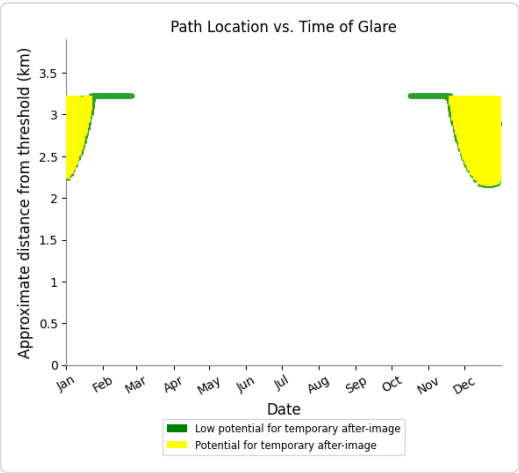
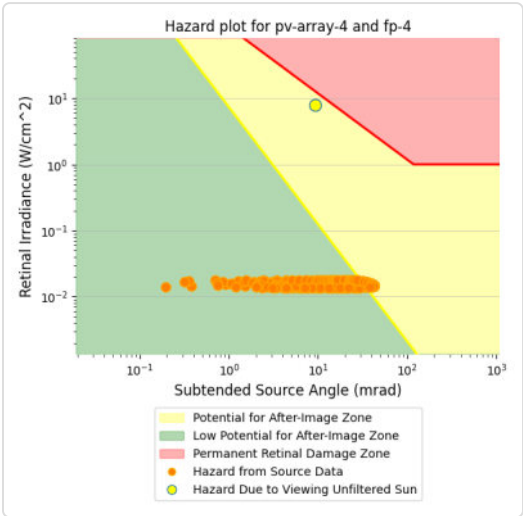
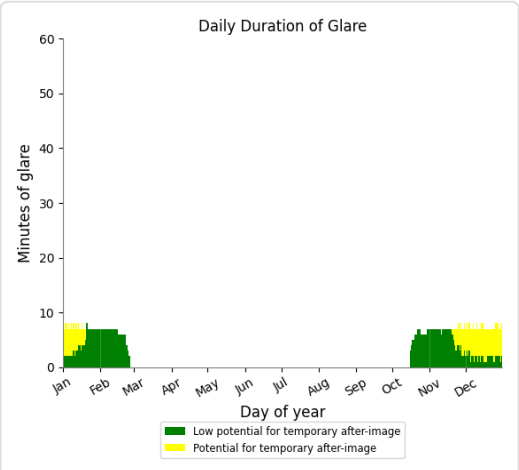
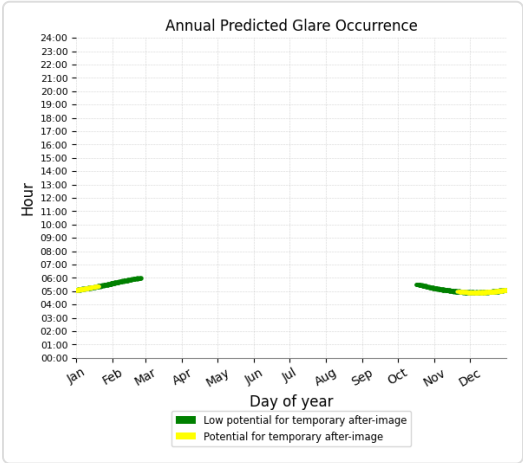


PV array 4 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 5 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	769	28

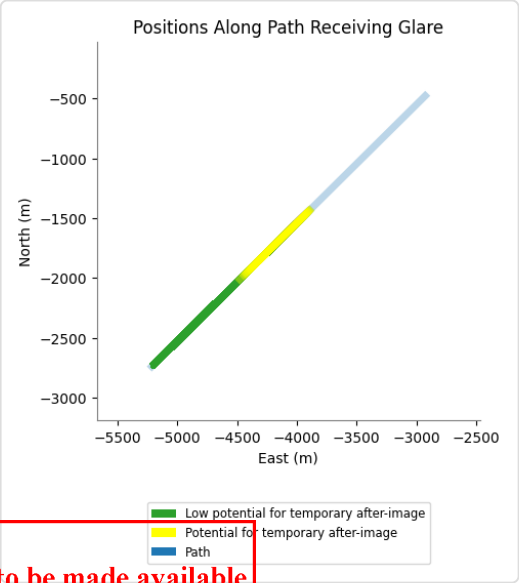
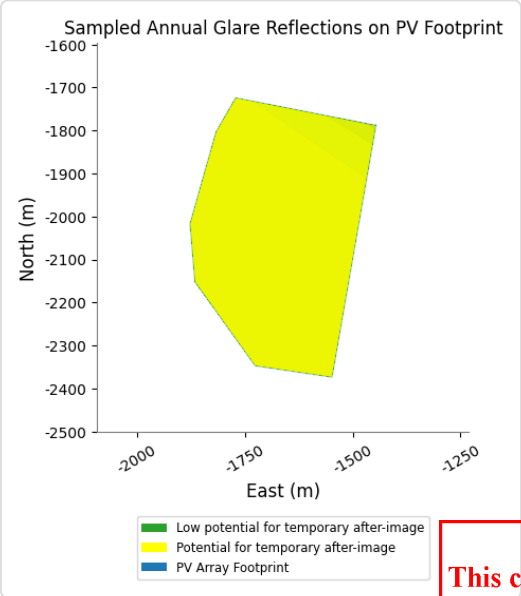
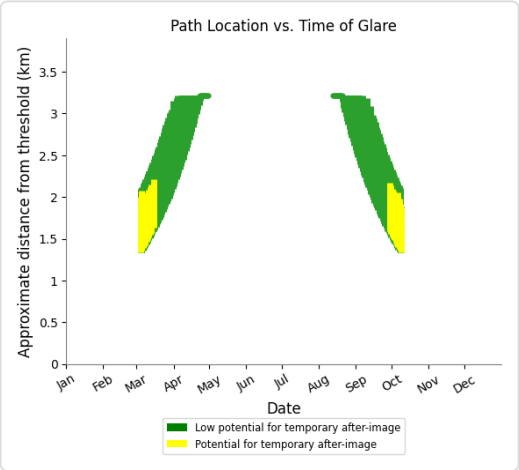
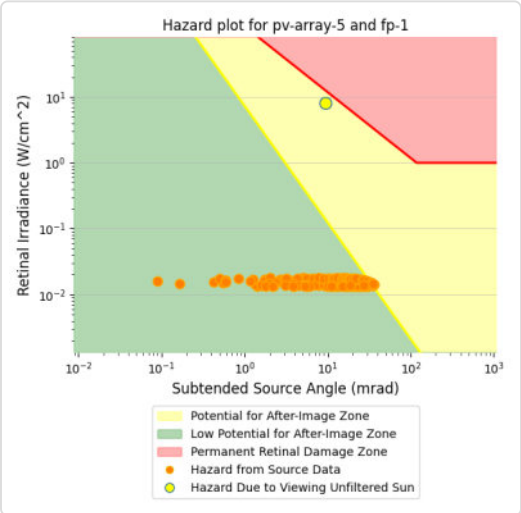
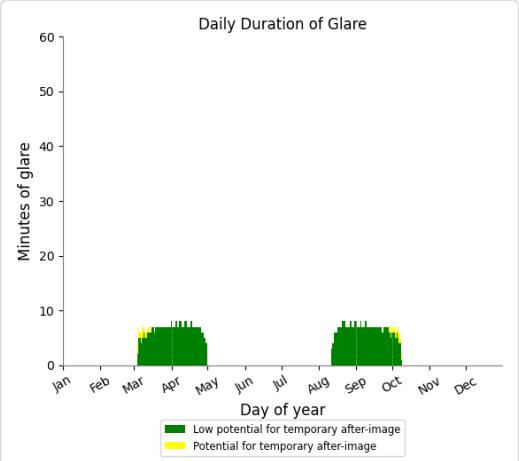
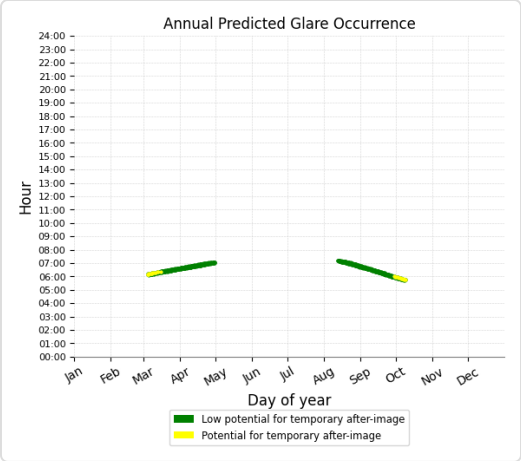
FP: FP 2	0	0
FP: FP 3	108	0
FP: FP 4	153	0

PV array 5 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 5 - Receptor (FP 2)

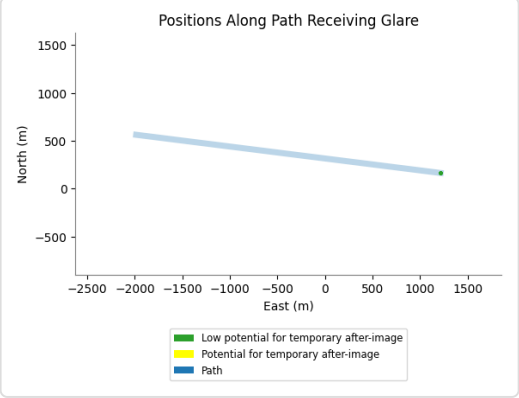
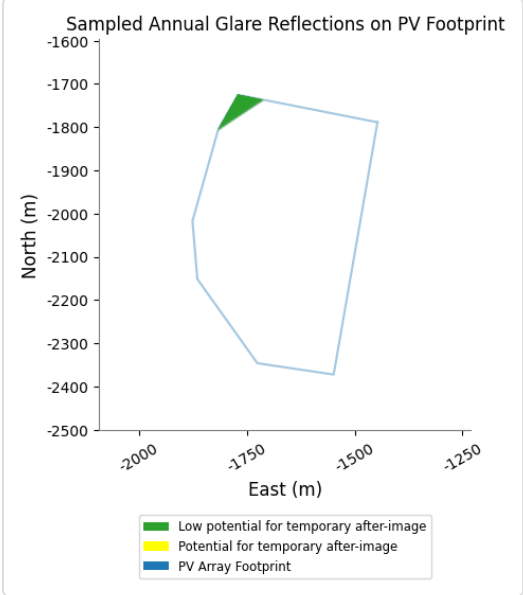
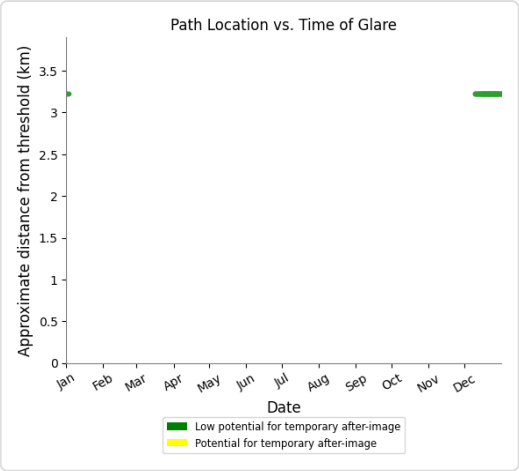
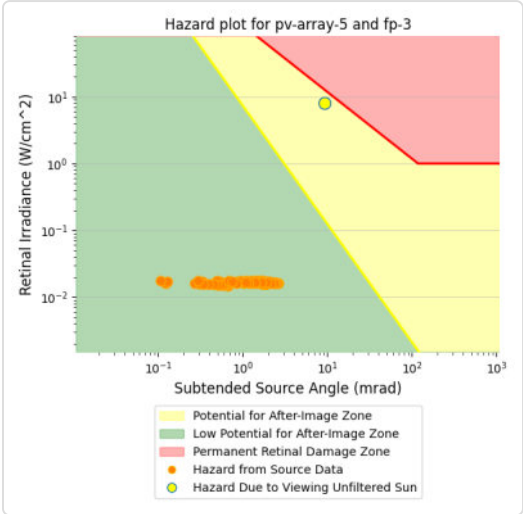
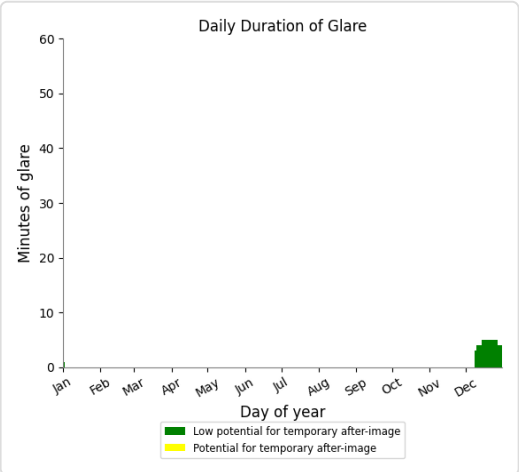
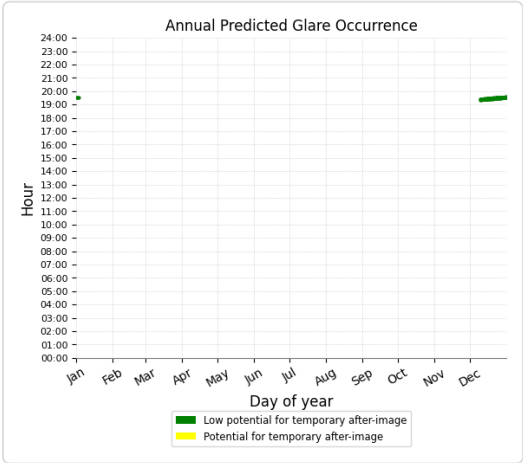
No glare found

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PV array 5 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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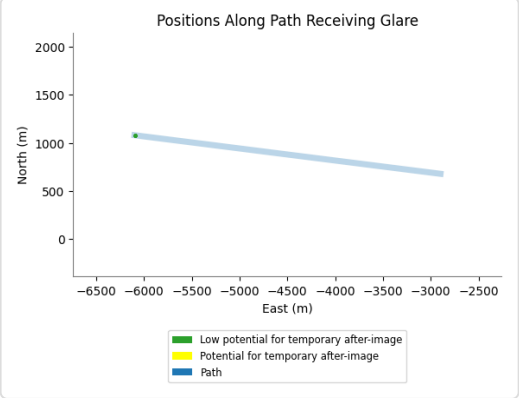
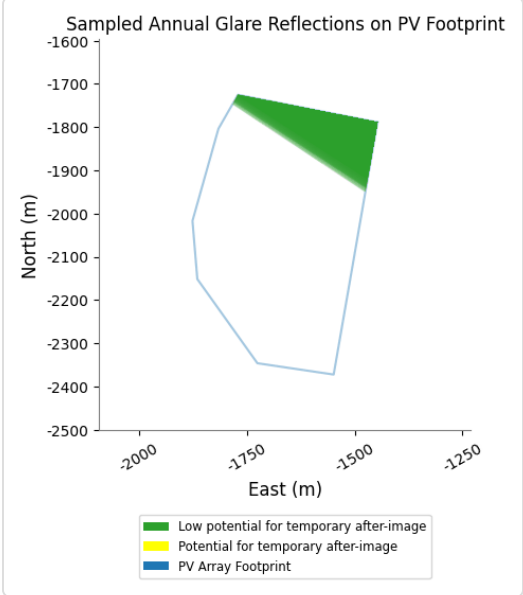
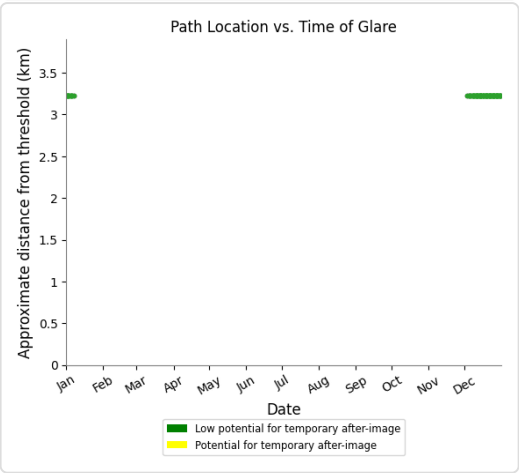
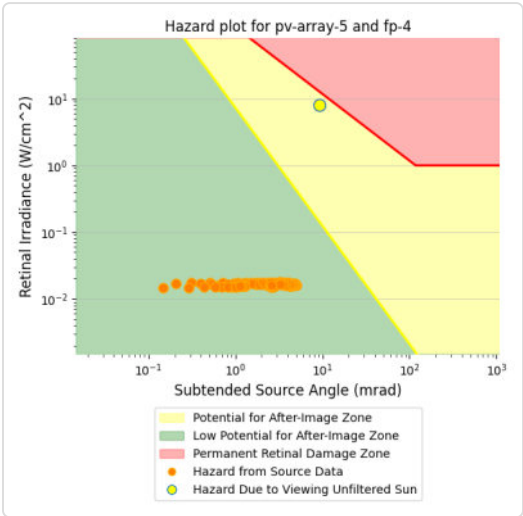
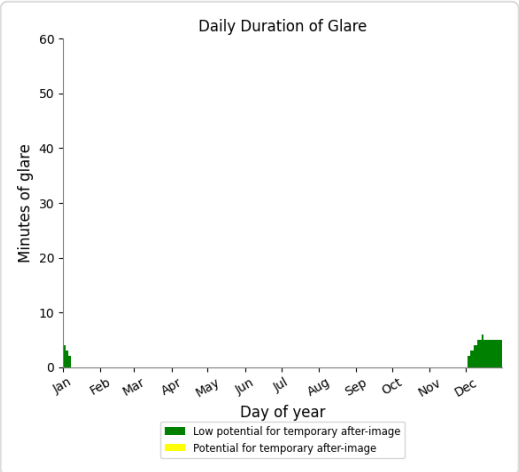
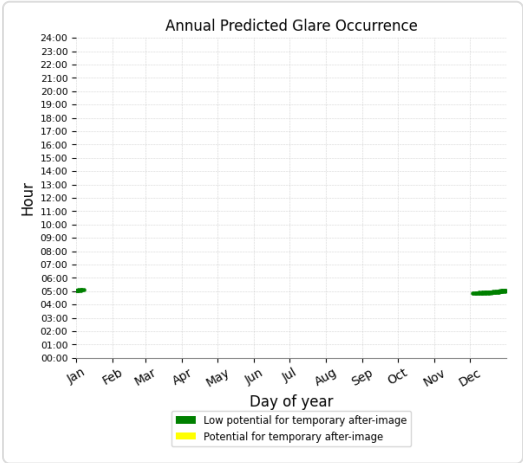
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PV array 5 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 6 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	663	1113
FP: FP 2	0	0



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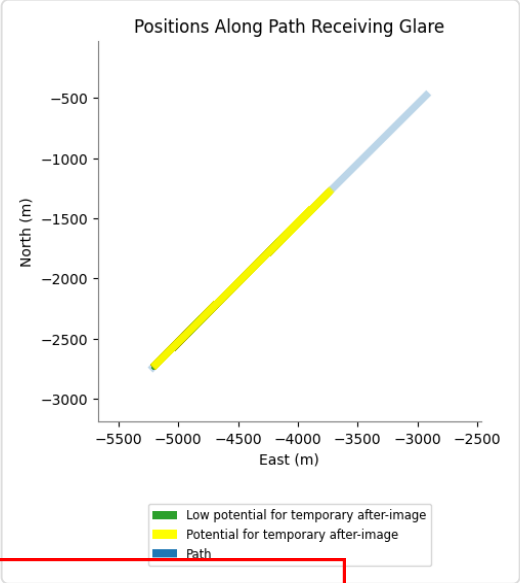
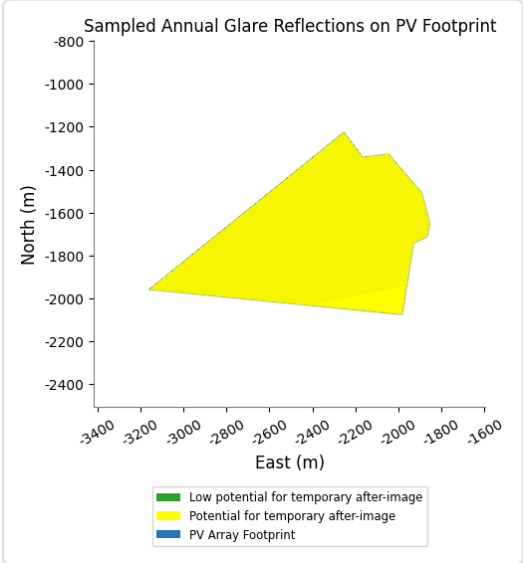
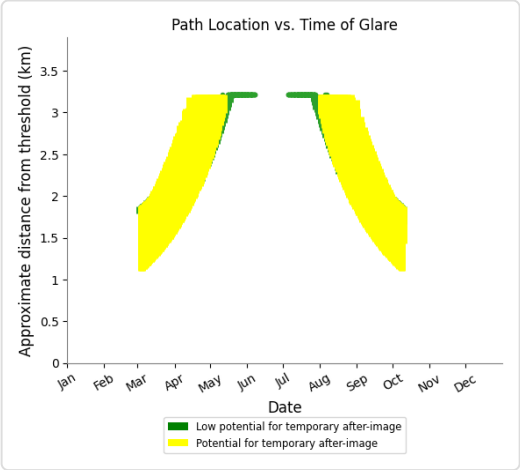
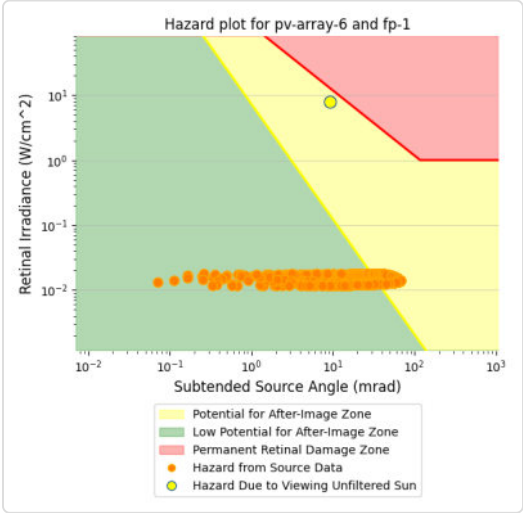
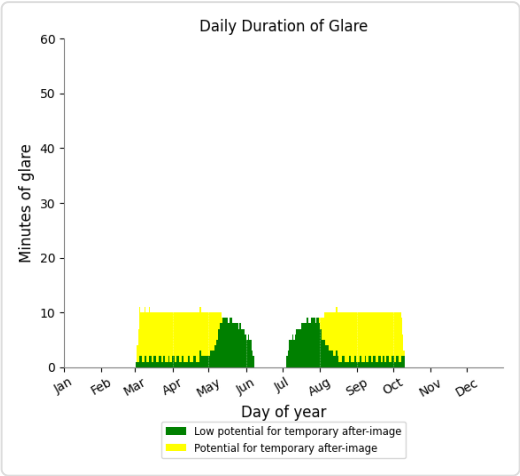
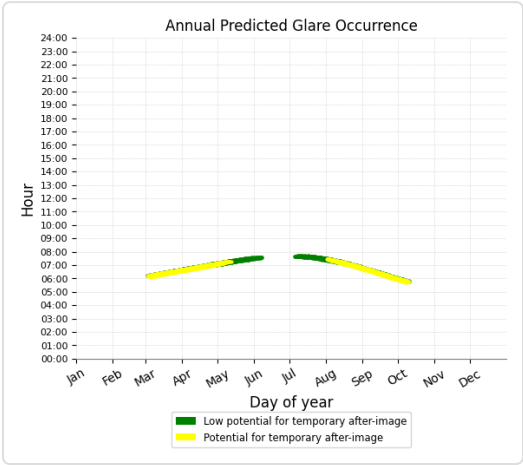
FP: FP 3	559	211
FP: FP 4	250	0

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PV array 6 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 663 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 6 - Receptor (FP 2)

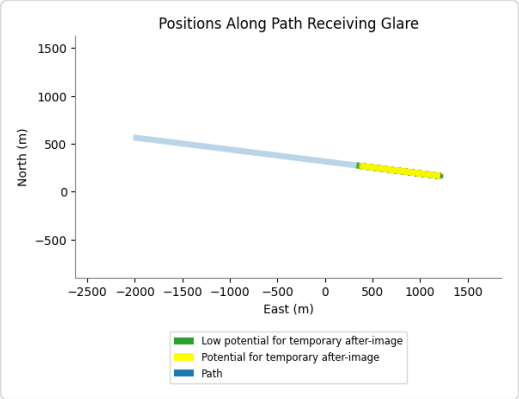
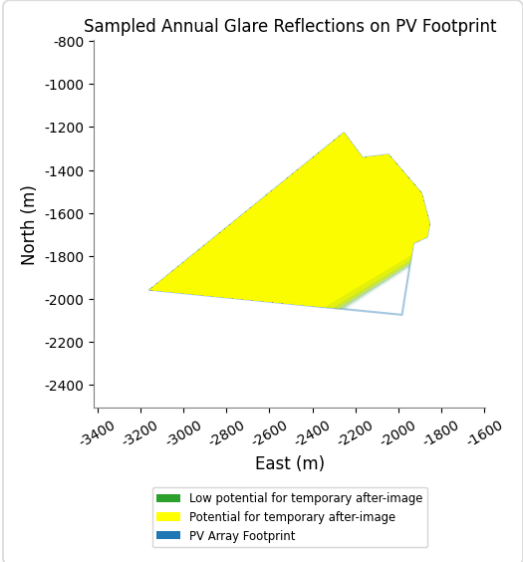
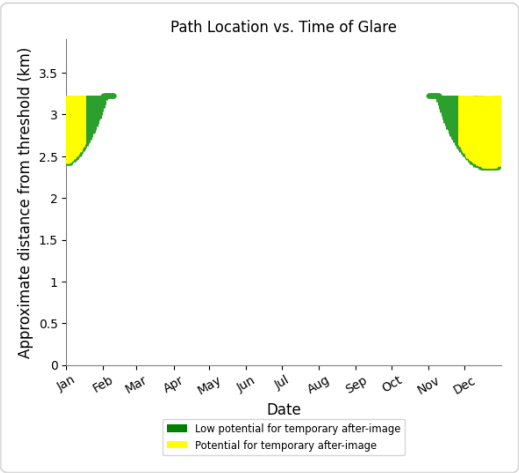
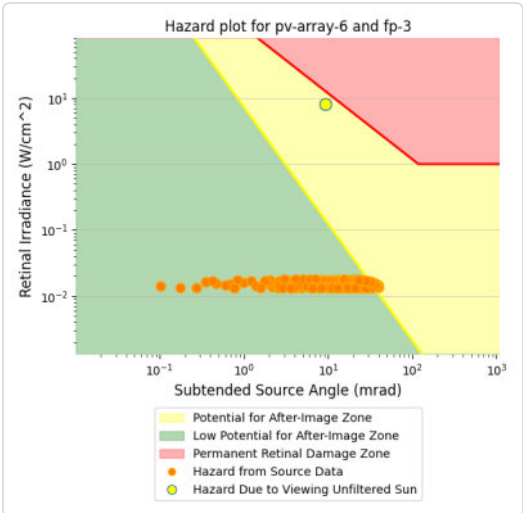
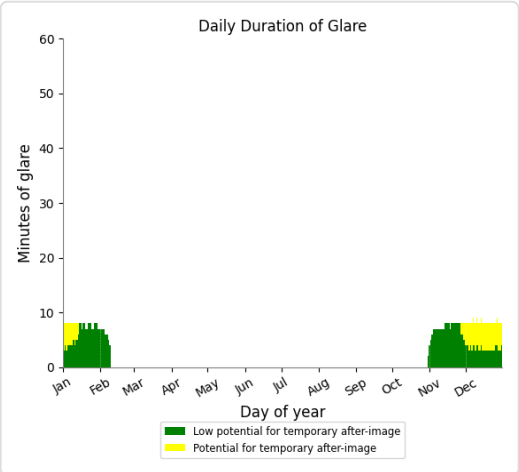
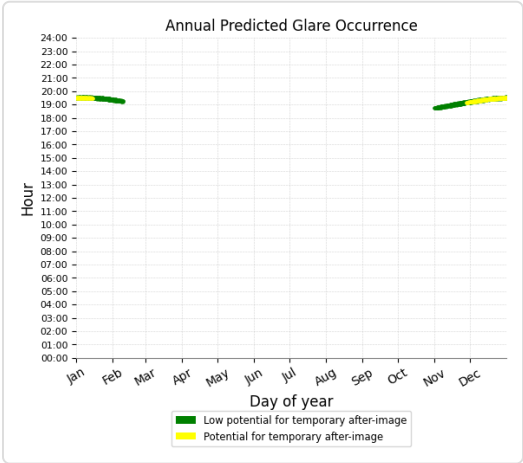
No glare found

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PV array 6 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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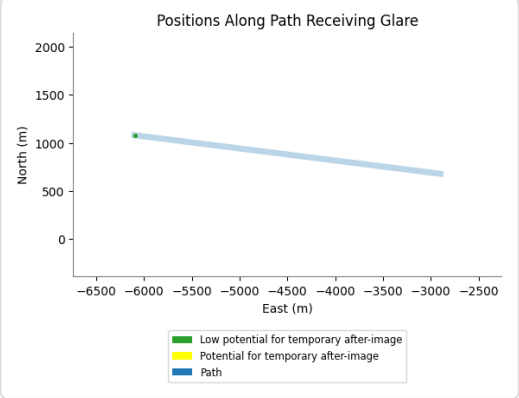
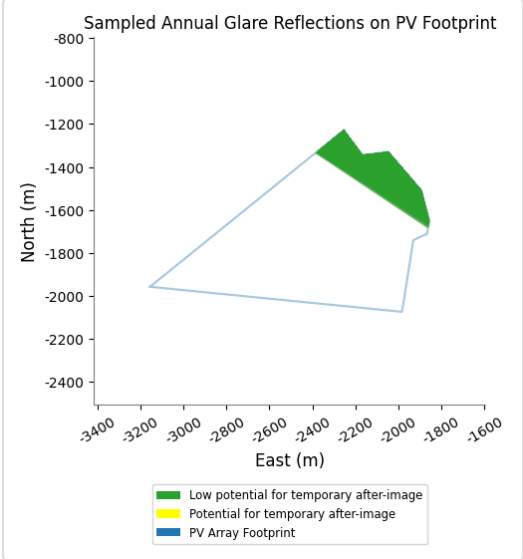
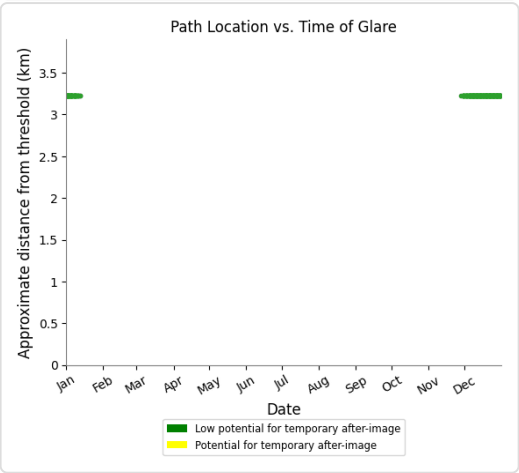
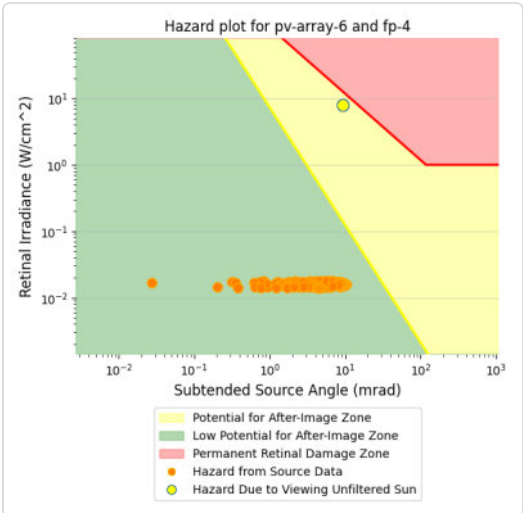
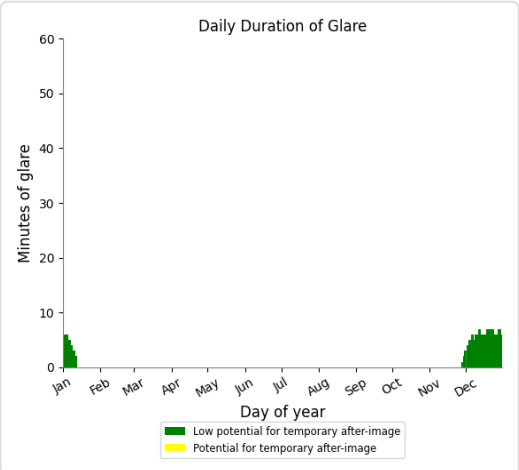
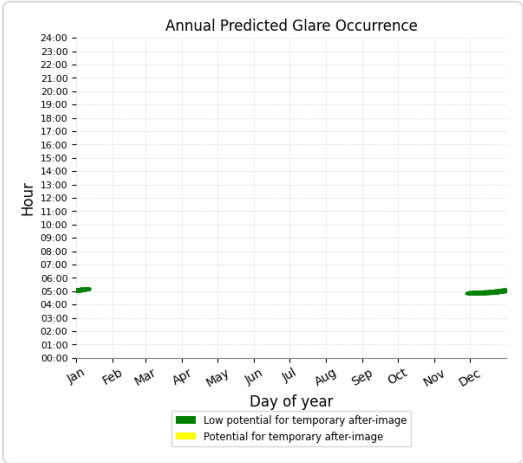
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PV array 6 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 7 potential temporary after-image

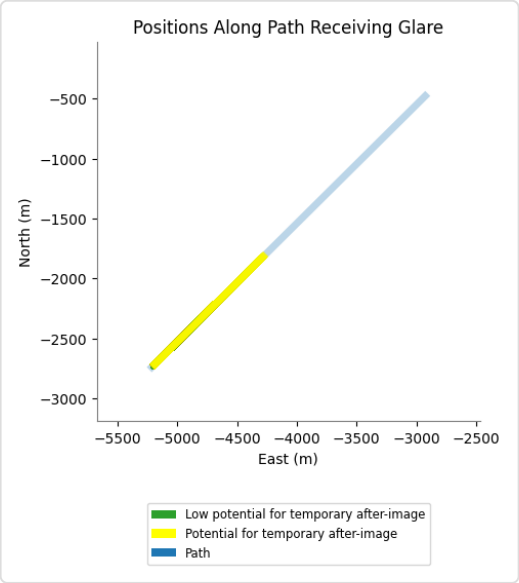
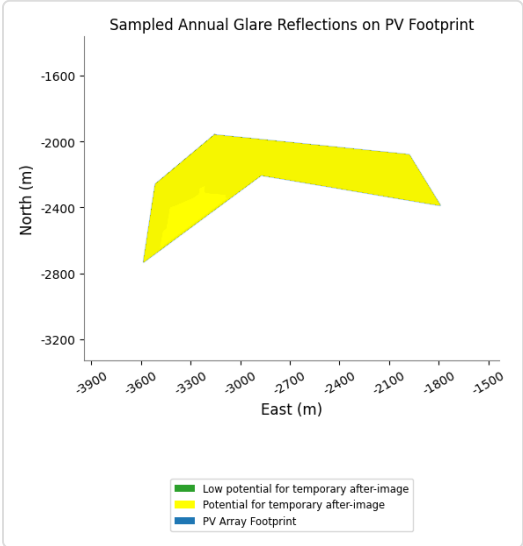
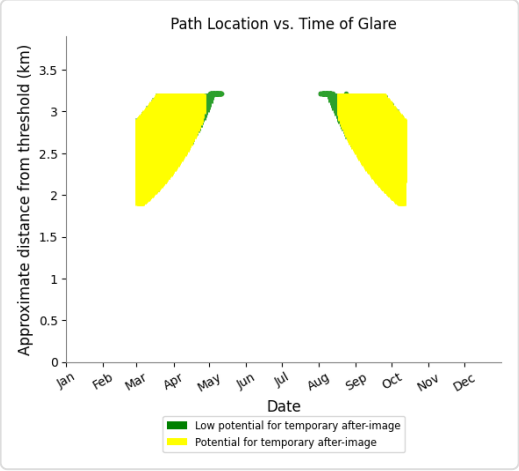
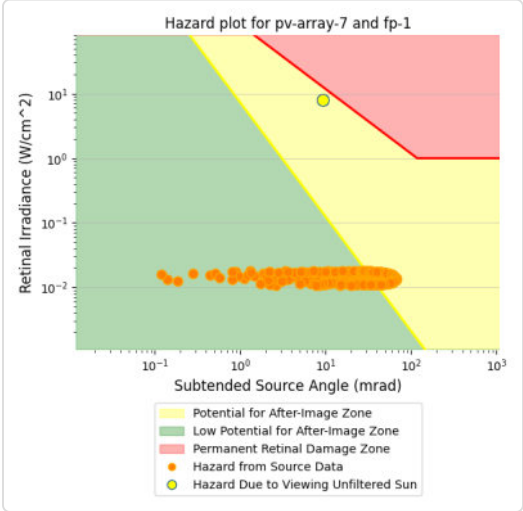
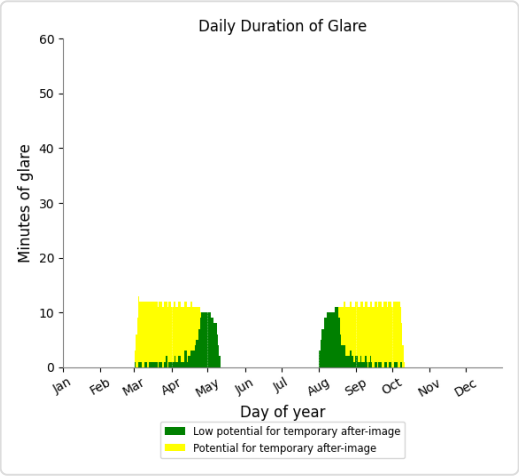
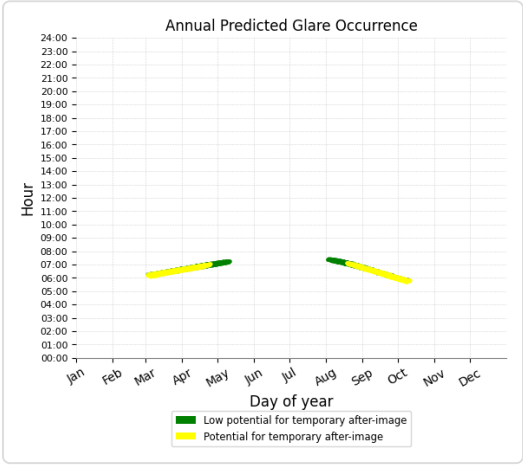
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	445	1068
FP: FP 2	0	0
FP: FP 3	537	0

PV array 7 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 445 minutes of "green" glare with low potential to cause temporary after-image.
- 1,068 minutes of "yellow" glare with potential to cause temporary after-image.

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PV array 7 - Receptor (FP 2)

No glare found

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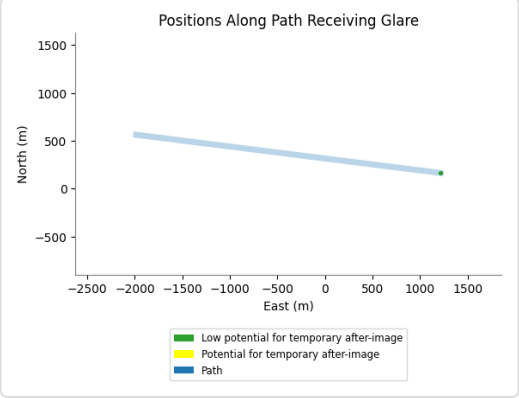
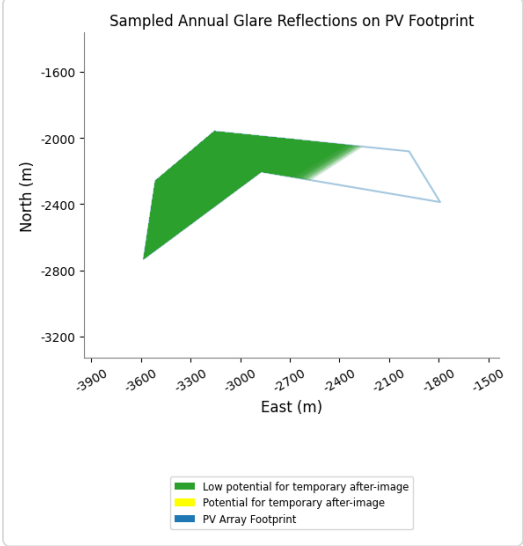
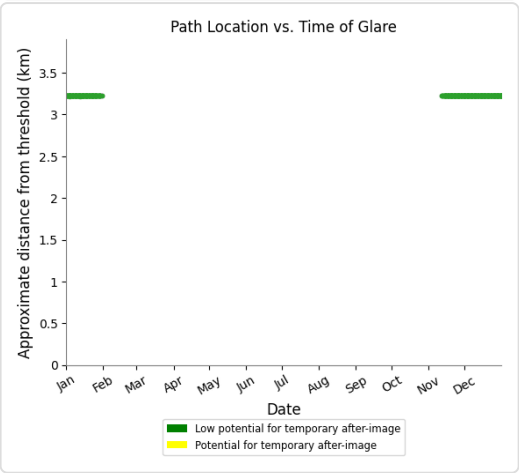
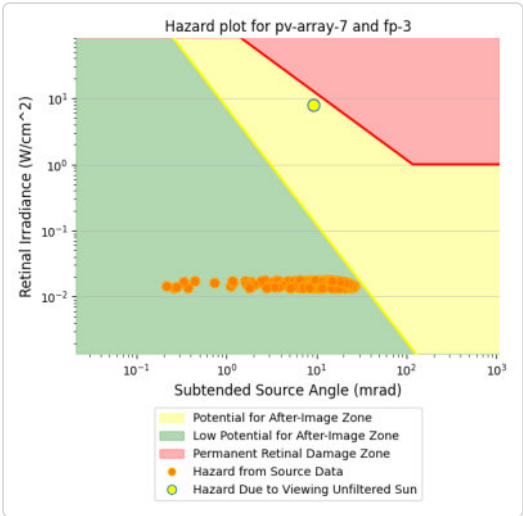
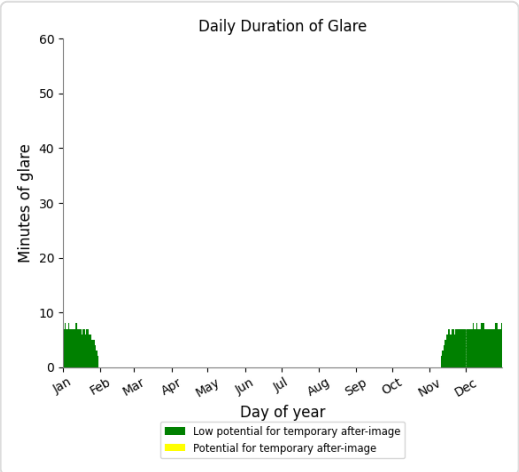
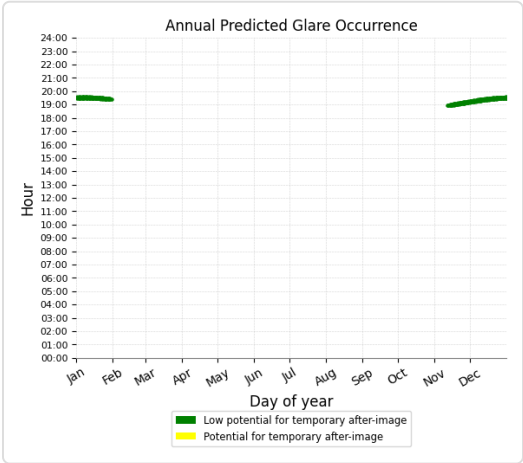


PV array 7 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 7 - Receptor (FP 4)

No glare found

PV array 8 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
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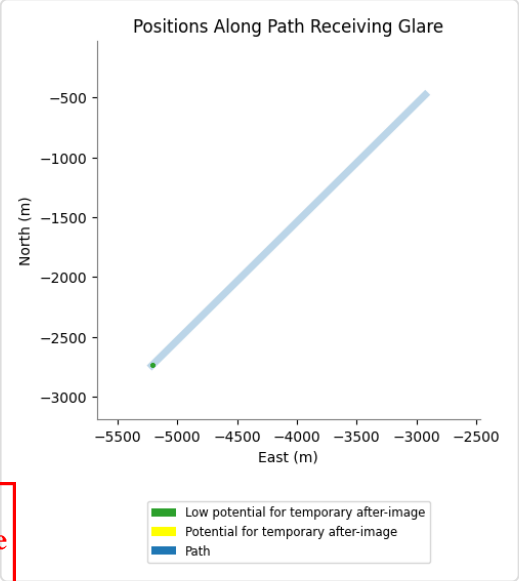
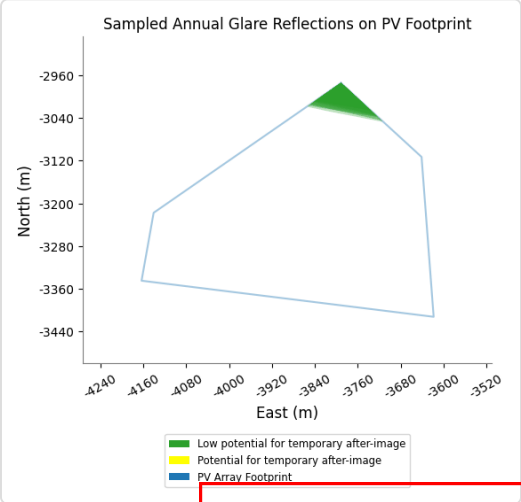
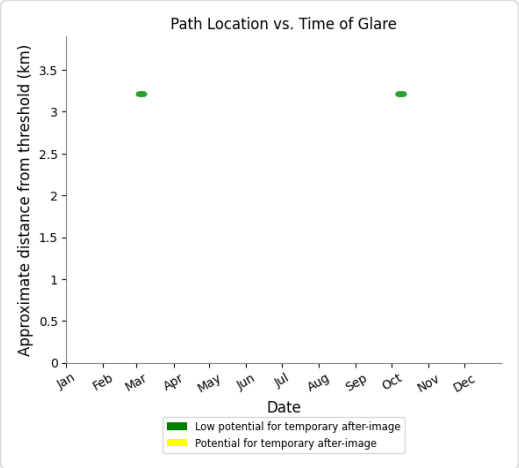
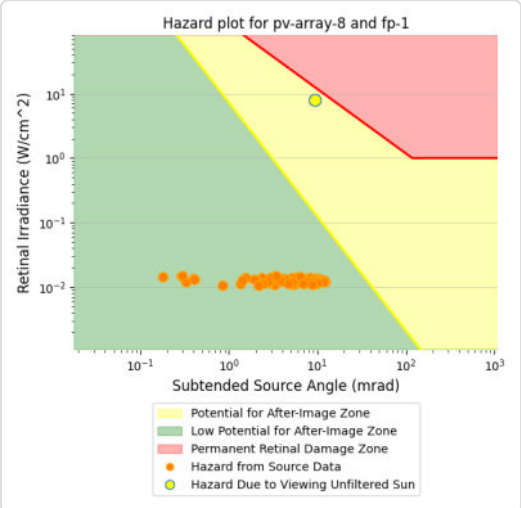
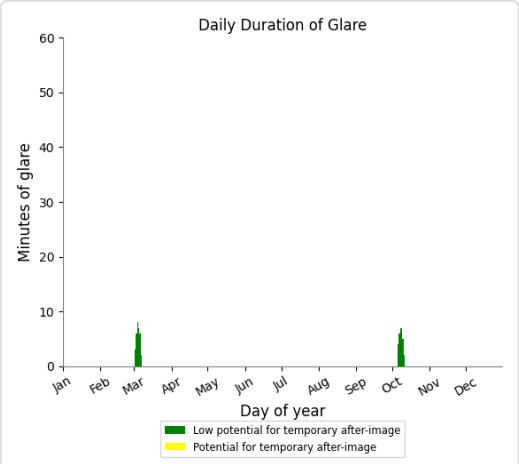
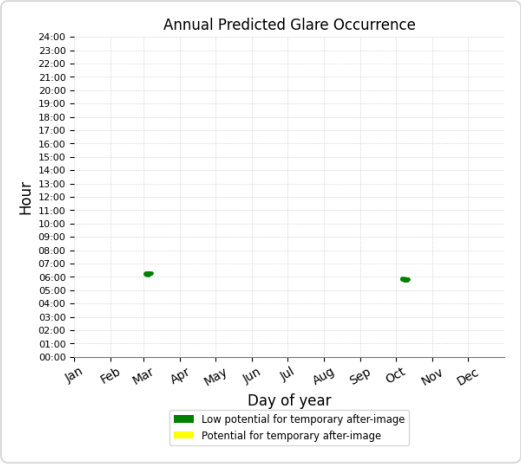
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FP: FP 1	63	0
FP: FP 2	0	0
FP: FP 3	115	0
FP: FP 4	0	0

PV array 8 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



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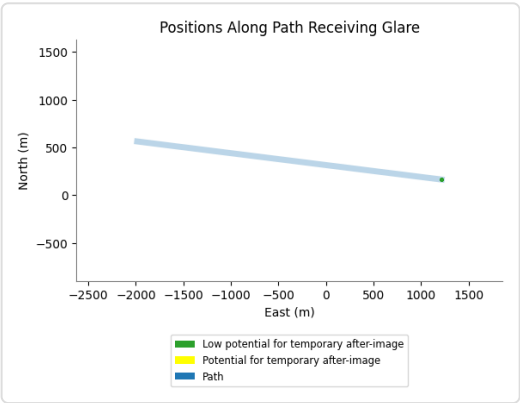
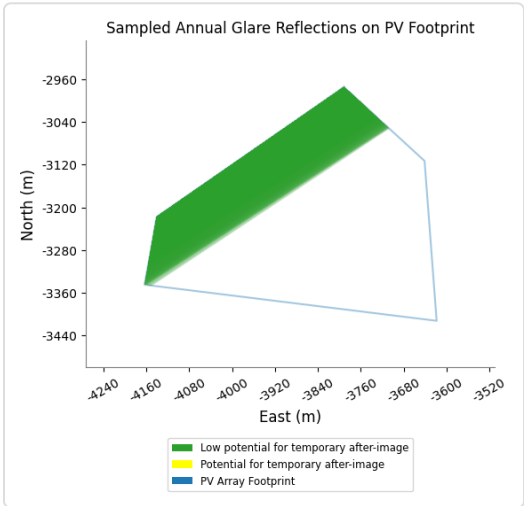
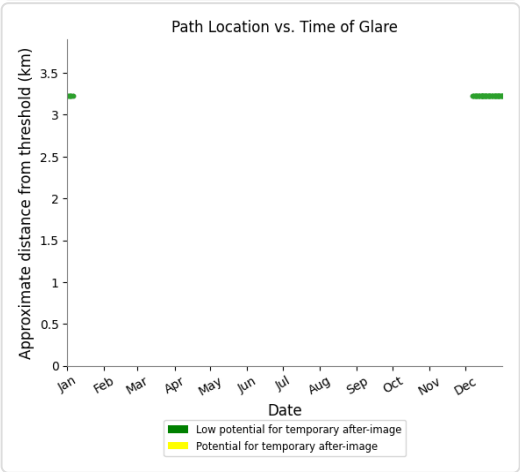
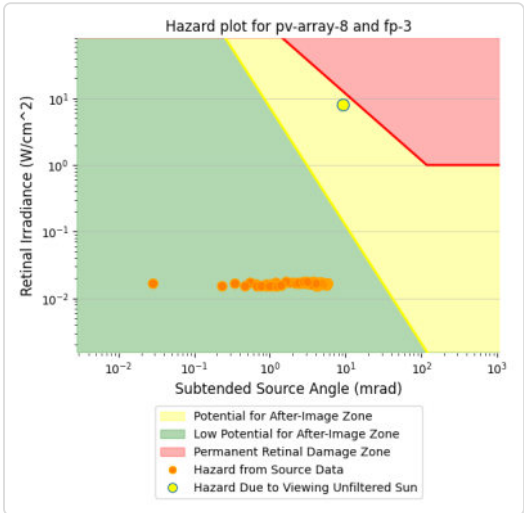
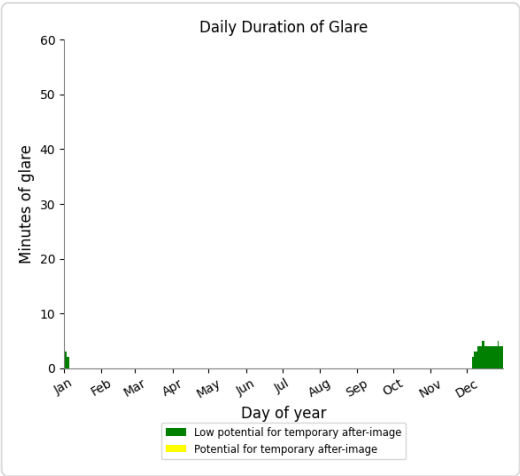
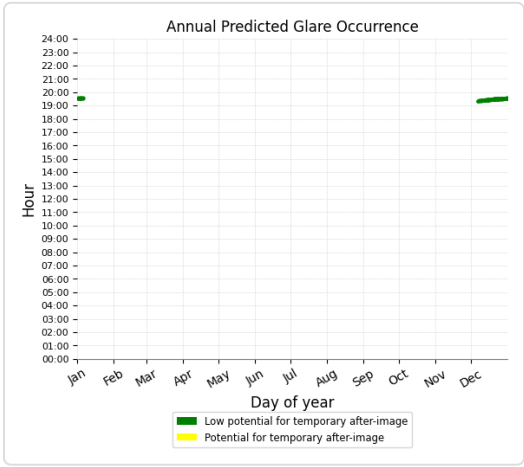
PV array 8 - Receptor (FP 2)

No glare found

PV array 8 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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PV array 8 - Receptor (FP 4)

No glare found

PV array 9 potential temporary after-image

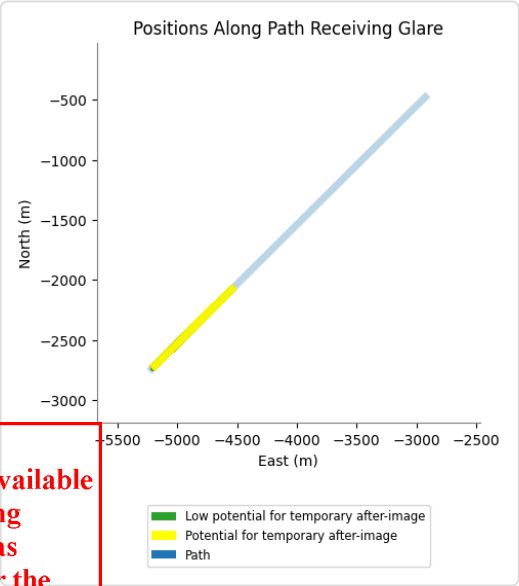
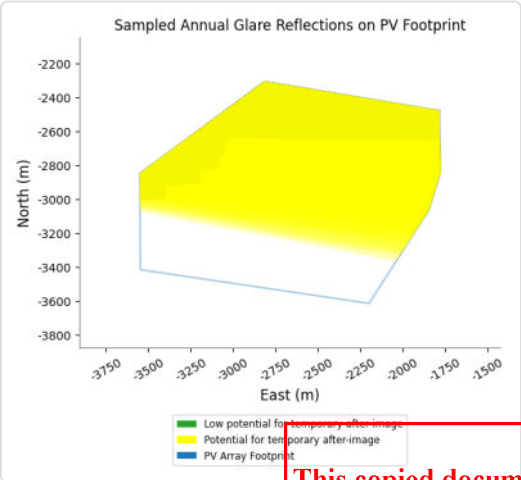
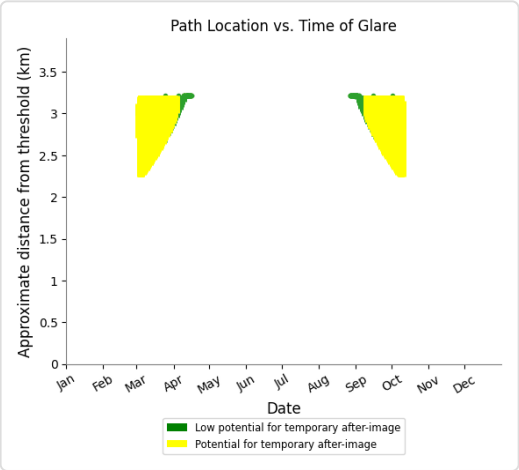
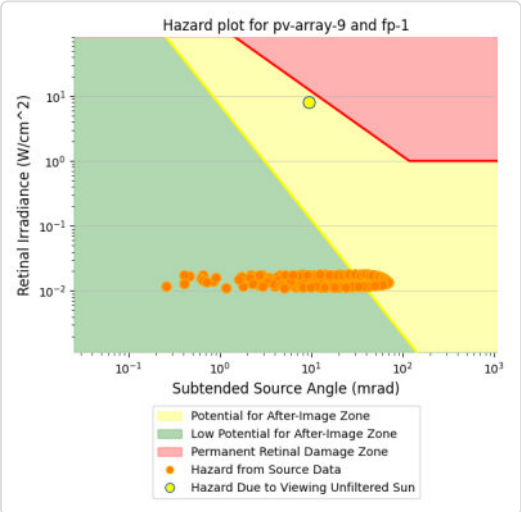
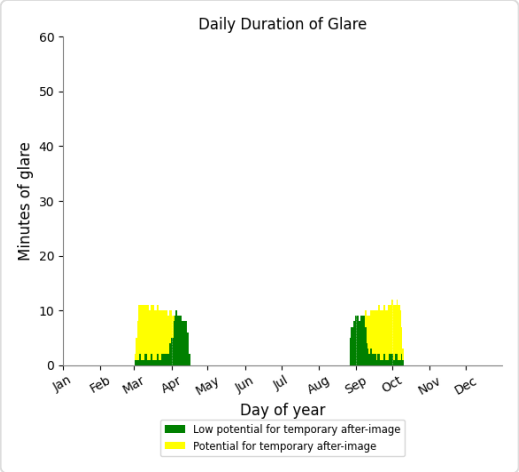
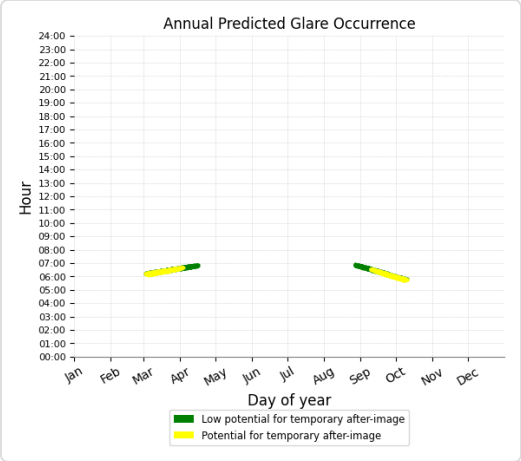
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	333	521
FP: FP 2	0	0
FP: FP 3	184	0
FP: FP 4	0	0

PV array 9 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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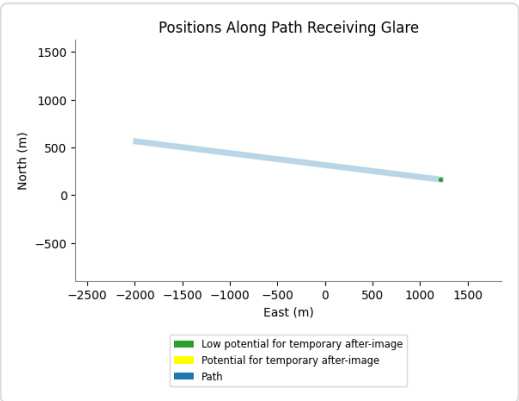
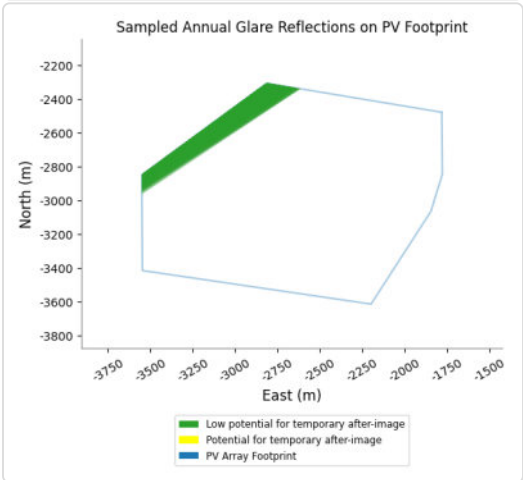
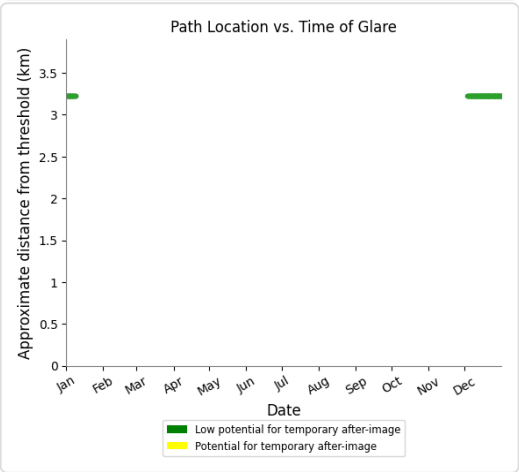
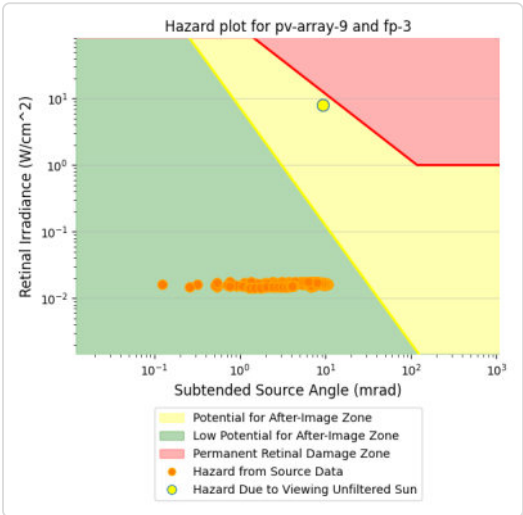
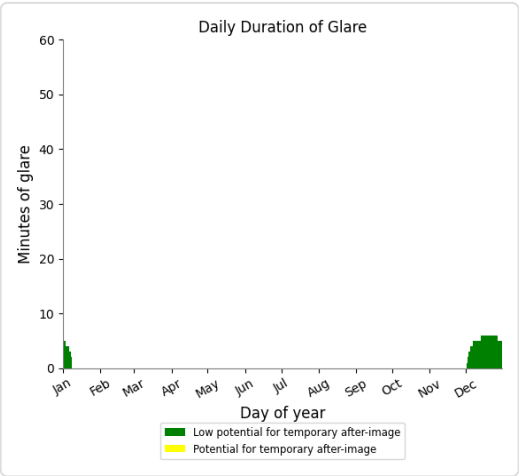
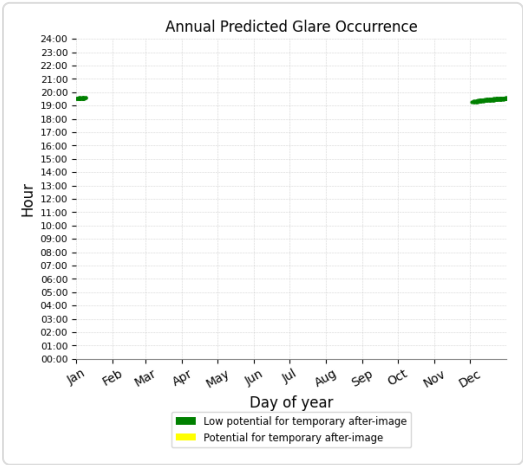
PV array 9 - Receptor (FP 2)

No glare found

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PV array 9 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 184 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 9 - Receptor (FP 4)

No glare found

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## Assumptions

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

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# Hazelwood North Solar Farm

## Hazelwood 1\_Min

Created Sept. 29, 2022  
 Updated Sept. 29, 2022  
 Time-step 1 minute  
 Timezone offset UTC10  
 Site ID 76763.13552

Project type Advanced  
 Project status: active  
 Category 100 MW to 1 GW



### Misc. Analysis Settings

DNI: varies (1,000.0 W/m<sup>2</sup> peak)  
 Ocular transmission coefficient: 0.5  
 Pupil diameter: 0.002 m  
 Eye focal length: 0.017 m  
 Sun subtended angle: 9.3 mrad

Analysis Methodology: **Version 2**  
 Enhanced subtended angle calculation: **On**

### 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	SA tracking	SA tracking	2,426	1,881	-
PV array 10	SA tracking	SA tracking	0	0	-
PV array 11	SA tracking	SA tracking	28	0	-
PV array 12	SA tracking	SA tracking	0	0	-
PV array 13	SA tracking	SA tracking	430	0	-
PV array 14	SA tracking	SA tracking	358	17	-
PV array 15	SA tracking	SA tracking	173	0	-
PV array 16	SA tracking	SA tracking	0	0	-
PV array 2	SA tracking	SA tracking	2,552	1,403	-
PV array 3	SA tracking	SA tracking	2,499	180	-
PV array 4	SA tracking	SA tracking	1,755	2,590	-
PV array 5	SA tracking	SA tracking	1,049	35	-
PV array 6	SA tracking	SA tracking	1,459	1,342	-
PV array 7	SA tracking	SA tracking	1,057	1,093	-
PV array 8	SA tracking	SA tracking	160	0	-
PV array 9	SA tracking	SA tracking	496	506	-

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## Component Data

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PV Array(s)

Total PV footprint area: 8,125,053 m^2

**Name:** PV array 1  
**Description:** Ground Minimum 66.2  
**Footprint area:** 143,281 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45

**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.211219	146.498454	66.20	3.90	70.10
2	-38.210848	146.492961	66.20	3.90	70.10
3	-38.212736	146.489785	66.20	3.90	70.10
4	-38.213377	146.497939	66.20	3.90	70.10




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**Name:** PV array 10  
**Description:** Ground Minimum 83.72  
**Footprint area:** 353,819 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45

**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.243180	146.468384	83.72	3.90	87.62
2	-38.249651	146.466882	83.72	3.90	87.62
3	-38.250460	146.474478	83.72	3.90	87.62
4	-38.247730	146.474907	83.72	3.90	87.62
5	-38.247528	146.473191	83.72	3.90	87.62
6	-38.248505	146.473105	83.72	3.90	87.62
7	-38.248235	146.471302	83.72	3.90	87.62
8	-38.246988	146.471517	83.72	3.90	87.62
9	-38.245842	146.472676	83.72	3.90	87.62
10	-38.243820	146.473105	83.72	3.90	87.62



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**Name:** PV array 11  
**Description:** Ground Minimum 79\_886  
**Footprint area:** 336,525 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.241393	146.477396	79.89	3.90	83.79
2	-38.241259	146.476495	79.89	3.90	83.79
3	-38.244461	146.473877	79.89	3.90	83.79
4	-38.245438	146.473877	79.89	3.90	83.79
5	-38.245842	146.474092	79.89	3.90	83.79
6	-38.247730	146.475079	79.89	3.90	83.79
7	-38.250527	146.474521	79.89	3.90	83.79
8	-38.251269	146.480014	79.89	3.90	83.79
9	-38.247932	146.478555	79.89	3.90	83.79
10	-38.246146	146.479413	79.89	3.90	83.79
11	-38.244528	146.477053	79.89	3.90	83.79
12	-38.242742	146.477353	79.89	3.90	83.79

**Name:** PV array 12  
**Description:** Ground Minimum 93\_361  
**Footprint area:** 309,978 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.44  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.249853	146.468127	93.36	3.90	97.26
2	-38.252414	146.467783	93.36	3.90	97.26
3	-38.253965	146.479585	93.36	3.90	97.26
4	-38.251269	146.480100	93.36	3.90	97.26

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**Name:** PV array 13  
**Description:** Ground Minimum 75\_613  
**Footprint area:** 197,878 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233873	146.481715	75.61	3.90	79.51
2	-38.233738	146.479483	75.61	3.90	79.51
3	-38.234817	146.479312	75.61	3.90	79.51
4	-38.236840	146.479784	75.61	3.90	79.51
5	-38.237952	146.479440	75.61	3.90	79.51
6	-38.238693	146.479655	75.61	3.90	79.51
7	-38.239502	146.485406	75.61	3.90	79.51
8	-38.238795	146.485792	75.61	3.90	79.51
9	-38.237042	146.483346	75.61	3.90	79.51

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**Name:** PV array 14  
**Description:** Ground Minimum 80\_498  
**Footprint area:** 460,155 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233941	146.483947	80.50	3.90	84.40
2	-38.235222	146.493645	80.50	3.90	84.40
3	-38.240750	146.492444	80.50	3.90	84.40
4	-38.239570	146.485449	80.50	3.90	84.40
5	-38.238727	146.485749	80.50	3.90	84.40
6	-38.236873	146.484333	80.50	3.90	84.40
7	-38.235525	146.483861	80.50	3.90	84.40
8	-38.234547	146.483560	80.50	3.90	84.40

**Name:** PV array 15  
**Description:** Ground Minimum 80\_637  
**Footprint area:** 631,951 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238716	146.479651	80.64	3.90	84.54
2	-38.239541	146.480252	80.64	3.90	84.54
3	-38.240637	146.479287	80.64	3.90	84.54
4	-38.244412	146.478750	80.64	3.90	84.54
5	-38.245204	146.491238	80.64	3.90	84.54
6	-38.240738	146.492397	80.64	3.90	84.54

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**Name:** PV array 16  
**Description:** Ground Minimum 84\_965  
**Footprint area:** 664,063 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.245259	146.491299	84.97	3.90	88.87
2	-38.244467	146.478767	84.96	3.90	88.86
3	-38.245765	146.480698	84.97	3.90	88.87
4	-38.246624	146.480677	84.97	3.90	88.87
5	-38.247652	146.479905	84.97	3.90	88.87
6	-38.251949	146.481879	84.97	3.90	88.87
7	-38.252017	146.486857	84.97	3.90	88.87
8	-38.250433	146.490161	84.97	3.90	88.87

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**Name:** PV array 2  
**Description:** Ground Minimum 66\_379  
**Footprint area:** 277,400 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213410	146.497896	66.38	3.90	70.28
2	-38.212736	146.489613	66.38	3.90	70.28
3	-38.216951	146.490686	66.38	3.90	70.28
4	-38.216816	146.497424	66.38	3.90	70.28

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**Name:** PV array 3  
**Description:** Ground Minimum 72\_933  
**Footprint area:** 233,123 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.216816	146.497510	72.93	3.90	76.83
2	-38.220558	146.496608	72.93	3.90	76.83
3	-38.220862	146.490858	72.93	3.90	76.83
4	-38.216951	146.490686	72.93	3.90	76.83

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**Name:** PV array 4  
**Description:** Ground Minimum 59\_527  
**Footprint area:** 1,289,642 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.213511	146.485665	59.53	3.90	63.43
2	-38.216243	146.486867	59.53	3.90	63.43
3	-38.217962	146.488283	59.53	3.90	63.43
4	-38.219277	146.488111	59.53	3.90	63.43
5	-38.220120	146.488626	59.53	3.90	63.43
6	-38.221738	146.488712	59.53	3.90	63.43
7	-38.222581	146.489570	59.53	3.90	63.43
8	-38.222682	146.490600	59.53	3.90	63.43
9	-38.223559	146.490815	59.53	3.90	63.43
10	-38.225144	146.489656	59.53	3.90	63.43
11	-38.227268	146.489012	59.53	3.90	63.43
12	-38.228211	146.490171	59.53	3.90	63.43
13	-38.226863	146.479056	59.53	3.90	63.43
14	-38.224301	146.478455	59.53	3.90	63.43
15	-38.222750	146.477339	59.53	3.90	63.43
16	-38.222143	146.475666	59.53	3.90	63.43
17	-38.219716	146.475966	59.53	3.90	63.43



**Name:** PV array 5  
**Description:** Ground Minimum 75\_153  
**Footprint area:** 201,836 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.227335	146.481931	75.15	3.90	79.05
2	-38.232594	146.480773	75.15	3.90	79.05
3	-38.232358	146.478756	75.15	3.90	79.05
4	-38.230605	146.477168	75.15	3.90	79.05
5	-38.229391	146.477039	75.15	3.90	79.05
6	-38.227470	146.477726	75.15	3.90	79.05
7	-38.226762	146.478241	75.15	3.90	79.05

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**Name:** PV array 6  
**Description:** Ground Minimum 63\_018  
**Footprint area:** 606,569 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.43  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228854	146.462419	63.02	3.90	66.92
2	-38.222280	146.472719	63.02	3.90	66.92
3	-38.223325	146.473706	63.02	3.90	66.92
4	-38.223190	146.475079	63.02	3.90	66.92
5	-38.224808	146.476838	63.02	3.90	66.92
6	-38.226089	146.477268	63.02	3.90	66.92
7	-38.226629	146.477139	63.02	3.90	66.92
8	-38.226898	146.476409	63.02	3.90	66.92
9	-38.229899	146.475808	63.02	3.90	66.92

**Name:** PV array 7  
**Description:** Ground Minimum 66\_215  
**Footprint area:** 509,279 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.45  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.228887	146.462419	66.22	3.90	70.12
2	-38.231584	146.458342	66.22	3.90	70.12
3	-38.235832	146.457527	66.22	3.90	70.12
4	-38.231079	146.465638	66.22	3.90	70.12
5	-38.232730	146.477997	66.22	3.90	70.12
6	-38.229966	146.475851	66.22	3.90	70.12

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**Name:** PV array 8  
**Description:** Ground Minimum 72\_306  
**Footprint area:** 153,894 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.4  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.238023	146.455166	72.31	3.90	76.21
2	-38.240214	146.451175	72.31	3.90	76.21
3	-38.241360	146.450918	72.31	3.90	76.21
4	-38.241966	146.457140	72.31	3.90	76.21
5	-38.239270	146.456883	72.31	3.90	76.21



**Name:** PV array 9  
**Description:** Ground Minimum 70\_084  
**Footprint area:** 1,755,658 m^2  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 50.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.42  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-38.233539	146.478126	70.08	3.90	73.98
2	-38.231989	146.466324	70.08	3.90	73.98
3	-38.236877	146.457913	70.08	3.90	73.98
4	-38.242000	146.457956	70.08	3.90	73.98
5	-38.243787	146.473362	70.08	3.90	73.98
6	-38.238832	146.477396	70.08	3.90	73.98
7	-38.236843	146.478169	70.08	3.90	73.98

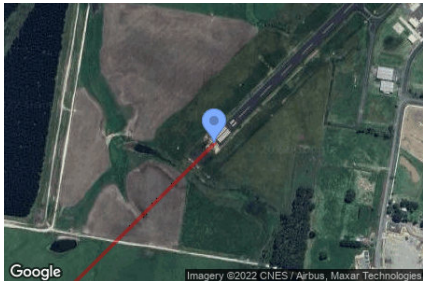


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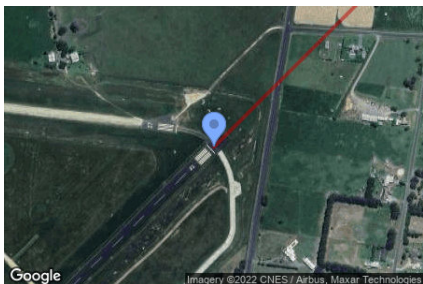
**Name:** FP 1  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 45.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.215525	146.465053	51.19	15.24	66.43
2-mile point	-38.235919	146.438938	66.15	168.97	235.11



**Name:** FP 2  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 225.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

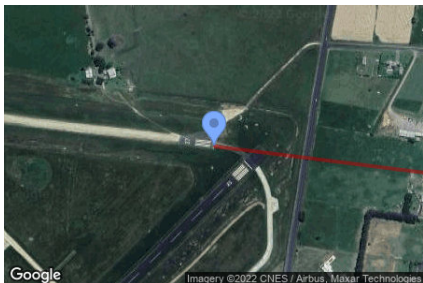
Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206436	146.476628	57.79	15.24	73.03
2-mile point	-38.186038	146.502735	52.47	189.25	241.72



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**Name:** FP 3  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 277.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.206142	146.475786	55.28	15.24	70.52
2-mile point	-38.209736	146.512338	69.94	169.27	239.20



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**Name:** FP 4  
**Description:**  
**Threshold height :** 15 m  
**Direction:** 97.1 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
Threshold	-38.205111	146.465369	50.98	15.24	66.22
2-mile point	-38.201512	146.428819	94.82	140.09	234.91



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# Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	2,426	1,881	-	-
PV array 10	SA tracking	SA tracking	0	0	-	
PV array 11	SA tracking	SA tracking	28	0	-	-
PV array 12	SA tracking	SA tracking	0	0	-	
PV array 13	SA tracking	SA tracking	430	0	-	-
PV array 14	SA tracking	SA tracking	358	17	-	-
PV array 15	SA tracking	SA tracking	173	0	-	-
PV array 16	SA tracking	SA tracking	0	0	-	
PV array 2	SA tracking	SA tracking	2,552	1,403	-	-
PV array 3	SA tracking	SA tracking	2,499	180	-	-
PV array 4	SA tracking	SA tracking	1,755	2,590	-	-
PV array 5	SA tracking	SA tracking	1,049	35	-	-
PV array 6	SA tracking	SA tracking	1,459	1,342	-	-
PV array 7	SA tracking	SA tracking	1,057	1,093	-	-
PV array 8	SA tracking	SA tracking	160	0	-	-
PV array 9	SA tracking	SA tracking	496	506	-	-

## Distinct glare per month

Excludes overlapping glare from PV array for multiple receptors at matching time(s)

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PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
pv-array-1 (green)	187	315	187	117	207	200	215	163	58	380	205	192
pv-array-1 (yellow)	450	295	27	0	0	0	0	0	0	216	410	483
pv-array-11 (green)	0	0	13	0	0	0	0	0	0	15	0	0
pv-array-11 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-13 (green)	0	0	200	15	0	0	0	0	155	60	0	0
pv-array-13 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-14 (green)	0	0	173	7	0	0	0	0	133	45	0	0
pv-array-14 (yellow)	0	0	9	0	0	0	0	0	0	8	0	0
pv-array-15 (green)	0	0	87	0	0	0	0	0	28	58	0	0
pv-array-15 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-2 (green)	251	345	108	149	219	200	221	183	92	321	264	199
pv-array-2 (yellow)	379	171	0	10	0	0	0	4	4	80	347	408
pv-array-3 (green)	508	167	110	179	163	0	82	199	148	98	443	402
pv-array-3 (yellow)	21	0	0	0	0	0	0	0	0	0	0	159
pv-array-4 (green)	150	351	56	10	124	230	202	18	13	315	207	79
pv-array-4 (yellow)	459	101	180	220	138	0	53	227	201	84	367	560
pv-array-5 (green)	26	0	177	215	0	0	0	139	214	41	0	237
pv-array-5 (yellow)	0	0	18	0	0	0	0	0	3	14	0	0
pv-array-6 (green)	239	54	45	51	208	32	188	87	42	17	207	289
pv-array-6 (yellow)	55	0	249	254	61	0	0	220	265	76	14	148
pv-array-7 (green)	197	0	36	136	83	0	0	194	41	9	125	236
pv-array-7 (yellow)	0	0	327	218	0	0	0	110	330	108	0	0
pv-array-8 (green)	13	0	28	0	0	0	0	0	0	25	0	94
pv-array-8 (yellow)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-9 (green)	31	0	47	113	0	0	0	32	114	12	0	147
pv-array-9 (yellow)	0	0	241	12	0	0	0	0	170	83	0	0

## PV & Receptor Analysis Results

Results for each PV array and receptor

### PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	923	0
FP: FP 2	0	0
FP: FP 3	1141	1881
FP: FP 4	362	0

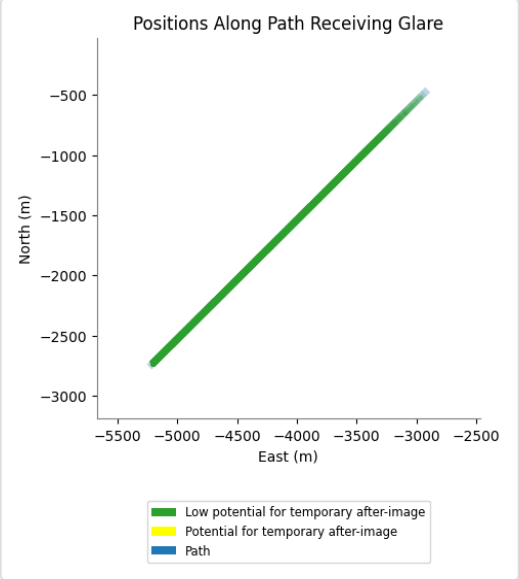
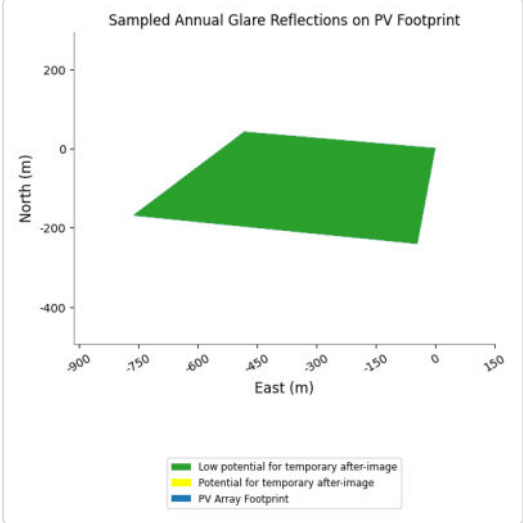
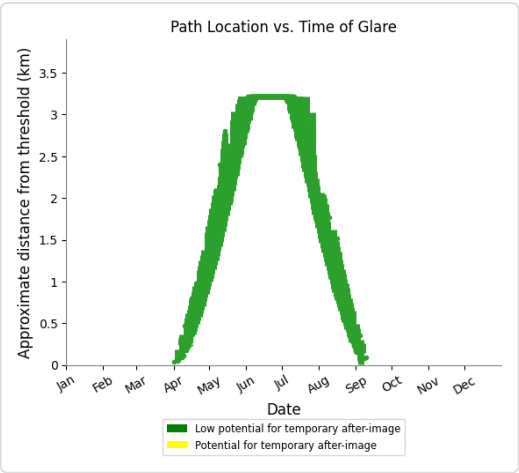
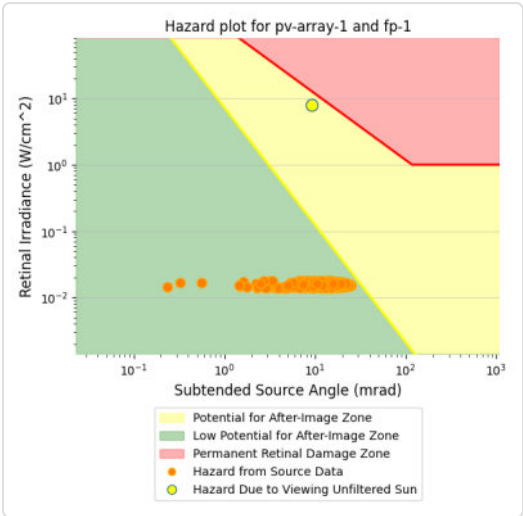
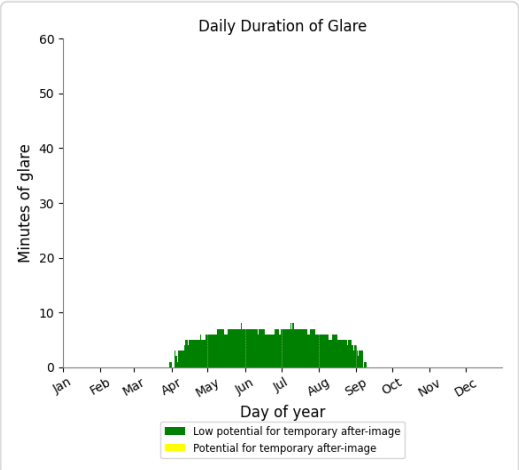
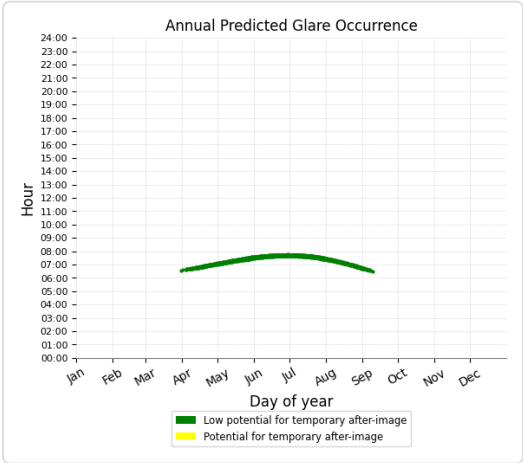
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PV array 1 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 923 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 - Receptor (FP 2)

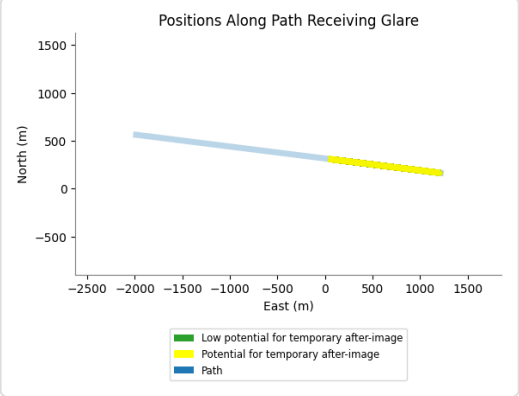
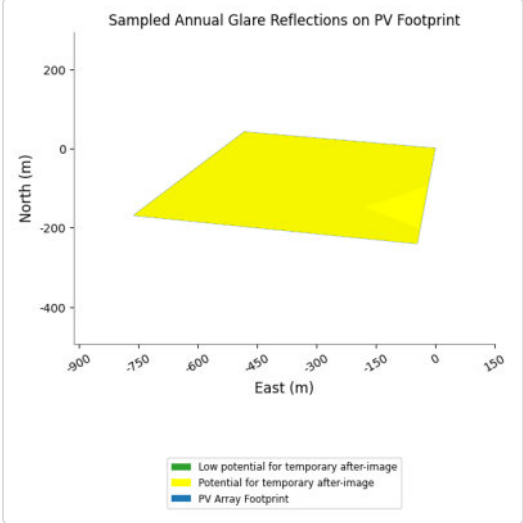
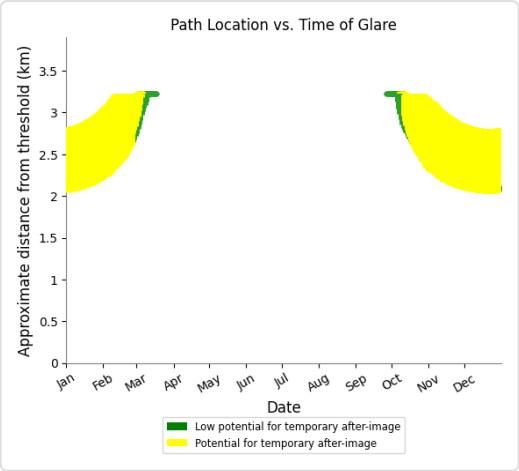
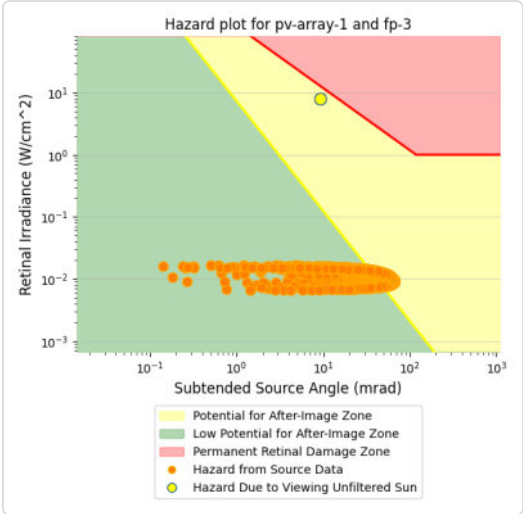
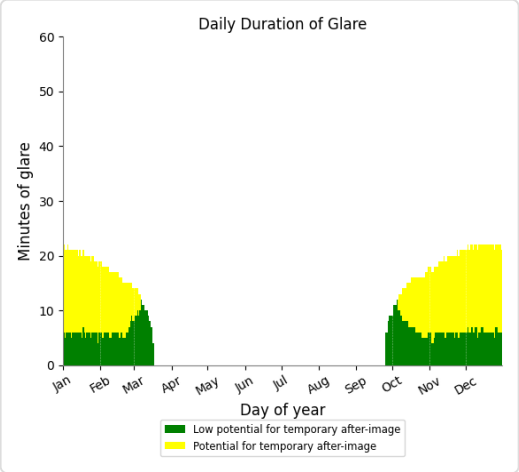
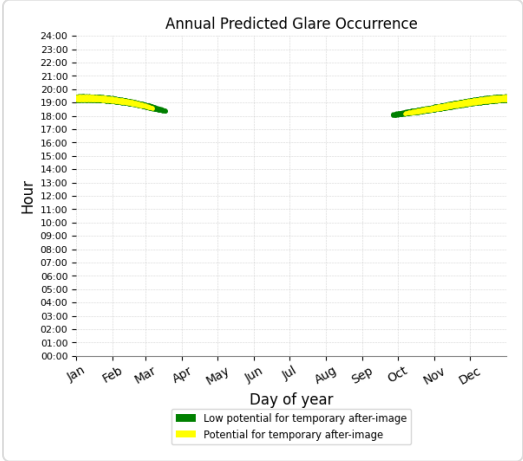
No glare found

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PV array 1 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 1,141 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,881 minutes of "yellow" glare with potential to cause temporary after-image.



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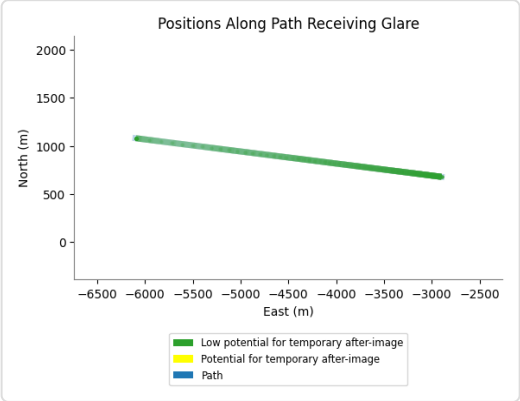
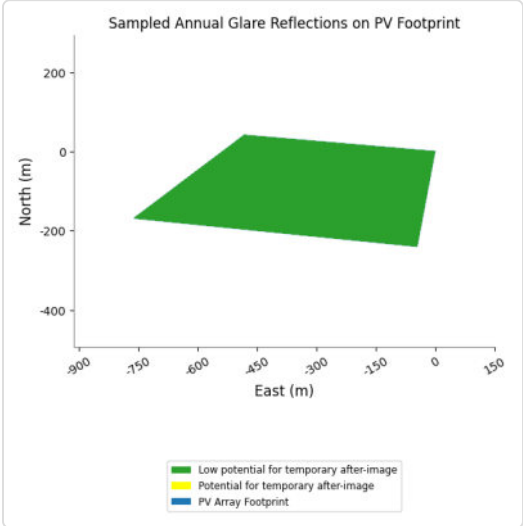
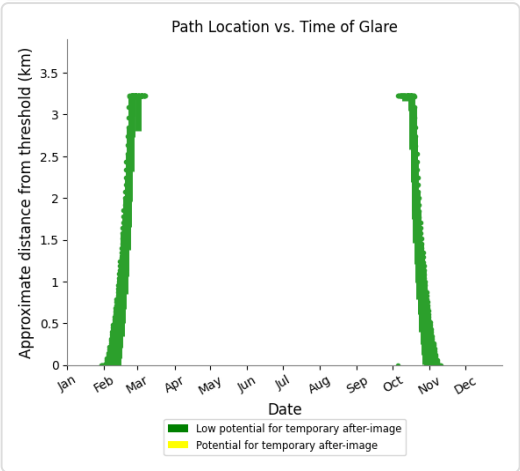
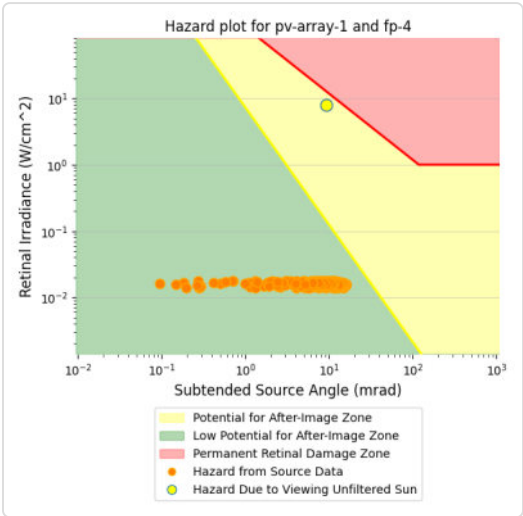
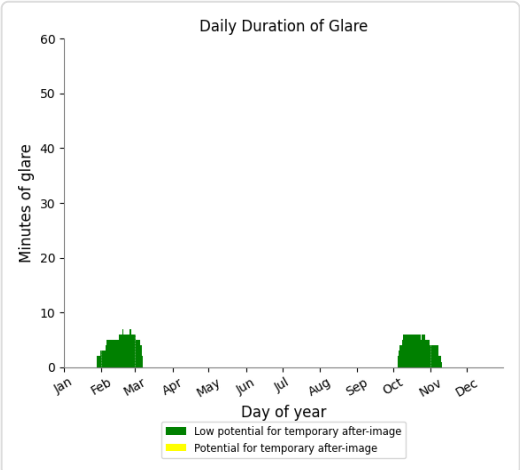
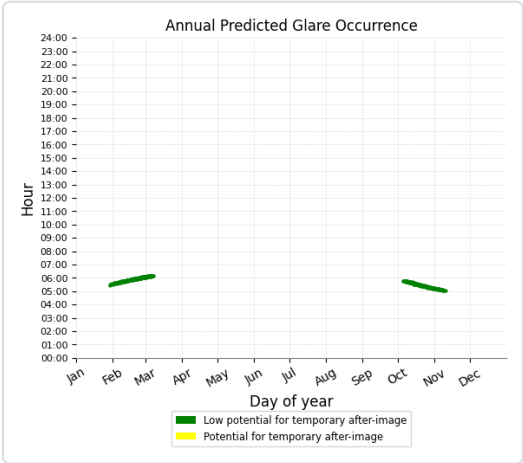
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PV array 1 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

- 362 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 10 no glare found

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Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

--

PV array 11 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	28	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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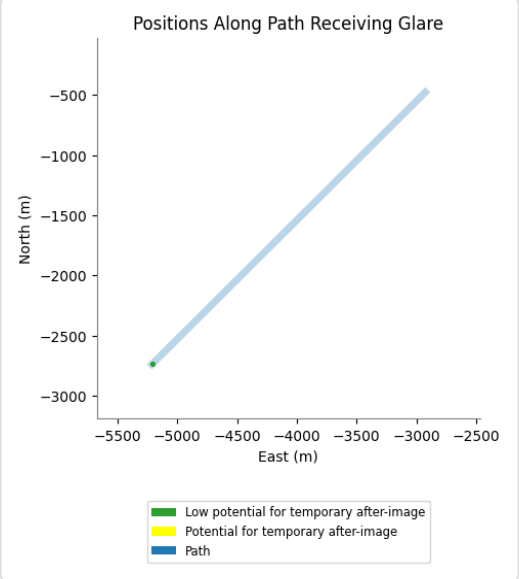
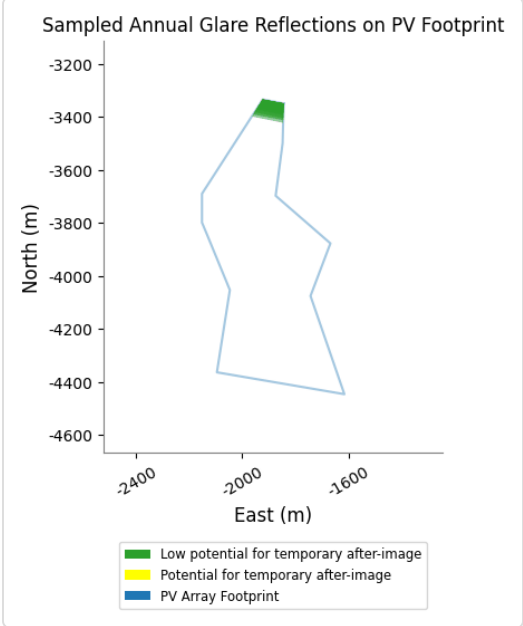
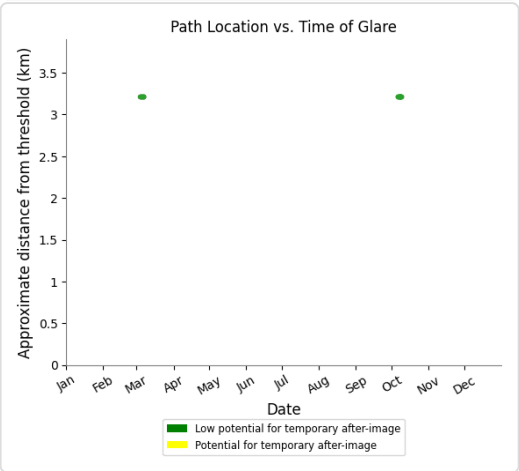
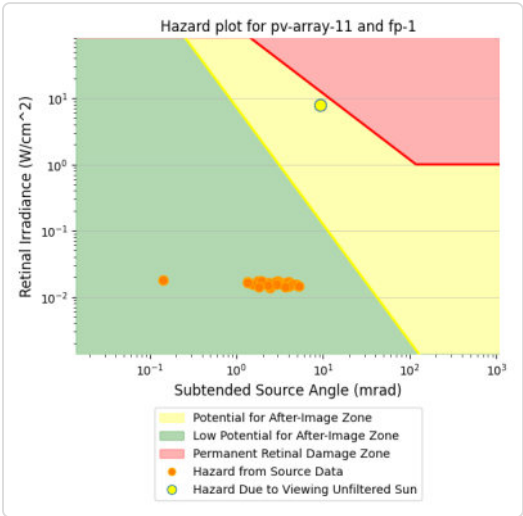
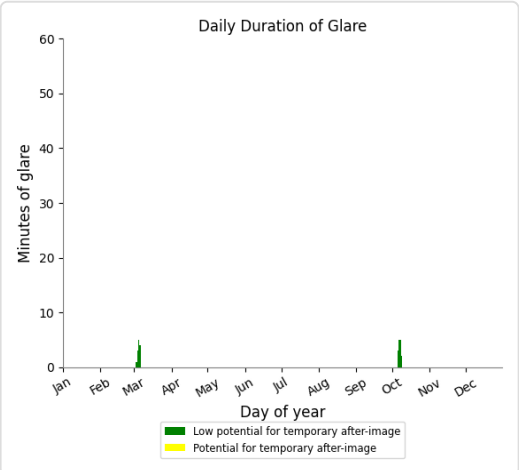
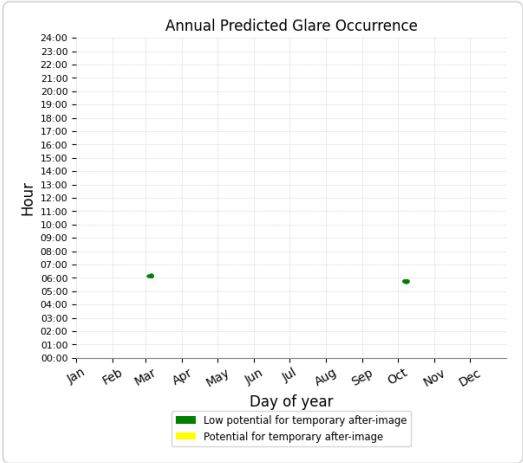
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PV array 11 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 28 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 11 - Receptor (FP 2)

No glare found

PV array 11 - Receptor (FP 3)

No glare found

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PV array 11 - Receptor (FP 4)

No glare found

PV array 12 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 13 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	430	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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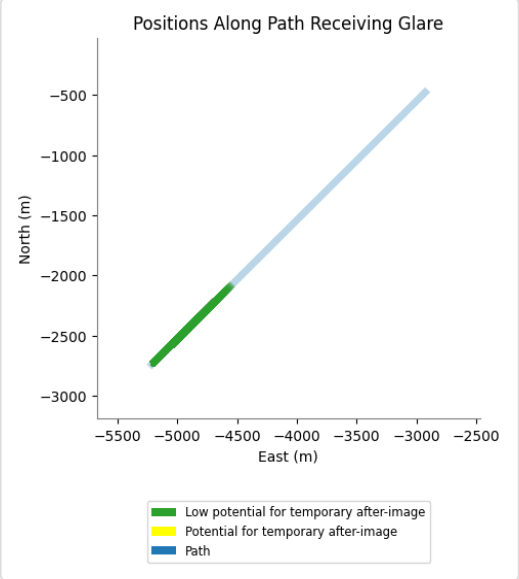
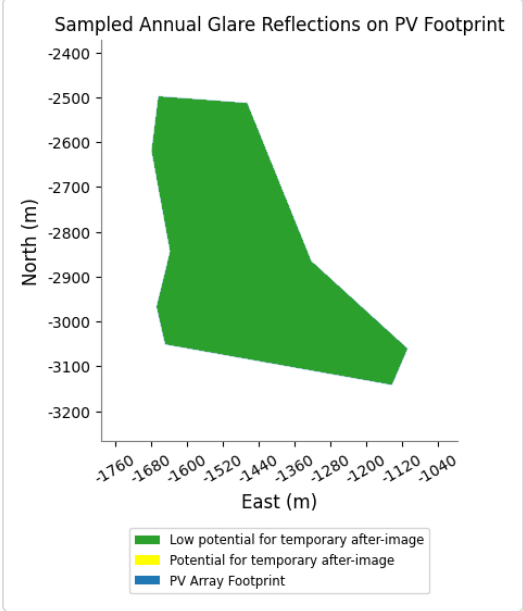
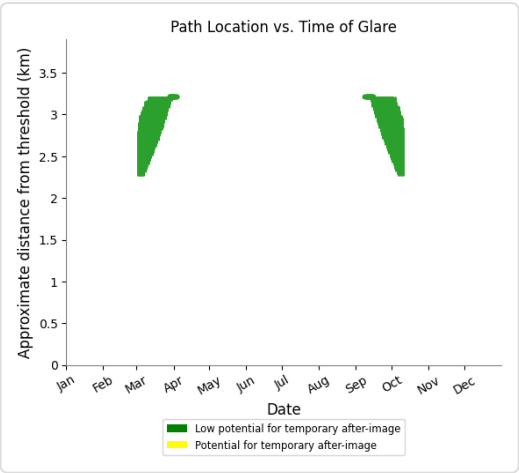
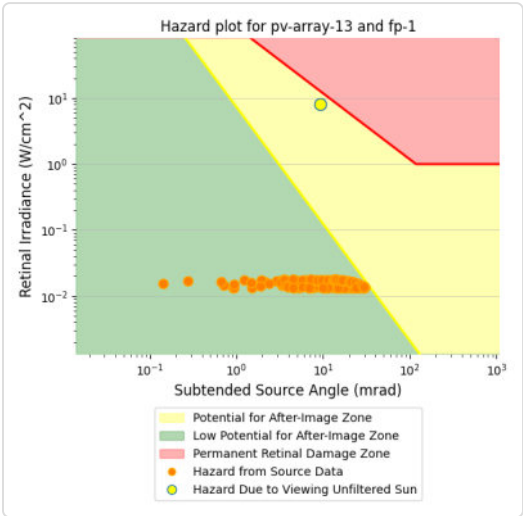
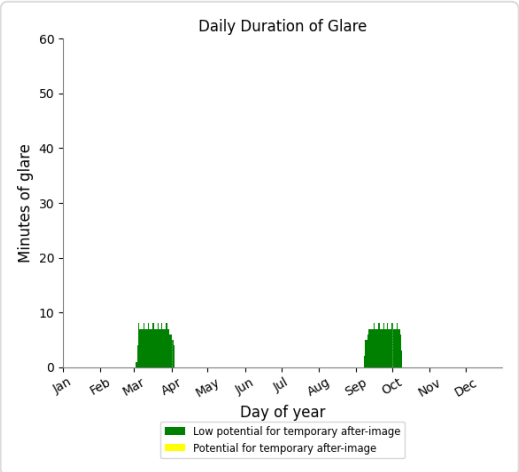
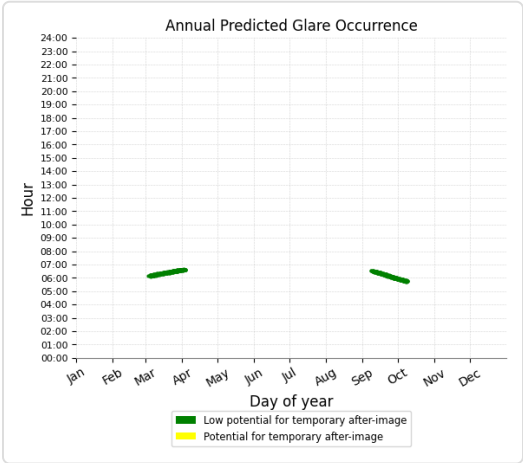


PV array 13 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 13 - Receptor (FP 2)

No glare found

PV array 13 - Receptor (FP 3)

No glare found

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PV array 13 - Receptor (FP 4)

No glare found

PV array 14 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	358	17
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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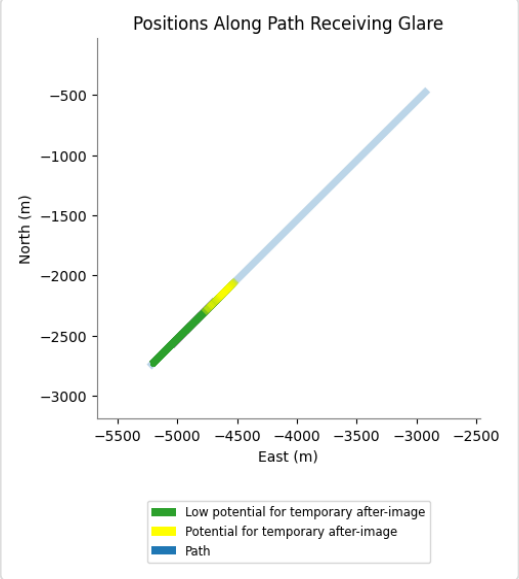
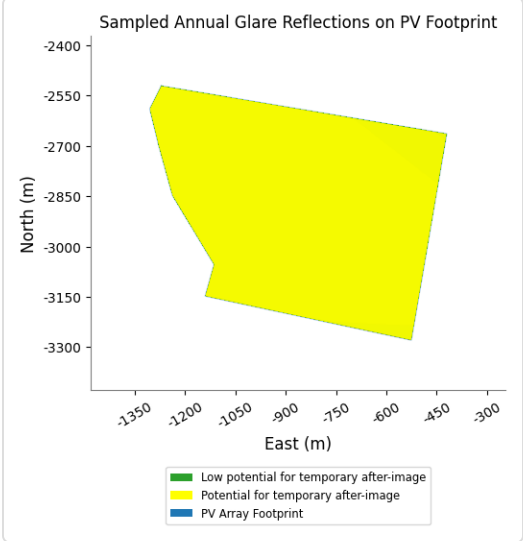
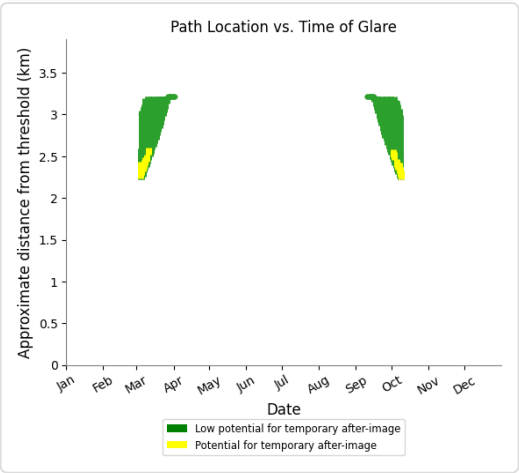
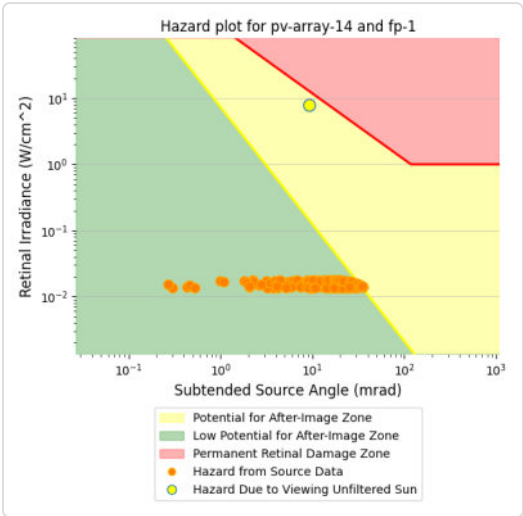
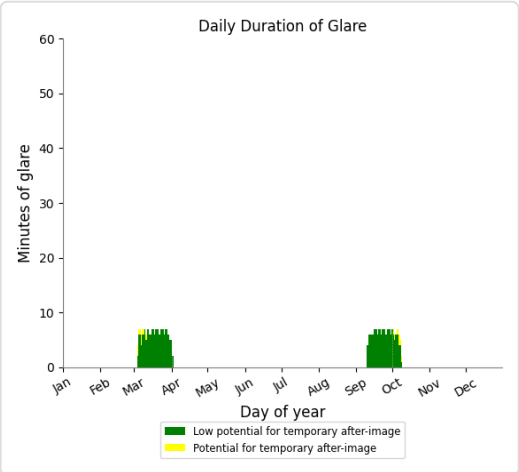
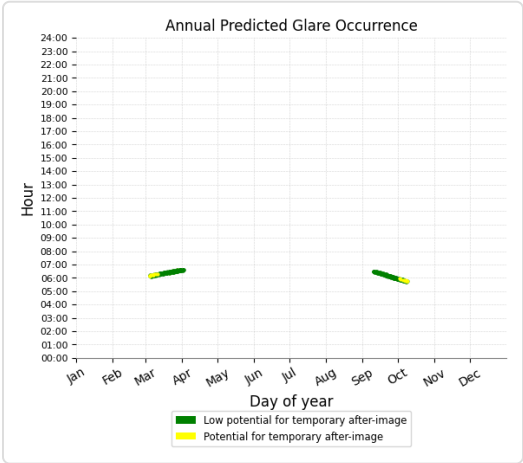
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PV array 14 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 14 - Receptor (FP 2)

No glare found

PV array 14 - Receptor (FP 3)

No glare found

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PV array 14 - Receptor (FP 4)

No glare found

PV array 15

low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	173	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

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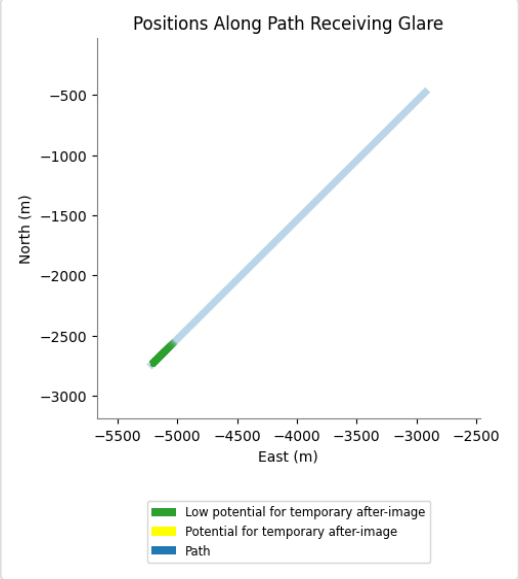
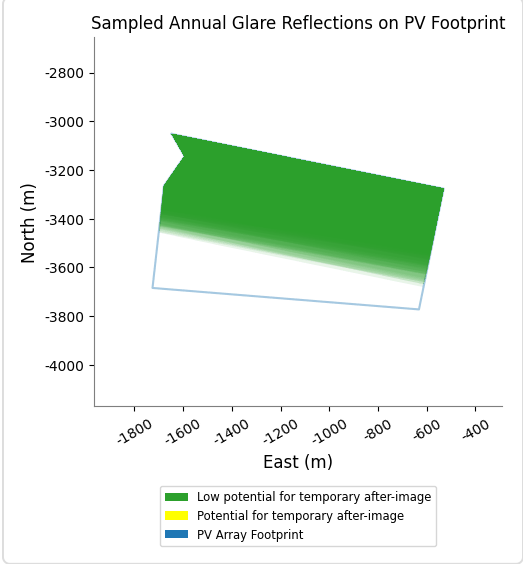
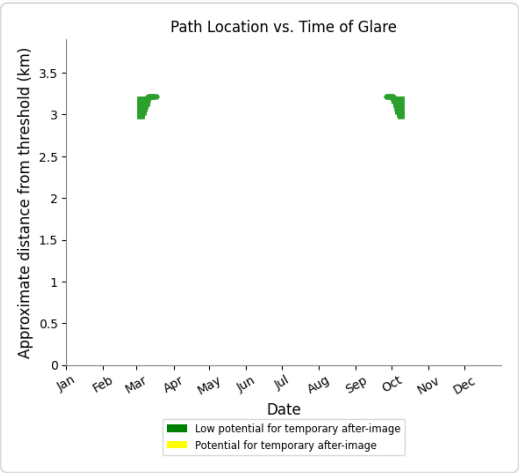
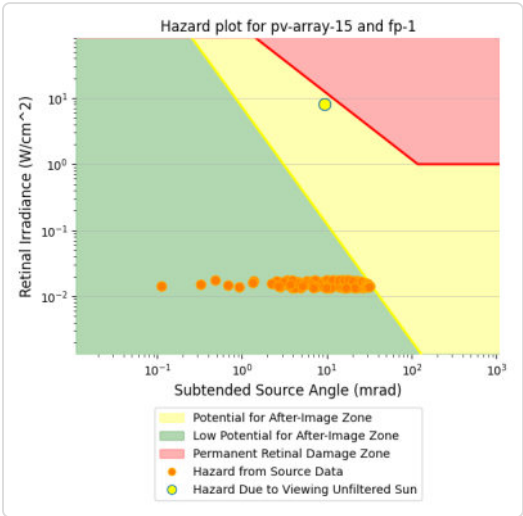
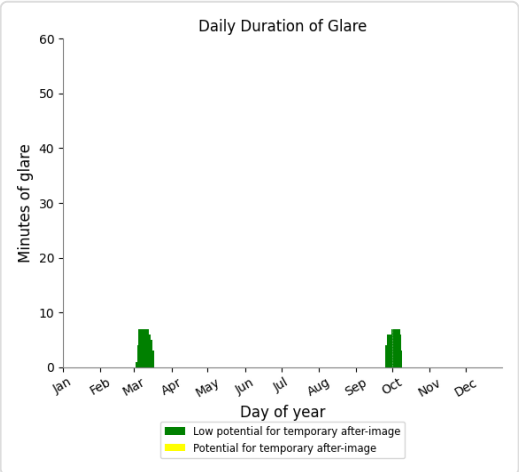
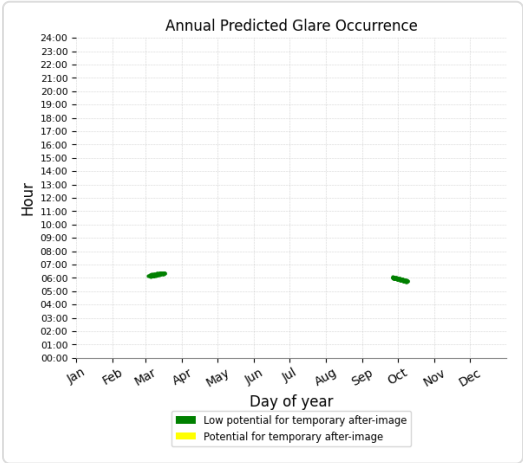


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PV array 15 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 173 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 15 - Receptor (FP 2)

No glare found

PV array 15 - Receptor (FP 3)

No glare found

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PV array 15 - Receptor (FP 4)

No glare found

PV array 16 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0

No glare found

PV array 2 potential temporary after-image

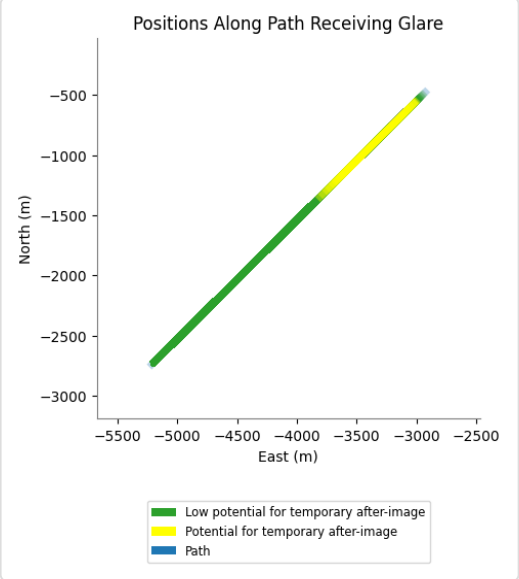
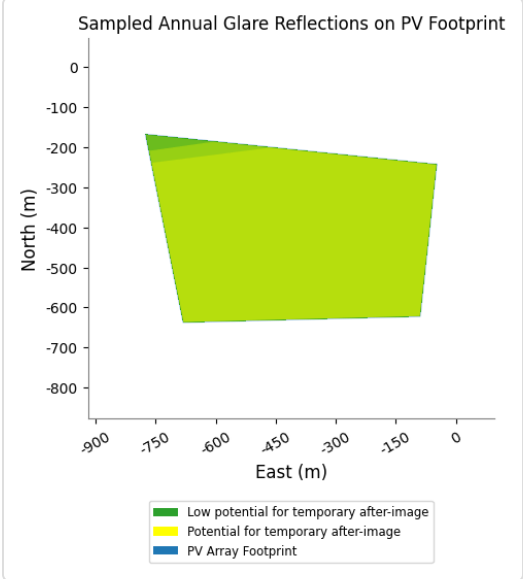
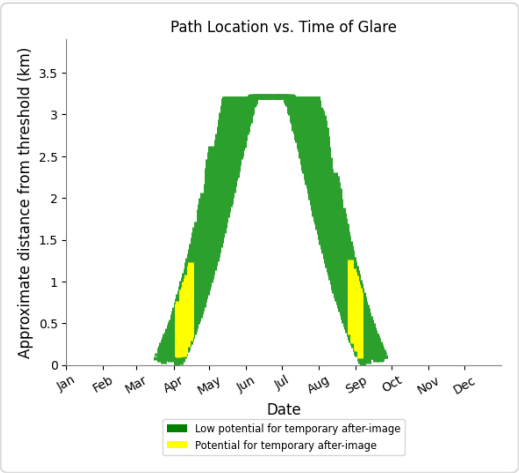
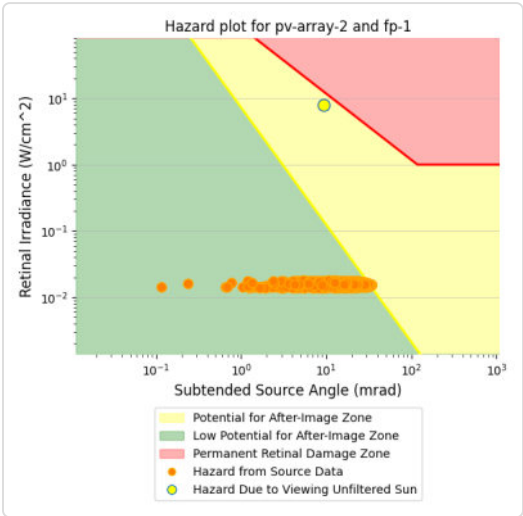
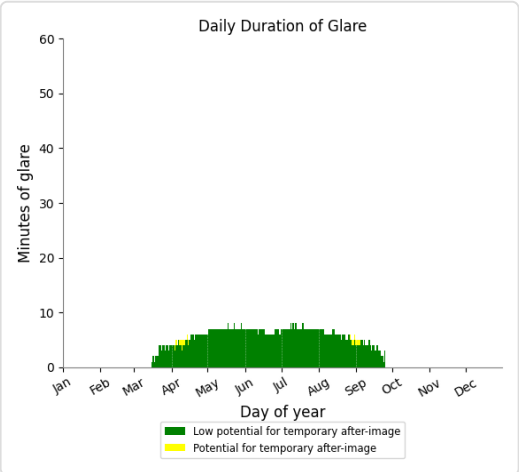
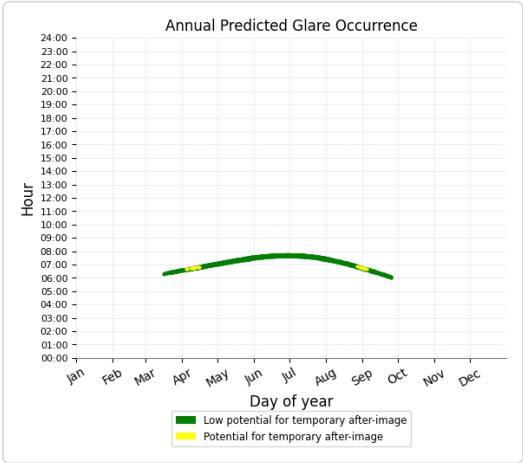
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	1111	18
FP: FP 2	0	0
FP: FP 3	752	1385
FP: FP 4	689	0

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PV array 2 - Receptor (FP 1)

- PV array is expected to produce the following glare for observers on this flight path:
- 1,111 minutes of "green" glare with low potential to cause temporary after-image.
  - 18 minutes of "yellow" glare with potential to cause temporary after-image.



PV array 2 - Receptor (FP 2)

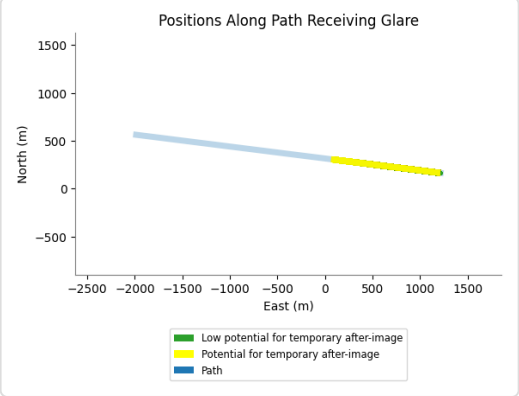
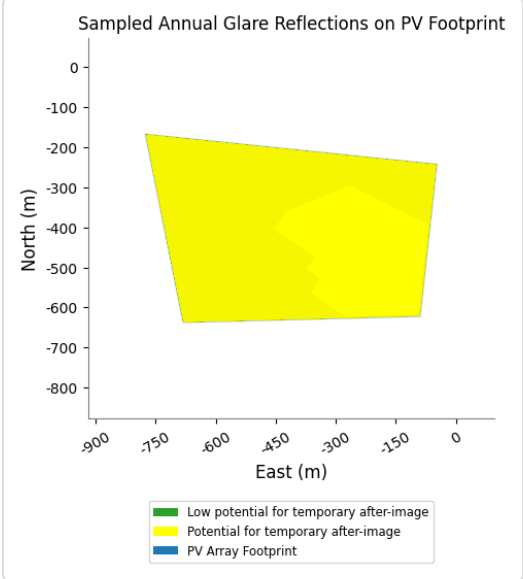
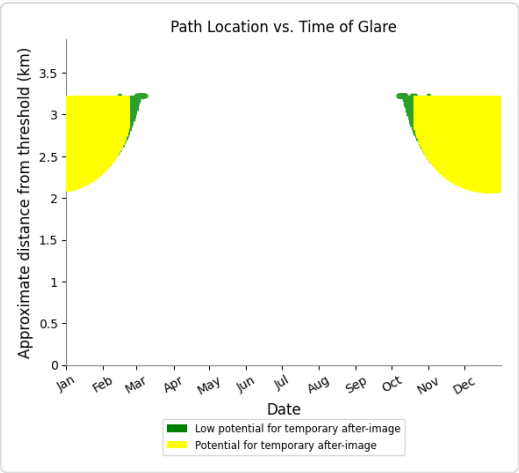
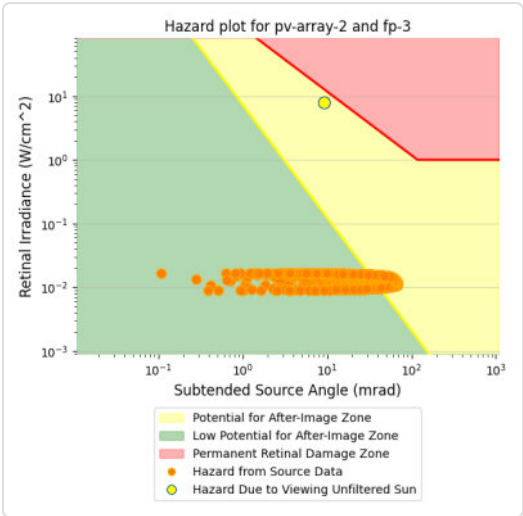
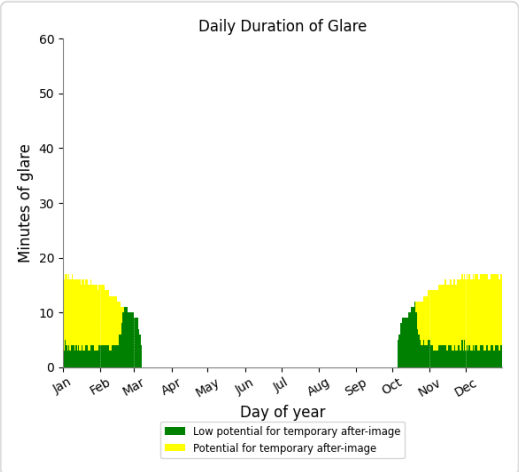
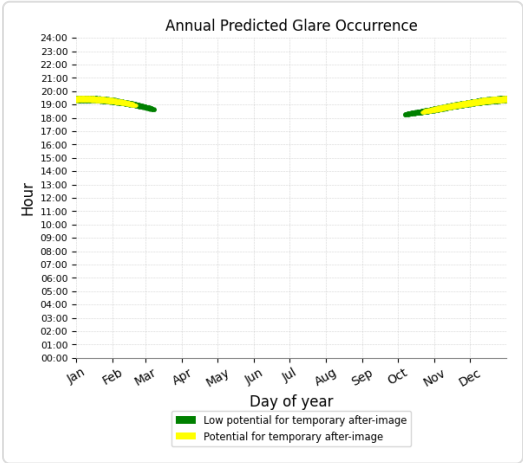
No glare found

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PV array 2 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 752 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,385 minutes of "yellow" glare with potential to cause temporary after-image.



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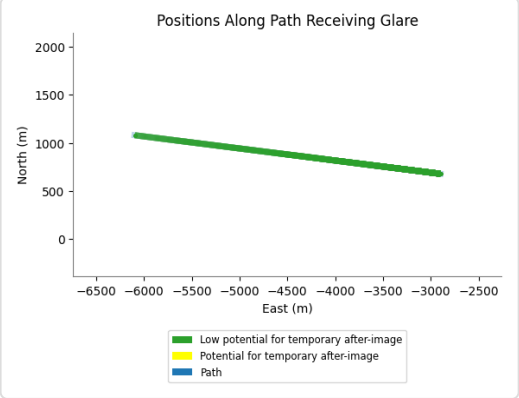
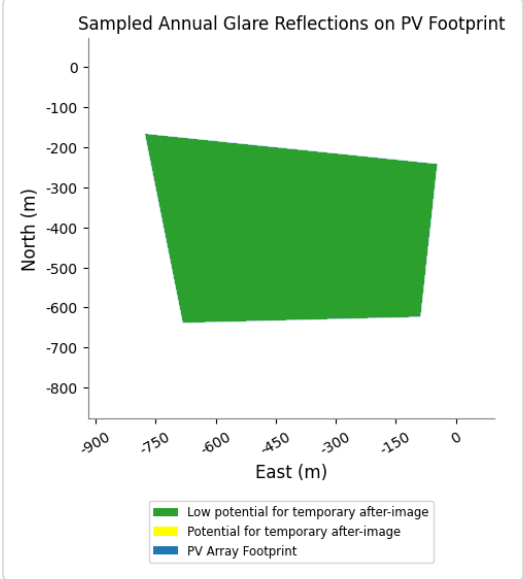
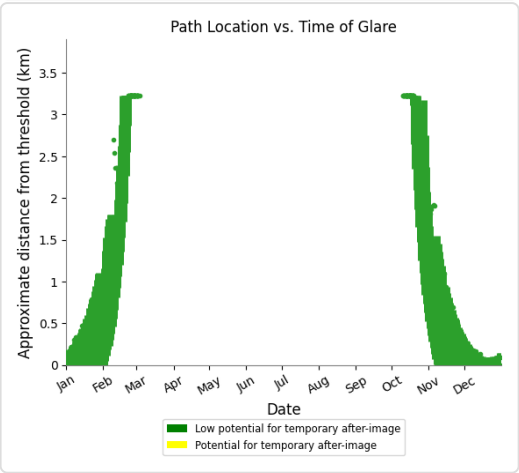
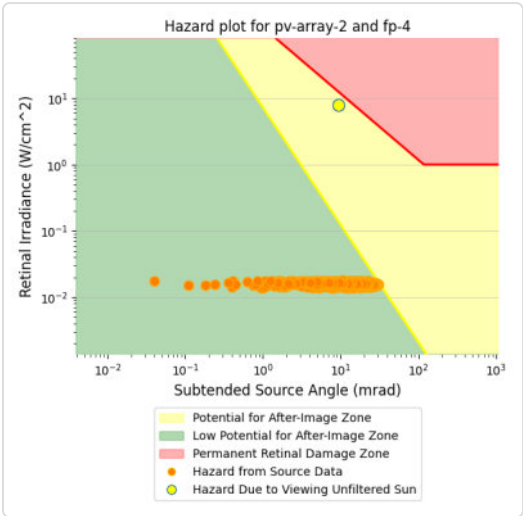
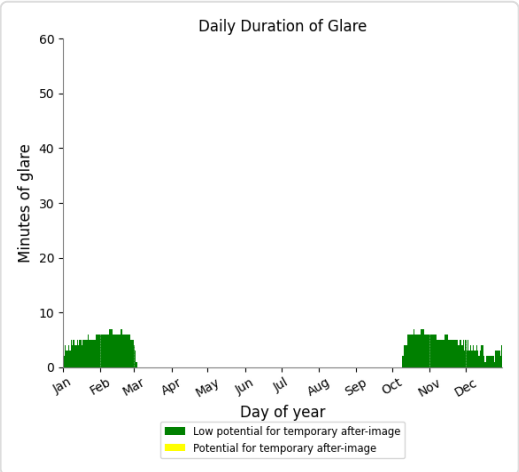
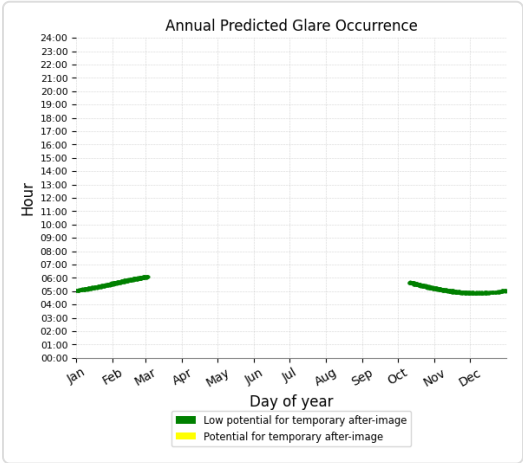


PV array 2 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 3 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	903	0
FP: FP 2	0	0

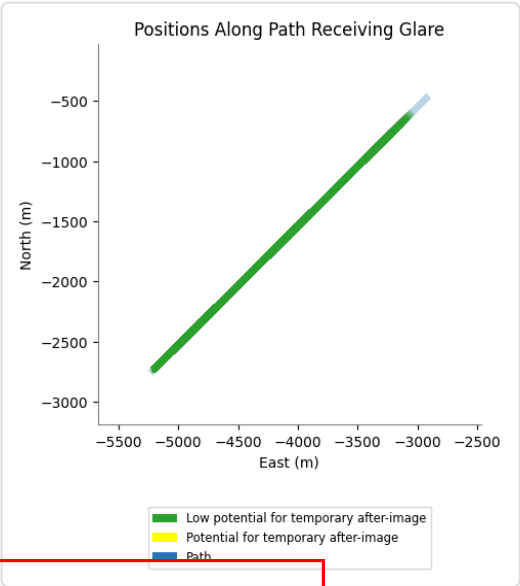
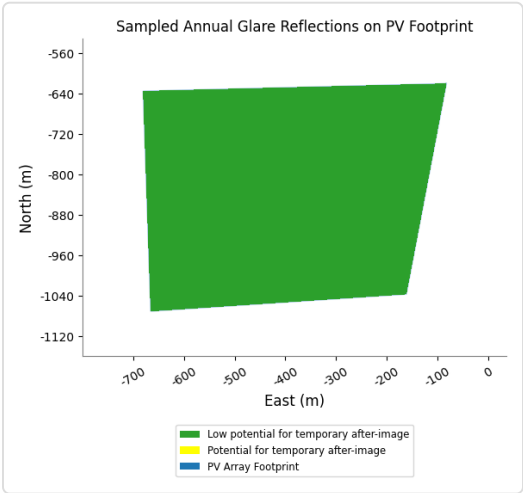
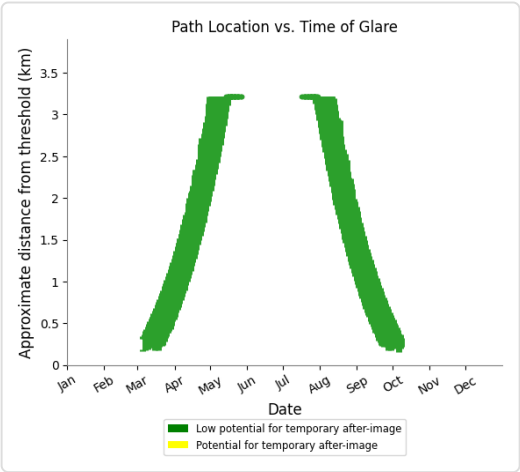
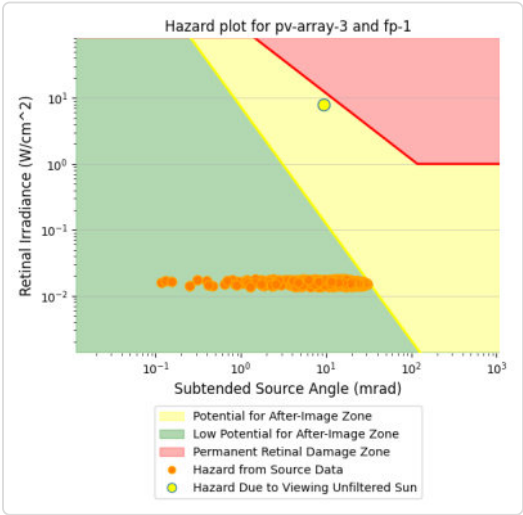
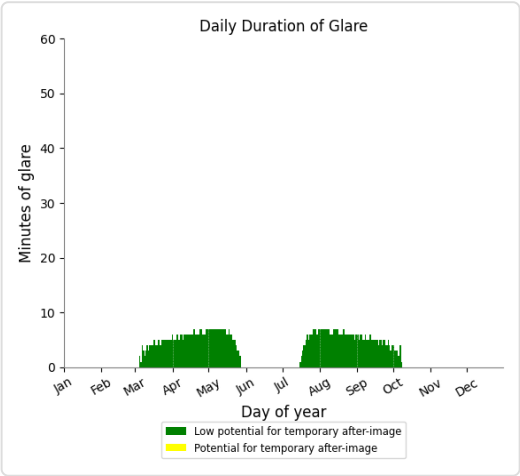
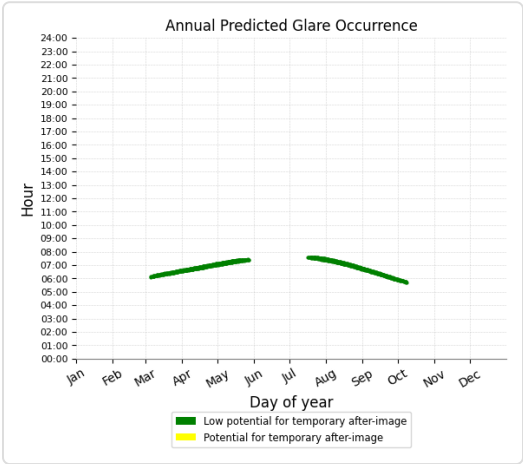
FP: FP 3	864	180
FP: FP 4	732	0

PV array 3 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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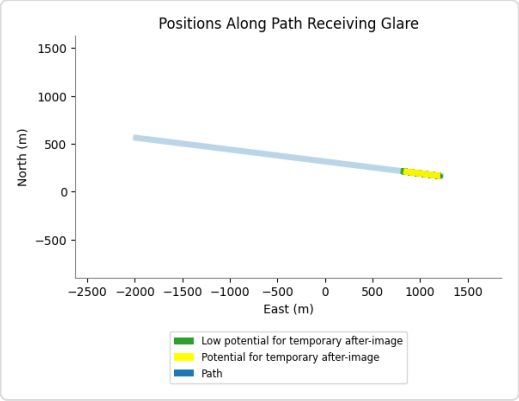
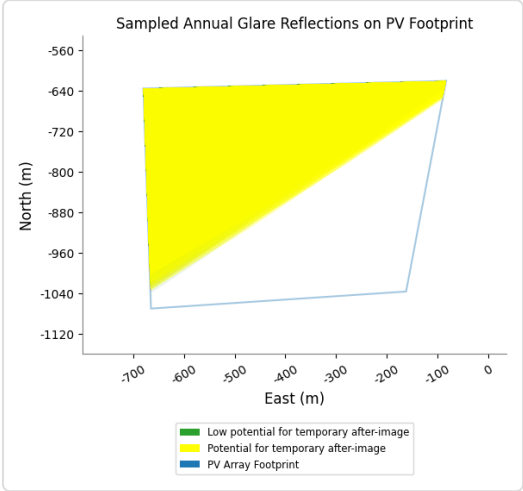
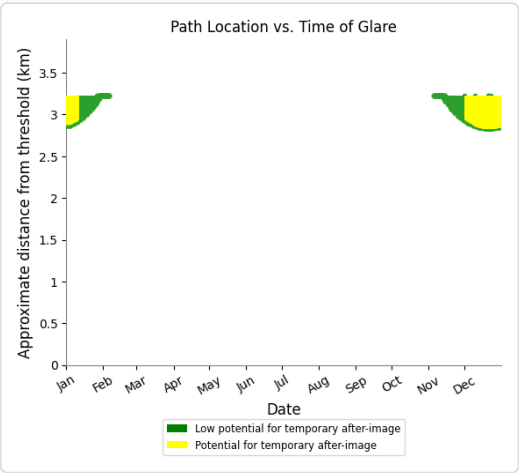
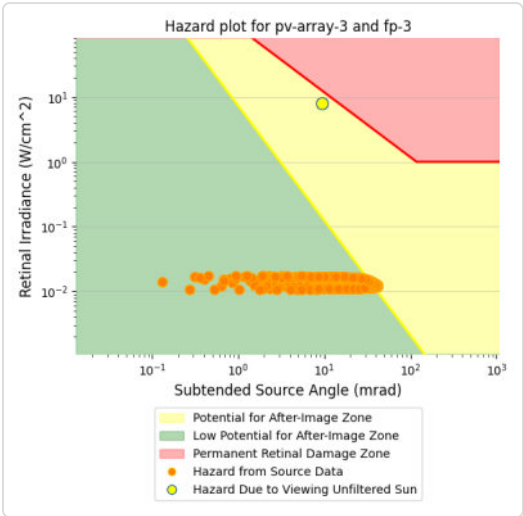
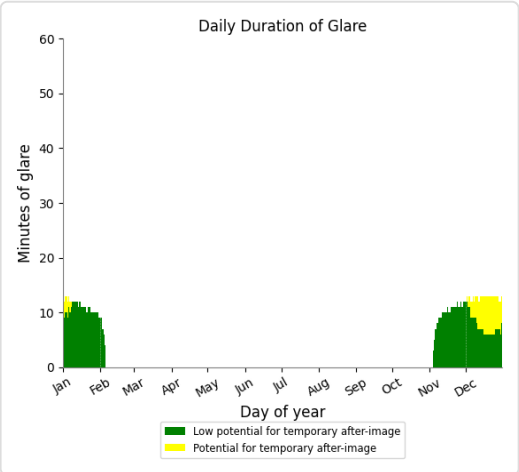
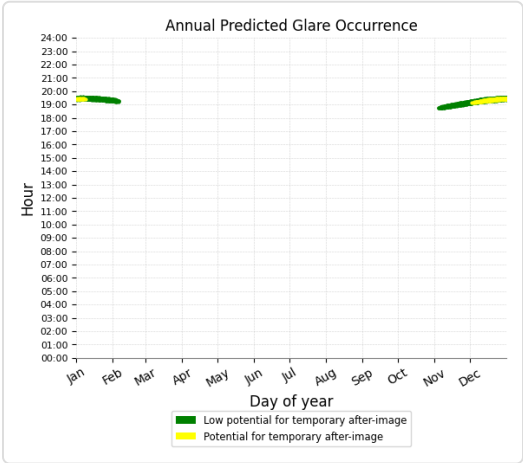
PV array 3 - Receptor (FP 2)

No glare found

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PV array 3 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 864 minutes of "green" glare with low potential to cause temporary after-image.
  - 180 minutes of "yellow" glare with potential to cause temporary after-image.



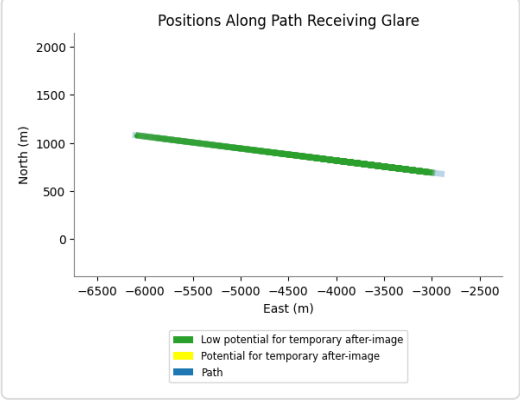
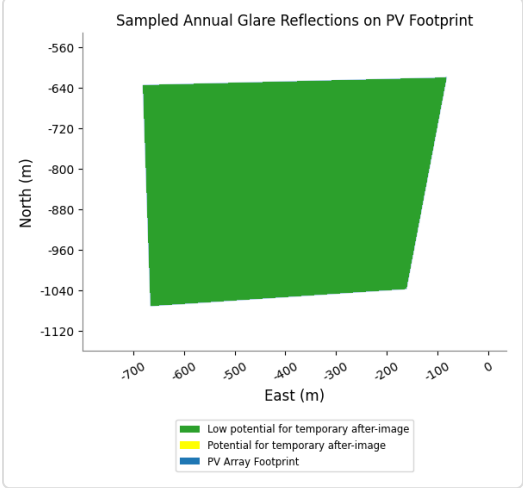
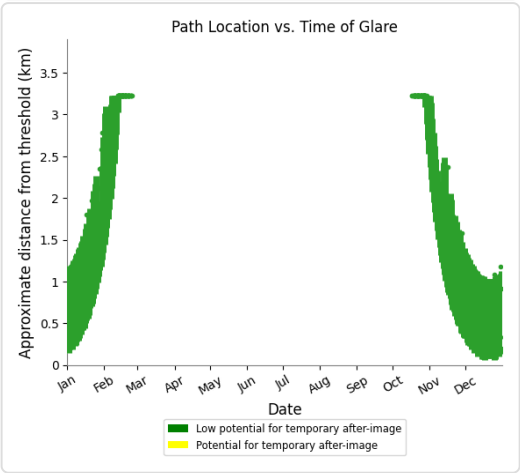
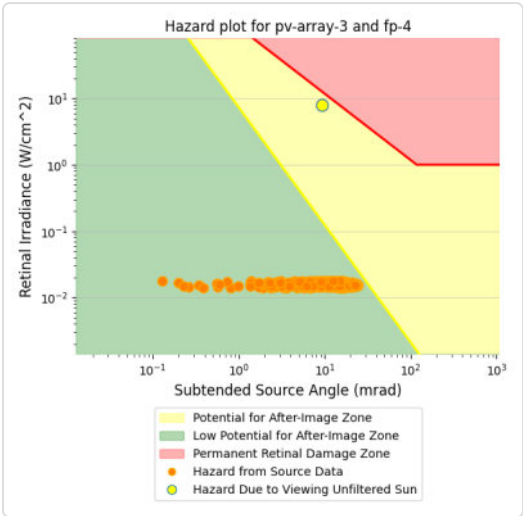
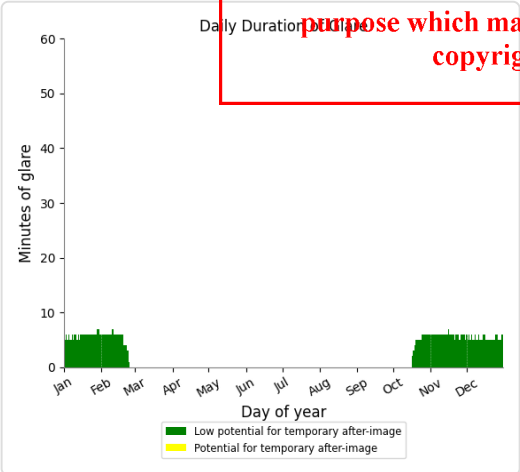
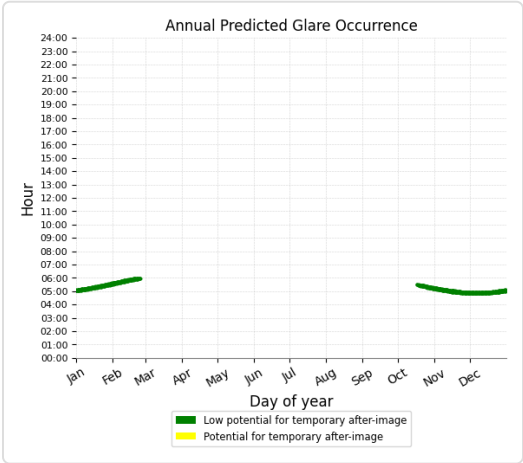
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PV array 3 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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



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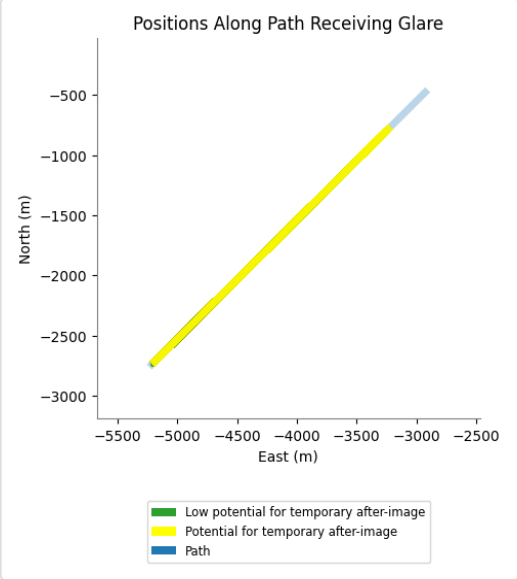
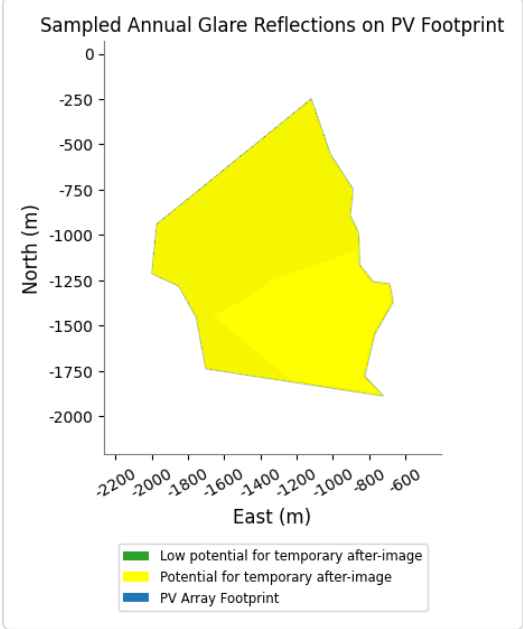
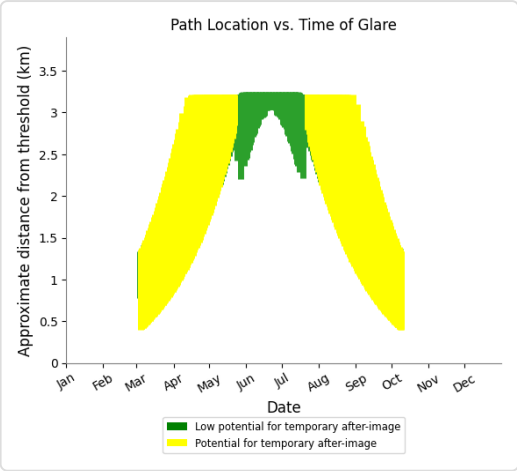
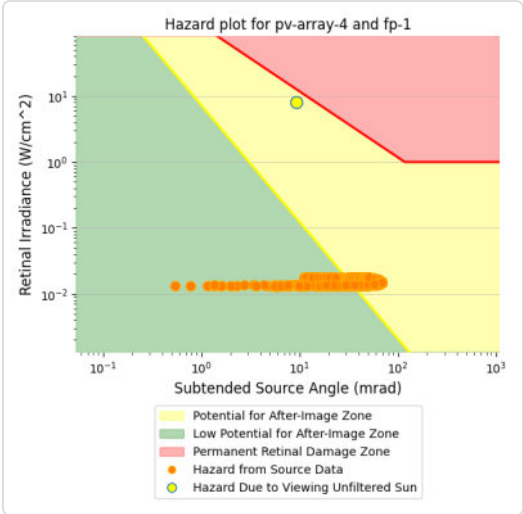
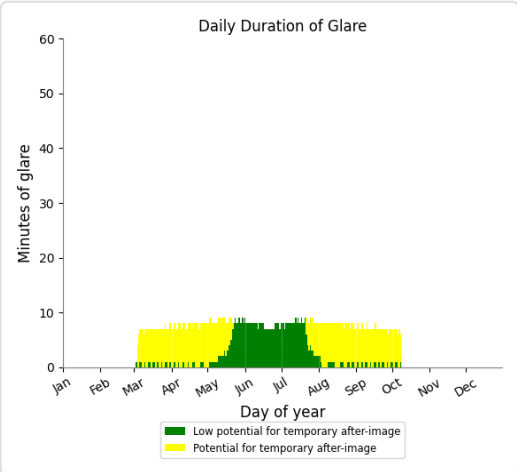
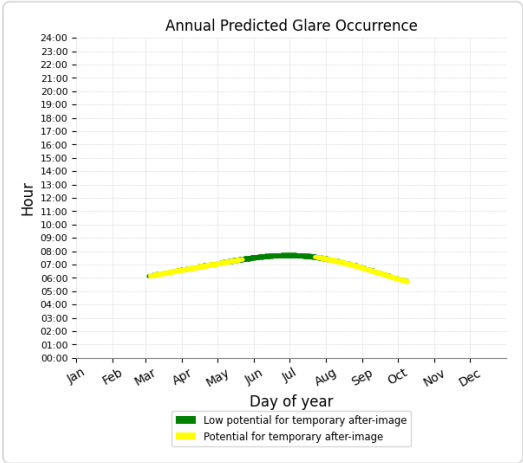
PV array 4 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	615	1070
FP: FP 2	0	0
FP: FP 3	595	1105
FP: FP 4	545	415



PV array 4 - Receptor (FP 1)

- PV array is expected to produce the following glare for observers on this flight path:
- 615 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,070 minutes of "yellow" glare with potential to cause temporary after-image.



PV array 4 - Receptor (FP 2)

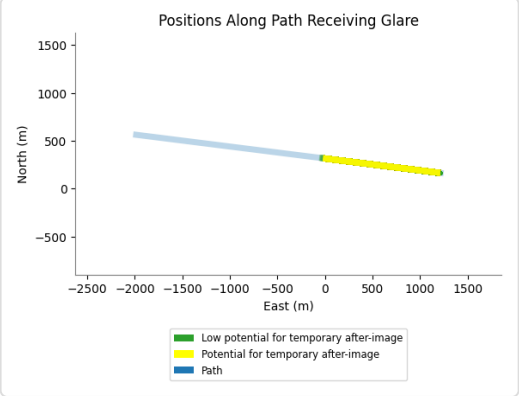
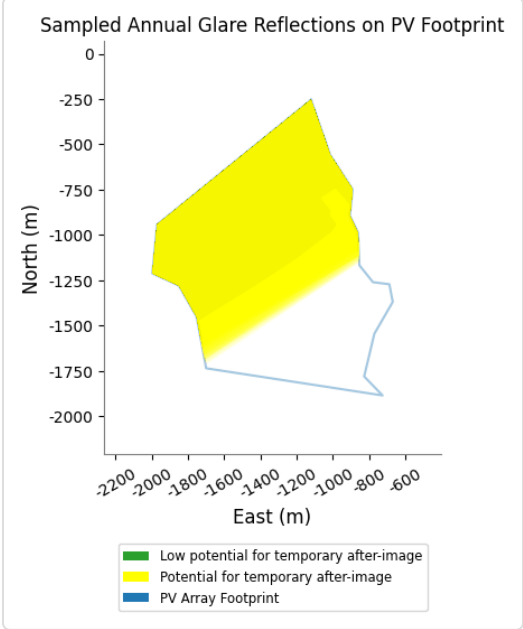
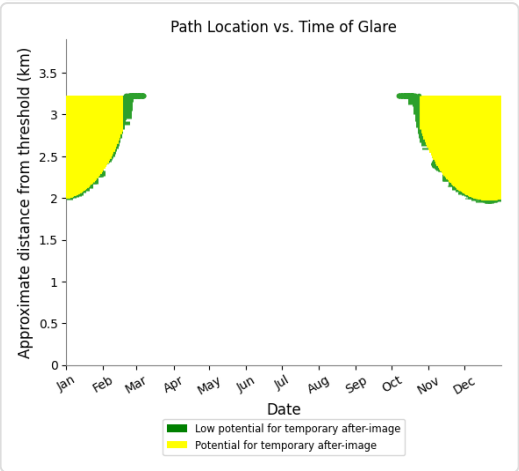
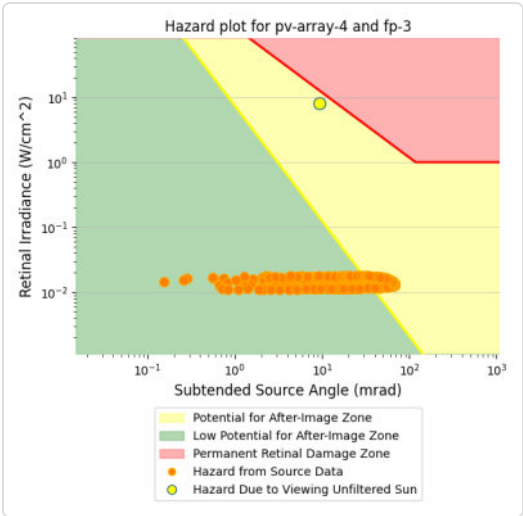
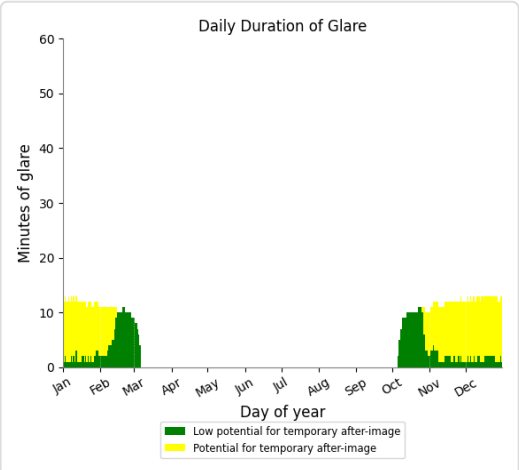
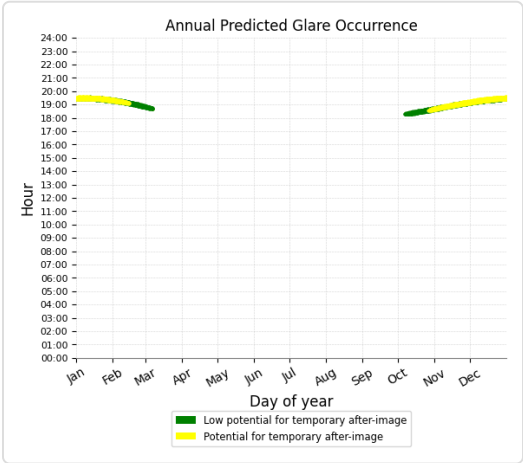
No glare found

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PV array 4 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 595 minutes of "green" glare with low potential to cause temporary after-image.
  - 1,105 minutes of "yellow" glare with potential to cause temporary after-image.



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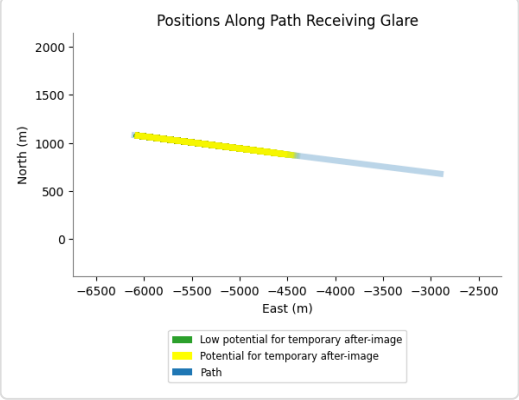
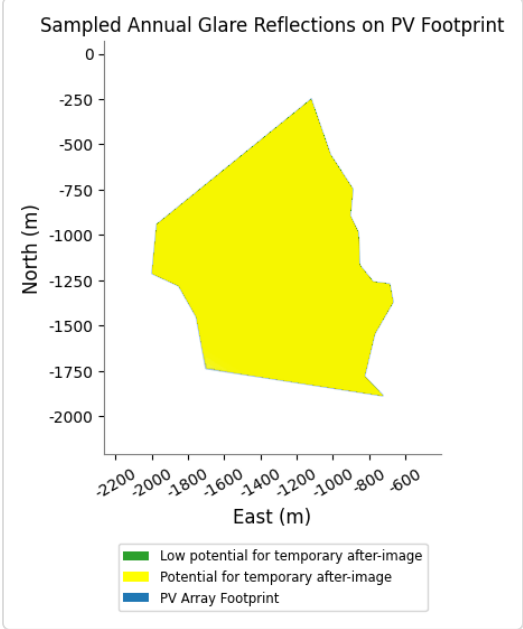
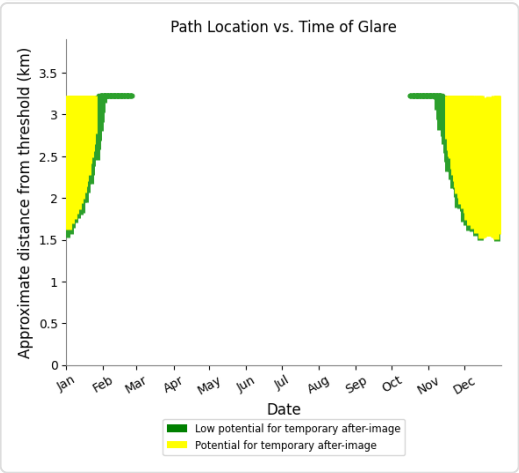
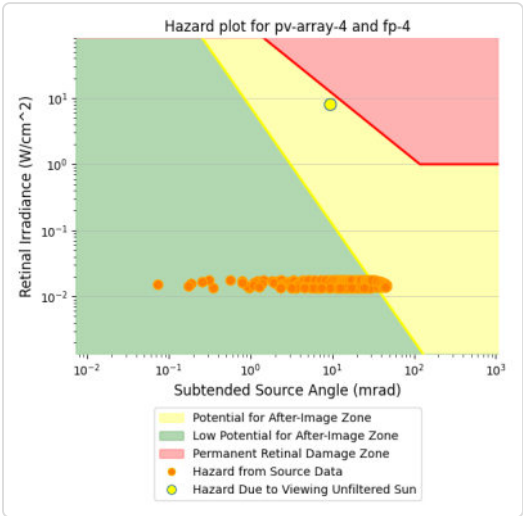
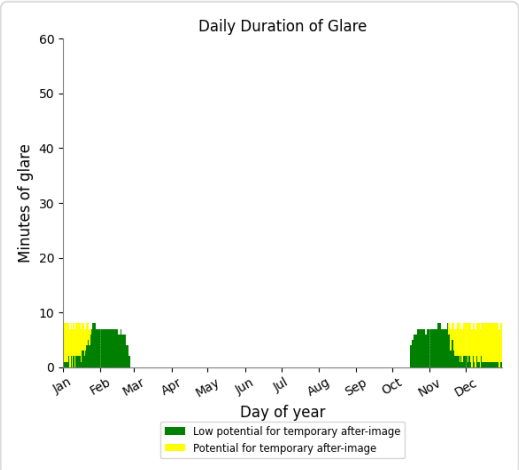
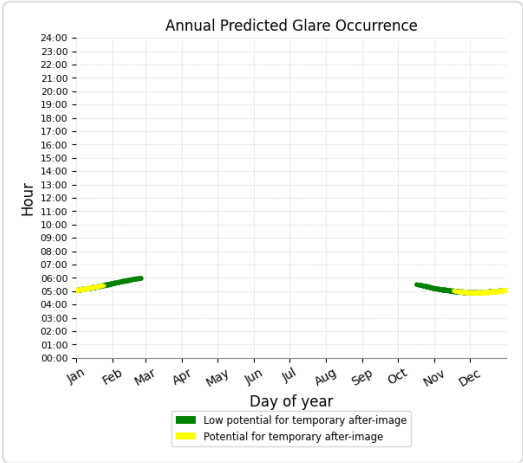
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PV array 4 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 5 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	786	35

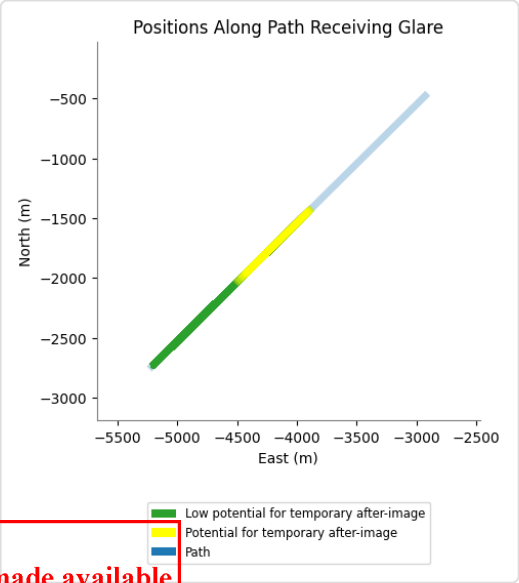
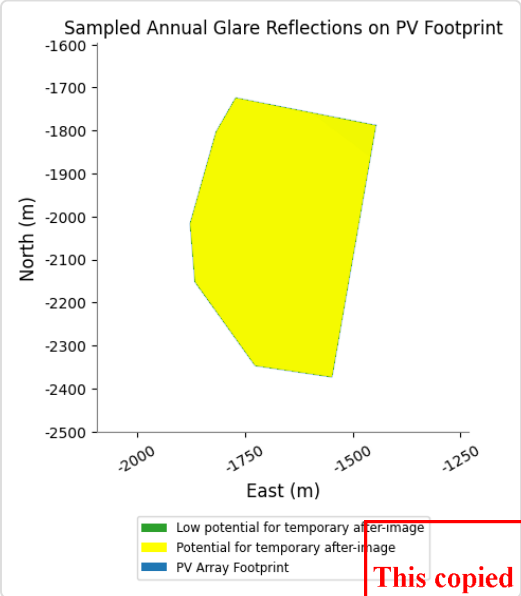
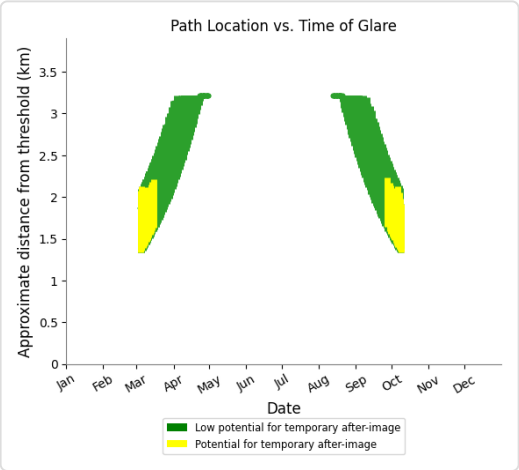
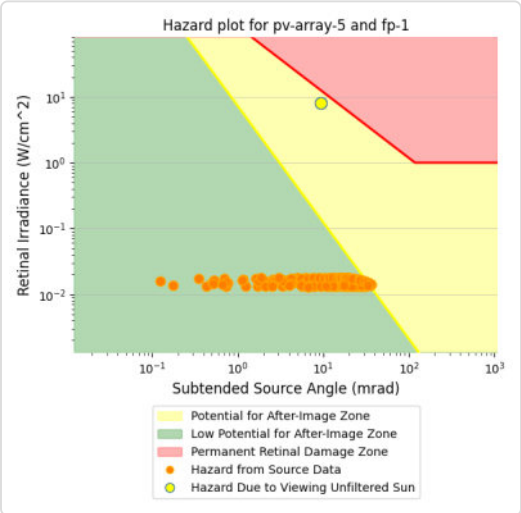
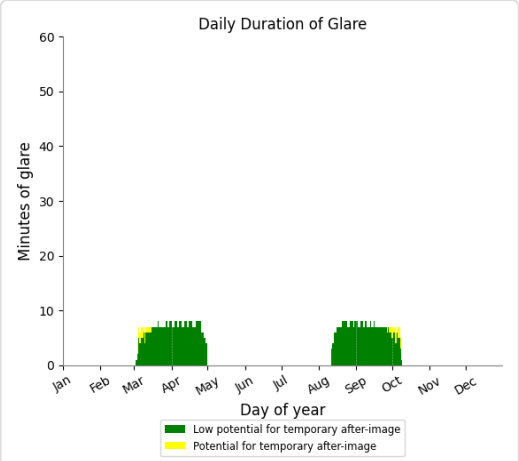
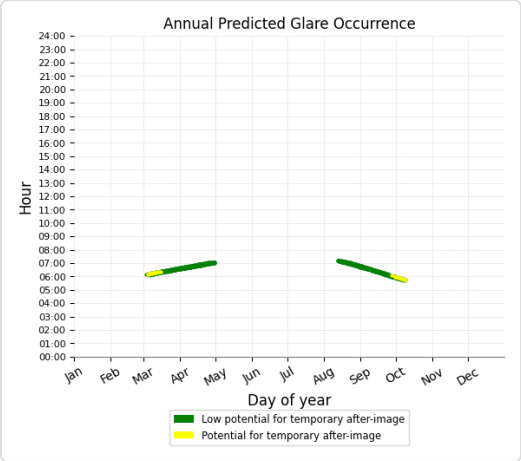
FP: FP 2	0	0
FP: FP 3	106	0
FP: FP 4	157	0

PV array 5 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 5 - Receptor (FP 2)

No glare found

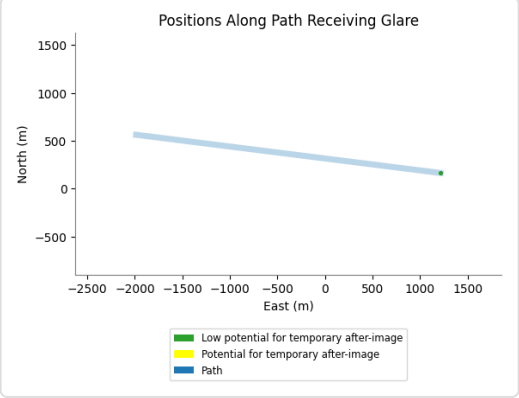
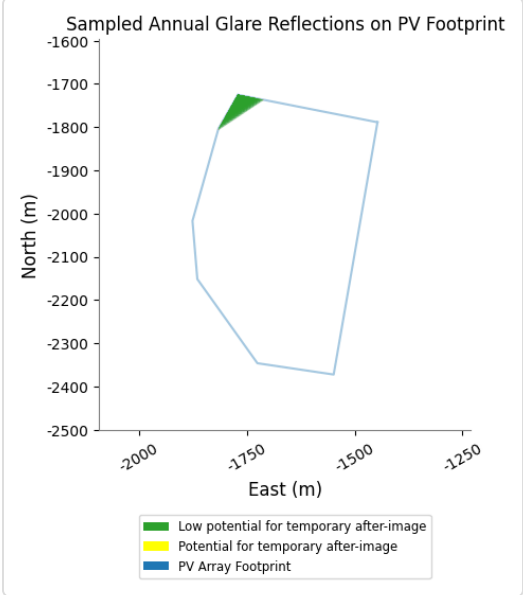
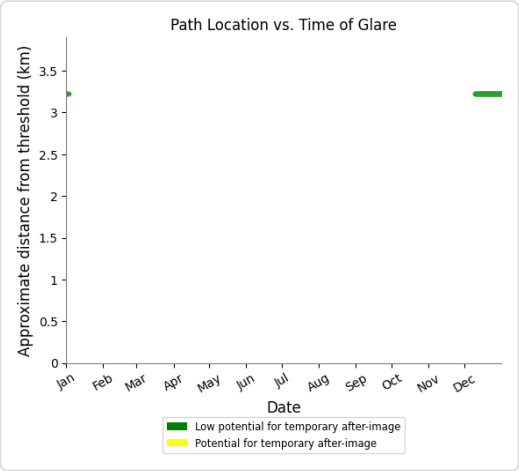
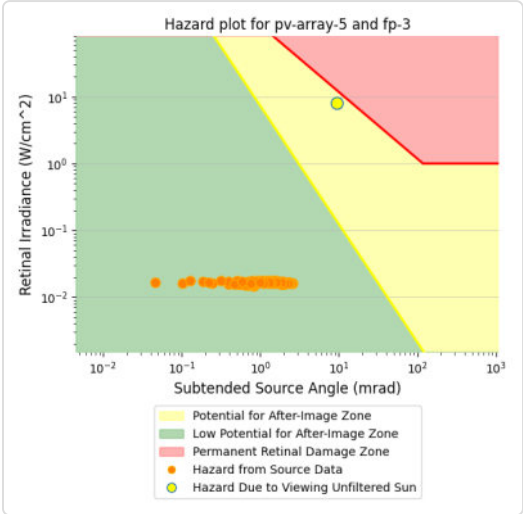
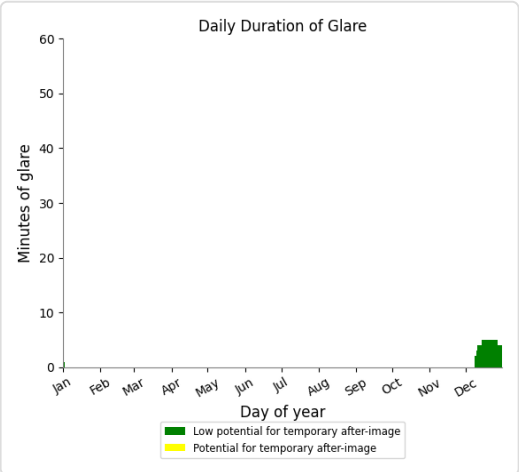
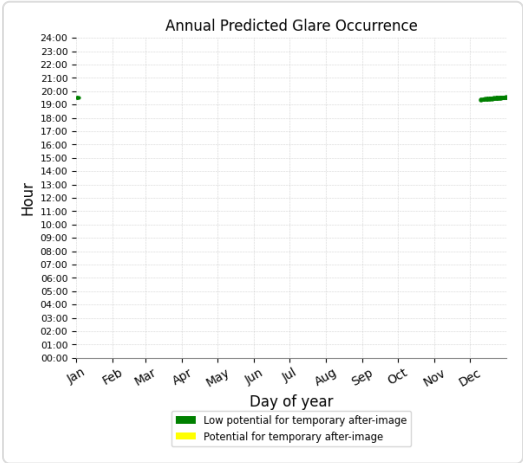
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PV array 5 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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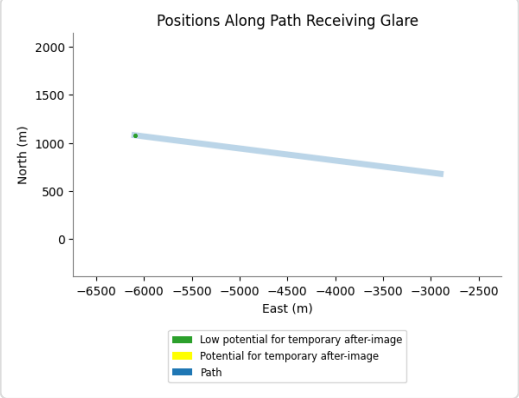
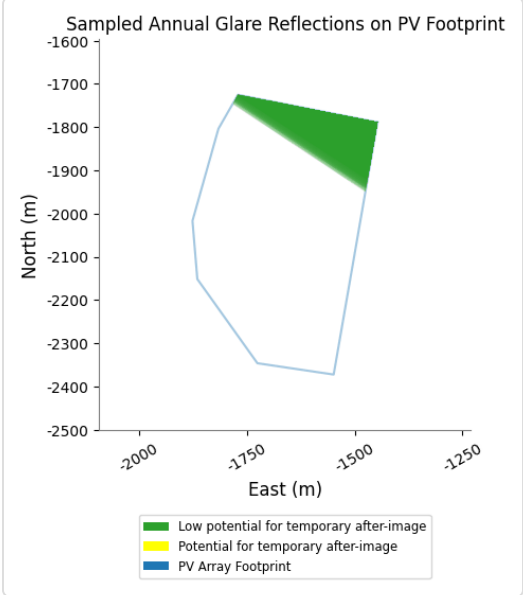
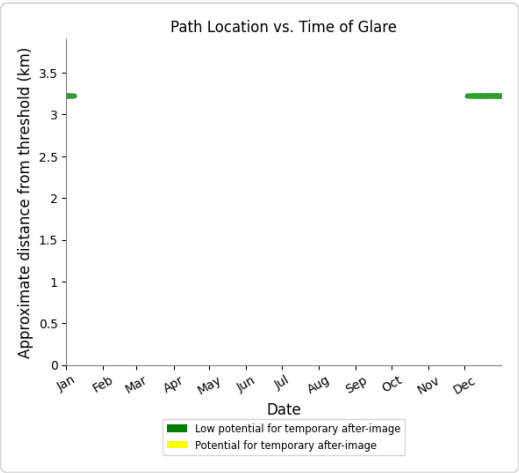
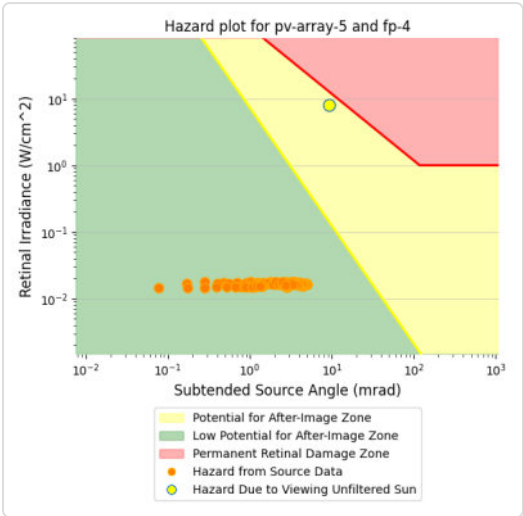
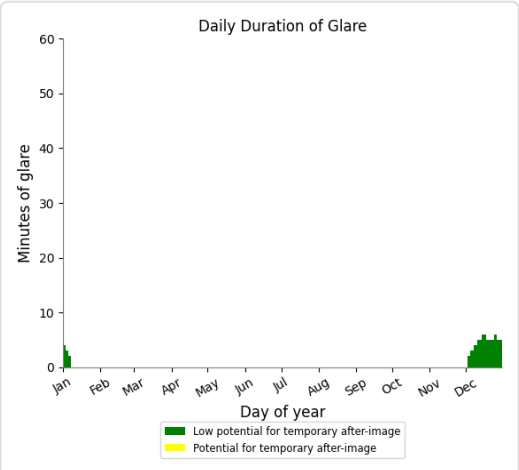
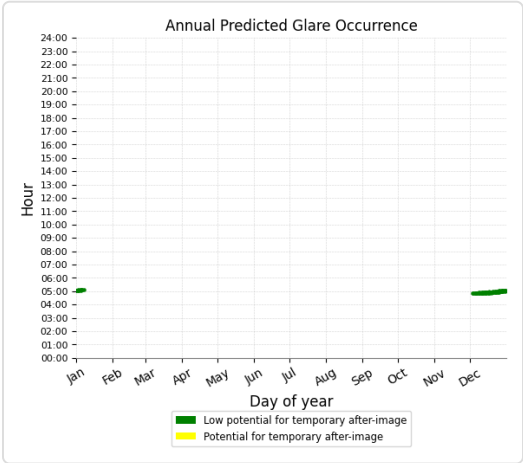
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PV array 5 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

- 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.

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PV array 6 potential temporary after-image

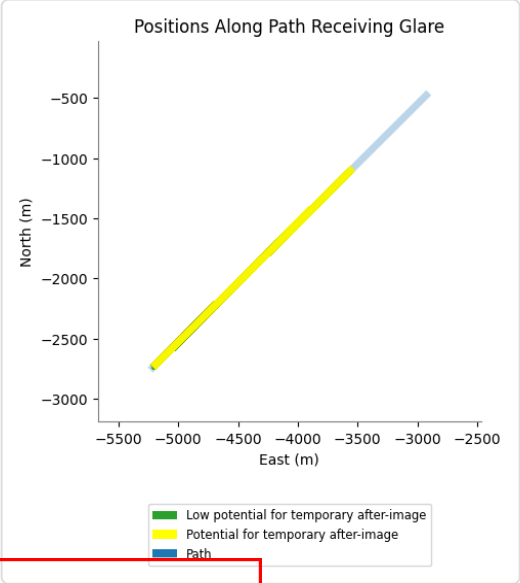
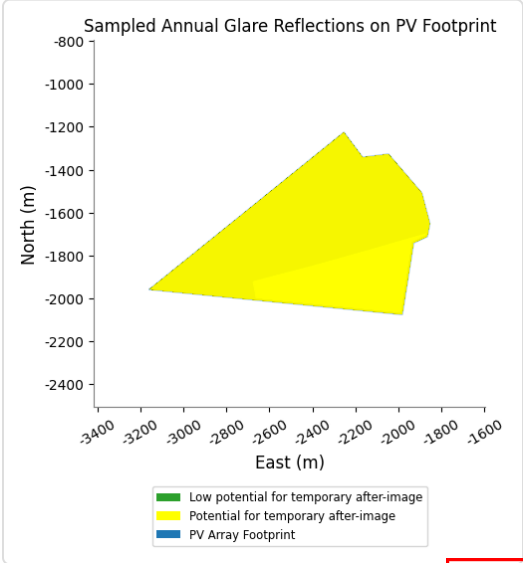
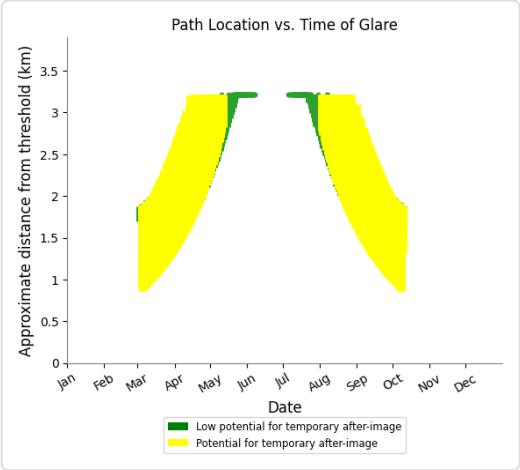
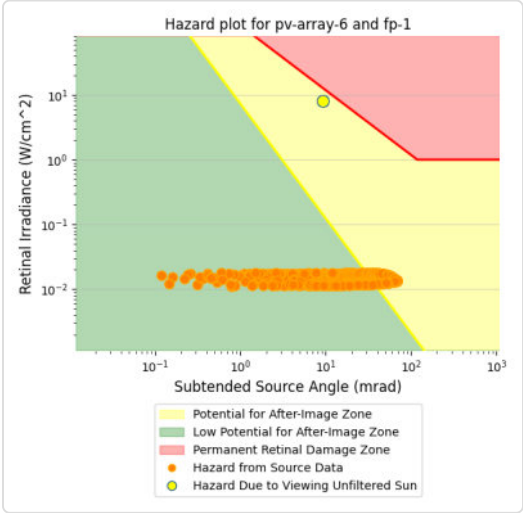
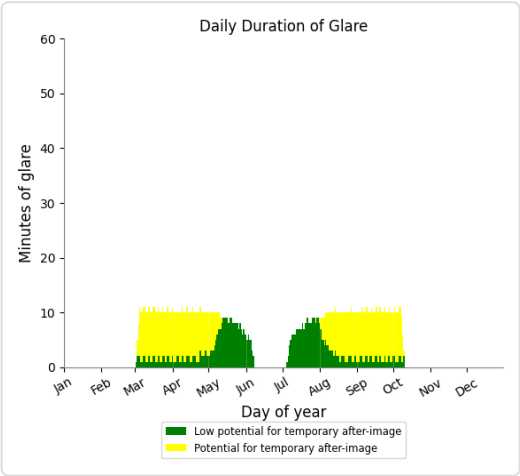
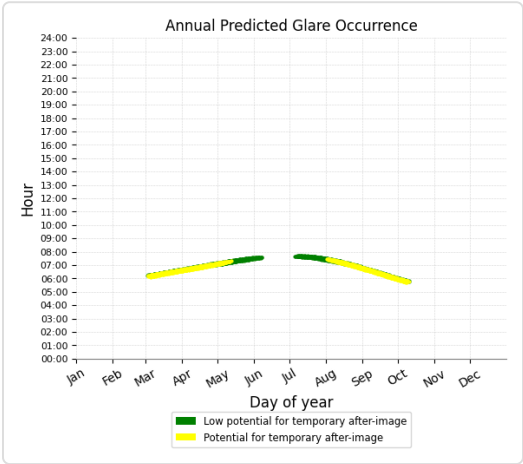
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	668	1125
FP: FP 2	0	0

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PV array 6 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 668 minutes of "green" glare with low potential to cause temporary after-image.
- 1,125 minutes of "yellow" glare with potential to cause temporary after-image.



PV array 6 - Receptor (FP 2)

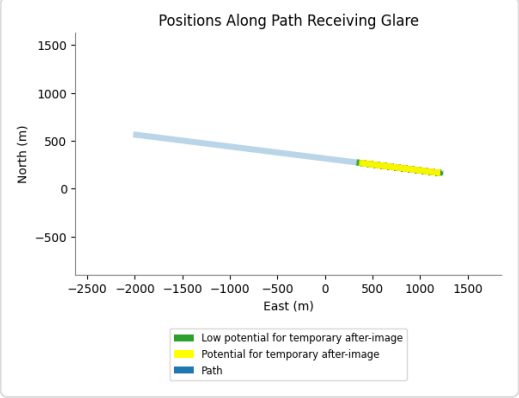
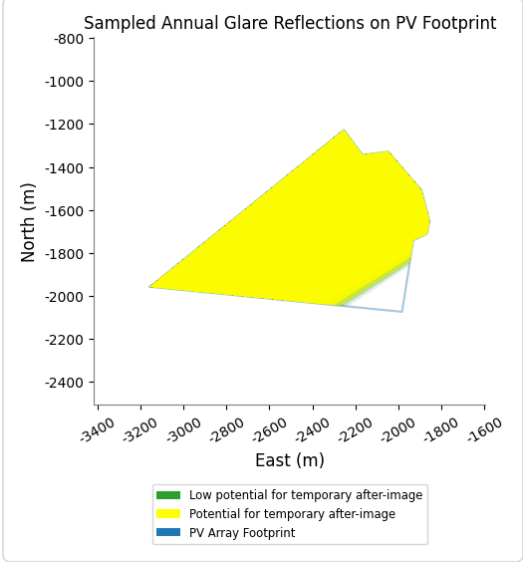
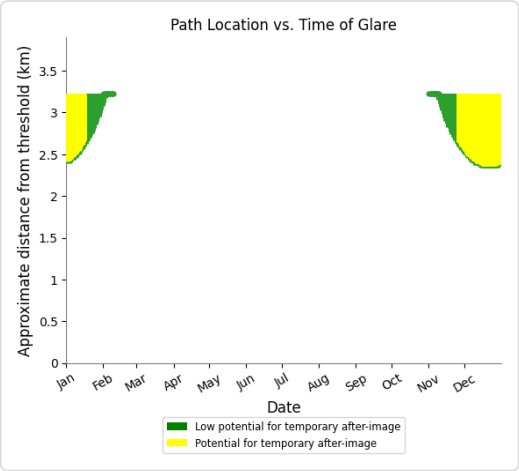
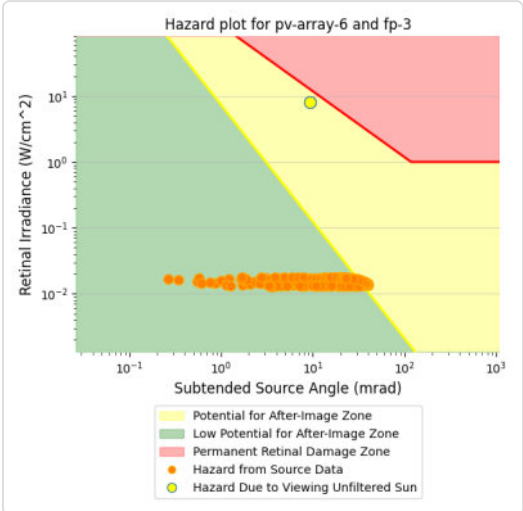
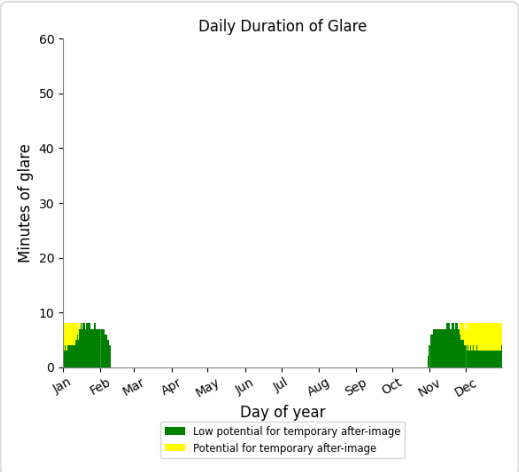
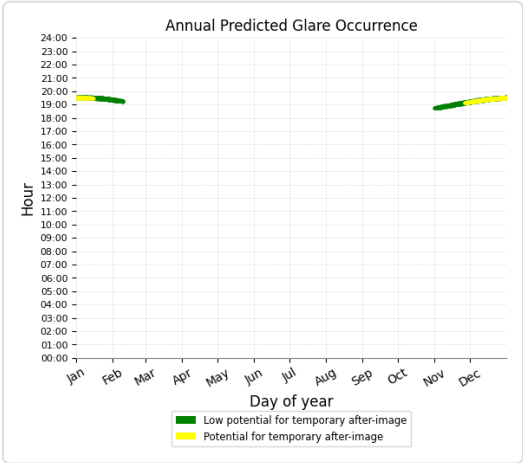
No glare found

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PV array 6 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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



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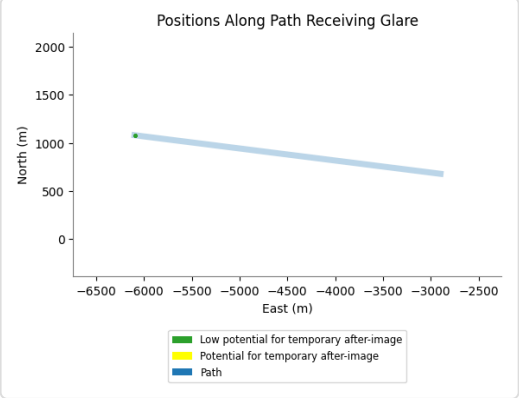
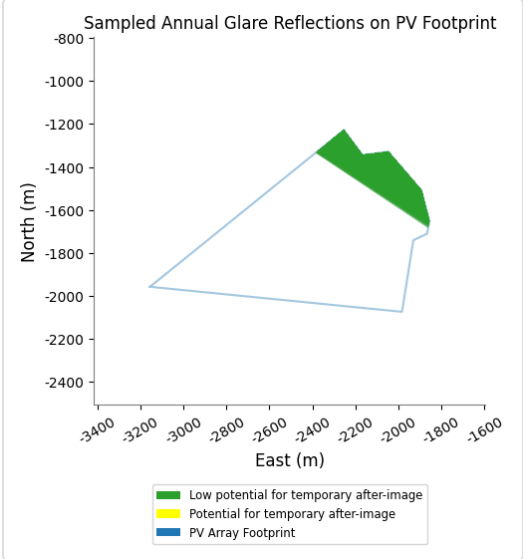
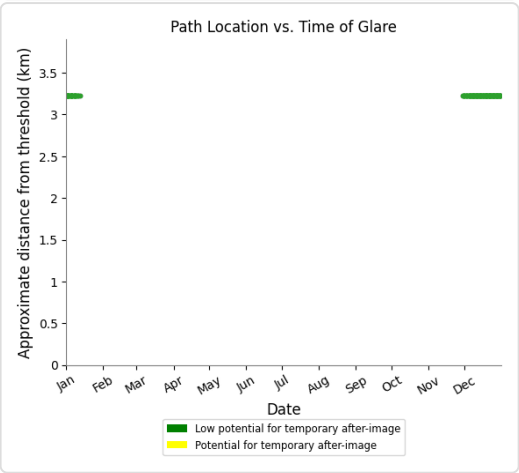
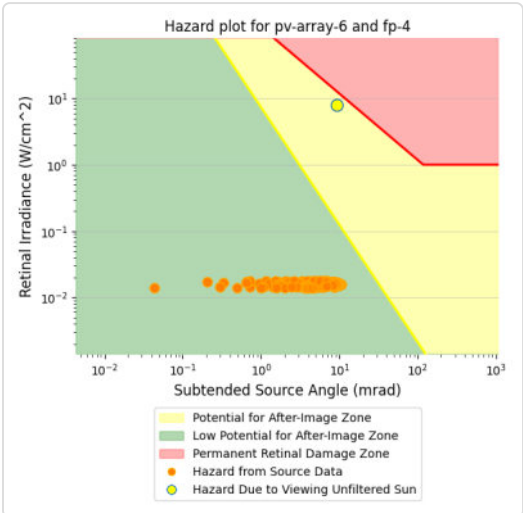
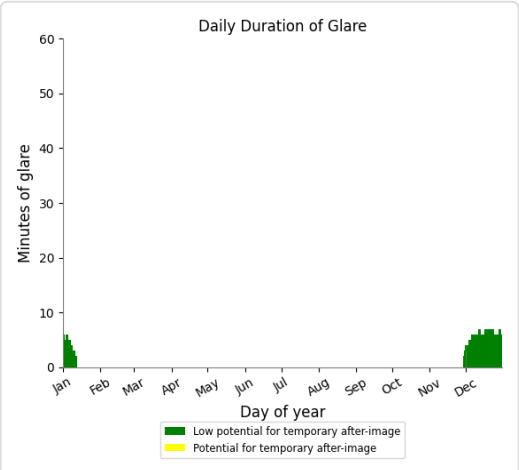
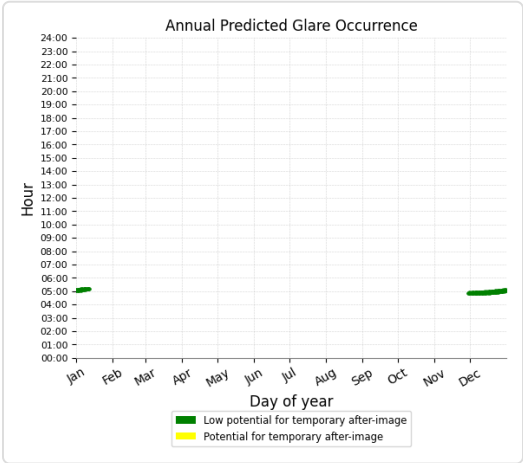


PV array 6 - Receptor (FP 4)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 7 potential temporary after-image

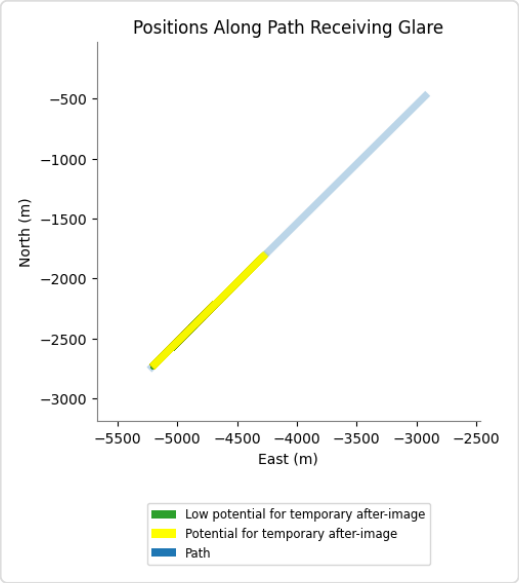
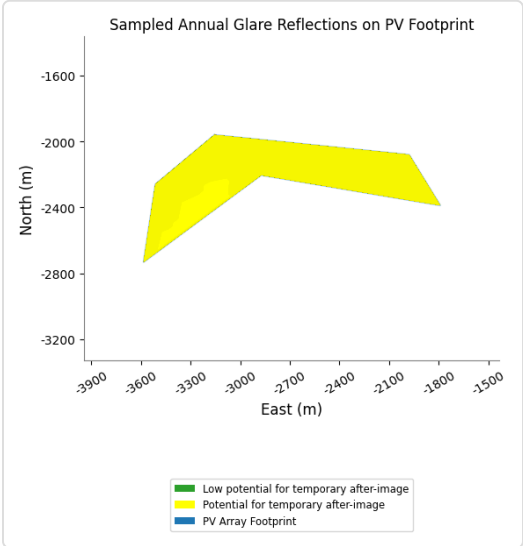
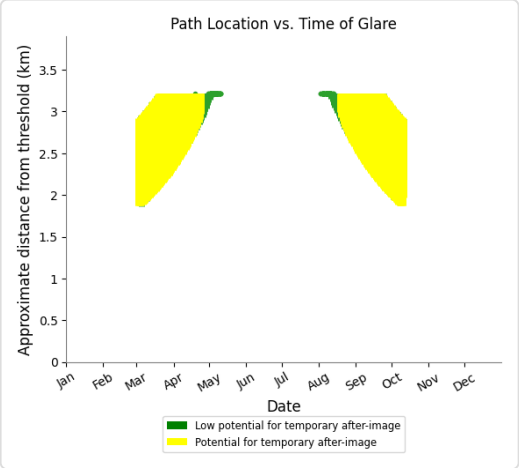
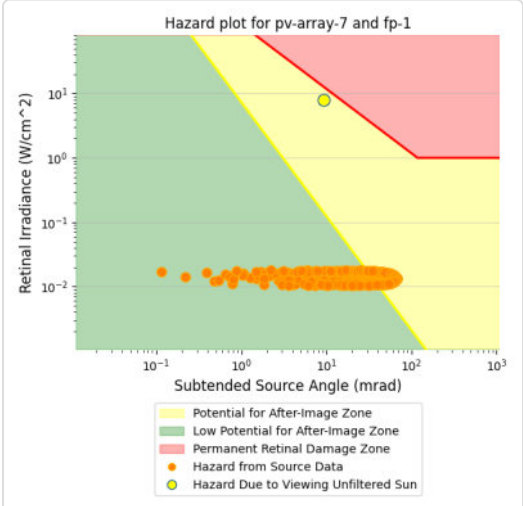
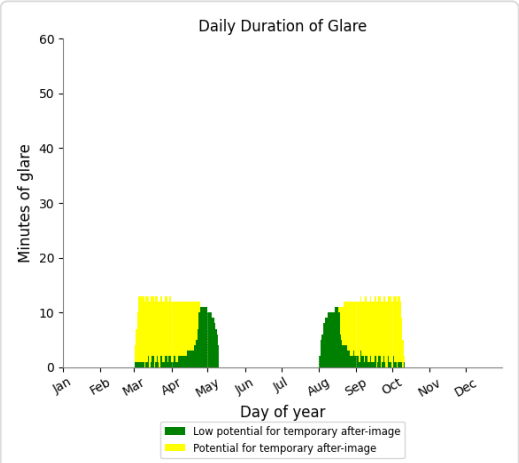
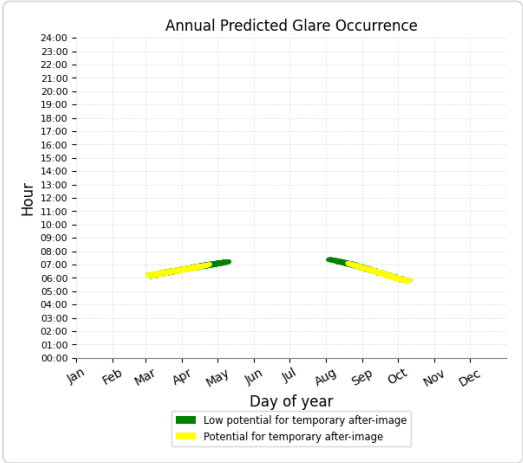
Component	Green glare (min)	Yellow glare (min)
FP: FP 1	499	1093
FP: FP 2	0	0
FP: FP 3	558	0

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PV array 7 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

- 499 minutes of "green" glare with low potential to cause temporary after-image.
- 1,093 minutes of "yellow" glare with potential to cause temporary after-image.



PV array 7 - Receptor (FP 2)

No glare found

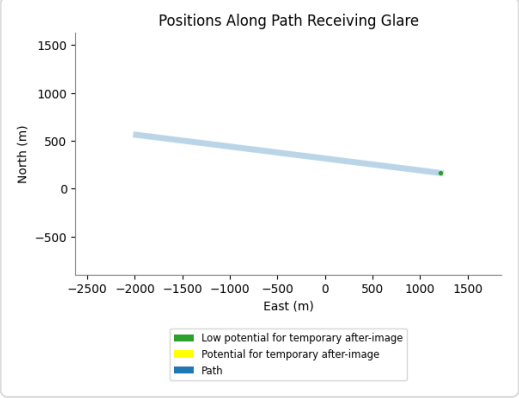
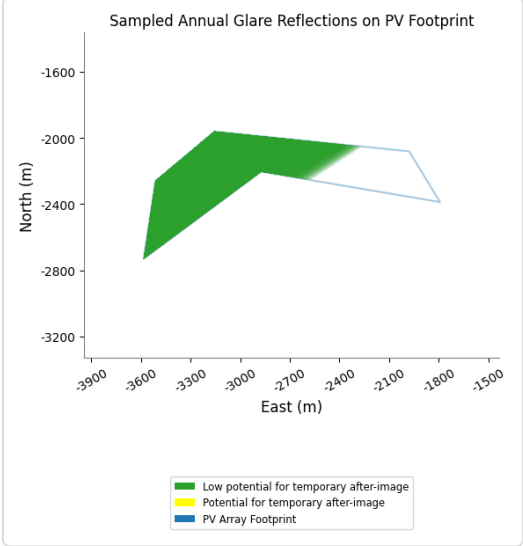
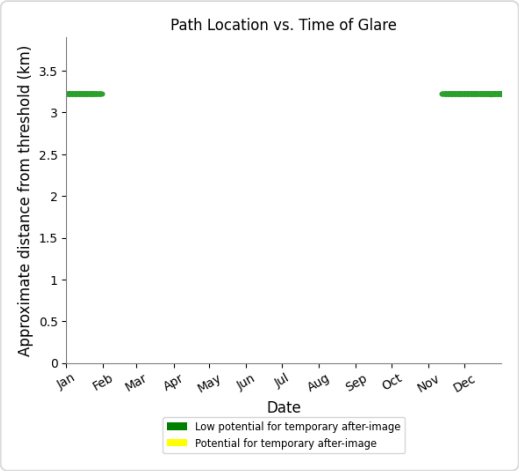
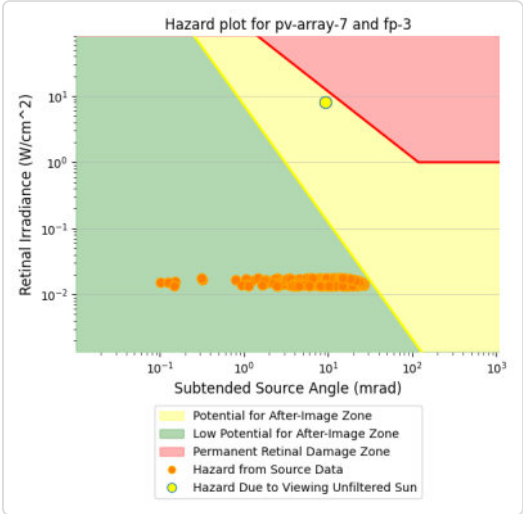
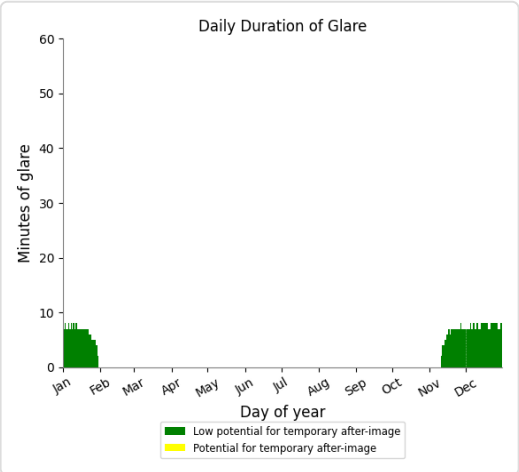
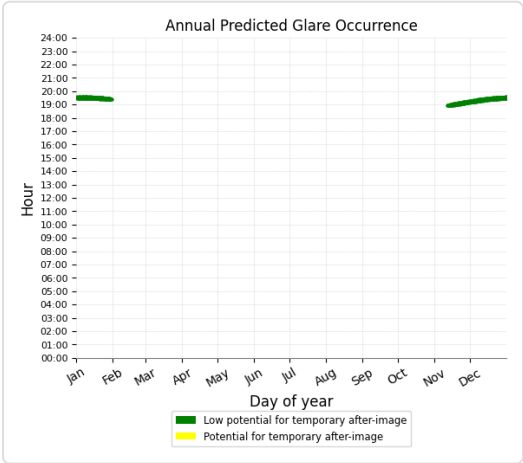
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PV array 7 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

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

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PV array 7 - Receptor (FP 4)

No glare found

PV array 8 low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
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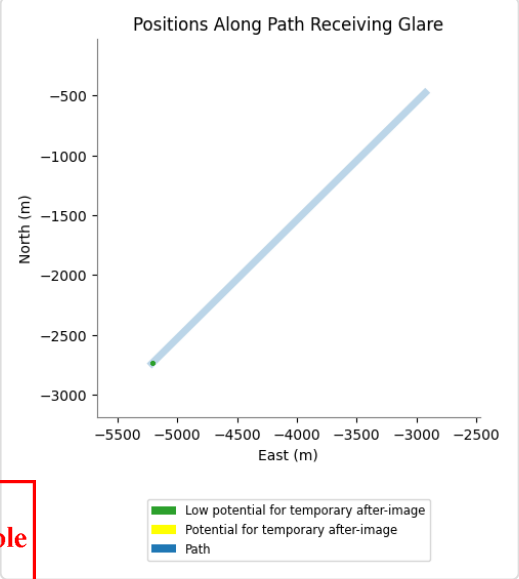
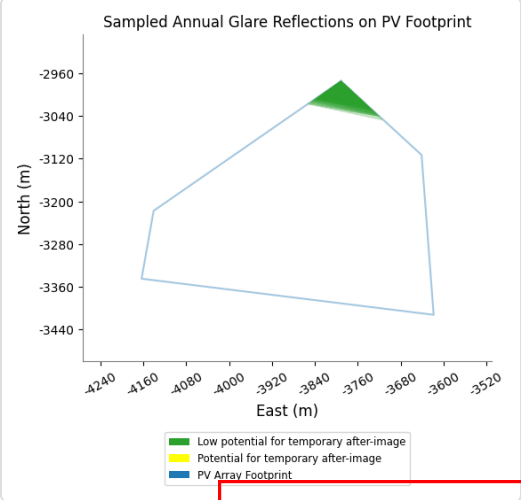
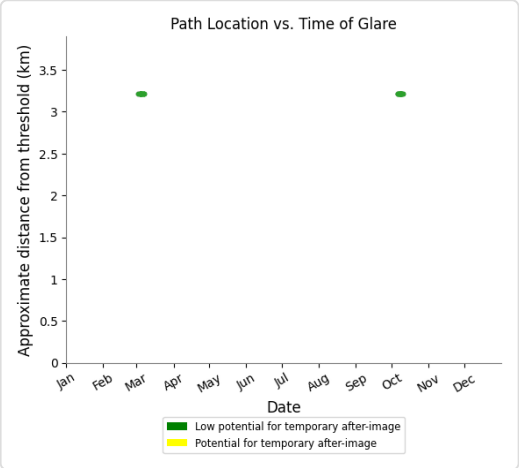
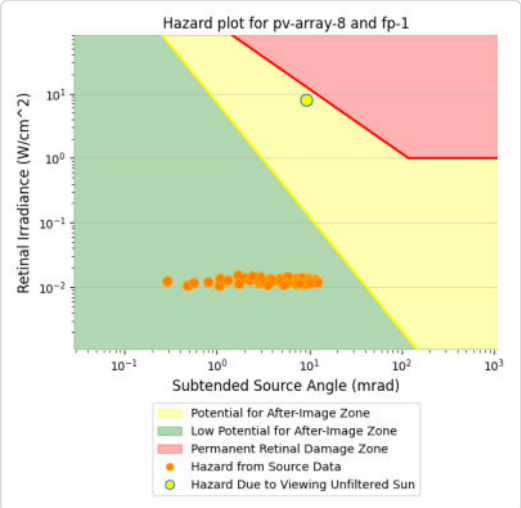
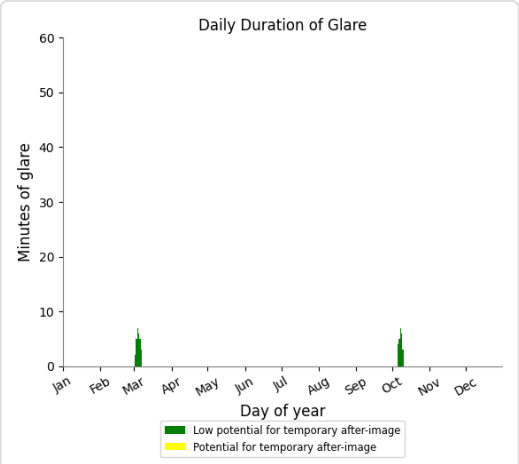
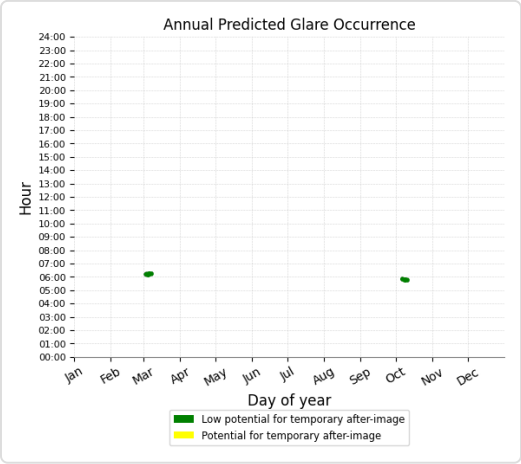
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FP: FP 1	53	0
FP: FP 2	0	0
FP: FP 3	107	0
FP: FP 4	0	0

PV array 8 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



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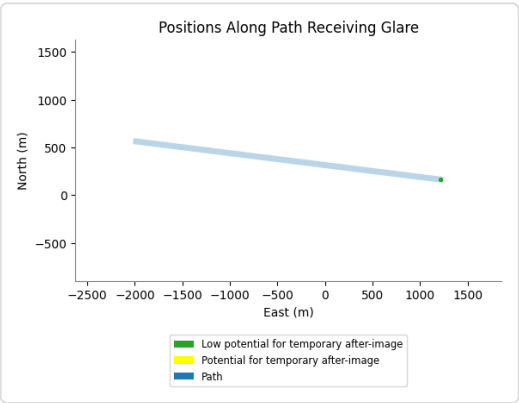
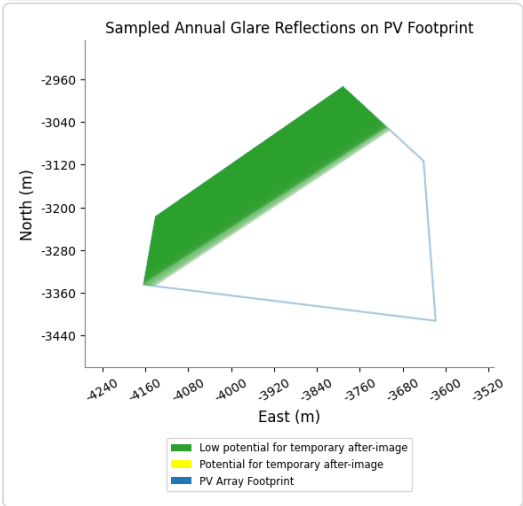
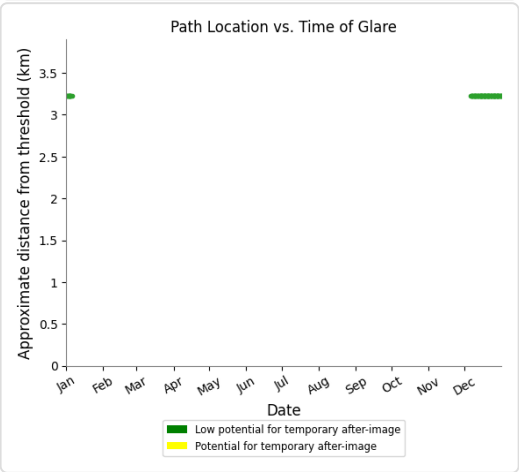
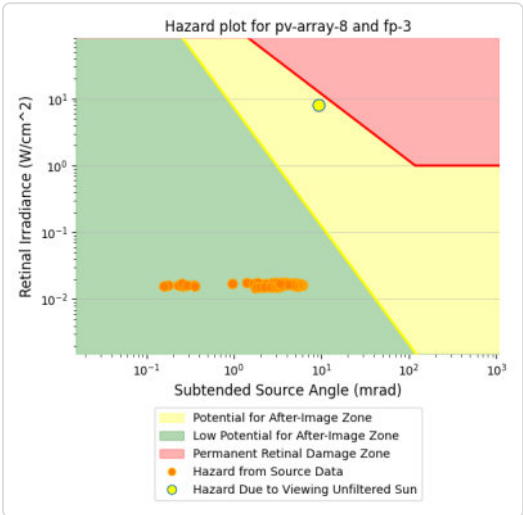
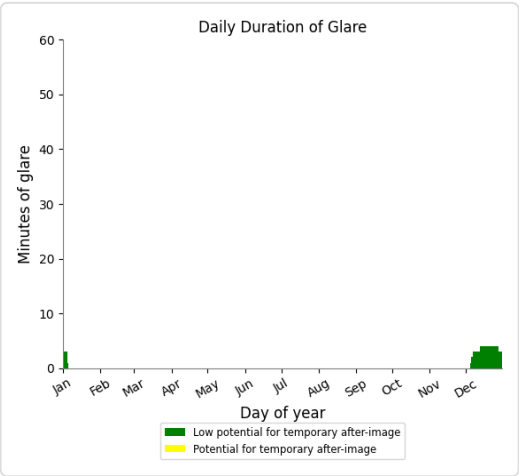
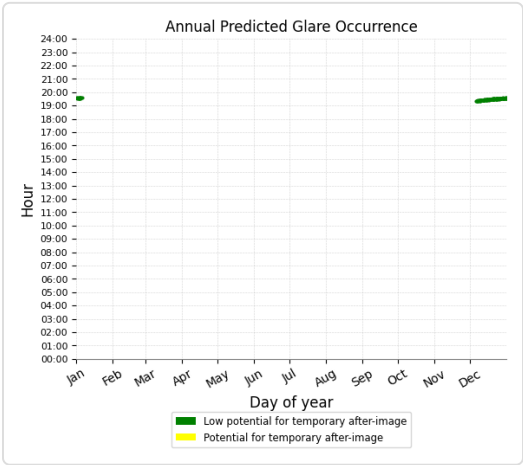
PV array 8 - Receptor (FP 2)

No glare found

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PV array 8 - Receptor (FP 3)

- PV array is expected to produce the following glare for observers on this flight path:
- 107 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 8 - Receptor (FP 4)

No glare found

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PV array 9 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	318	506
FP: FP 2	0	0
FP: FP 3	178	0
FP: FP 4	0	0

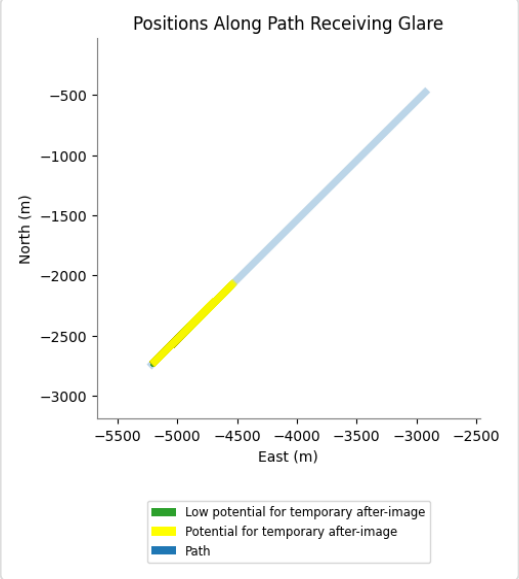
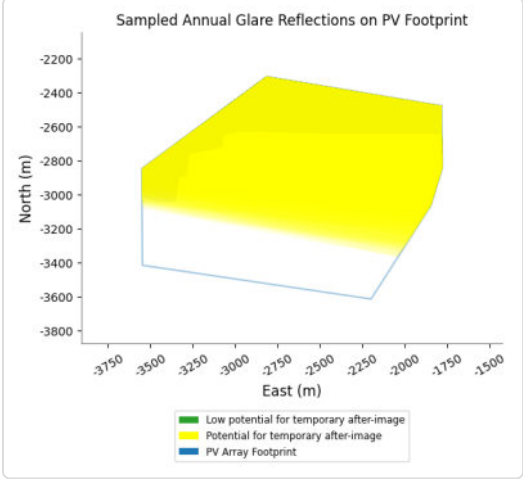
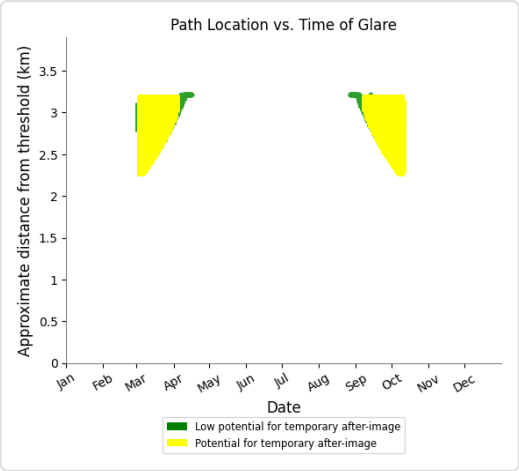
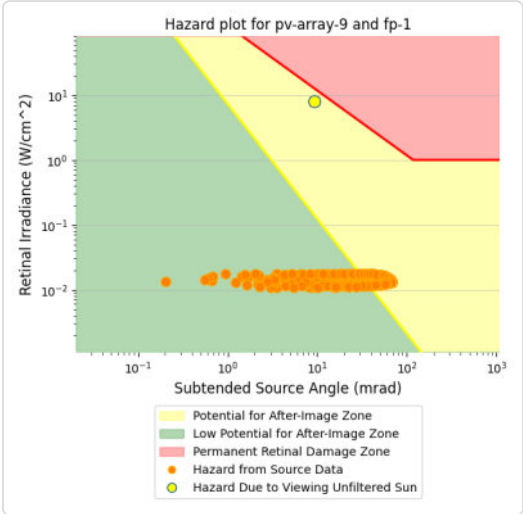
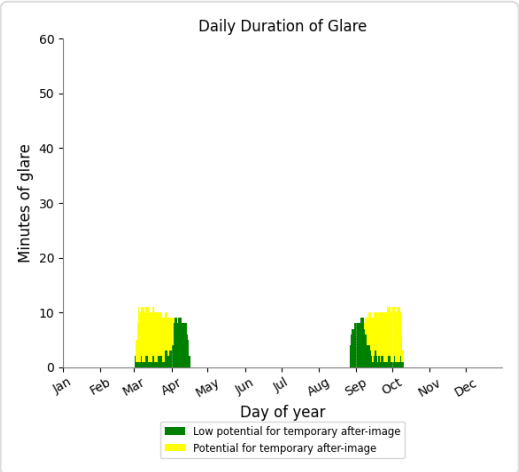
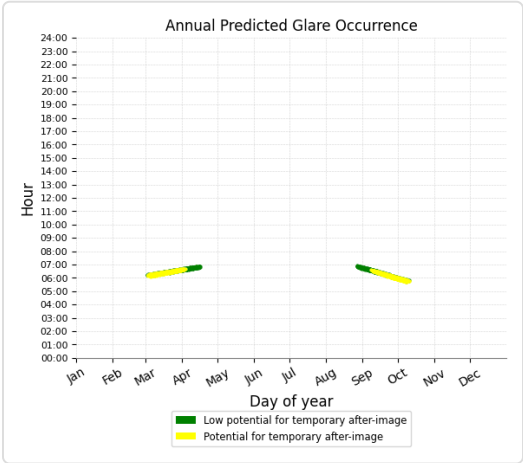
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PV array 9 - Receptor (FP 1)

PV array is expected to produce the following glare for observers on this flight path:

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



PV array 9 - Receptor (FP 2)

No glare found

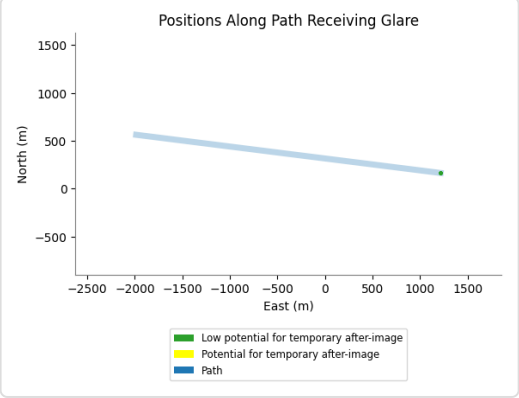
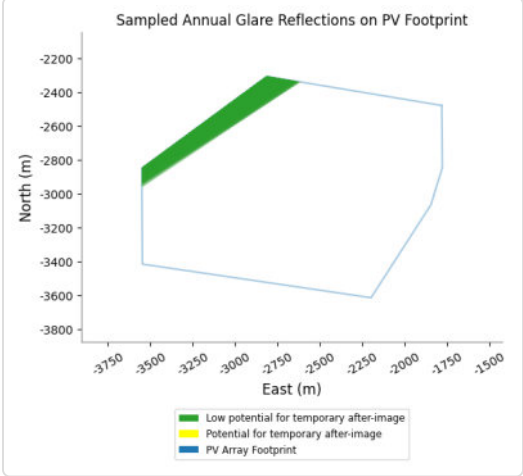
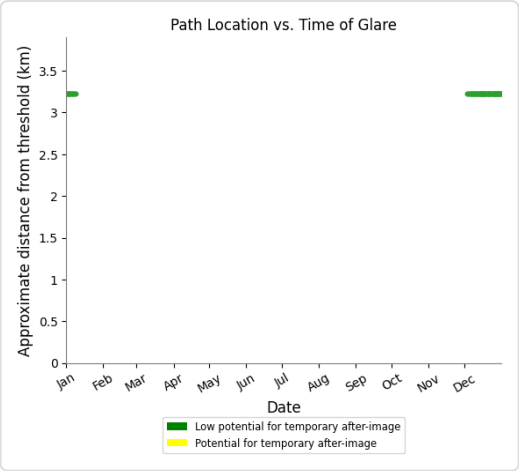
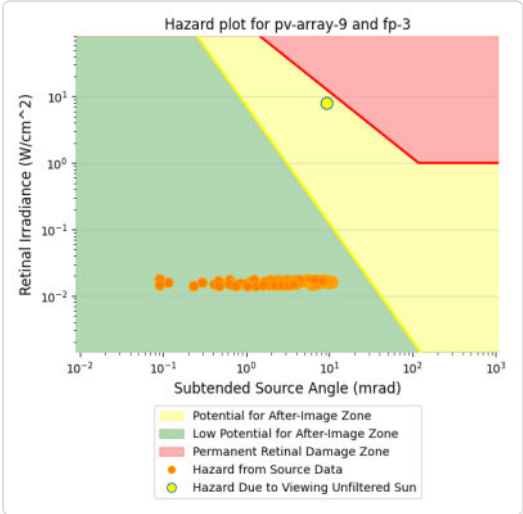
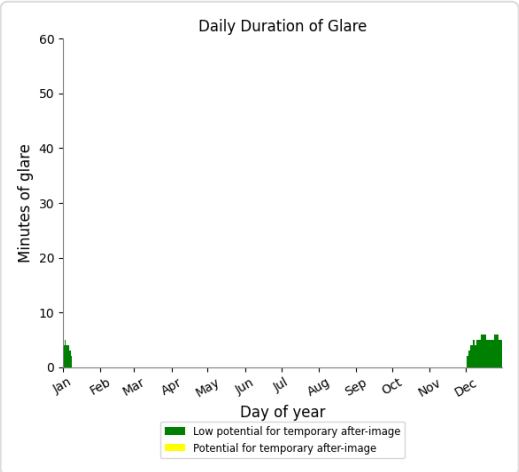
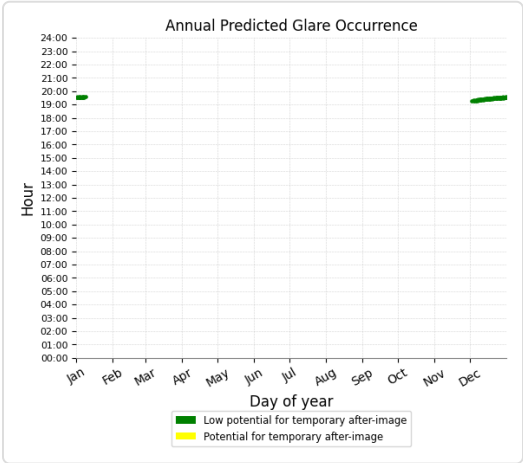
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PV array 9 - Receptor (FP 3)

PV array is expected to produce the following glare for observers on this flight path:

- 178 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 9 - Receptor (FP 4)

No glare found

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Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

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

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