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AVIATION GLINT AND GLARE ASSESSMENT

Proposed Solar PV Energy Installations

Milltown Park, Sandford Road, Dublin 6.

Prepared by Macro Works Ltd

November 2025

LVIA I TVIA I Landscape Design I Visibility Analysis I Glint and Glare I Verified Photomontages I CGI I Shadow Flicker Analysis

Registered Landscape Architect

1. AVIATION GLINT AND GLARE ASSESSMENT

1.1 INTRODUCTION

This Glint and Glare Assessment was carried out by Macro Works Ltd to determine the potential for solar reflectance effects upon aviation receptors in respect of proposed roof-mounted solar PV installations on the roofs of several proposed buildings as part of a proposed Large Residential Development at Milltown Park, Sandford Road, Dublin 6. The proposed panels will be tilted at an angle of 35 degrees generally towards the south and will remain in a fixed position throughout the day and year (i.e. they will not rotate to track the movement of the sun). Figure 1.1 and Figure 1.2 refer.

Figure 1.1 Aerial view indicating the location of the proposed PV panels

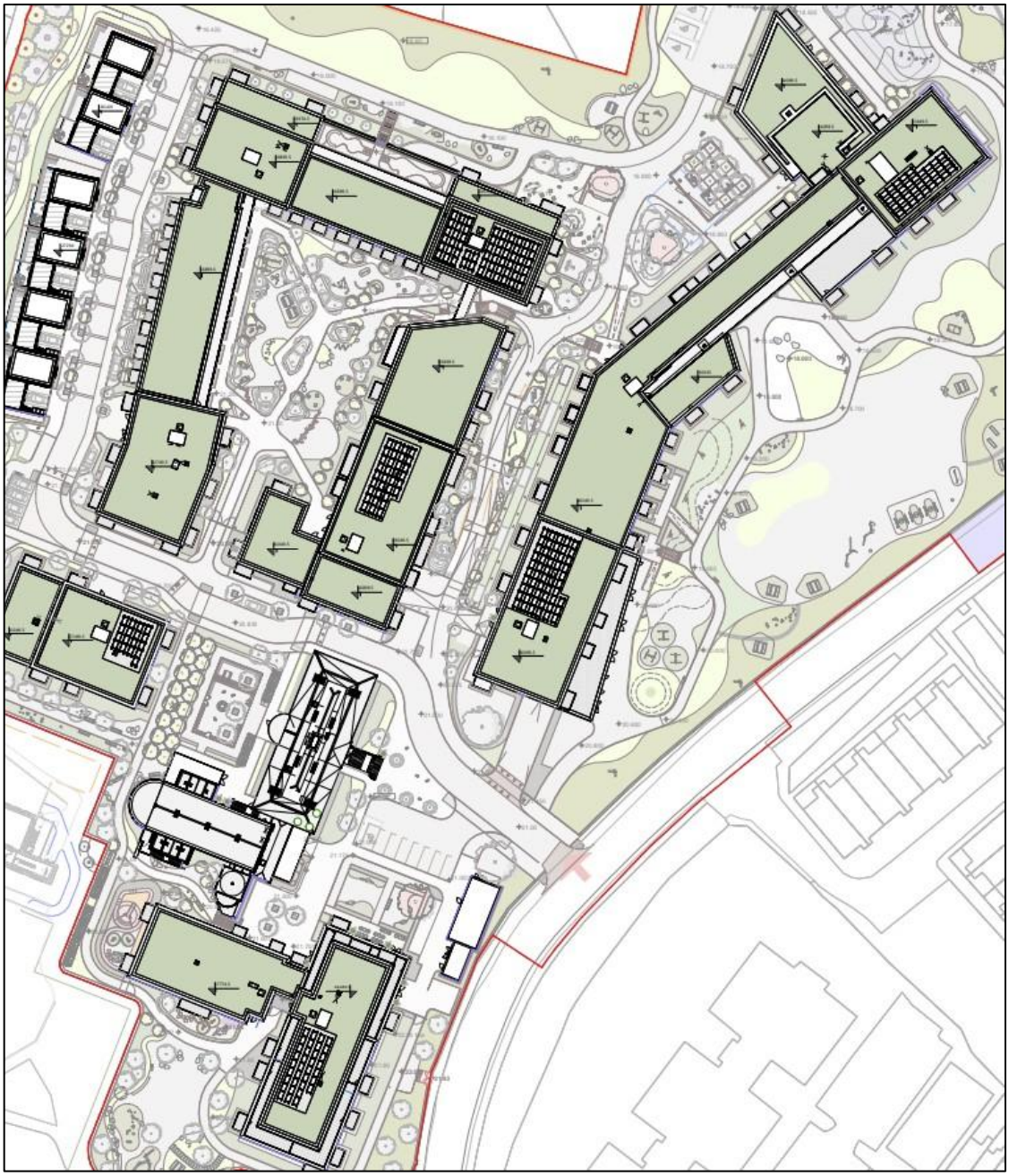

Figure 1.2 Extract from drawing no. 19037C-OMP-00-08-DR-A-1109 "Proposed Site Plan Roof Level" showing the layout of the proposed PV panels.

1.1.1 Statement of Authority

Macro Works' relevant experience includes twenty years of analysing the visual effects of a wide range of infrastructural and commercial development types. This experience includes numerous domestic and international wind and solar energy developments.

1.1.2 Guidance and Best Practice

The Irish Aviation Authority (IAA) has not published any specific guidance on solar PV developments. The IAA identifies the need to ensure safety in relation to potential reflectance effects emitting from solar developments and highlights the potential for an ocular assessment to be requested.[1] The European Union Aviation Safety Authority (EASA) requires an assessment of the luminance of proposed PV panels, rather than by ocular irradiance, so as not to dazzle air traffic controllers to the extent of a reduction in visual perception of airport operations.[2] EASA found that 20,000 cd/m2 was the maximum acceptable luminance value for solar PV arrays in the vicinity of an aviation receptor. As the IAA refer to the need for an ocular assessment, this analysis will focus on potential ocular effects.

The sequence of guidance developed by the United States Federal Aviation Administration (FAA) to address the potential hazards that solar developments may pose to aviation activities, is considered the most comprehensive for the purposes of assessment of solar developments near aerodromes. The initial guidance was prepared in 2010 (entitled 'Technical Guidance for Evaluating Selected Solar Technologies on Airports' (archived)), was subsequently updated in 2013[3] (entitled 'Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports'). The most current version of the guidance (Version 1.1) 'Technical Guidance for Evaluating Selected Solar Technologies on Airports' was released in 20184.

The SGHAT was developed in conjunction with the FAA in harmony with this guidance and is adopted as the standard for measuring the ocular impact of solar developments. Furthermore, it is commonly regarded as the accepted industry standard by aviation authorities internationally when considering the glint and glare effects upon aviation-related receptors.

By virtue of their efficiency, the intensity of reflected light from modern PV solar panels is deliberately low and currently equates with that of the reflection from still water. Recent studies generally agree, however, that there still exists the potential for hazard or nuisance upon surrounding receptors. Macro Works' glint and glare analysis methods and determination of effects are based on a combination of available studies and established best practice. This methodology has been successfully implemented on numerous previous solar farm projects that met with the approval of various Planning Authorities

Federal Aviation Authority

Within the FAA's interim policy, a 'Review of Solar Energy System Projects on Federally Obligated Airports'[5] it states:

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1 Irish Aviation Authority. (2025). IAA - National Aviation Safeguarding Framework, Consultation Document, p. 30.

2 European Union Aviation Safety Agency. (2025). Certification Specifications and Guidance Material for Aerodrome Design (CS-ADR-DSN). Issue 7. Page 161. https://www.easa.europa.eu/en/document-library/certification-specifications/group/cs-adr-dsn-aerodromes-design?utm_source=chatgpt.com#cs-adr-dsn-aerodromes-design.

3 Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports, Department of Transportation, Federal Aviation Administration, date: 10/2013

4 Technical Guidance for Evaluating Selected Solar Technologies on Airports, Federal Aviation Administration (FAA), date: 04/2018

5 Federal Aviation Administration (FAA). (2013). Department of Transportation - Federal Aviation Administration. Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports. Vol 78 (No 205), 63276-63279. Available at: https://www.federalregister.gov/documents/2013/10/23/2013-24729/interim-policy-faa-review-of-solar-energy-system-projects-on-federally-obligated-airports

"To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a ''no objection'' to a Notice of Proposed Construction Form 7460–1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:

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

No potential for glare or ''low potential for after-image'' (shown in green in Figure 1[Figure 1.3 refers]) along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath."

An update of the policy in 2021[6] replaced this interim policy, with the key amendment of deprioritising runway approaches as critical aviation receptors, citing the following;

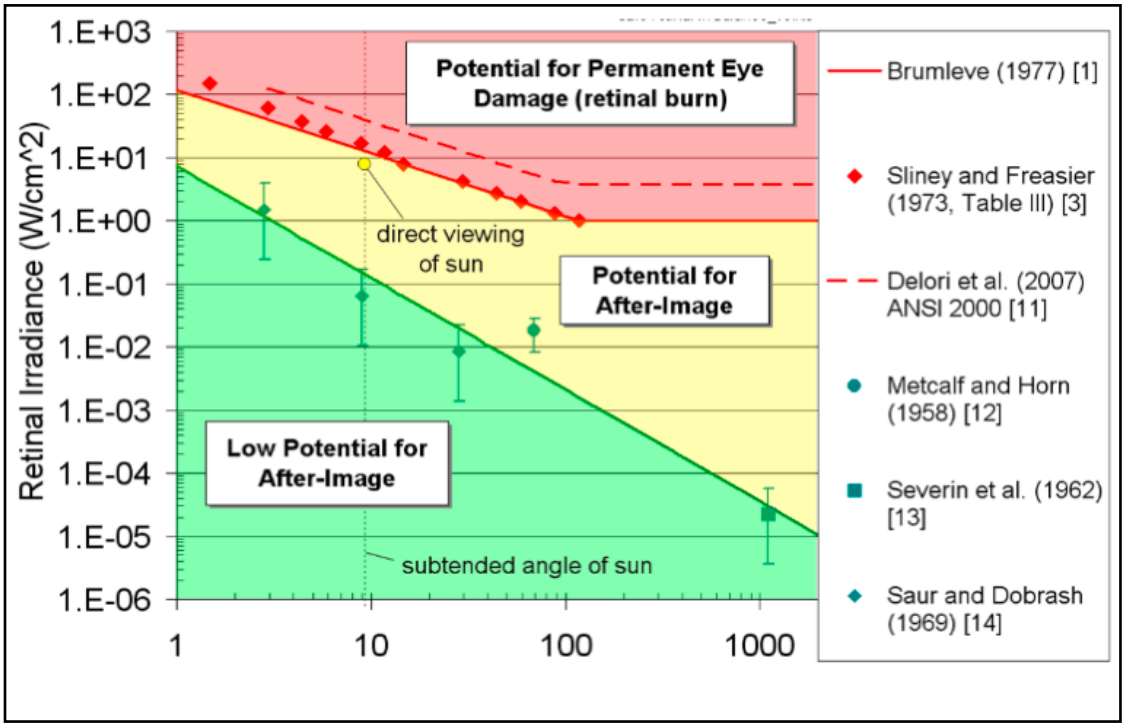
"Initially, FAA believed that solar energy systems could introduce a novel glint and glare effect to pilots on final approach. FAA has subsequently concluded that in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass-façade buildings, parking lots, and similar features. However, FAA has continued to receive reports of potential glint and glare from on-airport solar energy systems on personnel working in ATCT cabs. Therefore, FAA has determined the scope of agency policy should be focused on the impact of on-airport solar energy systems to federally-obligated towered airports, specifically the airport's ATCT" (Federal Aviation Administration 05/11/2021).

In summary, glare at an ATCT is not acceptable and while still relevant glare with a ''low potential for after-image'' is generally acceptable along final approach paths to runways in most instances.

Solar Glare Hazard Analysis Tool

The SGHAT was designed to determine whether a proposed solar energy project would result in the potential for ocular impact as depicted on the Solar Glare Hazard Analysis Plot (Figure 1.3 refers). SGHAT analyses ocular impact over the entire calendar year in one minute intervals from when the sun rises above the horizon until the sun sets below the horizon. One of the principal outputs from the SGHAT report is a glare plot per receptor that indicates the time of day and days per year that glare has the potential to occur. SGHAT plot classifies the intensity of ocular impact as either Green Glare, Yellow Glare or Red Glare. These colour classifications are equivalent to the FAA's definitions regarding the level of ocular impact e.g. 'Green Glare' in the SGHAT is synonymous to the FAA's ''low potential for after-image',' and so forth. The various correlations are illustrated on the Solar Glare Hazard Analysis Plot.

6 Federal Aviation Administration Policy: Review of Solar Energy System Projects on Federally-Obligated Airports; date: 11/2021



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

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

Figure 1.3 - Figure 1 from the FAA Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports

1.2 METHODOLOGY

The process for dealing with aviation receptors is as follows:

1. The Federal Aviation Administration (FAA) approved Solar Glare Hazard Analysis Tool (SGHAT) is used to determine if any of these aviation receptors has the potential to theoretically experience glint or glare. This tool also calculates the intensity of such reflectance and whether it is acceptable by FAA standards.
2. SGHAT does not account for terrain screening or screening provided by surface elements such as existing vegetation or buildings, therefore the results of the SGHAT may need to be considered, in conjunction with an assessment of existing intervening screening that may be present, to establish if reflectance can actually be experienced at the receptors.
3. Finally, if necessary, additional assessment is undertaken using Macro Works' bespoke model which would into account any screening provided by any proposed mitigation measures.

1.2.1 Identification of Relevant Receptors

The Planning and Development (Solar Safeguarding Zone) Regulations 2022 set out 43 Solar Safeguarding Zones (SSZs). A SSZ is an area around an airport, aerodrome or helipad in which there is a potential for glint or glare from solar panels to impact aviation safety. The proposed development is located within the Rathmines SSZ.

Observation Points

The Cathal Brugha Barracks helipad is situated approximately 2km southeast of the proposed development. This receptor is represented by thirteen Observation Points (OP), with heights ranging from 1.7m to 300m, were assessed for potential reflectance. These OPs present a range of flight heights from the urban standard for helicopters down to ground level at 25m intervals, representing the approach to land.

Figure 1.4 Map showing the location of the proposed development relative to the identified aviation receptor.

1.3 RESULTS

1.3.1 Observation Points (OP 1 - 39)

The SGHAT results are contained in Appendix A and show that each of the 13 OPs analysed had potential for Green Glare to occur. OP 9 recorded the highest figure for Green Glare at 456 minutes throughout the year.

None of the 13 OPs analysed showed any potential for Yellow Glare to occur. The absence of Yellow Glare is regarded as a 'Pass' in this assessment as there would only be low potential for after-image

1.4 OVERALL CONCLUSION

From the analysis and discussions contained herein, it is considered that the proposed PV arrays at the proposed Large Residential Development at Milltown Park, Sandford Road, Dublin 6 results in a 'Pass' at the Rathmines aviation receptor.

APPENDIX A: SGHAT RESULTS

FORGESOLAR GLARE ANALYSIS

Project: **Rathmines**
Site configuration: **Sandford_LRD**
Analysis conducted by Luis Dominguez (luis@macroworks.ie) at 18:40 on 19 Nov, 2025.

U.S. FAA 2013 Policy Adherence

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

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

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

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

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

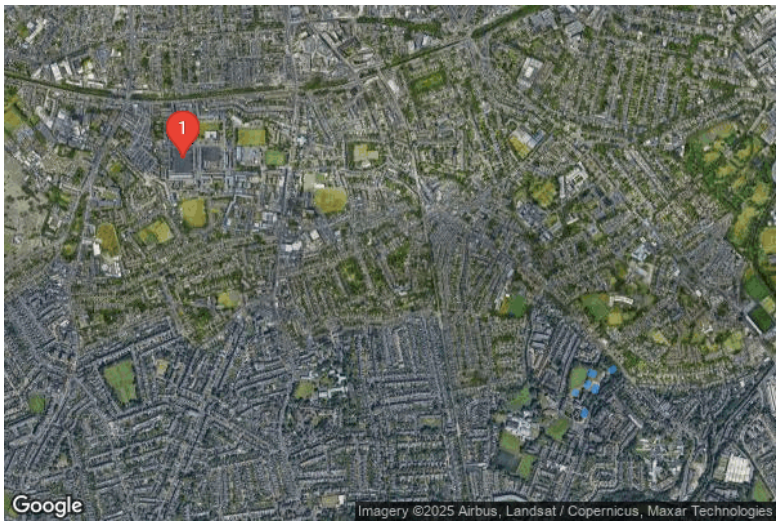
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 165209.23229
Methodology: V2



PV Array(s)

Name: PA1
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 200.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.317272	-6.245083	21.90	22.35	44.25
2	53.317249	-6.244978	21.90	22.35	44.25
3	53.317097	-6.245072	21.90	22.35	44.25
4	53.317120	-6.245176	21.90	22.35	44.25
5	53.317272	-6.245083	21.90	22.35	44.25

Name: PA2
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 200.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.318058	-6.245708	20.70	16.49	37.20
2	53.318032	-6.245589	20.70	16.49	37.20
3	53.317937	-6.245648	20.70	16.49	37.20
4	53.317963	-6.245767	20.70	16.49	37.20
5	53.318058	-6.245708	20.70	16.49	37.20

Name: PA3
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 200.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.318412	-6.244873	20.86	22.19	43.05
2	53.318387	-6.244759	20.86	22.19	43.05
3	53.318280	-6.244825	20.86	22.19	43.05
4	53.318286	-6.244853	20.86	22.19	43.05
5	53.318242	-6.244880	20.86	22.19	43.05
6	53.318261	-6.244966	20.86	22.19	43.05
7	53.318412	-6.244873	20.86	22.19	43.05

Name: PA4
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 200.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.318254	-6.244368	20.75	25.35	46.10
2	53.318224	-6.244230	20.75	25.35	46.10
3	53.318113	-6.244298	20.75	25.35	46.10
4	53.318107	-6.244271	20.75	25.35	46.10
5	53.318048	-6.244308	20.75	25.35	46.10
6	53.318084	-6.244472	20.75	25.35	46.10
7	53.318254	-6.244368	20.75	25.35	46.10

Name: PA5
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 200.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.318854	-6.244679	19.00	14.98	33.98
2	53.318837	-6.244600	19.00	14.98	33.98
3	53.318778	-6.244636	19.00	14.98	33.98
4	53.318766	-6.244580	19.00	14.98	33.98
5	53.318825	-6.244544	19.00	14.98	33.98
6	53.318790	-6.244386	19.00	14.98	33.98
7	53.318686	-6.244449	19.00	14.98	33.98
8	53.318751	-6.244743	19.00	14.98	33.98
9	53.318854	-6.244679	19.00	14.98	33.98

Name: PA6
Axis tracking: Fixed (no rotation)
Tilt: 35.0°
Orientation: 228.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	53.318997	-6.243109	18.00	25.45	43.45
2	53.318954	-6.243045	18.00	25.45	43.45
3	53.318847	-6.243245	18.00	25.45	43.45
4	53.318903	-6.243329	18.00	25.45	43.45
5	53.318965	-6.243214	18.00	25.45	43.45
6	53.318951	-6.243193	18.00	25.45	43.45
7	53.318997	-6.243109	18.00	25.45	43.45

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	53.327270	-6.271810	23.30	1.70
OP 2	2	53.327270	-6.271810	23.30	25.00
OP 3	3	53.327270	-6.271810	23.30	50.00
OP 4	4	53.327270	-6.271810	23.30	75.00
OP 5	5	53.327270	-6.271810	23.30	100.00
OP 6	6	53.327270	-6.271810	23.30	125.00
OP 7	7	53.327270	-6.271810	23.30	151.00
OP 8	8	53.327270	-6.271810	23.30	175.00
OP 9	9	53.327270	-6.271810	23.30	200.00
OP 10	10	53.327270	-6.271810	23.30	225.00
OP 11	11	53.327270	-6.271810	23.30	250.00
OP 12	12	53.327270	-6.271810	23.30	275.00
OP 13	13	53.327270	-6.271810	23.30	300.00

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PA1	35.0	200.0	0	0	-
PA2	35.0	200.0	0	0	-
PA3	35.0	200.0	0	0	-
PA4	35.0	200.0	0	0	-
PA5	35.0	200.0	0	0	-
PA6	35.0	228.0	5,081	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	238	0
OP 2	157	0
OP 3	296	0
OP 4	363	0
OP 5	428	0
OP 6	440	0
OP 7	449	0
OP 8	453	0
OP 9	456	0
OP 10	448	0
OP 11	450	0
OP 12	454	0
OP 13	449	0

Results for: PA1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Results for: PA2

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Results for: PA3

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Results for: PA4

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Results for: PA5

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

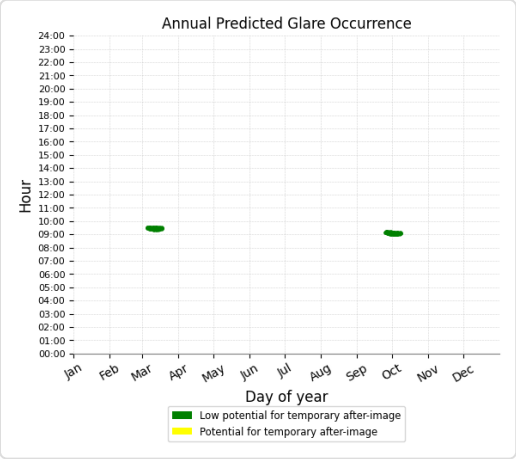
Results for: PA6

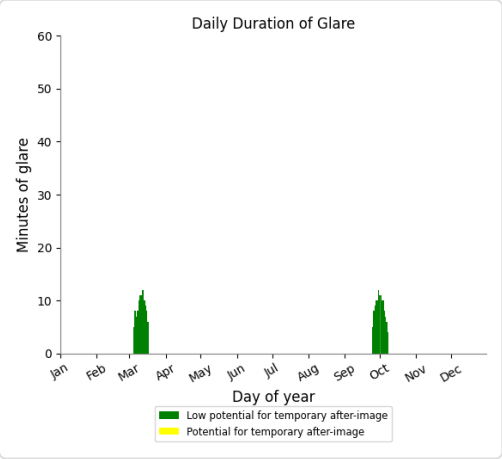
Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	238	0
OP 2	157	0
OP 3	296	0
OP 4	363	0
OP 5	428	0
OP 6	440	0
OP 7	449	0
OP 8	453	0
OP 9	456	0
OP 10	448	0
OP 11	450	0
OP 12	454	0
OP 13	449	0

Point Receptor: OP 1

0 minutes of yellow glare

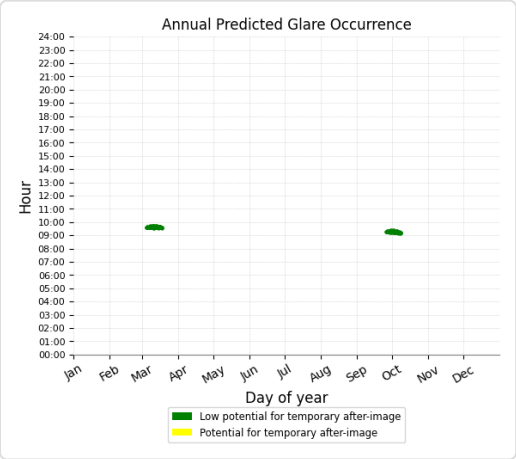
238 minutes of green glare

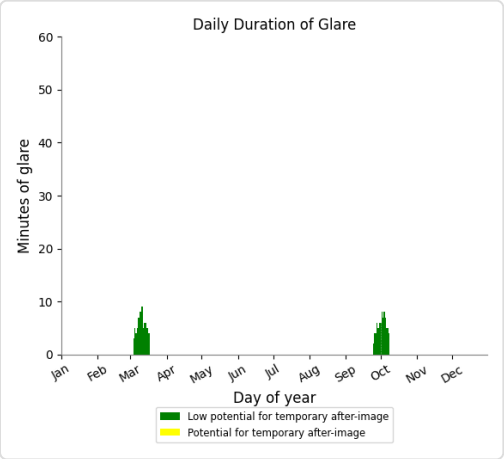




Point Receptor: OP 2

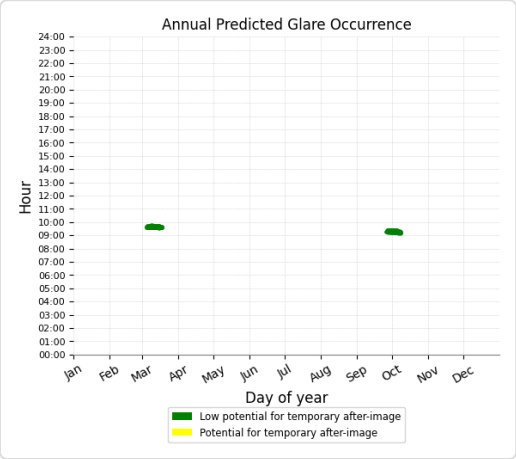
0 minutes of yellow glare
157 minutes of green glare

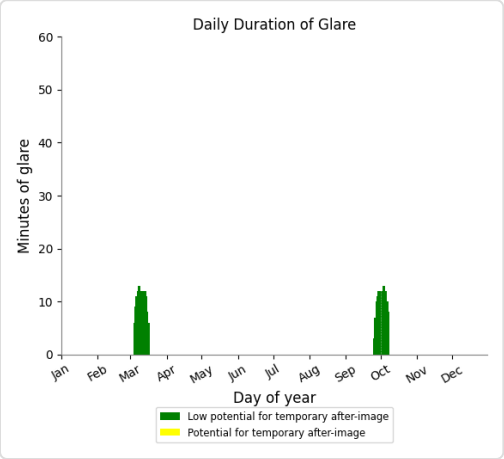




Point Receptor: OP 3

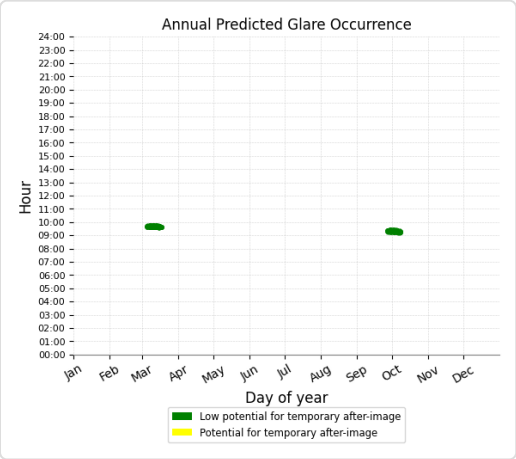
0 minutes of yellow glare
296 minutes of green glare

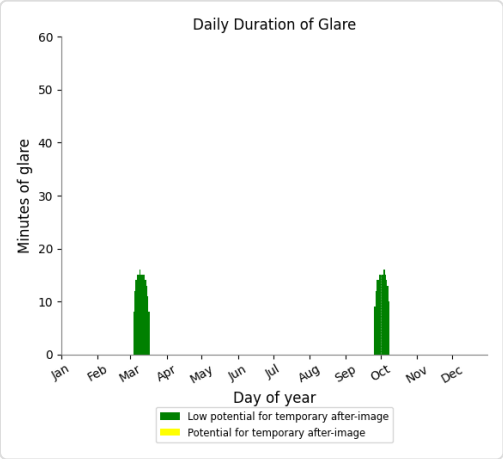




Point Receptor: OP 4

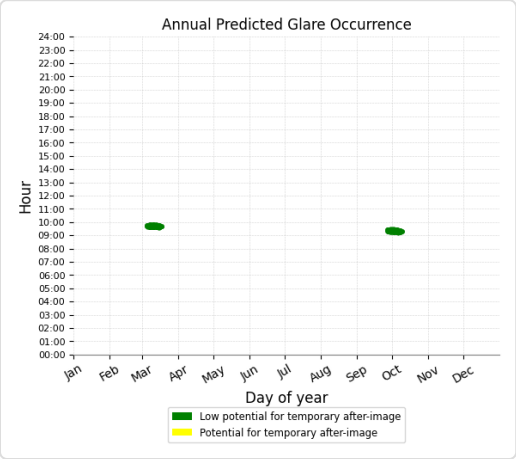
0 minutes of yellow glare
363 minutes of green glare

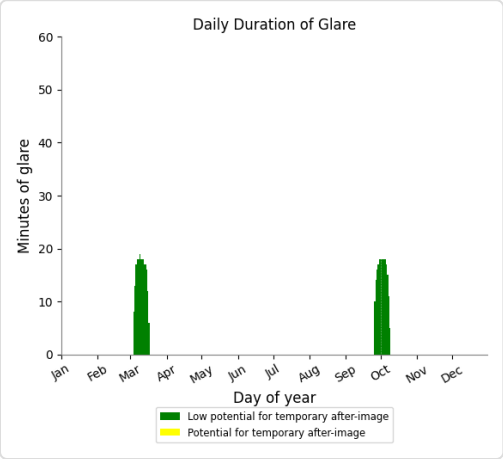




Point Receptor: OP 5

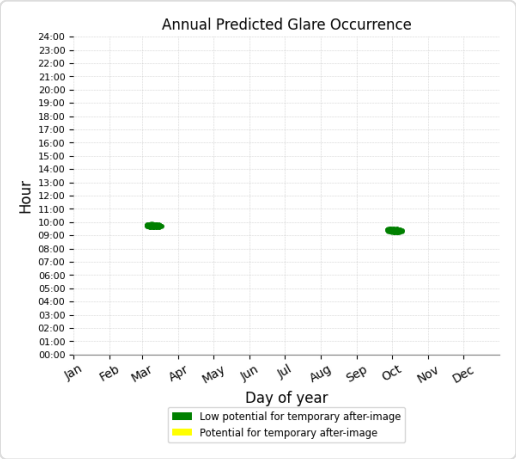
0 minutes of yellow glare
428 minutes of green glare

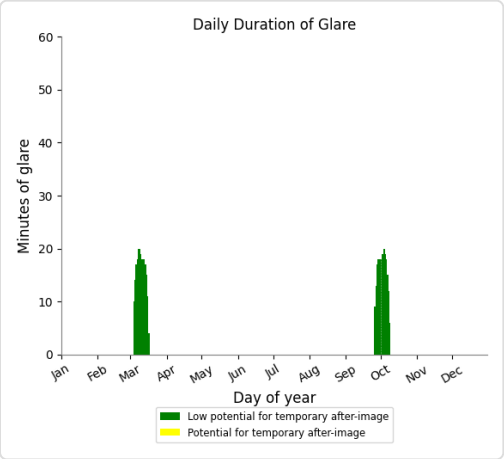




Point Receptor: OP 6

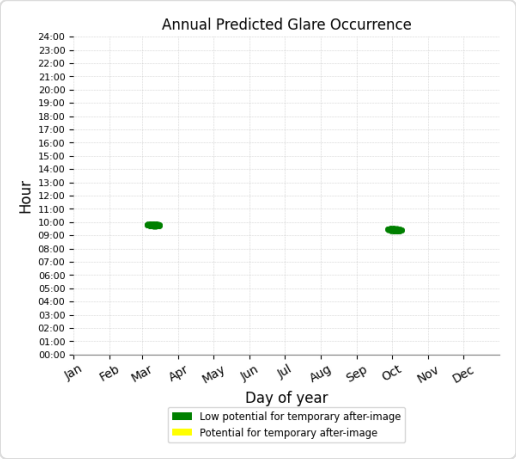
0 minutes of yellow glare
440 minutes of green glare

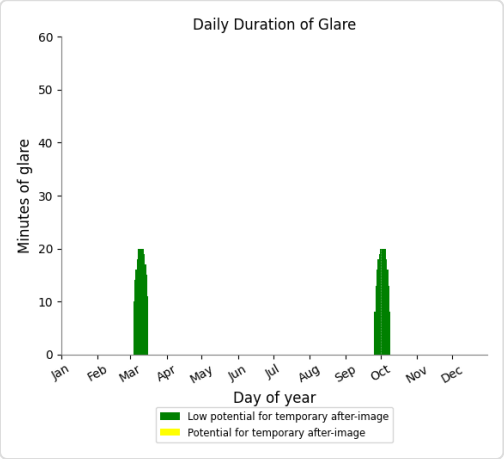




Point Receptor: OP 7

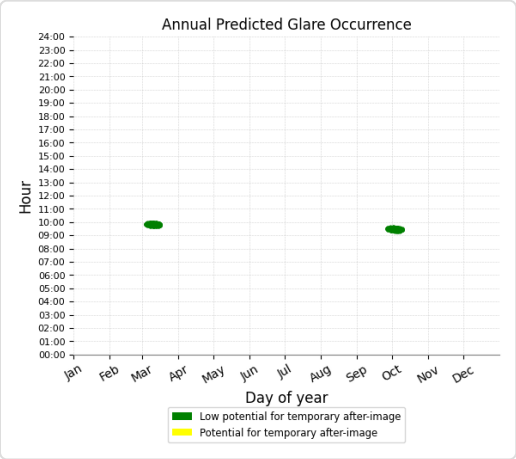
0 minutes of yellow glare
449 minutes of green glare

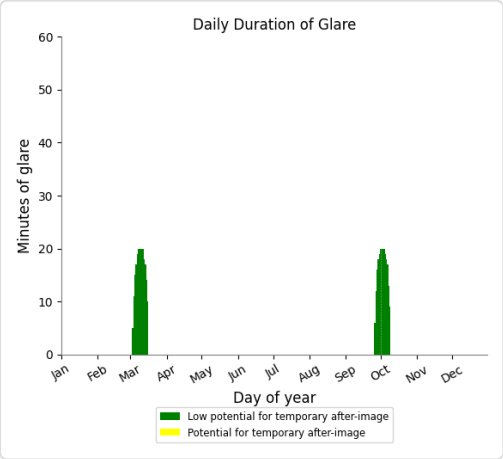




Point Receptor: OP 8

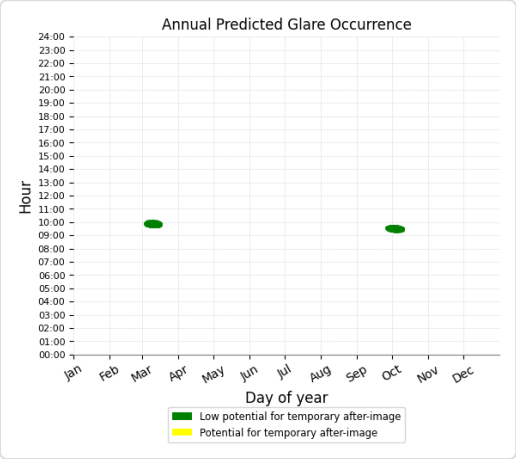
0 minutes of yellow glare
453 minutes of green glare

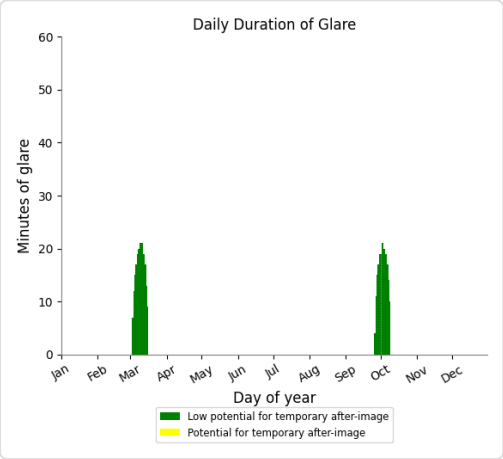




Point Receptor: OP 9

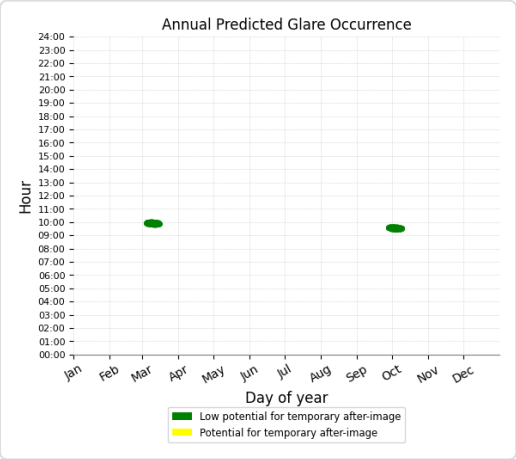
0 minutes of yellow glare
456 minutes of green glare

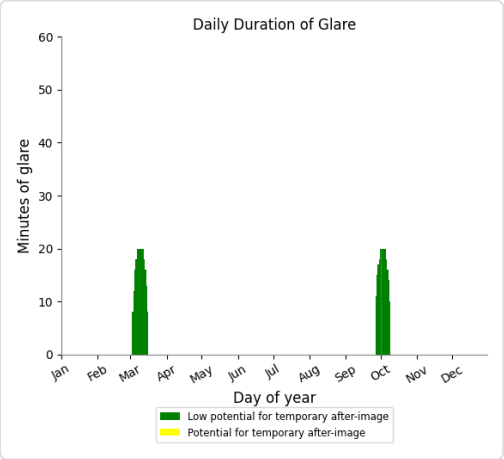




Point Receptor: OP 10

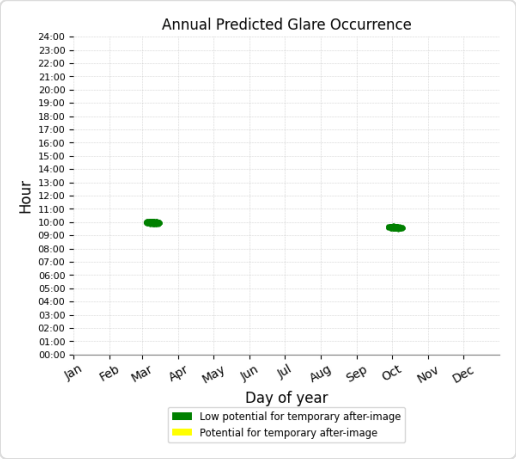
0 minutes of yellow glare
448 minutes of green glare

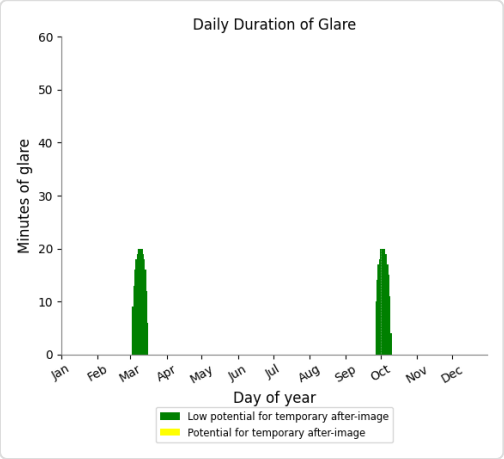




Point Receptor: OP 11

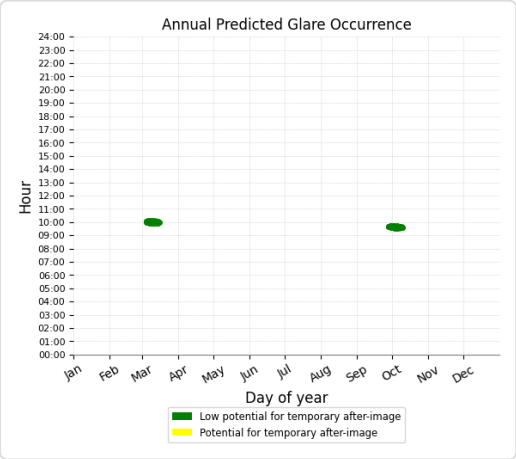
0 minutes of yellow glare
450 minutes of green glare

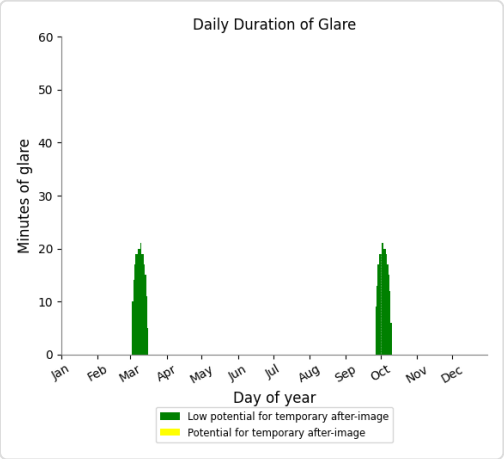




Point Receptor: OP 12

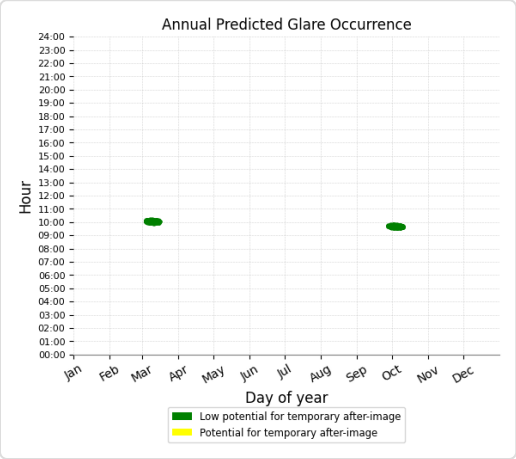
0 minutes of yellow glare
454 minutes of green glare

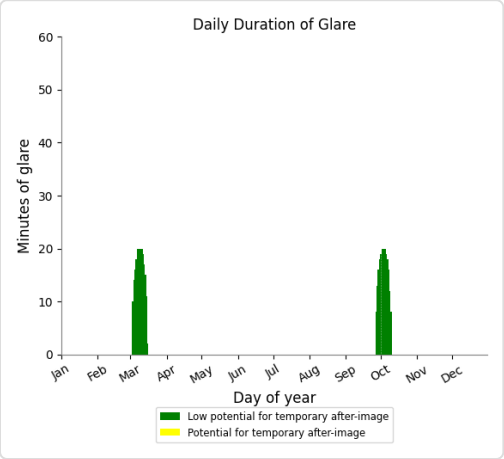




Point Receptor: OP 13

0 minutes of yellow glare
449 minutes of green glare





Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 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.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.