Appendix H

GLARE ANALYSIS

Barrelhead Solar, LLC

Wayne County, Kentucky

COPPERHEAD
ENVIRONMENTAL CONSULTING

Glare Analysis for Proposed Barrelhead Solar Project
Wayne County, KY

Prepared for:
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BACKGROUND

Project Summary

Barrelhead Solar, LLC, (the Applicant) contracted Copperhead Environmental Consulting, Inc., (Copperhead) to conduct a glare analysis for the proposed 54-megawatt (MW) Barrelhead Solar project (Barrelhead or Project). The Project is in Wayne County, southeast of the city of Monticello, KY. The Project Area consists of approximately 307 acres and has reference coordinates of 36.7743°, -85.0077°. The Project Area is located along KY 1009 and Massingale Road and is currently used as agricultural land, as well as contains forested areas.

According to the National Land Cover Database (NLCD), the Project Area currently consists predominantly of agricultural lands/cultivated crops, pasture, and forest/wooded land (Figure 1). The area surrounding the site appears to be a mix of hay/pasture and deciduous forest with smaller areas of developed space along roadways.

Figure 1. Looking south into the Project Area from KY 1009.

A few structures (e.g., barns and residences) currently exist on or directly adjacent to the Project Area, sometimes appearing as if they are within the Project Area boundary. The majority of these structures would remain in place and in use (Figure 2).

Figure 2. Example of a structure located within the Project Area boundary on KY 1009 that would remain in place and in use after the solar facility is developed.

The Project would generate electricity using solar photovoltaic (PV) panels. It would include a utility interconnection substation, a storage/maintenance container, inverter boxes, transformers, and overhead and underground electrical conveyance lines.

Although the results of the glare analysis model indicate that glare could result from the Project for a short time at a small number of nearby modeled receptor locations, modeled impacts are limited, and actual impacts are expected to be even less (Appendix A). For example, the model does not account for intervening terrain or forested areas that may obstruct views of certain panel areas, nor does it reflect reductions in impact associated with reductions in retinal irradiance associated with distance. Glare will not occur where the panels cannot be seen, and glare is much less likely to cause an adverse effect at receptors further away from the Project. In addition, the

Applicant has developed a vegetation plan that would further screen residences and roadways from the PV panels (Appendix B). Details on the methodology and results of the glare analysis are provided in other sections of this report.

Solar Glare

The glare analysis was conducted using the latest version of the ForgeSolar GlareGauge solar glare tool, formerly known as the Solar Glare Hazard Analysis (SGHAT) developed by Sandia National Laboratories to analyze potential glare caused by the sun reflecting off solar panels.

Glare is defined as a continuous source of bright light and is a common phenomenon in our everyday lives. Both the sun and artificial light sources can cause glare either directly (such as from a sunset when driving westbound) or indirectly (such as from the sun's reflections from a lake or mirror). Potential concerns associated with glare may include:

- Safety impacts, such as the potential to disorient motorists when driving or pilots when taking off or landing; or
- Annoyance impacts, such as distraction, after-image in the viewer's vision, or temporary avoidance of a view due to the presence of reflected light.

The GlareGauge model results in three possible levels of glare:

1. Green: Low potential for after-image
2. Yellow: Potential for after-image
3. Red: Potential for permanent eye damage

No red glare was indicated from the modeling results (Appendix A). The extent of green and yellow glare, where modeled, is discussed below.

SOLAR GLARE ANALYSIS

Using the GlareGauge software, Copperhead completed an analysis to identify the potential for solar glare to result from the Project. The locations for which potential solar glare from the Project was analyzed includes three road segments (all two-way roads) and 22 observation points (OPs)[1] representing specific nearby residences and other potential receptors. The closest public airport, Wayne County Airport, is approximately 9.5 miles from the Project Area.

Each of the evaluated road segments and OPs where yellow glare is indicated is discussed below. Beginning with the GlareGauge results, each section considers additional factors that would further reduce glare potential (such as intervening topography, vegetation, and distance) in order

[1] Note: although the OPs are numbered 1-27, there are no OP locations with the following ID numbers: 1, 2, 3, 22, and 23.

to characterize glare potential in each location. The full GlareGauge analysis output is provided in Appendix A.

Design Parameters

In deploying the model, the entire array footprint was broken into 8 sections to allow for more accurate modeling given the limitations of the GlareGauge tool. The project design parameters for the array provided by the Applicant are shown in Table 1. The height above ground for all sections of the array is 10 feet.

Table 1. The Project's Proposed Design Parameters.

System Tracking	Tilt	Orientation	Module Surface Material
None	60	180	Smooth glass with anti-reflective coating (ARC)

Observation Point and Route Receptor Parameters

A total of 22 observation points were used in the model, primarily residences, along with the Fairview Church on KY 1009. No commercial properties were found nearby. These properties were selected because they have parcel boundaries adjacent to the Project Area or are considered close by. Properties within or next to the Project Area that share ownership with the planned Project location were excluded from the analysis. The elevation at each point was set at 6 feet above ground level to represent typical eye height.

A total of 3 routes in the immediate vicinity of the Project Area were modeled using an elevation of 5 feet. The view angle along all routes was set at 50 degrees.

Obstruction Parameters

To try to make this analysis as accurate as possible, two types of obstructions were included in the analysis: existing vegetation and planned vegetation. Portions of the perimeter of the Project Area contain wide patches of mature trees and vegetation that would not be removed for the Project. An upper edge height of 45 feet was used for the existing vegetation, which is likely a low estimate of the actual height. Additionally, obstructions were added to the model where tree and shrub plantings are planned (see Landscaping Plan in Appendix B). The mature heights of the species identified for the planned plantings were averaged to produce a height of 30 feet, which was used in the tool as the upper edge height for these obstructions.

The Landscape Plan proposes areas of heavy screening and standard screening. The heavy screening areas contain a higher density of conifer species compared to the standard screening areas, which feature a more even mixture of deciduous and evergreen shrub and tree species combined with conifer species. The recommended shrubs would provide a range of screening

from approximately 7 to 35 feet when fully leafed out. Shrub species would be combined with conifer species for year-round screening in both heavy and standard plantings, which at full maturity would range from 35 to 80 feet in height.

The options for adding and modeling obstructions in the GlareGauge tool are limited. For example, only a single height associated with a single line representing an obstruction can be entered. It is unknown if or how the width of the obstruction is considered in the tool, as this is not a field available to the user. In general, a wider patch of mature vegetation would be expected to screen the Project more in comparison to a thinner patch. Additionally, obstructions are entered as a line with a single height, which does not allow the modeled results to reflect differences in vegetation height where it may vary.

While an effort was made to account for these limitations, the modeled results indicate some yellow glare at roadway and observation locations (discussed in the following section) that would likely be further reduced if these factors could be considered more accurately.

SUMMARY OF RESULTS FOR NEARBY ROADWAY AND OBSERVATION LOCATIONS

Results for Route Receptors and Observation Points that, according to modeled results, may experience yellow glare are summarized below. In order to interpret the GlareGauge results and characterize glare potential in each location, additional factors should be considered that would further reduce glare potential (such as intervening topography, vegetation, and distance). Where only green glare was found from the model, those results are summarized in the full GlareGauge output provided in Appendix A.

Route Receptor 1: KY 1009

According to the modeled results, yellow glare could be experienced on areas of KY 1009 between mileposts 9.4 and 10.5, primarily during spring and fall months for short periods in the evening (Table 2). However, the planned tree and shrub plantings between approximately milepost 10.2 and 9.9 would further alleviate the glare experienced (see Landscaping Plan in Appendix B). Although these sections of vegetation were included in the GlareGauge model, a width parameter cannot be entered into the tool. As a result, the effects of the planned plantings are underestimated, and it is anticipated that users of KY 1009 would experience less yellow glare than the modeled results indicate.

Table 2. Modeled results for KY 1009 showing yellow glare.

Panel Area	Approx. Feet from Array	Yellow Glare		
		Time of Year (approx.)	Time of Day (approx.)	Modeled Annual Duration (minutes)
Middle Top	1,603	March, Sept.	5 – 7 PM	1,557
Northeast 2	300	March – April, Sept.	5 – 7 PM	1,553

Route Receptor 2: Massingale Road

The portion of Massingale Road that the model results suggest will be affected is mainly the northern end, where it intersects with KY 1009. A few smaller sections toward the southern end could also be impacted. Given that Massingale Road is between two sections of arrays, impacts to this roadway were anticipated. In an effort to proactively address these impacts, plantings were added to the Landscape Plan along nearly the entire length of the road. Although these sections of planned plantings were included in the GlareGauge model, a width parameter cannot be entered into the tool. As a result, the effects of the planned plantings are likely underestimated, and the actual glare experienced on this roadway is anticipated to be less.

Table 3. Modeled results for Massingale Road showing yellow glare.

Panel Area	Approx. Feet from Array	Yellow Glare		
		Time of Year (approx.)	Time of Day (approx.)	Modeled Annual Duration (minutes)
Main NW	50 – 100	March – April; Aug. – Sept.	6 – 9 AM	2,093

Observation Points

The Observation Points (OPs) described below are all residences adjacent to the Project Area that are indicated as potentially experiencing yellow glare. The modeled results indicate that three OPs could experience yellow glare intermittently and for short periods. All three OPs (#12, 26, and 27) are on the eastern side of the Project Area. OP #12 is on the western side of KY 1009, and #26 and #27 are on the eastern side of the roadway.

OPs not described in Table 6 are indicated by the model as either experiencing no glare or green glare only. Of the 22 OPs, 14 are indicated as potentially experiencing green glare only, and 5 are as experiencing no glare from the Project. Because green glare is considered to have low potential for after-image, the remainder of this section of the report focuses on modeled results indicating yellow glare.

Table 4. Modeled results for Observation Points showing yellow glare.

OP #	Panel Area	Approx. Distance to Nearest Array (feet)	Yellow Glare			Comments
			Time of Year (approx.)	Time of Day (approx.)	Modeled Annual Duration (minutes)	
12	Middle Top	1,527.8	March – April, Sept. – Oct.	5 – 7 PM	860	Effects would be limited to short periods for a few months out of the year. The distance from this section of the array to the OP would likely result in less glare experienced compared to the modeled results. Some existing trees and the planned pollinator field would be between the OP and this section of the array, which would provide additional partial screening and reduce the glare experienced.
	Northeast 2	399.1	March, Sept.	5 – 7 PM	562	Yellow glare could be experienced at this location for less than 1 percent of the year. The modeled results suggest that the daily duration of yellow glare would be 100 minutes or less. It is expected that these impacts could occur for short periods in the evenings during two months of the year. Although the nearby existing vegetation was not used as an obstruction in the model because of the relatively narrow width of this patch, it would likely further reduce impacts.
26	Middle Top	1,958.2	March – April, Sept. – Oct.	5 – 7 PM	646	Effects would be limited to short periods for a few months out of the year. The distance from this section of the array to the OP would likely result in less glare experienced compared to the modeled results. As indicated by the modeled results showing the potential

OP #	Panel Area	Approx. Distance to Nearest Array (feet)	Yellow Glare			Comments
			Time of Year (approx.)	Time of Day (approx.)	Modeled Annual Duration (minutes)	
						for a short annual duration of 392 minutes (<1 percent of the year), effects from this section of the array would be negligible at this OP.
27	Middle Top	1,770	March, Sept.	5 – 7 PM	408	Effects would be limited to short periods for a few months out of the year. The distance from this section of the array to the OP would likely result in less glare experienced compared to the modeled results. Although the OP sits at a higher elevation, the intervening topography, existing vegetation, and existing structures would likely reduce the effects of the yellow glare experienced at this area to a negligible level.

AIRPORT SENSITIVE RECEPTORS AND PILOT ANALYSIS

In 2013, the FAA published an Interim Policy for Solar Projects at Airports. This Policy was finalized and went into effect on May 11, 2021 (86 FR 25801). In developing the final rule, the FAA concluded that the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from waterbodies, glass-façade buildings, parking lots, and similar features. The FAA continued to receive reports of glint and glare effects from on-airport solar arrays on air traffic control tower cab (ATCT) personnel and determined that agency policy should focus on the impact of these systems to federally obligated towered airports, specifically the ATCT cab (14 CFR Part 77).

Although the final rule does not apply to off-airport solar facilities, we used ForgeSolar's GlareGauge tool to analyze the potential impacts to one nearby airport: the Wayne County Airport. This airport does not have an ACTC. The tool produced no modeled glare (green, yellow, or red) from the array on the final approach to the airport runway and therefore does not pose any concern to pilots or airline safety. The ForgeSolar model results can be found in Appendix A.

CONCLUSIONS

ForgeSolar's GlareGauge tool, which incorporates the SGHAT model, was used to assess 22 observation points (OPs) and three roadway segments to identify the Project's potential to cause glare. The model indicated that the potential exists for yellow glare to result from the Project from 4 sections of the array (out of 8 total sections). Green glare only is predicted to occur at 14 OPs and on one roadway segment. Yellow glare is predicted to occur at 3 OPs and on two roadway segments. No red glare was predicted, and green or yellow glare that has been predicted is expected to occur within a handful of months for relatively short periods throughout the year. As addressed in this report, a more detailed review indicates that little potential exists for glare to materially affect the Project surroundings. The model is intended to reflect extremely conservative results, including the following:

- The model does not account for intervening topography that would block views of certain panel areas from a given modeled location. As discussed above for each of the segments and OPs, many of the locations where glare was predicted will not be visible or may be partially visible; in some instances, the partial visibility would shield viewers from the portion of the panels modeled as producing glare. If the panels cannot be seen from a given location, no glare effect would be experienced.
- The model also does not account for significant existing vegetation that would block views of certain panel areas from a given modeled location. As discussed above for each of the segments and OPs, a substantial amount of existing vegetation that will be retained will block visibility of certain panel areas. In addition to the existing vegetation, the Project plans to incorporate a landscaping plan that will add vegetation where it may not currently exist and to augment other areas (see Landscaping Plan in Appendix B).

Combinations of deciduous and evergreen trees and shrubs will be used in either heavy or standard screening throughout the edges of the Project Area. Mature heights of plantings are likely to range from 7 to 80 feet. While the landscaping is not intended to outright block views of the panels and would rather screen and soften views of the panels, vegetation can be further enhanced should experienced glare become an issue from a given location.

- Distance is also not a factor used in the model when calculating retinal irradiance. Several of the places where glare is predicted are quite distant from the viewing segment or OP. As distance increases from a potential location with glare effect, reflected light will diffuse and tend to become less concentrated and have a decreased characteristic of glare.

Given the adjustments to the modeled results based on tangible factors that would block visibility, and other factors noted above that are likely to reduce the potential for impact still further, glare is not expected to adversely influence traffic on nearby modeled roads or modeled OP locations. In the unlikely event that glare were to pose a concern from a given location, mitigation measures that could include enhanced landscaping would be considered.

REFERENCES

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Appendix A
ForgeSolar Glare Analysis

FORGESOLAR GLARE ANALYSIS

Project: **Barrelhead Solar**
Site configuration: **5 - with landscape plan**

Created 24 Jul, 2025
Updated 13 Aug, 2025
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 10 MW to 100 MW
Site ID 155729.25673

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

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Bottom	60.0	180.0	498	8.3	0	0.0	-
Main Northwest	60.0	180.0	26,018	433.6	2,119	35.3	-
Main Southwest	60.0	180.0	1,691	28.2	0	0.0	-
Middle bottom	60.0	180.0	809	13.5	0	0.0	-
Middle Top	60.0	180.0	12,222	203.7	3,546	59.1	-
Northeast 1	60.0	180.0	4,908	81.8	0	0.0	-
Northeast 2	60.0	180.0	13,523	225.4	2,045	34.1	-
West Array	60.0	180.0	294	4.9	0	0.0	-

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

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
CR 1018	0	0.0	0	0.0
KY 1009	11,685	194.8	3,225	53.8
Massingale Rd	10,524	175.4	2,119	35.3
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 4	221	3.7	0	0.0
OP 5	1,593	26.6	0	0.0
OP 6	4,312	71.9	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	594	9.9	0	0.0
OP 12	5,567	92.8	1,300	21.7
OP 13	4,846	80.8	0	0.0
OP 14	3,294	54.9	0	0.0
OP 15	0	0.0	0	0.0
OP 16	299	5.0	0	0.0
OP 17	1,552	25.9	0	0.0
OP 18	1,199	20.0	0	0.0
OP 19	2,244	37.4	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	230	3.8	0	0.0
OP 25	4,400	73.3	0	0.0
OP 26	2,328	38.8	658	11.0
OP 27	5,075	84.6	408	6.8

Component Data

PV Arrays

Name: Bottom
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.774043	-85.008190	943.39	10.00	953.39
2	36.772093	-85.008233	910.63	10.00	920.63
3	36.772067	-85.007342	909.30	10.00	919.30
4	36.772376	-85.006484	909.29	10.00	919.29
5	36.772462	-85.005545	919.07	10.00	929.07
6	36.772986	-85.004456	900.91	10.00	910.91
7	36.773356	-85.003115	904.55	10.00	914.55
8	36.774499	-85.000980	915.81	10.00	925.81
9	36.774705	-85.000991	915.48	10.00	925.48
10	36.774783	-85.006645	928.83	10.00	938.83

Name: Main Northwest
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778980	-85.010442	992.84	10.00	1002.84
2	36.780138	-85.010367	978.25	10.00	988.25
3	36.782314	-85.010474	982.09	10.00	992.09
4	36.782344	-85.009809	991.10	10.00	1001.10
5	36.782473	-85.009747	994.28	10.00	1004.28
6	36.782709	-85.009555	995.33	10.00	1005.33
7	36.783204	-85.009541	997.21	10.00	1007.21
8	36.783470	-85.009087	1011.10	10.00	1021.10
9	36.784518	-85.009082	998.90	10.00	1008.90
10	36.784531	-85.008532	1019.82	10.00	1029.82
11	36.783986	-85.008511	1012.27	10.00	1022.27
12	36.783988	-85.008092	1013.38	10.00	1023.38
13	36.777222	-85.008173	950.34	10.00	960.34
14	36.777213	-85.008857	942.66	10.00	952.66
15	36.777536	-85.009954	956.40	10.00	966.40
16	36.778978	-85.009927	990.45	10.00	1000.45

Name: Main Southwest
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.776773	-85.012924	976.87	10.00	986.87
2	36.775746	-85.012474	978.30	10.00	988.30
3	36.773705	-85.011457	953.18	10.00	963.18
4	36.773687	-85.010612	949.61	10.00	959.61
5	36.774085	-85.010250	953.72	10.00	963.72
6	36.774070	-85.009319	949.15	10.00	959.15
7	36.774289	-85.008912	947.76	10.00	957.76
8	36.775905	-85.008853	955.72	10.00	965.72
9	36.776429	-85.009625	957.09	10.00	967.09
10	36.776468	-85.011599	952.85	10.00	962.85
11	36.776760	-85.011800	955.87	10.00	965.87

Name: Middle bottom
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778244	-85.008037	964.29	10.00	974.29
2	36.776495	-85.008003	922.02	10.00	932.02
3	36.776057	-85.006881	914.52	10.00	924.52
4	36.775846	-85.006026	917.58	10.00	927.58
5	36.775833	-85.005433	914.00	10.00	924.00
6	36.776465	-85.003979	925.55	10.00	935.55
7	36.776624	-85.003979	926.40	10.00	936.40
8	36.777350	-85.006522	945.26	10.00	955.26
9	36.777354	-85.007144	956.13	10.00	966.13
10	36.777625	-85.007533	960.72	10.00	970.72

Name: Middle Top
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778837	-85.008033	950.88	10.00	960.88
2	36.783987	-85.008015	1013.10	10.00	1023.10
3	36.783273	-85.006310	994.81	10.00	1004.81
4	36.783259	-85.005507	978.47	10.00	988.47
5	36.781925	-85.002621	952.24	10.00	962.24
6	36.781213	-85.004391	967.43	10.00	977.43
7	36.781888	-85.004852	971.02	10.00	981.02
8	36.781884	-85.007363	981.32	10.00	991.32
9	36.780642	-85.007379	984.02	10.00	994.02
10	36.780616	-85.005984	982.34	10.00	992.34
11	36.780015	-85.004965	972.34	10.00	982.34
12	36.779568	-85.004941	971.88	10.00	981.88
13	36.779362	-85.004290	944.63	10.00	954.63
14	36.778674	-85.004271	948.27	10.00	958.27
15	36.778025	-85.003462	929.09	10.00	939.09
16	36.777566	-85.003179	924.01	10.00	934.01
17	36.777342	-85.003549	905.50	10.00	915.50
18	36.777368	-85.004901	913.20	10.00	923.20
19	36.777815	-85.006429	928.12	10.00	938.12
20	36.778416	-85.006413	956.41	10.00	966.41
21	36.778520	-85.007416	936.22	10.00	946.22

Name: Northeast 1
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.785369	-85.006633	1012.24	10.00	1022.24
2	36.785451	-85.006336	1012.86	10.00	1022.86
3	36.785461	-85.005303	1019.74	10.00	1029.74
4	36.785001	-85.004141	1007.26	10.00	1017.26
5	36.784603	-85.003467	1001.55	10.00	1011.55
6	36.784553	-85.006605	1015.80	10.00	1025.80

Name: Northeast 2
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.784553	-85.004340	994.36	10.00	1004.36
2	36.783148	-85.004308	958.78	10.00	968.78
3	36.782697	-85.003111	968.98	10.00	978.98
4	36.782532	-85.002366	966.19	10.00	976.19
5	36.782102	-85.002164	972.84	10.00	982.84
6	36.782132	-85.001432	983.49	10.00	993.49
7	36.782317	-85.001180	985.62	10.00	995.62
8	36.783086	-85.001210	989.88	10.00	999.88
9	36.783017	-85.002317	985.66	10.00	995.66
10	36.783755	-85.003019	985.48	10.00	995.48
11	36.784044	-85.003420	987.27	10.00	997.27
12	36.784563	-85.003452	1000.22	10.00	1010.22

Name: West Array
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

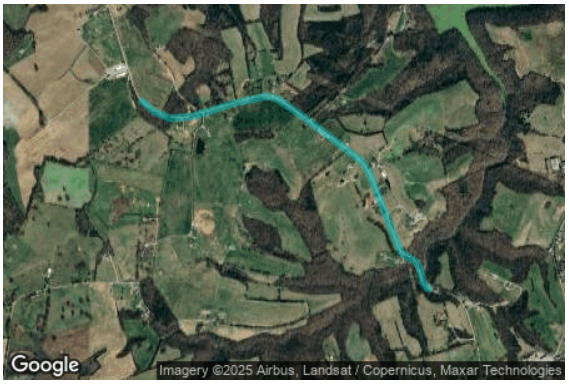
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778311	-85.012742	976.38	10.00	986.38
2	36.778315	-85.010993	984.66	10.00	994.66
3	36.782423	-85.011014	977.90	10.00	987.90
4	36.782444	-85.011932	985.35	10.00	995.35
5	36.779589	-85.012731	977.16	10.00	987.16

Route Receptors

Name: CR 1018
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 10.0°

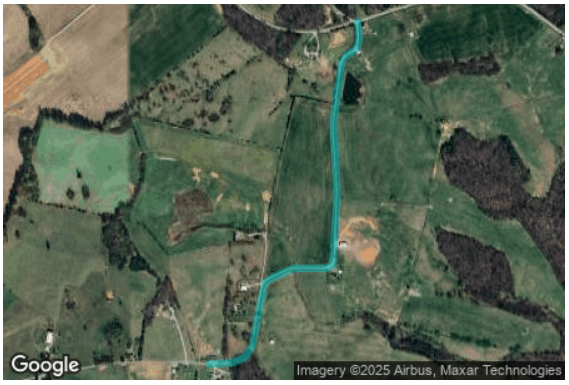
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.775466	-85.014300	969.37	5.00	974.37
2	36.774705	-85.014139	961.58	5.00	966.58
3	36.774280	-85.013919	952.41	5.00	957.41
4	36.773927	-85.013581	938.67	5.00	943.67
5	36.773743	-85.013409	935.41	5.00	940.41
6	36.773571	-85.013345	932.09	5.00	937.09
7	36.773137	-85.012835	924.57	5.00	929.57
8	36.773029	-85.012546	920.40	5.00	925.40

Name: KY 1009
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 10.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.785499	-85.014201	987.06	5.00	992.06
2	36.784915	-85.013321	962.82	5.00	967.82
3	36.784554	-85.012227	956.86	5.00	961.86
4	36.784674	-85.010660	979.59	5.00	984.59
5	36.785361	-85.007957	1003.51	5.00	1008.51
6	36.785774	-85.005596	1017.07	5.00	1022.07
7	36.785602	-85.004845	1017.11	5.00	1022.11
8	36.784622	-85.003064	1001.99	5.00	1006.99
9	36.782234	-84.999138	988.25	5.00	993.25
10	36.781581	-84.998580	985.62	5.00	990.62
11	36.777473	-84.996541	893.76	5.00	898.76
12	36.777121	-84.996252	887.19	5.00	892.19
13	36.776734	-84.995415	871.73	5.00	876.73
14	36.776339	-84.995114	845.38	5.00	850.38
15	36.775522	-84.994857	836.89	5.00	841.89
16	36.775204	-84.994514	854.92	5.00	859.92

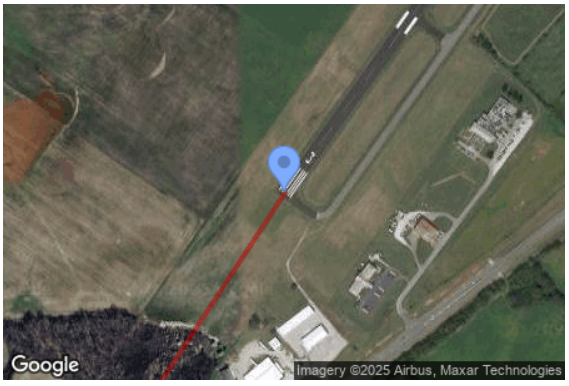
Name: Massingale Rd
Path type: Two-way
Azimuthal view angle: 50.0°
Downward view angle: 10.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.775471	-85.015038	947.88	5.00	952.88
2	36.775514	-85.014233	970.83	5.00	975.83
3	36.775660	-85.013825	967.40	5.00	972.40
4	36.775952	-85.013579	967.82	5.00	972.82
5	36.777705	-85.013149	991.70	5.00	996.70
6	36.777877	-85.012795	978.84	5.00	983.84
7	36.778100	-85.012152	964.47	5.00	969.47
8	36.778100	-85.011004	979.25	5.00	984.25
9	36.778212	-85.010811	980.33	5.00	985.33
10	36.780042	-85.010660	979.28	5.00	984.28
11	36.781091	-85.010714	979.03	5.00	984.03
12	36.782079	-85.010789	985.31	5.00	990.31
13	36.783772	-85.010499	988.49	5.00	993.49
14	36.783944	-85.010328	994.41	5.00	999.41
15	36.784124	-85.009984	1003.00	5.00	1008.00
16	36.784416	-85.009909	995.20	5.00	1000.20
17	36.784863	-85.009952	981.40	5.00	986.40

Flight Path Receptors

Name: Wayne County Airport 1
Description:
Threshold height: 50 ft
Direction: 33.3°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	36.850878	-84.860109	958.82	50.00	1008.82
Two-mile	36.826723	-84.879991	978.21	584.04	1562.25

Name: Wayne County Airport 2
Description:
Threshold height: 50 ft
Direction: 216.4°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	36.859681	-84.852219	961.50	50.00	1011.50
Two-mile	36.882956	-84.830755	971.79	593.13	1564.93

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 4	4	36.778958	-85.013388	976.81	6.00
OP 5	5	36.784044	-85.011476	983.24	6.00
OP 6	6	36.783674	-85.010699	985.33	6.00
OP 7	7	36.785835	-85.006938	1015.26	6.00
OP 8	8	36.786188	-85.005184	1023.03	6.00
OP 9	9	36.786617	-85.004390	1018.42	6.00
OP 10	10	36.785595	-85.004170	1009.45	6.00
OP 11	11	36.783234	-85.000026	1007.48	6.00
OP 12	12	36.782029	-84.999922	994.71	6.00
OP 13	13	36.779627	-84.997921	961.61	6.00
OP 14	14	36.776800	-84.996537	918.89	6.00
OP 15	15	36.771432	-85.001128	956.50	6.00
OP 16	16	36.770861	-85.000689	964.59	6.00
OP 17	17	36.770612	-84.998545	982.64	6.00
OP 18	18	36.769677	-85.009146	963.89	6.00
OP 19	19	36.767932	-85.009028	988.25	6.00
OP 20	20	36.773743	-85.013766	934.10	6.00
OP 21	21	36.774125	-85.014579	949.33	6.00
OP 24	24	36.783509	-85.001733	999.21	6.00
OP 25	25	36.773265	-84.993164	963.05	6.00
OP 26	26	36.781929	-84.998435	995.67	6.00
OP 27	27	36.780593	-84.997667	974.05	6.00

Obstruction Components

Name: Landscape 1
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783064	-85.002266	986.72
2	36.783419	-85.001252	994.88
3	36.782791	-85.000174	998.04

Name: Landscape 2
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.784196	-85.003355	994.03
2	36.784480	-85.003012	1002.54
3	36.785090	-85.004144	1009.92
4	36.785464	-85.004777	1016.29
5	36.785670	-85.005522	1018.57
6	36.785665	-85.005930	1013.52
7	36.785515	-85.006740	1012.49

Name: Landscape 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783866	-85.009639	1008.07
2	36.784068	-85.009204	1013.42
3	36.784914	-85.009231	989.51
4	36.785442	-85.007021	1013.89

Name: Landscape 4
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783724	-85.009896	1001.50
2	36.783582	-85.010057	994.84
3	36.783303	-85.009671	995.94
4	36.783140	-85.009617	996.69
5	36.782929	-85.009596	994.32
6	36.782710	-85.009628	994.27
7	36.782401	-85.009864	990.27
8	36.782242	-85.010615	982.85
9	36.780098	-85.010502	979.26
10	36.778929	-85.010583	991.54

Name: Landscape 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.778632	-85.010175	986.34
2	36.777670	-85.010454	962.36
3	36.777614	-85.011028	965.96

Name: Landscape 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.777988	-85.011076	975.42
2	36.777979	-85.011956	962.70

Name: Landscape 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.777954	-85.012208	962.05
2	36.777627	-85.013008	985.28
3	36.776952	-85.013185	984.37
4	36.774228	-85.011940	966.23

Name: Landscape 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.782426	-85.010846	980.16
2	36.781876	-85.010915	985.85
3	36.780072	-85.010819	978.96
4	36.778327	-85.010899	985.02
5	36.778207	-85.011023	981.16
6	36.778207	-85.012981	985.78

Name: Landscape 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.778265	-85.013015	988.04
2	36.779498	-85.012881	976.20
3	36.780207	-85.012720	990.69

Name: Landscape - for church
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783064	-85.002306	986.95
2	36.783324	-85.002488	989.22
3	36.783631	-85.002736	989.10
4	36.784136	-85.003327	992.83

Name: Obstruction 1
Top height: 45.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.772301	-85.011993	917.80
2	36.771665	-85.007519	921.84
3	36.771708	-85.005781	926.86
4	36.771974	-85.003893	963.05
5	36.773453	-85.000234	905.72
6	36.774166	-84.999537	894.94
7	36.775223	-84.999097	886.84
8	36.775610	-85.000213	910.85
9	36.776606	-85.001640	909.46
10	36.781092	-85.002670	933.85

Name: Obstruction 2
Top height: 45.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.775575	-85.013917	968.65
2	36.774883	-85.013675	961.50
3	36.774131	-85.013176	948.96
4	36.773379	-85.012602	933.63
5	36.773065	-85.012216	923.59
6	36.772863	-85.012200	911.91

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Bottom	60.0	180.0	498	8.3	0	0.0	-
Main Northwest	60.0	180.0	26,018	433.6	2,119	35.3	-
Main Southwest	60.0	180.0	1,691	28.2	0	0.0	-
Middle bottom	60.0	180.0	809	13.5	0	0.0	-
Middle Top	60.0	180.0	12,222	203.7	3,546	59.1	-
Northeast 1	60.0	180.0	4,908	81.8	0	0.0	-
Northeast 2	60.0	180.0	13,523	225.4	2,045	34.1	-
West Array	60.0	180.0	294	4.9	0	0.0	-

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

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
CR 1018	0	0.0	0	0.0
KY 1009	11,685	194.8	3,225	53.8
Massingale Rd	10,524	175.4	2,119	35.3
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 4	221	3.7	0	0.0
OP 5	1,593	26.6	0	0.0
OP 6	4,312	71.9	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	594	9.9	0	0.0
OP 12	5,567	92.8	1,300	21.7
OP 13	4,846	80.8	0	0.0
OP 14	3,294	54.9	0	0.0
OP 15	0	0.0	0	0.0
OP 16	299	5.0	0	0.0
OP 17	1,552	25.9	0	0.0
OP 18	1,199	20.0	0	0.0
OP 19	2,244	37.4	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 24	230	3.8	0	0.0
OP 25	4,400	73.3	0	0.0
OP 26	2,328	38.8	658	11.0
OP 27	5,075	84.6	408	6.8

PV: Bottom low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
CR 1018	0	0.0	0	0.0
KY 1009	0	0.0	0	0.0
Massingale Rd	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 17	68	1.1	0	0.0
OP 19	133	2.2	0	0.0
OP 25	297	5.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

Bottom and Route: CR 1018

No glare found

Bottom and Route: KY 1009

No glare found

Bottom and Route: Massingale Rd

No glare found

Bottom and FP: Wayne County Airport 1

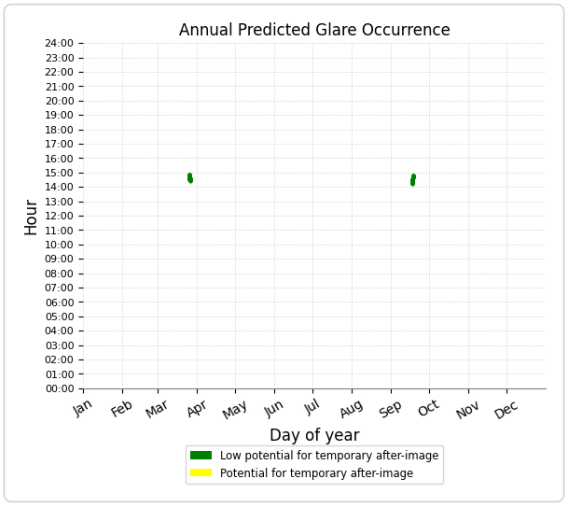
No glare found

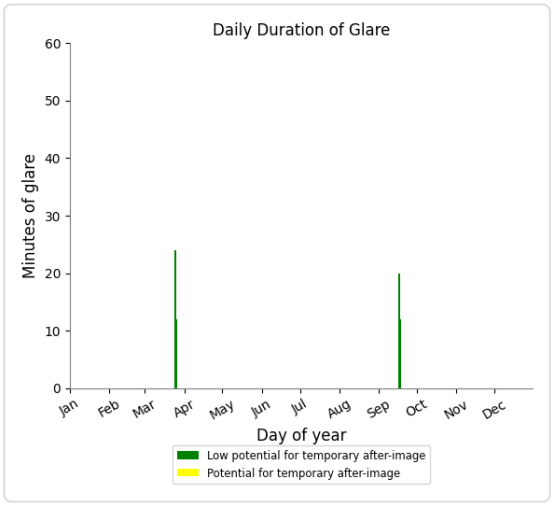
Bottom and FP: Wayne County Airport 2

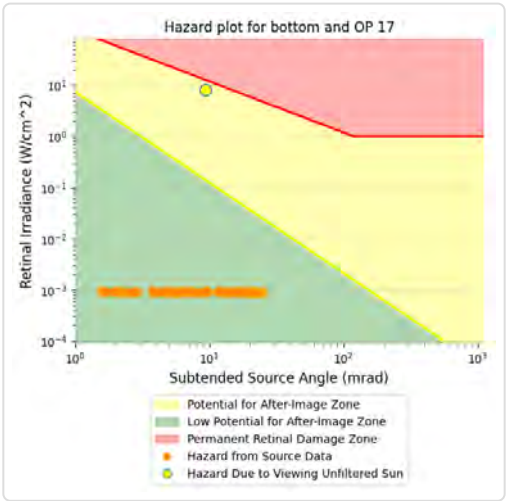
No glare found

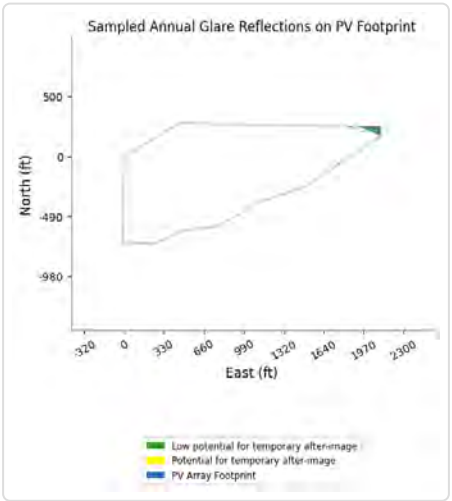
Bottom and OP 17

Yellow glare: none
Green glare: 68 min.





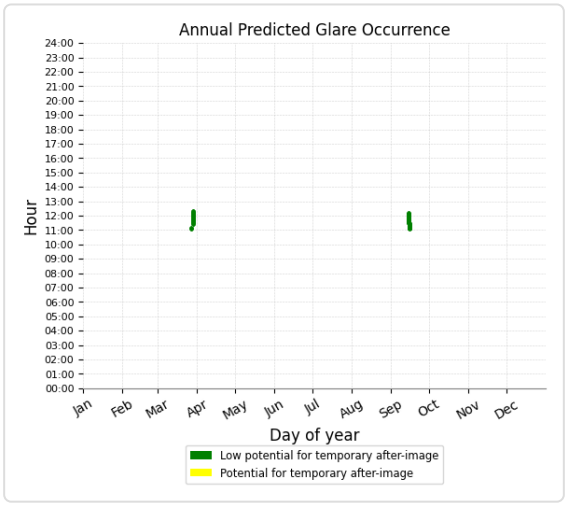


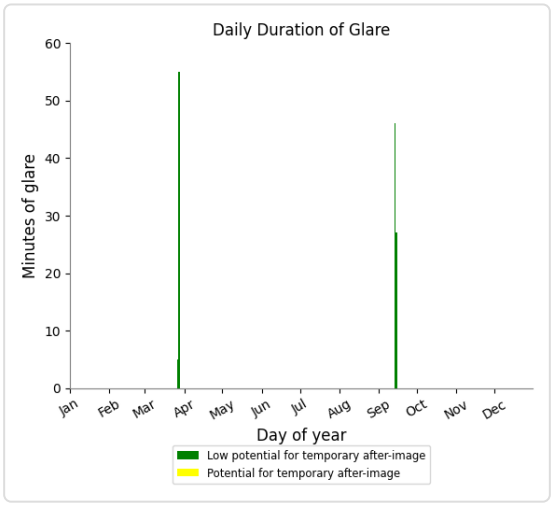


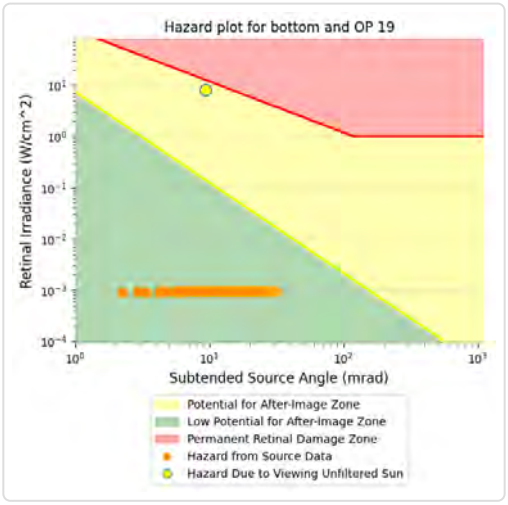
Bottom and OP 19

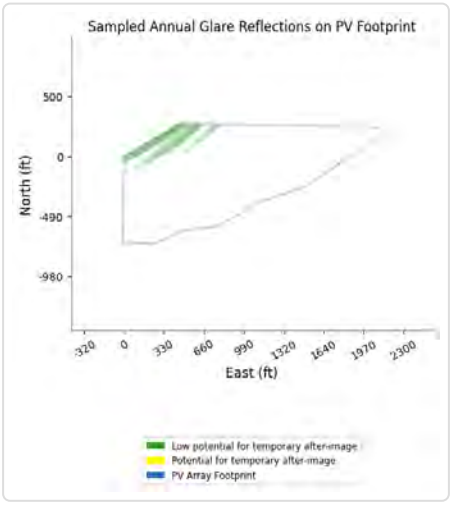
Yellow glare: none

Green glare: 133 min.



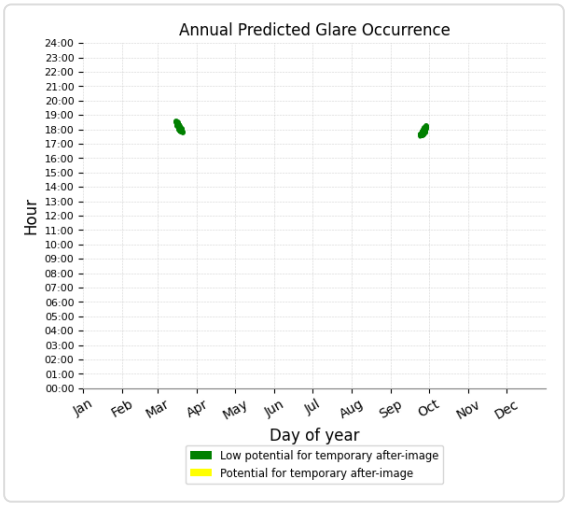


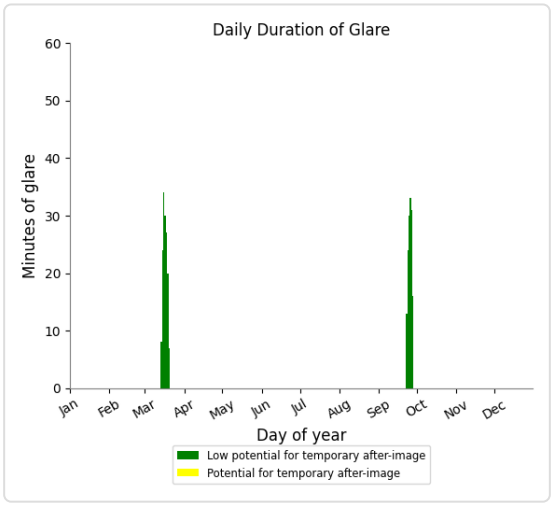


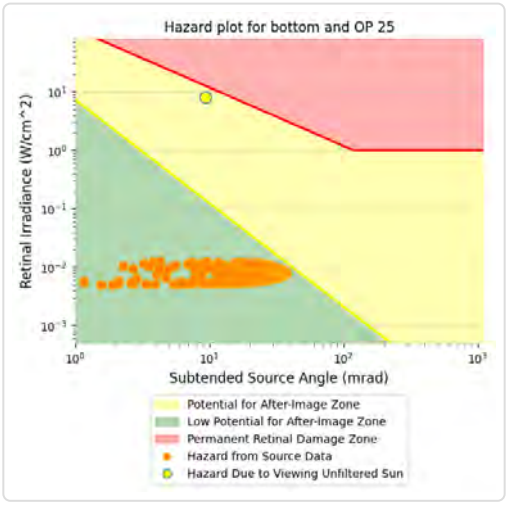


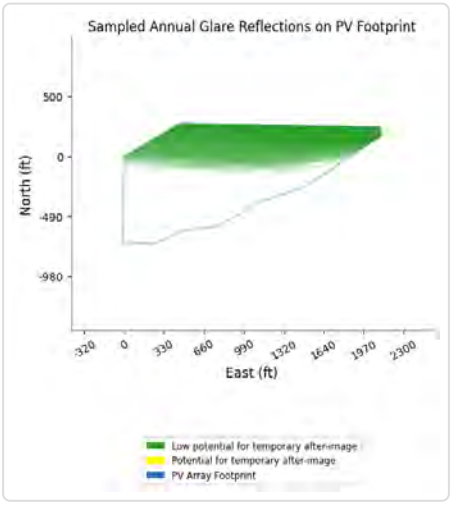
Bottom and OP 25

Yellow glare: none
Green glare: 297 min.









Bottom and OP 4

No glare found

Bottom and OP 5

No glare found

Bottom and OP 6

No glare found

Bottom and OP 7

No glare found

Bottom and OP 8

No glare found

Bottom and OP 9

No glare found

Bottom and OP 10

No glare found

Bottom and OP 11

No glare found

Bottom and OP 12

No glare found

Bottom and OP 13

No glare found

Bottom and OP 14

No glare found

Bottom and OP 15

No glare found

Bottom and OP 16

No glare found

Bottom and OP 18

No glare found

Bottom and OP 20

No glare found

Bottom and OP 21

No glare found

Bottom and OP 24

No glare found

Bottom and OP 26

No glare found

Bottom and OP 27

No glare found

PV: Main Northwest potential temporary after-image

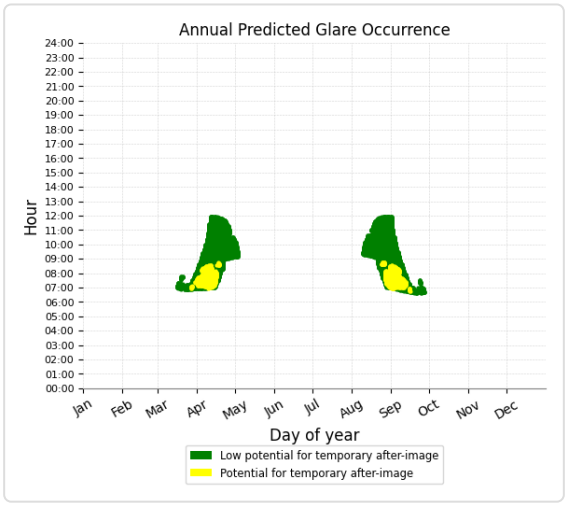
Receptor results ordered by category of glare

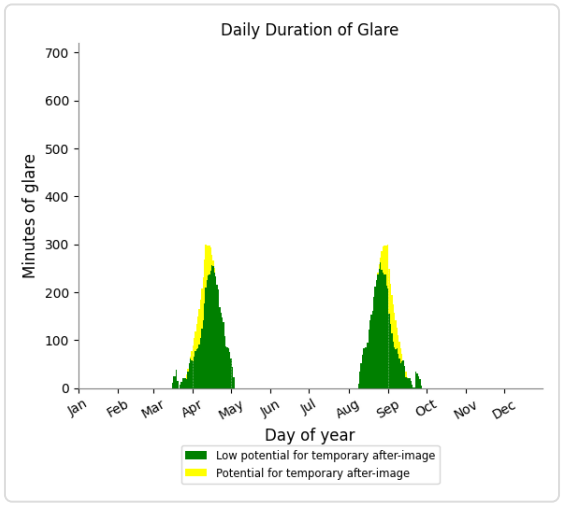
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Massingale Rd	10,343	172.4	2,119	35.3
KY 1009	2,924	48.7	0	0.0
CR 1018	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 5	1,593	26.6	0	0.0
OP 6	4,312	71.9	0	0.0
OP 12	1,781	29.7	0	0.0
OP 13	1,220	20.3	0	0.0
OP 18	116	1.9	0	0.0
OP 19	253	4.2	0	0.0
OP 26	1,548	25.8	0	0.0
OP 27	1,928	32.1	0	0.0
OP 4	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0

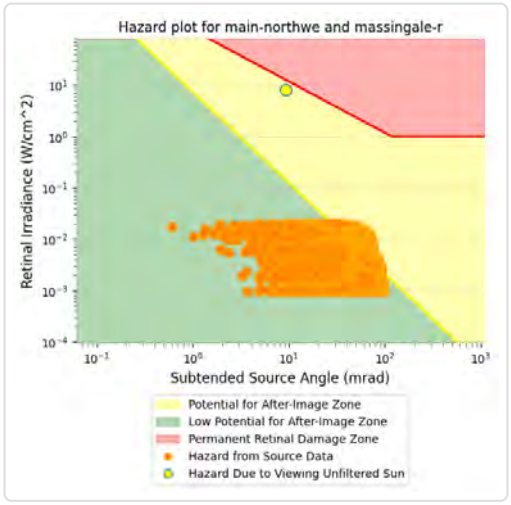
Main Northwest and Route: Massingale Rd

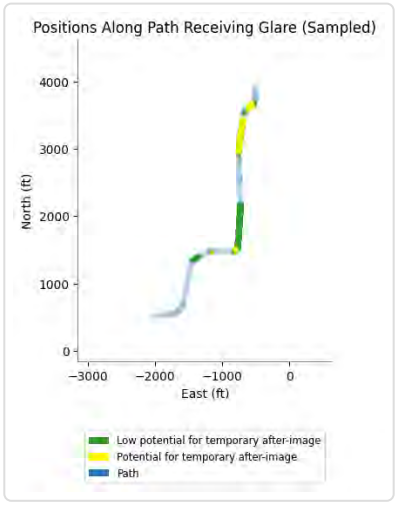
Yellow glare: 2,119 min.

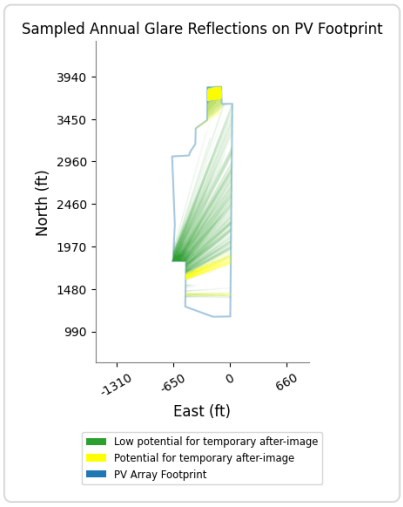
Green glare: 10,343 min.







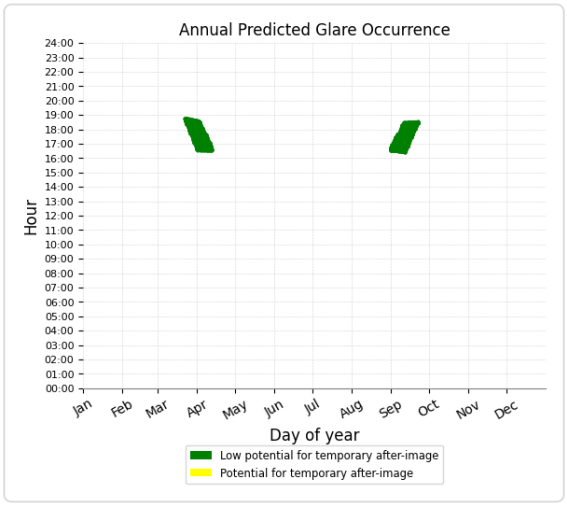


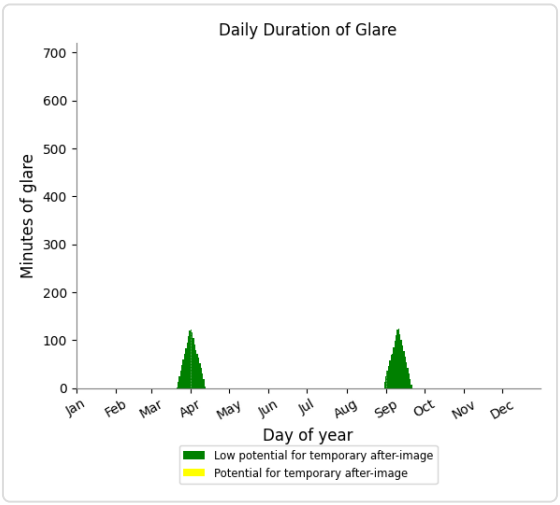


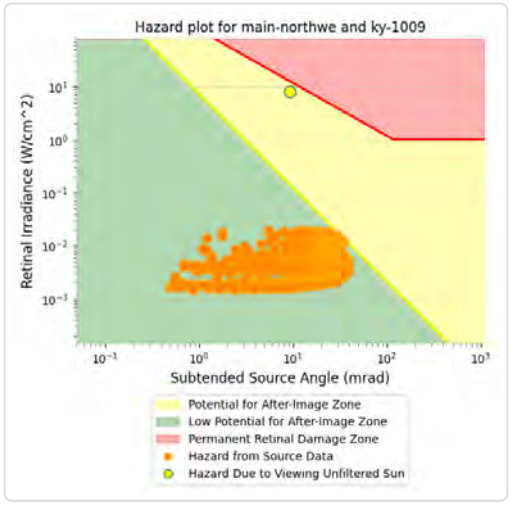
Main Northwest and Route: KY 1009

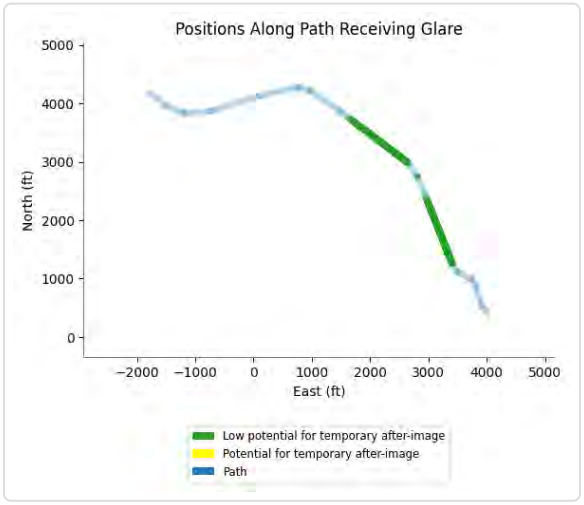
Yellow glare: none

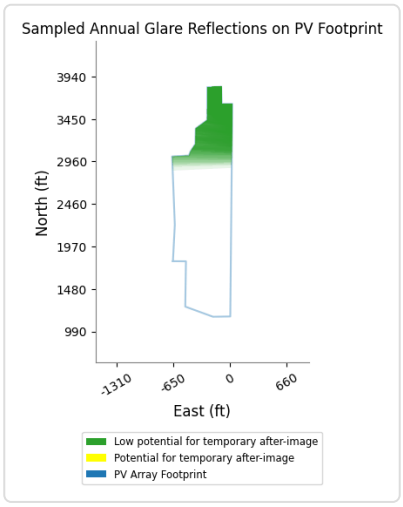
Green glare: 2,924 min.











Main Northwest and Route: CR 1018

No glare found

Main Northwest and FP: Wayne County Airport 1

No glare found

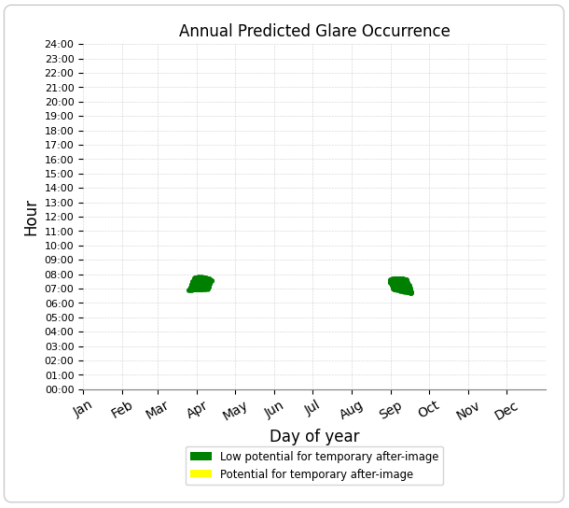
Main Northwest and FP: Wayne County Airport 2

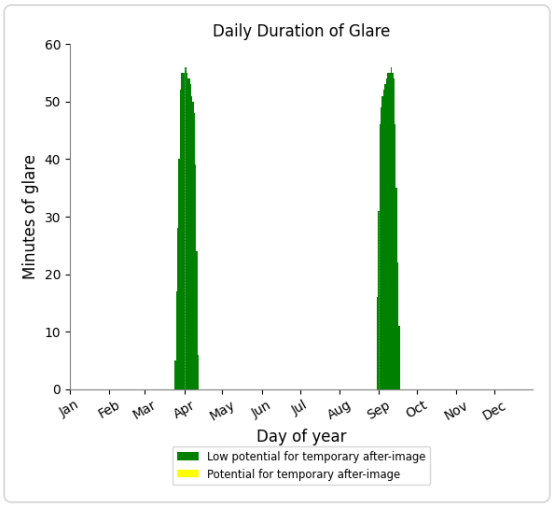
No glare found

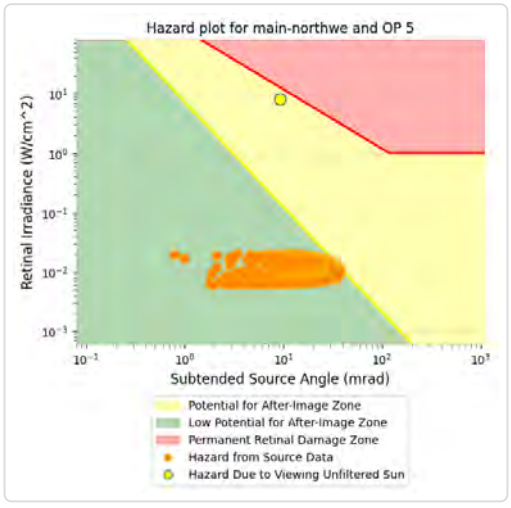
Main Northwest and OP 5

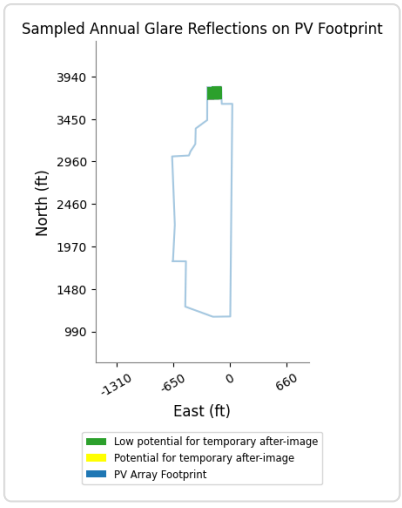
Yellow glare: none

Green glare: 1,593 min.





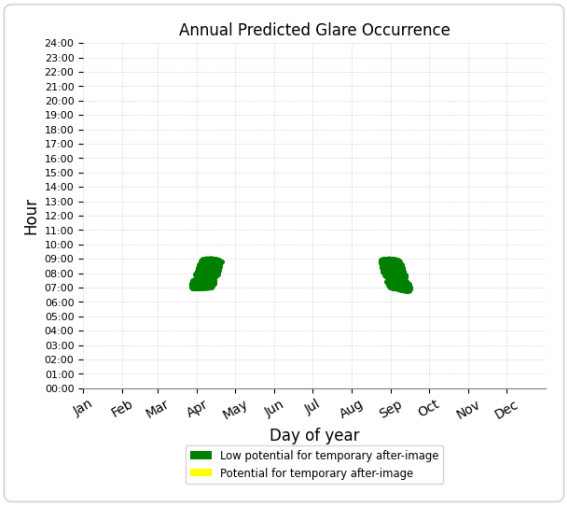


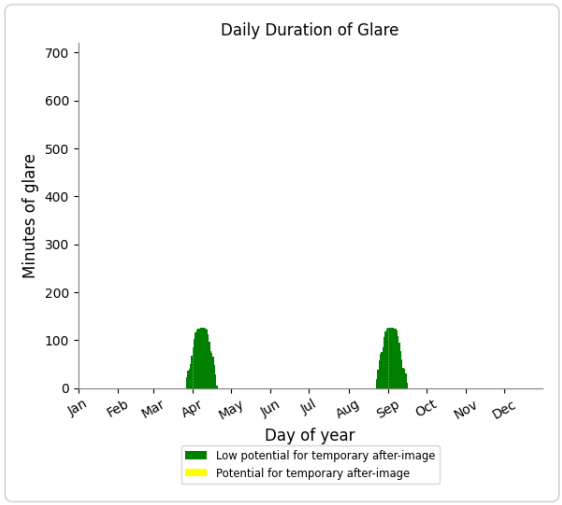


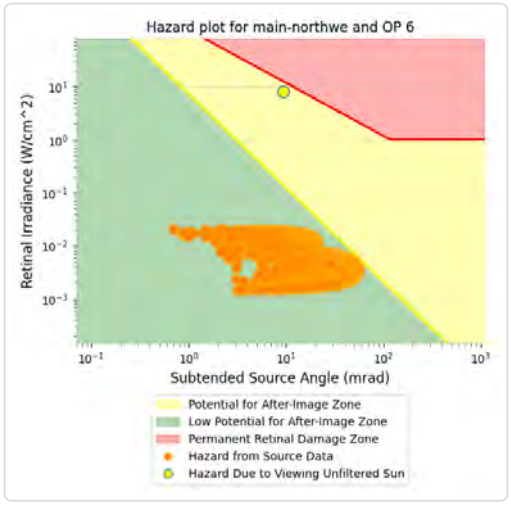
Main Northwest and OP 6

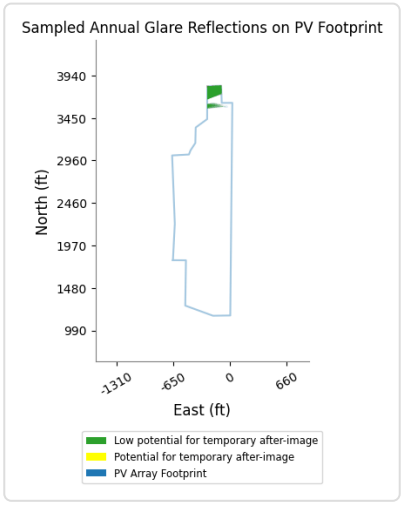
Yellow glare: none

Green glare: 4,312 min.





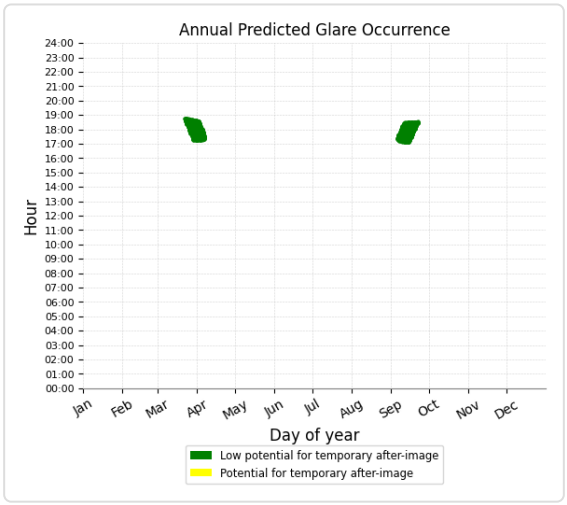


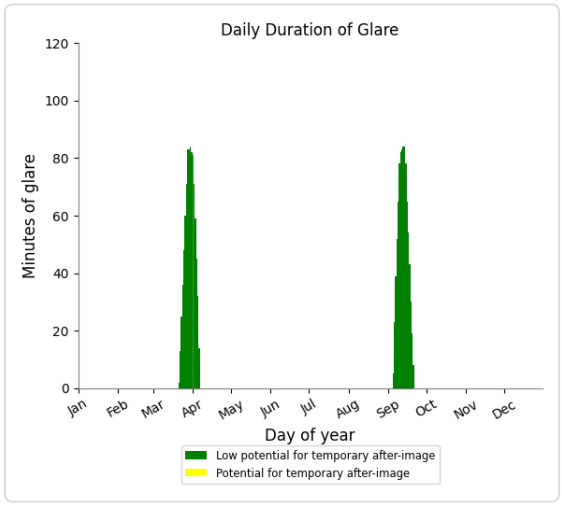


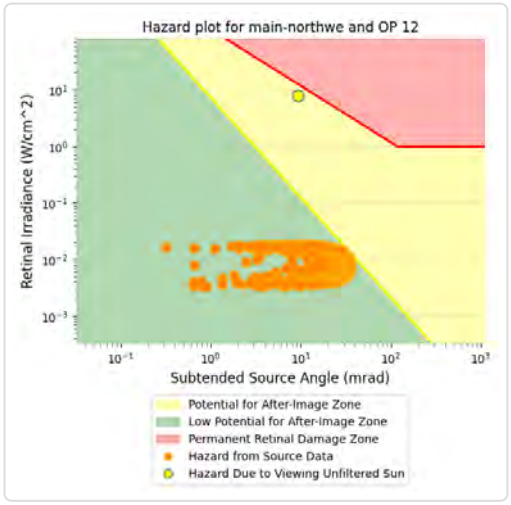
Main Northwest and OP 12

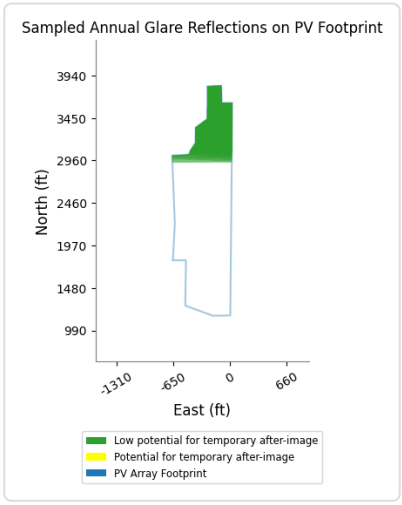
Yellow glare: none

Green glare: 1,781 min.





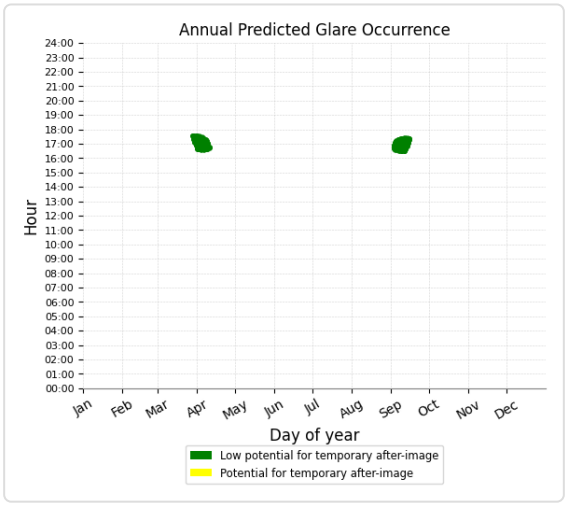


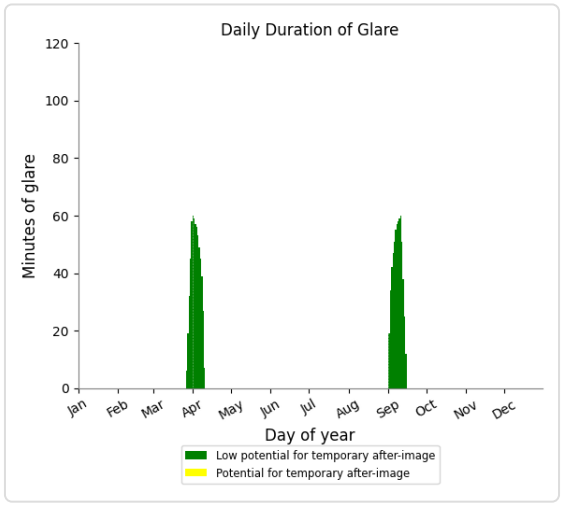


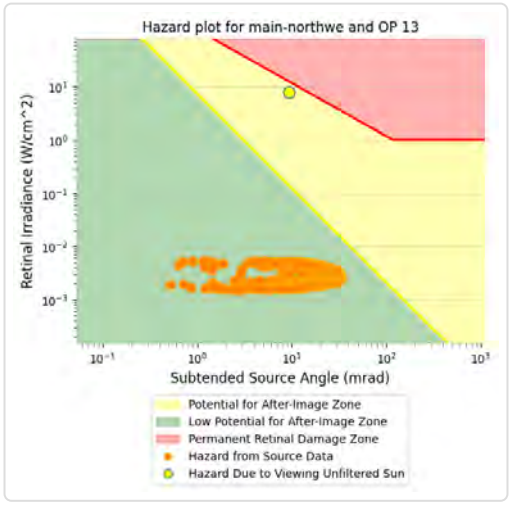
Main Northwest and OP 13

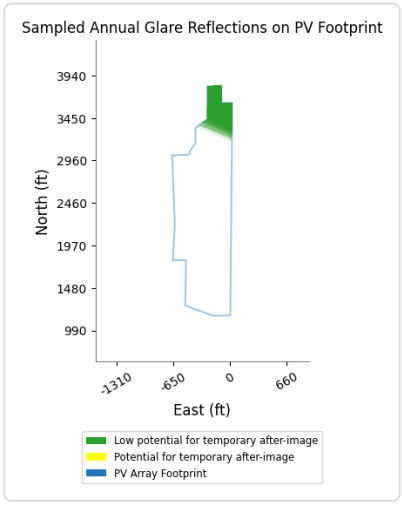
Yellow glare: none

Green glare: 1,220 min.





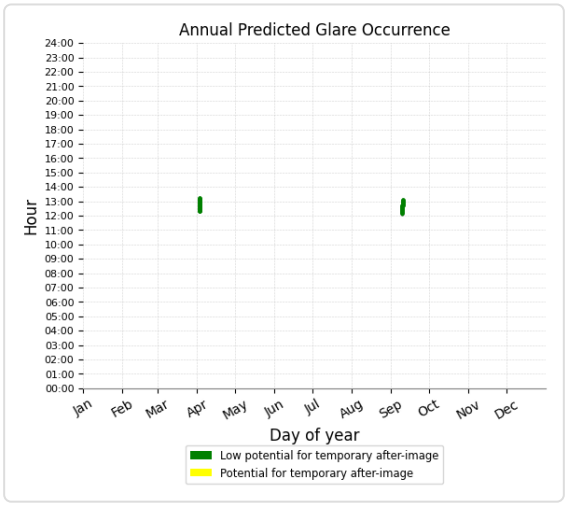


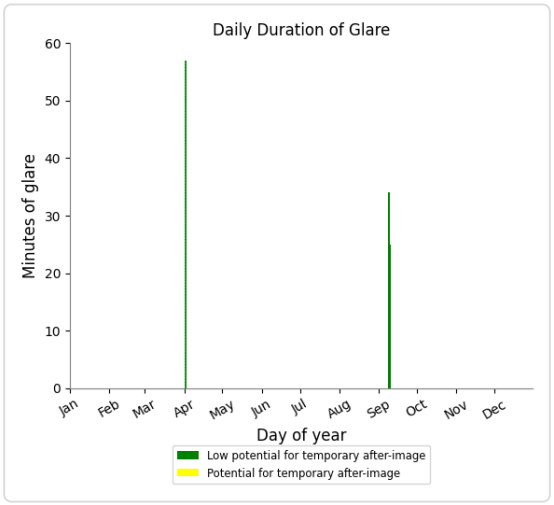


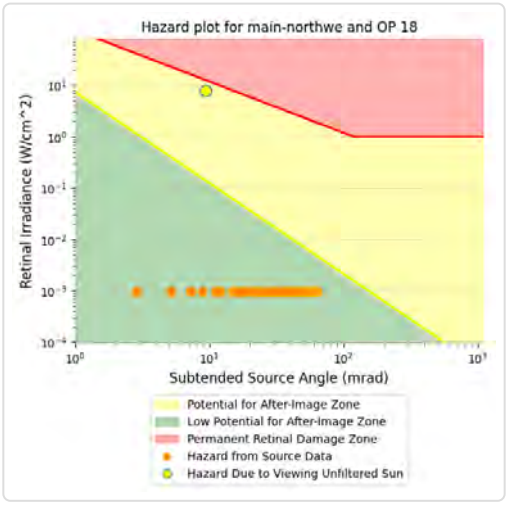
Main Northwest and OP 18

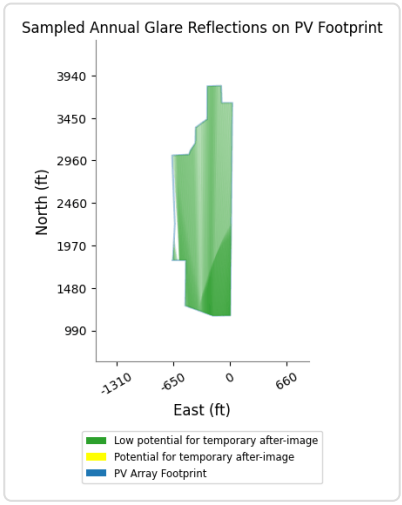
Yellow glare: none

Green glare: 116 min.





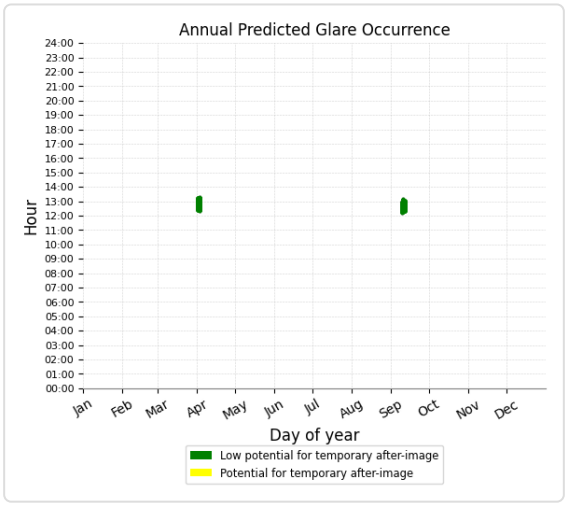


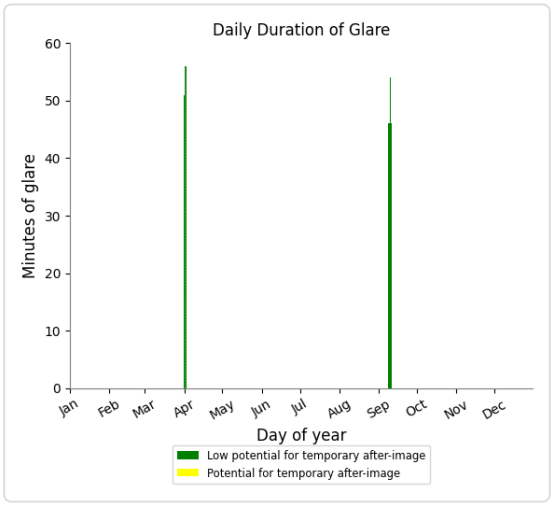


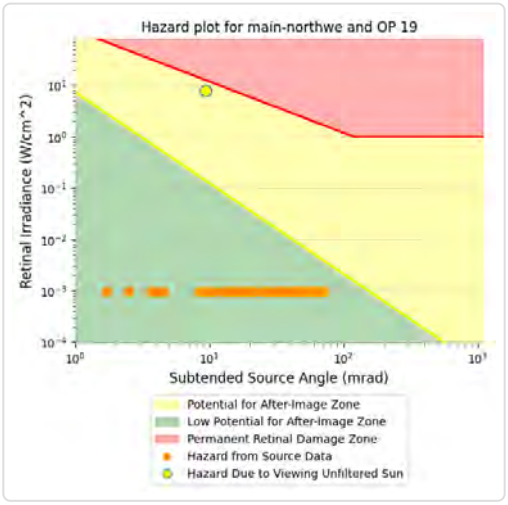
Main Northwest and OP 19

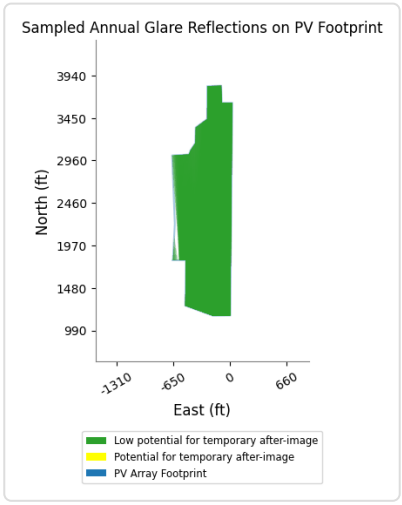
Yellow glare: none

Green glare: 253 min.





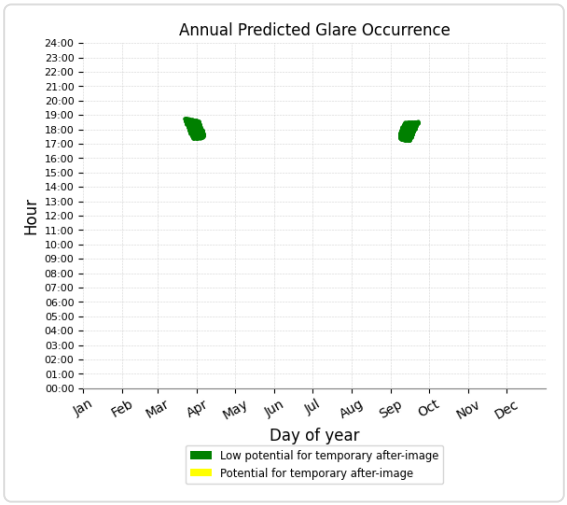


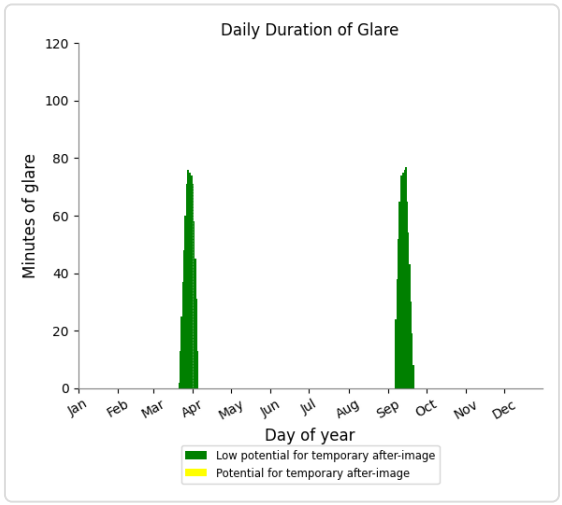


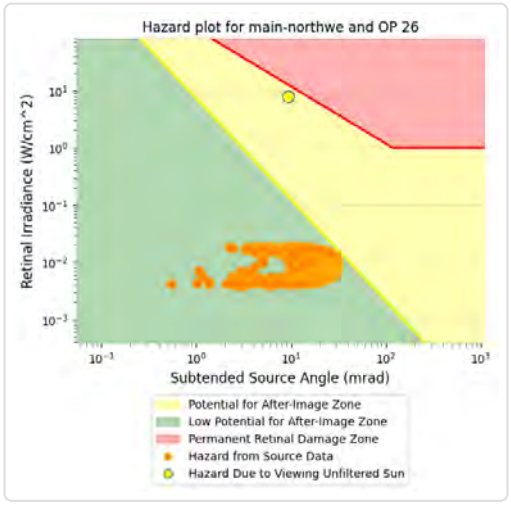
Main Northwest and OP 26

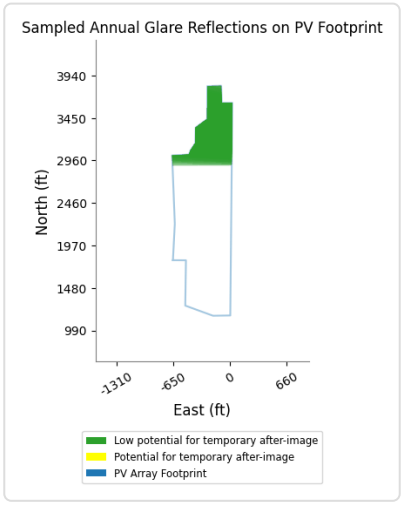
Yellow glare: none

Green glare: 1,548 min.



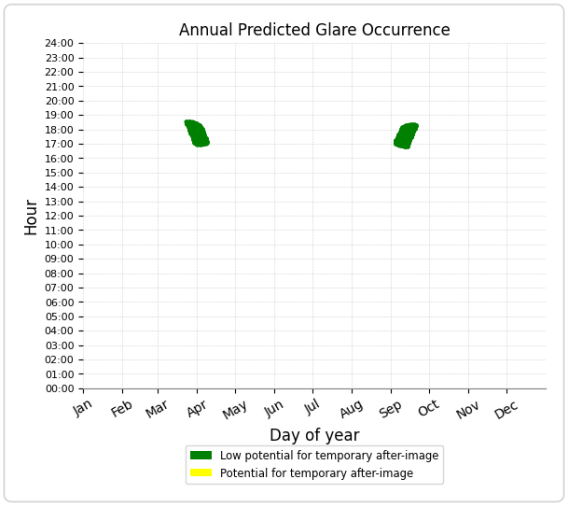


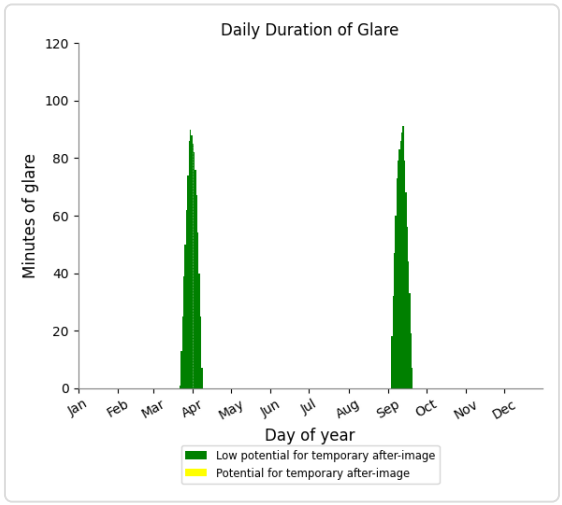


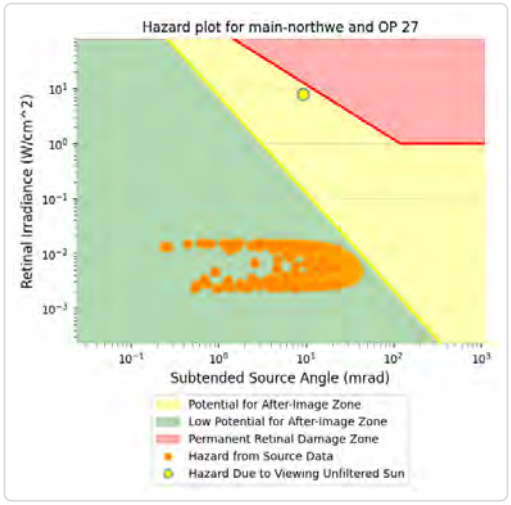


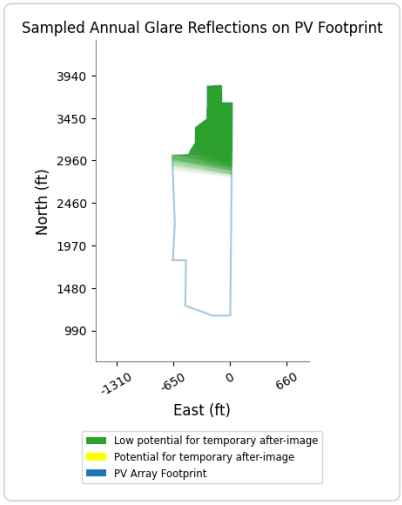
Main Northwest and OP 27

Yellow glare: none
Green glare: 1,928 min.









Main Northwest and OP 4

No glare found

Main Northwest and OP 7

No glare found

Main Northwest and OP 8

No glare found

Main Northwest and OP 9

No glare found

Main Northwest and OP 10

No glare found

Main Northwest and OP 11

No glare found

Main Northwest and OP 14

No glare found

Main Northwest and OP 15

No glare found

Main Northwest and OP 16

No glare found

Main Northwest and OP 17

No glare found

Main Northwest and OP 20

No glare found

Main Northwest and OP 21

No glare found

Main Northwest and OP 24

No glare found

Main Northwest and OP 25

No glare found

PV: Main Southwest low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
CR 1018	0	0.0	0	0.0
KY 1009	0	0.0	0	0.0
Massingale Rd	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 18	677	11.3	0	0.0
OP 19	851	14.2	0	0.0
OP 25	163	2.7	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

Main Southwest and Route: CR 1018

No glare found

Main Southwest and Route: KY 1009

No glare found

Main Southwest and Route: Massingale Rd

No glare found

Main Southwest and FP: Wayne County Airport 1

No glare found

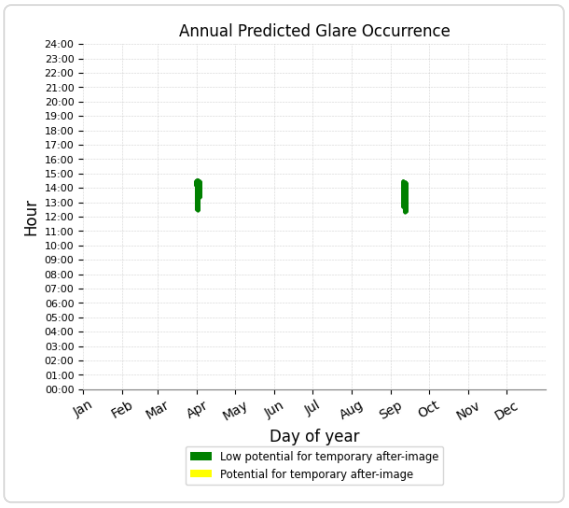
Main Southwest and FP: Wayne County Airport 2

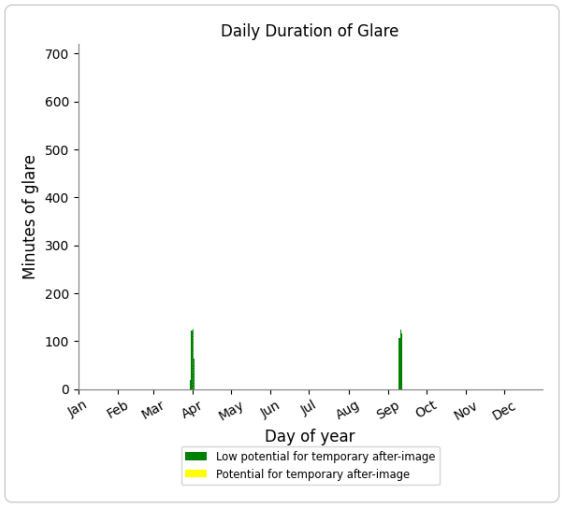
No glare found

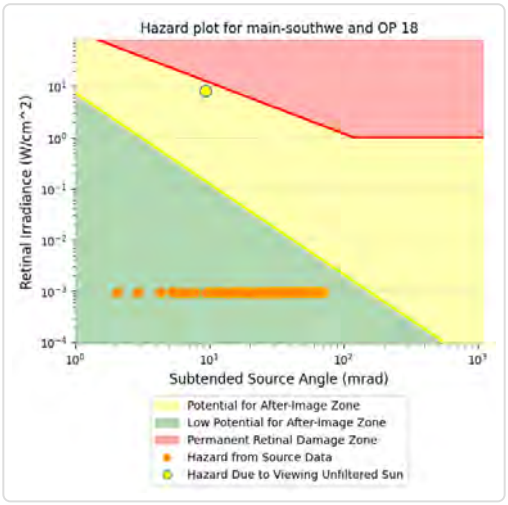
Main Southwest and OP 18

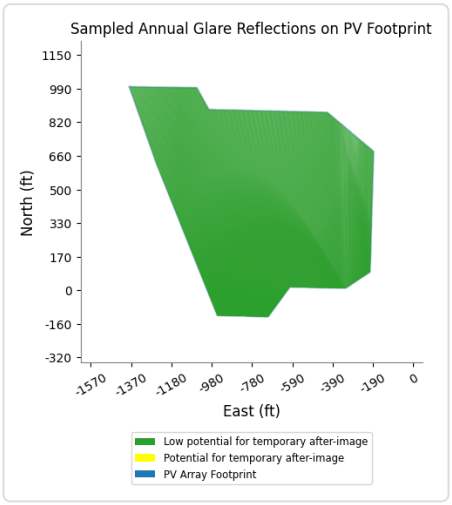
Yellow glare: none

Green glare: 677 min.





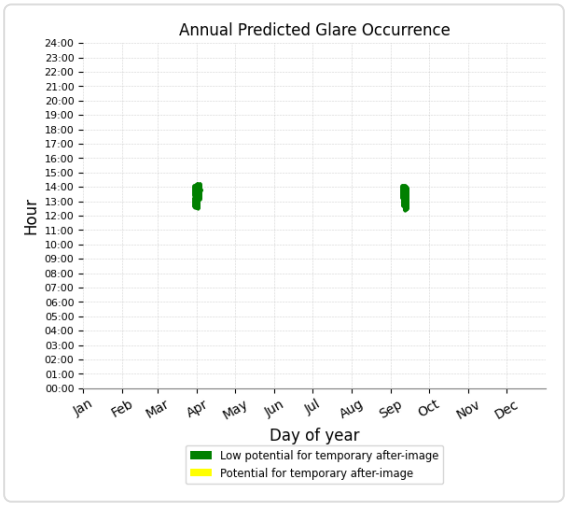


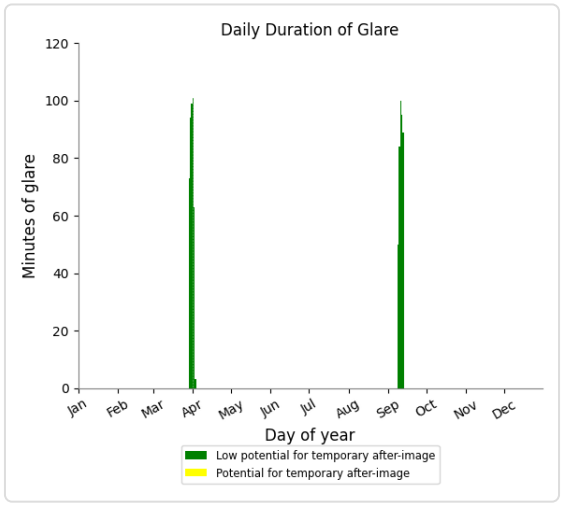


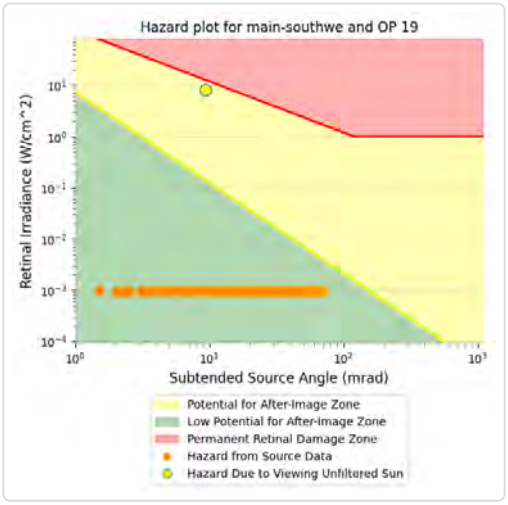
Main Southwest and OP 19

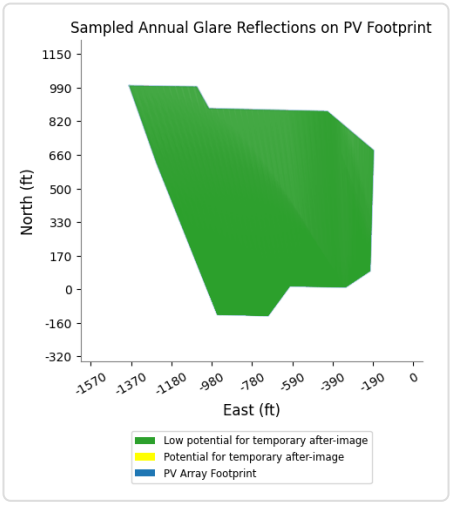
Yellow glare: none

Green glare: 851 min.





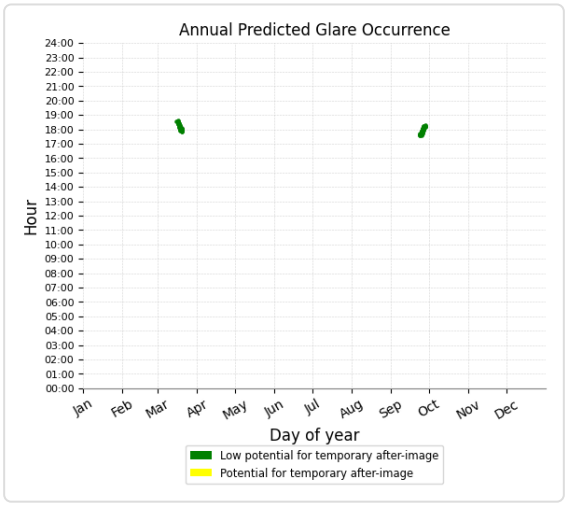


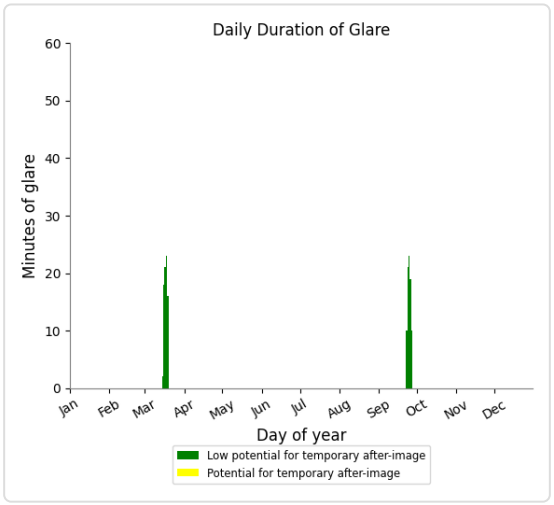


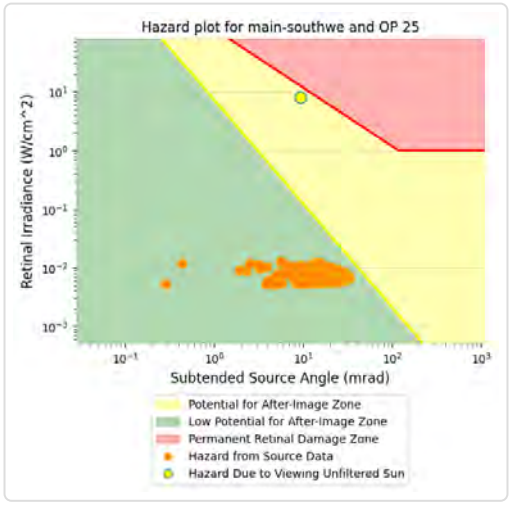
Main Southwest and OP 25

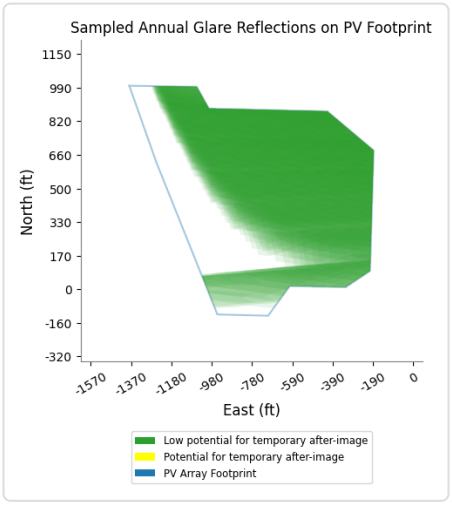
Yellow glare: none

Green glare: 163 min.









Main Southwest and OP 4

No glare found

Main Southwest and OP 5

No glare found

Main Southwest and OP 6

No glare found

Main Southwest and OP 7

No glare found

Main Southwest and OP 8

No glare found

Main Southwest and OP 9

No glare found

Main Southwest and OP 10

No glare found

Main Southwest and OP 11

No glare found

Main Southwest and OP 12

No glare found

Main Southwest and OP 13

No glare found

Main Southwest and OP 14

No glare found

Main Southwest and OP 15

No glare found

Main Southwest and OP 16

No glare found

Main Southwest and OP 17

No glare found

Main Southwest and OP 20

No glare found

Main Southwest and OP 21

No glare found

Main Southwest and OP 24

No glare found

Main Southwest and OP 26

No glare found

Main Southwest and OP 27

No glare found

PV: Middle bottom low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
CR 1018	0	0.0	0	0.0
KY 1009	0	0.0	0	0.0
Massingale Rd	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 14	52	0.9	0	0.0
OP 17	194	3.2	0	0.0
OP 18	44	0.7	0	0.0
OP 19	282	4.7	0	0.0
OP 25	237	4.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

Middle bottom and Route: CR 1018

No glare found

Middle bottom and Route: KY 1009

No glare found

Middle bottom and Route: Massingale Rd

No glare found

Middle bottom and FP: Wayne County Airport 1

No glare found

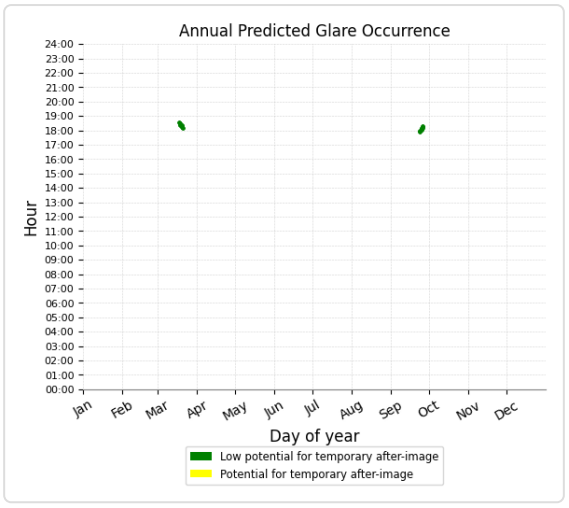
Middle bottom and FP: Wayne County Airport 2

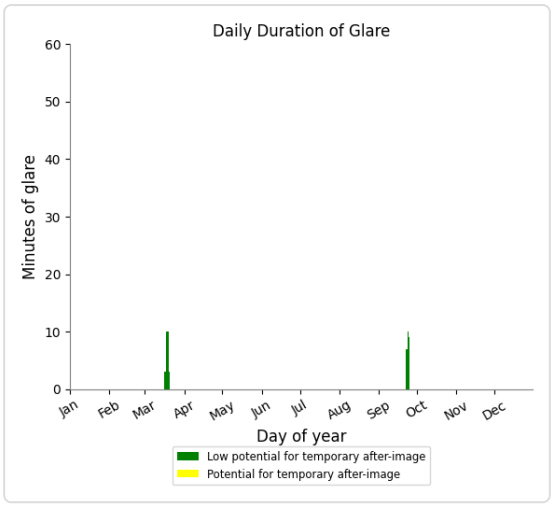
No glare found

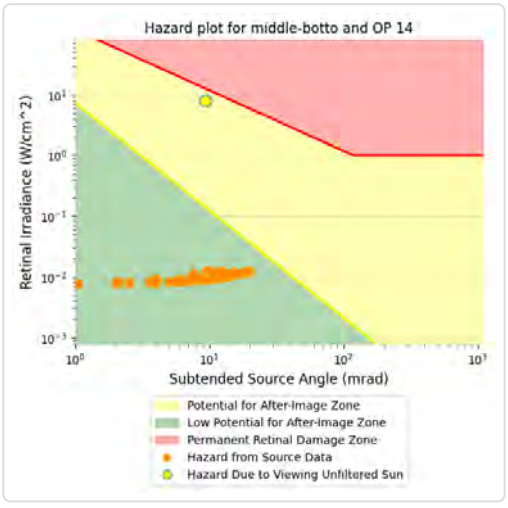
Middle bottom and OP 14

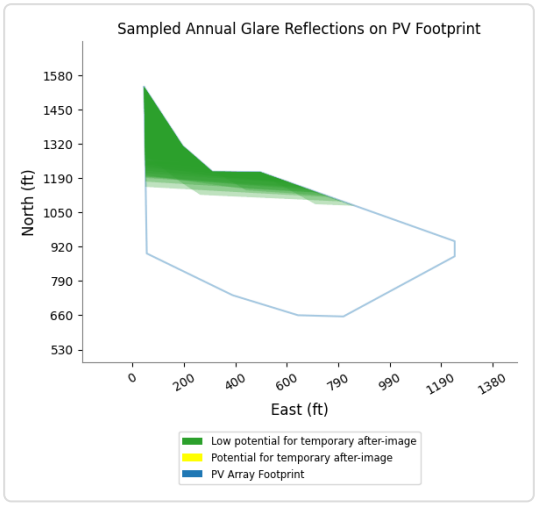
Yellow glare: none

Green glare: 52 min.





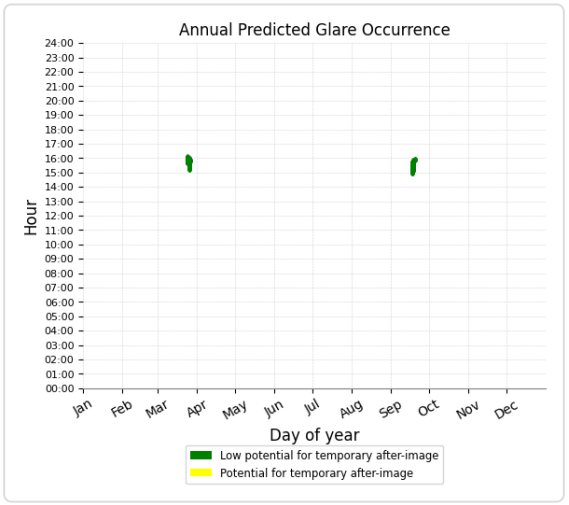


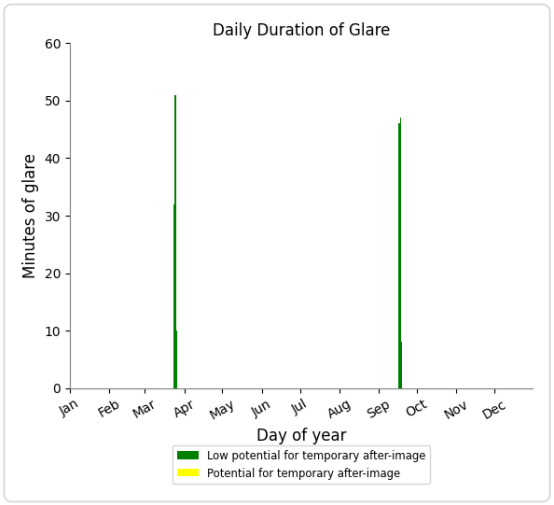


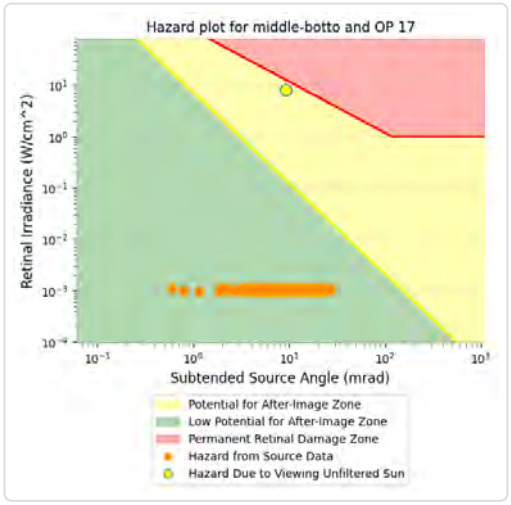
Middle bottom and OP 17

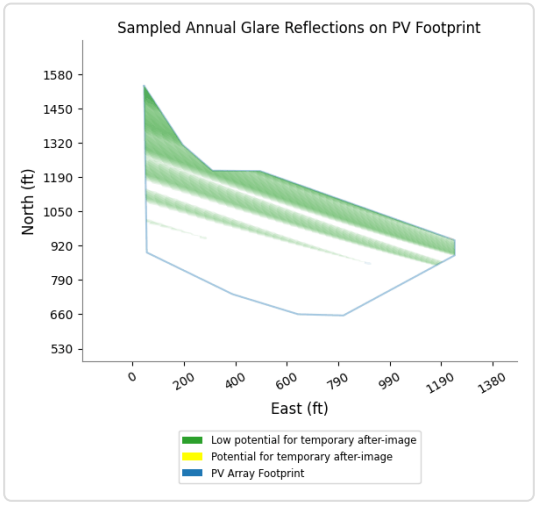
Yellow glare: none

Green glare: 194 min.





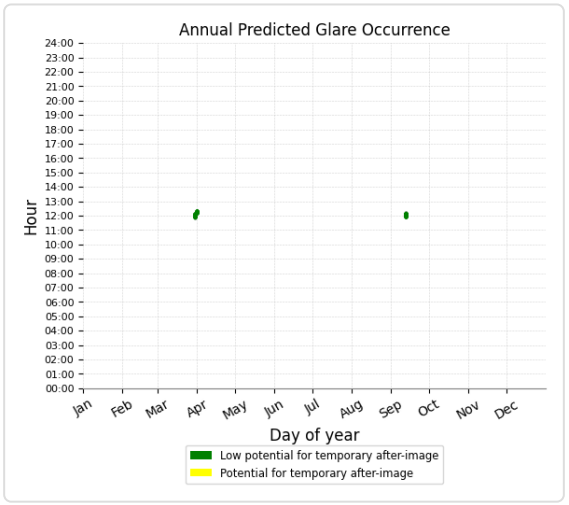


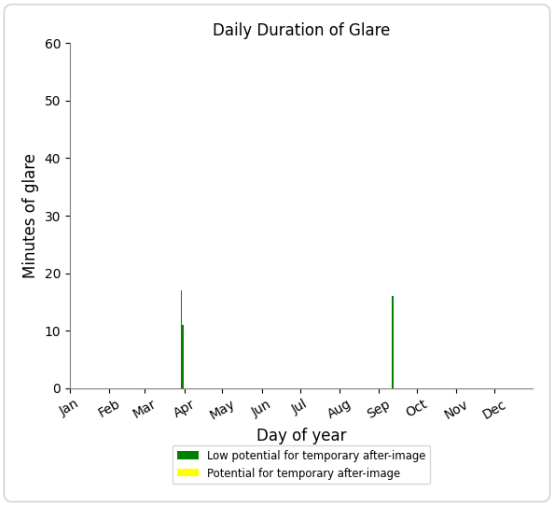


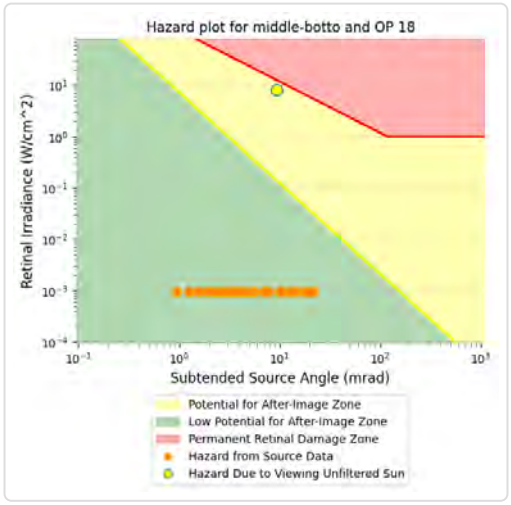
Middle bottom and OP 18

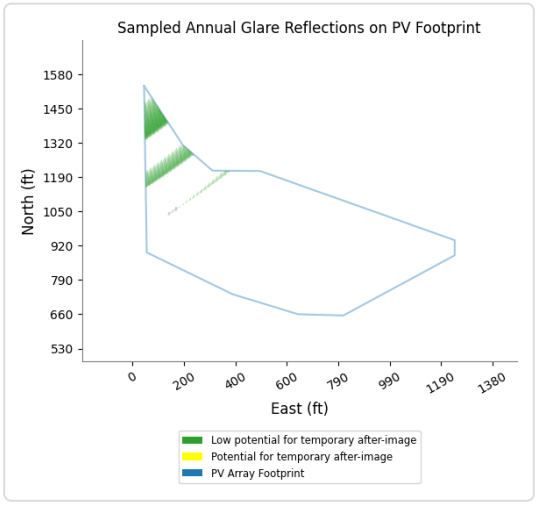
Yellow glare: none

Green glare: 44 min.





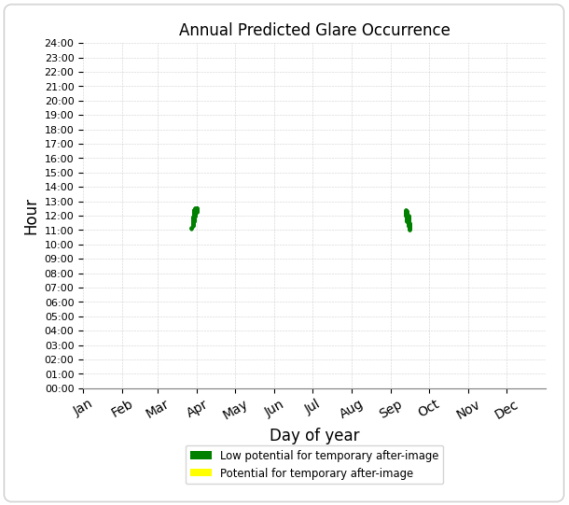


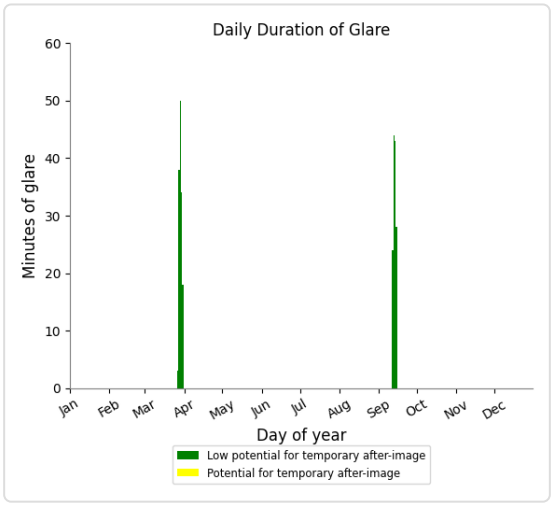


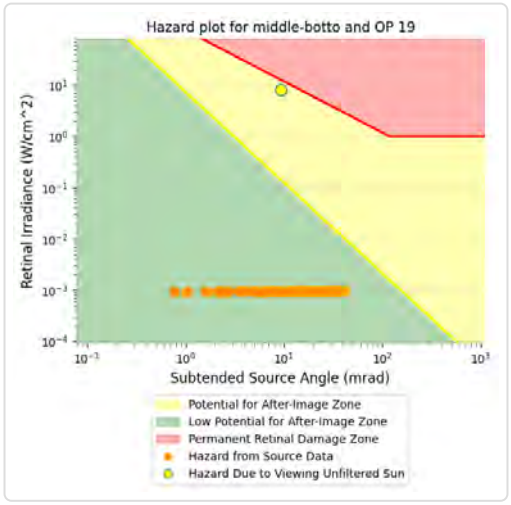
Middle bottom and OP 19

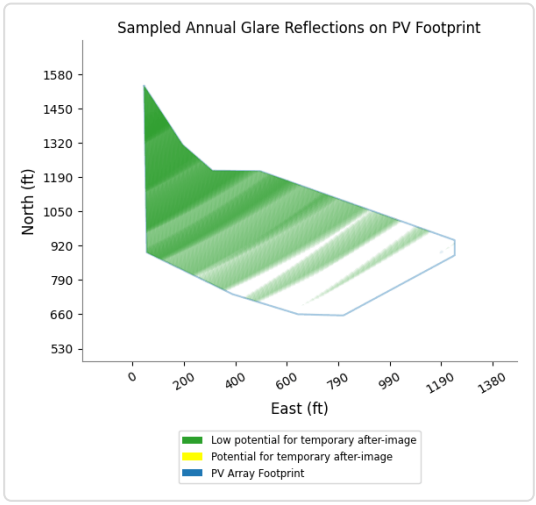
Yellow glare: none

Green glare: 282 min.



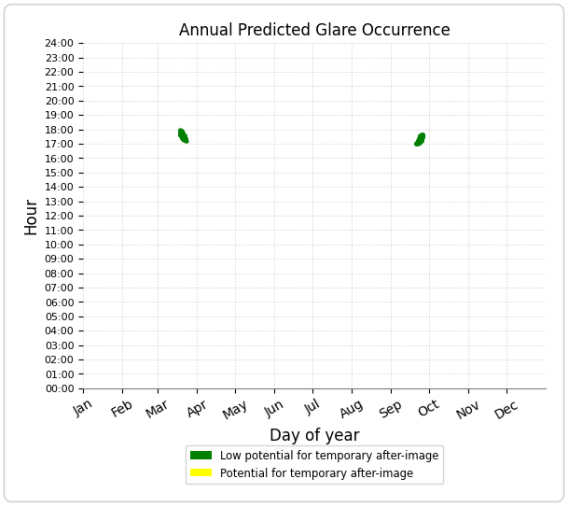


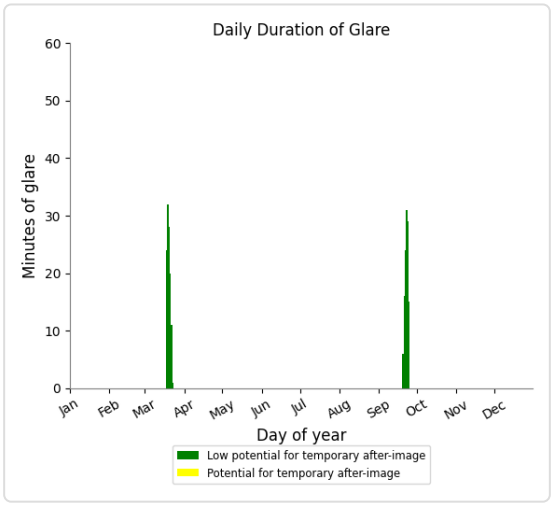


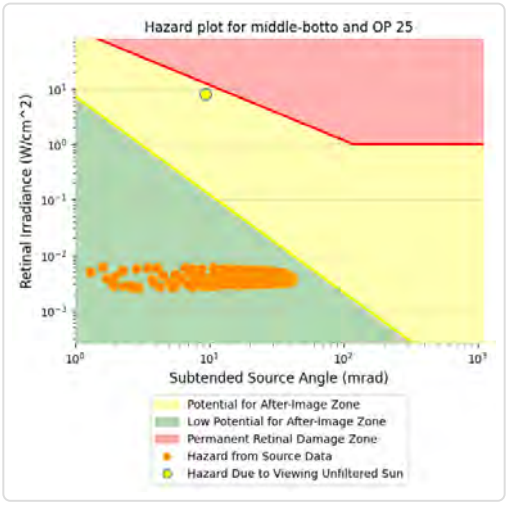


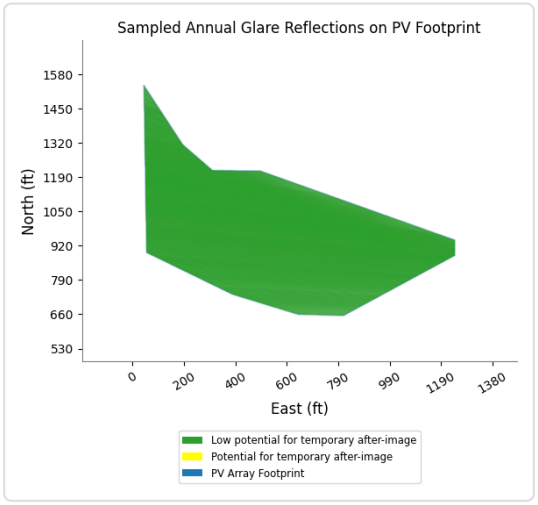
Middle bottom and OP 25

Yellow glare: none
Green glare: 237 min.









Middle bottom and OP 4

No glare found

Middle bottom and OP 5

No glare found

Middle bottom and OP 6

No glare found

Middle bottom and OP 7

No glare found

Middle bottom and OP 8

No glare found

Middle bottom and OP 9

No glare found

Middle bottom and OP 10

No glare found

Middle bottom and OP 11

No glare found

Middle bottom and OP 12

No glare found

Middle bottom and OP 13

No glare found

Middle bottom and OP 15

No glare found

Middle bottom and OP 16

No glare found

Middle bottom and OP 20

No glare found

Middle bottom and OP 21

No glare found

Middle bottom and OP 24

No glare found

Middle bottom and OP 26

No glare found

Middle bottom and OP 27

No glare found

PV: Middle Top potential temporary after-image

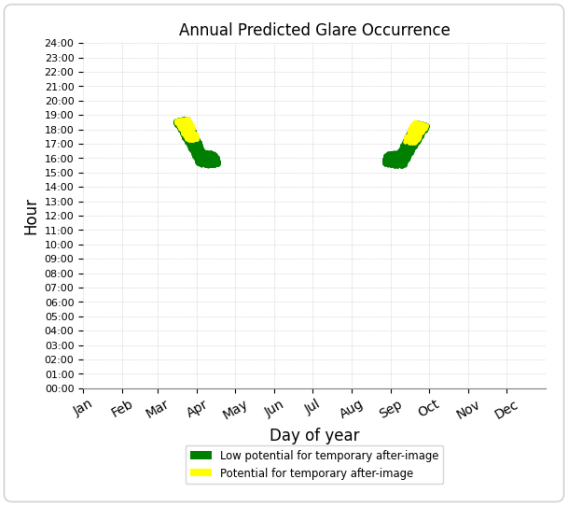
Receptor results ordered by category of glare

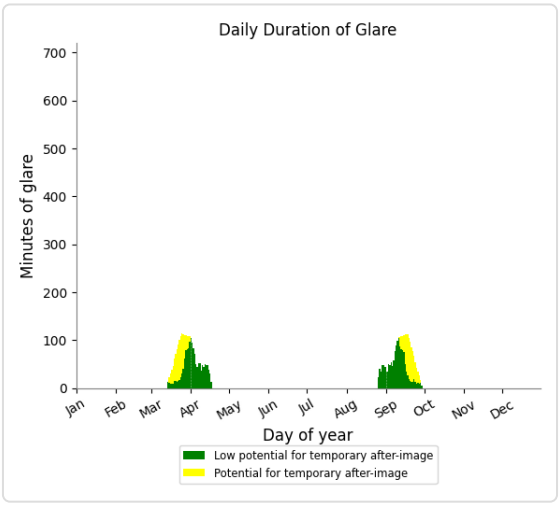
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
KY 1009	3,056	50.9	1,623	27.1
Massingale Rd	108	1.8	0	0.0
CR 1018	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 12	773	12.9	857	14.3
OP 26	780	13.0	658	11.0
OP 27	1,504	25.1	408	6.8
OP 13	1,511	25.2	0	0.0
OP 14	878	14.6	0	0.0
OP 16	131	2.2	0	0.0
OP 17	835	13.9	0	0.0
OP 18	281	4.7	0	0.0
OP 19	502	8.4	0	0.0
OP 25	1,863	31.1	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0

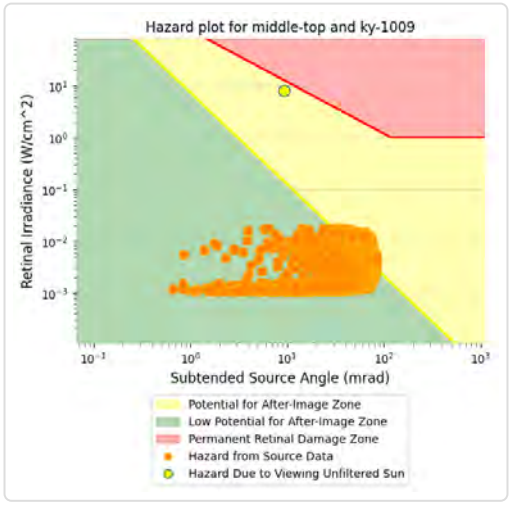
Middle Top and Route: KY 1009

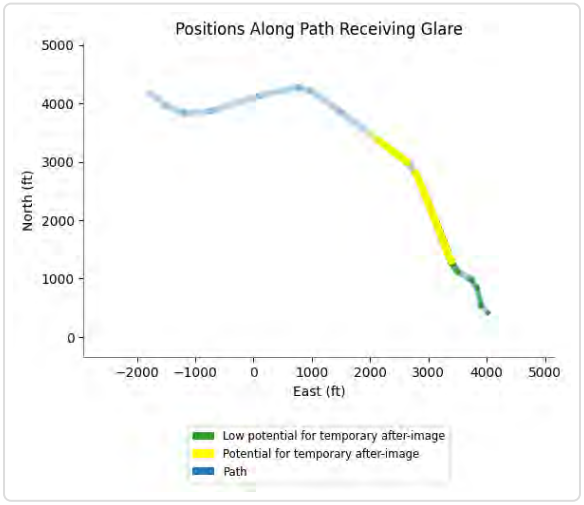
Yellow glare: 1,623 min.

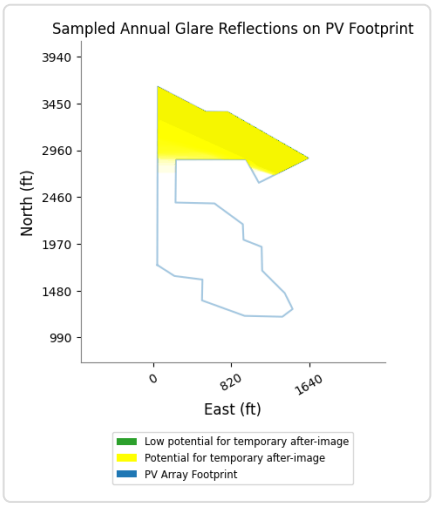
Green glare: 3,056 min.







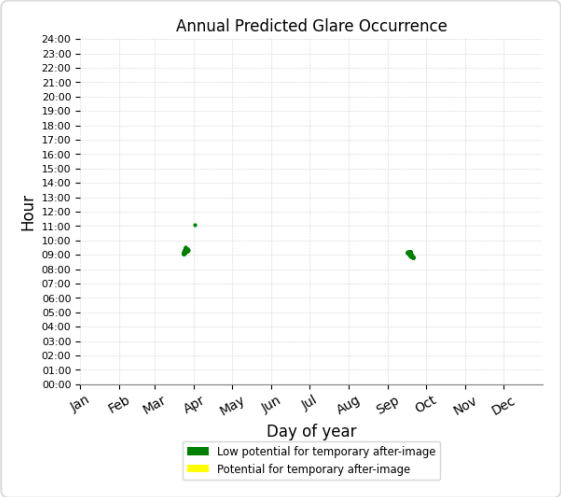


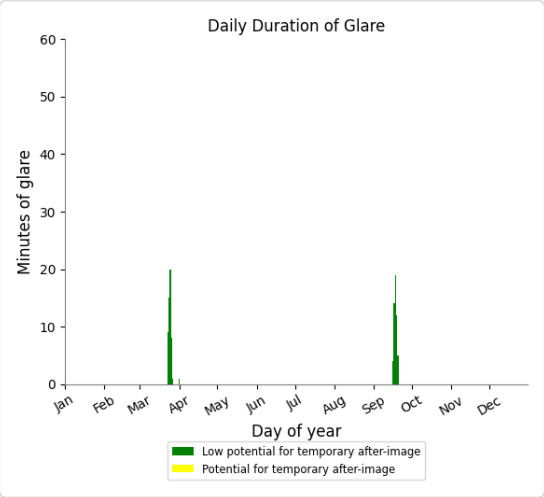


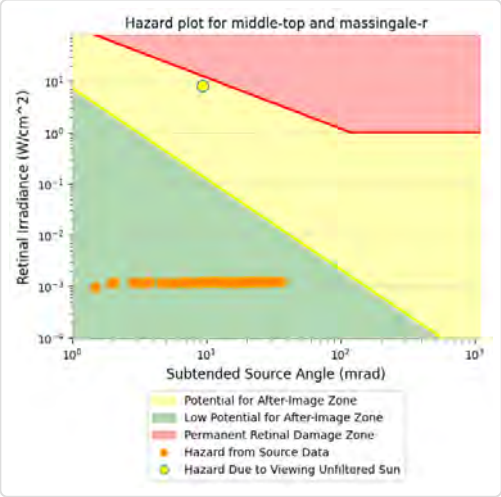
Middle Top and Route: Massingale Rd

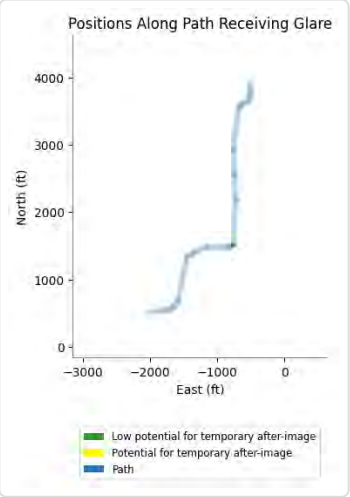
Yellow glare: none

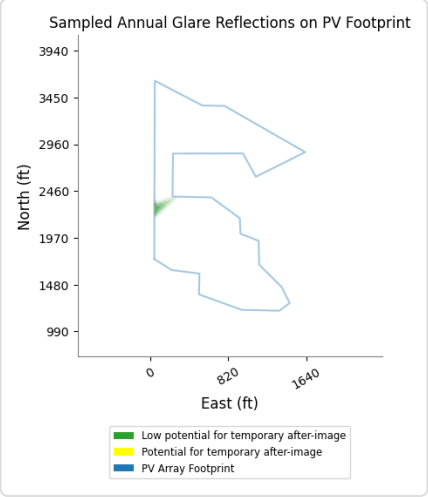
Green glare: 108 min.











Middle Top and Route: CR 1018

No glare found

Middle Top and FP: Wayne County Airport 1

No glare found

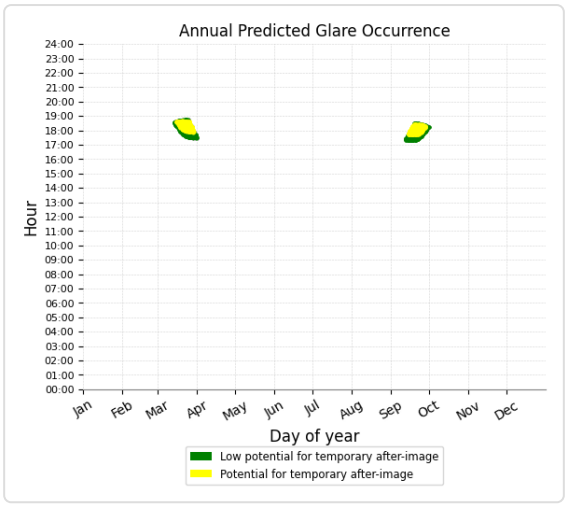
Middle Top and FP: Wayne County Airport 2

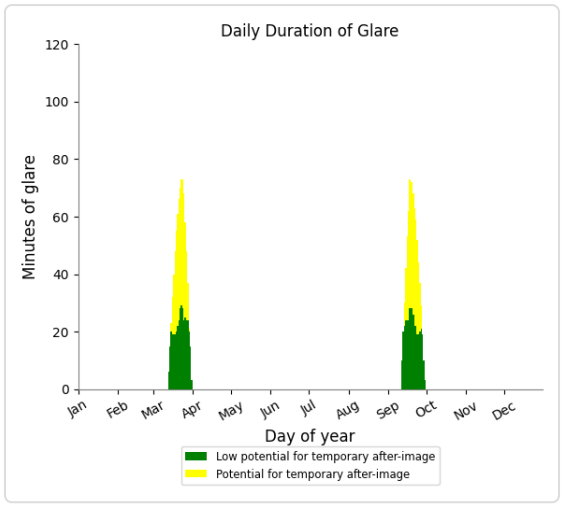
No glare found

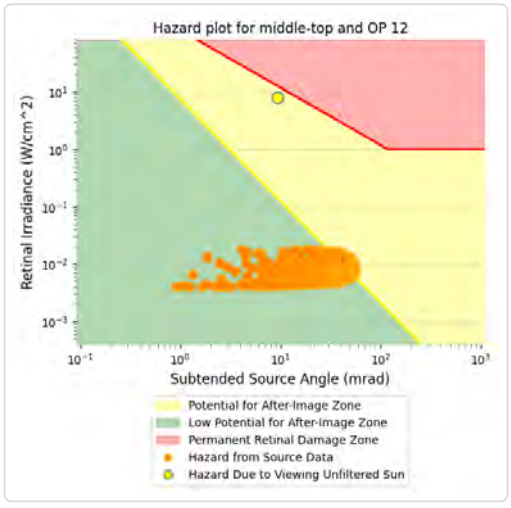
Middle Top and OP 12

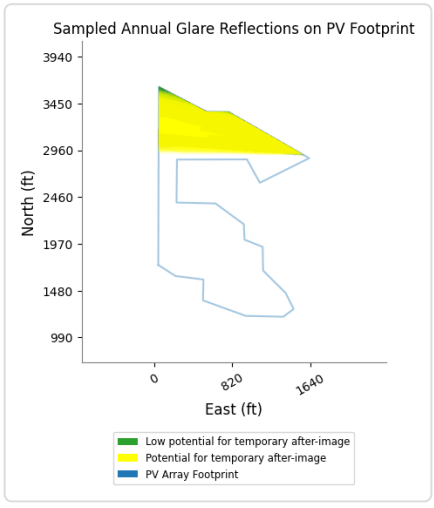
Yellow glare: 857 min.

Green glare: 773 min.





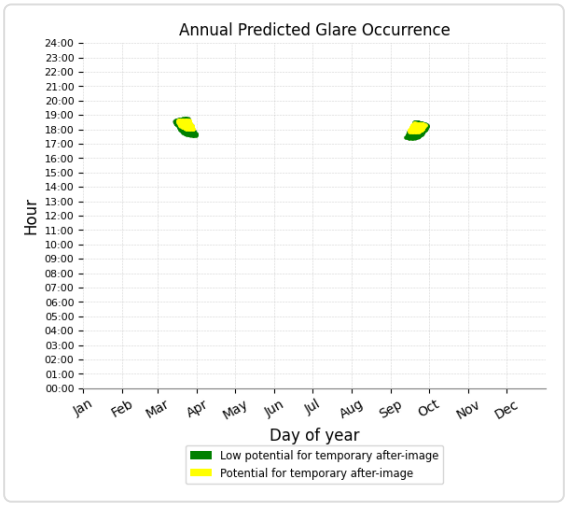


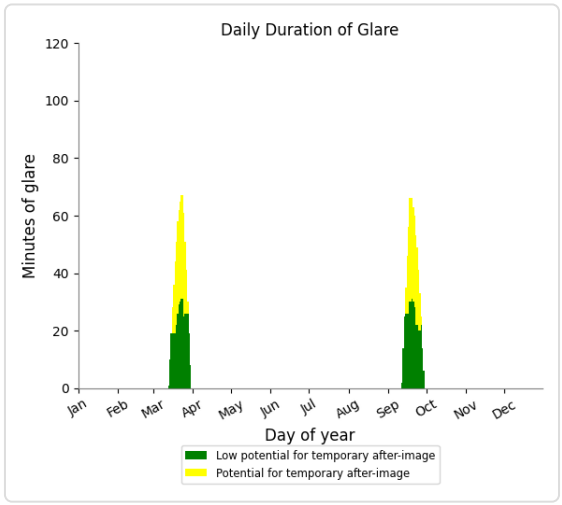


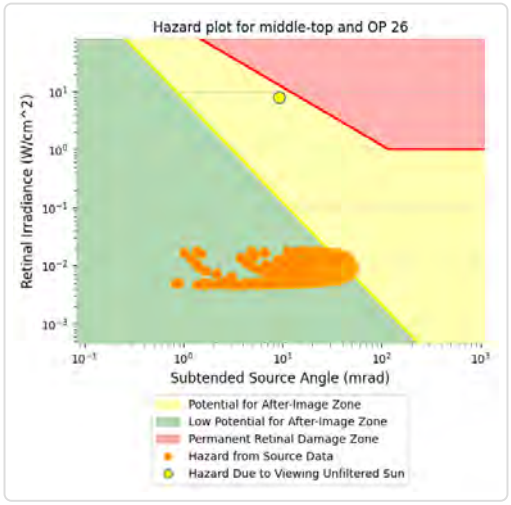
Middle Top and OP 26

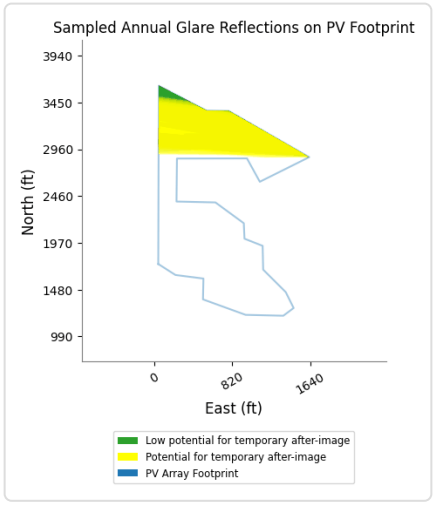
Yellow glare: 658 min.

Green glare: 780 min.





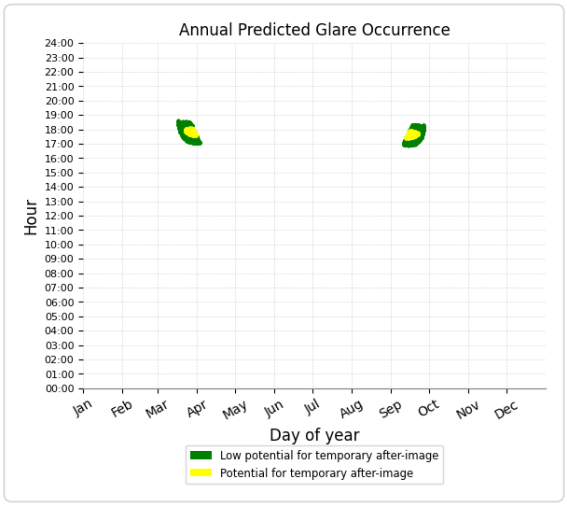


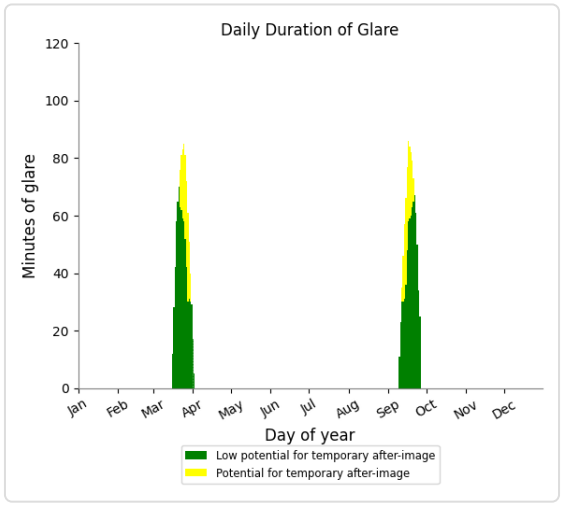


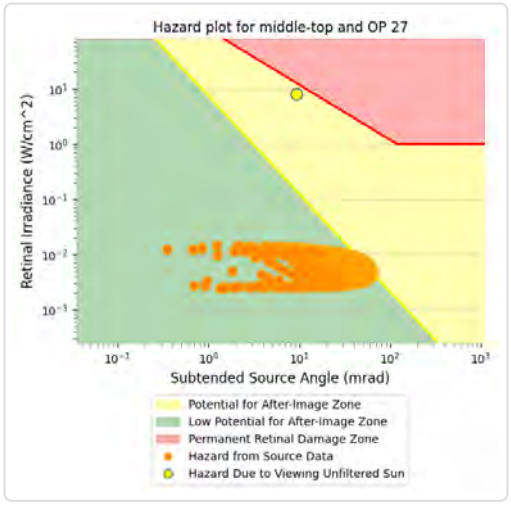
Middle Top and OP 27

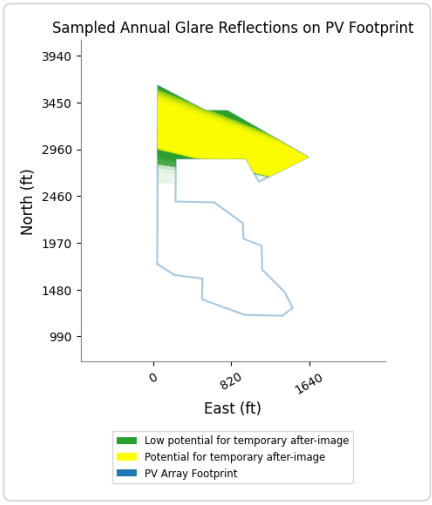
Yellow glare: 408 min.

Green glare: 1,504 min.





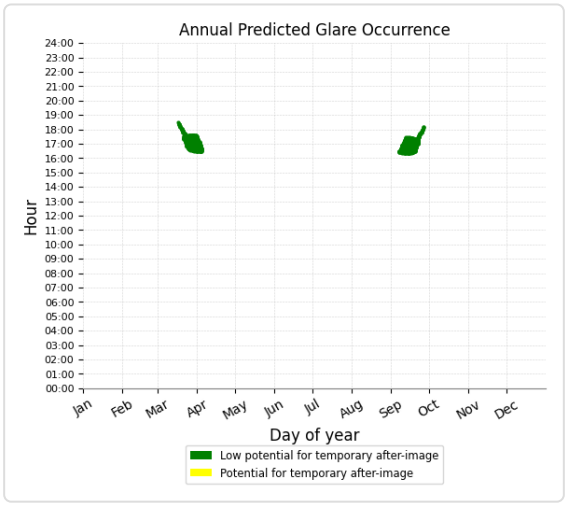


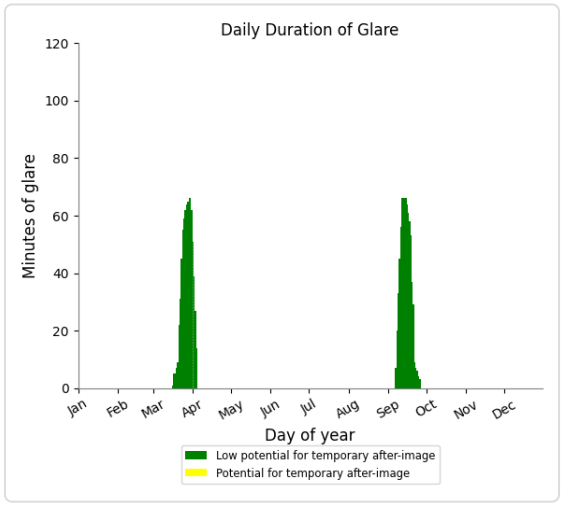


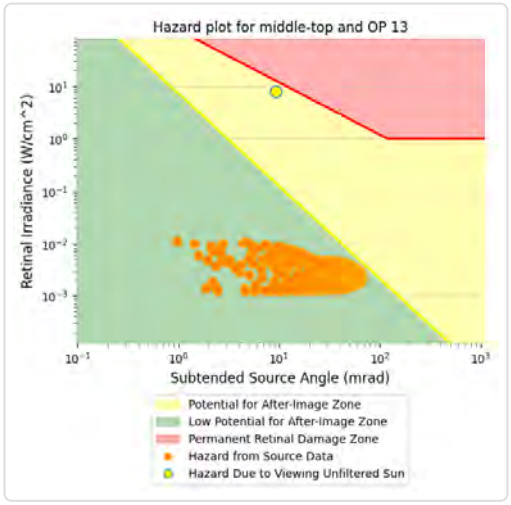
Middle Top and OP 13

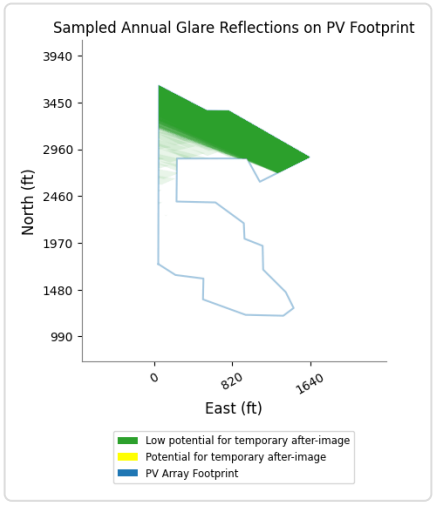
Yellow glare: none

Green glare: 1,511 min.





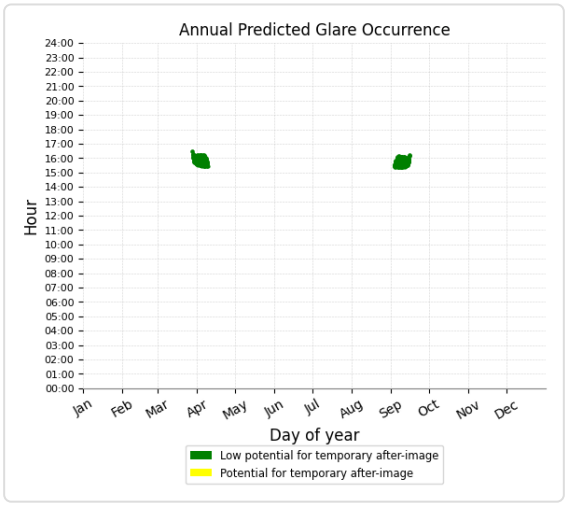


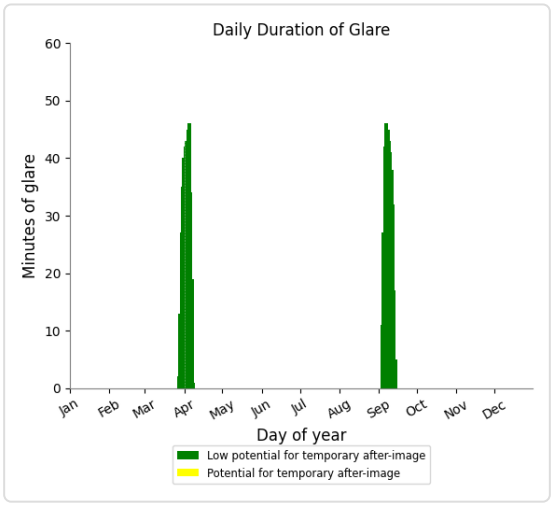


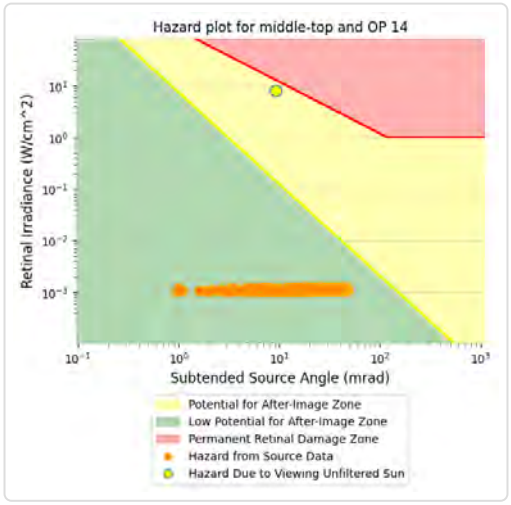
Middle Top and OP 14

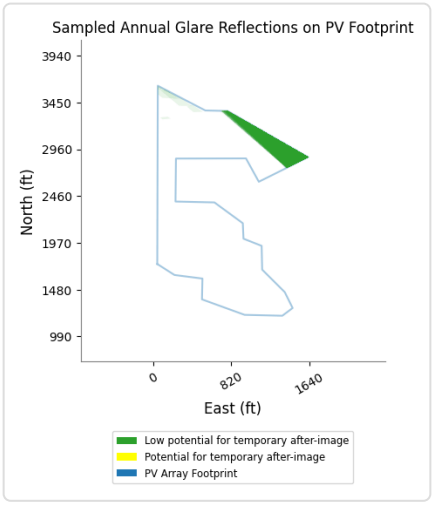
Yellow glare: none

Green glare: 878 min.





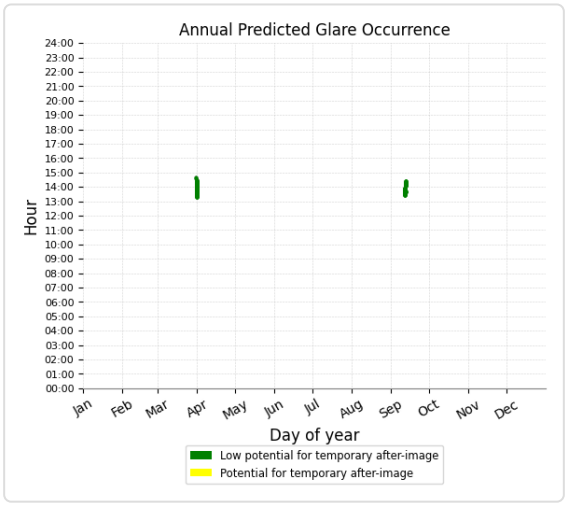


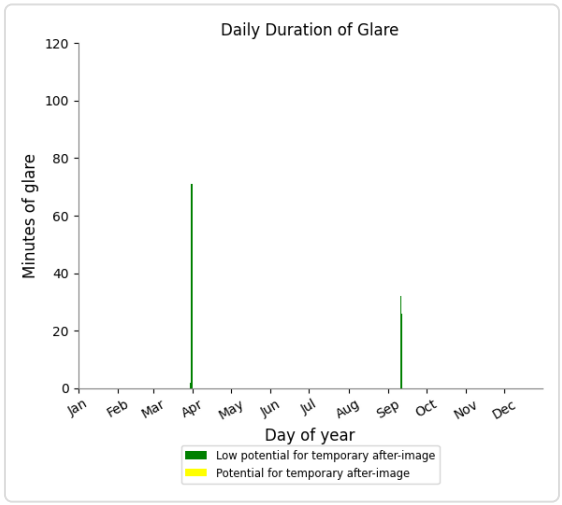


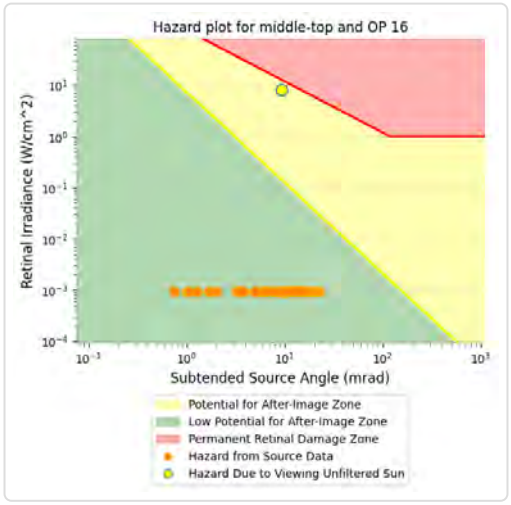
Middle Top and OP 16

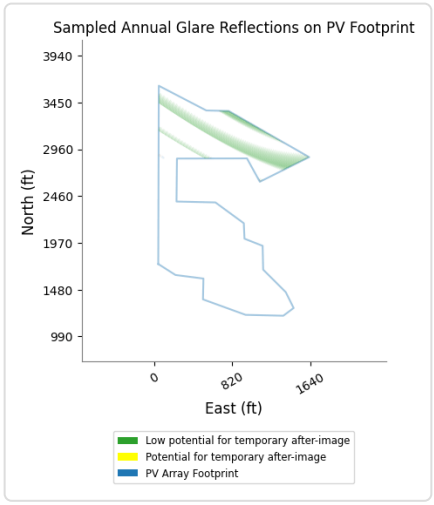
Yellow glare: none

Green glare: 131 min.





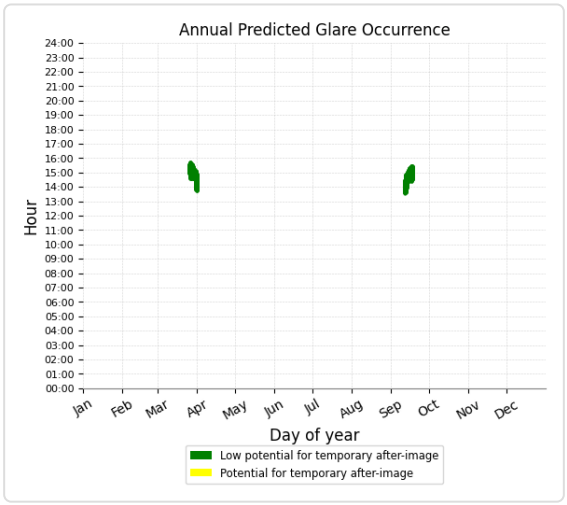


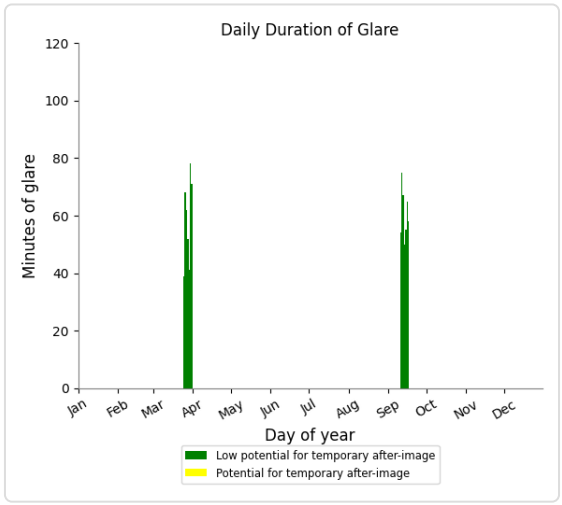


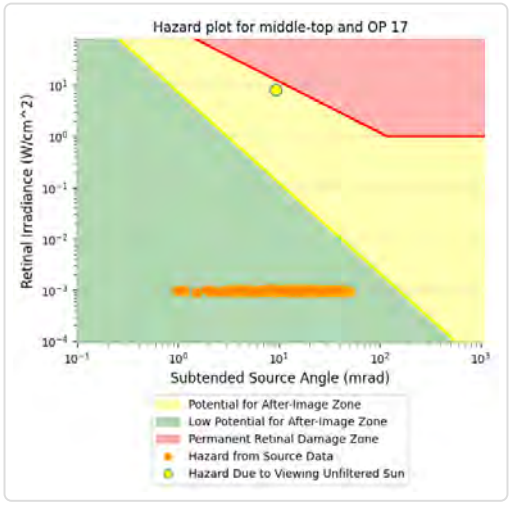
Middle Top and OP 17

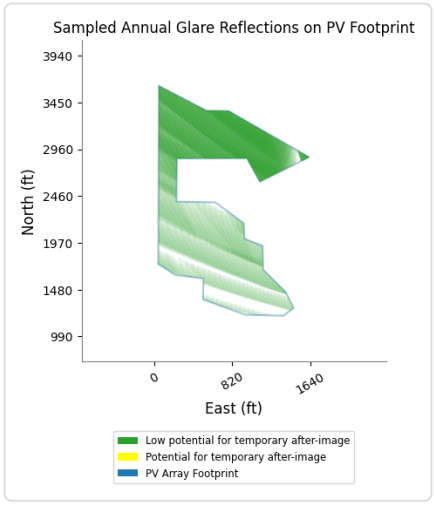
Yellow glare: none

Green glare: 835 min.





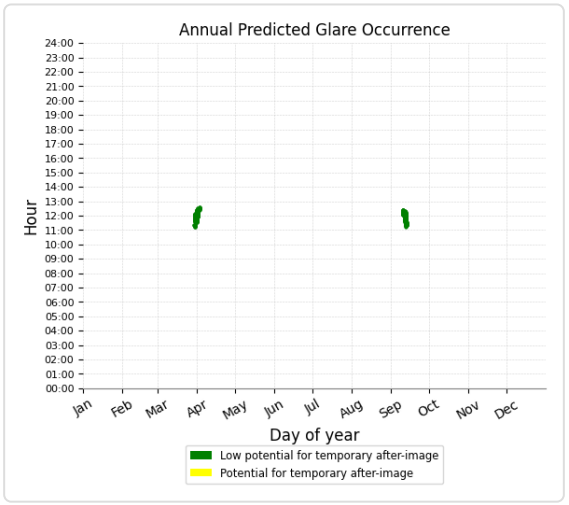


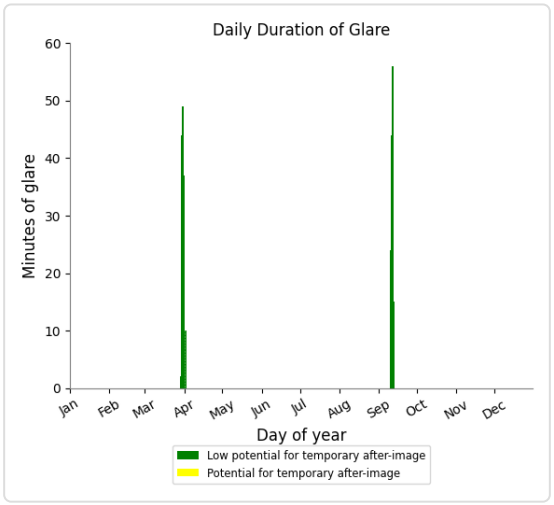


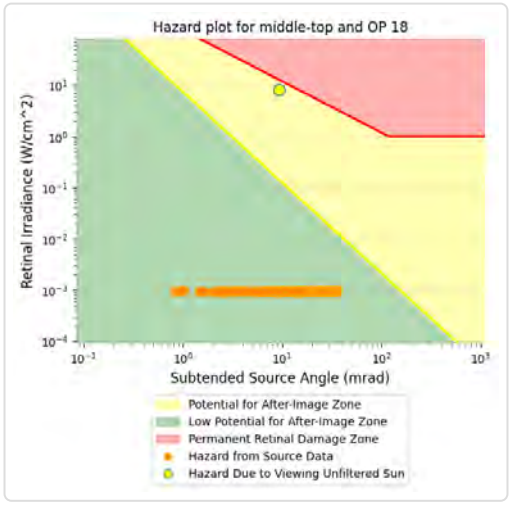
Middle Top and OP 18

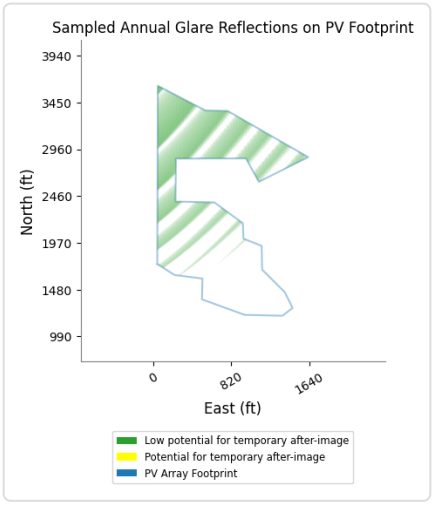
Yellow glare: none

Green glare: 281 min.





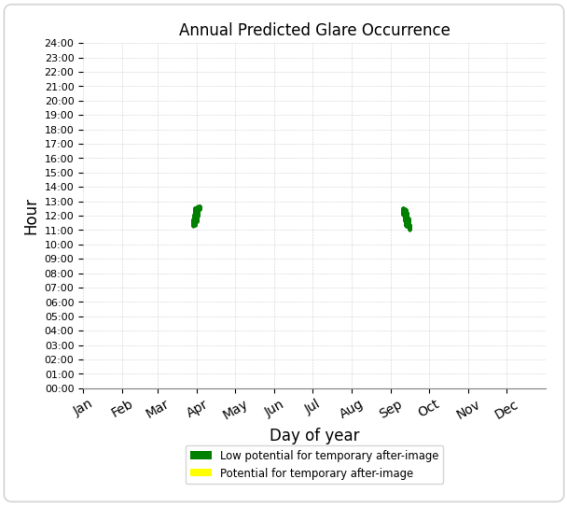


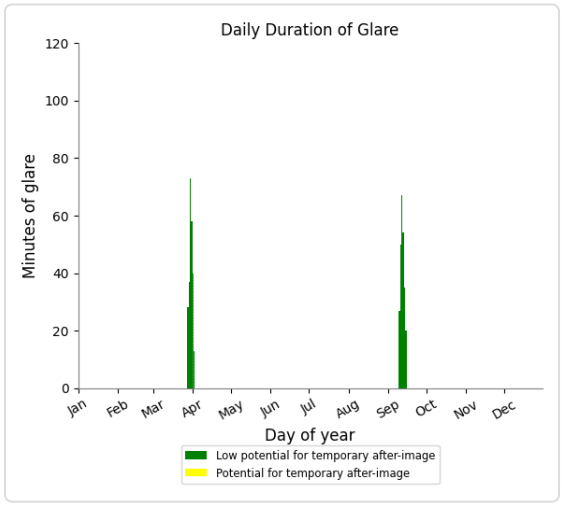


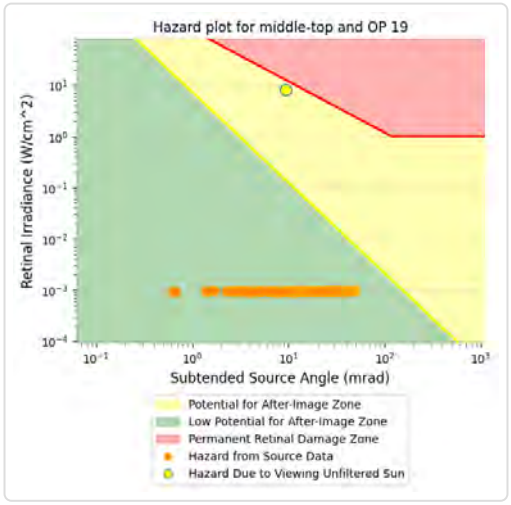
Middle Top and OP 19

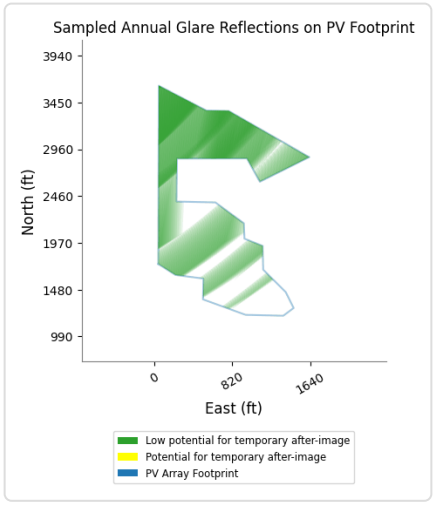
Yellow glare: none

Green glare: 502 min.





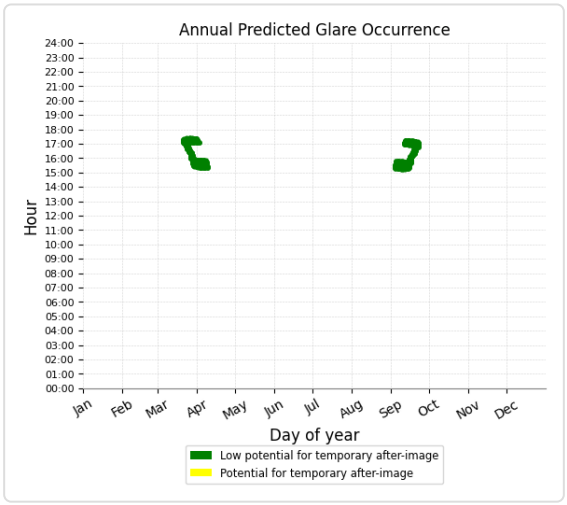


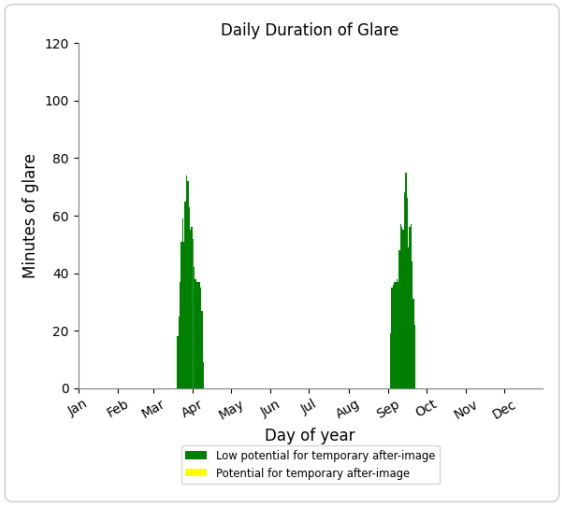


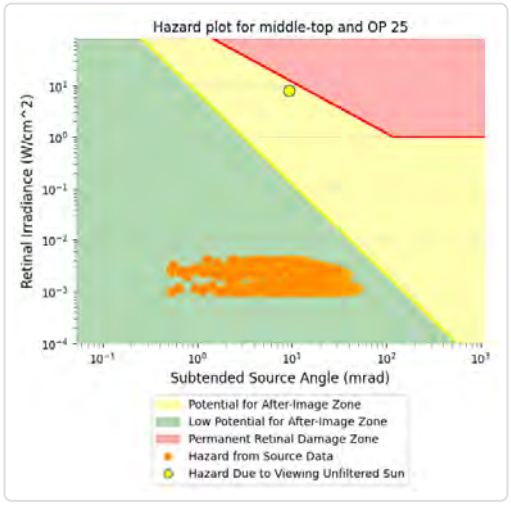
Middle Top and OP 25

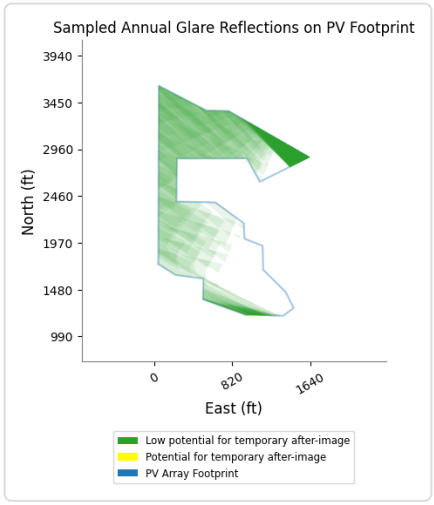
Yellow glare: none

Green glare: 1,863 min.









Middle Top and OP 4

No glare found

Middle Top and OP 5

No glare found

Middle Top and OP 6

No glare found

Middle Top and OP 7

No glare found

Middle Top and OP 8

No glare found

Middle Top and OP 9

No glare found

Middle Top and OP 10

No glare found

Middle Top and OP 11

No glare found

Middle Top and OP 15

No glare found

Middle Top and OP 20

No glare found

Middle Top and OP 21

No glare found

Middle Top and OP 24

No glare found

PV: Northeast 1 low potential for temporary after-image

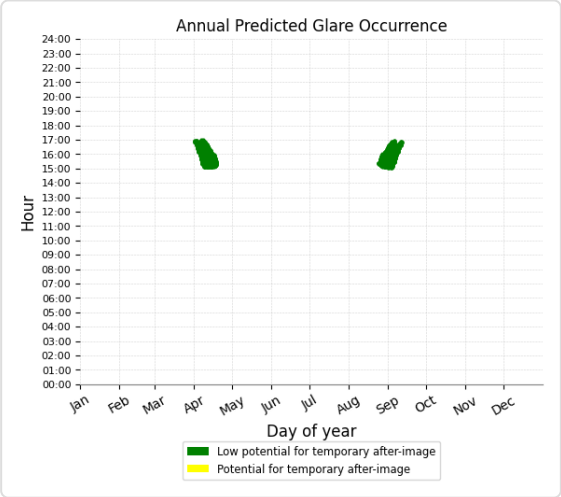
Receptor results ordered by category of glare

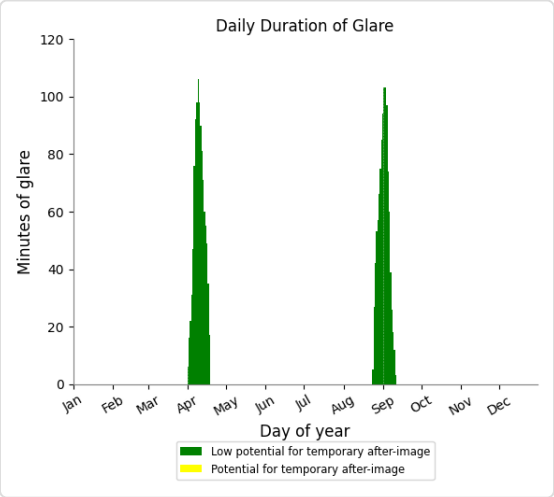
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
KY 1009	2,089	34.8	0	0.0
CR 1018	0	0.0	0	0.0
Massingale Rd	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 12	172	2.9	0	0.0
OP 13	510	8.5	0	0.0
OP 14	949	15.8	0	0.0
OP 16	51	0.8	0	0.0
OP 17	171	2.9	0	0.0
OP 18	21	0.3	0	0.0
OP 19	101	1.7	0	0.0
OP 25	844	14.1	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

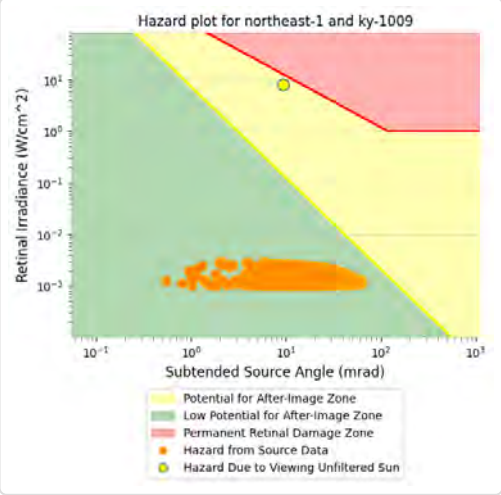
Northeast 1 and Route: KY 1009

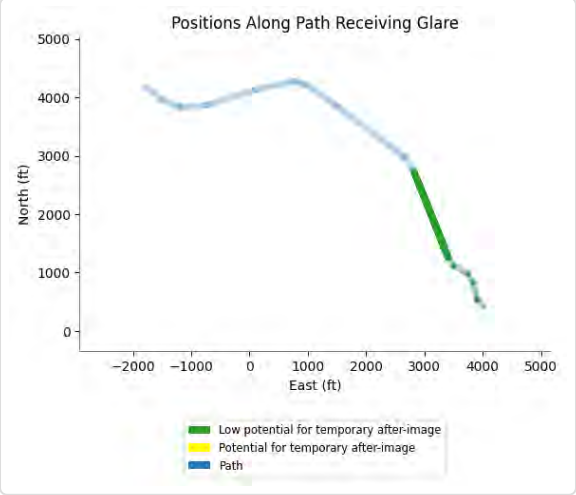
Yellow glare: none

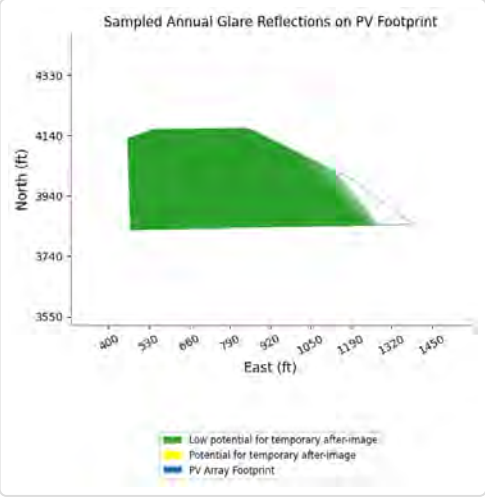
Green glare: 2,089 min.











Northeast 1 and Route: CR 1018

No glare found

Northeast 1 and Route: Massingale Rd

No glare found

Northeast 1 and FP: Wayne County Airport 1

No glare found

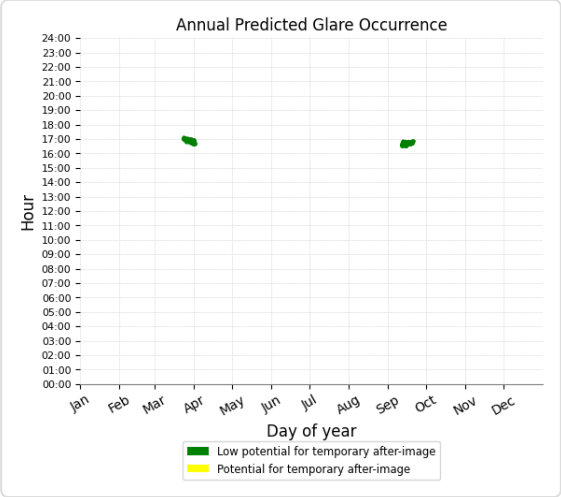
Northeast 1 and FP: Wayne County Airport 2

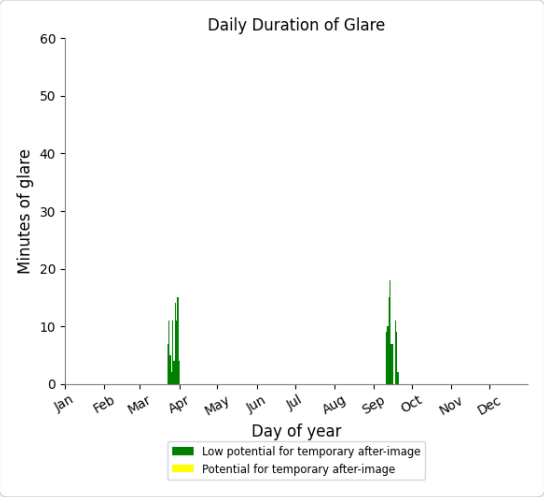
No glare found

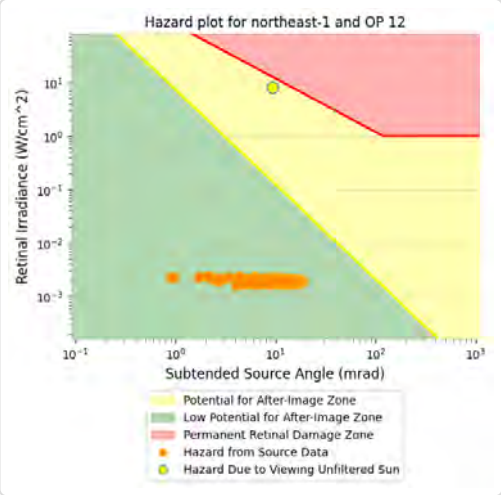
Northeast 1 and OP 12

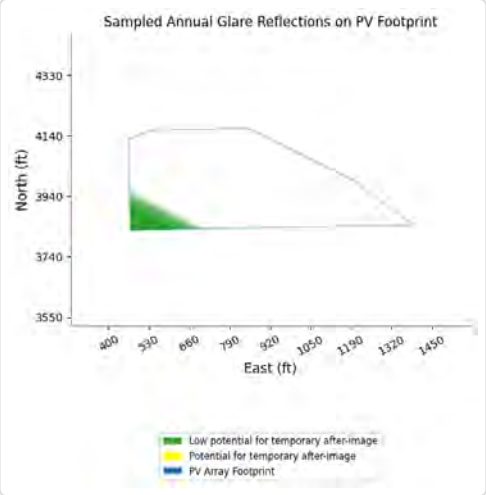
Yellow glare: none

Green glare: 172 min.





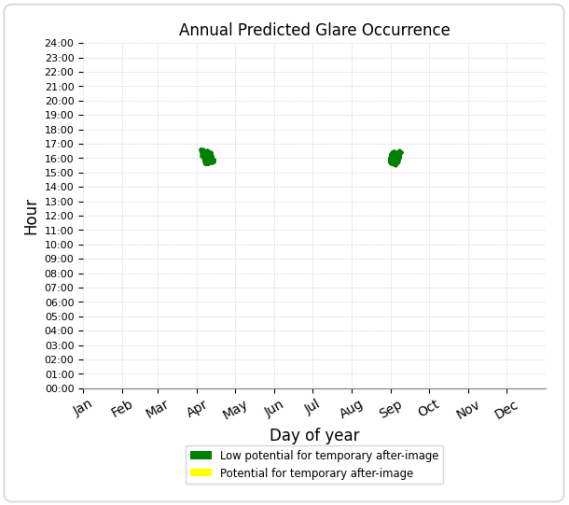


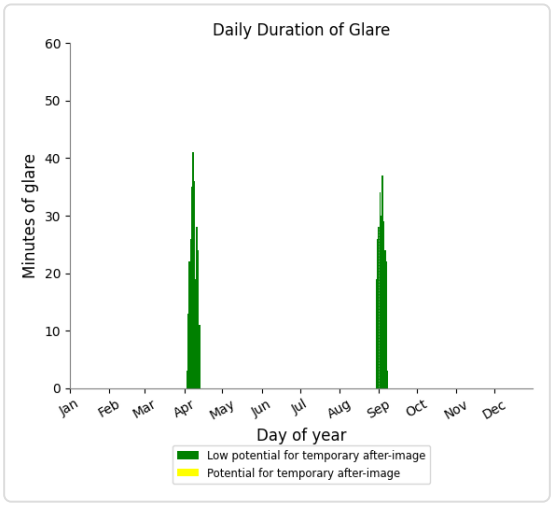


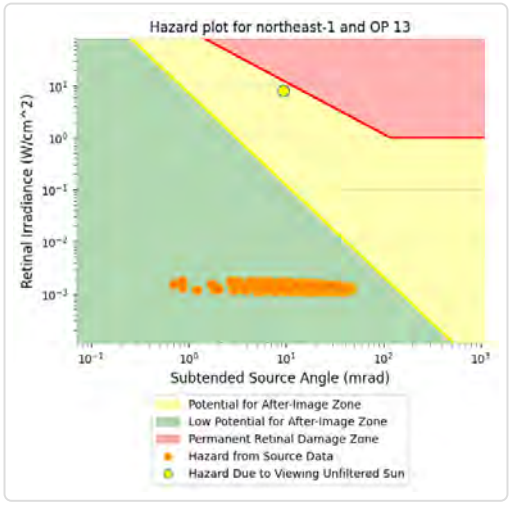
Northeast 1 and OP 13

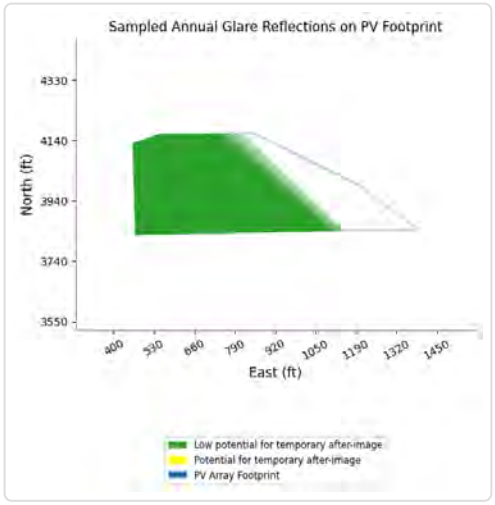
Yellow glare: none

Green glare: 510 min.





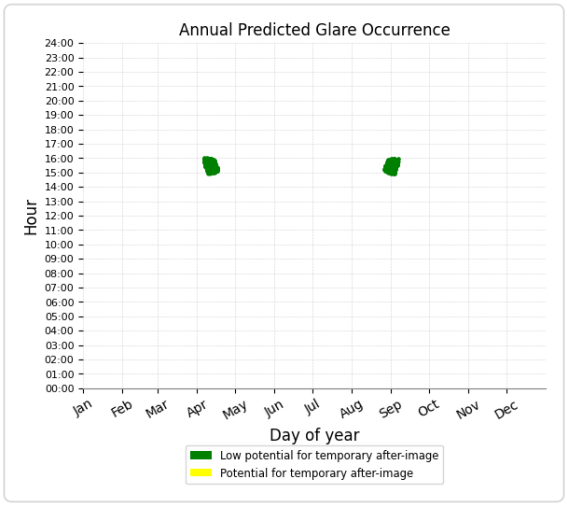


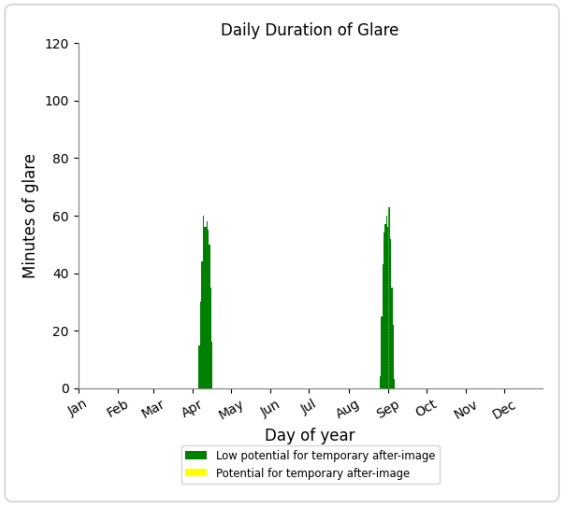


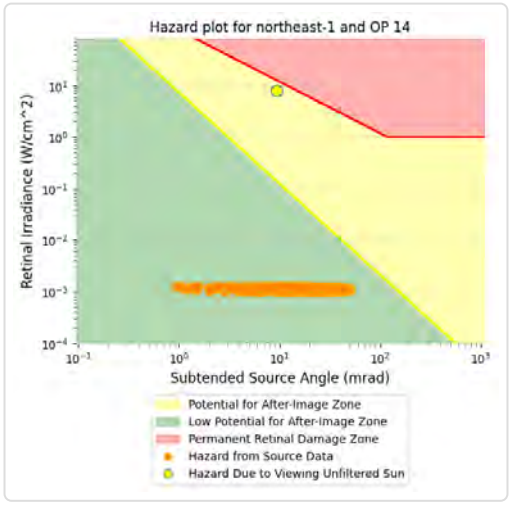
Northeast 1 and OP 14

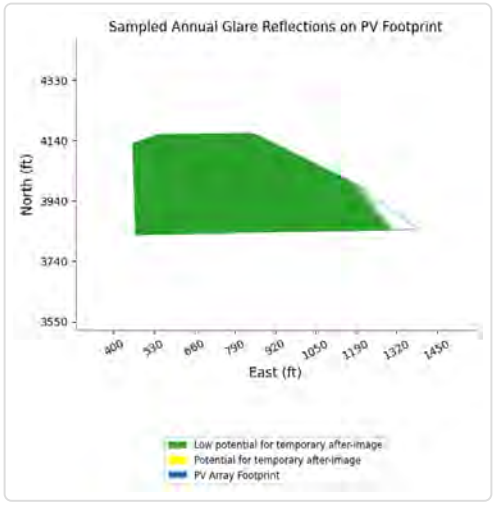
Yellow glare: none

Green glare: 949 min.





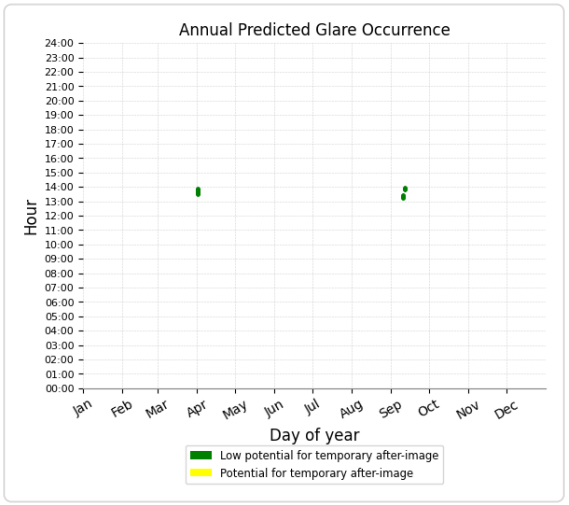


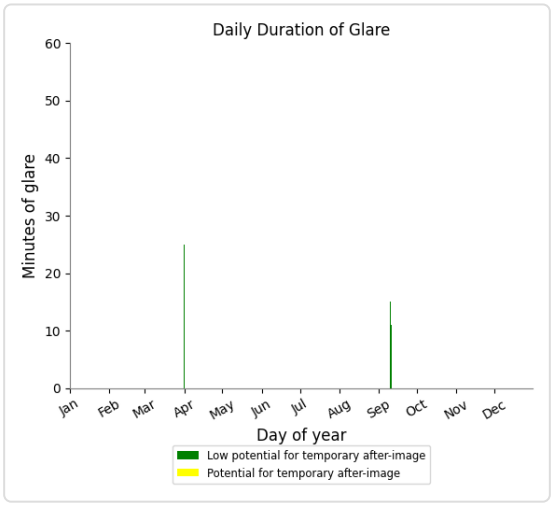


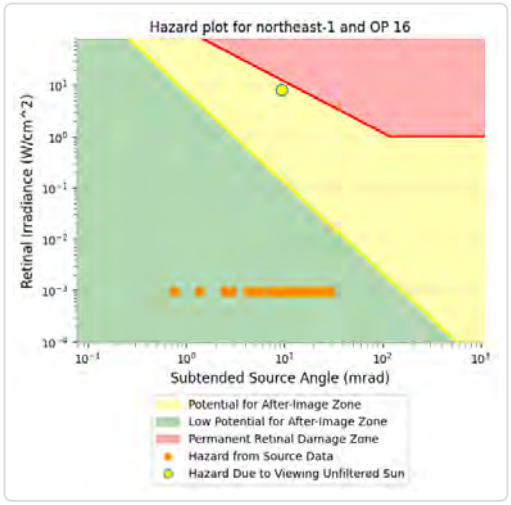
Northeast 1 and OP 16

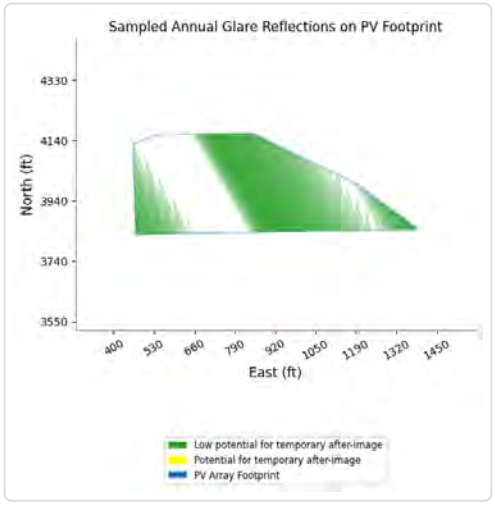
Yellow glare: none

Green glare: 51 min.





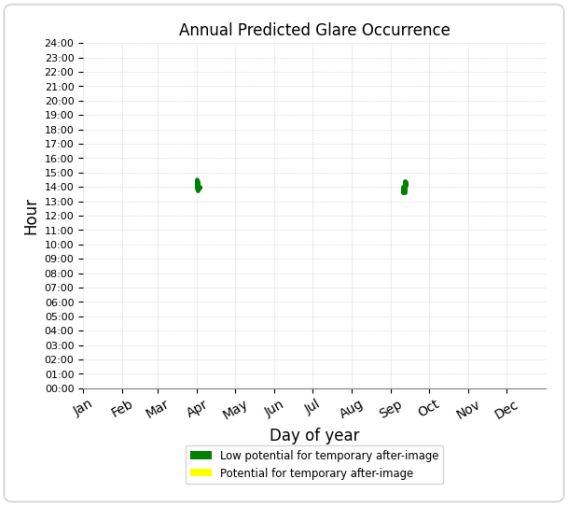


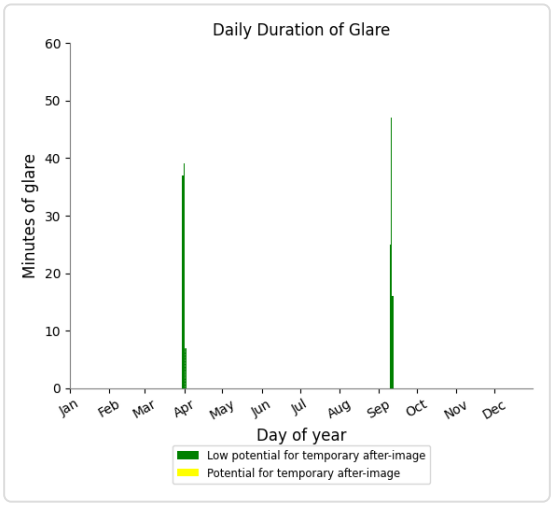


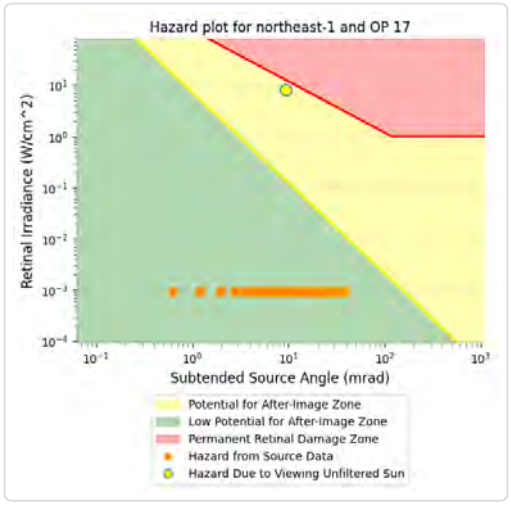
Northeast 1 and OP 17

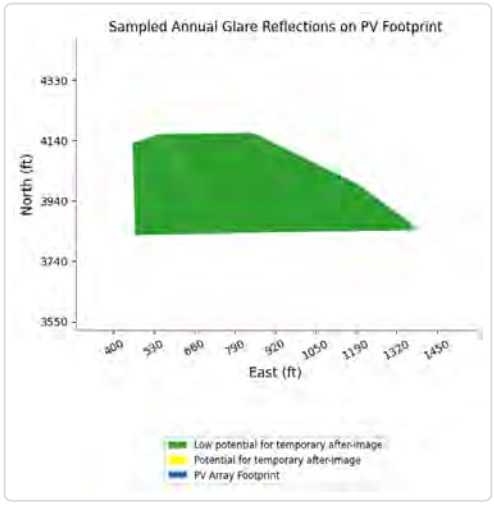
Yellow glare: none

Green glare: 171 min.





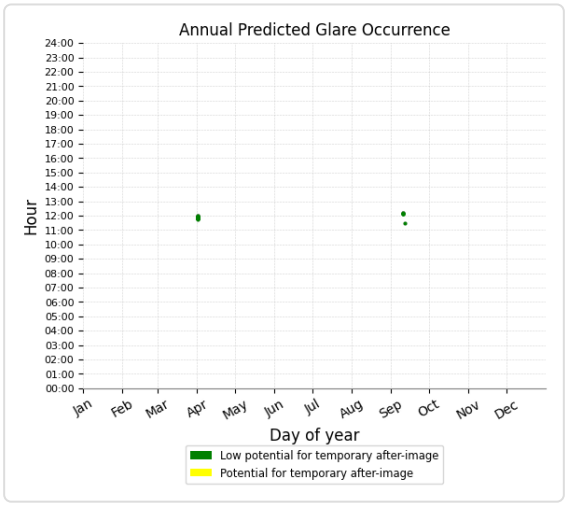


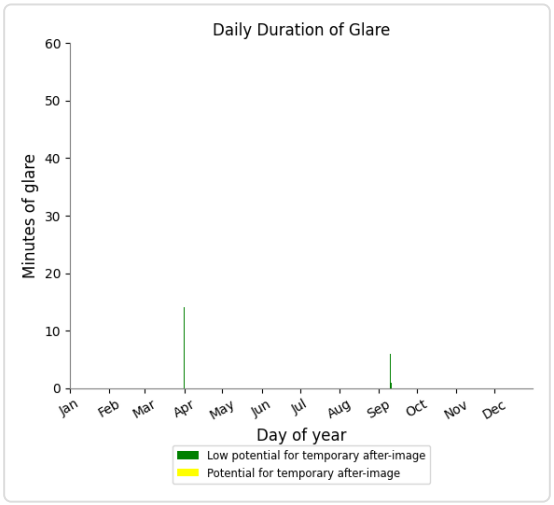


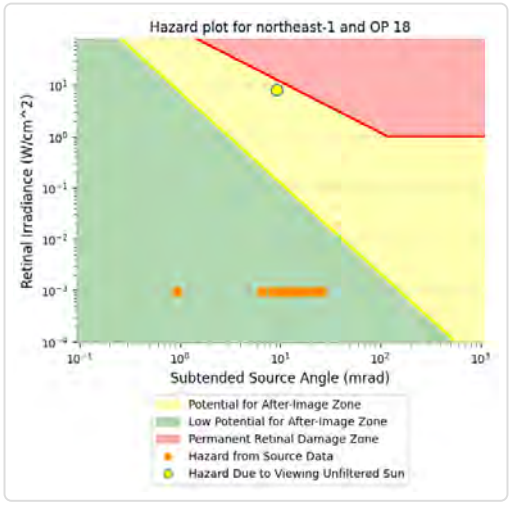
Northeast 1 and OP 18

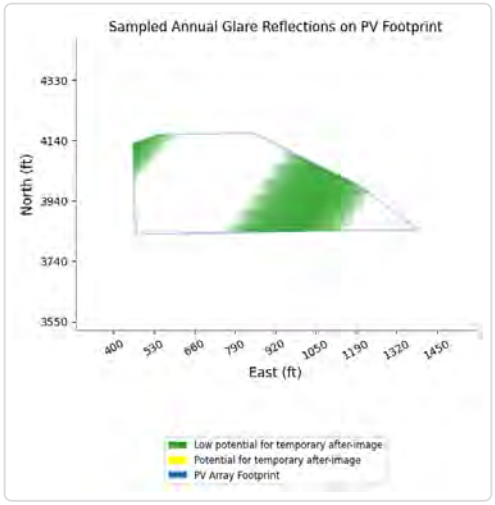
Yellow glare: none

Green glare: 21 min.





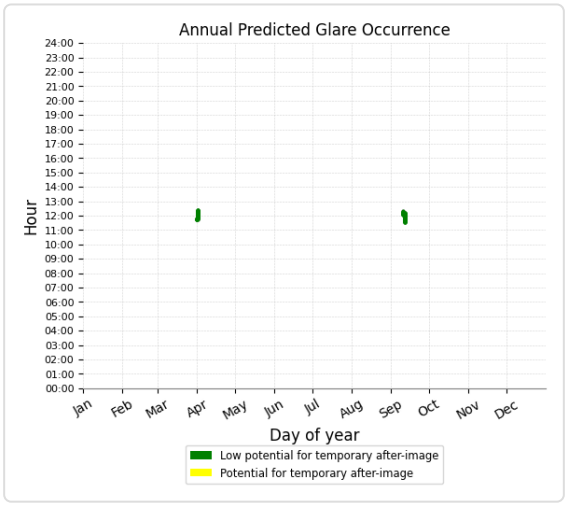


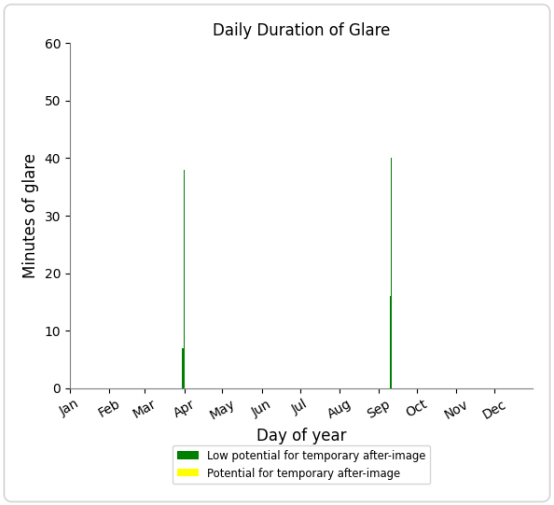


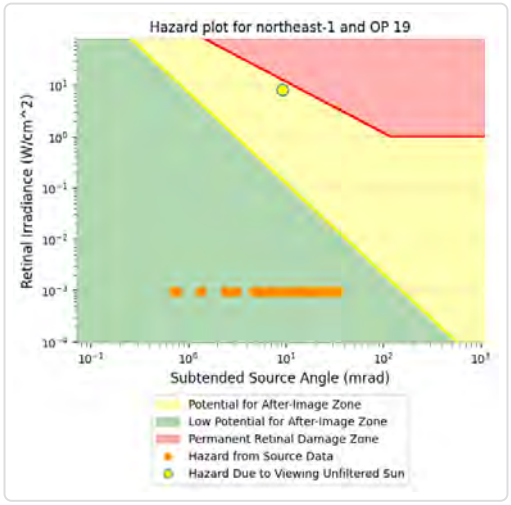
Northeast 1 and OP 19

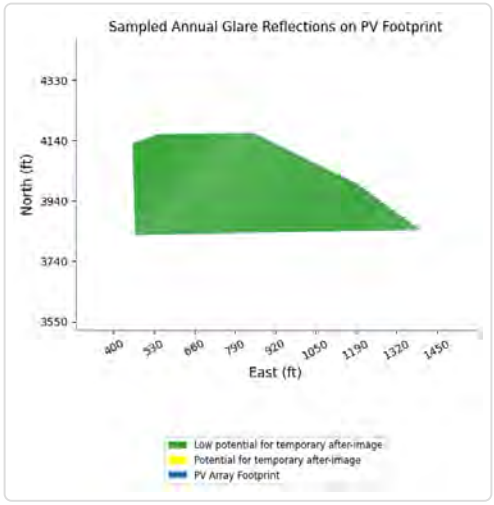
Yellow glare: none

Green glare: 101 min.





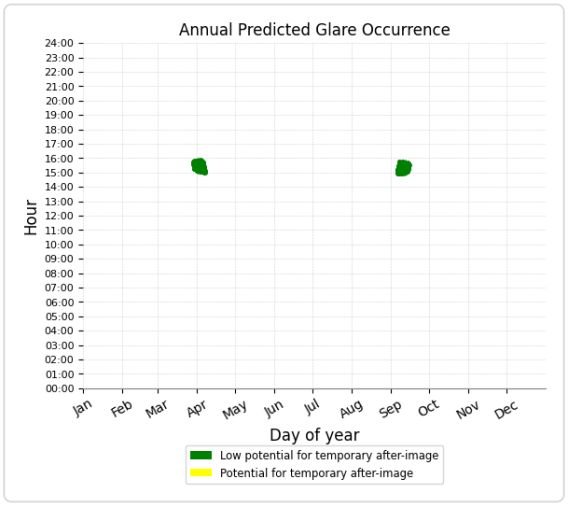


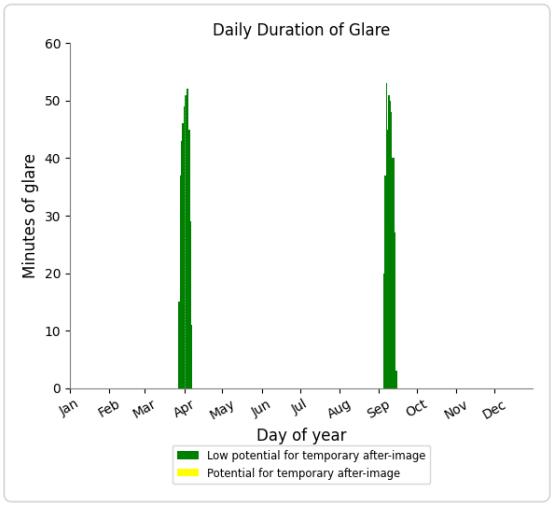


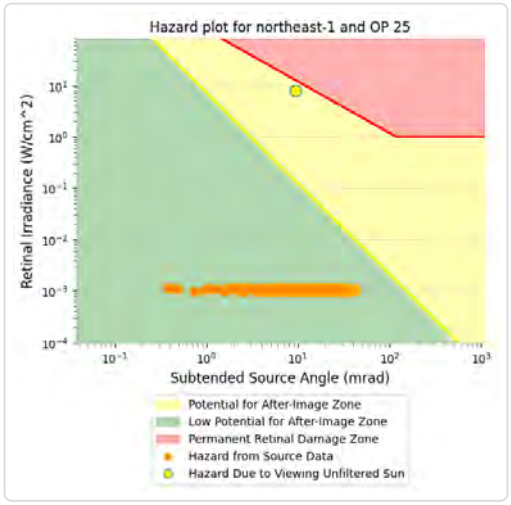
Northeast 1 and OP 25

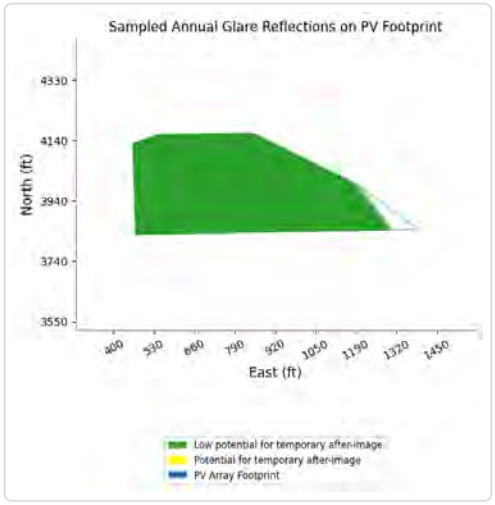
Yellow glare: none

Green glare: 844 min.









Northeast 1 and OP 4

No glare found

Northeast 1 and OP 5

No glare found

Northeast 1 and OP 6

No glare found

Northeast 1 and OP 7

No glare found

Northeast 1 and OP 8

No glare found

Northeast 1 and OP 9

No glare found

Northeast 1 and OP 10

No glare found

Northeast 1 and OP 11

No glare found

Northeast 1 and OP 15

No glare found

Northeast 1 and OP 20

No glare found

Northeast 1 and OP 21

No glare found

Northeast 1 and OP 24

No glare found

Northeast 1 and OP 26

No glare found

Northeast 1 and OP 27

No glare found

PV: Northeast 2 potential temporary after-image

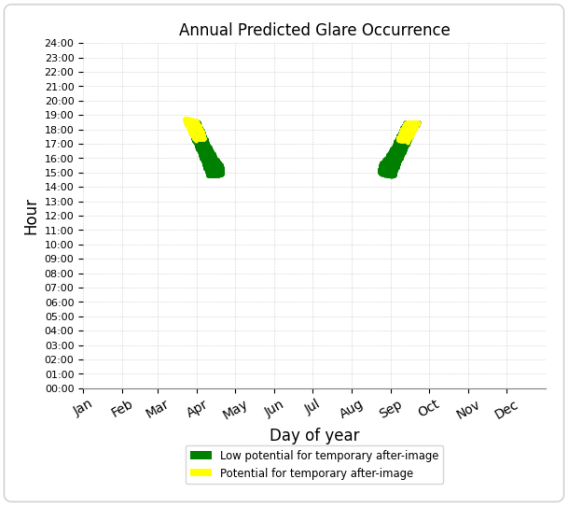
Receptor results ordered by category of glare

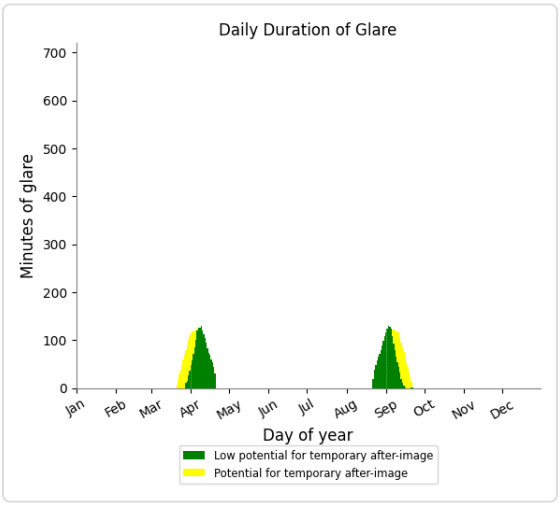
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
KY 1009	3,616	60.3	1,602	26.7
CR 1018	0	0.0	0	0.0
Massingale Rd	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 12	2,841	47.4	443	7.4
OP 11	594	9.9	0	0.0
OP 13	1,605	26.8	0	0.0
OP 14	1,415	23.6	0	0.0
OP 16	117	1.9	0	0.0
OP 17	284	4.7	0	0.0
OP 18	60	1.0	0	0.0
OP 19	122	2.0	0	0.0
OP 24	230	3.8	0	0.0
OP 25	996	16.6	0	0.0
OP 27	1,643	27.4	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 26	0	0.0	0	0.0

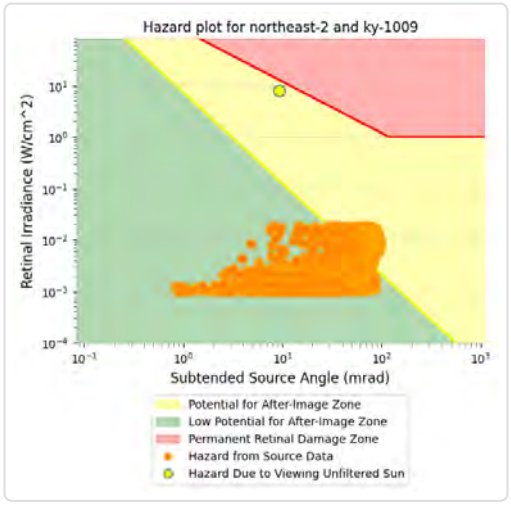
Northeast 2 and Route: KY 1009

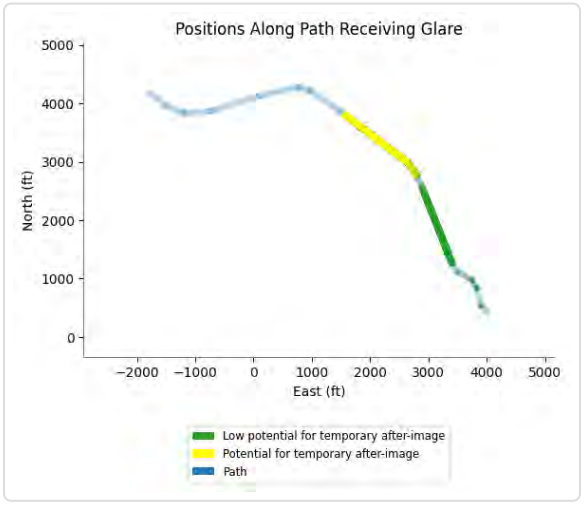
Yellow glare: 1,602 min.

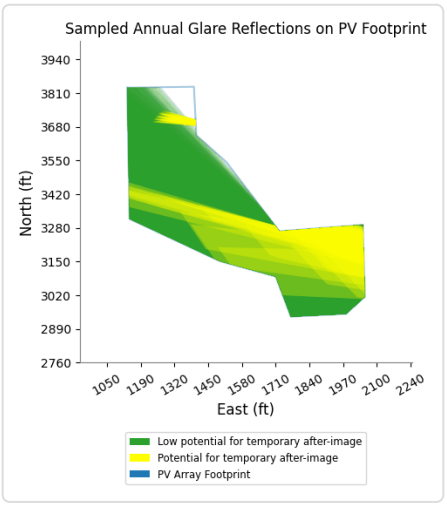
Green glare: 3,616 min.











Northeast 2 and Route: CR 1018

No glare found

Northeast 2 and Route: Massingale Rd

No glare found

Northeast 2 and FP: Wayne County Airport 1

No glare found

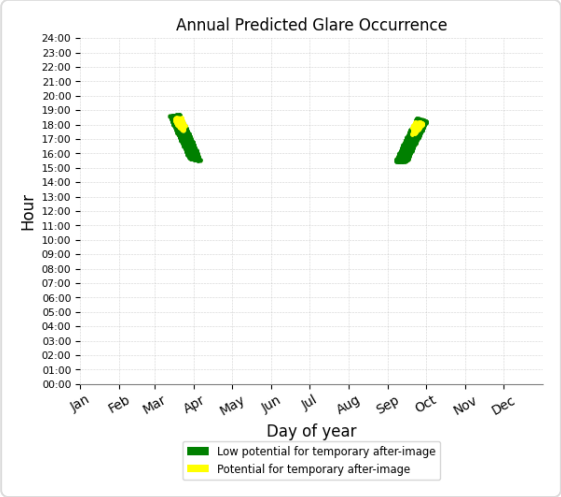
Northeast 2 and FP: Wayne County Airport 2

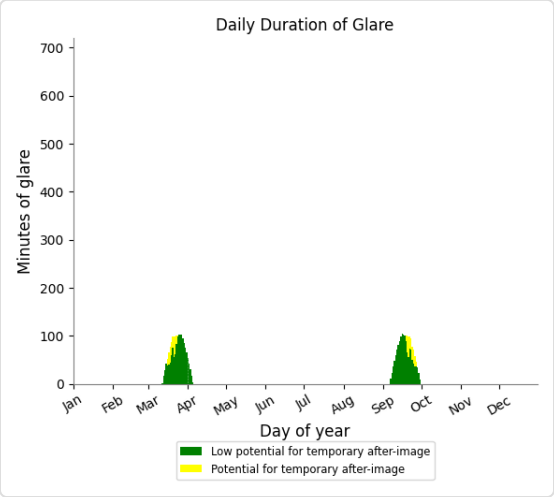
No glare found

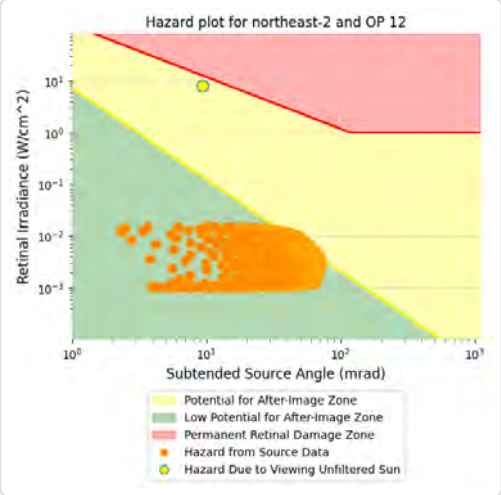
Northeast 2 and OP 12

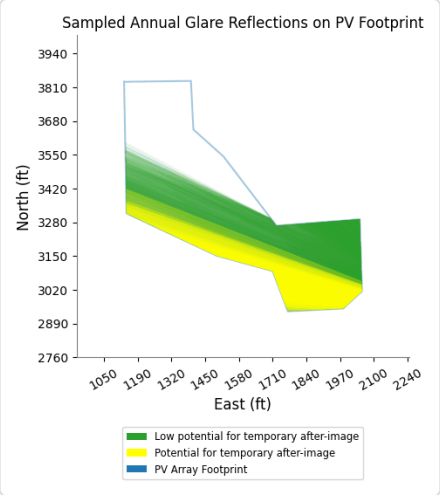
Yellow glare: 443 min.

Green glare: 2,841 min.





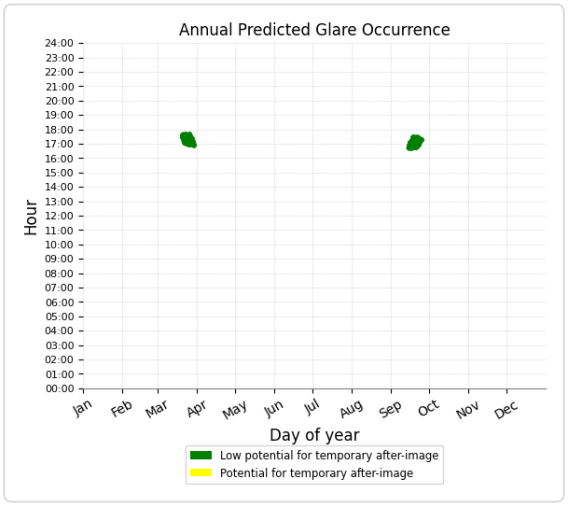


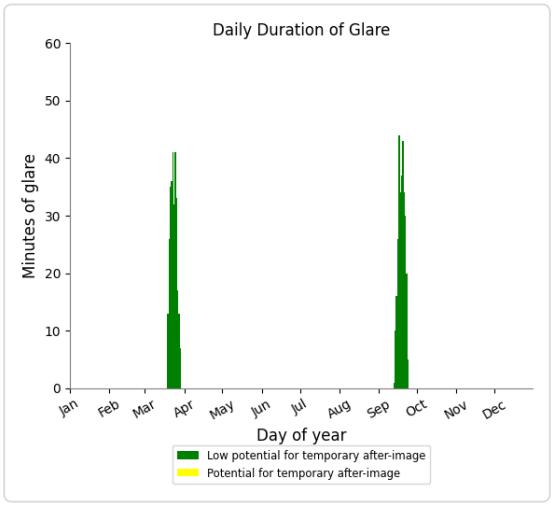


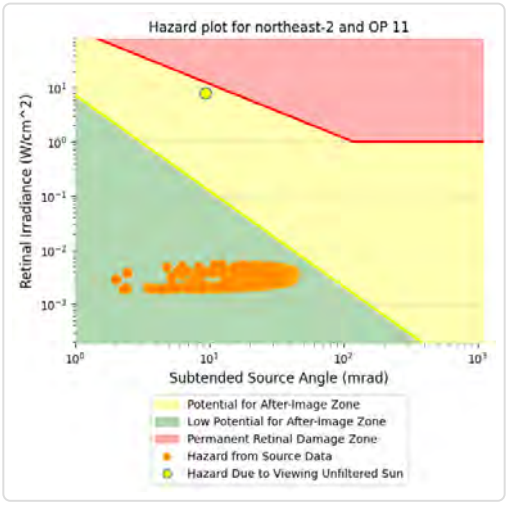
Northeast 2 and OP 11

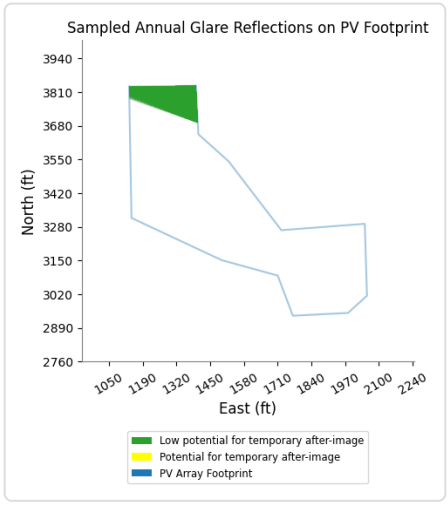
Yellow glare: none

Green glare: 594 min.





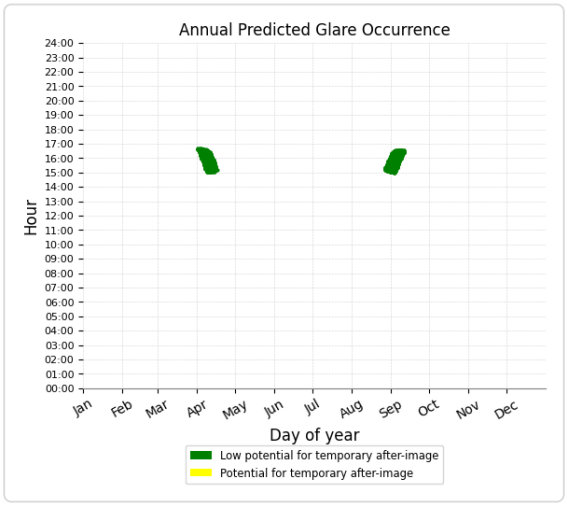


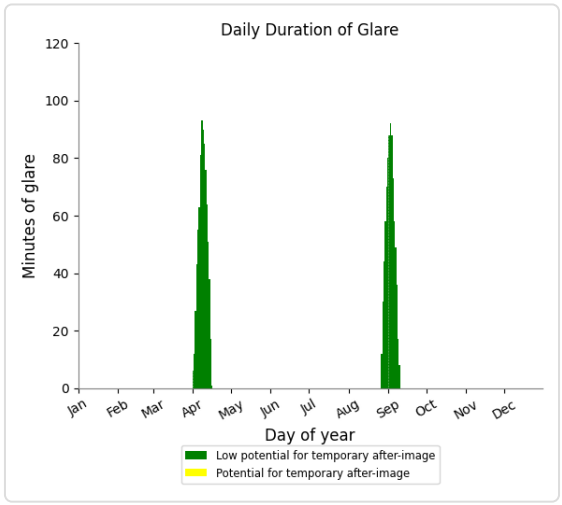


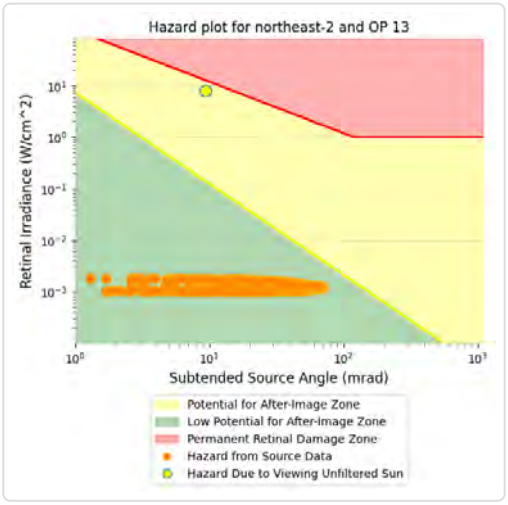
Northeast 2 and OP 13

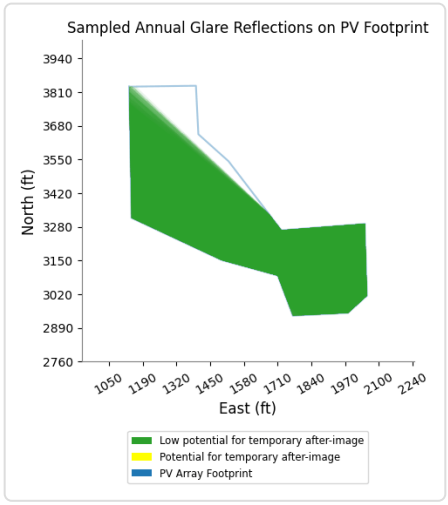
Yellow glare: none

Green glare: 1,605 min.





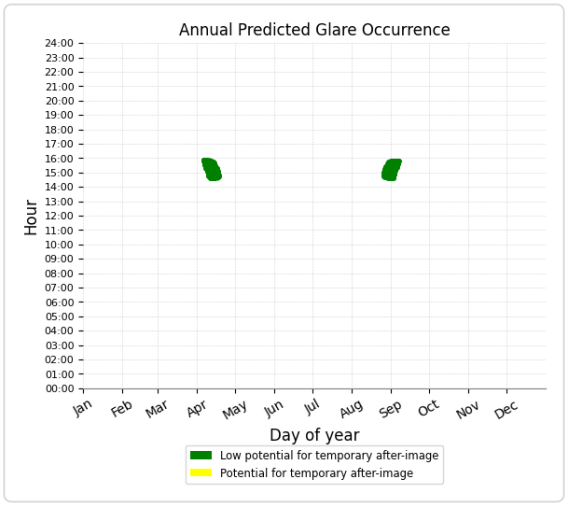


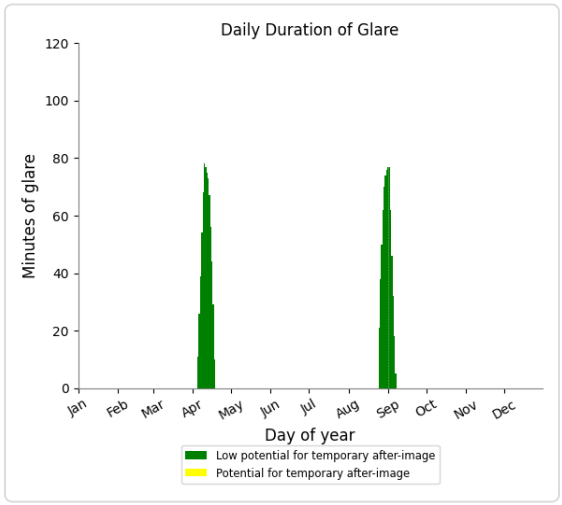


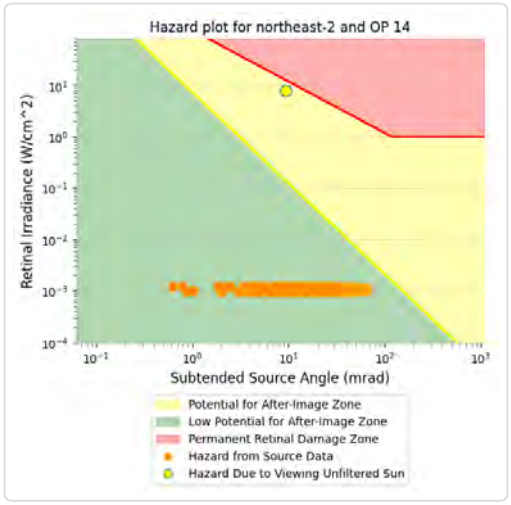
Northeast 2 and OP 14

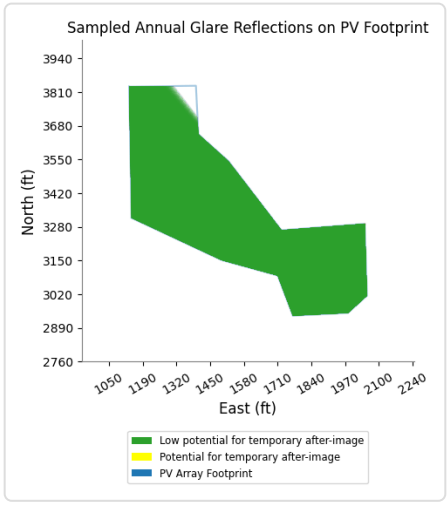
Yellow glare: none

Green glare: 1,415 min.





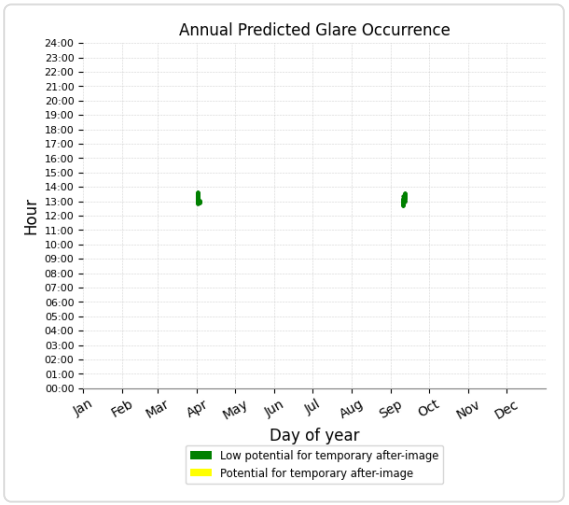


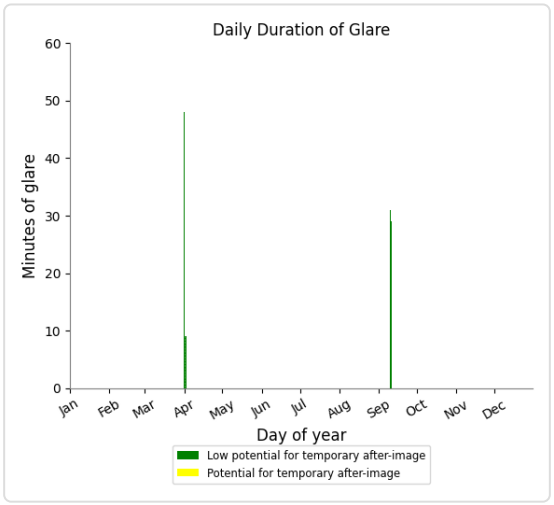


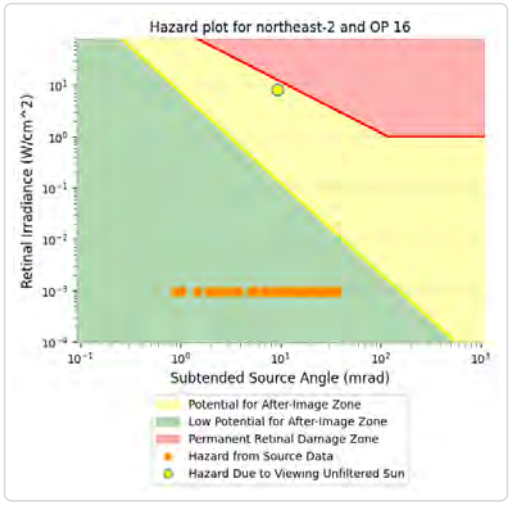
Northeast 2 and OP 16

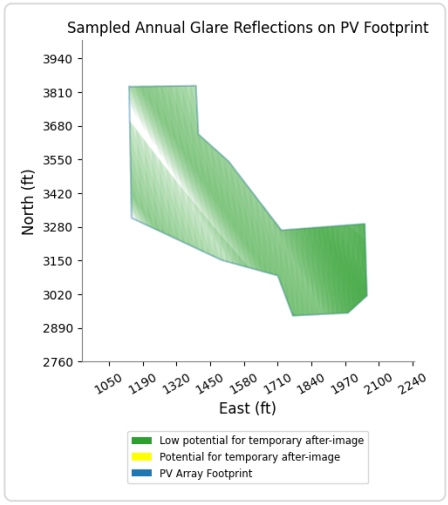
Yellow glare: none

Green glare: 117 min.





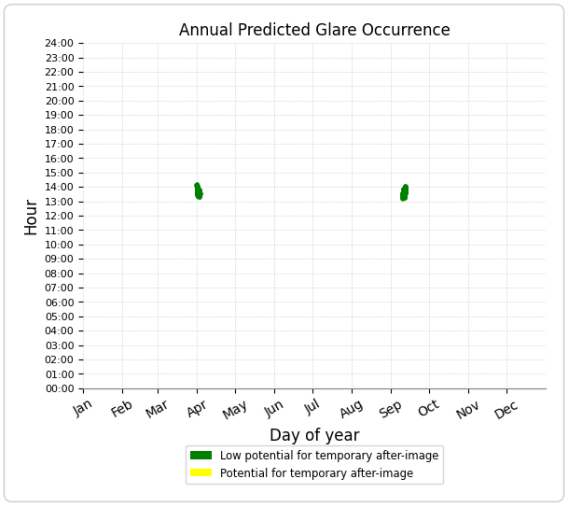


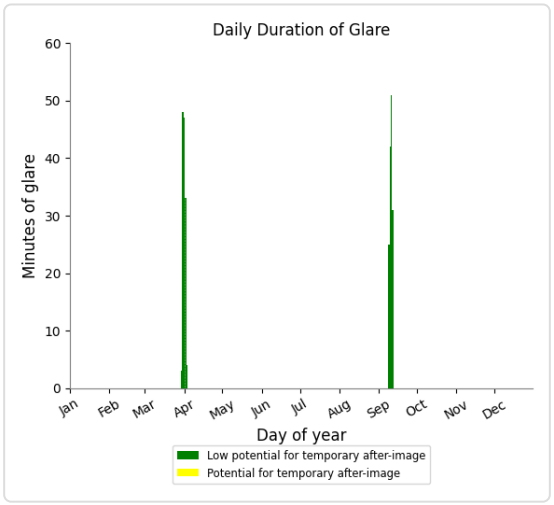


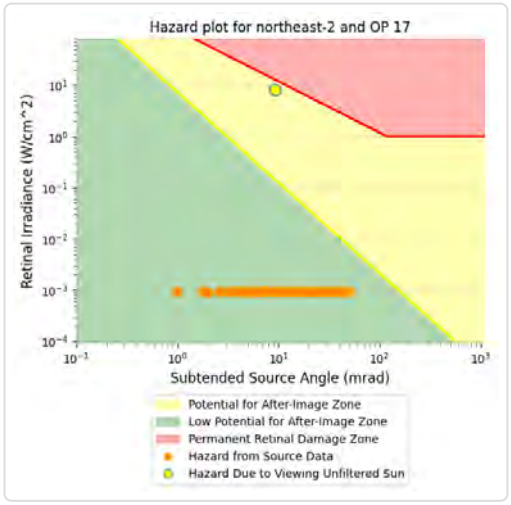
Northeast 2 and OP 17

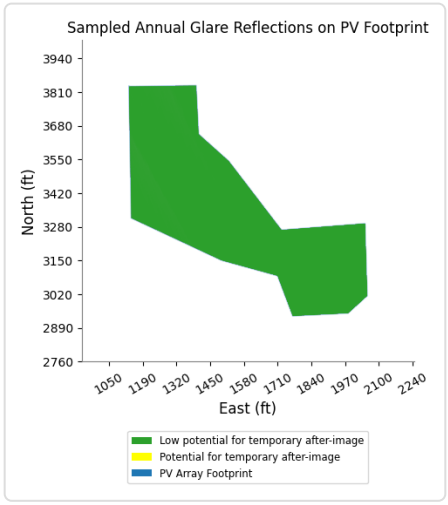
Yellow glare: none

Green glare: 284 min.





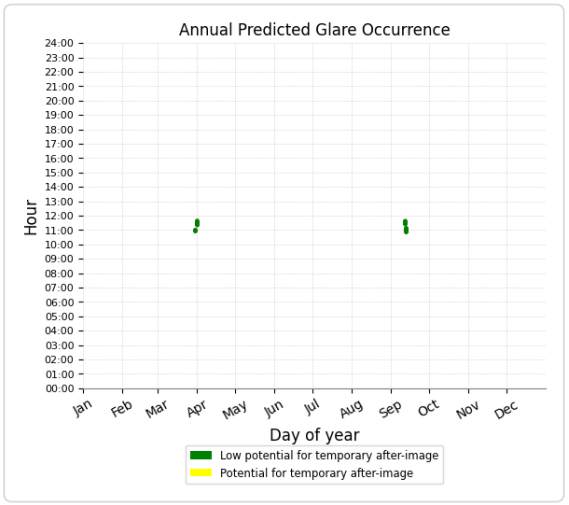


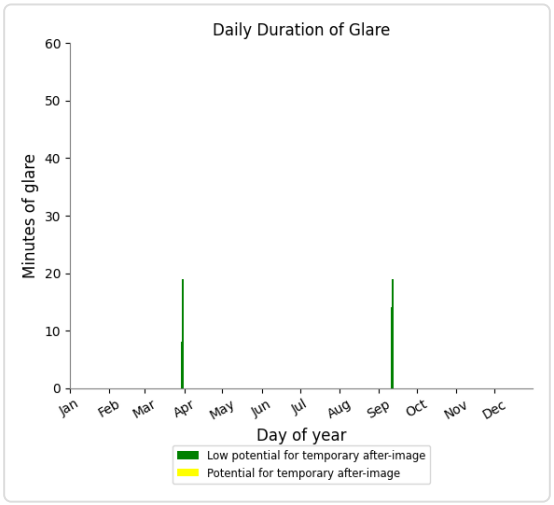


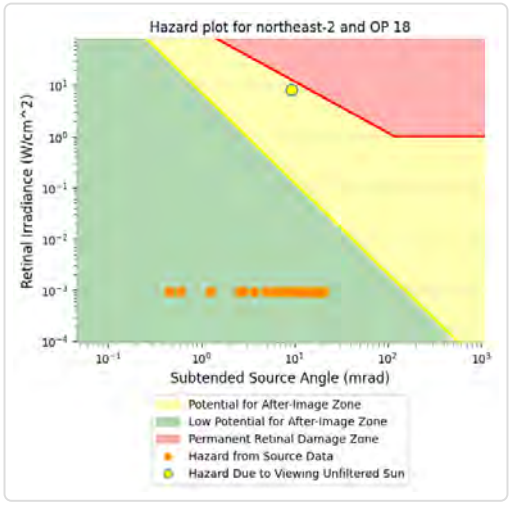
Northeast 2 and OP 18

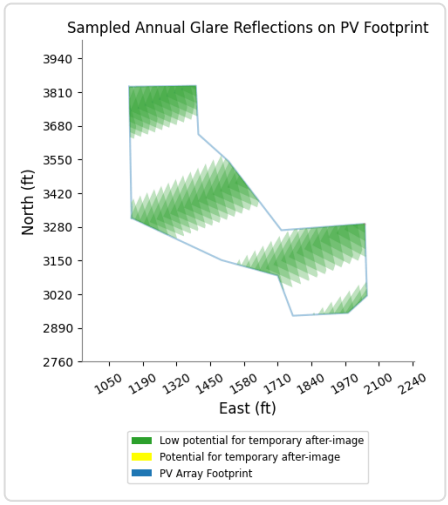
Yellow glare: none

Green glare: 60 min.





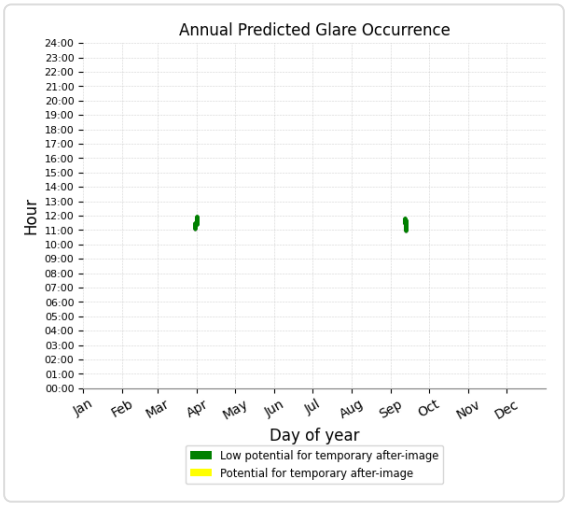


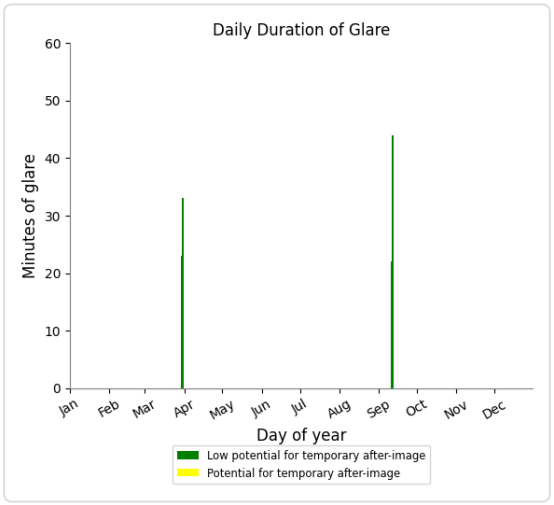


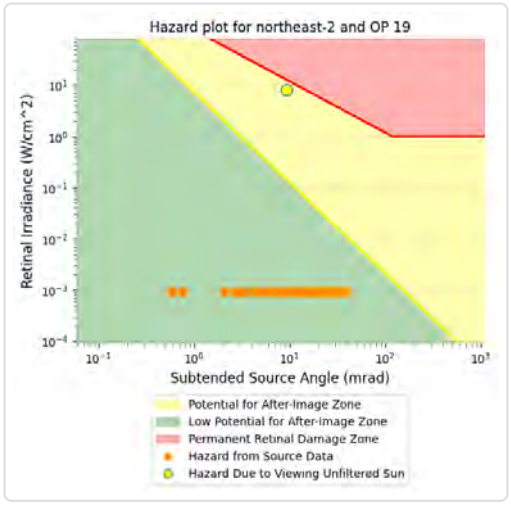
Northeast 2 and OP 19

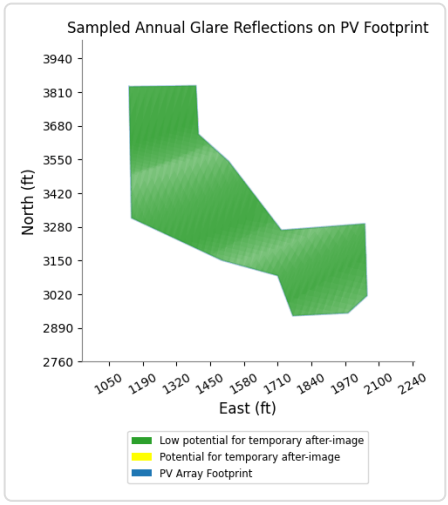
Yellow glare: none

Green glare: 122 min.





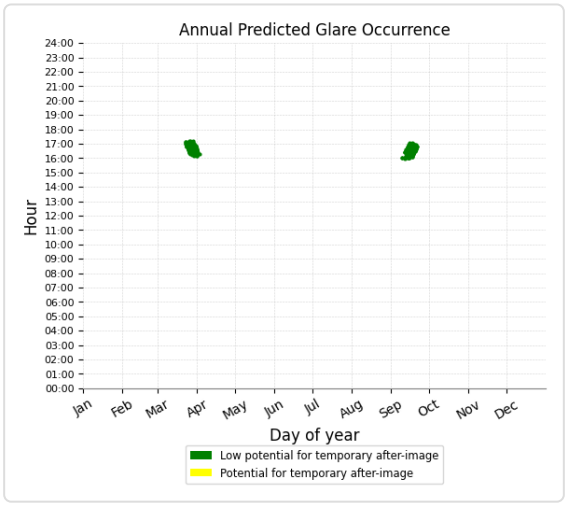


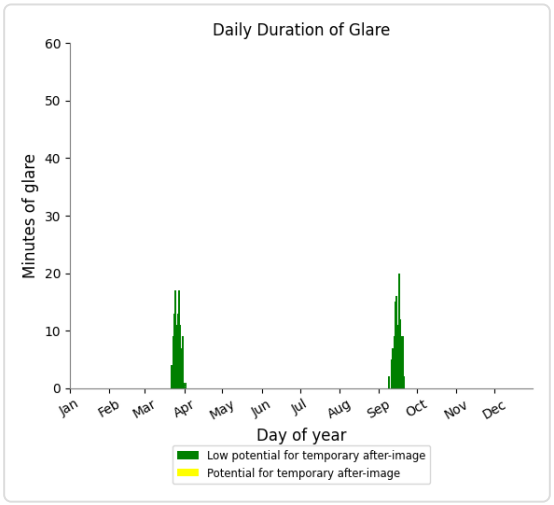


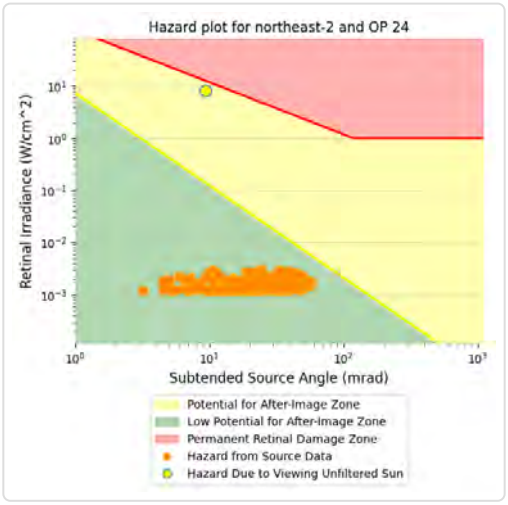
Northeast 2 and OP 24

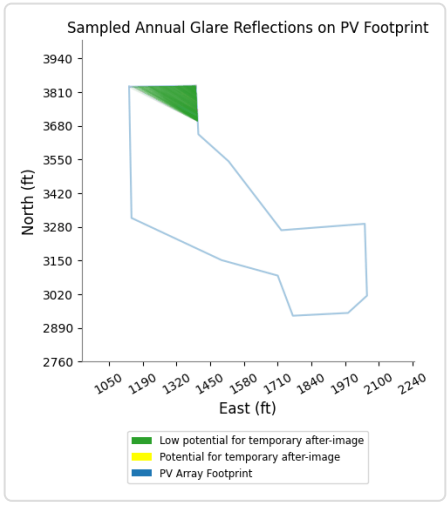
Yellow glare: none

Green glare: 230 min.





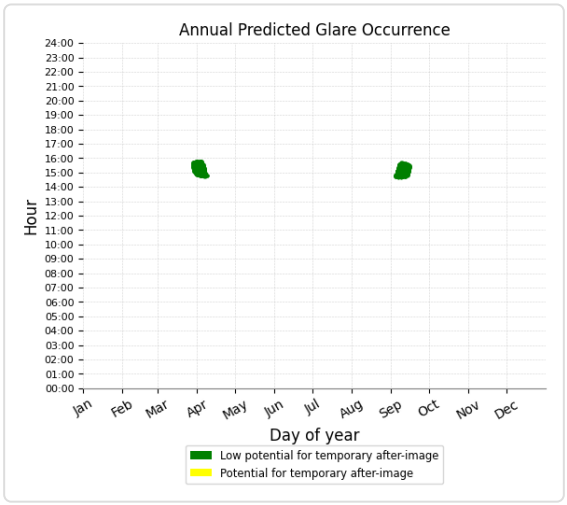


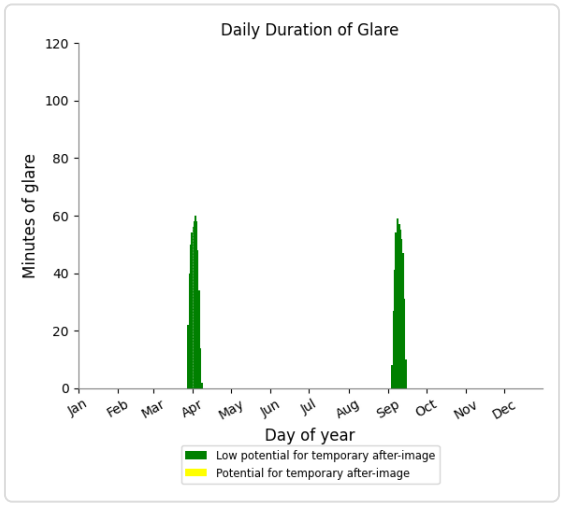


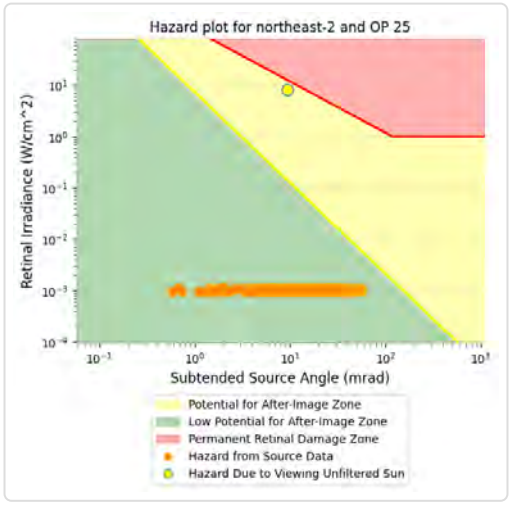
Northeast 2 and OP 25

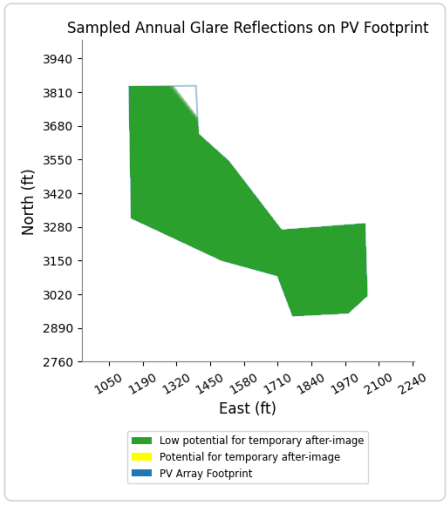
Yellow glare: none

Green glare: 996 min.





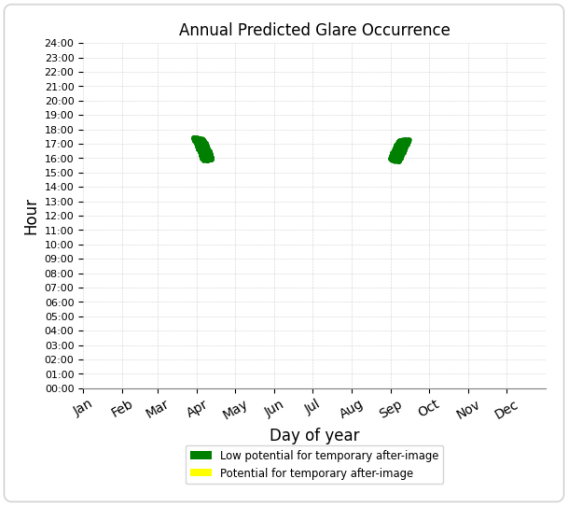


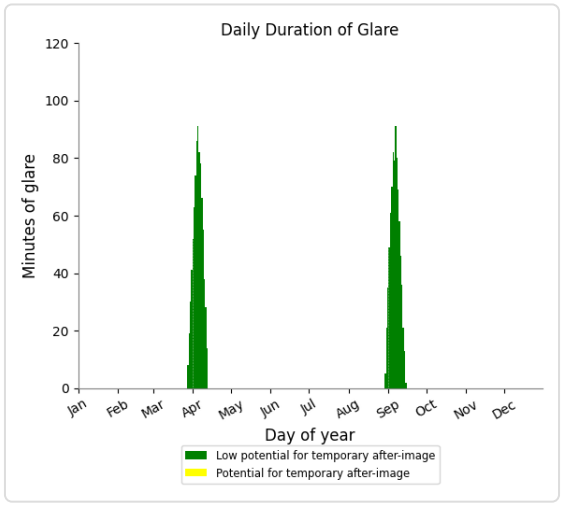


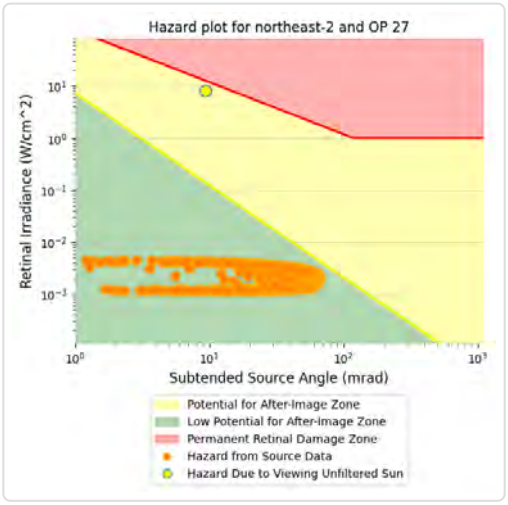
Northeast 2 and OP 27

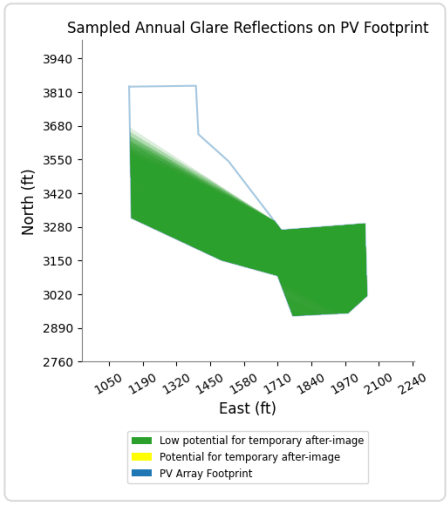
Yellow glare: none

Green glare: 1,643 min.









Northeast 2 and OP 4

No glare found

Northeast 2 and OP 5

No glare found

Northeast 2 and OP 6

No glare found

Northeast 2 and OP 7

No glare found

Northeast 2 and OP 8

No glare found

Northeast 2 and OP 9

No glare found

Northeast 2 and OP 10

No glare found

Northeast 2 and OP 15

No glare found

Northeast 2 and OP 20

No glare found

Northeast 2 and OP 21

No glare found

Northeast 2 and OP 26

No glare found

PV: West Array low potential for temporary after-image

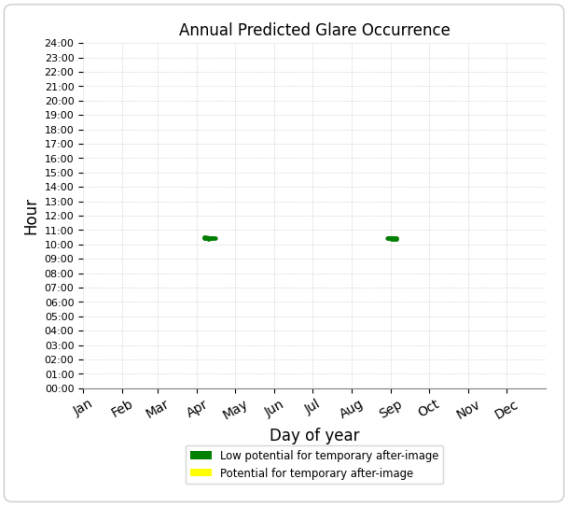
Receptor results ordered by category of glare

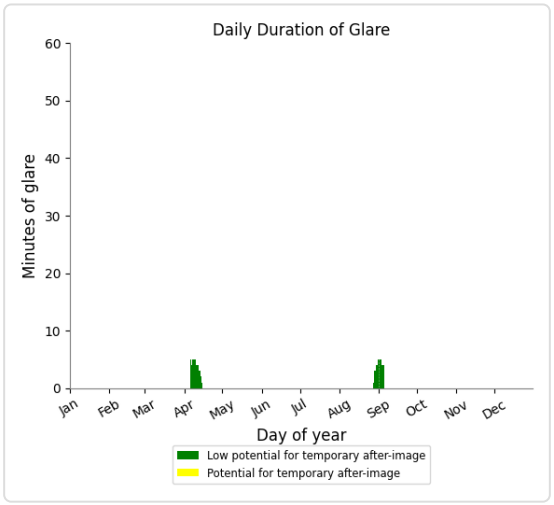
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Massingale Rd	73	1.2	0	0.0
CR 1018	0	0.0	0	0.0
KY 1009	0	0.0	0	0.0
Wayne County Airport 1	0	0.0	0	0.0
Wayne County Airport 2	0	0.0	0	0.0
OP 4	221	3.7	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0
OP 24	0	0.0	0	0.0
OP 25	0	0.0	0	0.0
OP 26	0	0.0	0	0.0
OP 27	0	0.0	0	0.0

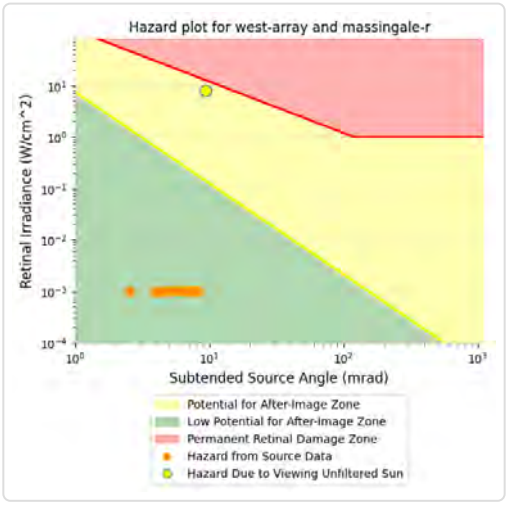
West Array and Route: Massingale Rd

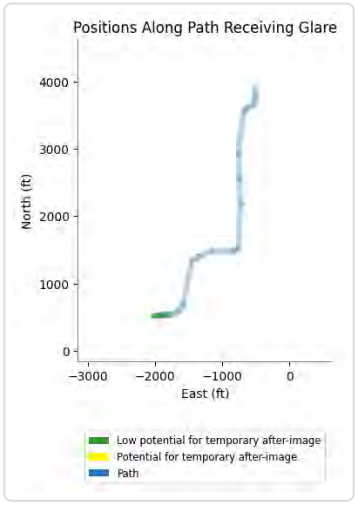
Yellow glare: none

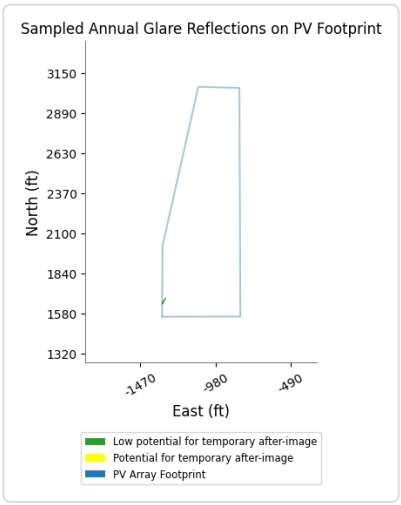
Green glare: 73 min.











West Array and Route: CR 1018

No glare found

West Array and Route: KY 1009

No glare found

West Array and FP: Wayne County Airport 1

No glare found

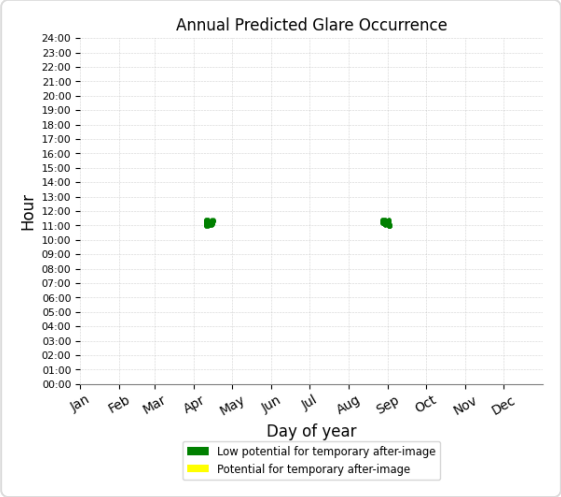
West Array and FP: Wayne County Airport 2

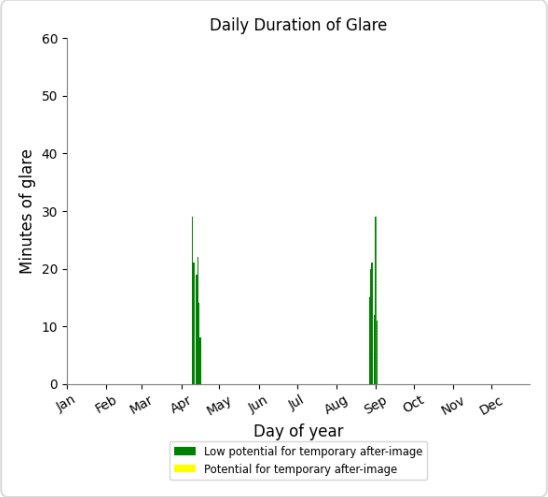
No glare found

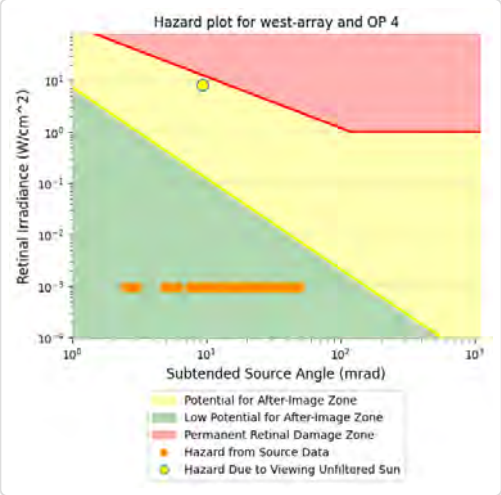
West Array and OP 4

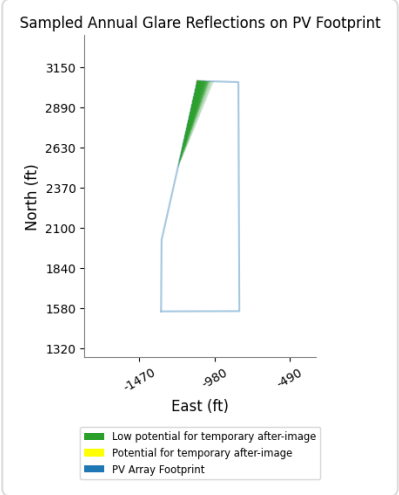
Yellow glare: none

Green glare: 221 min.









West Array and OP 5

No glare found

West Array and OP 6

No glare found

West Array and OP 7

No glare found

West Array and OP 8

No glare found

West Array and OP 9

No glare found

West Array and OP 10

No glare found

West Array and OP 11

No glare found

West Array and OP 12

No glare found

West Array and OP 13

No glare found

West Array and OP 14

No glare found

West Array and OP 15

No glare found

West Array and OP 16

No glare found

West Array and OP 17

No glare found

West Array and OP 18

No glare found

West Array and OP 19

No glare found

West Array and OP 20

No glare found

West Array and OP 21

No glare found

West Array and OP 24

No glare found

West Array and OP 25

No glare found

West Array and OP 26

No glare found

West Array and OP 27

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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

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

FORGESOLAR GLARE ANALYSIS

Project: **Barrelhead Solar**
Site configuration: **5 - with landscape plan**

Created 24 Jul, 2025
Updated 13 Aug, 2025
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Site ID 155729.25673

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

Glare Policy Adherence

The following table estimates the policy adherence of this glare analysis according to the **2021** U.S. Federal Aviation Administration Policy:

Review of Solar Energy System Projects on Federally-Obligated Airports

This policy may require the following criteria be met for solar energy systems on airport property:

- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics, including 1-minute time step.

ForgeSolar is not affiliated with the U.S. FAA and does not represent or speak officially for the U.S. FAA. ForgeSolar cannot approve or deny projects - results are informational only. Contact the relevant airport and FAA district office for information on policy and requirements.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
ATCT(s)	N/A	No ATCT receptors assessed

The referenced policy can be read at https://www.federalregister.gov/d/2021-09862

Component Data

This report includes results for PV arrays and Observation Point ("OP") receptors marked as ATCTs. Components that are not pertinent to the policy, such as routes, flight paths, and vertical surfaces, are excluded.

PV Arrays

Name: Bottom
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.774043	-85.008190	943.39	10.00	953.39
2	36.772093	-85.008233	910.63	10.00	920.63
3	36.772067	-85.007342	909.30	10.00	919.30
4	36.772376	-85.006484	909.29	10.00	919.29
5	36.772462	-85.005545	919.07	10.00	929.07
6	36.772986	-85.004456	900.91	10.00	910.91
7	36.773356	-85.003115	904.55	10.00	914.55
8	36.774499	-85.000980	915.81	10.00	925.81
9	36.774705	-85.000991	915.48	10.00	925.48
10	36.774783	-85.006645	928.83	10.00	938.83

Name: Main Northwest
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778980	-85.010442	992.84	10.00	1002.84
2	36.780138	-85.010367	978.25	10.00	988.25
3	36.782314	-85.010474	982.09	10.00	992.09
4	36.782344	-85.009809	991.10	10.00	1001.10
5	36.782473	-85.009747	994.28	10.00	1004.28
6	36.782709	-85.009555	995.33	10.00	1005.33
7	36.783204	-85.009541	997.21	10.00	1007.21
8	36.783470	-85.009087	1011.10	10.00	1021.10
9	36.784518	-85.009082	998.90	10.00	1008.90
10	36.784531	-85.008532	1019.82	10.00	1029.82
11	36.783986	-85.008511	1012.27	10.00	1022.27
12	36.783988	-85.008092	1013.38	10.00	1023.38
13	36.777222	-85.008173	950.34	10.00	960.34
14	36.777213	-85.008857	942.66	10.00	952.66
15	36.777536	-85.009954	956.40	10.00	966.40
16	36.778978	-85.009927	990.45	10.00	1000.45

Name: Main Southwest
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.776773	-85.012924	976.87	10.00	986.87
2	36.775746	-85.012474	978.30	10.00	988.30
3	36.773705	-85.011457	953.18	10.00	963.18
4	36.773687	-85.010612	949.61	10.00	959.61
5	36.774085	-85.010250	953.72	10.00	963.72
6	36.774070	-85.009319	949.15	10.00	959.15
7	36.774289	-85.008912	947.76	10.00	957.76
8	36.775905	-85.008853	955.72	10.00	965.72
9	36.776429	-85.009625	957.09	10.00	967.09
10	36.776468	-85.011599	952.85	10.00	962.85
11	36.776760	-85.011800	955.87	10.00	965.87

Name: Middle bottom
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778244	-85.008037	964.29	10.00	974.29
2	36.776495	-85.008003	922.02	10.00	932.02
3	36.776057	-85.006881	914.52	10.00	924.52
4	36.775846	-85.006026	917.58	10.00	927.58
5	36.775833	-85.005433	914.00	10.00	924.00
6	36.776465	-85.003979	925.55	10.00	935.55
7	36.776624	-85.003979	926.40	10.00	936.40
8	36.777350	-85.006522	945.26	10.00	955.26
9	36.777354	-85.007144	956.13	10.00	966.13
10	36.777625	-85.007533	960.72	10.00	970.72

Name: Middle Top
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778837	-85.008033	950.88	10.00	960.88
2	36.783987	-85.008015	1013.10	10.00	1023.10
3	36.783273	-85.006310	994.81	10.00	1004.81
4	36.783259	-85.005507	978.47	10.00	988.47
5	36.781925	-85.002621	952.24	10.00	962.24
6	36.781213	-85.004391	967.43	10.00	977.43
7	36.781888	-85.004852	971.02	10.00	981.02
8	36.781884	-85.007363	981.32	10.00	991.32
9	36.780642	-85.007379	984.02	10.00	994.02
10	36.780616	-85.005984	982.34	10.00	992.34
11	36.780015	-85.004965	972.34	10.00	982.34
12	36.779568	-85.004941	971.88	10.00	981.88
13	36.779362	-85.004290	944.63	10.00	954.63
14	36.778674	-85.004271	948.27	10.00	958.27
15	36.778025	-85.003462	929.09	10.00	939.09
16	36.777566	-85.003179	924.01	10.00	934.01
17	36.777342	-85.003549	905.50	10.00	915.50
18	36.777368	-85.004901	913.20	10.00	923.20
19	36.777815	-85.006429	928.12	10.00	938.12
20	36.778416	-85.006413	956.41	10.00	966.41
21	36.778520	-85.007416	936.22	10.00	946.22

Name: Northeast 1
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.785369	-85.006633	1012.24	10.00	1022.24
2	36.785451	-85.006336	1012.86	10.00	1022.86
3	36.785461	-85.005303	1019.74	10.00	1029.74
4	36.785001	-85.004141	1007.26	10.00	1017.26
5	36.784603	-85.003467	1001.55	10.00	1011.55
6	36.784553	-85.006605	1015.80	10.00	1025.80

Name: Northeast 2
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.784553	-85.004340	994.36	10.00	1004.36
2	36.783148	-85.004308	958.78	10.00	968.78
3	36.782697	-85.003111	968.98	10.00	978.98
4	36.782532	-85.002366	966.19	10.00	976.19
5	36.782102	-85.002164	972.84	10.00	982.84
6	36.782132	-85.001432	983.49	10.00	993.49
7	36.782317	-85.001180	985.62	10.00	995.62
8	36.783086	-85.001210	989.88	10.00	999.88
9	36.783017	-85.002317	985.66	10.00	995.66
10	36.783755	-85.003019	985.48	10.00	995.48
11	36.784044	-85.003420	987.27	10.00	997.27
12	36.784563	-85.003452	1000.22	10.00	1010.22

Name: West Array
Axis tracking: Fixed (no rotation)
Tilt: 60.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	36.778311	-85.012742	976.38	10.00	986.38
2	36.778315	-85.010993	984.66	10.00	994.66
3	36.782423	-85.011014	977.90	10.00	987.90
4	36.782444	-85.011932	985.35	10.00	995.35
5	36.779589	-85.012731	977.16	10.00	987.16

Observation Point ATCT Receptors

No ATCT receptors were included in the analysis.

Obstruction Components

Name: Landscape 1
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783064	-85.002266	986.72
2	36.783419	-85.001252	994.88
3	36.782791	-85.000174	998.04

Name: Landscape 2
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.784196	-85.003355	994.03
2	36.784480	-85.003012	1002.54
3	36.785090	-85.004144	1009.92
4	36.785464	-85.004777	1016.29
5	36.785670	-85.005522	1018.57
6	36.785665	-85.005930	1013.52
7	36.785515	-85.006740	1012.49

Name: Landscape 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783866	-85.009639	1008.07
2	36.784068	-85.009204	1013.42
3	36.784914	-85.009231	989.51
4	36.785442	-85.007021	1013.89

Name: Landscape 4
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783724	-85.009896	1001.50
2	36.783582	-85.010057	994.84
3	36.783303	-85.009671	995.94
4	36.783140	-85.009617	996.69
5	36.782929	-85.009596	994.32
6	36.782710	-85.009628	994.27
7	36.782401	-85.009864	990.27
8	36.782242	-85.010615	982.85
9	36.780098	-85.010502	979.26
10	36.778929	-85.010583	991.54

Name: Landscape 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.778632	-85.010175	986.34
2	36.777670	-85.010454	962.36
3	36.777614	-85.011028	965.96

Name: Landscape 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.777988	-85.011076	975.42
2	36.777979	-85.011956	962.70

Name: Landscape 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.777954	-85.012208	962.05
2	36.777627	-85.013008	985.28
3	36.776952	-85.013185	984.37
4	36.774228	-85.011940	966.23

Name: Landscape 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.782426	-85.010846	980.16
2	36.781876	-85.010915	985.85
3	36.780072	-85.010819	978.96
4	36.778327	-85.010899	985.02
5	36.778207	-85.011023	981.16
6	36.778207	-85.012981	985.78

Name: Landscape 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.778265	-85.013015	988.04
2	36.779498	-85.012881	976.20
3	36.780207	-85.012720	990.69

Name: Landscape - for church
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.783064	-85.002306	986.95
2	36.783324	-85.002488	989.22
3	36.783631	-85.002736	989.10
4	36.784136	-85.003327	992.83

Name: Obstruction 1
Top height: 45.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.772301	-85.011993	917.80
2	36.771665	-85.007519	921.84
3	36.771708	-85.005781	926.86
4	36.771974	-85.003893	963.05
5	36.773453	-85.000234	905.72
6	36.774166	-84.999537	894.94
7	36.775223	-84.999097	886.84
8	36.775610	-85.000213	910.85
9	36.776606	-85.001640	909.46
10	36.781092	-85.002670	933.85

Name: Obstruction 2
Top height: 45.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	36.775575	-85.013917	968.65
2	36.774883	-85.013675	961.50
3	36.774131	-85.013176	948.96
4	36.773379	-85.012602	933.63
5	36.773065	-85.012216	923.59
6	36.772863	-85.012200	911.91

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Bottom	60.0	180.0	0	0.0	0	0.0	-
Main Northwest	60.0	180.0	0	0.0	0	0.0	-
Main Southwest	60.0	180.0	0	0.0	0	0.0	-
Middle bottom	60.0	180.0	0	0.0	0	0.0	-
Middle Top	60.0	180.0	0	0.0	0	0.0	-
Northeast 1	60.0	180.0	0	0.0	0	0.0	-
Northeast 2	60.0	180.0	0	0.0	0	0.0	-
West Array	60.0	180.0	0	0.0	0	0.0	-

No ATCT receptors were included in the analysis.

PV: Bottom

No ATCT receptors assessed.

PV: Main Northwest

No ATCT receptors assessed.

PV: Main Southwest

No ATCT receptors assessed.

PV: Middle bottom

No ATCT receptors assessed.

PV: Middle Top

No ATCT receptors assessed.

PV: Northeast 1

No ATCT receptors assessed.

PV: Northeast 2

No ATCT receptors assessed.

PV: West Array

No ATCT receptors assessed.

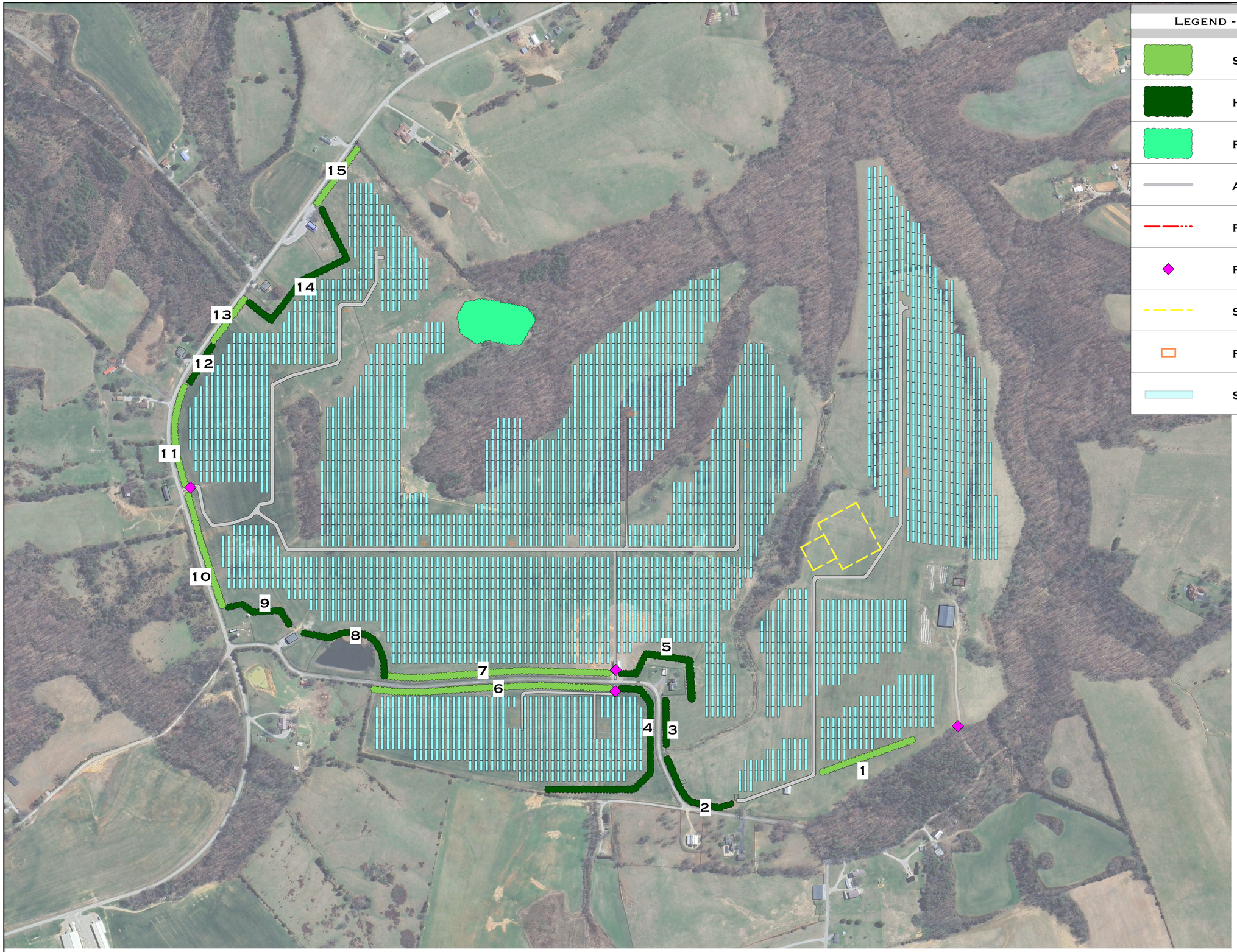
Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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

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

Appendix B
Landscaping Plan



Legend - Landscape Plan

- Standard Screening
- Heavy Screening
- Pollinator Meadow
- Access Roads
- Project Boundary
- Points of Access
- Substation
- Power Inverters
- Solar Panels

N

0 500 1000 ft

1 Site Overview
Scale: 1:3000

DEARBORN & ASSOCIATES
ENGINEERING | PROJECT MANAGEMENT | CONSULTING

Project Area:

Preliminary Landscape

Client Name and Address:

Barrelhead Solar

Wayne County Kentucky

Date: 8/13/25

Scale: 1:3000

LS-1

PLANT LEGEND

CC
Cercis canadensis
Eastern Redbud

CR
Cornus racemosa
Gray Dogwood

JV
Juniperus virginiana
Eastern Red Cedar

PS
Pinus strobus
Eastern White Pine

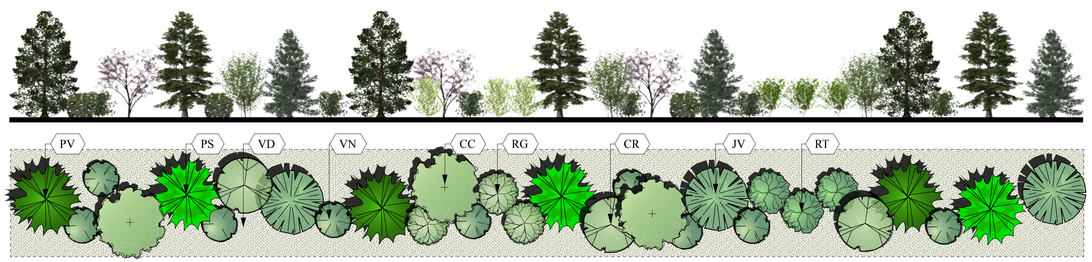
PV
Pinus virginiana
Virginia Pine

RG
Rhus glabra
Smooth Sumac

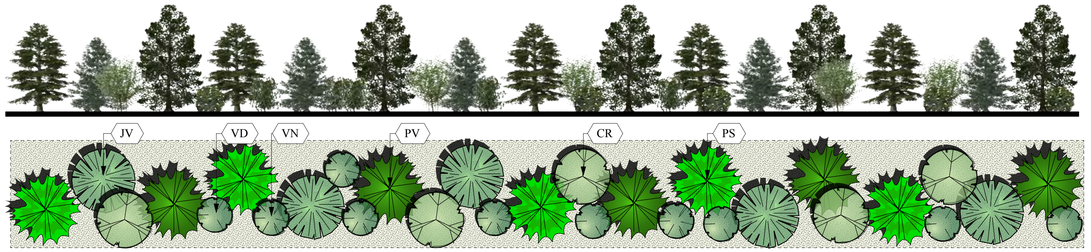
RT
Rhus typhina
Staghorn Sumac

VD
Viburnum dentatum
Arrowwood Viburnum

VN
Viburnum nudum
Witherod Viburnum



2 **Standard Screening**
Scale: 1" = 20'-0"



3 **Dense Screening**
Scale: 1" = 20'-0"

0 50 100 ft

Quantities by Segment

Total Qty	Symbol	SEGMENT: 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SF		17078	16458	8467	19081	23051	41337	38427	20085	12504	20668	17846	7947	9606	32319	12235
Acres		0.392	0.378	0.194	0.438	0.529	0.949	0.882	0.461	0.287	0.474	0.410	0.182	0.221	0.742	0.281
Linear Feet		569	549	282	636	768	1378	1281	670	417	689	595	265	320	1077	408
Conifers																
130	JV	5	8	4	20	12	13	12	10	6	6	6	4	3	17	4
130	PS	5	8	4	20	12	13	12	10	6	6	6	4	3	17	4
130	PV	5	8	4	20	12	13	12	10	6	6	6	4	3	17	4
390		**15**	**24**	**12**	**60**	**36**	**39**	**36**	**30**	**18**	**18**	**18**	**12**	**9**	**51**	**12**
Shrubs																
49	CC	5	0	0	0	0	13	12	0	0	6	6	0	3	0	4
130	CR	5	8	4	20	12	13	12	10	6	6	6	4	3	17	4
49	RG	5	0	0	0	0	13	12	0	0	6	6	0	3	0	4
49	RT	5	0	0	0	0	13	12	0	0	6	6	0	3	0	4
130	VD	5	8	4	20	12	13	12	10	6	6	6	4	3	17	4
180	VN	11	8	4	20	12	26	24	10	6	12	12	4	6	17	8
587		**36**	**24**	**12**	**60**	**36**	**91**	**84**	**30**	**18**	**42**	**42**	**12**	**21**	**51**	**28**
977	**TTL**	**51**	**48**	**24**	**120**	**72**	**130**	**120**	**60**	**36**	**60**	**60**	**24**	**30**	**102**	**40**

Plant Schedule

	ID	Qty	Common Name	Botanical Name	Plant Zones	Mature Height	Mature Width	Growth Habit	Scheduled Size
Conifers									
	JV	130	Eastern Red Cedar	*Juniperus virginiana*	3| 4| 5| 6| 7| 8| 9	35 - 50 ft	12 - 20 ft	Pyramidal	4-5' B&B / Container
	PS	130	Eastern White Pine	*Pinus strobus*	3| 4| 5| 6| 7| 8| 9	50 - 80 ft	12 - 20 ft	Pyramidal	5-6' B&B / Container
	PV	130	Virginia Pine	*Pinus virginiana*	4| 5| 6| 7| 8	15 - 35 ft	12 - 20 ft	Irregular	4-5' B&B / Container
Shrubs									
	CC	49	Eastern Redbud	*Cercis canadensis*		5| 6| 7| 8| 9	20 - 35 ft.	20 - 35 ft.	Round	4-5' B&B / Container
	CR	130	Gray Dogwood	*Cornus racemosa*	3| 4| 5| 6| 7| 8	7 - 12 ft	7 - 12 ft	Rounded	3' B&B / Container
	RG	49	Smooth Sumac	*Rhus glabra*	2| 3| 4| 5| 6| 7| 8| 9	7 - 12 ft	7 - 12 ft	Rounded	3' B&B / Container
	RT	49	Staghorn Sumac	*Rhus typhina*	4| 5| 6| 7| 8	12 - 20 ft	12 - 20 ft	Spreading	3' B&B / Container
	VD	130	Arrowwood Viburnum	*Viburnum dentatum*	2| 3| 4| 5| 6| 7| 8	4 - 7 ft	4 - 7 ft	Upright	3' B&B / Container
	VN	180	Witherod Viburnum	*Viburnum nudum*	5| 6| 7| 8| 9	7 - 12 ft	7 - 12 ft	Oval	3' B&B / Container

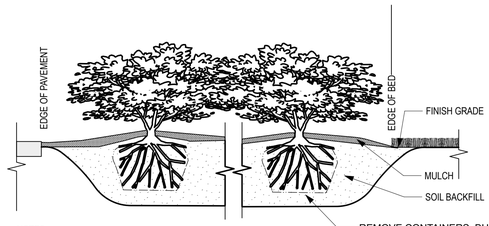
Vegetative Screening Notes:

Shrub and Tree Installation

1. The contractor is responsible for the accurate layout of all work as outlined in these plans.
2. All plant materials, unless specified otherwise, should have uniform branching and a strong, healthy root system. They must be free of defects, diseases, insect infestations, decay, pest eggs, or any signs of infestation. The plants should be in good health, show no transplant shock or visible wilting, and be fresh. Any plants that appear unhealthy will be rejected.
3. All plant materials must meet the minimum requirements and standards outlined in the latest edition of "The American Standard for Nursery Stock" published by the American Association of Nurserymen, 1250 I Street, N.W., Suite 500, Washington, D.C. 20005.
4. All container-grown stock must have been propagated in a container long enough for the root system to be sufficiently developed, allowing it to retain its soil. Any container stock with underdeveloped roots will be rejected.
5. Plants must be prepared for shipment in a manner that ensures no damage to the bark, buds, branches, stems, or overall form of the stock. Container-grown plants should be transported in the containers they were grown in.
6. If plants are not installed on the same day they arrive at the site, the contractor must store and protect them. Storage areas should be shaded and shielded from wind and sun. While on-site, plants should be kept moist by covering the balls or roots with wet burlap, moist sawdust, wood chips, shredded bark, peat moss, or other approved materials to prevent drying out.
7. Plant substitutions may be made if necessary, based on availability, but must match the size and landscape (screening) value of the original plants. All substitutions must be approved by the owner or the owner's representative.
8. The contractor is responsible for verifying all dimensions on-site.
9. Planting shall not take place when the soil is frozen.

Planting Procedure:

- Dig the planting hole at least twice the width of the rootball for the first 12 inches of depth. Below 12 inches, widen the hole enough to allow for adjustment, but do not exceed the rootball's depth measured from base of root flare to bottom of ball.
- Holes for individual plantings should have vertical sides and a flat bottom. Ensure the sides and bottom of the planting hole are roughened or scarified.
- Lift and position the tree by the rootball only—do not lift by the trunk or use the trunk as leverage.
- Remove all foreign or non biodegradable material from root ball including top 1/3 of wire basket.
- Ensure burlap and twine is pulled away from trunk and any excess burlap removed.
- Backfill with soil that has been well-tilled or broken up to ensure proper settling.
- Pruning should be limited to the removal of dead, diseased, or broken limbs and must follow ANSI A300 specifications.
- Remove any remaining trunk wrap at planting and avoid placing any wraps around the trunk.
- The contractor is responsible for restoring areas disturbed during the installation of shrubs and trees.



NOTES
1. PROVIDE MULCHED CIRCULAR SAUCER FOR INDIVIDUAL PLANTS.
2. ROOT FLARE SHOULD BE VISIBLE AT BASE.

Project Acceptance, Maintenance, and Warranty:

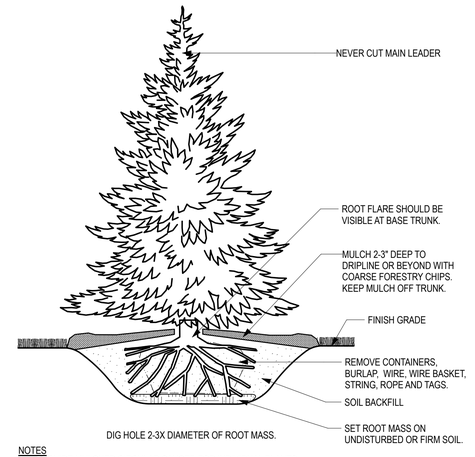
1. Plant areas will be inspected upon completion of installation and will receive initial acceptance if they meet the specified materials and installation requirements. Once the complete installation of all plant material is initially accepted, the warranty period will commence.
2. The contractor is responsible for maintaining the installed shrubs and trees within the project limits until final acceptance of the project by the engineer, which occurs at the end of the warranty period. Maintenance responsibilities include pruning, cultivating, weeding, watering, and ensuring plants remain free from insect infestations, diseases, and other damage from herbivores until final acceptance. The maintenance period will continue throughout the warranty period.
3. The contractor warrants that plant material will remain alive and in healthy, vigorous condition for one (1) year following the initial acceptance. If planting occurs over multiple planting windows, the warranty will apply to all plant material based on the warranty period of the most recently installed plants.
4. All plants deemed unsatisfactory by the owner's representative during the initial planting installation must be removed and immediately replaced.
5. Any plants that are dead or severely unhealthy, as determined by the owner's representative, within the warranty period must be replaced immediately, following the drawings and specifications. These replacements are at the contractor's expense and should be installed during the next suitable planting season.
6. Tree staking should be removed after one full growing season. If staking is necessary for replaced warranty plants, these stakes must be removed after one full growing season following their installation.
7. The contractor is responsible for providing herbivory protection throughout the maintenance and warranty period. Any plants replaced due to herbivory damage will be at the contractor's expense.
8. Upon final acceptance, plant maintenance responsibilities will be transferred to the owner.

PROJECT MEASUREMENT AND PAYMENT:

1. Payment for planting will be based on the actual number of individual plants that are installed and maintained.
2. All work under this item will be compensated at the contract unit price per plant. This price constitutes partial payment (90%) for all associated work, including materials, labor, warranty, and any other incidental items up to initial acceptance. The remaining 10% will be paid upon final acceptance, following the completion of the warranty period.

NOTES:

1. Mature height, spread, and average annual growth are approximate. Actual size and growth rates may vary.
2. Project is located in USDA planting zone 7a (Livingston County, Kentucky)
3. Plant species shown reflect the design intent. Substitutions may be made based on the availability of local nursery stock. The contractor may propose alternative species, subject to approval by the landscape architect.



DIG HOLE 2-3X DIAMETER OF ROOT MASS.

NOTES
1. PROVIDE MULCHED CIRCULAR SAUCER FOR INDIVIDUAL PLANTS.
2. GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE LANDSCAPE ARCHITECT. LOCAL FIELD CONDITIONS AS WELL AS PLANT CHARACTERISTICS WILL DETERMINE THE NECESSITY OF GUYING AND STAKING.
3. TYPICALLY ONLY TREES WITH A 3" OR GREATER CALIPER NEED TO BE STAKED. TREES WITH LESS THAN A 3" CALIPER NEED TO BE STAKED ONLY AS A REQUIRED BY LANDSCAPE ARCHITECT.

DEARBORN & ASSOCIATES
ARCHITECTURE / PLANNING / ENGINEERING / CONSTRUCTION

PRELIMINARY LANDSCAPE

PROJECT AREA:
CLIENT NAME AND ADDRESS:
BARRELHEAD SOLAR
WAYNE COUNTY KENTUCKY

DATE: 8/13/25
SCALE: AS NOTED
LS-2