

Blythe Solar Farm

Blythe Solar Farm Residential 20 degrees

Created May 30, 2023

Updated May 30, 2023

Time-step 1 minute

Timezone offset UTC0

Minimum sun altitude 0.0 deg

Site ID 91753.16130

Project type Advanced

Project status: active

Category 10 MW to 100 MW



Misc. Analysis Settings

DNI: varies (1,000.0 W/m^2 peak)

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: Version 2

Enhanced subtended angle calculation: On

Summary of Results

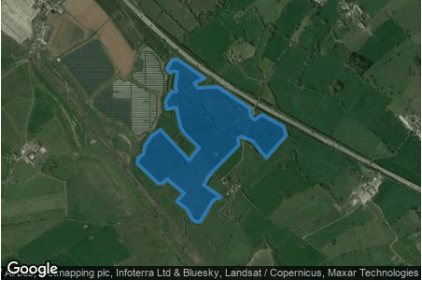
Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
East Array	20.0	180.0	9,149	5,147	-
West Array	20.0	180.0	10,269	7,168	-

Component Data

PV Array(s)

Total PV footprint area: 474,034 m^2

Name: East Array Footprint area: 350,479 m^2 Axis tracking: Fixed (no rotation) Tilt: 20.0 deg Orientation: 180.0 deg Rated power: - Panel material: Light textured glass with AR coating Vary reflectivity with sun position? Yes Correlate slope error with surface type? Yes Slope error: 9.16 mrad 	Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
		deg	deg	m	m	m
	1	52.944884	-2.008517	162.47	3.10	165.57
	2	52.944910	-2.008045	164.31	3.10	167.41
	3	52.943863	-2.005534	171.16	3.10	174.26
	4	52.943604	-2.006478	166.19	3.10	169.29
	5	52.943333	-2.006178	167.14	3.10	170.24
	6	52.943397	-2.004375	172.87	3.10	175.97
	7	52.942208	-2.001414	181.37	3.10	184.47
	8	52.941729	-2.001264	180.64	3.10	183.74
	9	52.941574	-2.000921	179.98	3.10	183.08
	10	52.941846	-2.000277	181.65	3.10	184.75
	11	52.941189	-1.998303	181.18	3.10	184.28
	12	52.940698	-1.998045	180.08	3.10	183.18
	13	52.939443	-1.999869	171.02	3.10	174.12
	14	52.939728	-2.000299	172.05	3.10	175.15
	15	52.940361	-2.001092	174.04	3.10	177.14
	16	52.940633	-2.002165	174.03	3.10	177.13
	17	52.940504	-2.002487	172.07	3.10	175.17
	18	52.940167	-2.002401	170.32	3.10	173.42
	19	52.938448	-2.005191	154.92	3.10	158.02
	20	52.937943	-2.005620	152.74	3.10	155.84
	21	52.937271	-2.004032	154.27	3.10	157.37
	22	52.937090	-2.004762	152.62	3.10	155.72
	23	52.935913	-2.005942	148.50	3.10	151.60
	24	52.935913	-2.006371	148.31	3.10	151.41
	25	52.936055	-2.006714	148.32	3.10	151.42
	26	52.936572	-2.007122	148.32	3.10	151.42
	27	52.937038	-2.008109	147.66	3.10	150.76
	28	52.937491	-2.007444	149.52	3.10	152.62
	29	52.938267	-2.009010	148.41	3.10	151.51
	30	52.938060	-2.009354	147.51	3.10	150.61
	31	52.938021	-2.009804	147.45	3.10	150.55
	32	52.939133	-2.011735	147.47	3.10	150.57
	33	52.939456	-2.011650	147.94	3.10	151.04
	34	52.939663	-2.011178	148.28	3.10	151.38
	35	52.940116	-2.011049	149.19	3.10	152.29
	36	52.940659	-2.010448	150.09	3.10	153.19
	37	52.941008	-2.009590	151.34	3.10	154.44
	38	52.939327	-2.006972	152.84	3.10	155.94
	39	52.940012	-2.006049	157.56	3.10	160.66
	40	52.940814	-2.007422	157.33	3.10	160.43
	41	52.941176	-2.007787	156.77	3.10	159.87
	42	52.942236	-2.008152	156.78	3.10	159.88
	43	52.942146	-2.009053	155.36	3.10	158.46
	44	52.942573	-2.009161	156.08	3.10	159.18
	45	52.943051	-2.008688	157.54	3.10	160.64
	46	52.943155	-2.008088	159.13	3.10	162.23
	47	52.943374	-2.008259	159.72	3.10	162.82
	48	52.944215	-2.008066	161.06	3.10	164.16
	49	52.944254	-2.008367	160.92	3.10	164.02
	50	52.944163	-2.008753	159.49	3.10	162.59
	51	52.944383	-2.008989	160.26	3.10	163.36

Name: West Array
Footprint area: 123,555 m^2
Axis tracking: Fixed (no rotation)
Tilt: 20.0 deg
Orientation: 180.0 deg
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	52.948071	-2.018159	166.55	3.10	169.65
2	52.949235	-2.016206	173.30	3.10	176.40
3	52.949235	-2.015563	174.54	3.10	177.64
4	52.946571	-2.010649	170.44	3.10	173.54
5	52.946171	-2.011078	167.18	3.10	170.28
6	52.946183	-2.011421	168.43	3.10	171.53
7	52.944813	-2.012237	165.42	3.10	168.52
8	52.944089	-2.012601	162.83	3.10	165.93
9	52.944076	-2.013074	161.77	3.10	164.87
10	52.946313	-2.015069	169.02	3.10	172.12
11	52.947722	-2.018095	166.98	3.10	170.08

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	52.950245	-2.032672	160.84	2.00	162.84
OP 2	52.948271	-2.018702	164.92	2.00	166.92
OP 3	52.948223	-2.019780	161.98	2.00	163.98
OP 4	52.947334	-2.020332	159.12	2.00	161.12
OP 5	52.945113	-2.021513	152.67	2.00	154.67
OP 6	52.939611	-2.022902	158.98	2.00	160.98
OP 7	52.952140	-2.001519	179.30	2.00	181.30
OP 8	52.952350	-2.000468	178.71	2.00	180.71
OP 9	52.951788	-2.000602	179.59	2.00	181.59
OP 10	52.944789	-2.002924	184.47	2.00	186.47
OP 11	52.947922	-1.995156	166.95	2.00	168.95
OP 12	52.946816	-1.993083	160.88	2.00	162.88
OP 13	52.947110	-1.992188	155.97	2.00	157.97
OP 14	52.940724	-1.986257	174.13	2.00	176.13
OP 15	52.937760	-2.002782	158.37	2.00	160.37
OP 16	52.938213	-1.991018	170.92	2.00	172.92

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
East Array	20.0	180.0	9,149	5,147	-	-
West Array	20.0	180.0	10,269	7,168	-	-

Distinct glare per month

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

PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
east-array (green)	0	0	750	803	866	867	906	737	1052	43	0	0
east-array (yellow)	0	0	3	460	610	581	586	587	118	0	0	0
west-array (green)	0	0	309	872	747	756	764	833	607	4	0	0
west-array (yellow)	0	0	0	137	652	697	698	344	1	0	0	0

PV & Receptor Analysis Results

Results for each PV array and receptor

East Array potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	127	0
OP: OP 6	3920	692
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	986	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	1808	199
OP: OP 15	868	2040
OP: OP 16	1440	2216

East Array: OP 1

No glare found

East Array: OP 2

No glare found

East Array: OP 3

No glare found

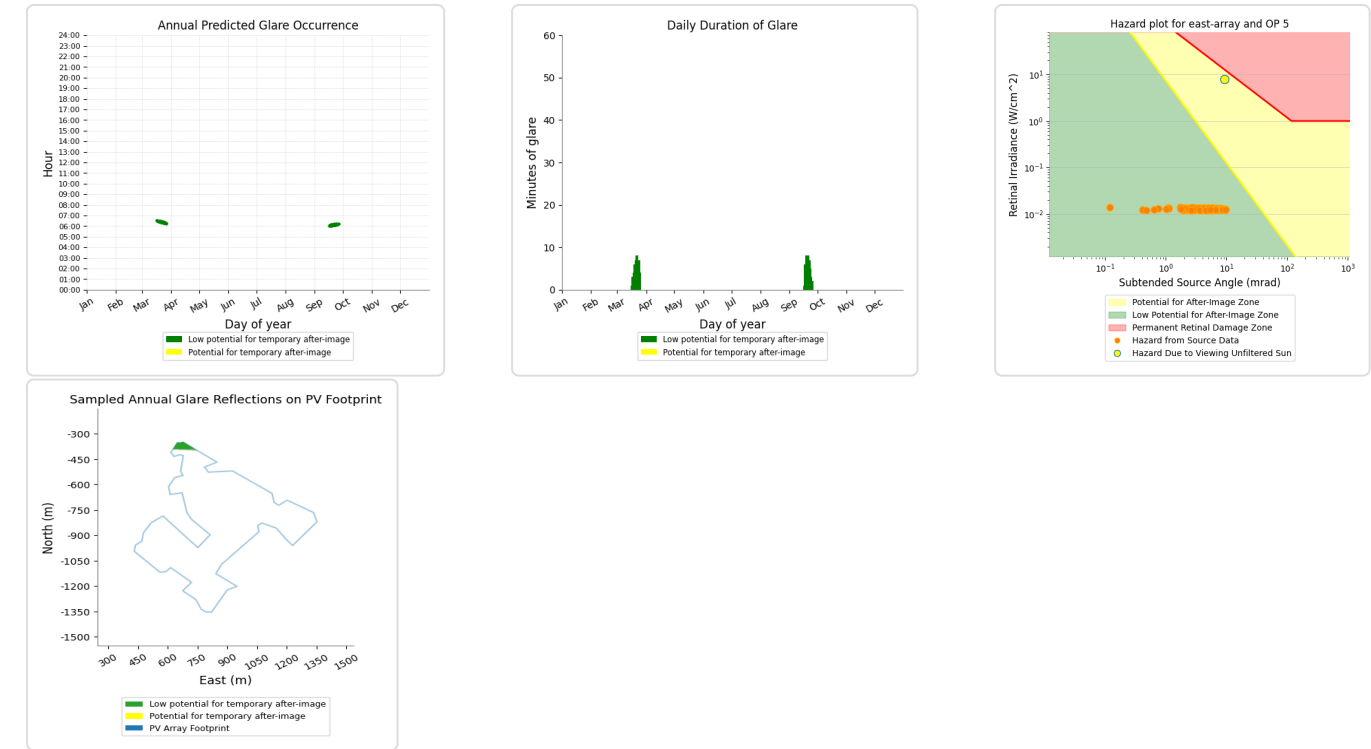
East Array: OP 4

No glare found

East Array: OP 5

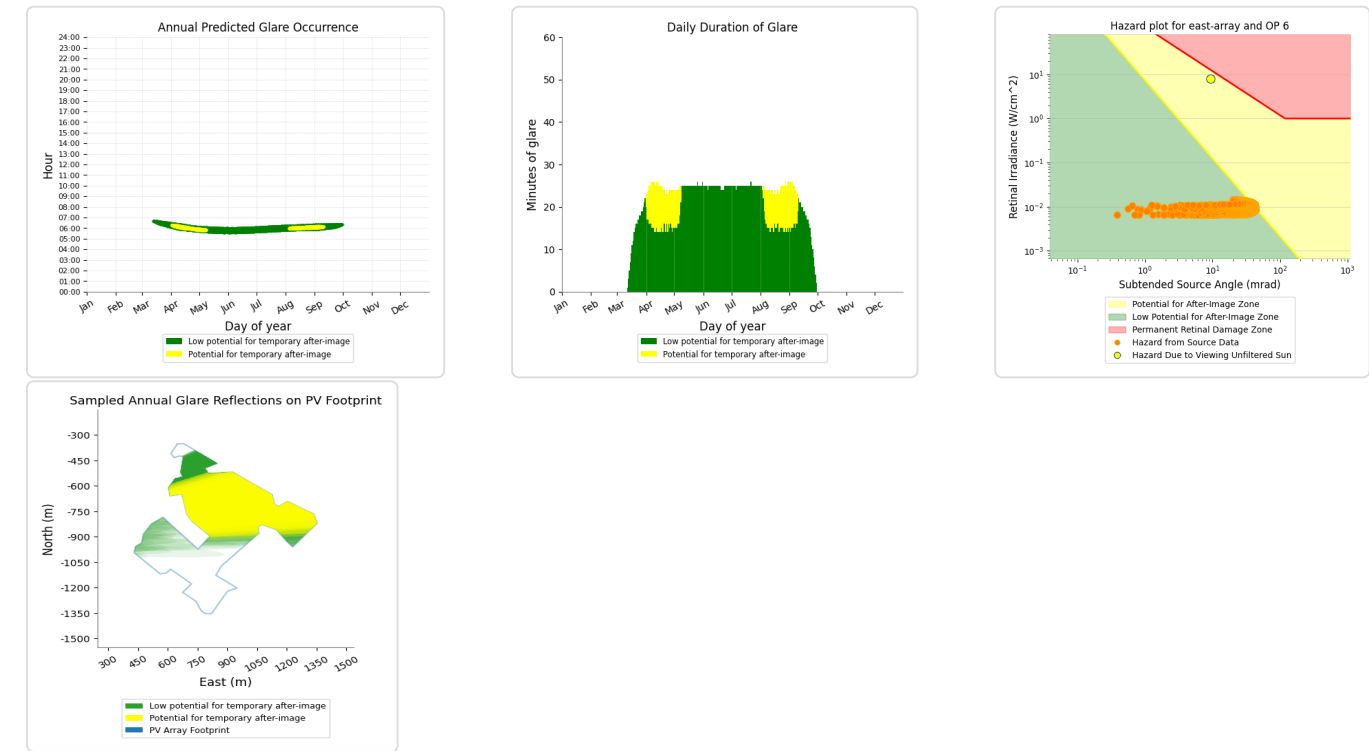
PV array is expected to produce the following glare for this receptor:

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



East Array: OP 6

- PV array is expected to produce the following glare for this receptor:
- 3,920 minutes of "green" glare with low potential to cause temporary after-image.
 - 692 minutes of "yellow" glare with potential to cause temporary after-image.



East Array: OP 7

No glare found

East Array: OP 8

No glare found

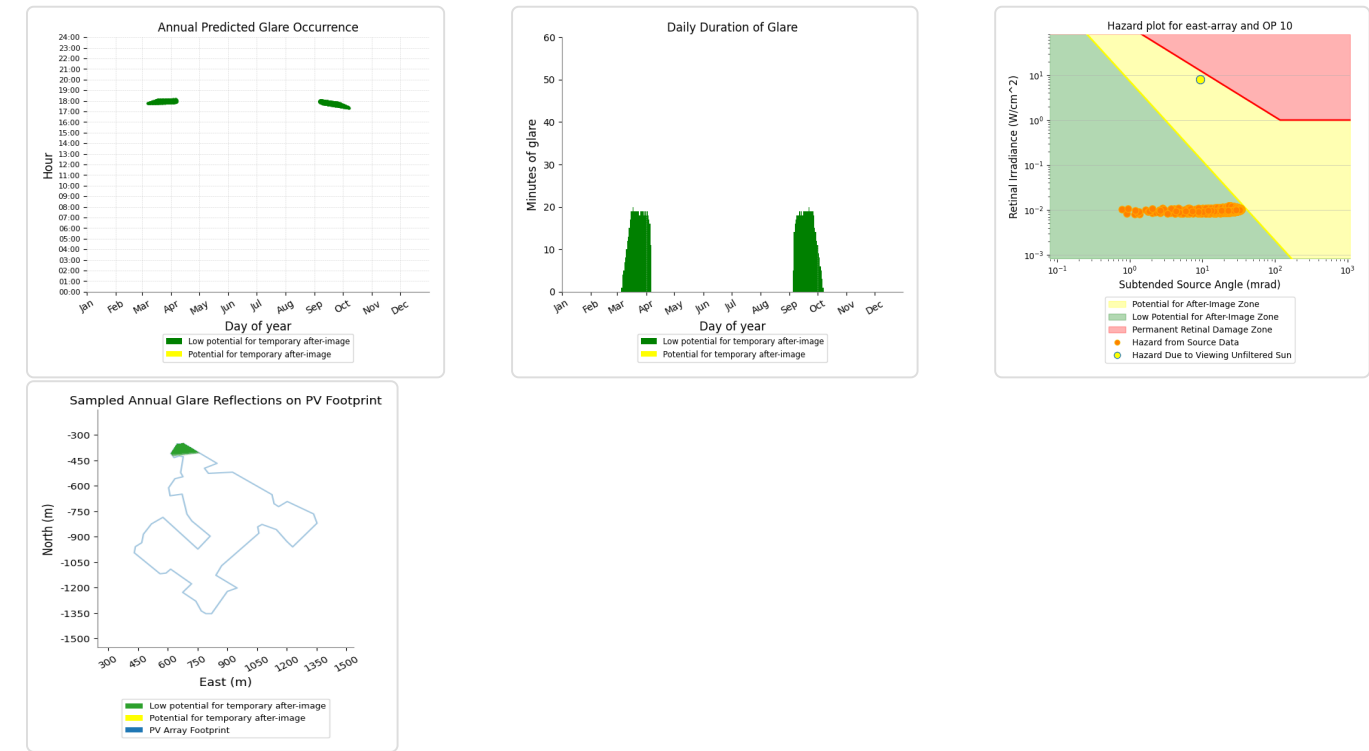
East Array: OP 9

No glare found

East Array: OP 10

PV array is expected to produce the following glare for this receptor:

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



East Array: OP 11

No glare found

East Array: OP 12

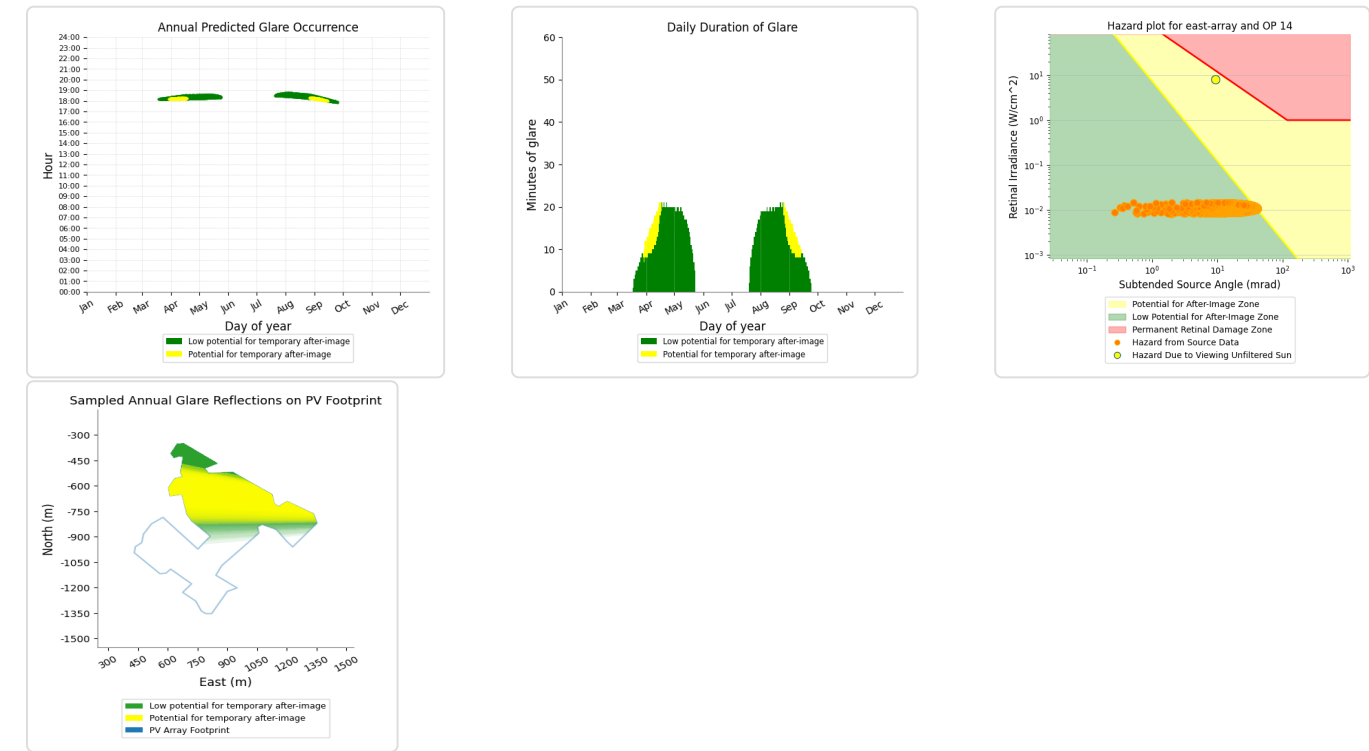
No glare found

East Array: OP 13

No glare found

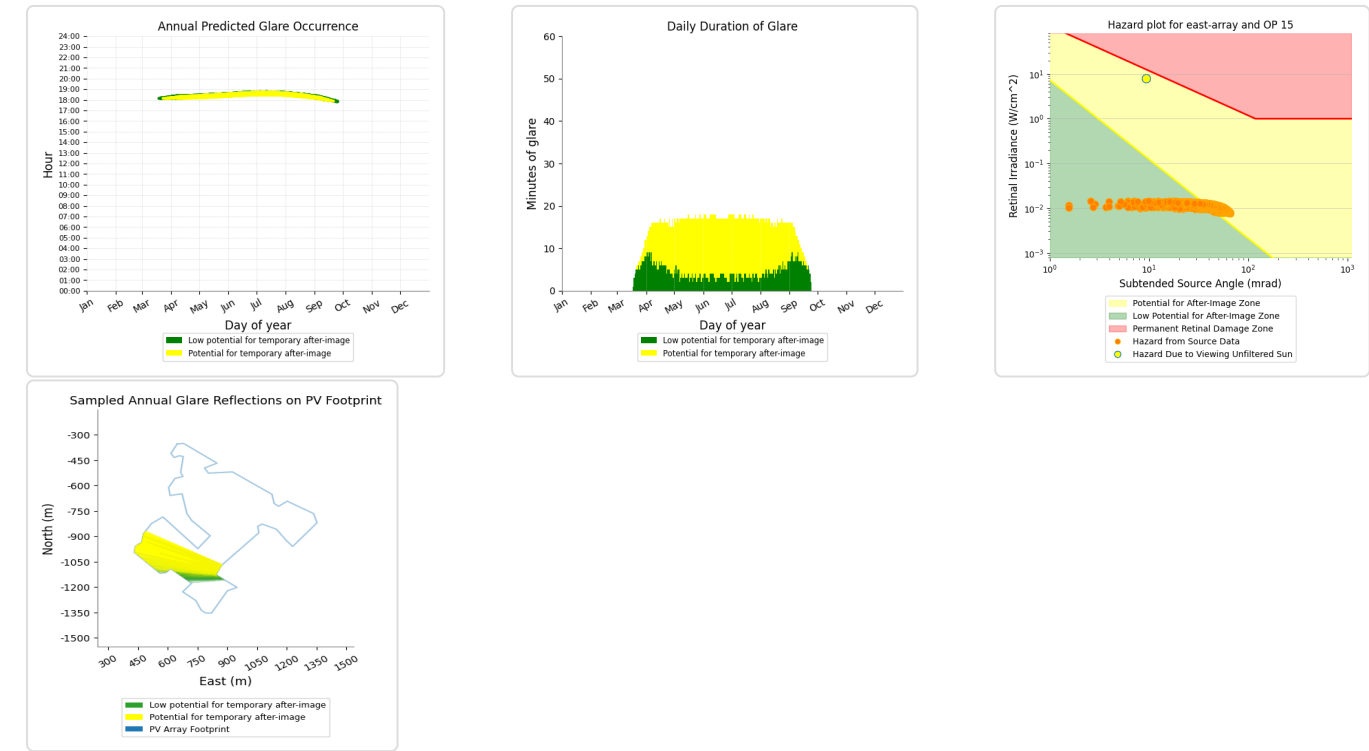
East Array: OP 14

- PV array is expected to produce the following glare for this receptor:
- 1,808 minutes of "green" glare with low potential to cause temporary after-image.
 - 199 minutes of "yellow" glare with potential to cause temporary after-image.



East Array: OP 15

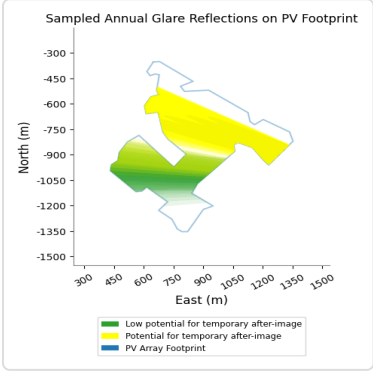
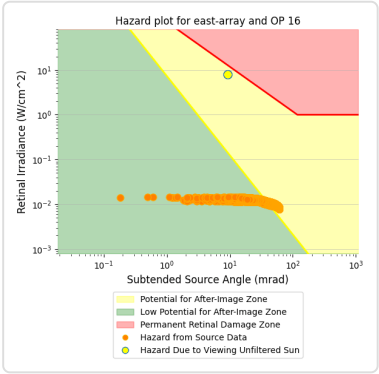
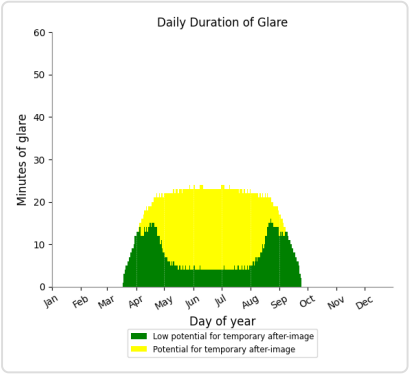
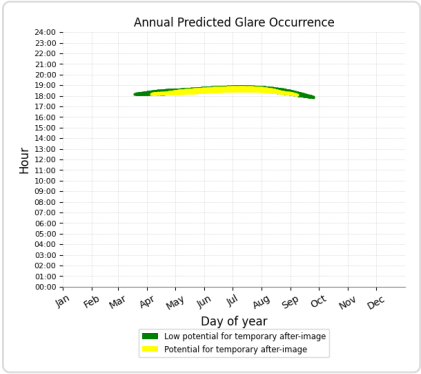
- PV array is expected to produce the following glare for this receptor:
- 868 minutes of "green" glare with low potential to cause temporary after-image.
 - 2,040 minutes of "yellow" glare with potential to cause temporary after-image.



East Array: OP 16

PV array is expected to produce the following glare for this receptor:

- 1,440 minutes of "green" glare with low potential to cause temporary after-image.
- 2,216 minutes of "yellow" glare with potential to cause temporary after-image.



West Array potential temporary after-image

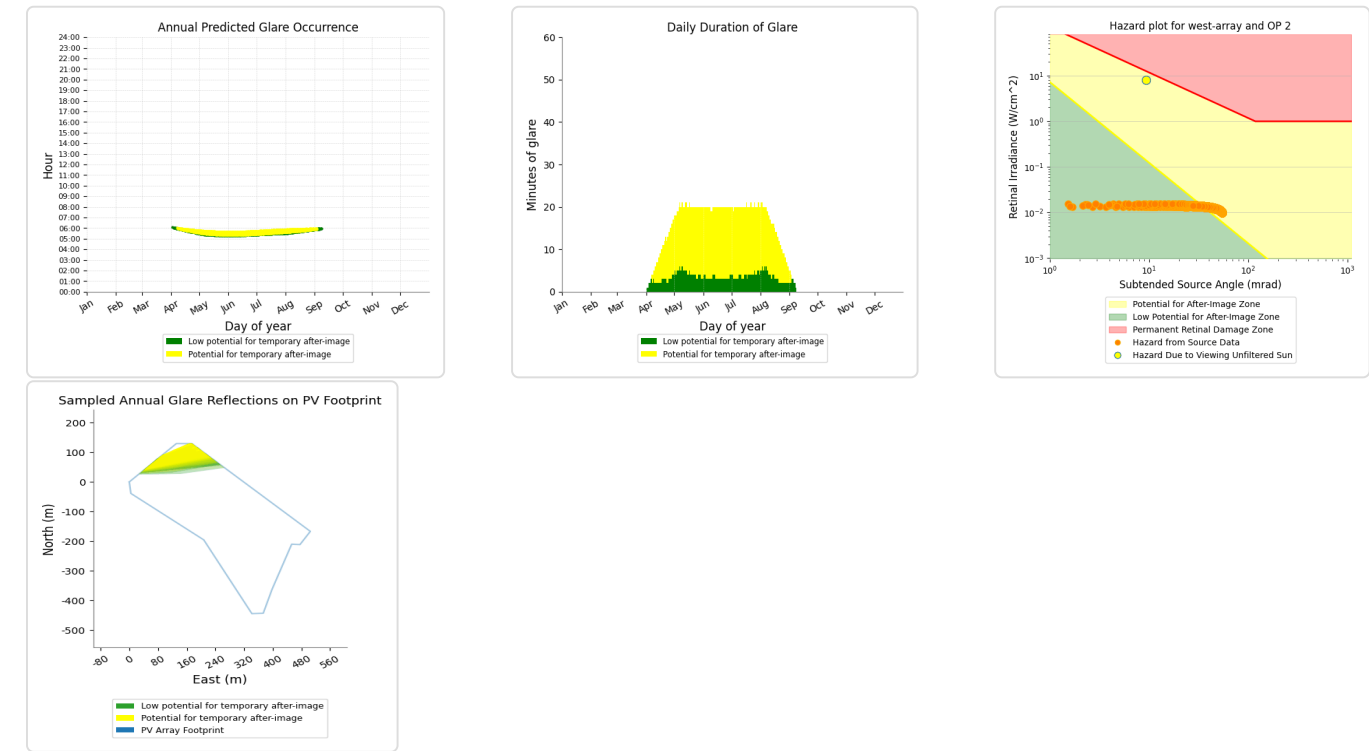
Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	546	2020
OP: OP 3	1806	654
OP: OP 4	645	2043
OP: OP 5	1351	851
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	1771	1600
OP: OP 11	348	0
OP: OP 12	682	0
OP: OP 13	547	0
OP: OP 14	2048	0
OP: OP 15	0	0
OP: OP 16	525	0

West Array: OP 1

No glare found

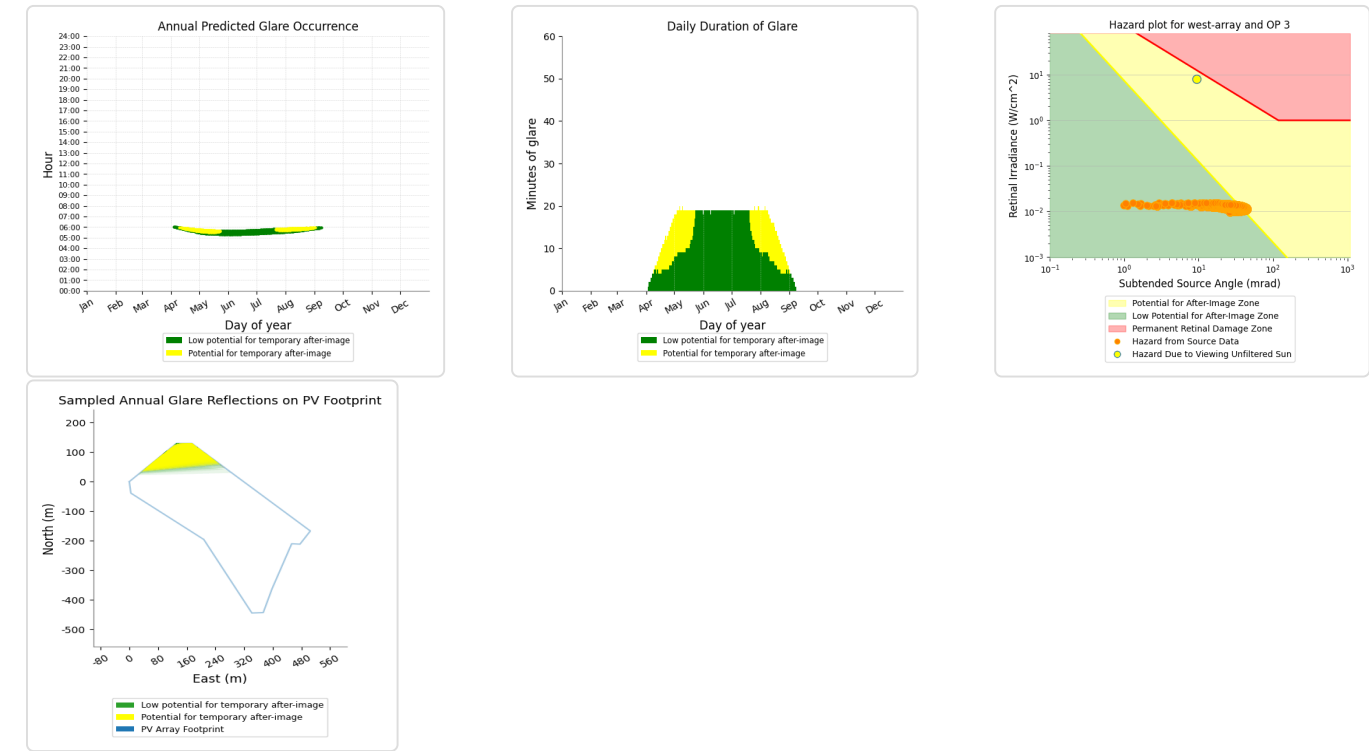
West Array: OP 2

- PV array is expected to produce the following glare for this receptor:
- 546 minutes of "green" glare with low potential to cause temporary after-image.
 - 2,020 minutes of "yellow" glare with potential to cause temporary after-image.



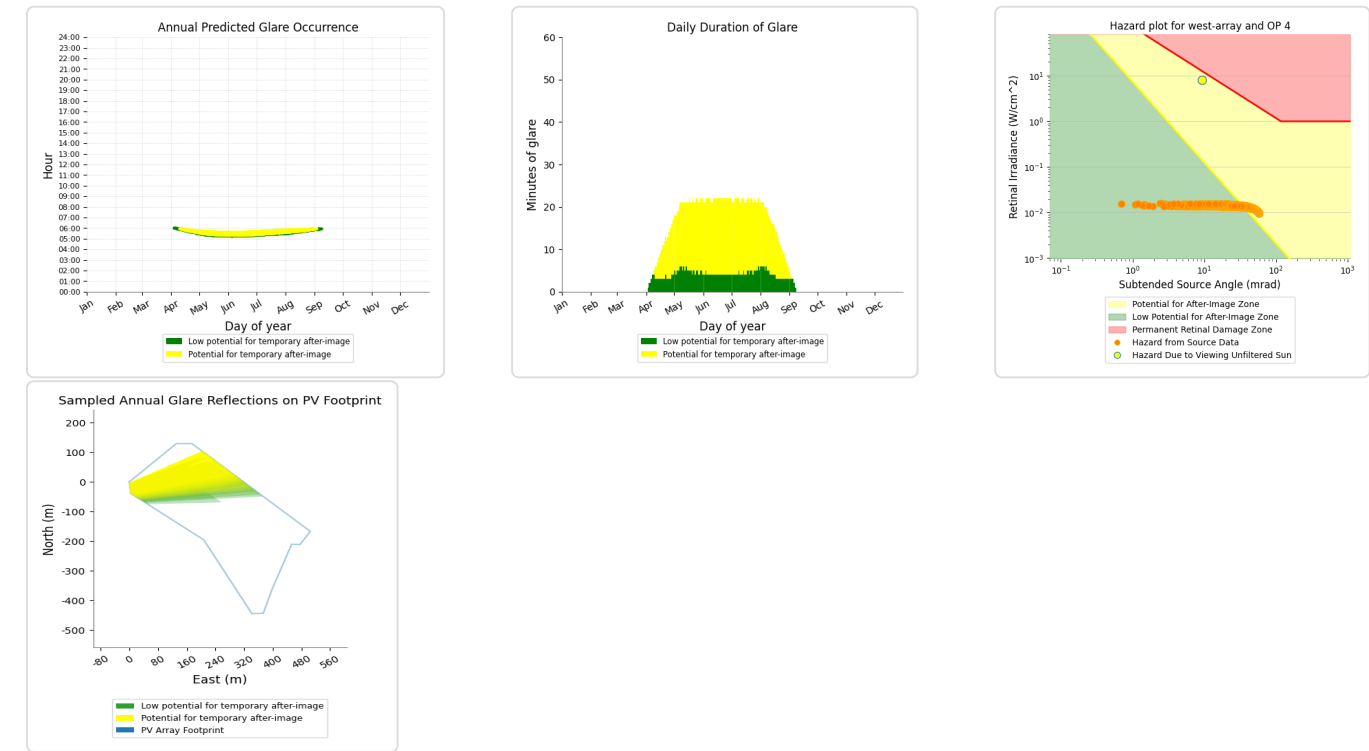
West Array: OP 3

- PV array is expected to produce the following glare for this receptor:
- 1,806 minutes of "green" glare with low potential to cause temporary after-image.
 - 654 minutes of "yellow" glare with potential to cause temporary after-image.



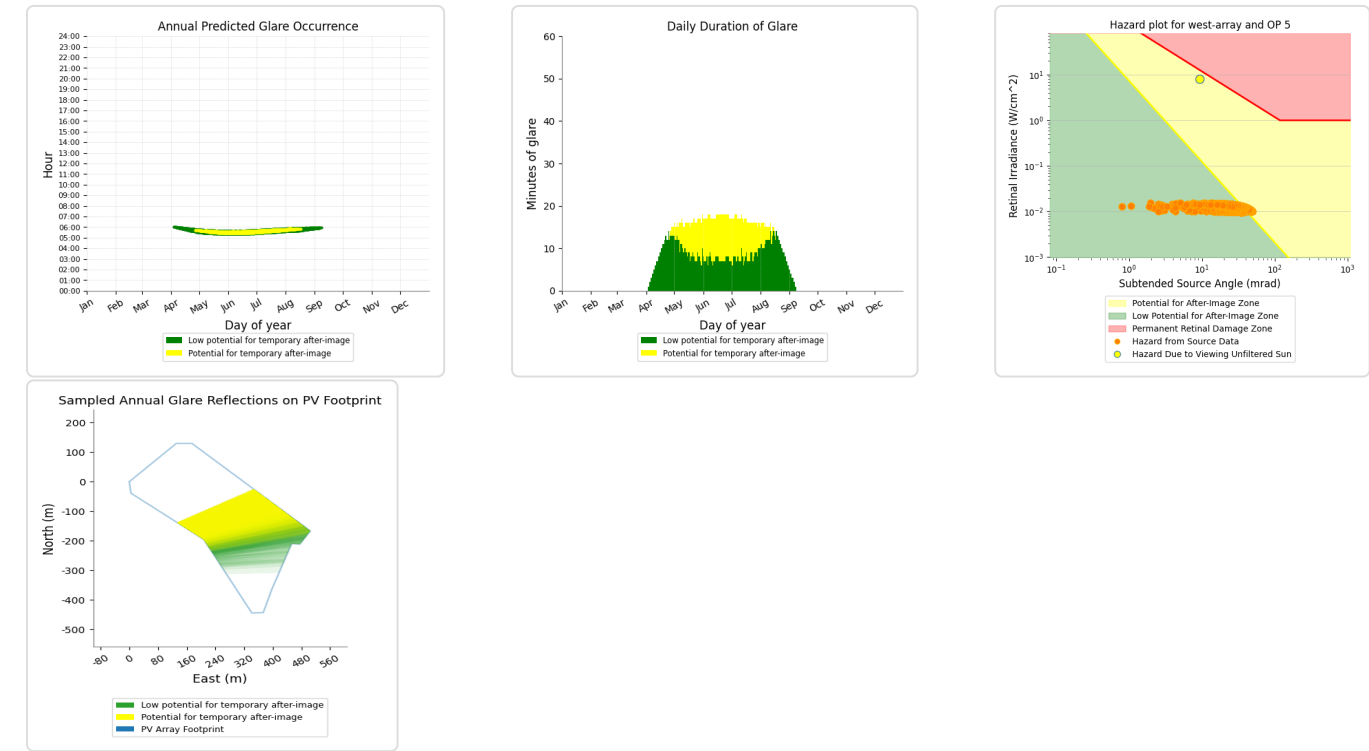
West Array: OP 4

- PV array is expected to produce the following glare for this receptor:
- 645 minutes of "green" glare with low potential to cause temporary after-image.
 - 2,043 minutes of "yellow" glare with potential to cause temporary after-image.



West Array: OP 5

- PV array is expected to produce the following glare for this receptor:
- 1,351 minutes of "green" glare with low potential to cause temporary after-image.
 - 851 minutes of "yellow" glare with potential to cause temporary after-image.



West Array: OP 6

No glare found

West Array: OP 7

No glare found

West Array: OP 8

No glare found

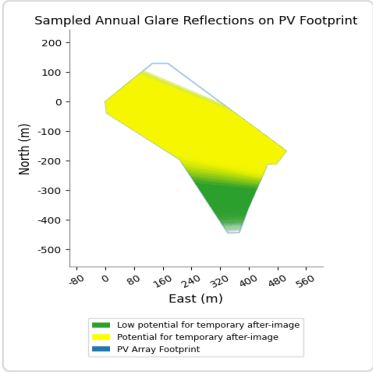
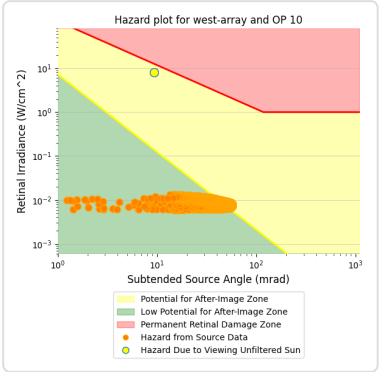
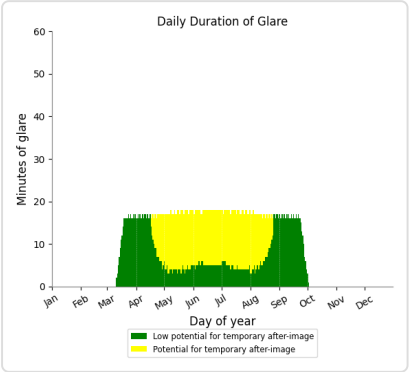
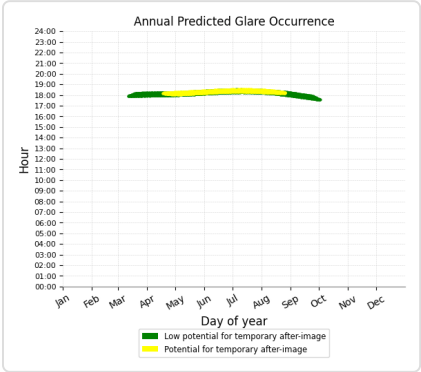
West Array: OP 9

No glare found

West Array: OP 10

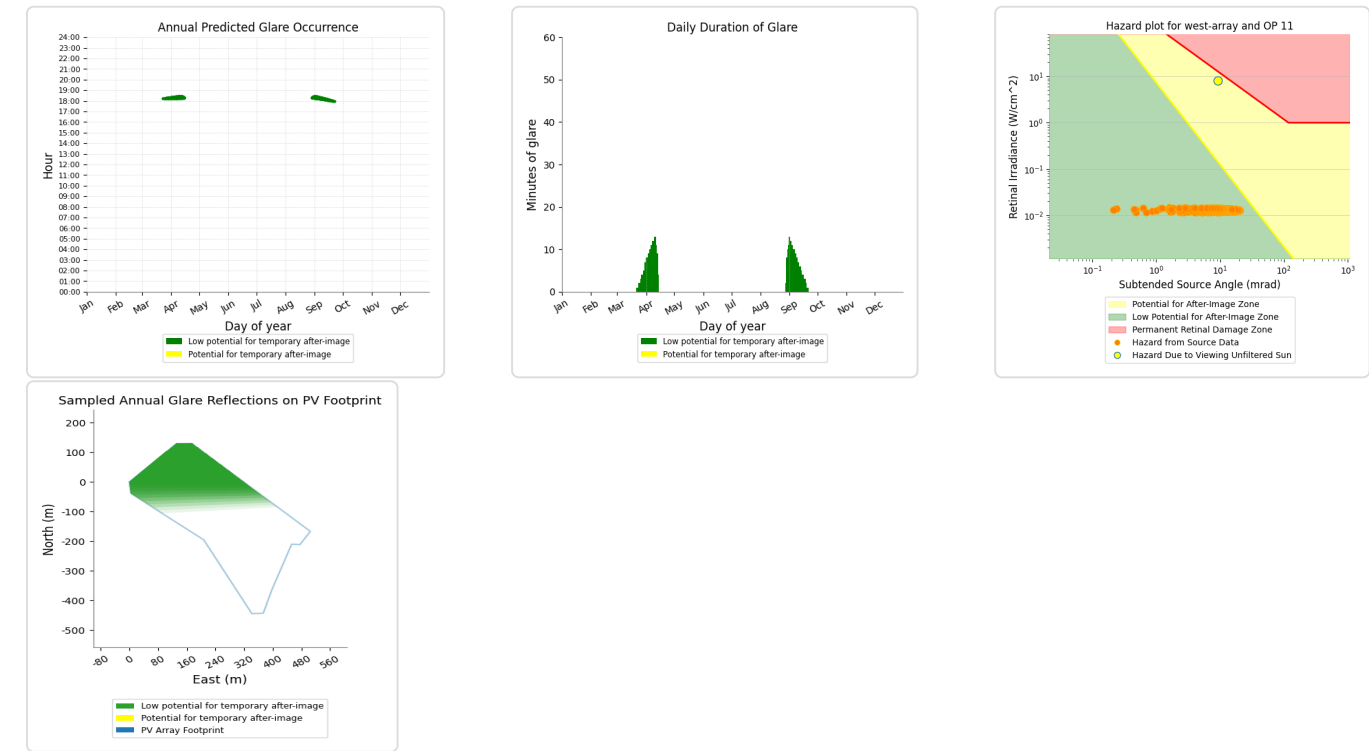
PV array is expected to produce the following glare for this receptor:

- 1,771 minutes of "green" glare with low potential to cause temporary after-image.
- 1,600 minutes of "yellow" glare with potential to cause temporary after-image.



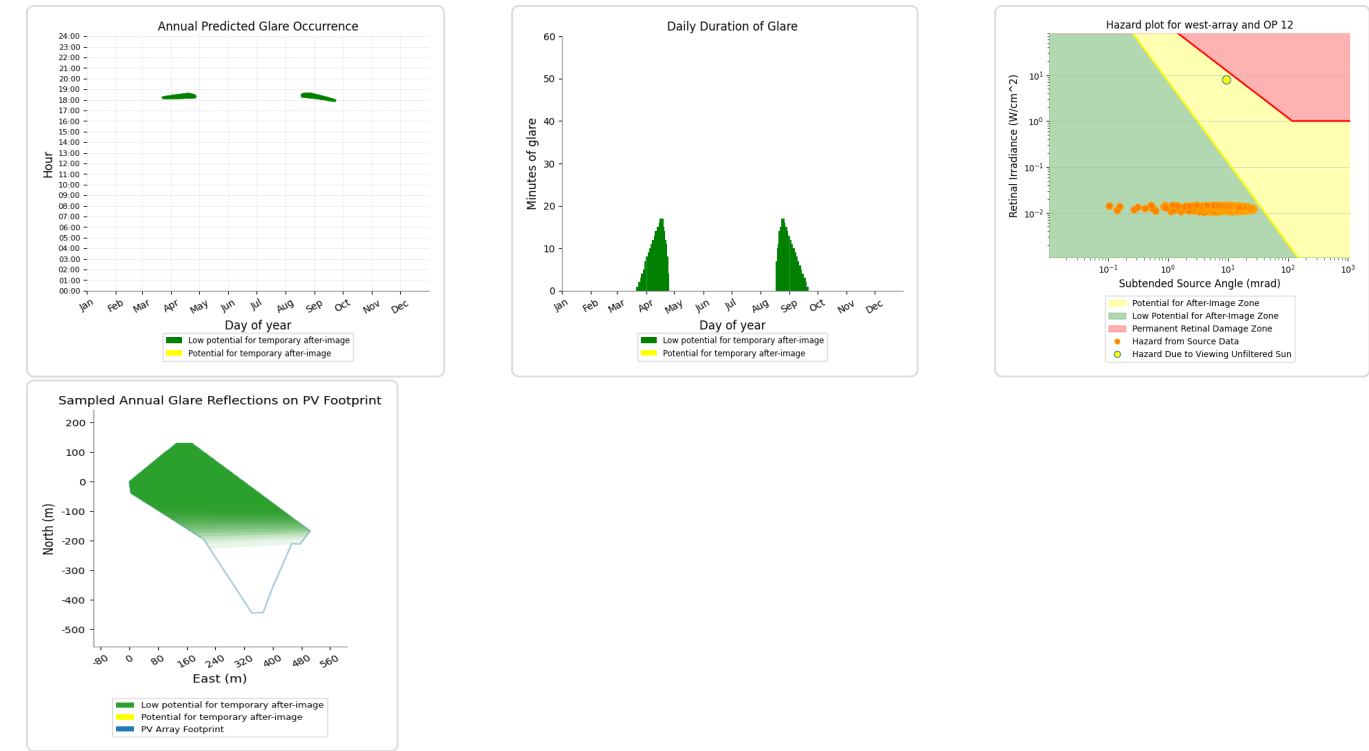
West Array: OP 11

- PV array is expected to produce the following glare for this receptor:
- 348 minutes of "green" glare with low potential to cause temporary after-image.
 - 0 minutes of "yellow" glare with potential to cause temporary after-image.



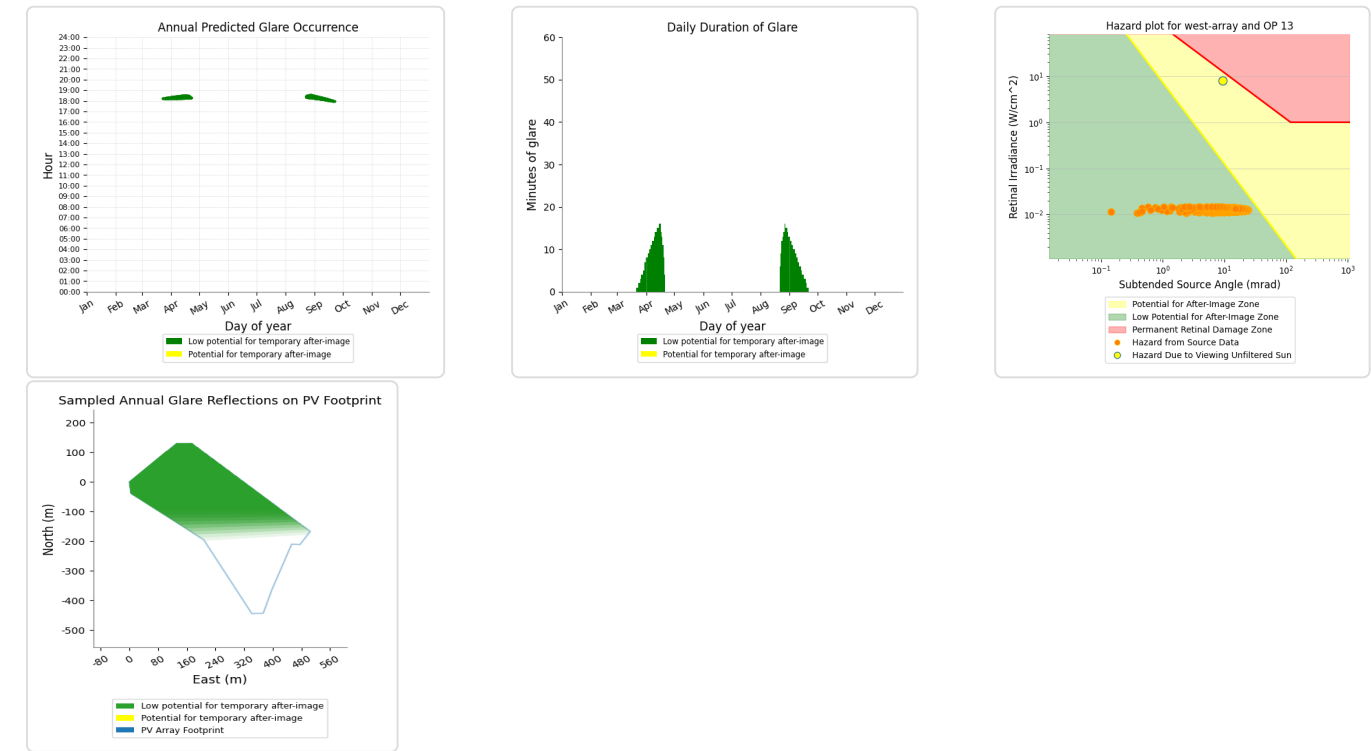
West Array: OP 12

- PV array is expected to produce the following glare for this receptor:
- 682 minutes of "green" glare with low potential to cause temporary after-image.
 - 0 minutes of "yellow" glare with potential to cause temporary after-image.



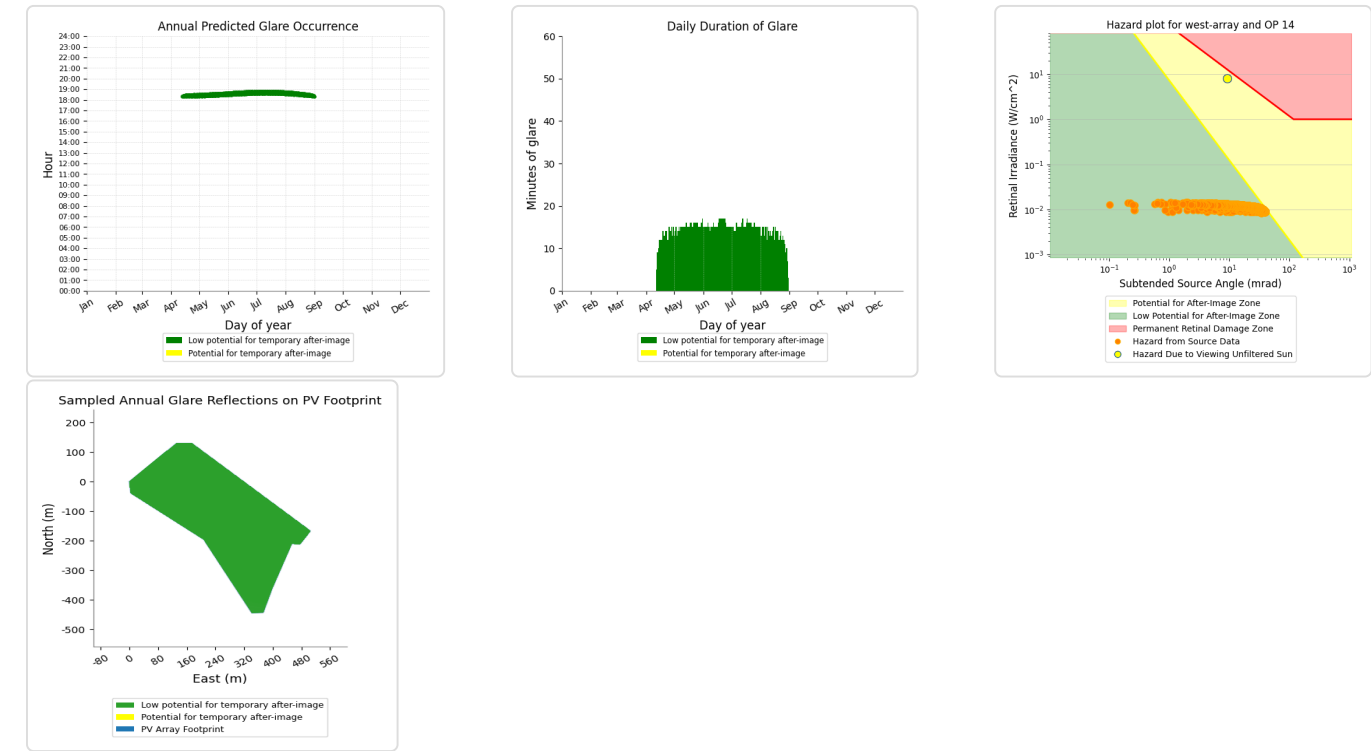
West Array: OP 13

- PV array is expected to produce the following glare for this receptor:
- 547 minutes of "green" glare with low potential to cause temporary after-image.
 - 0 minutes of "yellow" glare with potential to cause temporary after-image.



West Array: OP 14

- PV array is expected to produce the following glare for this receptor:
- 2,048 minutes of "green" glare with low potential to cause temporary after-image.
 - 0 minutes of "yellow" glare with potential to cause temporary after-image.



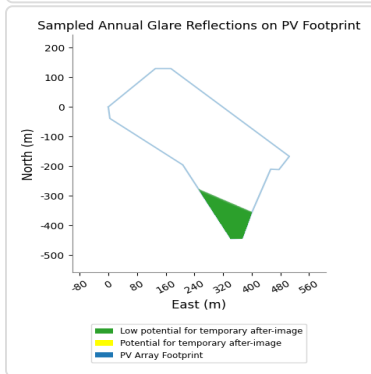
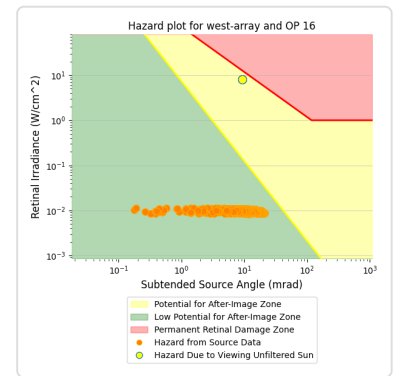
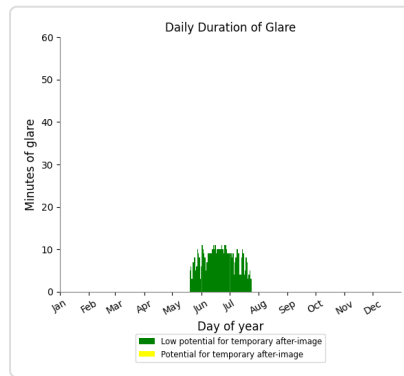
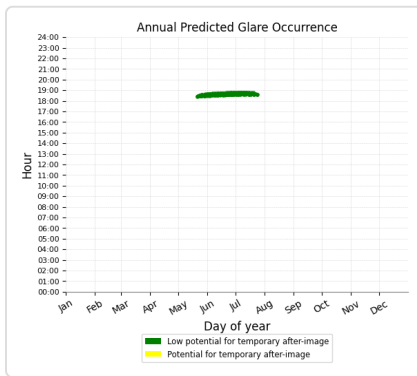
West Array: OP 15

No glare found

West Array: OP 16

PV array is expected to produce the following glare for this receptor:

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



Assumptions

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