



2945 - Tararua

Tararua Rev 3 - SAT - Potential Receptors

Client: Solar Bay

Created Aug 09, 2023
Updated Aug 10, 2023
Time-step 1 minute
Timezone offset UTC12
Minimum sun altitude 0.0 deg
Site ID 97328.12086

Project type Advanced
Project status: active
Category 10 MW to 100 MW



Misc. Analysis Settings

DNI: varies (1,000.0 W/m² 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: Off

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
SAT Array East	SA tracking	SA tracking	41	3,404	-
SAT Array West	SA tracking	SA tracking	0	9,542	-

Component Data

PV Array(s)

Total PV footprint area: 829,671 m²

Name: SAT Array East
 Footprint area: 375,328 m²
 Axis tracking: Single-axis rotation
 Backtracking: Shade-slope
 Tracking axis orientation: 0.0 deg
 Maximum tracking angle: 55.0 deg
 Resting angle: 0.0 deg
 Ground Coverage Ratio: 0.404
 Rated power: -
 Panel material: Smooth glass with AR coating
 Vary reflectivity with sun position? Yes
 Correlate slope error with surface type? Yes
 Slope error: 8.43 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-40.523131	175.748672	157.00	1.50	158.50
2	-40.521914	175.749605	154.00	1.50	155.50
3	-40.521488	175.750568	153.00	1.50	154.50
4	-40.521488	175.750568	153.00	1.50	154.50
5	-40.521159	175.750142	152.00	1.50	153.50
6	-40.520645	175.750533	151.00	1.50	152.50
7	-40.519854	175.751129	149.96	1.50	151.46
8	-40.519198	175.751628	148.00	1.50	149.50
9	-40.518333	175.752266	147.00	1.50	148.50
10	-40.517389	175.753038	146.00	1.50	147.50
11	-40.517662	175.753580	146.00	1.50	147.50
12	-40.517964	175.754197	146.00	1.50	147.50
13	-40.518659	175.753564	147.00	1.50	148.50
14	-40.518953	175.754079	147.00	1.50	148.50
15	-40.519357	175.755013	148.00	1.50	149.50
16	-40.519055	175.755345	147.00	1.50	148.50
17	-40.518745	175.755627	147.00	1.50	148.50
18	-40.519126	175.756308	147.00	1.50	148.50
19	-40.519540	175.757072	147.62	1.50	149.12
20	-40.520034	175.756627	148.00	1.50	149.50
21	-40.520658	175.756053	149.00	1.50	150.50
22	-40.521188	175.755549	150.00	1.50	151.50
23	-40.521624	175.756439	150.00	1.50	151.50
24	-40.522146	175.757587	150.00	1.50	151.50
25	-40.523155	175.756874	151.00	1.50	152.50
26	-40.524022	175.756225	152.62	1.50	154.12
27	-40.524986	175.755533	153.78	1.50	155.28
28	-40.525995	175.754760	154.08	1.50	155.58
29	-40.525482	175.753671	155.00	1.50	156.50
30	-40.524776	175.752164	155.92	1.50	157.42
31	-40.524160	175.750855	156.00	1.50	157.50
32	-40.523685	175.749841	156.96	1.50	158.46

Name: SAT Array West
Footprint area: 454,343 m²
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 0.0 deg
Maximum tracking angle: 55.0 deg
Resting angle: 0.0 deg
Ground Coverage Ratio: 0.404

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



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-40.521784	175.749185	154.00	1.50	155.50
2	-40.522361	175.748739	155.71	1.50	157.21
3	-40.523179	175.748136	157.20	1.50	158.70
4	-40.523727	175.747712	158.67	1.50	160.17
5	-40.524043	175.747488	159.00	0.00	159.00
6	-40.524343	175.747245	159.00	1.50	160.50
7	-40.524017	175.746564	160.00	1.50	161.50
8	-40.523723	175.745985	160.00	1.50	161.50
9	-40.523633	175.745840	160.00	1.50	161.50
10	-40.524241	175.745244	160.00	1.50	161.50
11	-40.524791	175.744735	161.00	1.50	162.50
12	-40.524985	175.745113	161.00	1.50	162.50

13	-40.525305	175.745778	160.00	1.50	161.50
14	-40.525560	175.746352	160.00	1.50	161.50
15	-40.525996	175.746038	160.00	1.50	161.50
16	-40.526791	175.745443	160.00	1.50	161.50
17	-40.527483	175.744912	161.00	1.50	162.50
18	-40.528100	175.744451	161.00	1.50	162.50
19	-40.529542	175.743423	163.00	1.50	164.50
20	-40.529164	175.742624	163.00	1.50	164.50
21	-40.528802	175.741902	163.00	1.50	164.50
22	-40.528441	175.741127	164.00	1.50	165.50
23	-40.527980	175.740135	163.00	1.50	164.50
24	-40.527487	175.739124	163.00	1.50	164.50
25	-40.527095	175.738265	162.00	1.50	163.50
26	-40.526687	175.737420	161.00	1.50	162.50
27	-40.525436	175.738721	160.00	1.50	161.50
28	-40.524746	175.739419	160.00	1.50	161.50
29	-40.524017	175.740223	160.00	1.50	161.50
30	-40.523405	175.740835	159.00	1.50	160.50
31	-40.522728	175.741511	157.02	1.50	158.52
32	-40.522125	175.742101	156.99	1.50	158.49
33	-40.521749	175.742519	157.00	1.50	158.50
34	-40.521668	175.743421	158.67	1.50	160.17
35	-40.521439	175.744054	157.00	1.50	158.50
36	-40.521439	175.744762	156.00	1.50	157.50
37	-40.521260	175.745631	155.00	1.50	156.50
38	-40.520942	175.746103	154.00	1.50	155.50
39	-40.520449	175.746763	152.39	1.50	153.89
40	-40.520864	175.747658	153.00	1.50	154.50
41	-40.521350	175.748667	153.55	1.50	155.05

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	m	m	m
OP 1	-40.530849	175.730612	169.00	1.70	170.70
OP 2	-40.528772	175.724436	180.54	1.70	182.24
OP 3	-40.527277	175.720330	201.00	1.70	202.70
OP 4	-40.526006	175.722248	222.40	1.70	224.10
OP 5	-40.525407	175.726448	221.35	1.70	223.05
OP 6	-40.525060	175.735779	160.00	1.70	161.70
OP 7	-40.522646	175.738676	151.00	1.70	152.70
OP 8	-40.522760	175.736509	182.89	1.70	184.59
OP 9	-40.521635	175.728484	197.40	1.70	199.10
OP 10	-40.519922	175.737281	221.00	1.70	222.70
OP 11	-40.517645	175.742153	202.45	1.70	204.15
OP 12	-40.517025	175.737089	224.15	1.70	225.85
OP 13	-40.510847	175.744292	189.00	1.70	190.70
OP 14	-40.511092	175.743605	220.96	1.70	222.66
OP 15	-40.513572	175.744034	198.33	1.70	200.03
OP 16	-40.514844	175.748934	146.00	1.70	147.70
OP 17	-40.515545	175.750651	144.00	1.70	145.70
OP 18	-40.516018	175.751745	144.85	1.70	146.55
OP 19	-40.516418	175.752657	145.00	1.70	146.70
OP 20	-40.516989	175.753741	145.00	1.70	146.70
OP 21	-40.518938	175.757367	147.00	1.70	148.70
OP 22	-40.517650	175.757968	145.00	1.70	146.70
OP 23	-40.516182	175.758719	143.35	1.70	145.05
OP 24	-40.519819	175.758472	147.00	1.70	148.70
OP 25	-40.525033	175.752206	156.00	1.70	157.70
OP 26	-40.523826	175.749578	157.00	1.70	158.70

Obstruction Components

Name: Obstruction 1
Upper edge height: 4.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.517741	175.752624	146.00
2	-40.517398	175.752889	146.00
3	-40.517431	175.752962	146.00
4	-40.517359	175.753021	146.00
5	-40.517651	175.753616	146.00
6	-40.517946	175.754212	146.00

Name: Obstruction 10
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.517712	175.752594	146.00
2	-40.518510	175.751972	147.00
3	-40.519319	175.751371	149.00

Name: Obstruction 2
Upper edge height: 4.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.518719	175.755639	147.00
2	-40.519094	175.756328	147.00
3	-40.519519	175.757100	147.23

Name: Obstruction 3
Upper edge height: 4.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.519365	175.751373	149.00
2	-40.520279	175.750713	150.90
3	-40.521184	175.750042	152.00
4	-40.521461	175.750396	153.00
5	-40.521885	175.749479	154.00
6	-40.522501	175.749018	155.68
7	-40.523141	175.748573	157.00
8	-40.523663	175.749651	157.00
9	-40.524683	175.751802	156.00
10	-40.525188	175.752853	155.00

Name: Obstruction 4
Upper edge height: 4.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.520925	175.747897	153.00
2	-40.521139	175.748313	153.00
3	-40.521353	175.748729	153.00
4	-40.521757	175.749238	154.00
5	-40.522399	175.748749	156.00
6	-40.523047	175.748273	157.00
7	-40.523728	175.747762	158.67
8	-40.524389	175.747264	159.00
9	-40.524069	175.746591	160.00
10	-40.523688	175.745843	160.00

Name: Obstruction 5
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.524781	175.744788	161.00
2	-40.525166	175.745600	160.00
3	-40.525552	175.746413	160.00
4	-40.527572	175.744919	161.00
5	-40.526562	175.744188	161.74
6	-40.529592	175.743414	163.00
7	-40.528854	175.741885	163.00
8	-40.528157	175.740378	163.88
9	-40.526722	175.737353	161.00

Name: Obstruction 6
Upper edge height: 8.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.529083	175.757262	155.00
2	-40.526696	175.756456	155.00
3	-40.528317	175.755683	156.00
4	-40.527947	175.754882	156.00
5	-40.527560	175.754081	156.00
6	-40.527187	175.753297	156.00
7	-40.526798	175.752491	156.00
8	-40.526405	175.751690	156.00
9	-40.526033	175.750895	157.00

Name: Obstruction 7
Upper edge height: 10.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.524484	175.747558	159.00
2	-40.524745	175.748079	159.00
3	-40.525006	175.748631	158.00

Name: Obstruction 8
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.516380	175.749299	145.00
2	-40.516804	175.748526	146.00
3	-40.517130	175.747764	146.00
4	-40.517505	175.747260	146.00
5	-40.517929	175.747046	147.00

Name: Obstruction 9
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.522574	175.737690	165.21
2	-40.522937	175.737523	163.30
3	-40.523267	175.737083	164.10

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	
SAT Array East	SA tracking	SA tracking	41	3,404	-	
SAT Array West	SA tracking	SA tracking	0	9,542	-	

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
sat-array-ea (green)	0	0	0	2	0	0	0	16	2	0	0	0
sat-array-ea (yellow)	205	206	327	213	1	0	0	55	199	412	208	395
sat-array-we (green)	0	0	0	0	0	0	0	0	0	0	0	0
sat-array-we (yellow)	1064	714	377	54	0	0	0	15	246	725	926	1167

PV & Receptor Analysis Results

Results for each PV array and receptor

SAT Array East potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	37	40
OP: OP 4	4	152
OP: OP 5	0	257
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	167
OP: OP 9	0	77
OP: OP 10	0	826
OP: OP 11	0	753
OP: OP 12	0	706
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	174

OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	63
OP: OP 23	0	170
OP: OP 24	0	0
OP: OP 25	0	19
OP: OP 26	0	0

SAT Array East: OP 1

No glare found

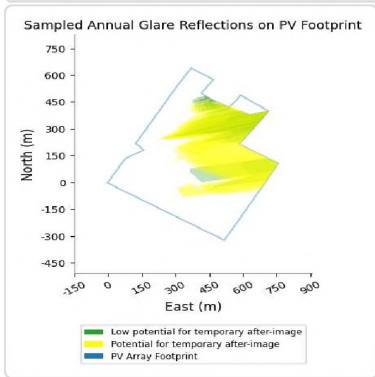
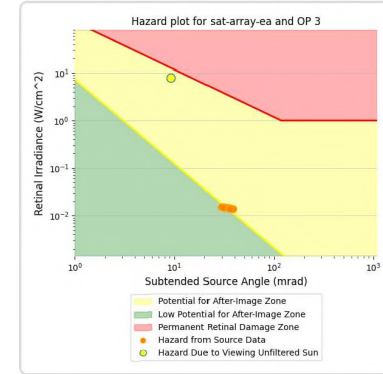
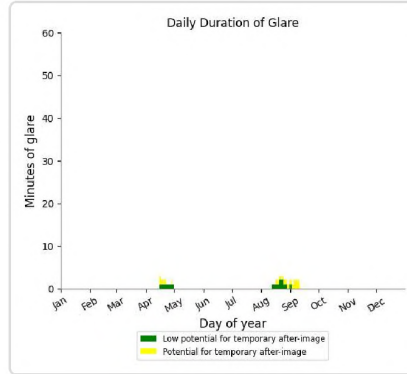
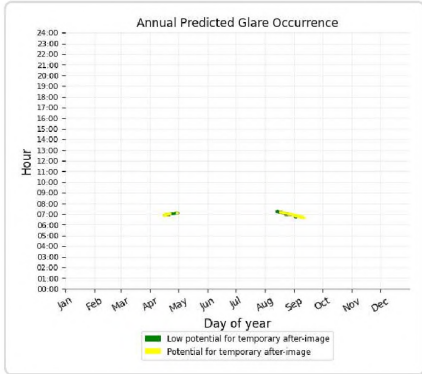
SAT Array East: OP 2

No glare found

SAT Array East: OP 3

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

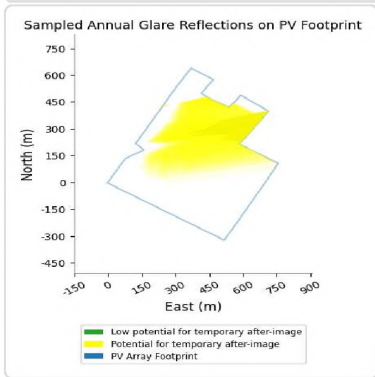
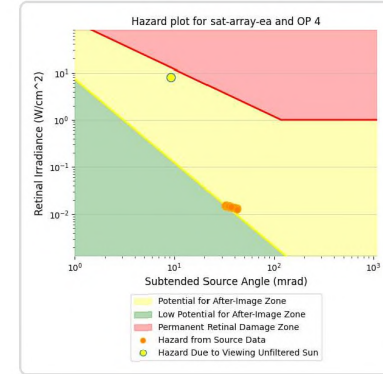
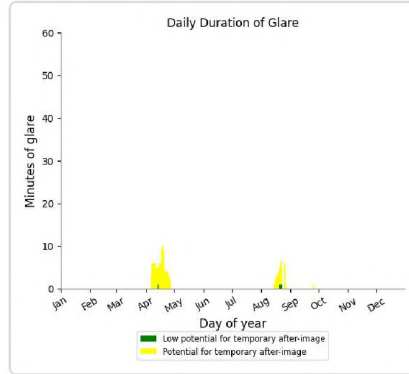
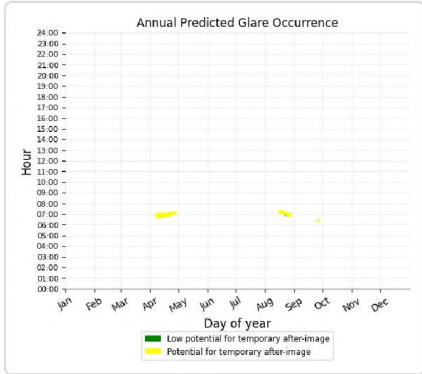
- 37 minutes of "green" glare with low potential to cause temporary after-image.
- 40 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 4

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

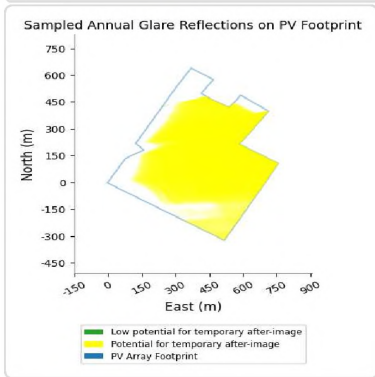
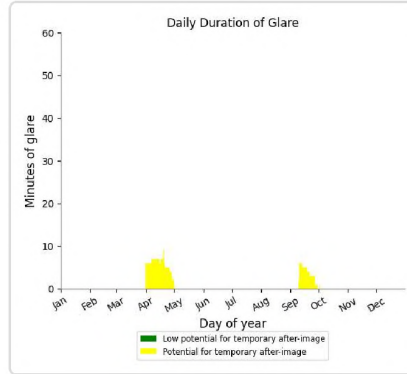
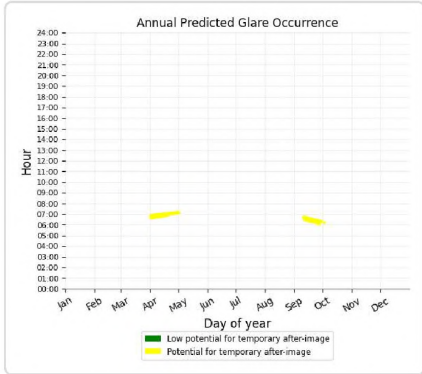
- 4 minutes of "green" glare with low potential to cause temporary after-image.
- 152 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 5

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

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



SAT Array East: OP 6

No glare found

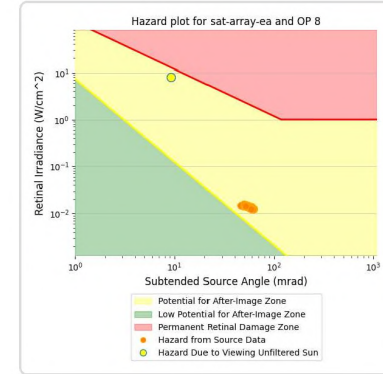
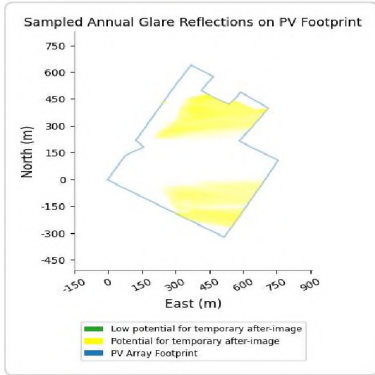
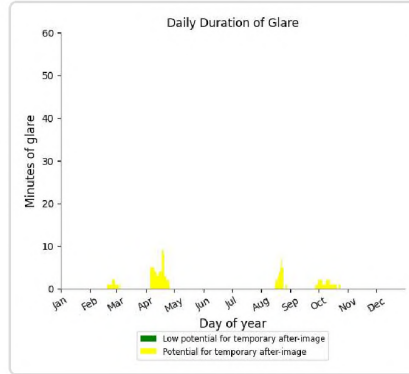
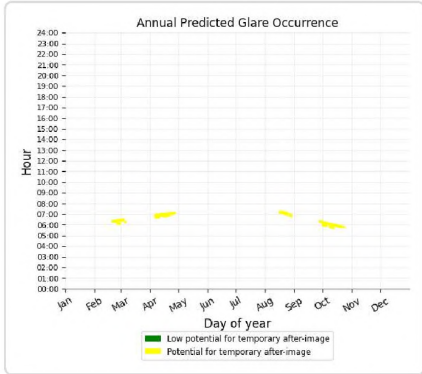
SAT Array East: OP 7

No glare found

SAT Array East: OP 8

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

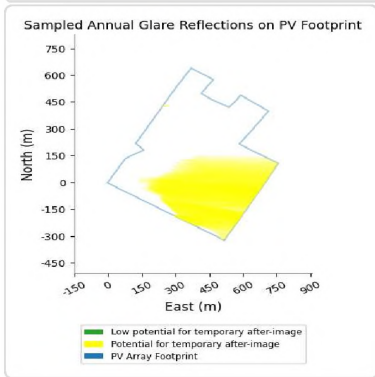
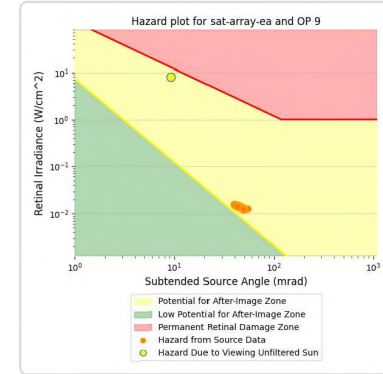
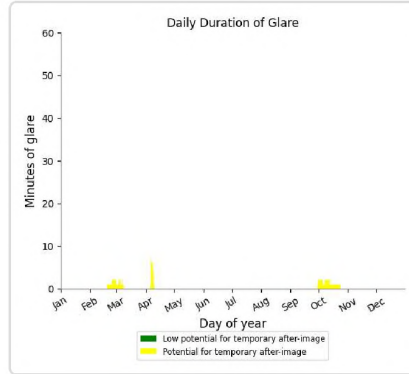
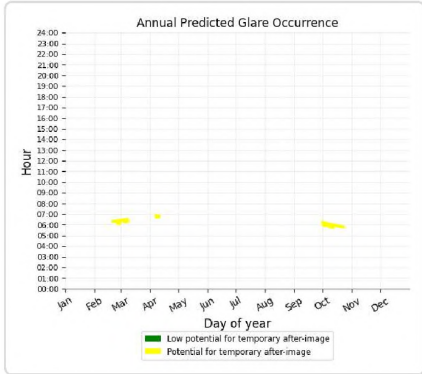
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 167 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 9

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

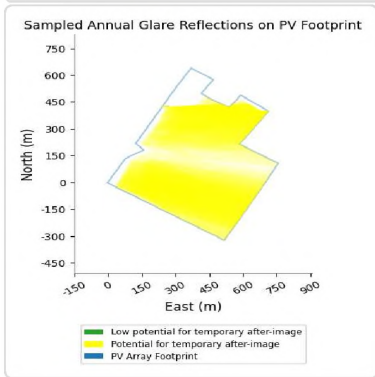
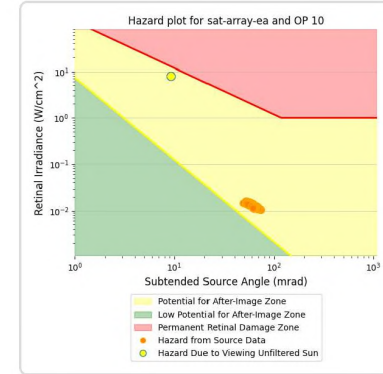
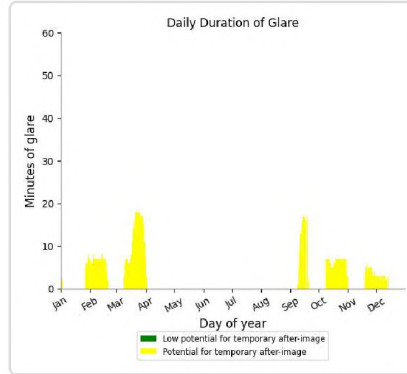
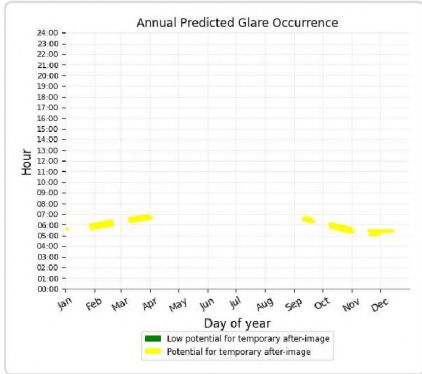
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 77 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 10

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

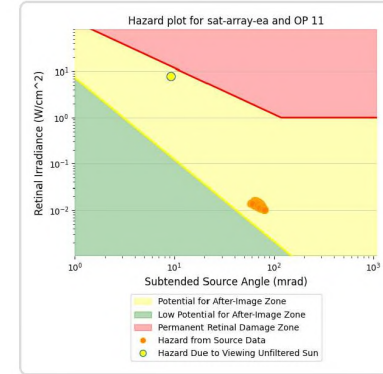
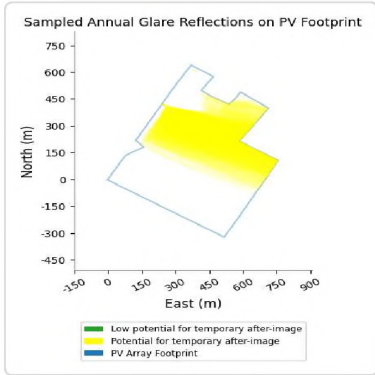
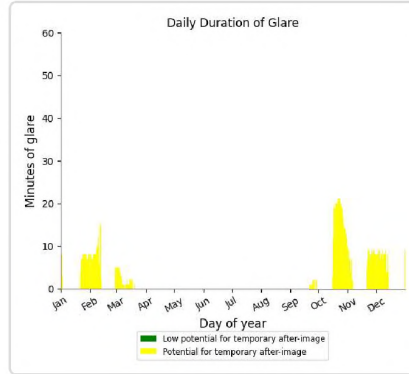
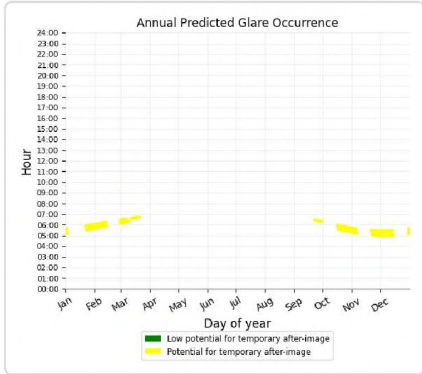
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 826 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 11

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

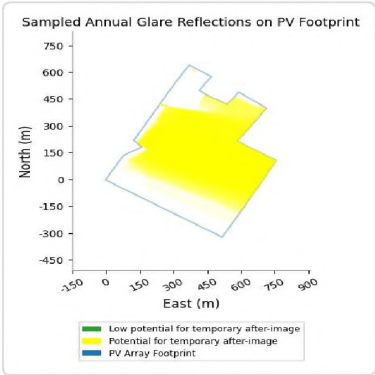
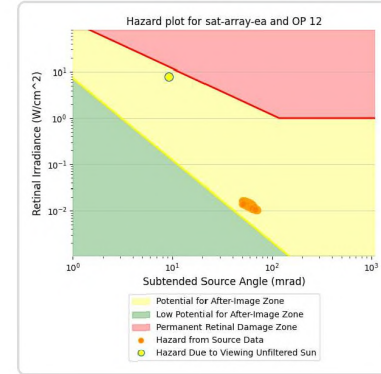
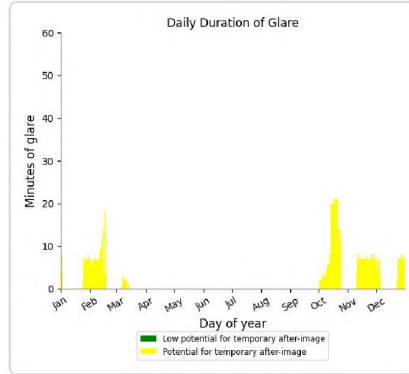
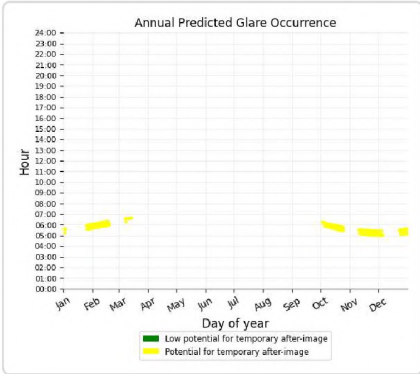
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 753 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 12

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

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



SAT Array East: OP 13

No glare found

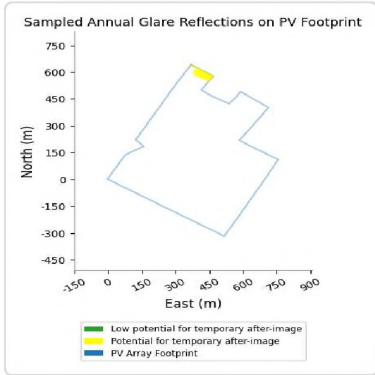
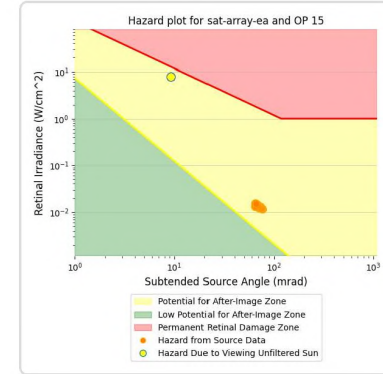
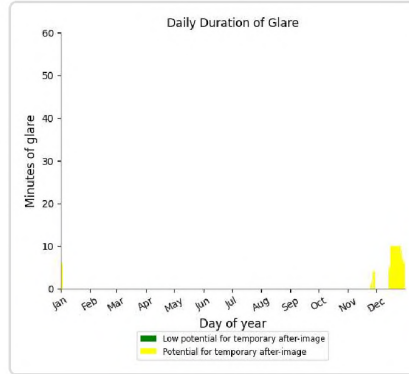
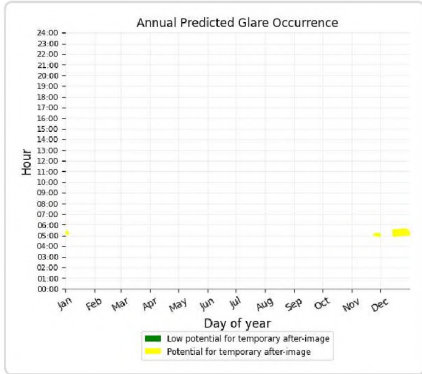
SAT Array East: OP 14

No glare found

SAT Array East: OP 15

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

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



SAT Array East: OP 16

No glare found

SAT Array East: OP 17

No glare found

SAT Array East: OP 18

No glare found

SAT Array East: OP 19

No glare found

SAT Array East: OP 20

No glare found

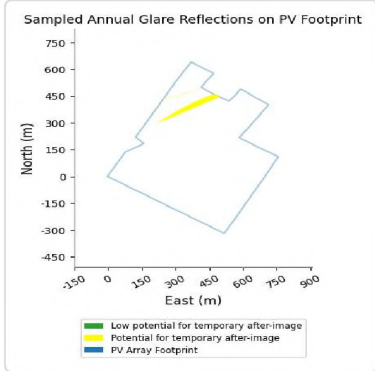
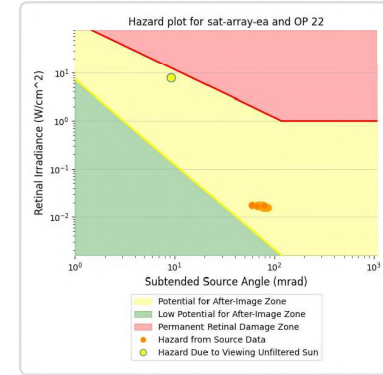
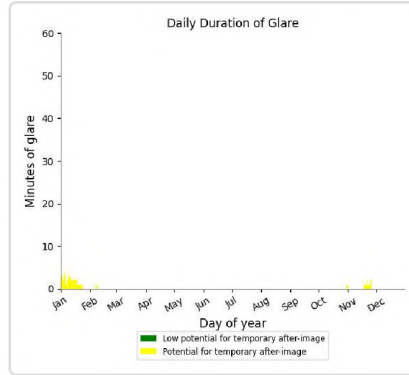
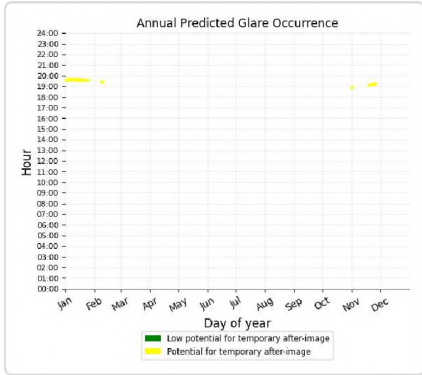
SAT Array East: OP 21

No glare found

SAT Array East: OP 22

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

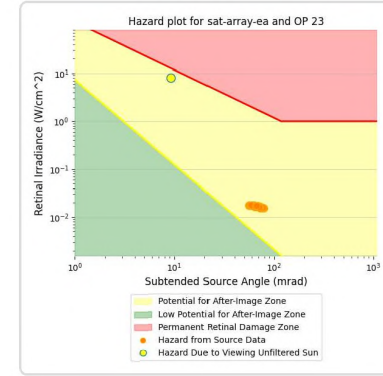
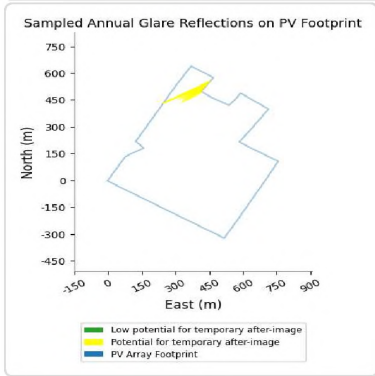
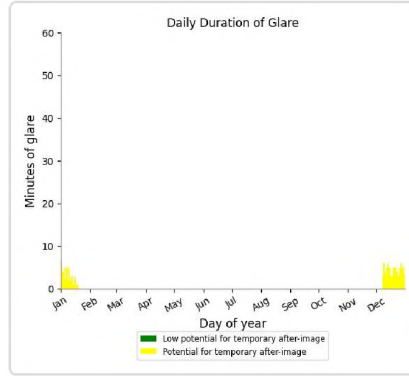
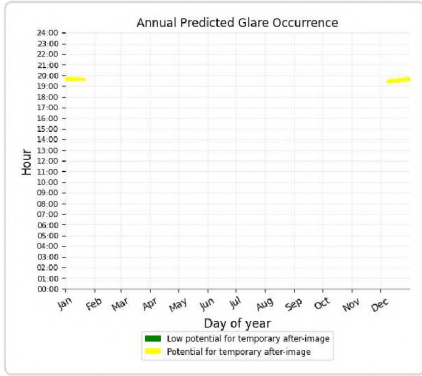
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 63 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array East: OP 23

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

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



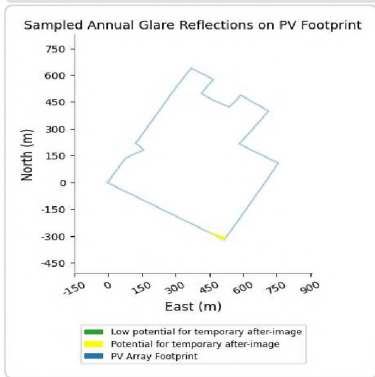
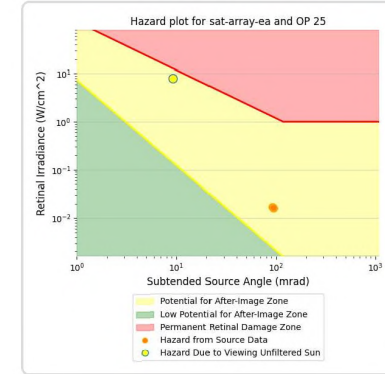
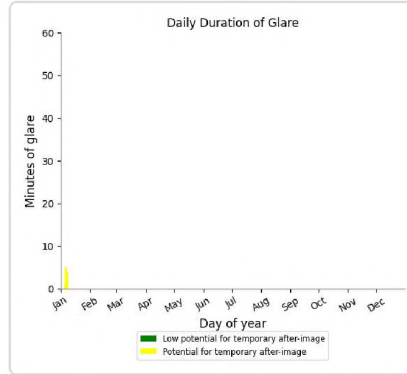
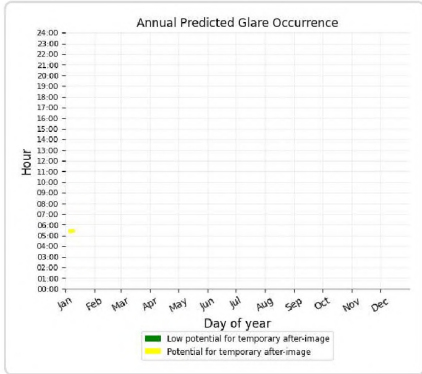
SAT Array East: OP 24

No glare found

SAT Array East: OP 25

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

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



SAT Array East: OP 26

No glare found

SAT Array West 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	80
OP: OP 4	0	375
OP: OP 5	0	1212
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	1669
OP: OP 9	0	1512

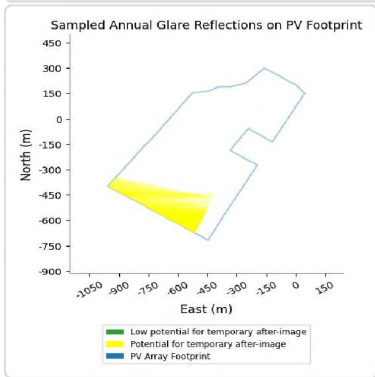
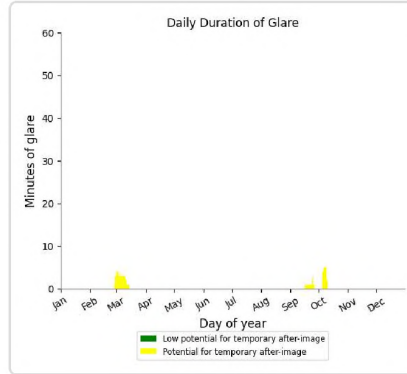
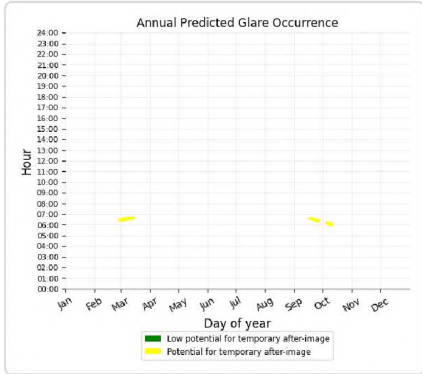
OP: OP 10	0	3660
OP: OP 11	0	0
OP: OP 12	0	1034
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0

SAT Array West: OP 1*No glare found***SAT Array West: OP 2***No glare found*

SAT Array West: OP 3

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

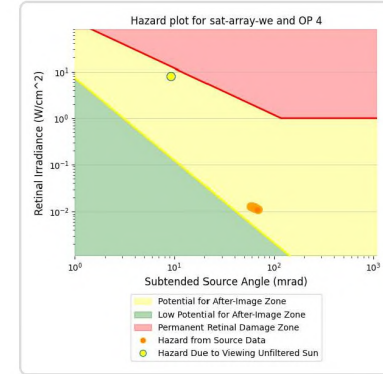
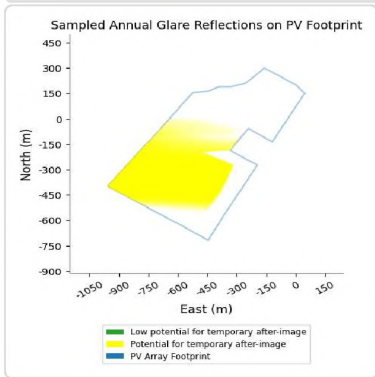
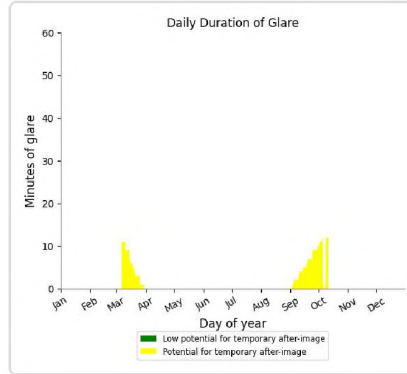
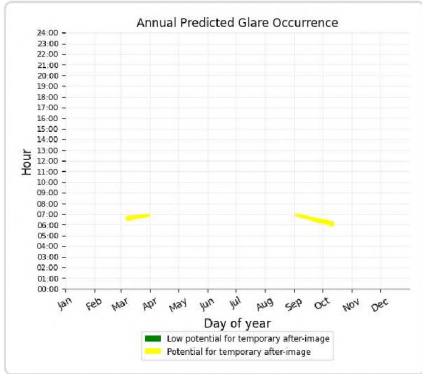
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 80 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 4

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

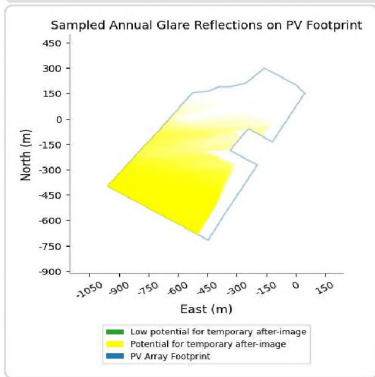
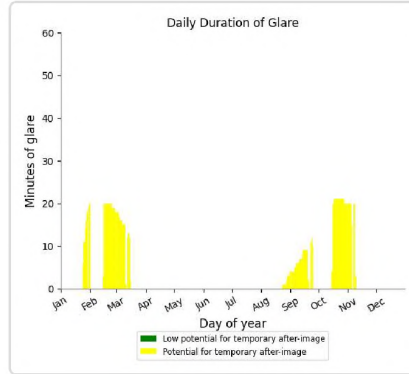
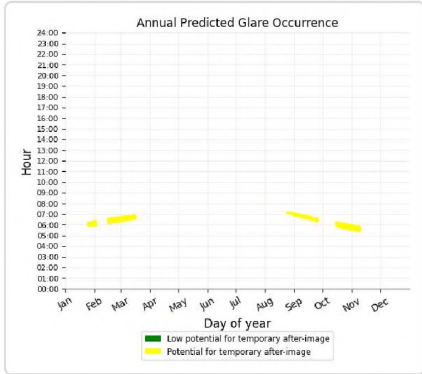
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 375 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 5

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

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,212 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 6

No glare found

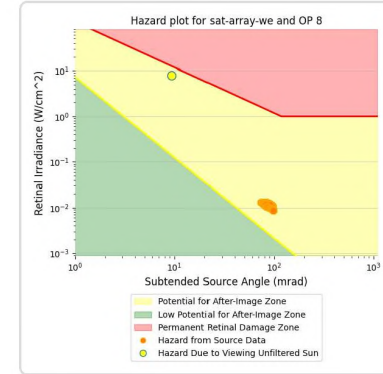
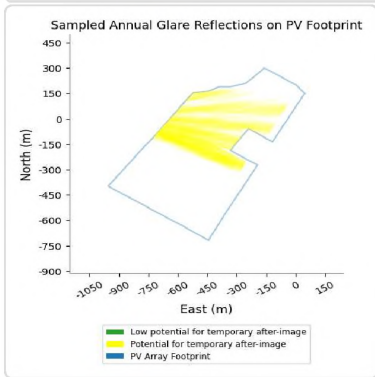
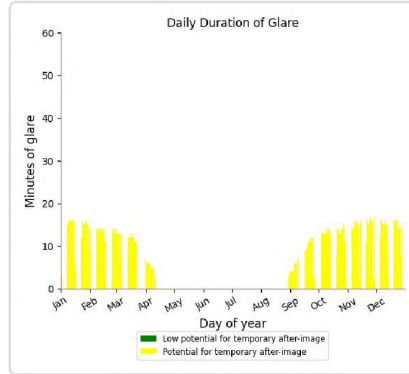
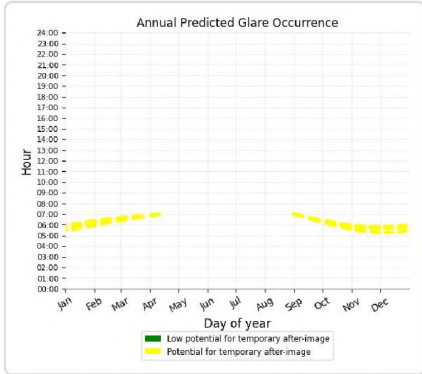
SAT Array West: OP 7

No glare found

SAT Array West: OP 8

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

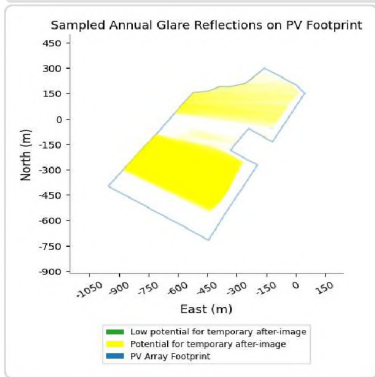
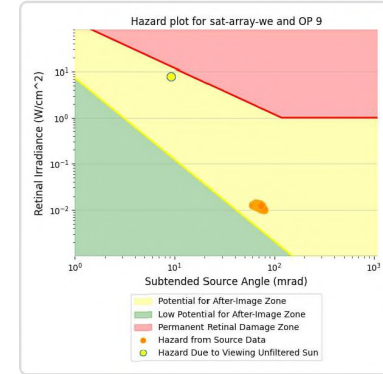
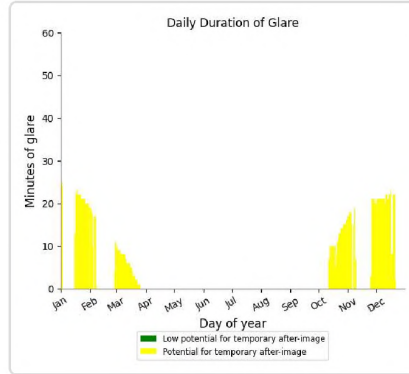
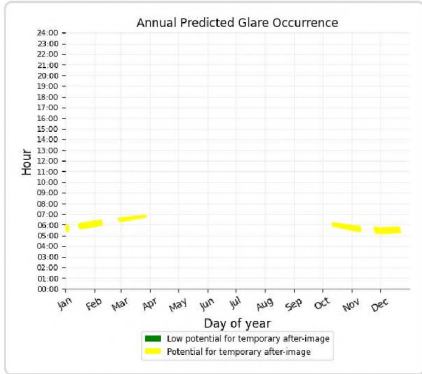
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,669 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 9

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

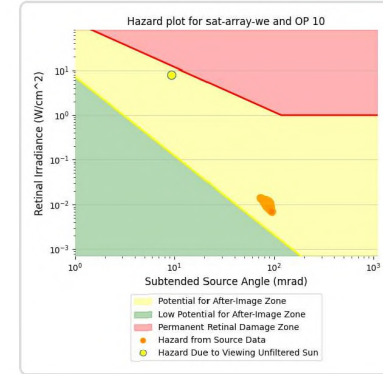
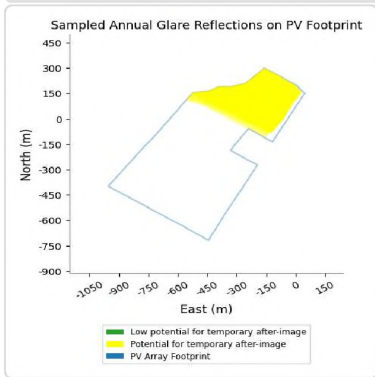
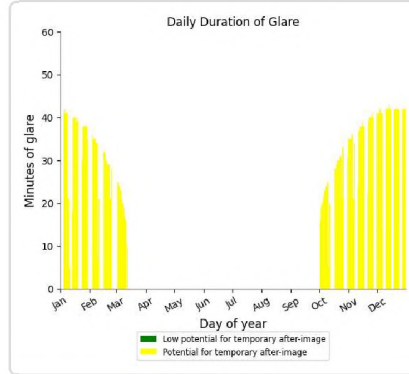
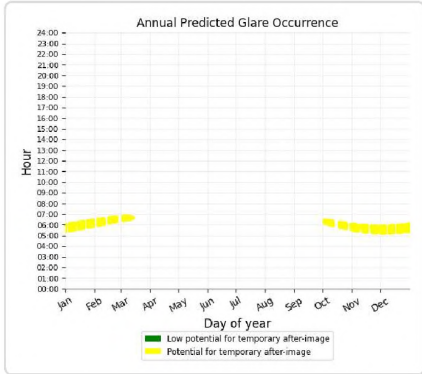
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,512 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 10

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

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 3,660 minutes of "yellow" glare with potential to cause temporary after-image.



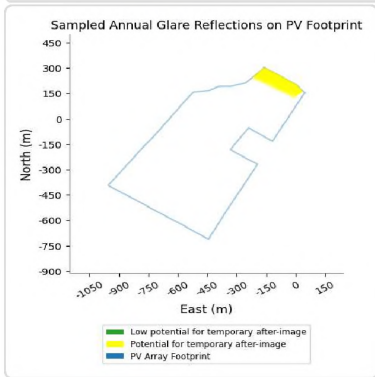
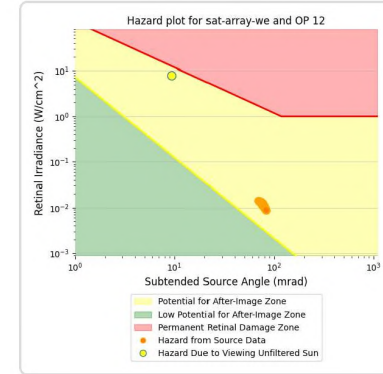
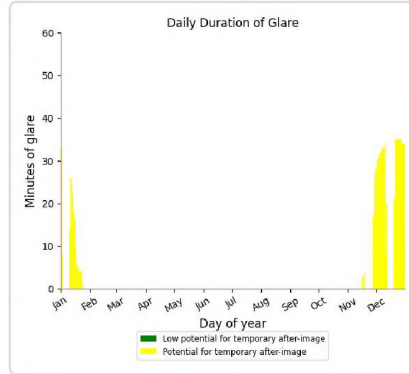
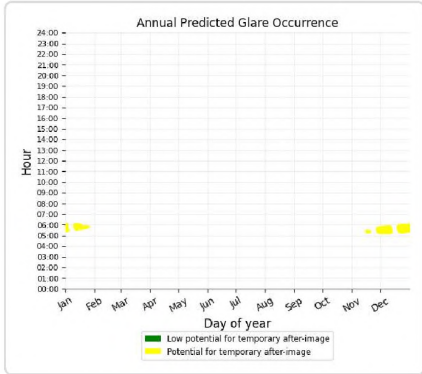
SAT Array West: OP 11

No glare found

SAT Array West: OP 12

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

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,034 minutes of "yellow" glare with potential to cause temporary after-image.



SAT Array West: OP 13

No glare found

SAT Array West: OP 14

No glare found

SAT Array West: OP 15

No glare found

SAT Array West: OP 16

No glare found

SAT Array West: OP 17

No glare found

SAT Array West: OP 18*No glare found***SAT Array West: OP 19***No glare found***SAT Array West: OP 20***No glare found***SAT Array West: OP 21***No glare found***SAT Array West: OP 22***No glare found***SAT Array West: OP 23***No glare found***SAT Array West: OP 24***No glare found***SAT Array West: OP 25***No glare found***SAT Array West: OP 26***No glare found*

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.

