FORGESOLAR GLARE ANALYSIS

Project: **Walnut Creek - MD**
Site configuration: **Walnut Creek**

Client: CI Renewables

Created 23 Jul, 2024
Updated 23 Jul, 2024
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 5 MW to 10 MW
Site ID 124931.17614

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 No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array A	20.0	180.0	0	0.0	0	0.0	-
PV Array B	20.0	180.0	0	0.0	0	0.0	-
PV Array C	20.0	180.0	0	0.0	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
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	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

Component Data

PV Arrays

Name: PV Array A
Description: ZNSHINE ZXM7-SHLDD144
Axis tracking: Fixed (no rotation)
Tilt: 20.0°
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	39.234609	-76.956054	455.84	8.00	463.84
2	39.234604	-76.956056	455.91	0.00	455.91
3	39.234600	-76.956060	455.91	0.00	455.91
4	39.234597	-76.956065	455.91	0.00	455.91
5	39.234588	-76.956074	456.06	0.00	456.06
6	39.234574	-76.956098	456.69	0.00	456.69
7	39.234580	-76.956165	457.35	0.00	457.35
8	39.234586	-76.956225	457.51	0.00	457.51
9	39.234596	-76.956298	457.35	0.00	457.35
10	39.234799	-76.958118	445.96	8.00	453.96
11	39.235119	-76.958080	443.56	8.00	451.56
12	39.235298	-76.957946	440.22	8.00	448.22
13	39.235373	-76.957662	441.79	8.00	449.79
14	39.235389	-76.957388	439.22	8.00	447.22
15	39.235489	-76.957275	429.80	8.00	437.80
16	39.235568	-76.957095	421.83	8.00	429.83
17	39.235499	-76.956831	425.04	8.00	433.04
18	39.235405	-76.956782	428.60	8.00	436.60
19	39.235352	-76.956734	429.84	0.00	429.84
20	39.235351	-76.956719	429.82	0.00	429.82
21	39.235353	-76.956701	429.83	0.00	429.83
22	39.235358	-76.956672	429.74	0.00	429.74
23	39.235373	-76.956605	430.03	8.00	438.03
24	39.235468	-76.956398	429.05	0.00	429.05
25	39.235468	-76.956398	429.05	0.00	429.05
26	39.235468	-76.956398	429.05	0.00	429.05
27	39.235468	-76.956398	429.05	0.00	429.05
28	39.235680	-76.956487	424.03	8.00	432.03
29	39.235817	-76.956675	417.76	8.00	425.76
30	39.235959	-76.956626	413.14	8.00	421.14
31	39.235959	-76.956465	413.84	8.00	421.84
32	39.235826	-76.956294	417.98	8.00	425.98
33	39.235871	-76.956026	424.06	8.00	432.06
34	39.236395	-76.955983	409.26	8.00	417.26
35	39.236515	-76.955934	401.54	8.00	409.54
36	39.236254	-76.955580	405.91	8.00	413.91
37	39.236121	-76.955666	414.32	8.00	422.32
38	39.235938	-76.955500	413.77	8.00	421.77
39	39.235814	-76.955633	424.44	8.00	432.44
40	39.235755	-76.955684	428.06	0.00	428.06
41	39.235704	-76.955723	429.41	0.00	429.41
42	39.235666	-76.955750	431.05	0.00	431.05
43	39.235649	-76.955757	431.97	0.00	431.97
44	39.235637	-76.955768	432.21	0.00	432.21
45	39.235625	-76.955777	432.77	0.00	432.77
46	39.235625	-76.955777	432.77	0.00	432.77
47	39.235625	-76.955777	432.77	0.00	432.77
48	39.235625	-76.955777	432.77	0.00	432.77
49	39.235625	-76.955777	432.77	0.00	432.77
50	39.235621	-76.955788	432.69	0.00	432.69
51	39.235608	-76.955815	432.84	0.00	432.84
52	39.235591	-76.955844	433.02	8.00	441.02
53	39.235523	-76.955869	434.71	0.00	434.71
54	39.235505	-76.955860	435.15	0.00	435.15
55	39.235486	-76.955849	435.74	0.00	435.74
56	39.235469	-76.955841	436.25	0.00	436.25
57	39.235460	-76.955837	436.34	0.00	436.34
58	39.235429	-76.955818	436.86	0.00	436.86
59	39.235399	-76.955795	437.21	0.00	437.21

Name: PV Array B
Description: ZNSHINE ZXM7-SHLDD144
Axis tracking: Fixed (no rotation)
Tilt: 20.0°
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	39.234374	-76.956390	465.84	8.00	473.84
2	39.234483	-76.957290	469.65	0.00	469.65
3	39.234483	-76.957290	469.65	0.00	469.65
4	39.234483	-76.957290	469.65	0.00	469.65
5	39.234483	-76.957290	469.65	0.00	469.65
6	39.234581	-76.958110	447.41	8.00	455.41
7	39.234282	-76.958169	452.37	8.00	460.37
8	39.234203	-76.958078	456.41	0.00	456.41
9	39.234203	-76.958078	456.41	0.00	456.41
10	39.234203	-76.958078	456.41	0.00	456.41
11	39.234203	-76.958078	456.41	0.00	456.41
12	39.234097	-76.957984	460.30	8.00	468.30
13	39.233838	-76.958056	460.81	8.00	468.81
14	39.233753	-76.958000	465.25	8.00	473.25
15	39.233577	-76.958037	465.55	8.00	473.55
16	39.232985	-76.957104	494.61	8.00	502.61
17	39.233284	-76.956769	494.04	8.00	502.04
18	39.233762	-76.957002	485.83	8.00	493.83
19	39.233986	-76.956997	480.54	8.00	488.54
20	39.234071	-76.956821	477.78	0.00	477.78
21	39.234071	-76.956821	477.78	0.00	477.78
22	39.234071	-76.956821	477.78	0.00	477.78
23	39.234080	-76.956772	476.65	0.00	476.65
24	39.234086	-76.956720	475.53	0.00	475.53
25	39.234089	-76.956672	475.03	0.00	475.03
26	39.234091	-76.956632	475.00	0.00	475.00
27	39.234092	-76.956609	475.04	0.00	475.04
28	39.234096	-76.956584	474.92	8.00	482.92

Name: PV Array C
Description: ZNSHINE ZXM7-SHLDD144
Axis tracking: Fixed (no rotation)
Tilt: 20.0°
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	39.234305	-76.953489	469.09	8.00	477.09
2	39.234332	-76.953325	464.42	0.00	464.42
3	39.234332	-76.953325	464.42	0.00	464.42
4	39.234337	-76.953243	462.22	0.00	462.22
5	39.234343	-76.953161	460.41	8.00	468.41
6	39.234257	-76.952529	441.09	8.00	449.09
7	39.234536	-76.952016	439.04	8.00	447.04
8	39.234878	-76.951859	432.48	8.00	440.48
9	39.235194	-76.951832	430.59	8.00	438.59
10	39.235297	-76.951909	434.13	8.00	442.13
11	39.235313	-76.952074	437.44	8.00	445.44
12	39.235316	-76.952261	436.47	8.00	444.47
13	39.235208	-76.952344	439.17	8.00	447.17
14	39.234934	-76.952468	447.99	8.00	455.99
15	39.234661	-76.952767	452.59	8.00	460.59
16	39.234489	-76.953049	457.70	8.00	465.70
17	39.234431	-76.953179	460.71	0.00	460.71
18	39.234385	-76.953330	465.20	0.00	465.20
19	39.234405	-76.953606	474.78	0.00	474.78
20	39.234435	-76.953722	477.31	0.00	477.31
21	39.234487	-76.953725	477.53	8.00	485.53
22	39.234733	-76.953746	474.84	8.00	482.84
23	39.235821	-76.953560	424.58	8.00	432.58
24	39.235968	-76.953602	413.59	8.00	421.59
25	39.236021	-76.953847	414.38	8.00	422.38
26	39.236025	-76.954236	416.43	8.00	424.43
27	39.236091	-76.954536	417.46	0.00	417.46
28	39.235925	-76.954635	429.26	8.00	437.26
29	39.235821	-76.954678	433.92	0.00	433.92
30	39.235753	-76.954651	437.32	8.00	445.32
31	39.235662	-76.954615	441.27	0.00	441.27
32	39.235624	-76.954592	442.57	8.00	450.57
33	39.235600	-76.954579	443.50	0.00	443.50
34	39.235570	-76.954567	444.86	0.00	444.86
35	39.235543	-76.954563	446.55	0.00	446.55
36	39.235516	-76.954570	447.25	0.00	447.25
37	39.235411	-76.954635	451.96	0.00	451.96
38	39.235411	-76.954635	451.96	0.00	451.96
39	39.235411	-76.954635	451.96	0.00	451.96
40	39.235411	-76.954635	451.96	0.00	451.96
41	39.235411	-76.954635	451.96	0.00	451.96
42	39.235349	-76.954655	452.86	0.00	452.86
43	39.235295	-76.954650	453.67	0.00	453.67
44	39.235238	-76.954632	455.55	0.00	455.55
45	39.235206	-76.954617	456.39	8.00	464.39
46	39.235141	-76.954584	458.68	0.00	458.68
47	39.235089	-76.954555	460.30	0.00	460.30
48	39.235061	-76.954538	461.40	0.00	461.40
49	39.235037	-76.954525	462.18	0.00	462.18
50	39.235021	-76.954474	463.71	0.00	463.71
51	39.235008	-76.954429	464.93	0.00	464.93
52	39.234994	-76.954373	466.89	0.00	466.89
53	39.234969	-76.954315	468.30	8.00	476.30
54	39.234955	-76.954286	469.14	0.00	469.14
55	39.234941	-76.954244	470.46	0.00	470.46
56	39.234926	-76.954189	471.44	0.00	471.44
57	39.234918	-76.954137	472.04	0.00	472.04
58	39.234907	-76.954100	472.52	0.00	472.52
59	39.234875	-76.954107	473.13	0.00	473.13

Route Receptors

Name: Route 1
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	39.247604	-76.937419	391.49	4.00	395.49
2	39.242602	-76.942891	353.11	4.00	357.11
3	39.239615	-76.941940	361.43	4.00	365.43
4	39.237388	-76.940824	345.85	4.00	349.85
5	39.233003	-76.938911	400.75	4.00	404.75
6	39.229588	-76.937384	386.94	4.00	390.94

Name: Route 2
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	39.246650	-76.977917	533.49	4.00	537.49
2	39.236573	-76.974835	486.56	4.00	490.56
3	39.228097	-76.973033	562.80	4.00	566.80
4	39.223532	-76.970733	564.06	4.00	568.06
5	39.220573	-76.967729	557.95	4.00	561.95
6	39.217439	-76.962359	518.95	4.00	522.95
7	39.215012	-76.957038	456.70	4.00	460.70

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	39.230688	-76.949927	393.08	15.00
OP 2	2	39.230530	-76.950517	395.11	15.00
OP 3	3	39.231385	-76.955467	504.12	15.00
OP 4	4	39.231963	-76.956057	511.63	15.00
OP 5	5	39.232162	-76.957345	506.44	15.00
OP 6	6	39.232711	-76.958273	481.28	15.00
OP 7	7	39.237390	-76.957870	431.92	15.00
OP 8	8	39.236908	-76.958643	442.19	15.00
OP 9	9	39.236193	-76.959694	437.22	15.00
OP 10	10	39.237696	-76.953000	435.42	15.00
OP 11	11	39.234371	-76.947377	375.41	15.00

Obstruction Components

Name: 5075 Sheppard Ln.
Top height: 35.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.232004	-76.938963	422.70
2	39.231597	-76.938786	422.91

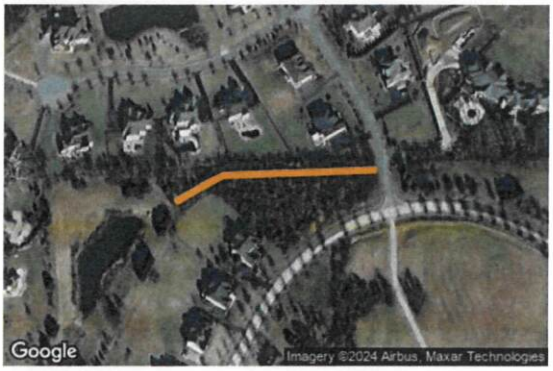
Name: Autumn Tree Ln.
Top height: 40.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.233119	-76.942227	354.24
2	39.232268	-76.944963	364.34
3	39.231212	-76.946899	376.23
4	39.230244	-76.947028	368.57
5	39.229959	-76.947066	366.79

Name: Lindera Ct.
Top height: 35.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.234205	-76.944820	369.28
2	39.234764	-76.944302	371.24
3	39.234943	-76.944123	370.55
4	39.235622	-76.942899	361.64
5	39.236197	-76.942459	363.33
6	39.236864	-76.942220	371.27
7	39.237062	-76.942193	373.19
8	39.237199	-76.942199	373.45

Name: Preakness Circle Ln._ Clay Circle Ln.
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.231285	-76.941435	383.30
2	39.231247	-76.942771	374.96
3	39.231073	-76.943174	373.21

Name: Preakness Circle Ln._Sheppard Ln.
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.231212	-76.938246	420.62
2	39.231405	-76.938358	425.96
3	39.231334	-76.941164	383.45

Name: Tree Line 1
Top height: 88.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.234338	-76.951609	409.94
2	39.235489	-76.951566	411.38
3	39.235705	-76.952295	416.20
4	39.235776	-76.952596	419.03
5	39.236117	-76.953406	401.14

Name: Tree Line 2
Top height: 75.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.236470	-76.956178	402.39
2	39.235876	-76.956855	408.48
3	39.235302	-76.958309	421.33
4	39.233815	-76.958400	440.05
5	39.233387	-76.958105	465.18
6	39.232534	-76.956776	508.63
7	39.231773	-76.955226	504.18
8	39.231068	-76.953737	448.25
9	39.230944	-76.952648	432.38
10	39.231401	-76.952128	425.76

Name: Tree Line 3
Top height: 50.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.231471	-76.952128	425.32
2	39.231716	-76.952262	424.66
3	39.231966	-76.951763	405.88
4	39.231683	-76.951205	394.74
5	39.232099	-76.950948	390.55
6	39.231621	-76.949580	384.15
7	39.231197	-76.949612	386.95
8	39.231305	-76.948781	412.72
9	39.232410	-76.947863	371.13
10	39.233145	-76.948518	361.50

Name: Tree Line 4
Top height: 50.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.233158	-76.948620	362.01
2	39.233660	-76.949617	367.48
3	39.234034	-76.951152	393.24
4	39.234097	-76.952117	426.49

Name: Tree Line 5
Top height: 80.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	39.236389	-76.956283	397.28
2	39.236900	-76.955822	386.27
3	39.236124	-76.953166	395.30

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
PV Array A	20.0	180.0	0	0.0	0	0.0	-
PV Array B	20.0	180.0	0	0.0	0	0.0	-
PV Array C	20.0	180.0	0	0.0	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
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	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

PV: PV Array A no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	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

PV Array A and Route: Route 1

No glare found

PV Array A and Route: Route 2

No glare found

PV Array A and OP 1

No glare found

PV Array A and OP 2

No glare found

PV Array A and OP 3

No glare found

PV Array A and OP 4

No glare found

PV Array A and OP 5

No glare found

PV Array A and OP 6

No glare found

PV Array A and OP 7

No glare found

PV Array A and OP 8

No glare found

PV Array A and OP 9

No glare found

PV Array A and OP 10

No glare found

PV Array A and OP 11

No glare found

PV: PV Array B no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	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

PV Array B and Route: Route 1

No glare found

PV Array B and Route: Route 2

No glare found

PV Array B and OP 1

No glare found

PV Array B and OP 2

No glare found

PV Array B and OP 3

No glare found

PV Array B and OP 4

No glare found

PV Array B and OP 5

No glare found

PV Array B and OP 6

No glare found

PV Array B and OP 7

No glare found

PV Array B and OP 8

No glare found

PV Array B and OP 9

No glare found

PV Array B and OP 10

No glare found

PV Array B and OP 11

No glare found

PV: PV Array C no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Route 2	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	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

PV Array C and Route: Route 1

No glare found

PV Array C and Route: Route 2

No glare found

PV Array C and OP 1

No glare found

PV Array C and OP 2

No glare found

PV Array C and OP 3

No glare found

PV Array C and OP 4

No glare found

PV Array C and OP 5

No glare found

PV Array C and OP 6

No glare found

PV Array C and OP 7

No glare found

PV Array C and OP 8

No glare found

PV Array C and OP 9

No glare found

PV Array C and OP 10

No glare found

PV Array C and OP 11

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