

Rutland East Solar Farm LLC.

RESF Glare Analysis-temp-2

Created Dec 18, 2024
Updated Dec 19, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
Site ID 137246.23251

Project type Advanced
Project status: active
Category 1 MW to 5 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: **On**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
RESF PV Array Approx Layout	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 26.6 acres

Name: RESF PV Array Approx Layout
Footprint area: 26.6 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 0.0 deg
Ground Coverage Ratio: 0.33
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 deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	42.109929	-88.456434	914.17	5.00	919.17
2	42.109925	-88.452641	914.70	5.00	919.70
3	42.107541	-88.452598	906.20	5.00	911.20
4	42.107438	-88.453618	905.89	5.00	910.89
5	42.107235	-88.454251	906.66	5.00	911.66
6	42.106996	-88.454707	908.00	5.00	913.00
7	42.105611	-88.455055	906.57	5.00	911.57
8	42.105516	-88.455345	906.95	5.00	911.95
9	42.107354	-88.456445	912.61	5.00	917.61

Route Receptor(s)

Name: Big Timber Rd
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	42.110310	-88.457794	918.01	0.00	918.01
2	42.110310	-88.451196	913.47	0.00	913.47

Name: Reinkings Rd
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	42.110143	-88.459124	916.05	0.00	916.05
2	42.108153	-88.457343	914.52	0.00	914.52
3	42.105311	-88.455573	909.20	0.00	909.20
4	42.104897	-88.455133	908.79	0.00	908.79

Name: Rt 47
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	42.104456	-88.454355	910.58	0.00	910.58
2	42.105363	-88.453776	910.32	0.00	910.32
3	42.106032	-88.453003	909.46	0.00	909.46
4	42.108340	-88.449259	908.69	0.00	908.69

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	42.114637	-88.459869	917.10	10.00	927.10
OP 2	42.115011	-88.462830	921.26	10.00	931.26
OP 3	42.102411	-88.450427	911.87	10.00	921.87
OP 4	42.100723	-88.451779	913.33	10.00	923.33
OP 5	42.100612	-88.450545	916.78	10.00	926.78
OP 6	42.100604	-88.449709	919.35	10.00	929.35
OP 7	42.100580	-88.448829	923.00	10.00	933.00
OP 8	42.101177	-88.449129	921.64	10.00	931.64
OP 9	42.101488	-88.451060	913.01	10.00	923.01
OP 10	42.100286	-88.449870	915.55	10.00	925.55
OP 11	42.100086	-88.448775	918.72	10.00	928.72
OP 12	42.101766	-88.443400	925.09	10.00	935.09
OP 13	42.101511	-88.443486	928.01	10.00	938.01
OP 14	42.102156	-88.442488	917.88	10.00	927.88
OP 15	42.101886	-88.442681	921.23	10.00	931.23
OP 16	42.101631	-88.442735	925.05	10.00	935.05
OP 17	42.101432	-88.442917	928.26	10.00	938.26
OP 18	42.102037	-88.441748	915.53	10.00	925.53
OP 19	42.101726	-88.442102	923.22	10.00	933.22
OP 20	42.101551	-88.442177	925.05	10.00	935.05
OP 21	42.101209	-88.442434	928.77	10.00	938.77
OP 22	42.101448	-88.441630	922.84	10.00	932.84
OP 23	42.101368	-88.441372	925.98	10.00	935.98
OP 24	42.108811	-88.469847	937.15	10.00	947.15
OP 25	42.105149	-88.467057	914.07	10.00	924.07

Obstruction Components

Name: Existing Non Linear Vegetation
Upper edge height: 30.0 ft



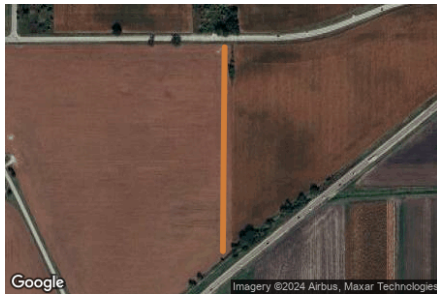
Vertex	Latitude deg	Longitude deg	Ground elevation ft
1	42.105503	-88.458752	905.64
2	42.104607	-88.456252	906.92
3	42.104870	-88.455275	901.00
4	42.107202	-88.451494	901.24
5	42.108066	-88.449986	904.36

Name: Existing Vegetation
Upper edge height: 20.0 ft



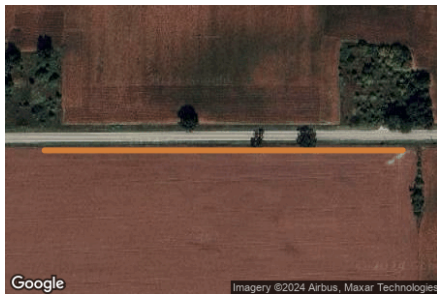
Vertex	Latitude deg	Longitude deg	Ground elevation ft
1	42.110724	-88.459553	916.99
2	42.110394	-88.459182	916.93

Name: New Eastern Screening
Upper edge height: 30.0 ft



Vertex	Latitude deg	Longitude deg	Ground elevation ft
1	42.110175	-88.452470	916.55
2	42.106816	-88.452507	904.05

Name: New Northern Screening
Upper edge height: 30.0 ft



Vertex	Latitude deg	Longitude deg	Ground elevation ft
1	42.110195	-88.456440	914.04
2	42.110195	-88.452470	916.84

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	
RESF PV Array Approx Layout	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

RESF PV Array Approx Layout no glare found

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	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
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
Route: Big Timber Rd	0	0
Route: Reinkings Rd	0	0
Route: Rt 47	0	0

No glare found

Summary of Vertical Surface Glare Analysis

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 geographical 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.