ForgeSolar

Rutland West Solar Farm LLC.

Rutland Solar Farm West-temp-1-temp-6

Created Dec 19, 2024
Updated Dec 20, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
Site ID 137427.23265

Project type Advanced
Project status: active
Category 1 MW to 5 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 No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
Core PV Array	SA tracking	SA tracking	0	0	-
Northern PV Array	SA tracking	SA tracking	0	0	-
Southern PV Array	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 19.7 acres

Name: Core PV Array
Footprint area: 12.8 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: 0.5

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	ft	ft	ft
1	42.110344	-88.461729	912.22	10.00	922.22
2	42.110336	-88.460570	909.62	10.00	919.62
3	42.110034	-88.460710	908.29	10.00	918.29
4	42.109779	-88.460656	908.68	10.00	918.68
5	42.109651	-88.460034	908.26	10.00	918.26
6	42.109787	-88.459712	908.70	10.00	918.70
7	42.110113	-88.459701	909.96	10.00	919.96
8	42.108235	-88.458135	907.49	10.00	917.49
9	42.108251	-88.460892	909.68	10.00	919.68
10	42.107526	-88.460892	909.88	10.00	919.88
11	42.107510	-88.461686	909.38	10.00	919.38

Name: Northern PV Array
Footprint area: 3.3 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: 0.5

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	ft	ft	ft
1	42.112607	-88.461819	915.12	5.00	920.12
2	42.110497	-88.460263	911.52	5.00	916.52
3	42.110668	-88.461765	912.32	5.00	917.32

Name: Southern PV Array
Footprint area: 3.6 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: 0.5

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	ft	ft	ft
1	42.106952	-88.457978	907.92	10.00	917.92
2	42.107222	-88.457195	910.64	10.00	920.64
3	42.105264	-88.455934	908.50	10.00	918.50
4	42.105189	-88.456191	909.21	10.00	919.21
5	42.105304	-88.456706	910.54	10.00	920.54

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	42.110314	-88.453317	916.49	0.00	916.49
2	42.110322	-88.457942	918.15	0.00	918.15
3	42.110601	-88.458982	917.72	0.00	917.72
4	42.111238	-88.460130	917.46	0.00	917.46

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	42.113554	-88.462512	919.32	0.00	919.32
2	42.108452	-88.457555	914.87	0.00	914.87
3	42.105212	-88.455463	909.44	0.00	909.44
4	42.104432	-88.454380	910.65	0.00	910.65

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	42.114630	-88.459765	917.66	10.00	927.66
OP 2	42.115044	-88.462790	920.97	10.00	930.97
OP 3	42.100764	-88.451747	913.32	10.00	923.32
OP 4	42.102484	-88.450288	911.71	10.00	921.71

Obstruction Components

Name: Existing Intersection Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.110829	-88.459564	917.90
2	42.110392	-88.459178	916.93

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

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.111423	-88.462061	912.15
2	42.112864	-88.462056	914.90

Name: Existing Southern Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.105297	-88.455295	906.69
2	42.104740	-88.454672	906.65

Name: Existing Southern Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.105146	-88.454940	908.16
2	42.107964	-88.450080	901.96

Name: Existing Southern Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.105616	-88.458642	906.37
2	42.104589	-88.456024	906.25
3	42.104907	-88.455263	904.20

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

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.108163	-88.457604	912.80
2	42.107773	-88.457303	911.14

Name: Existing Western Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.110360	-88.461979	912.34
2	42.106738	-88.462000	904.20

Name: Proposed Vegetation Screening
Upper edge height: 30.0 ft

Vertex	Latitude	Longitude	Ground elevation
	deg	deg	ft
1	42.111622	-88.460806	915.76
2	42.108382	-88.457995	908.85

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt deg	Orientation deg	"Green" Glare min	"Yellow" Glare min	Energy Produced kWh	Data File
Core PV Array	SA tracking	SA tracking	0	0	-	-
Northern PV Array	SA tracking	SA tracking	0	0	-	-
Southern PV Array	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

Core PV Array 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
Route: Big Timber Rd	0	0
Route: Reinkings Rd	0	0

No glare found

Northern PV Array 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
Route: Big Timber Rd	0	0
Route: Reinkings Rd	0	0

No glare found

Southern PV Array 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
Route: Big Timber Rd	0	0
Route: Reinkings Rd	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 geographi 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 larg 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, nc 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.