



## GlareGauge Glare Analysis Results

### Site Configuration: Ameren Lambert Lightly wo ARC Lambert Threshold

Project site configuration details and results.



Created **Sept. 29, 2017 5:28 p.m.**  
 DNI varies and peaks at **1,000.0 W/m<sup>2</sup>**  
 Analyze every **1 minute(s)**  
**0.5** ocular transmission coefficient  
**0.0066 ft** pupil diameter  
**0.056 ft** eye focal length  
**9.3 mrad** sun subtended angle  
 Site Configuration ID: 10401.1594

### Summary of Results Glare with low potential for temporary after-image predicted

PV name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
Central Array	25.0	165.5	1,862	0	-
East Array	25.0	175.0	2,666	0	-
West Array	25.0	202.0	6,474	0	-

### Component Data

#### PV Array(s)

<b>Name:</b> Central Array <b>Axis tracking:</b> Fixed (no rotation) <b>Tilt:</b> 25.0 deg <b>Orientation:</b> 165.5 deg <b>Rated power:</b> - <b>Panel material:</b> Light textured glass without AR coating <b>Vary reflectivity with sun position?</b> Yes <b>Correlate slope error with surface type?</b> Yes <b>Slope error:</b> 9.7 mrad	<b>Vertex</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Ground elevation</b>	<b>Height above ground</b>	<b>Total elevation</b>
		deg	deg	ft	ft	ft
	1	38.758484	-90.382251	577.14	8.00	585.14
	2	38.758811	-90.380646	582.64	8.00	590.64
	3	38.758973	-90.380652	584.74	8.00	592.74
<b>Name:</b> East Array <b>Axis tracking:</b> Fixed (no rotation) <b>Tilt:</b> 25.0 deg <b>Orientation:</b> 175.0 deg <b>Rated power:</b> - <b>Panel material:</b> Light textured glass without AR coating <b>Vary reflectivity with sun position?</b> Yes <b>Correlate slope error with surface type?</b> Yes <b>Slope error:</b> 9.7 mrad	<b>Vertex</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Ground elevation</b>	<b>Height above ground</b>	<b>Total elevation</b>
		deg	deg	ft	ft	ft
	1	38.758809	-90.380603	582.70	8.00	590.70
	2	38.758908	-90.379157	587.65	8.00	595.65
	3	38.758943	-90.379161	587.68	8.00	595.68
	4	38.759086	-90.379782	590.32	8.00	598.32
	5	38.759029	-90.380607	587.72	8.00	595.72

**Name:** West Array  
**Axis tracking:** Fixed (no rotation)  
**Tilt:** 25.0 deg  
**Orientation:** 202.0 deg  
**Rated power:** -  
**Panel material:** Light textured glass without AR coating  
**Vary reflectivity with sun position?** Yes  
**Correlate slope error with surface type?** Yes  
**Slope error:** 9.7 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	38.758901	-90.383772	567.82	8.00	575.83
2	38.758475	-90.382431	577.37	8.00	585.37
3	38.758623	-90.382354	583.05	8.00	591.05
4	38.758771	-90.382368	586.17	8.00	594.17
5	38.758864	-90.382455	587.34	8.00	595.34
6	38.759167	-90.383414	570.66	8.00	578.66
7	38.759136	-90.383520	569.82	8.00	577.82
8	38.758993	-90.383729	568.70	8.00	576.70

**Flight Path Receptor(s)**

**Name:** FP 1-12L  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 302.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.751803	-90.366323	528.52	50.00	578.52
2-mile point	38.767508	-90.397487	561.94	570.04	1131.97

**Name:** FP 2-30R  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 122.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.738617	-90.339562	604.91	50.00	654.91
2-mile point	38.722912	-90.308404	568.72	639.65	1208.37

**Name:** FP 3-12R  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 302.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.753911	-90.379158	541.94	50.00	591.94
2-mile point	38.769616	-90.410324	551.65	593.74	1145.39

**Name:** FP 4-30L  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 122.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.737792	-90.346464	586.19	50.00	636.19
2-mile point	38.722087	-90.315305	612.36	577.29	1189.65

**Name:** FP 5-11  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 302.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.759965	-90.409876	617.95	50.00	667.95
2-mile point	38.775670	-90.441044	446.82	774.58	1221.41

**Name:** FP 6-29  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 122.9 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.746799	-90.383162	555.98	50.00	605.98
2-mile point	38.731094	-90.351999	574.85	584.59	1159.43

**Name:** FP 7- 6  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 243.5 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.746691	-90.381220	551.34	50.00	601.34
2-mile point	38.733790	-90.414435	548.95	605.85	1154.79

**Name:** FP 8- 24  
**Description:**  
**Threshold height:** 50 ft  
**Direction:** 63.5 deg  
**Glide slope:** 3.0 deg  
**Pilot view restricted?** Yes  
**Vertical view restriction:** 30.0 deg  
**Azimuthal view restriction:** 120.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	38.756230	-90.357509	533.78	50.00	583.78
2-mile point	38.769130	-90.324289	609.38	527.85	1137.23

**Discrete Observation Receptors**

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
1	38.743225	-90.366139	557.03	189.01	746.04

## PV Array Results

### Central Array low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1-12L	0	0
FP: FP 2-30R	0	0
FP: FP 3-12R	1251	0
FP: FP 4-30L	0	0
FP: FP 5-11	0	0
FP: FP 6-29	0	0
FP: FP 7- 6	0	0
FP: FP 8- 24	611	0
OP: 1	0	0

#### Central Array - Flight Path Receptor (FP 1-12L)

*No glare found*

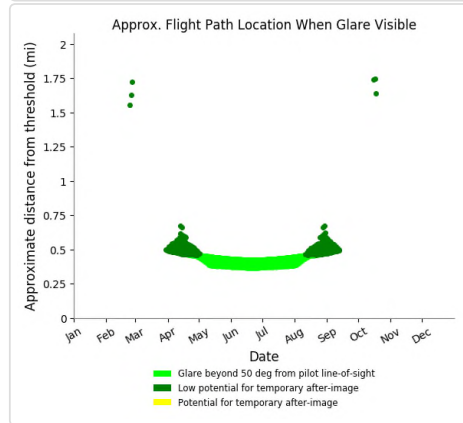
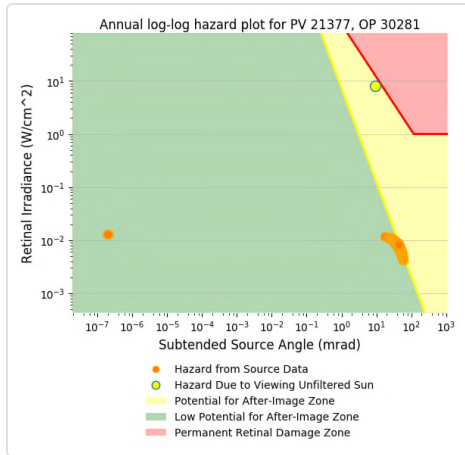
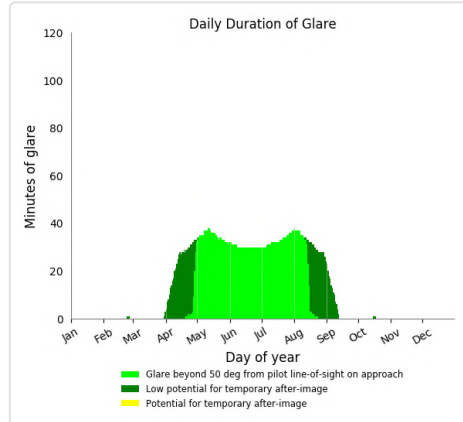
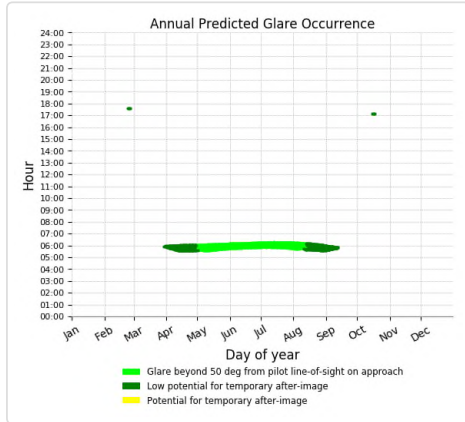
#### Central Array - Flight Path Receptor (FP 2-30R)

*No glare found*

### Central Array - Flight Path Receptor (FP 3-12R)

PV array is expected to produce the following glare for observers on this flight path:

- 1,251 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.



### Central Array - Flight Path Receptor (FP 4-30L)

No glare found

### Central Array - Flight Path Receptor (FP 5-11)

No glare found

### Central Array - Flight Path Receptor (FP 6-29)

No glare found

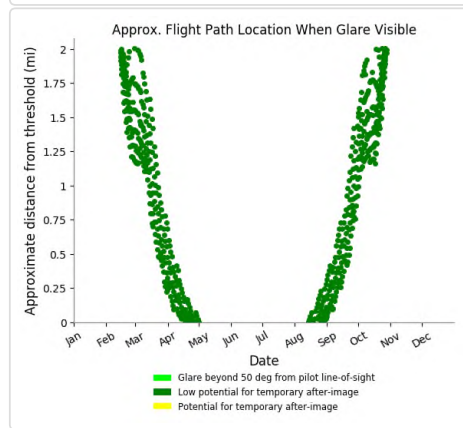
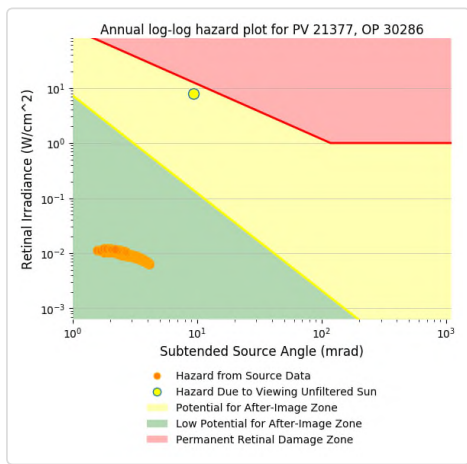
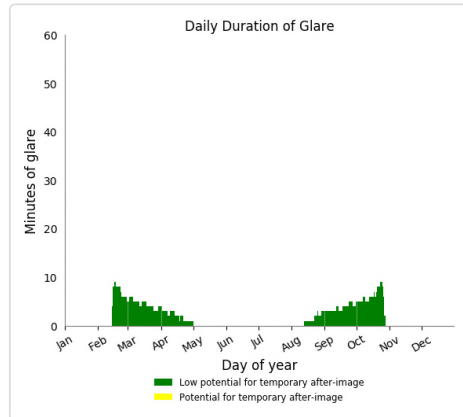
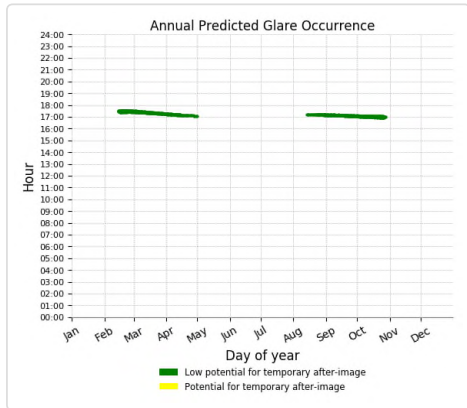
### Central Array - Flight Path Receptor (FP 7-6)

No glare found

### Central Array - Flight Path Receptor (FP 8- 24)

PV array is expected to produce the following glare for observers on this flight path:

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



### Central Array - OP Receptor (1)

No glare found

**East Array** low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1-12L	0	0
FP: FP 2-30R	309	0
FP: FP 3-12R	2018	0
FP: FP 4-30L	221	0
FP: FP 5-11	0	0
FP: FP 6-29	0	0
FP: FP 7- 6	0	0
FP: FP 8- 24	118	0
OP: 1	0	0

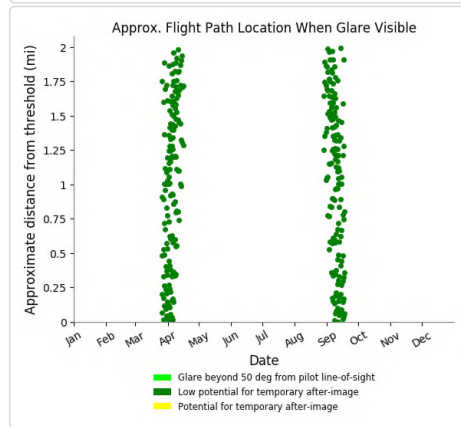
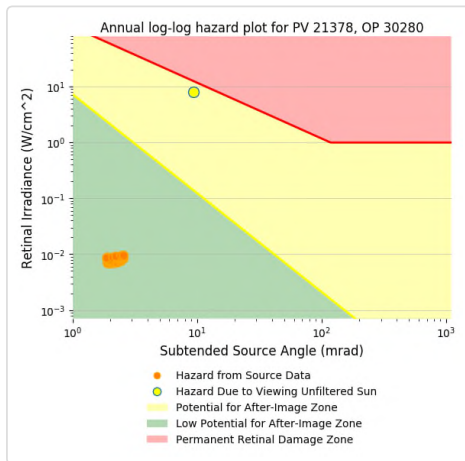
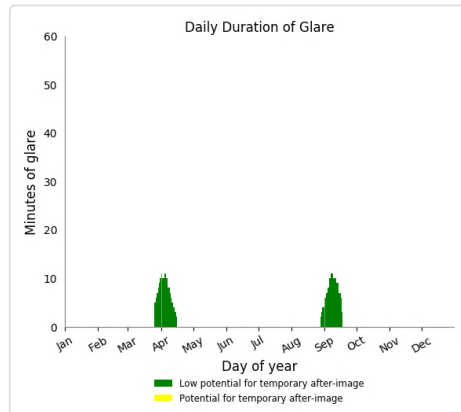
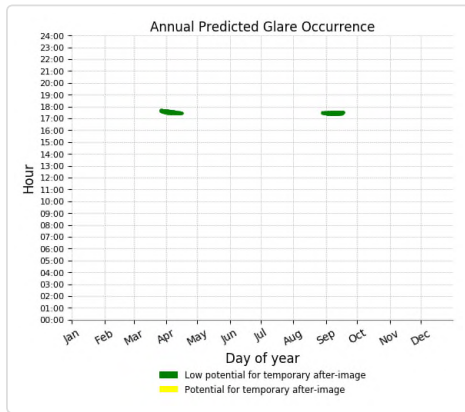
**East Array - Flight Path Receptor (FP 1-12L)**

No glare found

**East Array - Flight Path Receptor (FP 2-30R)**

PV array is expected to produce the following glare for observers on this flight path:

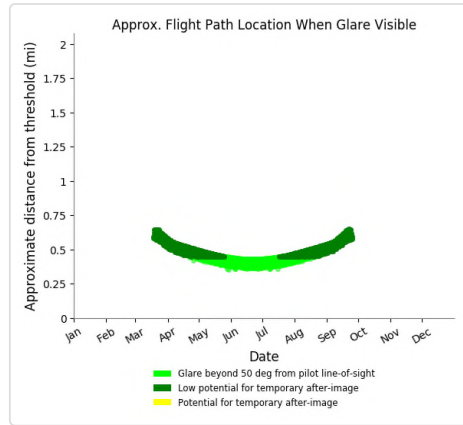
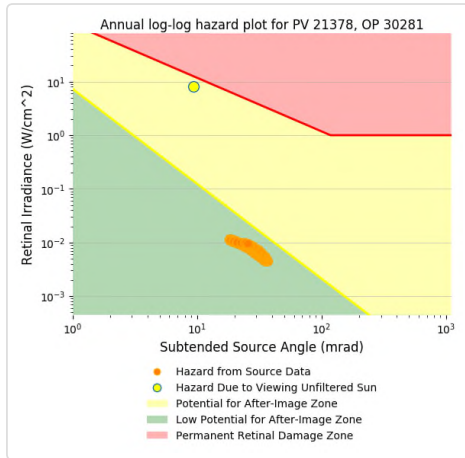
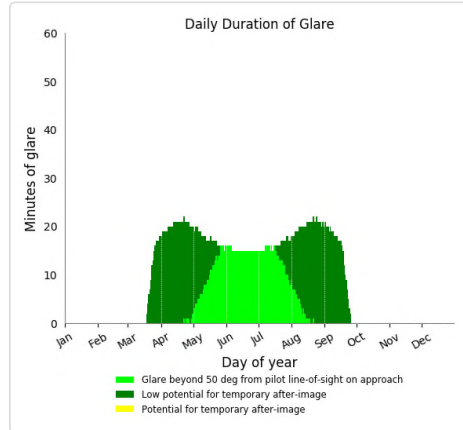
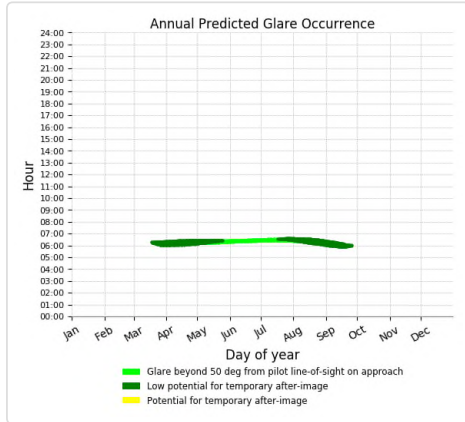
- 309 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.



### East Array - Flight Path Receptor (FP 3-12R)

PV array is expected to produce the following glare for observers on this flight path:

- 2,018 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.

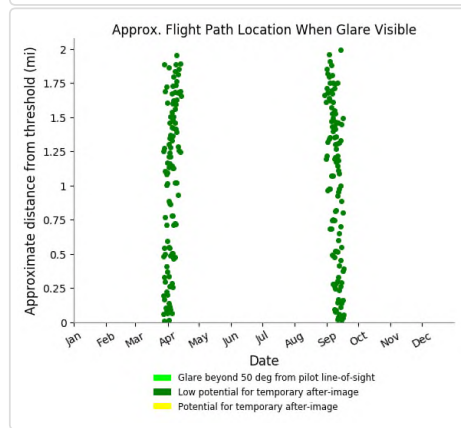
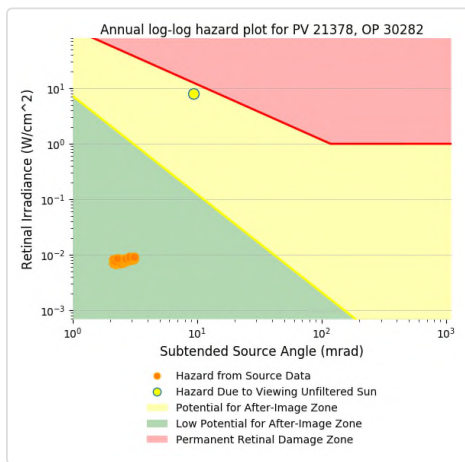
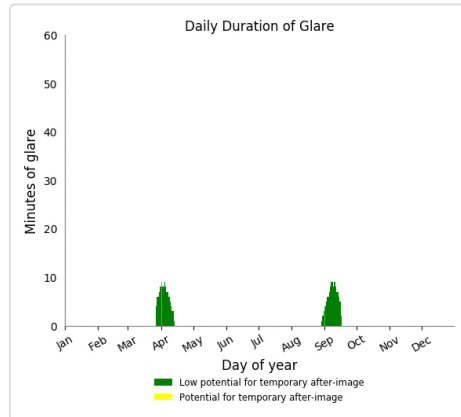
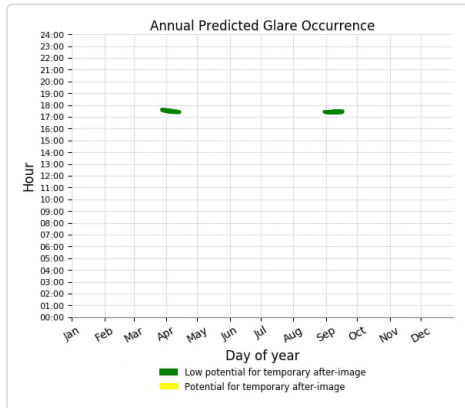




**East Array - Flight Path Receptor (FP 4-30L)**

PV array is expected to produce the following glare for observers on this flight path:

- 221 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 - Flight Path Receptor (FP 5-11)**

No glare found

**East Array - Flight Path Receptor (FP 6-29)**

No glare found

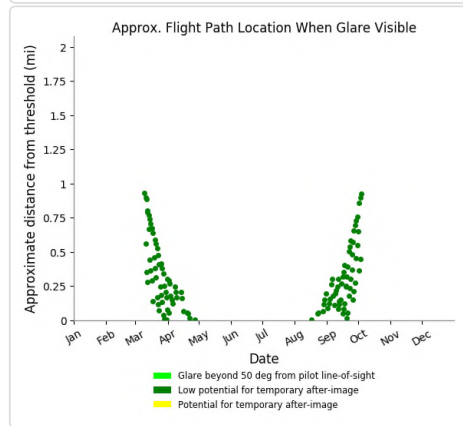
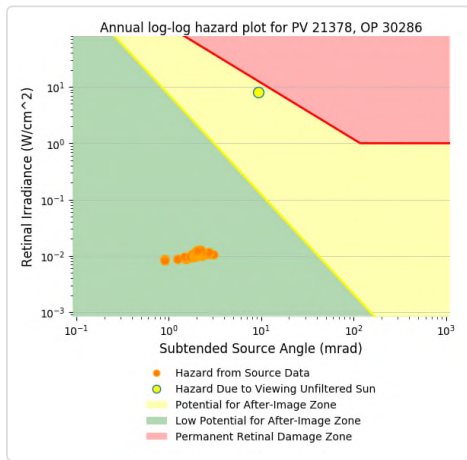
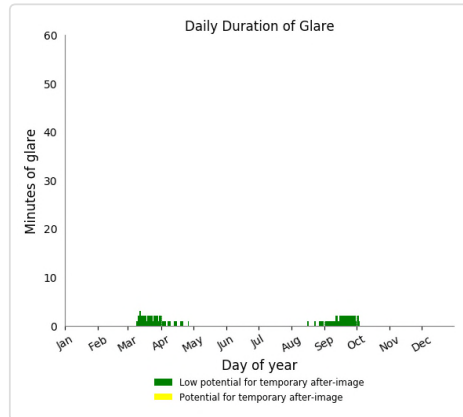
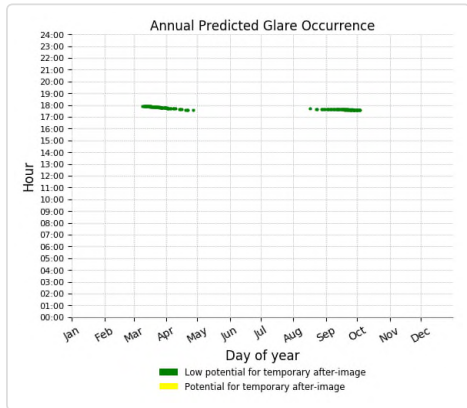
**East Array - Flight Path Receptor (FP 7- 6)**

No glare found

**East Array - Flight Path Receptor (FP 8- 24)**

PV array is expected to produce the following glare for observers on this flight path:

- 118 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 Receptor (1)**

No glare found

**West Array** low potential for temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: FP 1-12L	0	0
FP: FP 2-30R	0	0
FP: FP 3-12R	5358	0
FP: FP 4-30L	0	0
FP: FP 5-11	1116	0
FP: FP 6-29	0	0
FP: FP 7- 6	0	0
FP: FP 8- 24	0	0
OP: 1	0	0

**West Array - Flight Path Receptor (FP 1-12L)**

No glare found

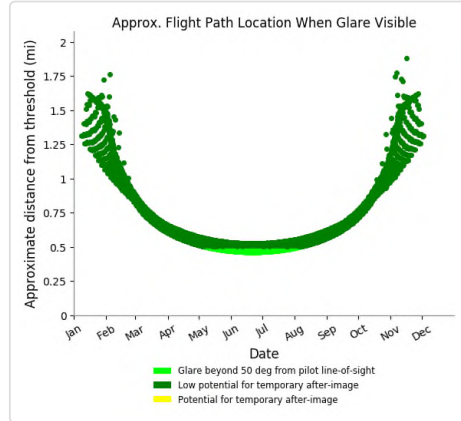
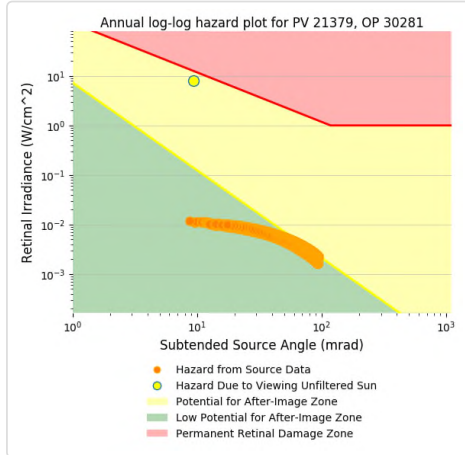
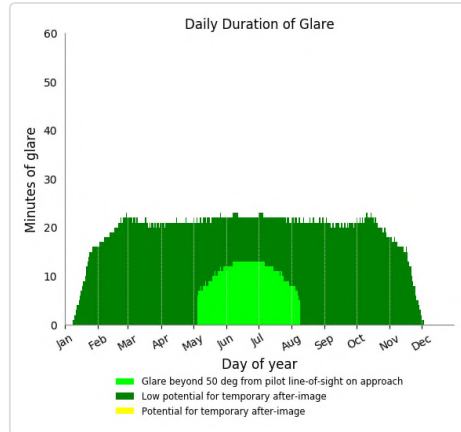
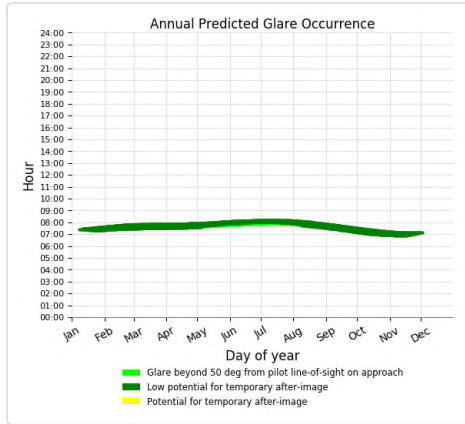
**West Array - Flight Path Receptor (FP 2-30R)**

No glare found

**West Array - Flight Path Receptor (FP 3-12R)**

PV array is expected to produce the following glare for observers on this flight path:

- 5,358 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.



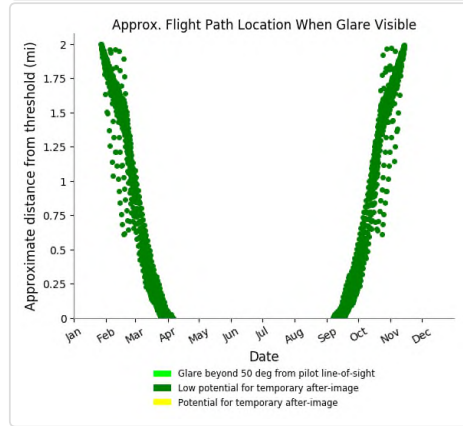
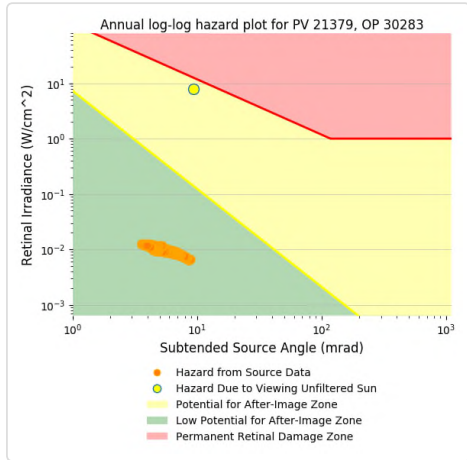
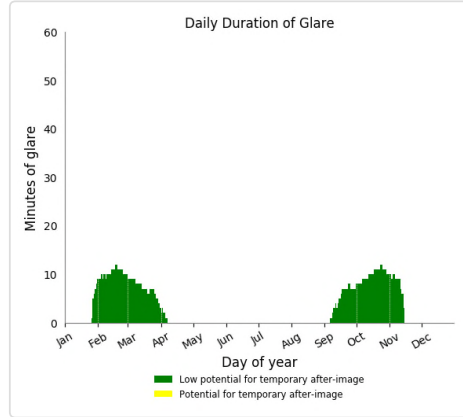
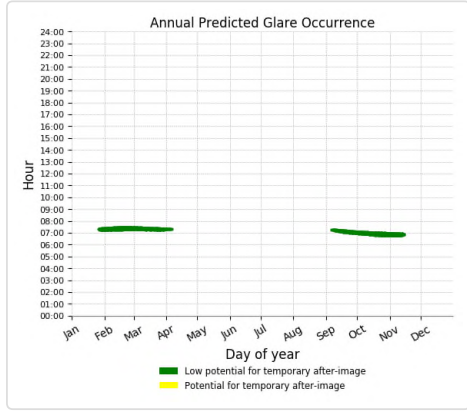
### West Array - Flight Path Receptor (FP 4-30L)

No glare found

### West Array - Flight Path Receptor (FP 5-11)

PV array is expected to produce the following glare for observers on this flight path:

- 1,116 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 - Flight Path Receptor (FP 6-29)

No glare found

### West Array - Flight Path Receptor (FP 7- 6)

No glare found

### West Array - Flight Path Receptor (FP 8- 24)

No glare found

### West Array - OP Receptor (1)

No glare found

## Assumptions

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- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values may differ.
- 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.