Attachment 8: Visual Impacts Minimization and Mitigation Plan

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for the

Somerset Solar Facility

Niagara County, New York

February 2023 (Revised August 2023)

Prepared for:

The AES Corporation, Inc.

TETRA TECH

Prepared by:

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1.0 INTRODUCTION

Tetra Tech, Inc. was contracted by The AES Corporation, Inc. to prepare a Visual Impact Assessment (VIA) for Somerset Solar, LLC (Applicant) in support of the development of the New York Codes, Rules, and Regulations (NYCRR) Chapter XVIII, Title 19 NYCRR §900-2.9 (Implementing Section 94-c of the Executive Law) Application for the Somerset Solar Facility (Facility). The Facility consists of a 125-megawatt photovoltaic solar facility to be sited on approximately 1,396 acres of privately-owned land located in the Town of Somerset, Niagara County, New York (the Project Site; see Figure 1). The Facility is situated along New York State (NYS) Route 18/Lake Road, between Hess Road to the west and Niagara County Route 108 (Hartland Road) to the east.

2.0 REGULATORY SETTING

2.1 19 NYCRR §900-2.9

19 NYCRR §900-2.9 requires a VIA to be completed to determine the extent and assess the significance of facility visibility and outlines specific components of the VIA including: identification of visually sensitive resources; viewshed mapping; confirmatory visual assessment fieldwork; visual simulations (photographic overlays); cumulative visual impact analysis; and proposed visual impact mitigation. Table 1 outlines the information needed to fulfill the requirements of 19 NYCRR §900-2.9 and where these requirements are addressed in the VIA. This Visual Impacts Minimization and Mitigation Plan (VIMMP) was prepared as part of the VIA.

Table 1. 19 NYCRR §900-2.9 Requirements

19 NYCRR §900-2.9 Visual Impacts		Section
(d)	Visual Impacts Minimization and Mitigation Plan. The Visual Impacts Minimization and Mitigation Plan shall include proposed minimization and mitigation alternatives based on an assessment of mitigation strategies, including screening (landscaping), architectural design, visual offsets, relocation or rearranging facility components, reduction of facility component profiles, alternative technologies, facility color and design, lighting options for work areas and safety requirements, and lighting options for FAA aviation hazard lighting. The facility design shall incorporate the following measures for the Visual Impacts Minimization and Mitigation Plan:	Attachment 8
(1)	Advertisements, conspicuous lettering, or logos identifying the facility owner, turbine manufacturer, solar module manufacturer, or any other supplier entity, other than warning and safety signs, shall not be allowed;	Attachment 8
(2)	The electrical collection system shall be located underground, to the extent practicable. Structures shall only be constructed overhead for portions where necessary based on engineering, construction, or environmental constraints;	Attachment 8
(3)	Electric collection and transmission facilities design shall specify use of either wood poles or steel pole structures; steel poles shall be self-weathering (such as Corten or equivalent) or other surface finish in dark brown or green color, non-glare finish;	Attachment 8
(4)	Non-specular conductors shall be used for any overhead portions of the transmission line and the electric collection system; and	Attachment 8
(5)	For wind facilities, wind turbines, towers and blades shall be Federal Aviation Administration (FAA) approved white or off-white colors to avoid the need for daytime aviation hazard lighting, unless otherwise mandated by FAA, and non-reflective finishes shall be used on wind turbines to minimize reflected glare.	Not Applicable
(6)	Shadow Flicker for Wind Facilities. Shadow Flicker shall be limited to thirty (30) hours per year at any non-participating residence, subject to verification using shadow prediction and operational controls at appropriate wind turbines. The Visual Impacts Minimization and Mitigation Plan shall include items i-v.	Not Applicable
(7)	Glare for Solar Facilities. Solar panels shall have anti-reflective coatings and the Visual Impacts Minimization and Mitigation Plan shall include an analysis using Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGHAT) methodology or equivalent, that solar glare exposure at any non-participating residence, airport or public roadway will be avoided or minimized, and will not result in complaints, impede traffic movements or create safety hazards.	Attachment 8, Appendix A

19 NYCRR §900-2.9 Visual Impacts	Section
(8) Planting Plans which shall include the facility substation; energy storage structures; and the POI Switchyard; and for components of solar generating facilities as appropriate to facility setting.	Attachment 8
(9) A lighting plan(s), which shall address: (i) Security lighting needs at substation and switchyard sites, and any exterior equipment storage yards; (ii) Plan and profile figures to demonstrate the lighting area needs and proposed lighting arrangement and illumination levels to provide safe working conditions at the collection substation site, and any exterior equipment storage yards or other locations (iii) Exterior lighting design shall be limited to lighting required for health, safety, security, emergencies and operational purposes and shall be specified to avoid off-site lighting effects as follows: (a) Using task lighting as appropriate to perform specific tasks; limiting the maximum total outdoor lighting output based on the lowest allowable OSHA limits; task lighting fixtures shall be designed to be placed at the lowest practical height and directed to the ground and/or work areas to avoid being cast skyward or over long distances, incorporate shields and/or louvers where practicable, and capable of manual or auto-shut off switch activation rather than motion detection; (b) Requiring full cutoff fixtures, with no drop-down optical elements (that can spread illumination and create glare) for permanent exterior lighting, consistent with OSHA requirements and adopted local laws or ordinances, including development standards for exterior industrial lighting, manufacturer's cut sheets of all proposed lighting fixtures shall be provided; and (c) For wind facilities, lighting shall be installed on turbines for aviation hazard marking as specified by FAA. The applicant shall file a Notice for a Marking and Lighting Study of Aircraft Detection Lighting System(s) (ADLS) and dimmable lighting options with the FAA/Department of Defense (DOD) seeking a written determination approving the use of ADLS or other dimmable lighting option at the Project. If FAA/DOD determine that ADLS or dimmable lighting options are not appropriate for the project, or if the applicant determines installation of ADLS or dimmable lighting options are not technically feasible, the applicant shall consider other means of minimizing lighting effects, such as use of low-intensity lighting, and synchronization of lighting activation with adjoining wind farms.	Attachment 9

3.0 MINIMIZATION AND MITIGATION

Per 19 NYCRR §900-2.9(d), the VIMMP includes proposed minimization and mitigation alternatives based on an assessment of mitigation strategies, including screening (landscaping, see Section 7 of the VIA and Section 8(d) of Exhibit 8), visual offsets and relocation or rearranging Facility components (see Facility setback discussion in Section 7 of the VIA and Section 8(d) of Exhibit 8), and lighting options for work areas and safety requirements (see Attachment 9 of the VIA, Substation Photometrics Plan and Section 8(a)(5) of Exhibit 8).

The VIMMP does not include architectural design, reduction of facility component profiles, alternative technologies, and Facility color and design which are discussed in more detail below.

1. Architectural design – The proposed Facility includes one small utility control building (approximately 12’ x 30’ x 12’ high) that would not provide opportunities for architectural design changes. The building will be located within the Facility Substation Site, located approximately 1,420 feet from the nearest neighboring residence, and 1,325 feet north of NYS Route 18. Representative photographs of a Control Building similar to what will be used for the Facility is provided in Appendix 8-A, Attachment 9. The façade color, texture, and final material finishes will be dark gray, and include a textured plaster façade (Example #1) or a light tan color with corrugated metal exterior (Example #2). Due to these distances, in addition to dense existing vegetation around the Facility Substation, the control building will not be visible from surrounding areas as supported by the simulations provided in Appendix 8-A, Attachment 8. One exception is the view from NYS Route 18/Lake Road, which would have limited views of the Control Building (identified as the Control Room on the simulations) in the distance from Viewpoint 2A during leaf-off. Views from this location would be partially obscured during leaf-on conditions, and as the proposed landscaping fills in after Year 5 of the Facility, this view will further diminish and become obscured as the vegetation plantings increase in size.
2. Reduction of facility component profiles –Setbacks influenced the footprint of the Facility (see Section 7 of the VIA and Section 8(d) of Exhibit 8) and no other relocation or reductions are anticipated for this Facility. With other proposed visual mitigation measures in place, the need for additional mitigation is not anticipated for this Facility.
3. Alternative technologies – Photovoltaic module technology and equipment are fairly standard, is selected based on availability and ability to meet the power production targets for the Facility, and does not offer alternatives that will significantly decrease visual impact.

4. Facility color and design – Facility components use standard designs and colors. Custom colors may not be available or would otherwise increase the cost and maintenance requirements for activities such as repainting or other ongoing maintenance and may require facility outages to address.

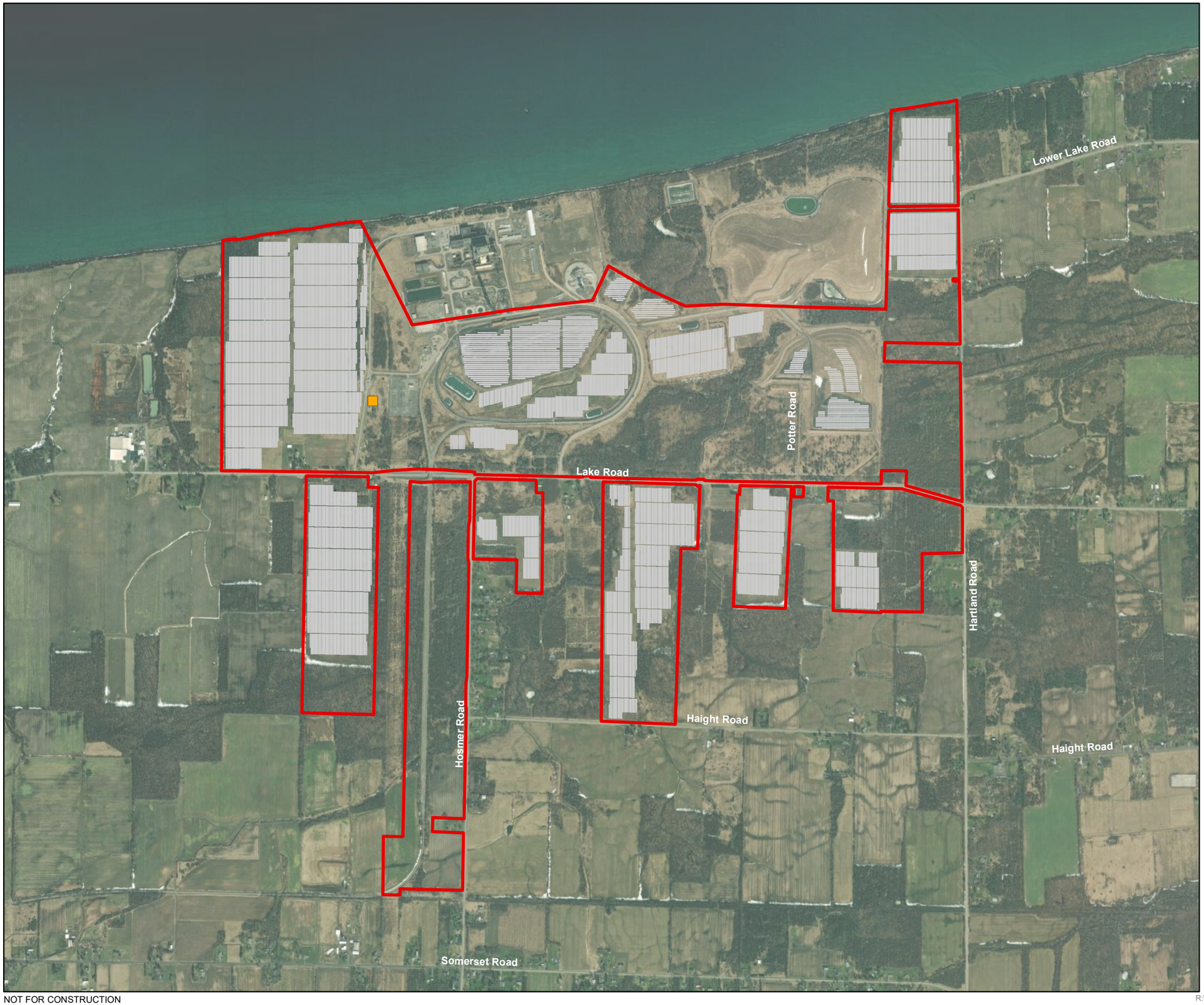
The Facility design incorporates the following measures for the VIMMP:

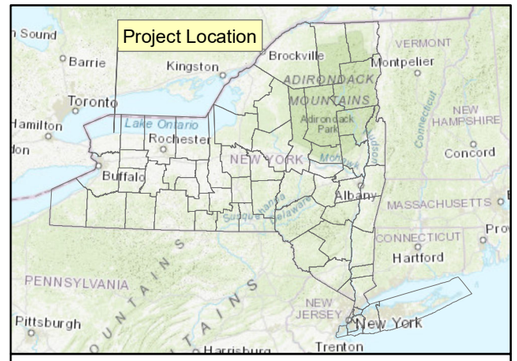
1. Advertisements, conspicuous lettering, or logos identifying the facility owner, solar module manufacturer, or any other supplier entity, other than warning and safety signs, will not be on the Facility infrastructure.
2. The electrical collection system for solar array areas will be located underground, to the extent practicable (see Exhibit 5, Design Drawings). Aboveground electrical collection lines are proposed on cable sleeper trays within the loop track and landfill areas of the Facility where underground trenching is not feasible, based on engineering constraints.
3. Electric interconnection line facilities will use wood poles; if used, steel poles will be self-weathering (such as Corten or equivalent) or other surface finish in dark brown or green color, non-glare finish.
4. Non-specular conductors will be used for any overhead portions of the transmission line and the electric collection system.
5. This section is not applicable and is therefore not discussed in this plan.
6. This section is not applicable and is therefore not discussed in this plan.
7. See Glare Study (Appendix A). Solar panels shall have anti-reflective coatings. To determine if the Facility would affect the areas modeled for glare at Observation Points (OPs) 9 and 13, these points were photographed from public access areas to determine if these areas could observe the Facility and potential glare from it. Based on the photography, OPs 9 and 13 were determined to have no clear views of the Facility (Attachment 3, Viewpoints for Glare Analysis OP 9 and OP 13). Furthermore, as the roadways associated with these OPs are oriented north-south, drivers on these roadways would not be affected by the predicted glare found within Analysis 2 and Analysis 4 for the fixed panel areas, as their focused view/attention would be oriented away from the direction of the Facility. Photographs from OP 6 could not be obtained to ascertain potential view from the location, due to its location on private property. With the overall glare predicted for OP 6 being a total of 6 minutes of green glare annually, and that the predicted glare can be considered a conservative value as it doesn't take into account ambient weather conditions and limited obstruction modeling, the miniscule amount of predicted glare for OP 6 is considered to be a non-material amount of glare.
8. See Landscape Plan (Appendix B).

9. See Substation Photometrics Plan (Attachment 9).

In addition to this VIMMP, additional avoidance, minimization, and mitigation measures implemented at the Facility are discussed in Section 8(d) of Exhibit 8; and Section 7.0 of the VIA.

Figure





Legend

- Facility Substation
- Project Site
- Solar Array

1:18,000

0 0.25 0.5 Miles

Figure 1

Facility Layout

Somerset Solar
Niagara County, NY
August 2023

TETRA TECH

Source: Esri, et. al., 2022; Niagara County Real Property Tax Services

NOT FOR CONSTRUCTION

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Appendix A:
Glare Study

Glare Analysis Report for the Somerset Solar Facility

New York State Route 18/Lake Road
Somerset, New York

Prepared for:

Somerset Solar, LLC

Prepared by:

Tetra Tech, Inc.

August 2023

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Executive Summary

At the request of AES Somerset Solar, LLC, Tetra Tech, Inc. conducted a glare analysis of the proposed Somerset Solar facility (Facility). The analysis was conducted using the Solar Glare Hazard Analysis Tool software through an online tool (GlareGauge) developed by Sandia National Laboratories and hosted by ForgeSolar. A total of four glare analyses were conducted for the Facility. Two of the analyses modeled single-axis tracking photovoltaic (PV) arrays from the points of view from an average first- and second-floor structure, as well as those from a typical commuter car and commercial truck travelling along adjacent roadways. The two remaining analyses modeled fixed tilt PV arrays from the points of view from an average first- and second-floor structure, as well as those from a typical commuter car and commercial truck travelling along adjacent roadways. The four analyses included 14 representative observation points (OPs) and six segmented traffic routes from representative locations in proximal areas surrounding the Facility. Based on the results of the Federal Aviation Administration (FAA) Notice Criteria Tool, the Facility is not required to formally file with the FAA Obstruction Evaluation Group due to its distance from any airports in the area.

The results of the analyses indicate that the Facility could result in some amount of glare at seven of the 14 representative OPs and one of the six traffic routes. The glare that is predicted for the OPs and roadway segments is expected to be partially to substantially blocked by intervening structures and vegetation.

1.0 Introduction

Somerset Solar, LLC (Applicant)is proposing the Somerset Solar facility (Facility) which is located along New York State (NYS) Route 18 (Lake Road) in Somerset, Niagara County, New York. The proposed Facility involves construction and operation of an approximately 125-megawatt (MW) ground-mounted solar photovoltaic (PV) system, as well as ancillary support facilities on land owned by Somerset Operating Company, LLC and Terroir Development, LLC. The Facility is located on portions of the following five parcels totaling approximately 1,784 acres (Project Parcels):

- Tax ID: 7.00-3-28 (278.3 acres) (Terroir Development LLC)
- Tax ID: 8.00-1-1.11 (621.5 acres) (Somerset Operation Company, LLC)
- Tax ID: 8.00-1-1.12 (36.6 acres) (Somerset Operation Company, LLC)
- Tax ID: 8.00-1-1.2 (815.00 acres) (Somerset Operation Company, LLC)
- Tax ID: 8.00-1-38 (32.6 acres) (Somerset Operation Company, LLC)

1.1 Description of Project Site

The Project Parcels encompass approximately 1,784 acres; however, the lease area is a subset of the full parcel acreages, with approximately 1,396 acres of the Project Parcels under lease agreements (Project Site). NYS Route 18/Lake Road runs through the central portion of the Project Site dividing it into northern and southern portions. The northern portion is developed and contains ancillary structures of the inactive Somerset Coal Fired Power Generation Station (Somerset Station), such as a coal storage pile, a coal combustion residual landfill (coal ash), and associated roads and rail lines. The actual plant turbines and a majority of the built structures associated with the Somerset Station are located adjacent to the Project Site, with much of these structures associated with the decommissioned plant, including buildings and support structures, and rail lines having been removed as part of the ongoing demolition process (Appendix 6-C). Features of the decommissioned plant that will remain on the Project Site include the Kintigh Substation, with the coal storage pile and ash landfill proposed to be used for PV arrays for the Facility. The remaining parcels south of NYS Route 18/Lake Road consist of agricultural, residential, and forested land. The Project Site is bounded by portions of the former coal plant and Lake Ontario to the north; Niagara County Route 108/Hartland Road followed by agricultural, residential, and forested land to the east; agricultural, residential, and forested land to the south; and agricultural and forested land to the west.

Historically, the northern half of the Project Site has been used for operation of the former coal plant and agricultural activities and the southern half of the Project Site has been used for agricultural activities or is undeveloped. Remnants of the former coal plant that are located on the Project Site include the coal storage pile and ash landfill. The topography within the Project Site generally slopes in a northerly direction towards Lake Ontario, with elevations ranging from approximately 315 feet above mean sea level (amsl) along the southern boundary to approximately 250 feet amsl near the northern boundary of the Project Site.

1.2 Facility Description

The Facility involves construction and operation of an approximately 125-megawatt (MW), ground-mounted PV solar energy generation facility 125-MW, and supporting infrastructure, including the Somerset Collector Substation (Facility Station) and related interconnection and ancillary facilities. A series of solar PV panels would be mounted on a racking system arranged in evenly-spaced rows throughout the Project Site. This equipment would connect via primarily underground electrical wiring to connect to the Facility Substation, although above-ground cabling on sleeper trays is proposed in the loop track and ash landfill areas due to engineering constraints. The Facility Substation would be located near the existing New York State Electric and Gas Corporation's (NYSEG's) 345-kilovolt-transmission line and would include equipment to allow interconnection with the electrical grid; an overhead interconnection line will connect the Facility Substation to the Kintigh Substation for connection to the grid. The Facility would be accessed via gated entry points and would utilize a network of existing and new on-site access roads. Temporary construction staging and laydown would occur within the approximately 693-limit of disturbance (Facility Site). The Facility would be owned and operated by the Applicant, with use of the area secured through a long-term lease or easement with the current landowners (Somerset Operation Company, LLC and Terroir Development LLC). The power generated by the Facility would be sold to NYSEG under a new 25-year power purchase agreement (PPA). At the end of its useful life (35 years), the Facility would be decommissioned (Exhibit 23). Decommissioning would involve removal of all equipment associated with the Facility and returning the area to substantially the same or similar condition as existed prior to Facility development.

1.3 Overview of Glare Analysis

As an industry standard, the term "glint and glare" analysis is typically used to describe an analysis of potential ocular impacts to defined receptors. As a point of clarification, ForgeSolar defines glint and glare in the following statement:

> *Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.*

Based on the ForgeSolar definitions of glint and glare and the stationary nature of the Facility's solar PV modules related to the sun, the potential reflectance from the Facility modeled throughout this report will be referred to as glare.

Tetra Tech, Inc. (Tetra Tech) completed a glare analysis using the Solar Glare Hazard Analysis Tool (SGHAT) software, developed by Sandia Laboratories, now hosted by ForgeSolar (as discussed further below). The SGHAT software is considered an industry-best practice and conservative model that effectively models the potential for glare at defined receptors from defined solar energy generating facilities. As discussed further below, the model is conservative in that it does not account for potential screening such as existing or proposed vegetation, topography outside of the defined areas, buildings, walls, or fences, nor does it account for varying weather conditions throughout the year.

This report summarizes the glare analysis conducted based on the preliminary Facility layout dated March 3, 2023. Included as attachments are Figure 1: PV Array Areas and Figure 2: Receptors (Attachment A), and the glare analysis reports generated by the ForgeSolar tool (Attachment B).

2.0 FAA Notice Criteria Consultation

The Federal Aviation Administration (FAA) developed Technical Guidance for Evaluating Selected Solar Technologies on Airports in 2010, in addition to FAA regulatory guidance under 78 FR 63276 Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports (collectively referred to as FAA Guidance) (FAA 2018). The FAA Guidance recommends that glare analyses be performed on a site-specific basis using the Sandia Laboratories SGHAT. This guidance applies to solar facilities located on federally-obligated airport property; it is not mandatory for a proposed solar installation that is not on an airport (and for which a Form 7460-1 is filed with FAA pursuant to Code of Federal Regulations [CFR] Title 14 Part 77.9, as discussed below), but is considered to be an industry best practice for solar facilities in general (FAA 2010). The SGHAT is the standard for measuring potential ocular impact as a result of solar facilities (78 FR 63276).

According to 78 Federal Regulations 63276, the FAA has determined that "glint and glare from solar energy systems could result in an ocular impact to pilots and/or air traffic control (ATC) facilities and compromise the safety of the air transportation system." The FAA has developed the following criteria for analysis of solar energy projects located on jurisdictional airports:

- No potential for glint or glare in the existing or planned ATC Tower cab; and
- No potential for glare or "low potential for after-image" along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two miles from 50 feet above the landing threshold using a standard three-degree glidepath.

The online FAA Notice Criteria Tool (NCT) reports whether a proposed structure is in proximity to a jurisdictional air navigation facility and if formal submission to the FAA Obstruction Evaluation Group (OEG) under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace) is recommended. The NCT also identifies final approach flight paths that may be considered vulnerable to a proposed structure's impact on navigation signal reception. The NCT was utilized to determine if the proposed Facility is located within an FAA-identified impact area based on the Project Site boundaries and height above ground surface. The FAA NCT Report stated that a formal filing with the FAA OEG is not required. Based on this information, airport facilities were not included in the SGHAT analysis. The FAA NCT results are provided in Attachment C.

3.0 Glare Analysis Method

The SGHAT is considered to be an industry best practice for analysis of glare related to solar energy generating facilities. Tetra Tech utilized the SGHAT technology as part of an online tool (GlareGauge) developed by Sandia National Laboratories and hosted by ForgeSolar. GlareGauge provides a quantitative assessment of the following:

- When and where glare has the potential to occur throughout the year for a defined solar array polygon; and
- Potential effects on the human eye at locations where glare is predicted.

The following statement was issued by Sandia Laboratories regarding the SGHAT technology:

> *Sandia developed SGHAT v. 3.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard* (Sandia Laboratories 2016).

Note, however, that technology changes continue to occur to address issues such as reflectivity. The model, therefore, presents a conservative assessment based upon simplifying assumptions inherent in the model as well as industry improvements since the most recent update of such assumptions.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptor, the GlareGauge categorizes potential glare where it is predicted by the model to occur in accordance with three tiers of severity (ocular hazards) that are shown by different colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

These categories of glare are calculated using a typical observer's blink response time, ocular transmission coefficient (the amount of radiation absorbed in the eye prior to reaching the retina), pupil diameter, and eye focal length (the distance between where rays intersect in the eye and the retina). As a point of comparison, direct viewing of the sun without a filter is considered to be on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare (approximately three orders of magnitude less than direct viewing of the sun). Upon exposure to yellow glare, the observer may experience a temporary spot in their vision temporarily lasting after the exposure. Upon exposure to green glare, the observer may experience a bright reflection but typically no spot lasting after exposure.

4.0 Glare Analysis Inputs

Based on information provided by the Applicant, the modules to be used for the Facility include smooth glass surface material with an anti-reflection coating (ARC), which are parameters selected in the glare analyses. Values associated with panel reflectivity and reflective scatter were not altered from the GlareGauge standard input, which are averaged from various module reflectance profiles produced from module research concluded in 2016; therefore, as previously noted, the model does not incorporate further advances in ARCs since that time.

Tetra Tech performed four separate glare analyses. The analyses included six proximal segmented vehicular traffic routes, as well as 14 observation points (OPs). The four analysis differ in the type of solar panel, single axis tracking or fixed tilt, and heights assumed for the OP and vehicular routes. Analysis 1 and 2 represent the point of view from an average first floor residential/commercial structure and typical commuter car, while Analysis 3 and 4 represent the point of view from an average second floor residential/ commercial structure and typical semi-tractor-trailer truck. For analyses 1 and 3, the Facility Site consisted of 15 separate PV areas "PV Array Areas" that utilize single axis tracking panels. For analyses 2 and 4, the Facility Site consisted of nine separate "PV Array Areas" that utilize fixed tilt panels. The segmented polygons shown in each analysis are generally representative of the proposed Facility layout dated June 29, 2022. Segmentation of the Facility layout allows GlareGauge to more accurately model potential ocular impacts as a result of the Facility. The modeled PV Array Areas are shown in Figure 1 and the OPs and roadway segments are shown in Figure 2. The additional input features used in the analyses are summarized in Table 1.

As noted below in the assumptions, the GlareGauge model does not consider obstacles (either man-made or natural) between the defined PV arrays and the receptors. ForgeSolar is updating their glare analysis tool and has provided a tool to model obstructions. The "Obstruction" component simulates obstacles and blocking geometries that may mitigate PV glare. These obstructions are modeled as multi-line paths as parallelograms with vertical sides that extend upward from ground elevation. These obstructions are assumed to be opaque, with incoming sunlight and emanating glare reflections completely mitigated if they intersect with the obstruction face. These analyses used this tool to model specific areas of dense forest and tree lines found within the Project Site and surrounding area. A total of 10 obstructions were used to simulate the natural vegetation buffer, using an average height of 30 feet. However, these modeled obstructions have limitations and can't fully model dense forest areas of varying heights, but only simulates a line of obstruction to represent natural vegetation buffers.

Table 1. Glare Analyses Input Features

Analysis No.	Racking Type	Module Orientation[1]	Panel Tilt (degrees)	Module Height[2] (feet)	OP Height[3] (feet)	Route Height[4] (feet)	ATCT	Flight Paths
1	Fixed	South-facing	20	4.0	6	5	NA	NA
	Single Axis	South-East facing	60	5.5				
2	Fixed	South-facing	20	4.0	16	9	NA	NA
	Single Axis	South-East facing	60	5.5				

1. PV Array Areas modeled are south facing (180 azimuth).
2. Average module centroid height above ground surface.
3. Height of observation point receptor: 6 feet represents an average first floor residential/commercial point of view and 16 feet represents an average second floor residential/commercial point of view.
4. Height of vehicular route receptor: 5 feet represents typical commuter car height and 9 feet represents typical semi-tractor-trailer truck views.
5. NA – not applicable.

5.0 Glare Analysis Assumptions

The GlareGauge model is bound by multiple limitations. The following limitations and assumptions provide a level of conservatism to the GlareGauge model (Ho et al., 2015):

- The GlareGauge model simulates PV arrays as infinitesimally small modules within planar convex polygons exemplifying the tilt and orientation characteristics defined by the user. Gaps between modules, variable heights of the PV array within the polygons, and supporting structures are not considered in the analysis. Since the actual module rows will be separated by open space, this model assumption could result in indication of glare in locations where panels will not be located. The supporting structures are considered to have reflectivity values that are negligible relative to the module surfaces included in the model.
- The GlareGauge model assumes that the observation point receptor can view the entire PV array segment when predicting glare minutes. However, it may be that the receptor at the observation point may only be able to view a small portion (typically the most proximal edge) of the PV array segment. Therefore, the predicted glare minutes and intensity from a specific PV array to a specific observation point are conservative as the observer will likely not experience glare from the entire PV array segment at once.
- The GlareGauge model does not consider obstacles (either man-made or natural) between the defined PV arrays and the receptors such as vegetative screening (existing or planned landscaping), buildings, topography, etc. Where such features exist, they would screen views of the Facility and, thus, minimize or eliminate glare at those locations.
- The GlareGauge model does not consider the potential effect of shading from existing topography between the sun and the Facility outside of the defined areas.
- The direct normal irradiance (DNI) is defined as variable using a typical clear day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum of 1,000 Watts per square meter (W/m^2) at solar noon. The irradiance profile uses coordinates from Google Maps and a sun position algorithm to scale the DNI throughout the year. The actual daily DNI would be affected by precipitation, cloud cover, atmospheric attenuation (radiation intensity affected by gaseous constituents), and other environmental factors not considered in the GlareGauge model. This may result in modeled predicted glare occurrences when in fact the glare is not actually occurring due to cloud cover, rain, or other atmospheric conditions.

6.0 Glare Analysis Results

Tetra Tech performed four separate glare analyses to provide a quantitative assessment of the potential for glare from the Facility based on different receptor characteristics. These four analyses also included the 10 modeled obstructions to model certain areas of existing vegetation buffer found within and around the Facility. The GlareGauge model's predicted results for the Facility are summarized in the following sections partitioned according to the receptor parameters.

6.1 Analysis 1: Single Axis Trackers - First Story and Commuter Car View Results

Analysis 1 included 14 OPs at 6 feet above ground surface (typical first-story receptor height) and six segmented vehicular traffic routes at 5 feet above ground surface (typical commuter vehicle receptor height). No glare is predicted for Analysis 1.

6.2 Analysis 2: Fixed Tilt Panels - First Story and Commuter Car View Results

Analysis 2 included the same 14 OPs at 6 feet above ground surface and six segmented vehicular traffic routes at 5 feet above ground surface. Table 2 presents the glare summary in terms of annual minutes of glare for Analysis 2.

Table 2. Analysis 2 Annual Minutes of Glare Summary for Fixed Tilt Panels

Receptor	Results of GlareGauge Analysis[1]
	Green Glare
OP 1	0
OP 2	0
OP 3	0
OP 4	0
OP 5	0
OP 6	2
OP 7	0
OP 8	0
OP 9	1,747
OP 10	0
OP 11	0
OP 12	0
OP 13	52
OP 14	0
Haight Road	0
Niagara County Route 108/Hartland Road	0

Receptor	Results of GlareGauge Analysis[1]
	Green Glare
Niagara County Route 24/Hess Road	0
Niagara County Route 65/Hosmer Road	0
New York State Route 18/Lake Road	0
Niagara County Route 3/West Somerset Road	0

1. No instances of yellow or red glare are predicted for any OP or road segment.

6.3 Analysis 3: Single Axis Trackers - Second Story and Tractor-Trailer View Results

Analysis 3 included the same 14 OPs and six segmented vehicular traffic routes as Analysis 1 and 2; however, the OPs were analyzed at 16 feet above ground surface (typical second story receptor height) and all of the segmented vehicular traffic routes at 9 feet above ground surface (typical tractor-trailer receptor height). No glare is predicted for Analysis 3.

6.4 Analysis 4: Fixed Tilt Panels - Second Story and Tractor-Trailer View Results

Analysis 4 included the same 14 OPs and six segmented vehicular traffic routes as Analysis 3 with OPs analyzed at 16 feet above ground surface and all of the segmented vehicular traffic routes at 9 feet above ground surface. Table 3 presents the glare summary in terms of annual minutes of glare for Analysis 4.

Table 3. Analysis 4 Annual Minutes of Glare Summary for Fixed Tilt Panels

Receptor	Results of GlareGauge Analysis[1]
	Green Glare
OP 1	0
OP 2	0
OP 3	0
OP 4	0
OP 5	0
OP 6	5
OP 7	0
OP 8	0
OP 9	1,803
OP 10	0

Receptor	Results of GlareGauge Analysis[1]
	Green Glare
OP 11	0
OP 12	0
OP 13	72
OP 14	0
Haight Road	0
Niagara County Route 108/Hartland Road	0
Niagara County Route 24/Hess Road	0
Niagara County Route 65/Hosmer Road	0
New York State Route 18/Lake Road	0
Niagara County Route 3/West Somerset Road	0

1. No instances of yellow or red glare are predicted for any OP or road segment.

6.5 Analysis 2 and 4: Detailed Glare Summary

No glare is predicted for Analysis 1 or Analysis 3 which both model the single-axis tracking systems. Table 4 presents a detailed glare summary for Analysis 2 and Analysis 4. The green glare that is predicted at the various receptors (OP 6, OP 9, OP 13) is for brief periods of time between the hours of 6:00 AM and 7:00 AM and 18:00 PM and 19:00 PM during various periods from March to September. Less than 25 minutes of green glare is predicted per day within the morning and evening hours.

Table 4. Analysis 2 and Analysis 3 Detailed Glare Summary

Receptor	Type of Glare	Annual Minutes[1]	Minutes per Day	Time of Day	Time of Year
OP 6	Green	7	Less than 2 minutes	6:00 – 7:00	March and September
OP 9	Green	2,550	Less than 25 minutes	18:00 – 19:00	Late March through May; August through September
OP 13	Green	124	Less than 5 minutes	6:00 – 7:00	May and July

1. The annual minutes shown for each receptor is the combined value of the Analysis 2 and Analysis 3 results.

7.0 Summary

The preliminary Facility layout was modeled using GlareGauge to evaluate the potential extent of glare the Facility may cause to receptors at 14 OPs and six segmented traffic routes representing proximal areas surrounding the Facility.

To better analyze the potential for glare from the Facility and address GlareGauge limitations noted in Section 5.0, 24 solar array segments were modeled within the Facility Site. Four separate glare analyses (Analysis 1, Analysis 2, Analysis 3, and Analysis 4) were conducted to provide a quantitative assessment of the potential for glare as a result of the Facility, based on the type of solar panel (single axis tracking panels or fixed tilt panels) and views from first- and second-story structures, commuter vehicles and semi-tractor-trailer trucks.

Based on the model results, the Facility is not expected to result in glare at OPs 1, 2, 3, 4, 5, 7, 8, 10, 11, 12, or 14, nor along the modeled segments of Haight Road, Niagara County Route 108 (Hartland Road), Niagara County Route 24 (Hess Road), Niagara County Route 108 (Hosmer Road), NYS Route 18 (Lake Road) or Niagara County Route 3 (West Somerset Road). The model results indicate that OPs 6, 9, and 13 could receive green glare. As detailed in Table 4, based on the model results, the accumulated instances of green glare is for less than 25 minutes per day either between the hours of 6:00 AM and 7:00 AM, or 18:00 PM and 19:00 PM during various periods from March to September. There is no yellow or red glare predicted.

The GlareGauge model does not account for varying ambient conditions (i.e., cloudy days, precipitation), atmospheric attenuation, screening due to existing topography not located within the defined array layouts, or existing vegetation or structures (including fences or walls), nor does the tool allow proposed landscaping to be included. However, through the use of the obstruction feature sections of existing natural screening through the existing forested areas buffering between the Facility and non-participating property lines was modeled using 10 obstruction features used in the four analyses. In addition to maintaining existing vegetative buffering, a landscape and screening plan utilizing spruce, cedar, and dogwood trees has been developed along portion of NYS Route 18/Lake Road and Niagara County Route 108/Hartland Road, which is further detailed in the preliminary Landscaping Plan (Appendix 5-A, Sheets PV-C.05.01–PV-C.05.04). The landscaping plan is expected to minimize any remaining views of the project by non-participating occupied residences, especially along NYS Route 18/Lake Road. In the case of this Facility, existing topography and intervening structures and vegetation are expected to reduce the potential for glare at all of the OPs and roadway segments.

To determine if the Facility would affect the areas modeled for OPs 9 and 13, these points were photographed from public access areas to determine if these areas could observe the Facility and potential glare from it. Based on the photography, OPs 9 and 13 were determined to have clear views of the Facility. Furthermore, as the roadways associated with these OPs are oriented north-south, drivers on these roadways would not be affected by the predicted glare found within Analysis 2 and Analysis 4 for the fixed panel areas, as their focused view/attention would be oriented away from the direction of the Facility. Photographs from OP 6 could not be obtained to ascertain potential view

from the location, due to its location on private property. With the overall glare predicted for OP 6 being a total of 6 minutes of green glare annually, and that the predicted glare can be considered a conservative value as it doesn't take into account ambient weather conditions and limited obstruction modeling, the miniscule amount of predicted glare for OP 6 is considered to be a non-material amount of glare.

8.0 References

Federal Aviation Administration (FAA). 2010. Federal Aviation Administration. CFR Title 14 Part 77.9 Notice of Proposed Construction or Alteration Requiring Notice. 2010.

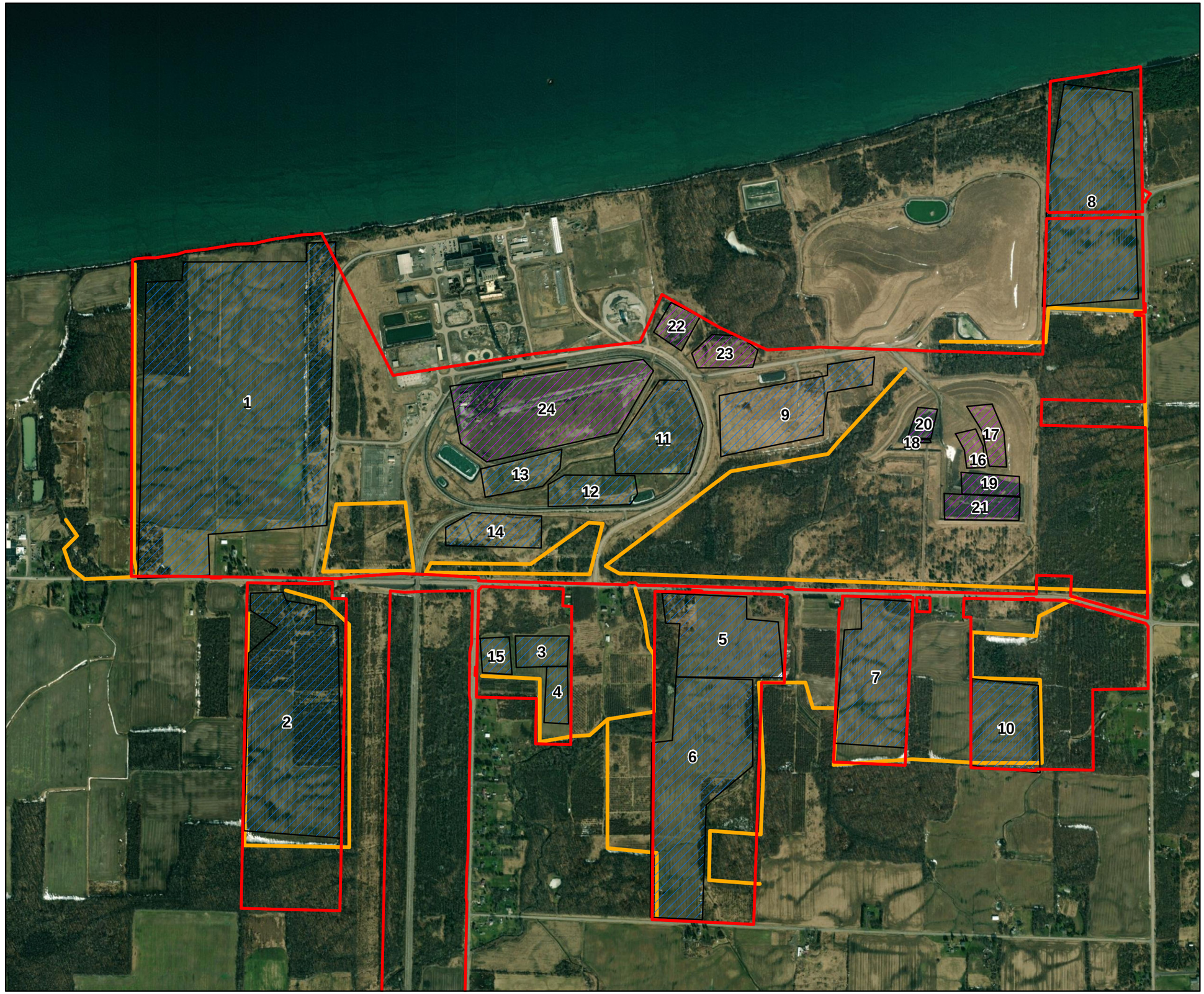
FAA. 2018. Technical Guidance for Evaluating Selected Solar Technologies on Airports. 2018.

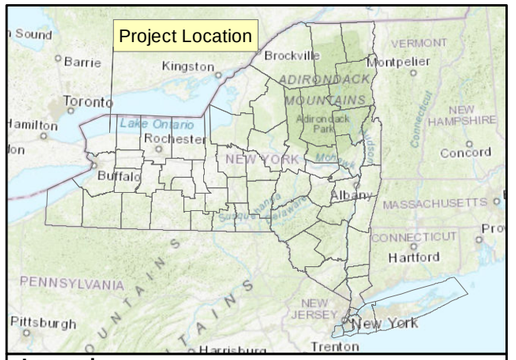
Ho, C.K., C.A. Sims, J.E. Yellowhair, and H.E. Bush. 2015. Sandia National Laboratories, Solar Glare Hazard Analysis Tool (SGHAT) Technical Reference Manual. March 2015.

Sandia Solar Glare Hazard Analysis Tool, GlareGauge hosted by ForgeSolar. Available online at: https://www.forgesolar.com/. Accessed February 7, 2023.

Sandia Laboratories. 2016. Sandia National Laboratories, Solar Glare Hazard Analysis Tool (SGHAT) User's Manual v. 3.0. December 6, 2016.

Attachment A. Figures





Legend

Project Site

PV Array Areas

Fixed Tilit

Single-Axis Tracking

Model Obstructions (30 feet tall)

*# = PV Array Area

Approximate Scale

Miles

0 0.25

Figure 1

PV Array Areas

Somerset Solar
Niagara County, NY
July 2023

TETRA TECH

Source: Esri, et. al., 2022; NYS GIS Civil Boundaries, Sept 2021

NOT FOR CONSTRUCTION

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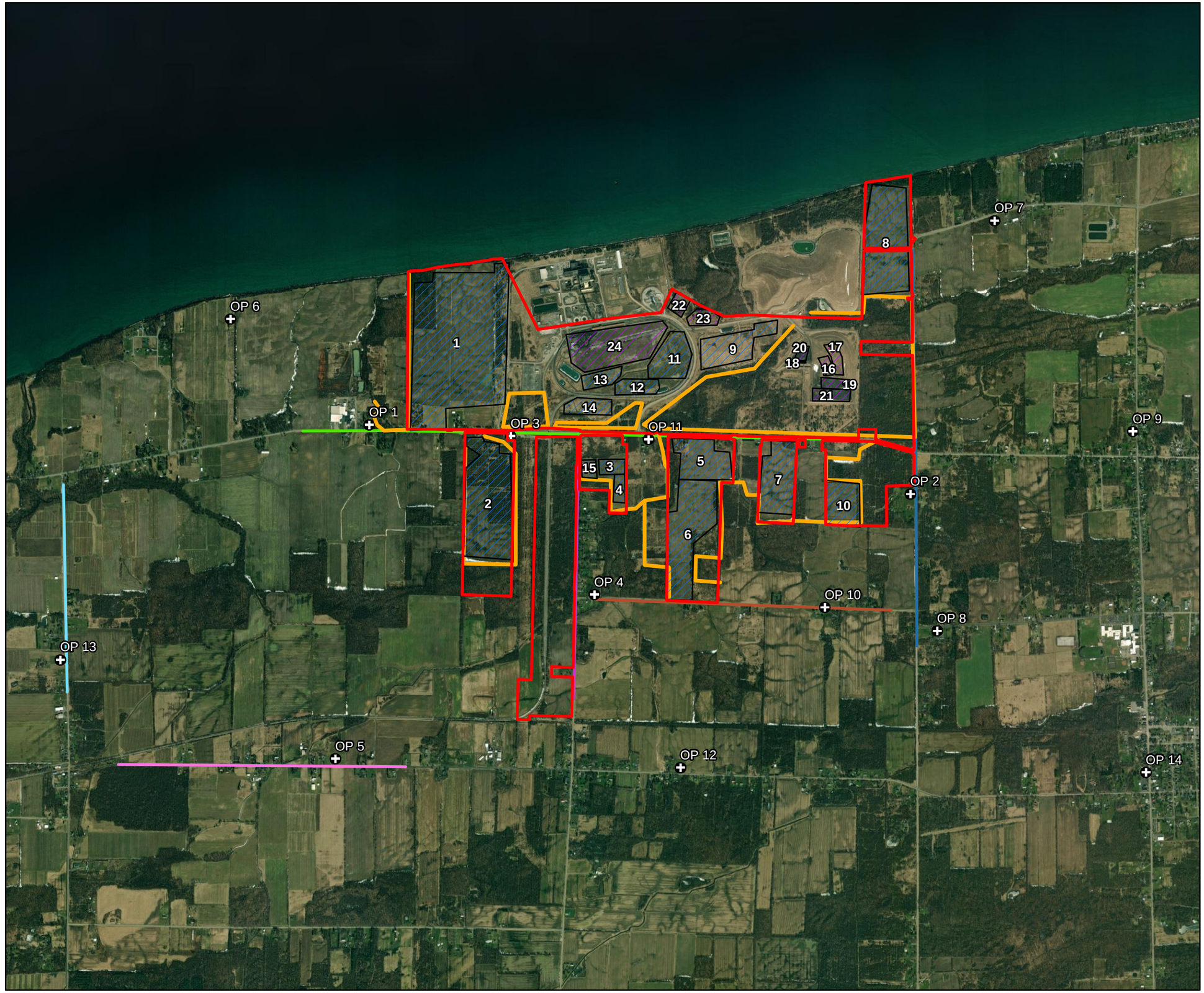

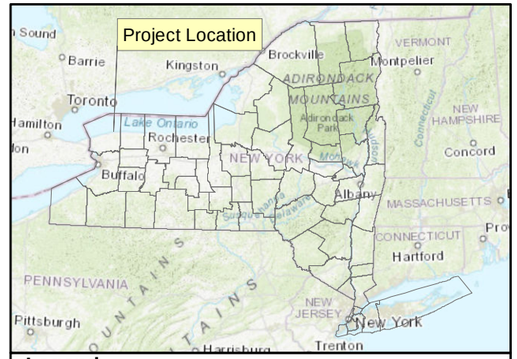

Legend

- Project Site

PV Array Areas

- Fixed Tilit
- Single-Axis Tracking
- Model Obstructions (30 feet tall)
- Observation Points (OPs)

Route Receptors

- Haight Road
- Hartland Road
- Hess Raod
- Hosmer Road
- Lake Road
- West Somerset Road

*# = PV Array Area

Approximate Scale

0 0.25 0.5 0.75 Miles

Figure 2

Receptors

Somerset Solar
Niagara County, NY
July 2023

TETRA TECH

Source: Esri, et. al., 2022; NYS GIS Civil Boundaries, Sept 2021

NOT FOR CONSTRUCTION

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Attachment B. ForgeSolar Glare Analysis Reports

FORGESOLAR GLARE ANALYSIS

Project: **Somerset Solar**

Proposed 125 MW solar project located in Somerset NY

Site configuration: **Analysis 1: Single Axis Trackers- First Story and Commuter Car View**

Client: AES

Created 24 Feb, 2023
Updated 22 Mar, 2023
Time-step 1 minute
Timezone offset UTC-5
Site ID 85144.12807
Category 10 MW to 100 MW
DNI peaks at 1,000.0 W/m^2
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 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 15	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 1	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.349256	-78.619283	295.10	5.50	300.60
2	43.358500	-78.619114	314.50	5.50	320.00
3	43.358497	-78.617394	288.70	5.50	294.20
4	43.359172	-78.617369	270.70	5.50	276.20
5	43.359078	-78.611989	269.40	5.50	274.90
6	43.359744	-78.611953	272.90	5.50	278.40
7	43.359756	-78.611172	262.50	5.50	268.00
8	43.358150	-78.610892	279.40	5.50	284.90
9	43.353681	-78.610953	292.10	5.50	297.60
10	43.350758	-78.611561	296.40	5.50	301.90
11	43.350714	-78.616175	298.20	5.50	303.70
12	43.349256	-78.616239	301.20	5.50	306.70

Name: PV array 10
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.345625	-78.582758	298.73	5.50	304.23
2	43.344094	-78.582781	301.32	5.50	306.82
3	43.344061	-78.582436	302.17	5.50	307.67
4	43.343150	-78.582497	302.43	5.50	307.93
5	43.343094	-78.580203	302.12	5.50	307.62
6	43.345563	-78.580366	299.86	5.50	305.36

Name: PV array 11
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.355189	-78.595558	294.80	5.50	300.30
2	43.355203	-78.596331	292.70	5.50	298.20
3	43.353069	-78.598336	292.50	5.50	298.00
4	43.352458	-78.598294	296.50	5.50	302.00
5	43.352444	-78.595433	295.00	5.50	300.50
6	43.354253	-78.594875	296.40	5.50	301.90

Name: PV array 12
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.352425	-78.597661	296.10	5.50	301.60
2	43.352344	-78.600811	293.70	5.50	299.20
3	43.352072	-78.601256	293.80	5.50	299.30
4	43.351486	-78.601256	296.30	5.50	301.80
5	43.351525	-78.597964	298.30	5.50	303.80
6	43.351825	-78.597664	295.70	5.50	301.20

Name: PV array 13
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.353081	-78.601006	295.30	5.50	300.80
2	43.352511	-78.604142	296.90	5.50	302.40
3	43.351919	-78.604186	296.60	5.50	302.10
4	43.351894	-78.602775	294.60	5.50	300.10
5	43.352094	-78.601686	296.40	5.50	301.90
6	43.352519	-78.601006	294.40	5.50	299.90

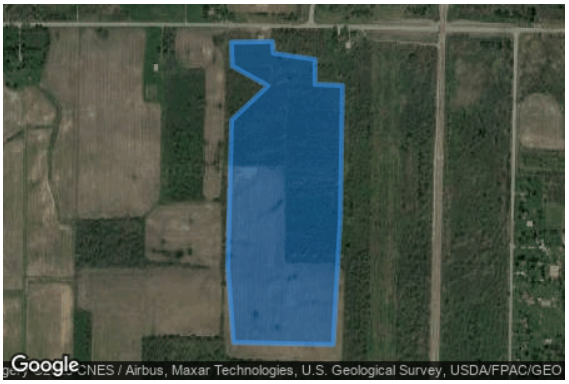
Name: PV array 14
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.351022	-78.601903	299.20	5.50	304.70
2	43.351000	-78.604703	297.50	5.50	303.00
3	43.350700	-78.605886	300.80	5.50	306.30
4	43.350108	-78.605856	297.20	5.50	302.70
5	43.350081	-78.602542	307.20	5.50	312.70
6	43.350328	-78.601867	302.30	5.50	307.80

Name: PV array 15
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.347119	-78.604220	293.80	5.50	299.30
2	43.346283	-78.604300	296.70	5.50	302.20
3	43.346131	-78.603956	297.70	5.50	303.20
4	43.346133	-78.603092	294.70	5.50	300.20
5	43.347008	-78.603181	293.90	5.50	299.40
6	43.347019	-78.603978	295.90	5.50	301.40

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348622	-78.614372	298.60	5.50	304.10
2	43.348025	-78.614342	302.50	5.50	308.00
3	43.347531	-78.613114	302.60	5.50	308.10
4	43.346681	-78.614364	305.10	5.50	310.60
5	43.343031	-78.614497	307.90	5.50	313.40
6	43.341142	-78.614297	308.70	5.50	314.20
7	43.341089	-78.610867	307.50	5.50	313.00
8	43.344247	-78.610622	308.50	5.50	314.00
9	43.347542	-78.610553	296.70	5.50	302.20
10	43.347572	-78.611494	301.00	5.50	306.50
11	43.348194	-78.611497	301.80	5.50	307.30
12	43.348344	-78.612928	302.10	5.50	307.60
13	43.348639	-78.612958	301.20	5.50	306.70

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.346946	-78.602709	293.60	5.50	299.10
2	43.347172	-78.602719	293.00	5.50	298.50
3	43.347147	-78.600594	299.20	5.50	304.70
4	43.346292	-78.600594	298.30	5.50	303.80
5	43.346289	-78.602717	293.00	5.50	298.50
6	43.346454	-78.602714	292.90	5.50	298.40
7	43.346651	-78.602713	293.40	5.50	298.90

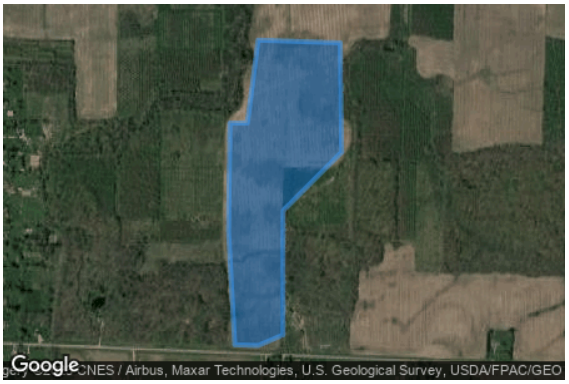
Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346233	-78.600589	298.10	5.50	303.60
2	43.346225	-78.601461	296.40	5.50	301.90
3	43.344422	-78.601561	296.10	5.50	301.60
4	43.344442	-78.600622	298.20	5.50	303.70

Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348525	-78.596306	294.70	5.50	300.20
2	43.347647	-78.596314	295.90	5.50	301.40
3	43.347556	-78.595450	296.50	5.50	302.00
4	43.345958	-78.595614	299.70	5.50	305.20
5	43.345878	-78.591306	299.50	5.50	305.00
6	43.347669	-78.591325	298.80	5.50	304.30
7	43.347758	-78.592758	300.70	5.50	306.20
8	43.348417	-78.592706	298.60	5.50	304.10

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.345925	-78.595600	298.80	5.50	304.30
2	43.343861	-78.595969	303.70	5.50	309.20
3	43.343861	-78.596567	302.90	5.50	308.40
4	43.341167	-78.596617	302.20	5.50	307.70
5	43.338339	-78.596403	308.50	5.50	314.00
6	43.338319	-78.595603	309.60	5.50	315.10
7	43.338583	-78.594742	305.00	5.50	310.50
8	43.341681	-78.594736	302.70	5.50	308.20
9	43.343136	-78.592728	300.00	5.50	305.50
10	43.345858	-78.592778	300.10	5.50	305.60

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348383	-78.587731	296.80	5.50	302.30
2	43.347411	-78.587736	301.10	5.50	306.60
3	43.347431	-78.588569	298.60	5.50	304.10
4	43.343778	-78.588697	295.10	5.50	300.60
5	43.343694	-78.586192	301.30	5.50	306.80
6	43.347986	-78.585814	299.40	5.50	304.90
7	43.348325	-78.586819	299.60	5.50	305.10

Name: PV array 8
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.357933	-78.579733	299.20	5.50	304.70
2	43.361792	-78.579608	289.10	5.50	294.60
3	43.364542	-78.578850	271.90	5.50	277.40
4	43.364558	-78.575867	273.80	5.50	279.30
5	43.360639	-78.575619	301.20	5.50	306.70
6	43.357961	-78.575589	299.60	5.50	305.10

Name: PV array 9
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.354867	-78.593967	296.80	5.50	302.30
2	43.353089	-78.593744	294.40	5.50	299.90
3	43.353625	-78.589336	296.10	5.50	301.60
4	43.354908	-78.589417	295.60	5.50	301.10
5	43.355225	-78.587208	288.30	5.50	293.80
6	43.356119	-78.587158	290.30	5.50	295.80
7	43.355872	-78.589217	292.80	5.50	298.30
8	43.355447	-78.589244	298.20	5.50	303.70

Route Receptors

Name: Haight Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.338322	-78.603224	299.40	5.00	304.40
2	43.337885	-78.590307	305.70	5.00	310.70
3	43.337588	-78.577153	309.20	5.00	314.20

Name: Hartland Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.360586	-78.575338	300.20	5.00	305.20
2	43.354104	-78.575252	296.50	5.00	301.50
3	43.347683	-78.575123	300.70	5.00	305.70
4	43.342963	-78.575080	304.50	5.00	309.50
5	43.335378	-78.575026	317.80	5.00	322.80

Name: Hess Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346026	-78.649776	290.00	5.00	295.00
2	43.339815	-78.649636	308.10	5.00	313.10
3	43.332542	-78.649336	331.00	5.00	336.00

Name: Hosmer Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.348114	-78.604576	296.50	5.00	301.50
2	43.341353	-78.604737	301.30	5.00	306.30
3	43.331739	-78.605038	310.50	5.00	315.50

Name: Lake Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.349064	-78.628713	305.20	5.00	310.20
2	43.349033	-78.614551	299.90	5.00	304.90
3	43.348892	-78.602664	296.50	5.00	301.50
4	43.348619	-78.589360	296.90	5.00	301.90
5	43.348474	-78.579604	302.60	5.00	307.60

Name: West Somerset Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.327738	-78.644061	326.20	5.00	331.20
2	43.327715	-78.635327	322.60	5.00	327.60
3	43.327594	-78.619878	316.20	5.00	321.20

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.349443	-78.622970	302.70	6.00
OP 2	2	43.344999	-78.575574	301.60	6.00
OP 3	3	43.348732	-78.610493	297.60	6.00
OP 4	4	43.338599	-78.603221	301.90	6.00
OP 5	5	43.328082	-78.625908	319.00	6.00
OP 6	6	43.356237	-78.635125	277.60	6.00
OP 7	7	43.362499	-78.568200	303.10	6.00
OP 8	8	43.336269	-78.573222	317.70	6.00
OP 9	9	43.349026	-78.556088	299.30	6.00
OP 10	10	43.337457	-78.583344	306.40	6.00
OP 11	11	43.348497	-78.598519	296.10	6.00
OP 12	12	43.327588	-78.595706	339.70	6.00
OP 13	13	43.334412	-78.649973	330.30	6.00
OP 14	14	43.327261	-78.554950	328.10	6.00

Obstruction Components

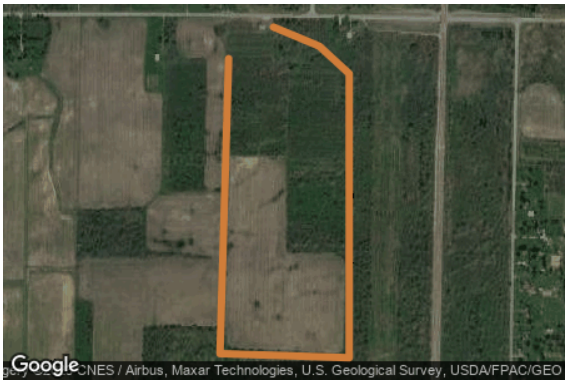
Name: Obstruction 1
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.355547	-78.585924	291.43
2	43.352972	-78.589250	334.36
3	43.352379	-78.593606	293.26
4	43.349399	-78.598884	296.28
5	43.349134	-78.598476	294.46
6	43.348463	-78.575388	298.74
7	43.357433	-78.575486	292.78
8	43.357495	-78.579670	293.68
9	43.356450	-78.579756	314.80
10	43.356481	-78.584391	320.77

Name: Obstruction 10
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.344413	-78.599219	294.93
2	43.344046	-78.599777	295.59
3	43.343976	-78.600571	298.51
4	43.343960	-78.601859	296.58
5	43.345817	-78.601934	295.02
6	43.345973	-78.604423	295.91

Name: Obstruction 2
Top height: 30.0 ft

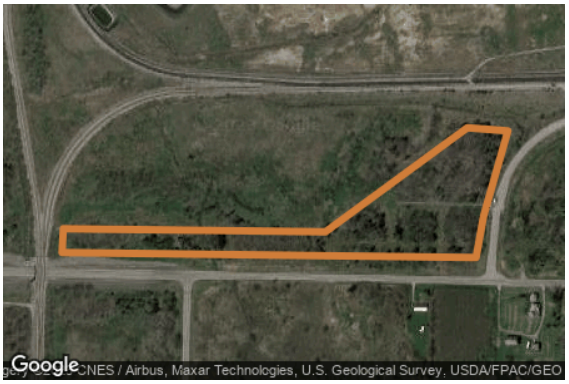


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348747	-78.612971	299.27
2	43.348271	-78.611394	299.02
3	43.347584	-78.610364	298.04
4	43.340513	-78.610364	366.51
5	43.340615	-78.614806	373.43
6	43.347959	-78.614508	300.63

Name: Obstruction 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349179	-78.619753	293.54
2	43.349156	-78.621888	302.36
3	43.349507	-78.622381	301.88
4	43.350037	-78.622585	299.87
5	43.350420	-78.622274	295.65
6	43.351005	-78.622575	294.04

Name: Obstruction 4
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349200	-78.606731	296.95
2	43.349138	-78.599618	295.00
3	43.349653	-78.599489	297.47
4	43.350714	-78.599071	299.32
5	43.350753	-78.599768	306.07
6	43.349457	-78.602204	301.77
7	43.349496	-78.606710	296.41
8	43.349200	-78.606731	296.95

Name: Obstruction 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349351	-78.611280	299.00
2	43.349257	-78.607418	298.14
3	43.351410	-78.607804	300.28
4	43.351441	-78.610787	300.68
5	43.349351	-78.611280	299.00

Name: Obstruction 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349336	-78.619460	294.73
2	43.349758	-78.619556	297.40
3	43.355184	-78.619522	280.59
4	43.359069	-78.619415	273.72

Name: Obstruction 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.588948	311.50
2	43.343203	-78.585815	350.56
3	43.343133	-78.582747	301.72
4	43.343032	-78.580048	299.89
5	43.345646	-78.580081	305.53
6	43.345770	-78.583063	298.52
7	43.347128	-78.583020	315.52
8	43.347050	-78.580231	336.29
9	43.347666	-78.580123	300.73
10	43.348251	-78.578514	300.57

Name: Obstruction 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343003	-78.589045	309.98
2	43.344845	-78.588938	294.65
3	43.344899	-78.589947	296.31
4	43.345602	-78.590354	293.32
5	43.345664	-78.592307	299.70
6	43.342871	-78.592178	343.24
7	43.340905	-78.592350	369.50
8	43.340967	-78.594496	327.50
9	43.339438	-78.594474	298.37
10	43.339235	-78.592414	303.28

Name: Obstruction 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348670	-78.597712	293.35
2	43.347538	-78.597261	293.89
3	43.346883	-78.597229	293.46
4	43.346610	-78.596757	298.15
5	43.344675	-78.596853	318.73
6	43.344527	-78.599064	297.41
7	43.340392	-78.598935	317.40
8	43.340306	-78.596832	311.35
9	43.338254	-78.596886	304.43

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 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 15	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 1 and Haight Road

Receptor type: Route
No glare found

PV array 1 and Hartland Road

Receptor type: Route
No glare found

PV array 1 and Hess Road

Receptor type: Route
No glare found

PV array 1 and Hosmer Road

Receptor type: Route
No glare found

PV array 1 and Lake Road

Receptor type: Route
No glare found

PV array 1 and West Somerset Road

Receptor type: Route
No glare found

PV array 1 and OP 1

Receptor type: Observation Point
No glare found

PV array 1 and OP 2

Receptor type: Observation Point
No glare found

PV array 1 and OP 3

Receptor type: Observation Point
No glare found

PV array 1 and OP 4

Receptor type: Observation Point
No glare found

PV array 1 and OP 5

Receptor type: Observation Point
No glare found

PV array 1 and OP 6

Receptor type: Observation Point
No glare found

PV array 1 and OP 7

Receptor type: Observation Point
No glare found

PV array 1 and OP 8

Receptor type: Observation Point
No glare found

PV array 1 and OP 9

Receptor type: Observation Point
No glare found

PV array 1 and OP 10

Receptor type: Observation Point
No glare found

PV array 1 and OP 11

Receptor type: Observation Point
No glare found

PV array 1 and OP 12

Receptor type: Observation Point
No glare found

PV array 1 and OP 13

Receptor type: Observation Point
No glare found

PV array 1 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 10 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 10 and Haight Road

Receptor type: Route

No glare found

PV array 10 and Hartland Road

Receptor type: Route

No glare found

PV array 10 and Hess Road

Receptor type: Route

No glare found

PV array 10 and Hosmer Road

Receptor type: Route

No glare found

PV array 10 and Lake Road

Receptor type: Route

No glare found

PV array 10 and West Somerset Road

Receptor type: Route

No glare found

PV array 10 and OP 1

Receptor type: Observation Point
No glare found

PV array 10 and OP 2

Receptor type: Observation Point
No glare found

PV array 10 and OP 3

Receptor type: Observation Point
No glare found

PV array 10 and OP 4

Receptor type: Observation Point
No glare found

PV array 10 and OP 5

Receptor type: Observation Point
No glare found

PV array 10 and OP 6

Receptor type: Observation Point
No glare found

PV array 10 and OP 7

Receptor type: Observation Point
No glare found

PV array 10 and OP 8

Receptor type: Observation Point
No glare found

PV array 10 and OP 9

Receptor type: Observation Point
No glare found

PV array 10 and OP 10

Receptor type: Observation Point
No glare found

PV array 10 and OP 11

Receptor type: Observation Point
No glare found

PV array 10 and OP 12

Receptor type: Observation Point
No glare found

PV array 10 and OP 13

Receptor type: Observation Point
No glare found

PV array 10 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 11 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 11 and Haight Road

Receptor type: Route

No glare found

PV array 11 and Hartland Road

Receptor type: Route

No glare found

PV array 11 and Hess Road

Receptor type: Route

No glare found

PV array 11 and Hosmer Road

Receptor type: Route

No glare found

PV array 11 and Lake Road

Receptor type: Route

No glare found

PV array 11 and West Somerset Road

Receptor type: Route

No glare found

PV array 11 and OP 1

Receptor type: Observation Point
No glare found

PV array 11 and OP 2

Receptor type: Observation Point
No glare found

PV array 11 and OP 3

Receptor type: Observation Point
No glare found

PV array 11 and OP 4

Receptor type: Observation Point
No glare found

PV array 11 and OP 5

Receptor type: Observation Point
No glare found

PV array 11 and OP 6

Receptor type: Observation Point
No glare found

PV array 11 and OP 7

Receptor type: Observation Point
No glare found

PV array 11 and OP 8

Receptor type: Observation Point
No glare found

PV array 11 and OP 9

Receptor type: Observation Point
No glare found

PV array 11 and OP 10

Receptor type: Observation Point
No glare found

PV array 11 and OP 11

Receptor type: Observation Point
No glare found

PV array 11 and OP 12

Receptor type: Observation Point
No glare found

PV array 11 and OP 13

Receptor type: Observation Point
No glare found

PV array 11 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 12 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 12 and Haight Road

Receptor type: Route

No glare found

PV array 12 and Hartland Road

Receptor type: Route

No glare found

PV array 12 and Hess Road

Receptor type: Route

No glare found

PV array 12 and Hosmer Road

Receptor type: Route

No glare found

PV array 12 and Lake Road

Receptor type: Route

No glare found

PV array 12 and West Somerset Road

Receptor type: Route

No glare found

PV array 12 and OP 1

Receptor type: Observation Point
No glare found

PV array 12 and OP 2

Receptor type: Observation Point
No glare found

PV array 12 and OP 3

Receptor type: Observation Point
No glare found

PV array 12 and OP 4

Receptor type: Observation Point
No glare found

PV array 12 and OP 5

Receptor type: Observation Point
No glare found

PV array 12 and OP 6

Receptor type: Observation Point
No glare found

PV array 12 and OP 7

Receptor type: Observation Point
No glare found

PV array 12 and OP 8

Receptor type: Observation Point
No glare found

PV array 12 and OP 9

Receptor type: Observation Point
No glare found

PV array 12 and OP 10

Receptor type: Observation Point
No glare found

PV array 12 and OP 11

Receptor type: Observation Point
No glare found

PV array 12 and OP 12

Receptor type: Observation Point
No glare found

PV array 12 and OP 13

Receptor type: Observation Point
No glare found

PV array 12 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 13 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 13 and Haight Road

Receptor type: Route
No glare found

PV array 13 and Hartland Road

Receptor type: Route
No glare found

PV array 13 and Hess Road

Receptor type: Route
No glare found

PV array 13 and Hosmer Road

Receptor type: Route
No glare found

PV array 13 and Lake Road

Receptor type: Route
No glare found

PV array 13 and West Somerset Road

Receptor type: Route
No glare found

PV array 13 and OP 1

Receptor type: Observation Point
No glare found

PV array 13 and OP 2

Receptor type: Observation Point
No glare found

PV array 13 and OP 3

Receptor type: Observation Point
No glare found

PV array 13 and OP 4

Receptor type: Observation Point
No glare found

PV array 13 and OP 5

Receptor type: Observation Point
No glare found

PV array 13 and OP 6

Receptor type: Observation Point
No glare found

PV array 13 and OP 7

Receptor type: Observation Point
No glare found

PV array 13 and OP 8

Receptor type: Observation Point
No glare found

PV array 13 and OP 9

Receptor type: Observation Point
No glare found

PV array 13 and OP 10

Receptor type: Observation Point
No glare found

PV array 13 and OP 11

Receptor type: Observation Point
No glare found

PV array 13 and OP 12

Receptor type: Observation Point
No glare found

PV array 13 and OP 13

Receptor type: Observation Point
No glare found

PV array 13 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 14 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 14 and Haight Road

Receptor type: Route

No glare found

PV array 14 and Hartland Road

Receptor type: Route

No glare found

PV array 14 and Hess Road

Receptor type: Route

No glare found

PV array 14 and Hosmer Road

Receptor type: Route

No glare found

PV array 14 and Lake Road

Receptor type: Route

No glare found

PV array 14 and West Somerset Road

Receptor type: Route

No glare found

PV array 14 and OP 1

Receptor type: Observation Point
No glare found

PV array 14 and OP 2

Receptor type: Observation Point
No glare found

PV array 14 and OP 3

Receptor type: Observation Point
No glare found

PV array 14 and OP 4

Receptor type: Observation Point
No glare found

PV array 14 and OP 5

Receptor type: Observation Point
No glare found

PV array 14 and OP 6

Receptor type: Observation Point
No glare found

PV array 14 and OP 7

Receptor type: Observation Point
No glare found

PV array 14 and OP 8

Receptor type: Observation Point
No glare found

PV array 14 and OP 9

Receptor type: Observation Point
No glare found

PV array 14 and OP 10

Receptor type: Observation Point
No glare found

PV array 14 and OP 11

Receptor type: Observation Point
No glare found

PV array 14 and OP 12

Receptor type: Observation Point
No glare found

PV array 14 and OP 13

Receptor type: Observation Point
No glare found

PV array 14 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 15 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 15 and Haight Road

Receptor type: Route

No glare found

PV array 15 and Hartland Road

Receptor type: Route

No glare found

PV array 15 and Hess Road

Receptor type: Route

No glare found

PV array 15 and Hosmer Road

Receptor type: Route

No glare found

PV array 15 and Lake Road

Receptor type: Route

No glare found

PV array 15 and West Somerset Road

Receptor type: Route

No glare found

PV array 15 and OP 1

Receptor type: Observation Point
No glare found

PV array 15 and OP 2

Receptor type: Observation Point
No glare found

PV array 15 and OP 3

Receptor type: Observation Point
No glare found

PV array 15 and OP 4

Receptor type: Observation Point
No glare found

PV array 15 and OP 5

Receptor type: Observation Point
No glare found

PV array 15 and OP 6

Receptor type: Observation Point
No glare found

PV array 15 and OP 7

Receptor type: Observation Point
No glare found

PV array 15 and OP 8

Receptor type: Observation Point
No glare found

PV array 15 and OP 9

Receptor type: Observation Point
No glare found

PV array 15 and OP 10

Receptor type: Observation Point
No glare found

PV array 15 and OP 11

Receptor type: Observation Point
No glare found

PV array 15 and OP 12

Receptor type: Observation Point
No glare found

PV array 15 and OP 13

Receptor type: Observation Point
No glare found

PV array 15 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 2 and Haight Road

Receptor type: Route

No glare found

PV array 2 and Hartland Road

Receptor type: Route

No glare found

PV array 2 and Hess Road

Receptor type: Route

No glare found

PV array 2 and Hosmer Road

Receptor type: Route

No glare found

PV array 2 and Lake Road

Receptor type: Route

No glare found

PV array 2 and West Somerset Road

Receptor type: Route

No glare found

PV array 2 and OP 1

Receptor type: Observation Point
No glare found

PV array 2 and OP 2

Receptor type: Observation Point
No glare found

PV array 2 and OP 3

Receptor type: Observation Point
No glare found

PV array 2 and OP 4

Receptor type: Observation Point
No glare found

PV array 2 and OP 5

Receptor type: Observation Point
No glare found

PV array 2 and OP 6

Receptor type: Observation Point
No glare found

PV array 2 and OP 7

Receptor type: Observation Point
No glare found

PV array 2 and OP 8

Receptor type: Observation Point
No glare found

PV array 2 and OP 9

Receptor type: Observation Point
No glare found

PV array 2 and OP 10

Receptor type: Observation Point
No glare found

PV array 2 and OP 11

Receptor type: Observation Point
No glare found

PV array 2 and OP 12

Receptor type: Observation Point
No glare found

PV array 2 and OP 13

Receptor type: Observation Point
No glare found

PV array 2 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 3 and Haight Road

Receptor type: Route

No glare found

PV array 3 and Hartland Road

Receptor type: Route

No glare found

PV array 3 and Hess Road

Receptor type: Route

No glare found

PV array 3 and Hosmer Road

Receptor type: Route

No glare found

PV array 3 and Lake Road

Receptor type: Route

No glare found

PV array 3 and West Somerset Road

Receptor type: Route

No glare found

PV array 3 and OP 1

Receptor type: Observation Point
No glare found

PV array 3 and OP 2

Receptor type: Observation Point
No glare found

PV array 3 and OP 3

Receptor type: Observation Point
No glare found

PV array 3 and OP 4

Receptor type: Observation Point
No glare found

PV array 3 and OP 5

Receptor type: Observation Point
No glare found

PV array 3 and OP 6

Receptor type: Observation Point
No glare found

PV array 3 and OP 7

Receptor type: Observation Point
No glare found

PV array 3 and OP 8

Receptor type: Observation Point
No glare found

PV array 3 and OP 9

Receptor type: Observation Point
No glare found

PV array 3 and OP 10

Receptor type: Observation Point
No glare found

PV array 3 and OP 11

Receptor type: Observation Point
No glare found

PV array 3 and OP 12

Receptor type: Observation Point
No glare found

PV array 3 and OP 13

Receptor type: Observation Point
No glare found

PV array 3 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 4 and Haight Road

Receptor type: Route
No glare found

PV array 4 and Hartland Road

Receptor type: Route
No glare found

PV array 4 and Hess Road

Receptor type: Route
No glare found

PV array 4 and Hosmer Road

Receptor type: Route
No glare found

PV array 4 and Lake Road

Receptor type: Route
No glare found

PV array 4 and West Somerset Road

Receptor type: Route
No glare found

PV array 4 and OP 1

Receptor type: Observation Point
No glare found

PV array 4 and OP 2

Receptor type: Observation Point
No glare found

PV array 4 and OP 3

Receptor type: Observation Point
No glare found

PV array 4 and OP 4

Receptor type: Observation Point
No glare found

PV array 4 and OP 5

Receptor type: Observation Point
No glare found

PV array 4 and OP 6

Receptor type: Observation Point
No glare found

PV array 4 and OP 7

Receptor type: Observation Point
No glare found

PV array 4 and OP 8

Receptor type: Observation Point
No glare found

PV array 4 and OP 9

Receptor type: Observation Point
No glare found

PV array 4 and OP 10

Receptor type: Observation Point
No glare found

PV array 4 and OP 11

Receptor type: Observation Point
No glare found

PV array 4 and OP 12

Receptor type: Observation Point
No glare found

PV array 4 and OP 13

Receptor type: Observation Point
No glare found

PV array 4 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 5 and Haight Road

Receptor type: Route

No glare found

PV array 5 and Hartland Road

Receptor type: Route

No glare found

PV array 5 and Hess Road

Receptor type: Route

No glare found

PV array 5 and Hosmer Road

Receptor type: Route

No glare found

PV array 5 and Lake Road

Receptor type: Route

No glare found

PV array 5 and West Somerset Road

Receptor type: Route

No glare found

PV array 5 and OP 1

Receptor type: Observation Point
No glare found

PV array 5 and OP 2

Receptor type: Observation Point
No glare found

PV array 5 and OP 3

Receptor type: Observation Point
No glare found

PV array 5 and OP 4

Receptor type: Observation Point
No glare found

PV array 5 and OP 5

Receptor type: Observation Point
No glare found

PV array 5 and OP 6

Receptor type: Observation Point
No glare found

PV array 5 and OP 7

Receptor type: Observation Point
No glare found

PV array 5 and OP 8

Receptor type: Observation Point
No glare found

PV array 5 and OP 9

Receptor type: Observation Point
No glare found

PV array 5 and OP 10

Receptor type: Observation Point
No glare found

PV array 5 and OP 11

Receptor type: Observation Point
No glare found

PV array 5 and OP 12

Receptor type: Observation Point
No glare found

PV array 5 and OP 13

Receptor type: Observation Point
No glare found

PV array 5 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 6 and Haight Road

Receptor type: Route

No glare found

PV array 6 and Hartland Road

Receptor type: Route

No glare found

PV array 6 and Hess Road

Receptor type: Route

No glare found

PV array 6 and Hosmer Road

Receptor type: Route

No glare found

PV array 6 and Lake Road

Receptor type: Route

No glare found

PV array 6 and West Somerset Road

Receptor type: Route

No glare found

PV array 6 and OP 1

Receptor type: Observation Point
No glare found

PV array 6 and OP 2

Receptor type: Observation Point
No glare found

PV array 6 and OP 3

Receptor type: Observation Point
No glare found

PV array 6 and OP 4

Receptor type: Observation Point
No glare found

PV array 6 and OP 5

Receptor type: Observation Point
No glare found

PV array 6 and OP 6

Receptor type: Observation Point
No glare found

PV array 6 and OP 7

Receptor type: Observation Point
No glare found

PV array 6 and OP 8

Receptor type: Observation Point
No glare found

PV array 6 and OP 9

Receptor type: Observation Point
No glare found

PV array 6 and OP 10

Receptor type: Observation Point
No glare found

PV array 6 and OP 11

Receptor type: Observation Point
No glare found

PV array 6 and OP 12

Receptor type: Observation Point
No glare found

PV array 6 and OP 13

Receptor type: Observation Point
No glare found

PV array 6 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 7 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 7 and Haight Road

Receptor type: Route

No glare found

PV array 7 and Hartland Road

Receptor type: Route

No glare found

PV array 7 and Hess Road

Receptor type: Route

No glare found

PV array 7 and Hosmer Road

Receptor type: Route

No glare found

PV array 7 and Lake Road

Receptor type: Route

No glare found

PV array 7 and West Somerset Road

Receptor type: Route

No glare found

PV array 7 and OP 1

Receptor type: Observation Point
No glare found

PV array 7 and OP 2

Receptor type: Observation Point
No glare found

PV array 7 and OP 3

Receptor type: Observation Point
No glare found

PV array 7 and OP 4

Receptor type: Observation Point
No glare found

PV array 7 and OP 5

Receptor type: Observation Point
No glare found

PV array 7 and OP 6

Receptor type: Observation Point
No glare found

PV array 7 and OP 7

Receptor type: Observation Point
No glare found

PV array 7 and OP 8

Receptor type: Observation Point
No glare found

PV array 7 and OP 9

Receptor type: Observation Point
No glare found

PV array 7 and OP 10

Receptor type: Observation Point
No glare found

PV array 7 and OP 11

Receptor type: Observation Point
No glare found

PV array 7 and OP 12

Receptor type: Observation Point
No glare found

PV array 7 and OP 13

Receptor type: Observation Point
No glare found

PV array 7 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 8 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 8 and Haight Road

Receptor type: Route

No glare found

PV array 8 and Hartland Road

Receptor type: Route

No glare found

PV array 8 and Hess Road

Receptor type: Route

No glare found

PV array 8 and Hosmer Road

Receptor type: Route

No glare found

PV array 8 and Lake Road

Receptor type: Route

No glare found

PV array 8 and West Somerset Road

Receptor type: Route

No glare found

PV array 8 and OP 1

Receptor type: Observation Point
No glare found

PV array 8 and OP 2

Receptor type: Observation Point
No glare found

PV array 8 and OP 3

Receptor type: Observation Point
No glare found

PV array 8 and OP 4

Receptor type: Observation Point
No glare found

PV array 8 and OP 5

Receptor type: Observation Point
No glare found

PV array 8 and OP 6

Receptor type: Observation Point
No glare found

PV array 8 and OP 7

Receptor type: Observation Point
No glare found

PV array 8 and OP 8

Receptor type: Observation Point
No glare found

PV array 8 and OP 9

Receptor type: Observation Point
No glare found

PV array 8 and OP 10

Receptor type: Observation Point
No glare found

PV array 8 and OP 11

Receptor type: Observation Point
No glare found

PV array 8 and OP 12

Receptor type: Observation Point
No glare found

PV array 8 and OP 13

Receptor type: Observation Point
No glare found

PV array 8 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 9 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 9 and Haight Road

Receptor type: Route

No glare found

PV array 9 and Hartland Road

Receptor type: Route

No glare found

PV array 9 and Hess Road

Receptor type: Route

No glare found

PV array 9 and Hosmer Road

Receptor type: Route

No glare found

PV array 9 and Lake Road

Receptor type: Route

No glare found

PV array 9 and West Somerset Road

Receptor type: Route

No glare found

PV array 9 and OP 1

Receptor type: Observation Point
No glare found

PV array 9 and OP 2

Receptor type: Observation Point
No glare found

PV array 9 and OP 3

Receptor type: Observation Point
No glare found

PV array 9 and OP 4

Receptor type: Observation Point
No glare found

PV array 9 and OP 5

Receptor type: Observation Point
No glare found

PV array 9 and OP 6

Receptor type: Observation Point
No glare found

PV array 9 and OP 7

Receptor type: Observation Point
No glare found

PV array 9 and OP 8

Receptor type: Observation Point
No glare found

PV array 9 and OP 9

Receptor type: Observation Point
No glare found

PV array 9 and OP 10

Receptor type: Observation Point
No glare found

PV array 9 and OP 11

Receptor type: Observation Point
No glare found

PV array 9 and OP 12

Receptor type: Observation Point
No glare found

PV array 9 and OP 13

Receptor type: Observation Point
No glare found

PV array 9 and OP 14

Receptor type: Observation Point
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

FORGESOLAR GLARE ANALYSIS

Project: **Somerset Solar**

Proposed 125 MW solar project located in Somerset NY

Site configuration: **Analysis 2: Fixed Tilt Panels - First Story and Commuter Car View**

Client: AES

Created 24 Feb, 2023
Updated 22 Mar, 2023
Time-step 1 minute
Timezone offset UTC-5
Site ID 85146.12807
Category 10 MW to 100 MW
DNI peaks at 1,000.0 W/m^2
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

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 16	20.0	180.0	9	0.1	0	0.0	-
PV array 17	20.0	180.0	303	5.0	0	0.0	-
PV array 18	20.0	180.0	0	0.0	0	0.0	-
PV array 19	20.0	180.0	592	9.9	0	0.0	-
PV array 20	20.0	180.0	0	0.0	0	0.0	-
PV array 21	20.0	180.0	897	14.9	0	0.0	-
PV array 22	20.0	180.0	0	0.0	0	0.0	-
PV array 23	20.0	180.0	0	0.0	0	0.0	-
PV array 24	20.0	180.0	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
West Somerset Road	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	2	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	1,747	29.1	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	52	0.9	0	0.0
OP 14	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 16
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	43.353683	-78.583514	365.86	4.00	369.86
2	43.353103	-78.583167	373.25	4.00	377.25
3	43.352603	-78.583158	369.77	4.00	373.77
4	43.352606	-78.582353	370.90	4.00	374.90
5	43.353158	-78.582411	371.27	4.00	375.27
6	43.353564	-78.582583	371.85	4.00	375.85
7	43.353700	-78.583097	370.33	4.00	374.33

Name: PV array 17
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	43.354456	-78.582944	379.12	4.00	383.12
2	43.353675	-78.582361	377.25	4.00	381.25
3	43.352603	-78.582147	367.00	4.00	371.00
4	43.352608	-78.581411	340.85	4.00	344.85
5	43.353767	-78.581628	346.77	4.00	350.77
6	43.354500	-78.582192	347.90	4.00	351.90

Name: PV array 18
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	43.353485	-78.585889	314.37	4.00	318.37
2	43.353433	-78.585889	315.20	4.00	319.20
3	43.353433	-78.584769	318.05	4.00	322.05
4	43.353499	-78.584766	317.73	4.00	321.73

Name: PV array 19
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	43.352325	-78.583285	340.11	4.00	344.11
2	43.351756	-78.583259	327.64	4.00	331.64
3	43.351756	-78.580859	314.00	4.00	318.00
4	43.351987	-78.580863	314.41	4.00	318.41
5	43.352017	-78.581102	316.30	4.00	320.30
6	43.352064	-78.581428	319.93	4.00	323.93
7	43.352274	-78.582139	333.22	4.00	337.22

Name: PV array 20
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	43.354403	-78.584472	321.21	4.00	325.21
2	43.354375	-78.585238	321.05	4.00	325.05
3	43.354153	-78.585292	320.19	4.00	324.19
4	43.353939	-78.585492	320.04	4.00	324.04
5	43.353517	-78.585592	316.33	4.00	320.33
6	43.353517	-78.584861	319.04	4.00	323.04
7	43.353917	-78.584739	320.98	4.00	324.98
8	43.354125	-78.584536	322.72	4.00	326.72

Name: PV array 21
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	43.351748	-78.582142	323.26	4.00	327.26
2	43.351749	-78.582881	325.86	4.00	329.86
3	43.351750	-78.583261	327.57	4.00	331.57
4	43.351747	-78.583783	319.50	4.00	323.50
5	43.351489	-78.584006	318.85	4.00	322.85
6	43.351011	-78.584008	314.14	4.00	318.14
7	43.351000	-78.580803	308.97	4.00	312.97
8	43.351746	-78.580858	313.99	4.00	317.99
9	43.351744	-78.581067	314.81	4.00	318.81
10	43.351746	-78.581370	316.42	4.00	320.42

Name: PV array 22
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	43.357567	-78.596078	294.60	4.00	298.60
2	43.356864	-78.596711	298.70	4.00	302.70
3	43.356583	-78.595961	296.90	4.00	300.90
4	43.356581	-78.595572	297.30	4.00	301.30
5	43.357417	-78.594958	295.70	4.00	299.70
6	43.357586	-78.595381	296.00	4.00	300.00

Name: PV array 23
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	43.356644	-78.594286	289.50	4.00	293.50
2	43.356189	-78.595136	292.70	4.00	296.70
3	43.355819	-78.594844	290.70	4.00	294.70
4	43.355806	-78.592644	292.10	4.00	296.10
5	43.356114	-78.592397	304.40	4.00	308.40
6	43.356408	-78.592522	360.30	4.00	364.30
7	43.356678	-78.593206	360.40	4.00	364.40

Name: PV array 24
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	43.355848	-78.597129	294.00	4.00	298.00
2	43.355926	-78.598621	293.10	4.00	297.10
3	43.355442	-78.601796	291.60	4.00	295.60
4	43.355048	-78.605348	297.40	4.00	301.40
5	43.353332	-78.604983	298.50	4.00	302.50
6	43.352778	-78.603760	294.60	4.00	298.60
7	43.353773	-78.598320	295.50	4.00	299.50
8	43.355395	-78.597054	292.40	4.00	296.40

Route Receptors

Name: Haight Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.338322	-78.603224	299.40	5.00	304.40
2	43.337885	-78.590307	305.70	5.00	310.70
3	43.337588	-78.577153	309.20	5.00	314.20

Name: Hartland Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.360586	-78.575338	300.20	5.00	305.20
2	43.354104	-78.575252	296.50	5.00	301.50
3	43.347683	-78.575123	300.70	5.00	305.70
4	43.342963	-78.575080	304.50	5.00	309.50
5	43.335378	-78.575026	317.80	5.00	322.80

Name: Hess Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346026	-78.649776	290.00	5.00	295.00
2	43.339815	-78.649636	308.10	5.00	313.10
3	43.332542	-78.649336	331.00	5.00	336.00

Name: Hosmer Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.348114	-78.604576	296.50	5.00	301.50
2	43.341353	-78.604737	301.30	5.00	306.30
3	43.331739	-78.605038	310.50	5.00	315.50

Name: Lake Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.349064	-78.628713	305.20	5.00	310.20
2	43.349033	-78.614551	299.90	5.00	304.90
3	43.348892	-78.602664	296.50	5.00	301.50
4	43.348619	-78.589360	296.90	5.00	301.90
5	43.348474	-78.579604	302.60	5.00	307.60

Name: West Somerset Road
Path type: Two-way
Observer view angle: 50.0°

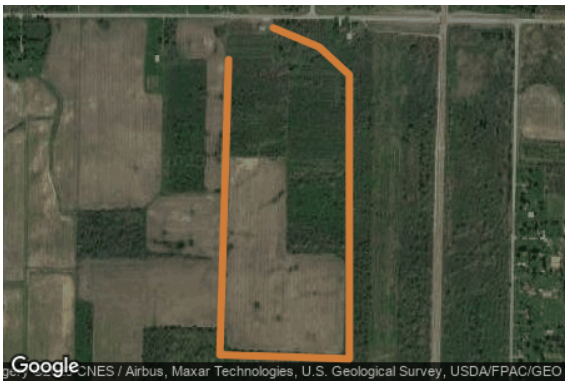
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.327738	-78.644061	326.20	5.00	331.20
2	43.327715	-78.635327	322.60	5.00	327.60
3	43.327594	-78.619878	316.20	5.00	321.20

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.349443	-78.622970	302.70	6.00
OP 2	2	43.344999	-78.575574	301.60	6.00
OP 3	3	43.348732	-78.610493	297.60	6.00
OP 4	4	43.338599	-78.603221	301.90	6.00
OP 5	5	43.328082	-78.625908	319.00	6.00
OP 6	6	43.356237	-78.635125	277.60	6.00
OP 7	7	43.362499	-78.568200	303.10	6.00
OP 8	8	43.336269	-78.573222	317.70	6.00
OP 9	9	43.349026	-78.556088	299.30	6.00
OP 10	10	43.337457	-78.583344	306.40	6.00
OP 11	11	43.348497	-78.598519	296.10	6.00
OP 12	12	43.327588	-78.595706	339.70	6.00
OP 13	13	43.334412	-78.649973	330.30	6.00
OP 14	14	43.327261	-78.554950	328.10	6.00

Obstruction Components

Name: Obstruction 1
Top height: 30.0 ft

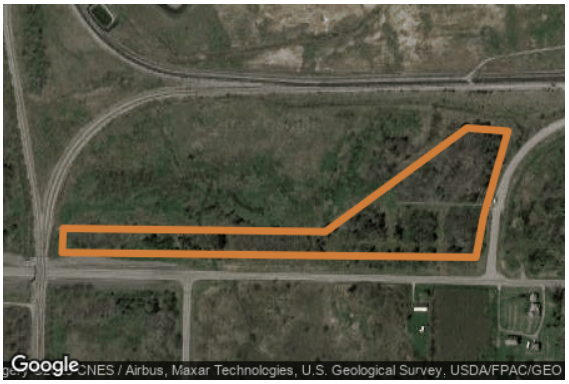


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348750	-78.612970	299.27
2	43.348270	-78.611390	299.02
3	43.347580	-78.610360	298.04
4	43.340510	-78.610360	366.51
5	43.340610	-78.614810	373.43
6	43.347960	-78.614510	300.63

Name: Obstruction 10
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349180	-78.619750	293.54
2	43.349160	-78.621890	302.36
3	43.349510	-78.622380	301.88
4	43.350040	-78.622590	299.87
5	43.350420	-78.622270	295.65
6	43.351000	-78.622570	294.04

Name: Obstruction 2
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349200	-78.606730	296.95
2	43.349140	-78.599620	295.00
3	43.349650	-78.599490	297.47
4	43.350710	-78.599070	299.32
5	43.350750	-78.599770	306.07
6	43.349460	-78.602200	301.77
7	43.349500	-78.606710	296.41
8	43.349200	-78.606730	296.95

Name: Obstruction 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349350	-78.611280	299.00
2	43.349260	-78.607420	298.14
3	43.351410	-78.607800	300.28
4	43.351440	-78.610790	300.68
5	43.349350	-78.611280	299.00

Name: Obstruction 4
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349340	-78.619460	294.73
2	43.349760	-78.619560	297.40
3	43.355180	-78.619520	280.59
4	43.359070	-78.619410	273.72

Name: Obstruction 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.588950	311.50
2	43.343200	-78.585820	350.56
3	43.343130	-78.582750	301.72
4	43.343030	-78.580050	299.89
5	43.345650	-78.580080	305.53
6	43.345770	-78.583060	298.52
7	43.347130	-78.583020	315.52
8	43.347050	-78.580230	336.29
9	43.347670	-78.580120	300.73
10	43.348250	-78.578510	300.57

Name: Obstruction 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.589050	309.98
2	43.344840	-78.588940	294.65
3	43.344900	-78.589950	296.31
4	43.345600	-78.590350	293.32
5	43.345660	-78.592310	299.70
6	43.342870	-78.592180	343.24
7	43.340900	-78.592350	369.50
8	43.340970	-78.594500	327.50
9	43.339440	-78.594470	298.37
10	43.339230	-78.592410	303.28

Name: Obstruction 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348670	-78.597710	293.35
2	43.347540	-78.597260	293.89
3	43.346880	-78.597230	293.46
4	43.346610	-78.596760	298.15
5	43.344670	-78.596850	318.73
6	43.344530	-78.599060	297.41
7	43.340390	-78.598930	317.40
8	43.340310	-78.596830	311.35
9	43.338250	-78.596890	304.43

Name: Obstruction 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.344410	-78.599220	294.93
2	43.344050	-78.599780	295.59
3	43.343980	-78.600570	298.51
4	43.343960	-78.601860	296.58
5	43.345820	-78.601930	295.02
6	43.345970	-78.604420	295.91

Name: Obstruction 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.355550	-78.585920	289.98
2	43.352970	-78.589250	334.36
3	43.352380	-78.593610	293.26
4	43.349400	-78.598880	296.28
5	43.349130	-78.598480	294.46
6	43.348460	-78.575390	298.74
7	43.357430	-78.575490	292.78
8	43.357500	-78.579670	293.68
9	43.356450	-78.579760	314.80
10	43.356480	-78.584390	320.77

Glare Analysis Results

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 16	20.0	180.0	9	0.1	0	0.0	-
PV array 17	20.0	180.0	303	5.0	0	0.0	-
PV array 18	20.0	180.0	0	0.0	0	0.0	-
PV array 19	20.0	180.0	592	9.9	0	0.0	-
PV array 20	20.0	180.0	0	0.0	0	0.0	-
PV array 21	20.0	180.0	897	14.9	0	0.0	-
PV array 22	20.0	180.0	0	0.0	0	0.0	-
PV array 23	20.0	180.0	0	0.0	0	0.0	-
PV array 24	20.0	180.0	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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	2	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	1,747	29.1	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	52	0.9	0	0.0
OP 14	0	0.0	0	0.0

PV: PV array 16 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 13	9	0.1	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
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 16 and Haight Road

Receptor type: Route
No glare found

PV array 16 and Hartland Road

Receptor type: Route
No glare found

PV array 16 and Hess Road

Receptor type: Route
No glare found

PV array 16 and Hosmer Road

Receptor type: Route
No glare found

PV array 16 and Lake Road

Receptor type: Route
No glare found

PV array 16 and West Somerset Road

Receptor type: Route

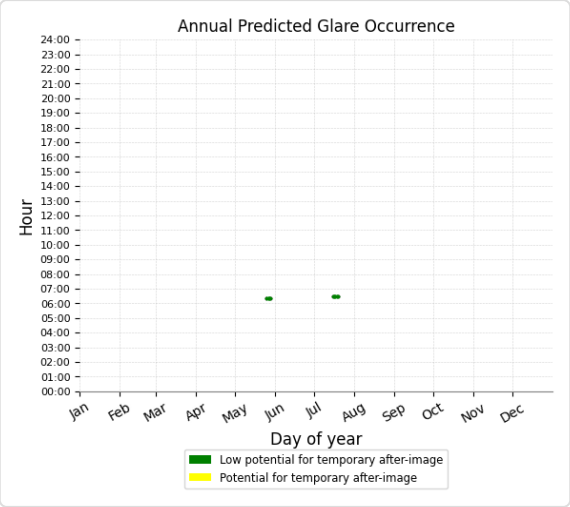
No glare found

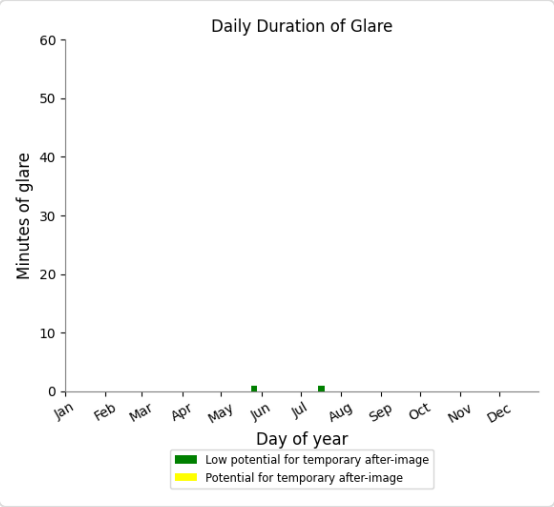
PV array 16 and OP 13

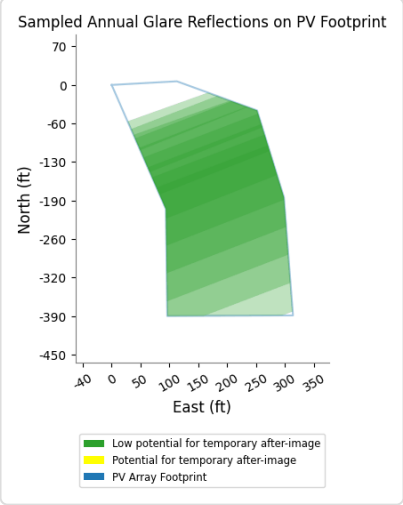
Receptor type: Observation Point

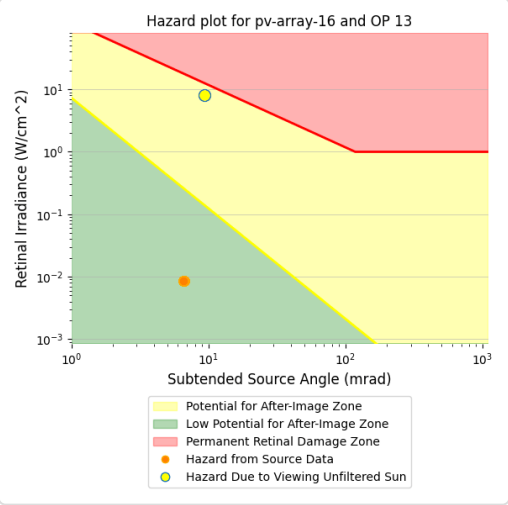
0 minutes of yellow glare

9 minutes of green glare









PV array 16 and OP 1

Receptor type: Observation Point

No glare found

PV array 16 and OP 2

Receptor type: Observation Point

No glare found

PV array 16 and OP 3

Receptor type: Observation Point

No glare found

PV array 16 and OP 4

Receptor type: Observation Point

No glare found

PV array 16 and OP 5

Receptor type: Observation Point
No glare found

PV array 16 and OP 6

Receptor type: Observation Point
No glare found

PV array 16 and OP 7

Receptor type: Observation Point
No glare found

PV array 16 and OP 8

Receptor type: Observation Point
No glare found

PV array 16 and OP 9

Receptor type: Observation Point
No glare found

PV array 16 and OP 10

Receptor type: Observation Point
No glare found

PV array 16 and OP 11

Receptor type: Observation Point
No glare found

PV array 16 and OP 12

Receptor type: Observation Point
No glare found

PV array 16 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 17 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 6	2	0.0	0	0.0
OP 9	280	4.7	0	0.0
OP 13	21	0.3	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 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 17 and Haight Road

Receptor type: Route

No glare found

PV array 17 and Hartland Road

Receptor type: Route

No glare found

PV array 17 and Hess Road

Receptor type: Route

No glare found

PV array 17 and Hosmer Road

Receptor type: Route

No glare found

PV array 17 and Lake Road

Receptor type: Route

No glare found

PV array 17 and West Somerset Road

Receptor type: Route

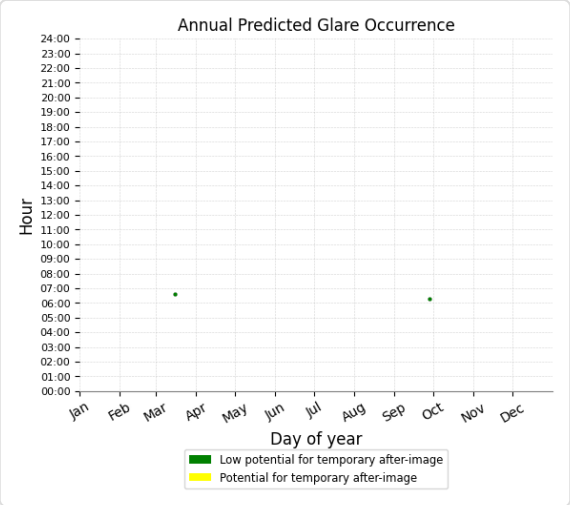
No glare found

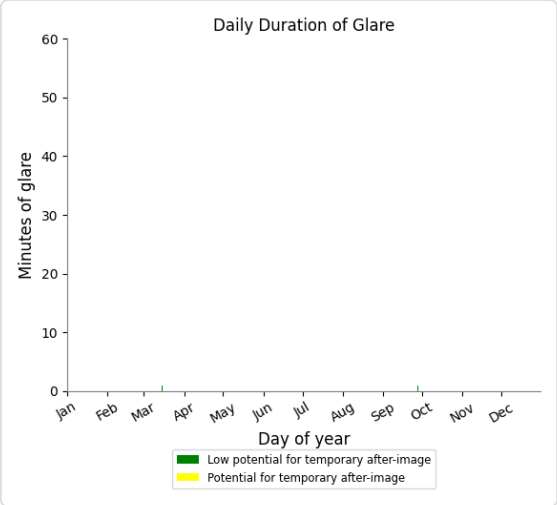
PV array 17 and OP 6

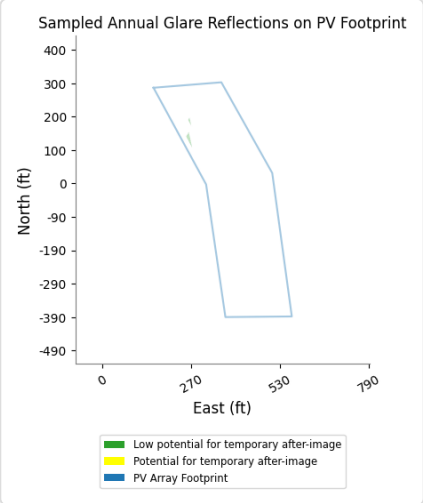
Receptor type: Observation Point

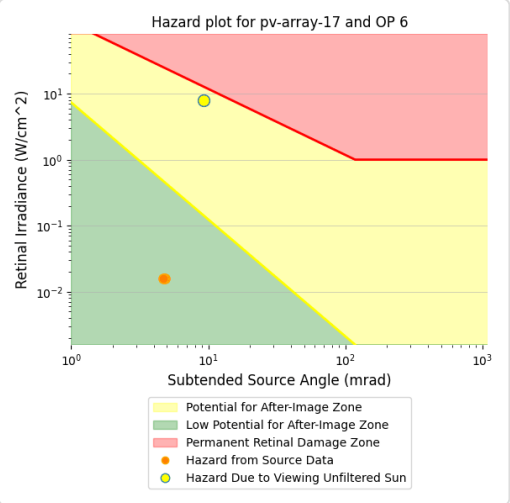
0 minutes of yellow glare

2 minutes of green glare



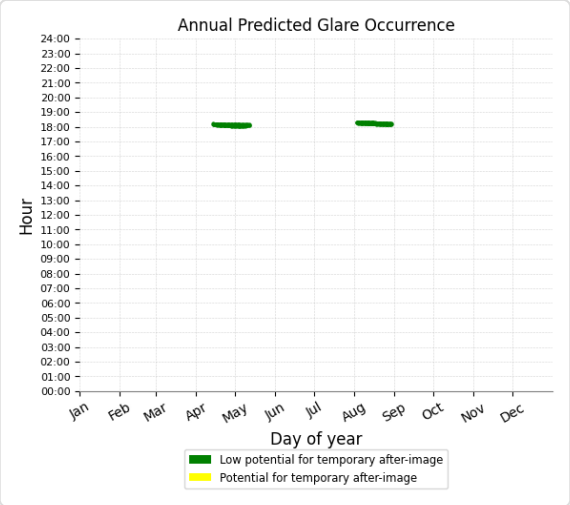


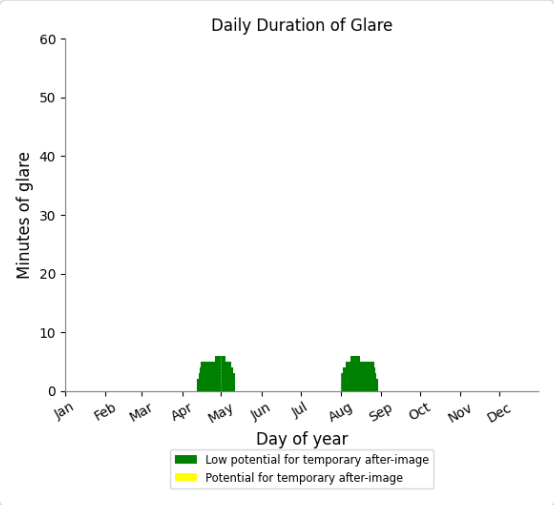


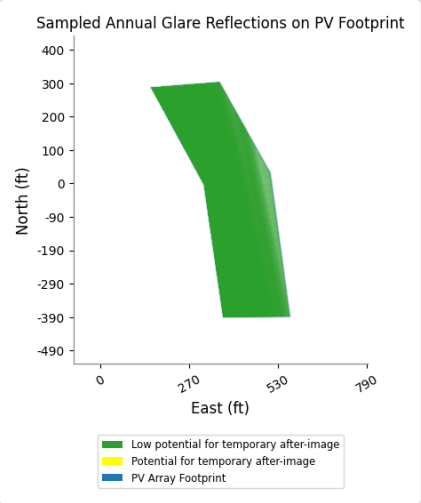


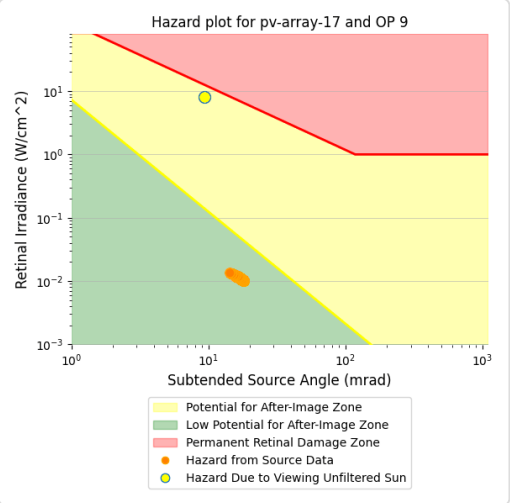
PV array 17 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
280 minutes of green glare



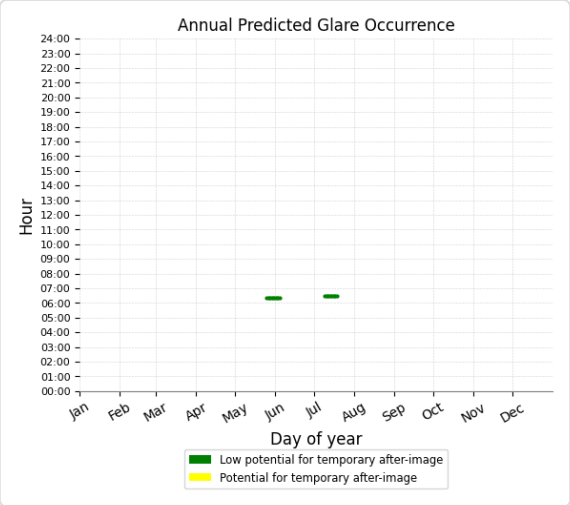


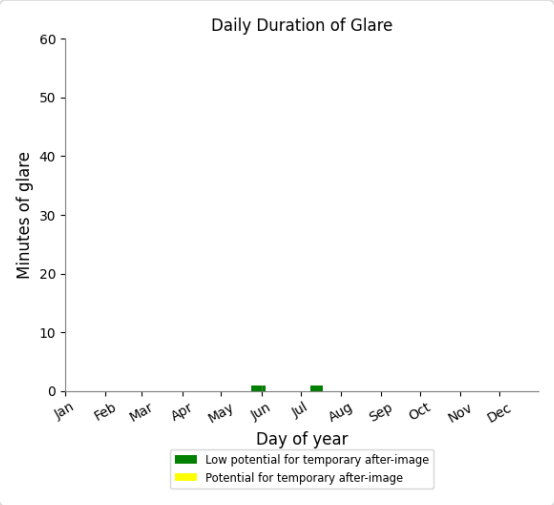


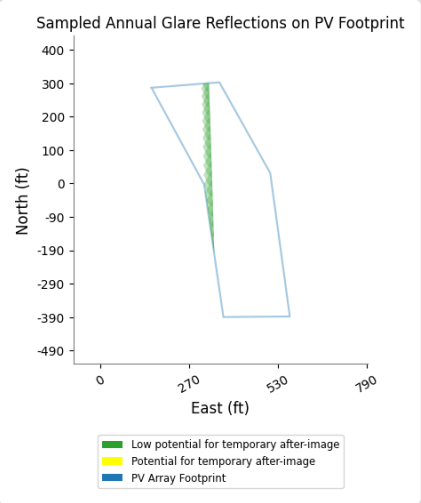


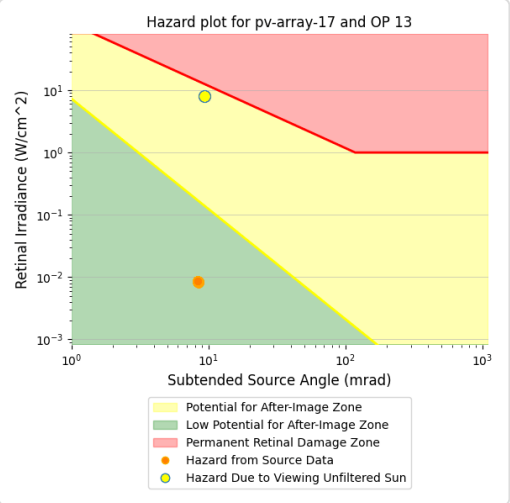
PV array 17 and OP 13

Receptor type: Observation Point
0 minutes of yellow glare
21 minutes of green glare









PV array 17 and OP 1

Receptor type: Observation Point
No glare found

PV array 17 and OP 2

Receptor type: Observation Point
No glare found

PV array 17 and OP 3

Receptor type: Observation Point
No glare found

PV array 17 and OP 4

Receptor type: Observation Point
No glare found

PV array 17 and OP 5

Receptor type: Observation Point
No glare found

PV array 17 and OP 7

Receptor type: Observation Point
No glare found

PV array 17 and OP 8

Receptor type: Observation Point
No glare found

PV array 17 and OP 10

Receptor type: Observation Point
No glare found

PV array 17 and OP 11

Receptor type: Observation Point
No glare found

PV array 17 and OP 12

Receptor type: Observation Point
No glare found

PV array 17 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 18 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 18 and Haight Road

Receptor type: Route
No glare found

PV array 18 and Hartland Road

Receptor type: Route
No glare found

PV array 18 and Hess Road

Receptor type: Route
No glare found

PV array 18 and Hosmer Road

Receptor type: Route
No glare found

PV array 18 and Lake Road

Receptor type: Route
No glare found

PV array 18 and West Somerset Road

Receptor type: Route
No glare found

PV array 18 and OP 1

Receptor type: Observation Point
No glare found

PV array 18 and OP 2

Receptor type: Observation Point
No glare found

PV array 18 and OP 3

Receptor type: Observation Point
No glare found

PV array 18 and OP 4

Receptor type: Observation Point
No glare found

PV array 18 and OP 5

Receptor type: Observation Point
No glare found

PV array 18 and OP 6

Receptor type: Observation Point
No glare found

PV array 18 and OP 7

Receptor type: Observation Point
No glare found

PV array 18 and OP 8

Receptor type: Observation Point
No glare found

PV array 18 and OP 9

Receptor type: Observation Point
No glare found

PV array 18 and OP 10

Receptor type: Observation Point
No glare found

PV array 18 and OP 11

Receptor type: Observation Point
No glare found

PV array 18 and OP 12

Receptor type: Observation Point
No glare found

PV array 18 and OP 13

Receptor type: Observation Point
No glare found

PV array 18 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 19 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 9	570	9.5	0	0.0
OP 13	22	0.4	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 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 19 and Haight Road

Receptor type: Route

No glare found

PV array 19 and Hartland Road

Receptor type: Route

No glare found

PV array 19 and Hess Road

Receptor type: Route

No glare found

PV array 19 and Hosmer Road

Receptor type: Route

No glare found

PV array 19 and Lake Road

Receptor type: Route

No glare found

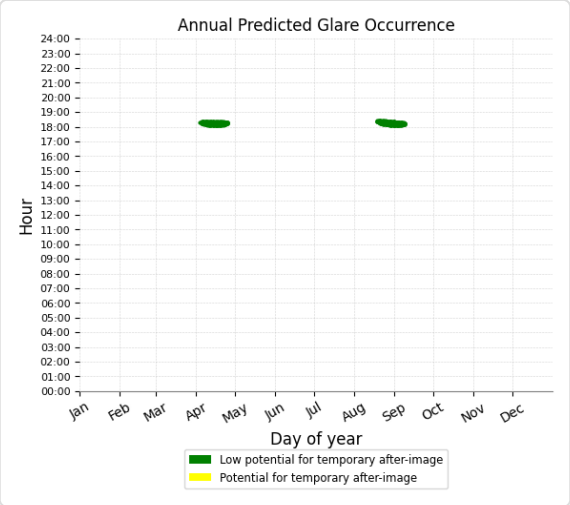
PV array 19 and West Somerset Road

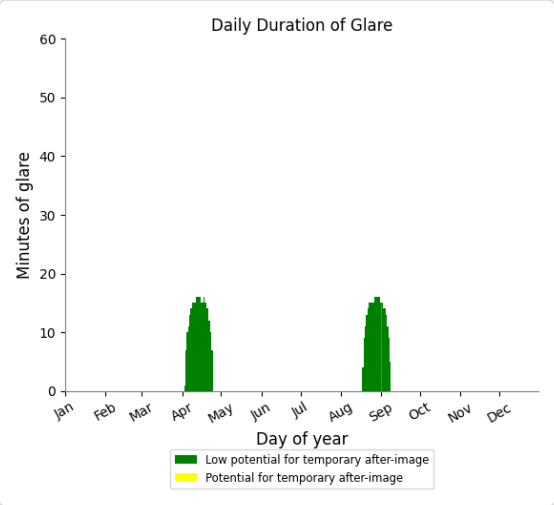
Receptor type: Route

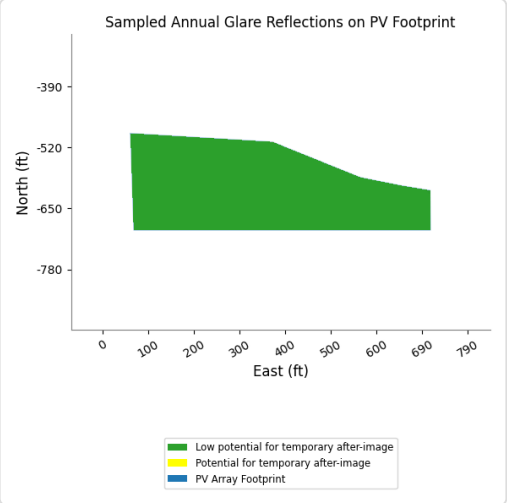
No glare found

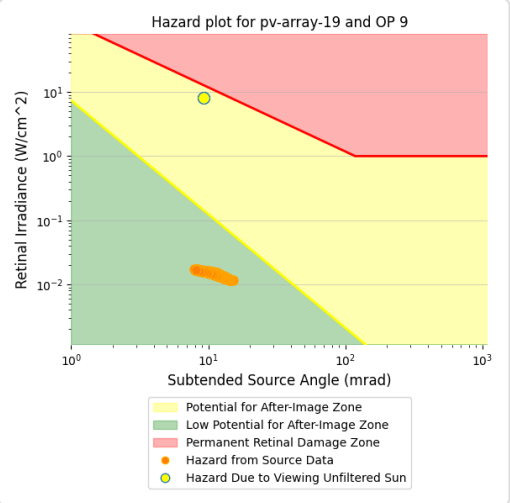
PV array 19 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
570 minutes of green glare



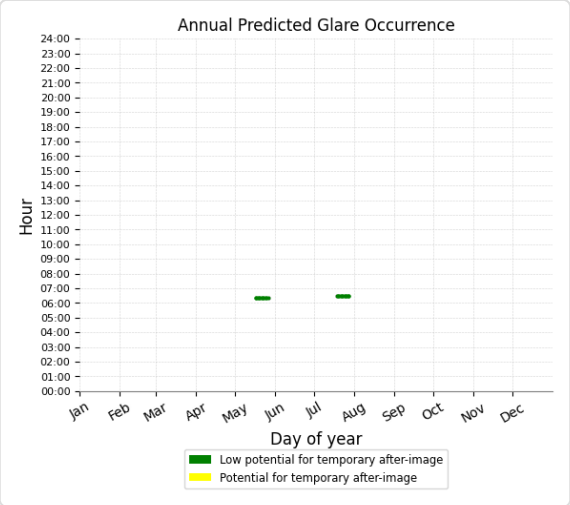


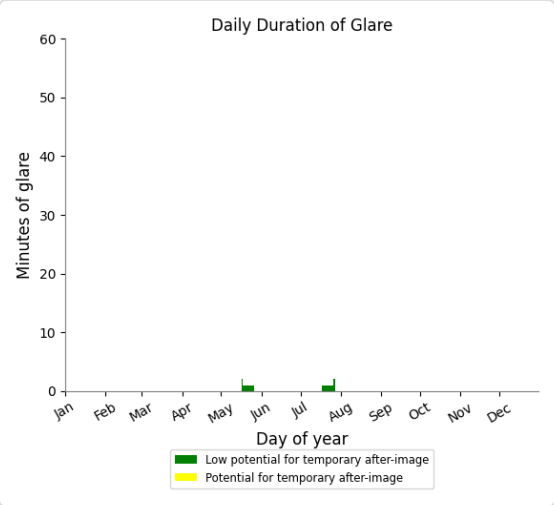


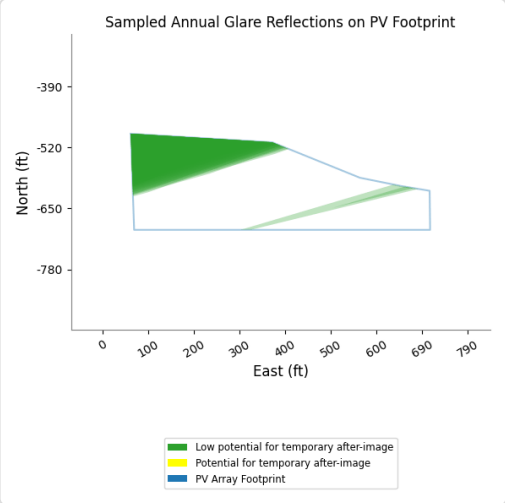


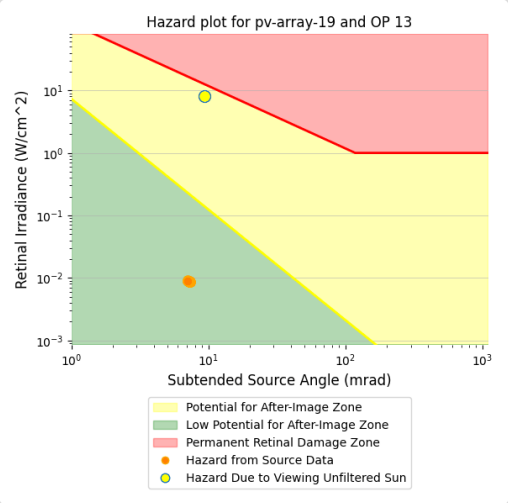
PV array 19 and OP 13

Receptor type: Observation Point
0 minutes of yellow glare
22 minutes of green glare









PV array 19 and OP 1

Receptor type: Observation Point
No glare found

PV array 19 and OP 2

Receptor type: Observation Point
No glare found

PV array 19 and OP 3

Receptor type: Observation Point
No glare found

PV array 19 and OP 4

Receptor type: Observation Point
No glare found

PV array 19 and OP 5

Receptor type: Observation Point
No glare found

PV array 19 and OP 6

Receptor type: Observation Point
No glare found

PV array 19 and OP 7

Receptor type: Observation Point
No glare found

PV array 19 and OP 8

Receptor type: Observation Point
No glare found

PV array 19 and OP 10

Receptor type: Observation Point
No glare found

PV array 19 and OP 11

Receptor type: Observation Point
No glare found

PV array 19 and OP 12

Receptor type: Observation Point
No glare found

PV array 19 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 20 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 20 and Haight Road

Receptor type: Route
No glare found

PV array 20 and Hartland Road

Receptor type: Route
No glare found

PV array 20 and Hess Road

Receptor type: Route
No glare found

PV array 20 and Hosmer Road

Receptor type: Route
No glare found

PV array 20 and Lake Road

Receptor type: Route
No glare found

PV array 20 and West Somerset Road

Receptor type: Route
No glare found

PV array 20 and OP 1

Receptor type: Observation Point
No glare found

PV array 20 and OP 2

Receptor type: Observation Point
No glare found

PV array 20 and OP 3

Receptor type: Observation Point
No glare found

PV array 20 and OP 4

Receptor type: Observation Point
No glare found

PV array 20 and OP 5

Receptor type: Observation Point
No glare found

PV array 20 and OP 6

Receptor type: Observation Point
No glare found

PV array 20 and OP 7

Receptor type: Observation Point
No glare found

PV array 20 and OP 8

Receptor type: Observation Point
No glare found

PV array 20 and OP 9

Receptor type: Observation Point
No glare found

PV array 20 and OP 10

Receptor type: Observation Point
No glare found

PV array 20 and OP 11

Receptor type: Observation Point
No glare found

PV array 20 and OP 12

Receptor type: Observation Point
No glare found

PV array 20 and OP 13

Receptor type: Observation Point
No glare found

PV array 20 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 21 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 9	897	14.9	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 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 21 and Haight Road

Receptor type: Route

No glare found

PV array 21 and Hartland Road

Receptor type: Route

No glare found

PV array 21 and Hess Road

Receptor type: Route

No glare found

PV array 21 and Hosmer Road

Receptor type: Route

No glare found

PV array 21 and Lake Road

Receptor type: Route

No glare found

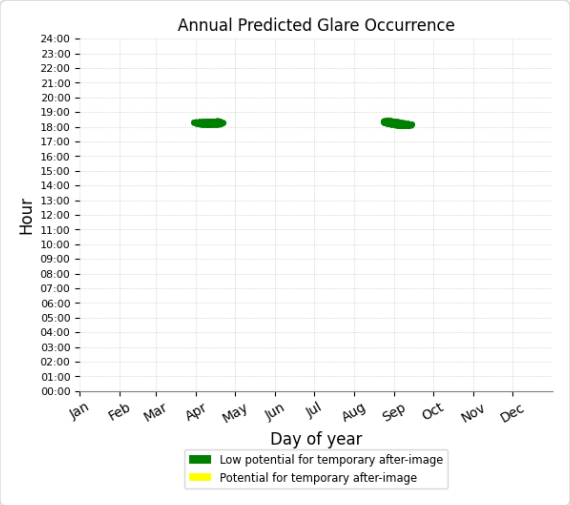
PV array 21 and West Somerset Road

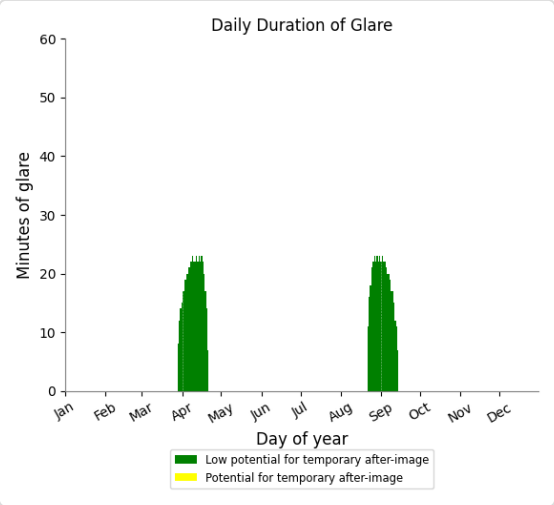
Receptor type: Route

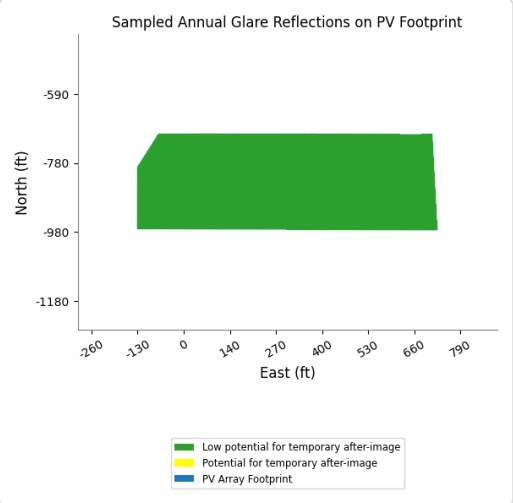
No glare found

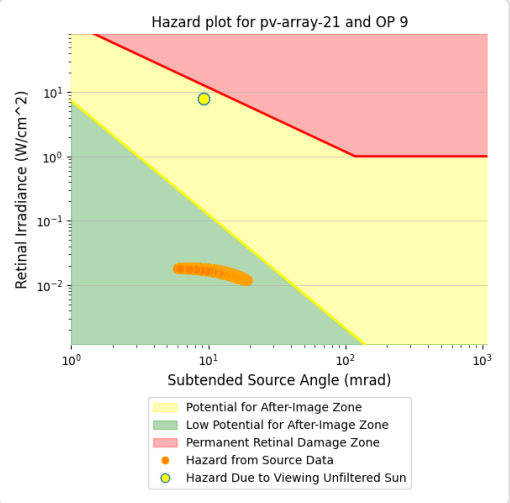
PV array 21 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
897 minutes of green glare









PV array 21 and OP 1

Receptor type: Observation Point
No glare found

PV array 21 and OP 2

Receptor type: Observation Point
No glare found

PV array 21 and OP 3

Receptor type: Observation Point
No glare found

PV array 21 and OP 4

Receptor type: Observation Point
No glare found

PV array 21 and OP 5

Receptor type: Observation Point
No glare found

PV array 21 and OP 6

Receptor type: Observation Point
No glare found

PV array 21 and OP 7

Receptor type: Observation Point
No glare found

PV array 21 and OP 8

Receptor type: Observation Point
No glare found

PV array 21 and OP 10

Receptor type: Observation Point
No glare found

PV array 21 and OP 11

Receptor type: Observation Point
No glare found

PV array 21 and OP 12

Receptor type: Observation Point
No glare found

PV array 21 and OP 13

Receptor type: Observation Point
No glare found

PV array 21 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 22 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 22 and Haight Road

Receptor type: Route
No glare found

PV array 22 and Hartland Road

Receptor type: Route
No glare found

PV array 22 and Hess Road

Receptor type: Route
No glare found

PV array 22 and Hosmer Road

Receptor type: Route
No glare found

PV array 22 and Lake Road

Receptor type: Route
No glare found

PV array 22 and West Somerset Road

Receptor type: Route
No glare found

PV array 22 and OP 1

Receptor type: Observation Point
No glare found

PV array 22 and OP 2

Receptor type: Observation Point
No glare found

PV array 22 and OP 3

Receptor type: Observation Point
No glare found

PV array 22 and OP 4

Receptor type: Observation Point
No glare found

PV array 22 and OP 5

Receptor type: Observation Point
No glare found

PV array 22 and OP 6

Receptor type: Observation Point
No glare found

PV array 22 and OP 7

Receptor type: Observation Point
No glare found

PV array 22 and OP 8

Receptor type: Observation Point
No glare found

PV array 22 and OP 9

Receptor type: Observation Point
No glare found

PV array 22 and OP 10

Receptor type: Observation Point
No glare found

PV array 22 and OP 11

Receptor type: Observation Point
No glare found

PV array 22 and OP 12

Receptor type: Observation Point
No glare found

PV array 22 and OP 13

Receptor type: Observation Point
No glare found

PV array 22 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 23 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 23 and Haight Road

Receptor type: Route
No glare found

PV array 23 and Hartland Road

Receptor type: Route
No glare found

PV array 23 and Hess Road

Receptor type: Route
No glare found

PV array 23 and Hosmer Road

Receptor type: Route
No glare found

PV array 23 and Lake Road

Receptor type: Route
No glare found

PV array 23 and West Somerset Road

Receptor type: Route
No glare found

PV array 23 and OP 1

Receptor type: Observation Point
No glare found

PV array 23 and OP 2

Receptor type: Observation Point
No glare found

PV array 23 and OP 3

Receptor type: Observation Point
No glare found

PV array 23 and OP 4

Receptor type: Observation Point
No glare found

PV array 23 and OP 5

Receptor type: Observation Point
No glare found

PV array 23 and OP 6

Receptor type: Observation Point
No glare found

PV array 23 and OP 7

Receptor type: Observation Point
No glare found

PV array 23 and OP 8

Receptor type: Observation Point
No glare found

PV array 23 and OP 9

Receptor type: Observation Point
No glare found

PV array 23 and OP 10

Receptor type: Observation Point
No glare found

PV array 23 and OP 11

Receptor type: Observation Point
No glare found

PV array 23 and OP 12

Receptor type: Observation Point
No glare found

PV array 23 and OP 13

Receptor type: Observation Point
No glare found

PV array 23 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 24 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 24 and Haight Road

Receptor type: Route
No glare found

PV array 24 and Hartland Road

Receptor type: Route
No glare found

PV array 24 and Hess Road

Receptor type: Route
No glare found

PV array 24 and Hosmer Road

Receptor type: Route
No glare found

PV array 24 and Lake Road

Receptor type: Route
No glare found

PV array 24 and West Somerset Road

Receptor type: Route
No glare found

PV array 24 and OP 1

Receptor type: Observation Point
No glare found

PV array 24 and OP 2

Receptor type: Observation Point
No glare found

PV array 24 and OP 3

Receptor type: Observation Point
No glare found

PV array 24 and OP 4

Receptor type: Observation Point
No glare found

PV array 24 and OP 5

Receptor type: Observation Point
No glare found

PV array 24 and OP 6

Receptor type: Observation Point
No glare found

PV array 24 and OP 7

Receptor type: Observation Point
No glare found

PV array 24 and OP 8

Receptor type: Observation Point
No glare found

PV array 24 and OP 9

Receptor type: Observation Point
No glare found

PV array 24 and OP 10

Receptor type: Observation Point
No glare found

PV array 24 and OP 11

Receptor type: Observation Point
No glare found

PV array 24 and OP 12

Receptor type: Observation Point
No glare found

PV array 24 and OP 13

Receptor type: Observation Point
No glare found

PV array 24 and OP 14

Receptor type: Observation Point
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

FORGESOLAR GLARE ANALYSIS

Project: **Somerset Solar**

Proposed 125 MW solar project located in Somerset NY

Site configuration: **Analysis 3: Single Axis Trackers - Second Story and Tractor-Trailer View**

Client: AES
Created 26 Feb, 2023
Updated 22 Mar, 2023
Time-step 1 minute
Timezone offset UTC-5
Site ID 85196.12807
Category 10 MW to 100 MW
DNI peaks at 1,000.0 W/m^2
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 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 15	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 1	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.349256	-78.619283	295.10	5.50	300.60
2	43.358500	-78.619114	314.50	5.50	320.00
3	43.358497	-78.617394	288.70	5.50	294.20
4	43.359172	-78.617369	270.70	5.50	276.20
5	43.359078	-78.611989	269.40	5.50	274.90
6	43.359744	-78.611953	272.90	5.50	278.40
7	43.359756	-78.611172	262.50	5.50	268.00
8	43.358150	-78.610892	279.40	5.50	284.90
9	43.353681	-78.610953	292.10	5.50	297.60
10	43.350758	-78.611561	296.40	5.50	301.90
11	43.350714	-78.616175	298.20	5.50	303.70
12	43.349256	-78.616239	301.20	5.50	306.70

Name: PV array 10
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.345625	-78.582758	298.70	5.50	304.20
2	43.344094	-78.582781	301.30	5.50	306.80
3	43.344061	-78.582436	302.20	5.50	307.70
4	43.343150	-78.582497	302.40	5.50	307.90
5	43.343094	-78.580203	302.10	5.50	307.60
6	43.345563	-78.580366	299.90	5.50	305.40

Name: PV array 11
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.355189	-78.595558	294.80	5.50	300.30
2	43.355203	-78.596331	292.70	5.50	298.20
3	43.353069	-78.598336	292.50	5.50	298.00
4	43.352458	-78.598294	296.50	5.50	302.00
5	43.352444	-78.595433	295.00	5.50	300.50
6	43.354253	-78.594875	296.40	5.50	301.90

Name: PV array 12
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.352425	-78.597661	296.10	5.50	301.60
2	43.352344	-78.600811	293.70	5.50	299.20
3	43.352072	-78.601256	293.80	5.50	299.30
4	43.351486	-78.601256	296.30	5.50	301.80
5	43.351525	-78.597964	298.30	5.50	303.80
6	43.351825	-78.597664	295.70	5.50	301.20

Name: PV array 13
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.353081	-78.601006	295.30	5.50	300.80
2	43.352511	-78.604142	296.90	5.50	302.40
3	43.351919	-78.604186	296.60	5.50	302.10
4	43.351894	-78.602775	294.60	5.50	300.10
5	43.352094	-78.601686	296.40	5.50	301.90
6	43.352519	-78.601006	294.40	5.50	299.90

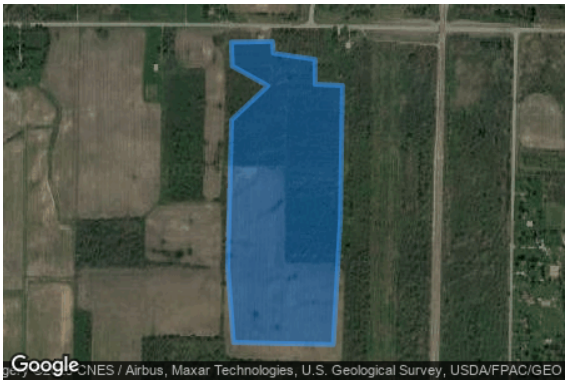
Name: PV array 14
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.351022	-78.601903	299.20	5.50	304.70
2	43.351000	-78.604703	297.50	5.50	303.00
3	43.350700	-78.605886	300.80	5.50	306.30
4	43.350108	-78.605856	297.20	5.50	302.70
5	43.350081	-78.602542	307.20	5.50	312.70
6	43.350328	-78.601867	302.30	5.50	307.80

Name: PV array 15
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.347119	-78.604220	293.80	5.50	299.30
2	43.346283	-78.604300	296.70	5.50	302.20
3	43.346131	-78.603956	297.70	5.50	303.20
4	43.346133	-78.603092	294.70	5.50	300.20
5	43.347008	-78.603181	293.90	5.50	299.40
6	43.347019	-78.603978	295.90	5.50	301.40

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348622	-78.614372	298.60	5.50	304.10
2	43.348025	-78.614342	302.50	5.50	308.00
3	43.347531	-78.613114	302.60	5.50	308.10
4	43.346681	-78.614364	305.10	5.50	310.60
5	43.343031	-78.614497	307.90	5.50	313.40
6	43.341142	-78.614297	308.70	5.50	314.20
7	43.341089	-78.610867	307.50	5.50	313.00
8	43.344247	-78.610622	308.50	5.50	314.00
9	43.347542	-78.610553	296.70	5.50	302.20
10	43.347572	-78.611494	301.00	5.50	306.50
11	43.348194	-78.611497	301.80	5.50	307.30
12	43.348344	-78.612928	302.10	5.50	307.60
13	43.348639	-78.612958	301.20	5.50	306.70

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.346946	-78.602709	293.60	5.50	299.10
2	43.347172	-78.602719	293.00	5.50	298.50
3	43.347147	-78.600594	299.20	5.50	304.70
4	43.346292	-78.600594	298.30	5.50	303.80
5	43.346289	-78.602717	293.00	5.50	298.50
6	43.346454	-78.602714	292.90	5.50	298.40
7	43.346651	-78.602713	293.40	5.50	298.90

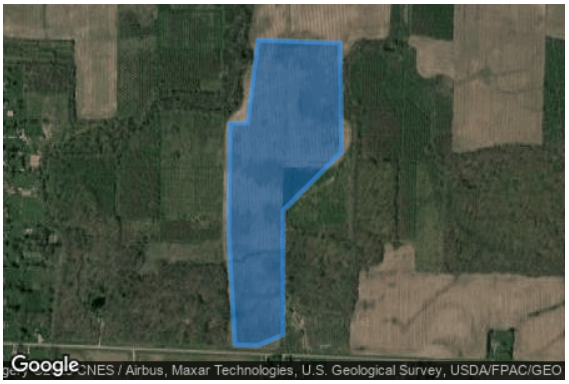
Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346233	-78.600589	298.10	5.50	303.60
2	43.346225	-78.601461	296.40	5.50	301.90
3	43.344422	-78.601561	296.10	5.50	301.60
4	43.344442	-78.600622	298.20	5.50	303.70

Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348525	-78.596306	294.70	5.50	300.20
2	43.347647	-78.596314	295.90	5.50	301.40
3	43.347556	-78.595450	296.50	5.50	302.00
4	43.345958	-78.595614	299.70	5.50	305.20
5	43.345878	-78.591306	299.50	5.50	305.00
6	43.347669	-78.591325	298.80	5.50	304.30
7	43.347758	-78.592758	300.70	5.50	306.20
8	43.348417	-78.592706	298.60	5.50	304.10

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.345925	-78.595600	298.80	5.50	304.30
2	43.343861	-78.595969	303.70	5.50	309.20
3	43.343861	-78.596567	302.90	5.50	308.40
4	43.341167	-78.596617	302.20	5.50	307.70
5	43.338339	-78.596403	308.50	5.50	314.00
6	43.338319	-78.595603	309.60	5.50	315.10
7	43.338583	-78.594742	305.00	5.50	310.50
8	43.341681	-78.594736	302.70	5.50	308.20
9	43.343136	-78.592728	300.00	5.50	305.50
10	43.345858	-78.592778	300.10	5.50	305.60

Name: PV array 7
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.348383	-78.587731	296.80	5.50	302.30
2	43.347411	-78.587736	301.10	5.50	306.60
3	43.347431	-78.588569	298.60	5.50	304.10
4	43.343778	-78.588697	295.10	5.50	300.60
5	43.343694	-78.586192	301.30	5.50	306.80
6	43.347986	-78.585814	299.40	5.50	304.90
7	43.348325	-78.586819	299.60	5.50	305.10

Name: PV array 8
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.357933	-78.579733	299.20	5.50	304.70
2	43.361792	-78.579608	289.10	5.50	294.60
3	43.364542	-78.578850	271.90	5.50	277.40
4	43.364558	-78.575867	273.80	5.50	279.30
5	43.360639	-78.575619	301.20	5.50	306.70
6	43.357961	-78.575589	299.60	5.50	305.10

Name: PV array 9
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.4
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	43.354867	-78.593967	296.80	5.50	302.30
2	43.353089	-78.593744	294.40	5.50	299.90
3	43.353625	-78.589336	296.10	5.50	301.60
4	43.354908	-78.589417	295.60	5.50	301.10
5	43.355225	-78.587208	288.30	5.50	293.80
6	43.356119	-78.587158	290.30	5.50	295.80
7	43.355872	-78.589217	292.80	5.50	298.30
8	43.355447	-78.589244	298.20	5.50	303.70

Route Receptors

Name: Haight Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.338322	-78.603224	299.40	9.00	308.40
2	43.337885	-78.590307	305.70	9.00	314.70
3	43.337588	-78.577153	309.20	9.00	318.20

Name: Hartland Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.360586	-78.575338	300.20	9.00	309.20
2	43.354104	-78.575252	296.50	9.00	305.50
3	43.347683	-78.575123	300.70	9.00	309.70
4	43.342963	-78.575080	304.50	9.00	313.50
5	43.335378	-78.575026	317.80	9.00	326.80

Name: Hess Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346026	-78.649776	290.00	9.00	299.00
2	43.339815	-78.649636	308.10	9.00	317.10
3	43.332542	-78.649336	331.00	9.00	340.00

Name: Hosmer Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.348114	-78.604576	296.50	9.00	305.50
2	43.341353	-78.604737	301.30	9.00	310.30
3	43.331739	-78.605038	310.50	9.00	319.50

Name: Lake Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.349064	-78.628713	305.20	9.00	314.20
2	43.349033	-78.614551	299.90	9.00	308.90
3	43.348892	-78.602664	296.50	9.00	305.50
4	43.348619	-78.589360	296.90	9.00	305.90
5	43.348474	-78.579604	302.60	9.00	311.60

Name: West Somerset Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.327738	-78.644061	326.20	9.00	335.20
2	43.327715	-78.635327	322.60	9.00	331.60
3	43.327594	-78.619878	316.20	9.00	325.20

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.349443	-78.622970	302.70	16.00
OP 2	2	43.344999	-78.575574	301.60	16.00
OP 3	3	43.348732	-78.610493	297.60	16.00
OP 4	4	43.338599	-78.603221	301.90	16.00
OP 5	5	43.328082	-78.625908	319.00	16.00
OP 6	6	43.356237	-78.635125	277.60	16.00
OP 7	7	43.362499	-78.568200	303.10	16.00
OP 8	8	43.336269	-78.573222	317.70	16.00
OP 9	9	43.349026	-78.556088	299.30	16.00
OP 10	10	43.337457	-78.583344	306.40	16.00
OP 11	11	43.348497	-78.598519	296.10	16.00
OP 12	12	43.327588	-78.595706	339.70	16.00
OP 13	13	43.334412	-78.649973	330.30	16.00
OP 14	14	43.327261	-78.554950	328.10	16.00

Obstruction Components

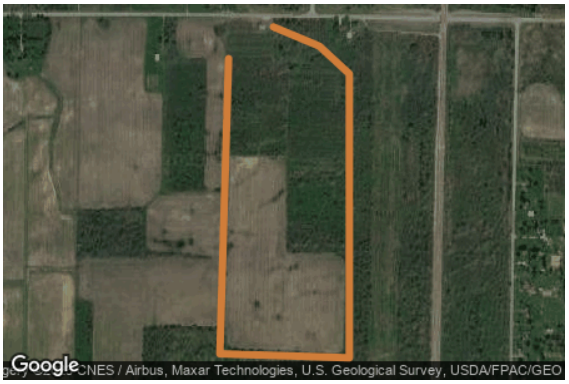
Name: Obstruction 1
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.355550	-78.585920	291.43
2	43.352970	-78.589250	334.36
3	43.352380	-78.593610	293.26
4	43.349400	-78.598880	296.28
5	43.349130	-78.598480	294.46
6	43.348460	-78.575390	298.74
7	43.357430	-78.575490	292.78
8	43.357500	-78.579670	293.68
9	43.356450	-78.579760	314.80
10	43.356480	-78.584390	320.77

Name: Obstruction 10
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.344410	-78.599220	294.93
2	43.344050	-78.599780	295.59
3	43.343980	-78.600570	298.51
4	43.343960	-78.601860	296.58
5	43.345820	-78.601930	295.02
6	43.345970	-78.604420	295.91

Name: Obstruction 2
Top height: 30.0 ft

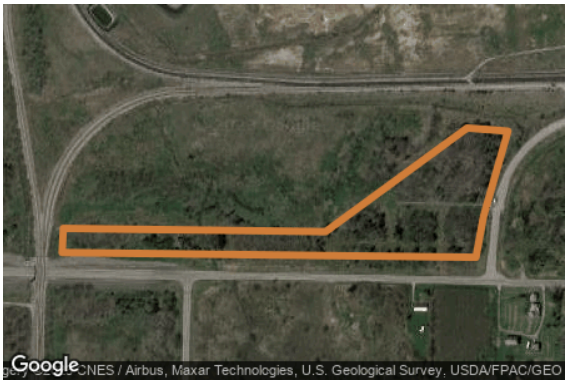


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348750	-78.612970	299.27
2	43.348270	-78.611390	299.02
3	43.347580	-78.610360	298.04
4	43.340510	-78.610360	366.51
5	43.340610	-78.614810	373.43
6	43.347960	-78.614510	300.63

Name: Obstruction 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349180	-78.619750	293.54
2	43.349160	-78.621890	302.36
3	43.349510	-78.622380	301.88
4	43.350040	-78.622590	299.87
5	43.350420	-78.622270	295.65
6	43.351000	-78.622570	294.04

Name: Obstruction 4
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349200	-78.606730	296.95
2	43.349140	-78.599620	295.00
3	43.349650	-78.599490	297.47
4	43.350710	-78.599070	299.32
5	43.350750	-78.599770	306.07
6	43.349460	-78.602200	301.77
7	43.349500	-78.606710	296.41
8	43.349200	-78.606730	296.95

Name: Obstruction 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349350	-78.611280	299.00
2	43.349260	-78.607420	298.14
3	43.351410	-78.607800	300.28
4	43.351440	-78.610790	300.68
5	43.349350	-78.611280	299.00

Name: Obstruction 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349340	-78.619460	294.73
2	43.349760	-78.619560	297.40
3	43.355180	-78.619520	280.59
4	43.359070	-78.619410	273.72

Name: Obstruction 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.588950	311.50
2	43.343200	-78.585820	350.56
3	43.343130	-78.582750	301.72
4	43.343030	-78.580050	299.89
5	43.345650	-78.580080	305.53
6	43.345770	-78.583060	298.52
7	43.347130	-78.583020	315.52
8	43.347050	-78.580230	336.29
9	43.347670	-78.580120	300.73
10	43.348250	-78.578510	300.57

Name: Obstruction 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.589050	309.98
2	43.344840	-78.588940	294.65
3	43.344900	-78.589950	296.31
4	43.345600	-78.590350	293.32
5	43.345660	-78.592310	299.70
6	43.342870	-78.592180	343.24
7	43.340900	-78.592350	369.50
8	43.340970	-78.594500	327.50
9	43.339440	-78.594470	298.37
10	43.339230	-78.592410	303.28

Name: Obstruction 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348670	-78.597710	293.35
2	43.347540	-78.597260	293.89
3	43.346880	-78.597230	293.46
4	43.314660	-78.596760	298.15
5	43.344670	-78.596850	318.73
6	43.344530	-78.599060	297.41
7	43.340390	-78.598930	317.40
8	43.340310	-78.596830	311.35
9	43.338250	-78.596890	304.43

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 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 10	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 11	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 12	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 13	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 14	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 15	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 7	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 8	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 9	SA tracking	SA tracking	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 1 and Haight Road

Receptor type: Route
No glare found

PV array 1 and Hartland Road

Receptor type: Route
No glare found

PV array 1 and Hess Road

Receptor type: Route
No glare found

PV array 1 and Hosmer Road

Receptor type: Route
No glare found

PV array 1 and Lake Road

Receptor type: Route
No glare found

PV array 1 and West Somerset Road

Receptor type: Route
No glare found

PV array 1 and OP 1

Receptor type: Observation Point
No glare found

PV array 1 and OP 2

Receptor type: Observation Point
No glare found

PV array 1 and OP 3

Receptor type: Observation Point
No glare found

PV array 1 and OP 4

Receptor type: Observation Point
No glare found

PV array 1 and OP 5

Receptor type: Observation Point
No glare found

PV array 1 and OP 6

Receptor type: Observation Point
No glare found

PV array 1 and OP 7

Receptor type: Observation Point
No glare found

PV array 1 and OP 8

Receptor type: Observation Point
No glare found

PV array 1 and OP 9

Receptor type: Observation Point
No glare found

PV array 1 and OP 10

Receptor type: Observation Point
No glare found

PV array 1 and OP 11

Receptor type: Observation Point
No glare found

PV array 1 and OP 12

Receptor type: Observation Point
No glare found

PV array 1 and OP 13

Receptor type: Observation Point
No glare found

PV array 1 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 10 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 10 and Haight Road

Receptor type: Route

No glare found

PV array 10 and Hartland Road

Receptor type: Route

No glare found

PV array 10 and Hess Road

Receptor type: Route

No glare found

PV array 10 and Hosmer Road

Receptor type: Route

No glare found

PV array 10 and Lake Road

Receptor type: Route

No glare found

PV array 10 and West Somerset Road

Receptor type: Route

No glare found

PV array 10 and OP 1

Receptor type: Observation Point
No glare found

PV array 10 and OP 2

Receptor type: Observation Point
No glare found

PV array 10 and OP 3

Receptor type: Observation Point
No glare found

PV array 10 and OP 4

Receptor type: Observation Point
No glare found

PV array 10 and OP 5

Receptor type: Observation Point
No glare found

PV array 10 and OP 6

Receptor type: Observation Point
No glare found

PV array 10 and OP 7

Receptor type: Observation Point
No glare found

PV array 10 and OP 8

Receptor type: Observation Point
No glare found

PV array 10 and OP 9

Receptor type: Observation Point
No glare found

PV array 10 and OP 10

Receptor type: Observation Point
No glare found

PV array 10 and OP 11

Receptor type: Observation Point
No glare found

PV array 10 and OP 12

Receptor type: Observation Point
No glare found

PV array 10 and OP 13

Receptor type: Observation Point
No glare found

PV array 10 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 11 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 11 and Haight Road

Receptor type: Route

No glare found

PV array 11 and Hartland Road

Receptor type: Route

No glare found

PV array 11 and Hess Road

Receptor type: Route

No glare found

PV array 11 and Hosmer Road

Receptor type: Route

No glare found

PV array 11 and Lake Road

Receptor type: Route

No glare found

PV array 11 and West Somerset Road

Receptor type: Route

No glare found

PV array 11 and OP 1

Receptor type: Observation Point
No glare found

PV array 11 and OP 2

Receptor type: Observation Point
No glare found

PV array 11 and OP 3

Receptor type: Observation Point
No glare found

PV array 11 and OP 4

Receptor type: Observation Point
No glare found

PV array 11 and OP 5

Receptor type: Observation Point
No glare found

PV array 11 and OP 6

Receptor type: Observation Point
No glare found

PV array 11 and OP 7

Receptor type: Observation Point
No glare found

PV array 11 and OP 8

Receptor type: Observation Point
No glare found

PV array 11 and OP 9

Receptor type: Observation Point
No glare found

PV array 11 and OP 10

Receptor type: Observation Point
No glare found

PV array 11 and OP 11

Receptor type: Observation Point
No glare found

PV array 11 and OP 12

Receptor type: Observation Point
No glare found

PV array 11 and OP 13

Receptor type: Observation Point
No glare found

PV array 11 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 12 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 12 and Haight Road

Receptor type: Route

No glare found

PV array 12 and Hartland Road

Receptor type: Route

No glare found

PV array 12 and Hess Road

Receptor type: Route

No glare found

PV array 12 and Hosmer Road

Receptor type: Route

No glare found

PV array 12 and Lake Road

Receptor type: Route

No glare found

PV array 12 and West Somerset Road

Receptor type: Route

No glare found

PV array 12 and OP 1

Receptor type: Observation Point
No glare found

PV array 12 and OP 2

Receptor type: Observation Point
No glare found

PV array 12 and OP 3

Receptor type: Observation Point
No glare found

PV array 12 and OP 4

Receptor type: Observation Point
No glare found

PV array 12 and OP 5

Receptor type: Observation Point
No glare found

PV array 12 and OP 6

Receptor type: Observation Point
No glare found

PV array 12 and OP 7

Receptor type: Observation Point
No glare found

PV array 12 and OP 8

Receptor type: Observation Point
No glare found

PV array 12 and OP 9

Receptor type: Observation Point
No glare found

PV array 12 and OP 10

Receptor type: Observation Point
No glare found

PV array 12 and OP 11

Receptor type: Observation Point
No glare found

PV array 12 and OP 12

Receptor type: Observation Point
No glare found

PV array 12 and OP 13

Receptor type: Observation Point
No glare found

PV array 12 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 13 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 13 and Haight Road

Receptor type: Route
No glare found

PV array 13 and Hartland Road

Receptor type: Route
No glare found

PV array 13 and Hess Road

Receptor type: Route
No glare found

PV array 13 and Hosmer Road

Receptor type: Route
No glare found

PV array 13 and Lake Road

Receptor type: Route
No glare found

PV array 13 and West Somerset Road

Receptor type: Route
No glare found

PV array 13 and OP 1

Receptor type: Observation Point
No glare found

PV array 13 and OP 2

Receptor type: Observation Point
No glare found

PV array 13 and OP 3

Receptor type: Observation Point
No glare found

PV array 13 and OP 4

Receptor type: Observation Point
No glare found

PV array 13 and OP 5

Receptor type: Observation Point
No glare found

PV array 13 and OP 6

Receptor type: Observation Point
No glare found

PV array 13 and OP 7

Receptor type: Observation Point
No glare found

PV array 13 and OP 8

Receptor type: Observation Point
No glare found

PV array 13 and OP 9

Receptor type: Observation Point
No glare found

PV array 13 and OP 10

Receptor type: Observation Point
No glare found

PV array 13 and OP 11

Receptor type: Observation Point
No glare found

PV array 13 and OP 12

Receptor type: Observation Point
No glare found

PV array 13 and OP 13

Receptor type: Observation Point
No glare found

PV array 13 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 14 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 14 and Haight Road

Receptor type: Route

No glare found

PV array 14 and Hartland Road

Receptor type: Route

No glare found

PV array 14 and Hess Road

Receptor type: Route

No glare found

PV array 14 and Hosmer Road

Receptor type: Route

No glare found

PV array 14 and Lake Road

Receptor type: Route

No glare found

PV array 14 and West Somerset Road

Receptor type: Route

No glare found

PV array 14 and OP 1

Receptor type: Observation Point
No glare found

PV array 14 and OP 2

Receptor type: Observation Point
No glare found

PV array 14 and OP 3

Receptor type: Observation Point
No glare found

PV array 14 and OP 4

Receptor type: Observation Point
No glare found

PV array 14 and OP 5

Receptor type: Observation Point
No glare found

PV array 14 and OP 6

Receptor type: Observation Point
No glare found

PV array 14 and OP 7

Receptor type: Observation Point
No glare found

PV array 14 and OP 8

Receptor type: Observation Point
No glare found

PV array 14 and OP 9

Receptor type: Observation Point
No glare found

PV array 14 and OP 10

Receptor type: Observation Point
No glare found

PV array 14 and OP 11

Receptor type: Observation Point
No glare found

PV array 14 and OP 12

Receptor type: Observation Point
No glare found

PV array 14 and OP 13

Receptor type: Observation Point
No glare found

PV array 14 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 15 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 15 and Haight Road

Receptor type: Route

No glare found

PV array 15 and Hartland Road

Receptor type: Route

No glare found

PV array 15 and Hess Road

Receptor type: Route

No glare found

PV array 15 and Hosmer Road

Receptor type: Route

No glare found

PV array 15 and Lake Road

Receptor type: Route

No glare found

PV array 15 and West Somerset Road

Receptor type: Route

No glare found

PV array 15 and OP 1

Receptor type: Observation Point
No glare found

PV array 15 and OP 2

Receptor type: Observation Point
No glare found

PV array 15 and OP 3

Receptor type: Observation Point
No glare found

PV array 15 and OP 4

Receptor type: Observation Point
No glare found

PV array 15 and OP 5

Receptor type: Observation Point
No glare found

PV array 15 and OP 6

Receptor type: Observation Point
No glare found

PV array 15 and OP 7

Receptor type: Observation Point
No glare found

PV array 15 and OP 8

Receptor type: Observation Point
No glare found

PV array 15 and OP 9

Receptor type: Observation Point
No glare found

PV array 15 and OP 10

Receptor type: Observation Point
No glare found

PV array 15 and OP 11

Receptor type: Observation Point
No glare found

PV array 15 and OP 12

Receptor type: Observation Point
No glare found

PV array 15 and OP 13

Receptor type: Observation Point
No glare found

PV array 15 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 2 and Haight Road

Receptor type: Route

No glare found

PV array 2 and Hartland Road

Receptor type: Route

No glare found

PV array 2 and Hess Road

Receptor type: Route

No glare found

PV array 2 and Hosmer Road

Receptor type: Route

No glare found

PV array 2 and Lake Road

Receptor type: Route

No glare found

PV array 2 and West Somerset Road

Receptor type: Route

No glare found

PV array 2 and OP 1

Receptor type: Observation Point
No glare found

PV array 2 and OP 2

Receptor type: Observation Point
No glare found

PV array 2 and OP 3

Receptor type: Observation Point
No glare found

PV array 2 and OP 4

Receptor type: Observation Point
No glare found

PV array 2 and OP 5

Receptor type: Observation Point
No glare found

PV array 2 and OP 6

Receptor type: Observation Point
No glare found

PV array 2 and OP 7

Receptor type: Observation Point
No glare found

PV array 2 and OP 8

Receptor type: Observation Point
No glare found

PV array 2 and OP 9

Receptor type: Observation Point
No glare found

PV array 2 and OP 10

Receptor type: Observation Point
No glare found

PV array 2 and OP 11

Receptor type: Observation Point
No glare found

PV array 2 and OP 12

Receptor type: Observation Point
No glare found

PV array 2 and OP 13

Receptor type: Observation Point
No glare found

PV array 2 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 3 and Haight Road

Receptor type: Route

No glare found

PV array 3 and Hartland Road

Receptor type: Route

No glare found

PV array 3 and Hess Road

Receptor type: Route

No glare found

PV array 3 and Hosmer Road

Receptor type: Route

No glare found

PV array 3 and Lake Road

Receptor type: Route

No glare found

PV array 3 and West Somerset Road

Receptor type: Route

No glare found

PV array 3 and OP 1

Receptor type: Observation Point
No glare found

PV array 3 and OP 2

Receptor type: Observation Point
No glare found

PV array 3 and OP 3

Receptor type: Observation Point
No glare found

PV array 3 and OP 4

Receptor type: Observation Point
No glare found

PV array 3 and OP 5

Receptor type: Observation Point
No glare found

PV array 3 and OP 6

Receptor type: Observation Point
No glare found

PV array 3 and OP 7

Receptor type: Observation Point
No glare found

PV array 3 and OP 8

Receptor type: Observation Point
No glare found

PV array 3 and OP 9

Receptor type: Observation Point
No glare found

PV array 3 and OP 10

Receptor type: Observation Point
No glare found

PV array 3 and OP 11

Receptor type: Observation Point
No glare found

PV array 3 and OP 12

Receptor type: Observation Point
No glare found

PV array 3 and OP 13

Receptor type: Observation Point
No glare found

PV array 3 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 4 and Haight Road

Receptor type: Route
No glare found

PV array 4 and Hartland Road

Receptor type: Route
No glare found

PV array 4 and Hess Road

Receptor type: Route
No glare found

PV array 4 and Hosmer Road

Receptor type: Route
No glare found

PV array 4 and Lake Road

Receptor type: Route
No glare found

PV array 4 and West Somerset Road

Receptor type: Route
No glare found

PV array 4 and OP 1

Receptor type: Observation Point
No glare found

PV array 4 and OP 2

Receptor type: Observation Point
No glare found

PV array 4 and OP 3

Receptor type: Observation Point
No glare found

PV array 4 and OP 4

Receptor type: Observation Point
No glare found

PV array 4 and OP 5

Receptor type: Observation Point
No glare found

PV array 4 and OP 6

Receptor type: Observation Point
No glare found

PV array 4 and OP 7

Receptor type: Observation Point
No glare found

PV array 4 and OP 8

Receptor type: Observation Point
No glare found

PV array 4 and OP 9

Receptor type: Observation Point
No glare found

PV array 4 and OP 10

Receptor type: Observation Point
No glare found

PV array 4 and OP 11

Receptor type: Observation Point
No glare found

PV array 4 and OP 12

Receptor type: Observation Point
No glare found

PV array 4 and OP 13

Receptor type: Observation Point
No glare found

PV array 4 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 5 and Haight Road

Receptor type: Route

No glare found

PV array 5 and Hartland Road

Receptor type: Route

No glare found

PV array 5 and Hess Road

Receptor type: Route

No glare found

PV array 5 and Hosmer Road

Receptor type: Route

No glare found

PV array 5 and Lake Road

Receptor type: Route

No glare found

PV array 5 and West Somerset Road

Receptor type: Route

No glare found

PV array 5 and OP 1

Receptor type: Observation Point
No glare found

PV array 5 and OP 2

Receptor type: Observation Point
No glare found

PV array 5 and OP 3

Receptor type: Observation Point
No glare found

PV array 5 and OP 4

Receptor type: Observation Point
No glare found

PV array 5 and OP 5

Receptor type: Observation Point
No glare found

PV array 5 and OP 6

Receptor type: Observation Point
No glare found

PV array 5 and OP 7

Receptor type: Observation Point
No glare found

PV array 5 and OP 8

Receptor type: Observation Point
No glare found

PV array 5 and OP 9

Receptor type: Observation Point
No glare found

PV array 5 and OP 10

Receptor type: Observation Point
No glare found

PV array 5 and OP 11

Receptor type: Observation Point
No glare found

PV array 5 and OP 12

Receptor type: Observation Point
No glare found

PV array 5 and OP 13

Receptor type: Observation Point
No glare found

PV array 5 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 6 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 6 and Haight Road

Receptor type: Route

No glare found

PV array 6 and Hartland Road

Receptor type: Route

No glare found

PV array 6 and Hess Road

Receptor type: Route

No glare found

PV array 6 and Hosmer Road

Receptor type: Route

No glare found

PV array 6 and Lake Road

Receptor type: Route

No glare found

PV array 6 and West Somerset Road

Receptor type: Route

No glare found

PV array 6 and OP 1

Receptor type: Observation Point
No glare found

PV array 6 and OP 2

Receptor type: Observation Point
No glare found

PV array 6 and OP 3

Receptor type: Observation Point
No glare found

PV array 6 and OP 4

Receptor type: Observation Point
No glare found

PV array 6 and OP 5

Receptor type: Observation Point
No glare found

PV array 6 and OP 6

Receptor type: Observation Point
No glare found

PV array 6 and OP 7

Receptor type: Observation Point
No glare found

PV array 6 and OP 8

Receptor type: Observation Point
No glare found

PV array 6 and OP 9

Receptor type: Observation Point
No glare found

PV array 6 and OP 10

Receptor type: Observation Point
No glare found

PV array 6 and OP 11

Receptor type: Observation Point
No glare found

PV array 6 and OP 12

Receptor type: Observation Point
No glare found

PV array 6 and OP 13

Receptor type: Observation Point
No glare found

PV array 6 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 7 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 7 and Haight Road

Receptor type: Route

No glare found

PV array 7 and Hartland Road

Receptor type: Route

No glare found

PV array 7 and Hess Road

Receptor type: Route

No glare found

PV array 7 and Hosmer Road

Receptor type: Route

No glare found

PV array 7 and Lake Road

Receptor type: Route

No glare found

PV array 7 and West Somerset Road

Receptor type: Route

No glare found

PV array 7 and OP 1

Receptor type: Observation Point
No glare found

PV array 7 and OP 2

Receptor type: Observation Point
No glare found

PV array 7 and OP 3

Receptor type: Observation Point
No glare found

PV array 7 and OP 4

Receptor type: Observation Point
No glare found

PV array 7 and OP 5

Receptor type: Observation Point
No glare found

PV array 7 and OP 6

Receptor type: Observation Point
No glare found

PV array 7 and OP 7

Receptor type: Observation Point
No glare found

PV array 7 and OP 8

Receptor type: Observation Point
No glare found

PV array 7 and OP 9

Receptor type: Observation Point
No glare found

PV array 7 and OP 10

Receptor type: Observation Point
No glare found

PV array 7 and OP 11

Receptor type: Observation Point
No glare found

PV array 7 and OP 12

Receptor type: Observation Point
No glare found

PV array 7 and OP 13

Receptor type: Observation Point
No glare found

PV array 7 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 8 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 8 and Haight Road

Receptor type: Route

No glare found

PV array 8 and Hartland Road

Receptor type: Route

No glare found

PV array 8 and Hess Road

Receptor type: Route

No glare found

PV array 8 and Hosmer Road

Receptor type: Route

No glare found

PV array 8 and Lake Road

Receptor type: Route

No glare found

PV array 8 and West Somerset Road

Receptor type: Route

No glare found

PV array 8 and OP 1

Receptor type: Observation Point
No glare found

PV array 8 and OP 2

Receptor type: Observation Point
No glare found

PV array 8 and OP 3

Receptor type: Observation Point
No glare found

PV array 8 and OP 4

Receptor type: Observation Point
No glare found

PV array 8 and OP 5

Receptor type: Observation Point
No glare found

PV array 8 and OP 6

Receptor type: Observation Point
No glare found

PV array 8 and OP 7

Receptor type: Observation Point
No glare found

PV array 8 and OP 8

Receptor type: Observation Point
No glare found

PV array 8 and OP 9

Receptor type: Observation Point
No glare found

PV array 8 and OP 10

Receptor type: Observation Point
No glare found

PV array 8 and OP 11

Receptor type: Observation Point
No glare found

PV array 8 and OP 12

Receptor type: Observation Point
No glare found

PV array 8 and OP 13

Receptor type: Observation Point
No glare found

PV array 8 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 9 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 9 and Haight Road

Receptor type: Route

No glare found

PV array 9 and Hartland Road

Receptor type: Route

No glare found

PV array 9 and Hess Road

Receptor type: Route

No glare found

PV array 9 and Hosmer Road

Receptor type: Route

No glare found

PV array 9 and Lake Road

Receptor type: Route

No glare found

PV array 9 and West Somerset Road

Receptor type: Route

No glare found

PV array 9 and OP 1

Receptor type: Observation Point
No glare found

PV array 9 and OP 2

Receptor type: Observation Point
No glare found

PV array 9 and OP 3

Receptor type: Observation Point
No glare found

PV array 9 and OP 4

Receptor type: Observation Point
No glare found

PV array 9 and OP 5

Receptor type: Observation Point
No glare found

PV array 9 and OP 6

Receptor type: Observation Point
No glare found

PV array 9 and OP 7

Receptor type: Observation Point
No glare found

PV array 9 and OP 8

Receptor type: Observation Point
No glare found

PV array 9 and OP 9

Receptor type: Observation Point
No glare found

PV array 9 and OP 10

Receptor type: Observation Point
No glare found

PV array 9 and OP 11

Receptor type: Observation Point
No glare found

PV array 9 and OP 12

Receptor type: Observation Point
No glare found

PV array 9 and OP 13

Receptor type: Observation Point
No glare found

PV array 9 and OP 14

Receptor type: Observation Point
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

FORGESOLAR GLARE ANALYSIS

Project: **Somerset Solar**

Proposed 125 MW solar project located in Somerset NY

Site configuration: **Analysis 4: Fixed Tilt Panels- Second Story and Tractor-Trailer View**

Client: AES

Created 26 Feb, 2023
Updated 22 Mar, 2023
Time-step 1 minute
Timezone offset UTC-5
Site ID 85197.12807
Category 10 MW to 100 MW
DNI peaks at 1,000.0 W/m^2
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

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 16	20.0	180.0	17	0.3	0	0.0	-
PV array 17	20.0	180.0	344	5.7	0	0.0	-
PV array 18	20.0	180.0	0	0.0	0	0.0	-
PV array 19	20.0	180.0	604	10.1	0	0.0	-
PV array 20	20.0	180.0	0	0.0	0	0.0	-
PV array 21	20.0	180.0	915	15.2	0	0.0	-
PV array 22	20.0	180.0	0	0.0	0	0.0	-
PV array 23	20.0	180.0	0	0.0	0	0.0	-
PV array 24	20.0	180.0	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
West Somerset Road	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	5	0.1	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	1,803	30.1	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	72	1.2	0	0.0
OP 14	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 16
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	43.353683	-78.583514	365.90	4.00	369.90
2	43.353103	-78.583167	373.20	4.00	377.20
3	43.352603	-78.583158	369.80	4.00	373.80
4	43.352606	-78.582353	370.90	4.00	374.90
5	43.353158	-78.582411	371.30	4.00	375.30
6	43.353564	-78.582583	371.90	4.00	375.90
7	43.353700	-78.583097	370.30	4.00	374.30

Name: PV array 17
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	43.354456	-78.582944	379.10	4.00	383.10
2	43.353675	-78.582361	377.30	4.00	381.30
3	43.352603	-78.582147	367.00	4.00	371.00
4	43.352608	-78.581411	340.80	4.00	344.80
5	43.353767	-78.581628	346.80	4.00	350.80
6	43.354500	-78.582192	347.90	4.00	351.90

Name: PV array 18
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	43.353485	-78.585889	314.40	4.00	318.40
2	43.353433	-78.585889	315.20	4.00	319.20
3	43.353433	-78.584769	318.00	4.00	322.00
4	43.353499	-78.584766	317.70	4.00	321.70

Name: PV array 19
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	43.352325	-78.583285	340.10	4.00	344.10
2	43.351756	-78.583259	327.60	4.00	331.60
3	43.351756	-78.580859	314.00	4.00	318.00
4	43.351987	-78.580863	314.40	4.00	318.40
5	43.352017	-78.581102	316.30	4.00	320.30
6	43.352064	-78.581428	319.90	4.00	323.90
7	43.352274	-78.582139	333.20	4.00	337.20

Name: PV array 20
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	43.354403	-78.584472	321.20	4.00	325.20
2	43.354375	-78.585238	321.10	4.00	325.10
3	43.354153	-78.585292	320.20	4.00	324.20
4	43.353939	-78.585492	320.00	4.00	324.00
5	43.353517	-78.585592	316.30	4.00	320.30
6	43.353517	-78.584861	319.00	4.00	323.00
7	43.353917	-78.584739	321.00	4.00	325.00
8	43.354125	-78.584536	322.70	4.00	326.70

Name: PV array 21
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	43.351748	-78.582142	323.30	4.00	327.30
2	43.351749	-78.582881	325.90	4.00	329.90
3	43.351750	-78.583261	327.60	4.00	331.60
4	43.351747	-78.583783	319.50	4.00	323.50
5	43.351489	-78.584006	318.90	4.00	322.90
6	43.351011	-78.584008	314.10	4.00	318.10
7	43.351000	-78.580803	309.00	4.00	313.00
8	43.351746	-78.580858	314.00	4.00	318.00
9	43.351744	-78.581067	314.80	4.00	318.80
10	43.351746	-78.581370	316.40	4.00	320.40

Name: PV array 22
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	43.357567	-78.596078	294.60	4.00	298.60
2	43.356864	-78.596711	298.70	4.00	302.70
3	43.356583	-78.595961	296.90	4.00	300.90
4	43.356581	-78.595572	297.30	4.00	301.30
5	43.357417	-78.594958	295.70	4.00	299.70
6	43.357586	-78.595381	296.00	4.00	300.00

Name: PV array 23
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	43.356644	-78.594286	289.50	4.00	293.50
2	43.356189	-78.595136	292.70	4.00	296.70
3	43.355819	-78.594844	290.70	4.00	294.70
4	43.355806	-78.592644	292.10	4.00	296.10
5	43.356114	-78.592397	304.40	4.00	308.40
6	43.356408	-78.592522	360.30	4.00	364.30
7	43.356678	-78.593206	360.40	4.00	364.40

Name: PV array 24
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	43.355848	-78.597129	294.00	4.00	298.00
2	43.355926	-78.598621	293.10	4.00	297.10
3	43.355442	-78.601796	291.60	4.00	295.60
4	43.355048	-78.605348	297.40	4.00	301.40
5	43.353332	-78.604983	298.50	4.00	302.50
6	43.352778	-78.603760	294.60	4.00	298.60
7	43.353773	-78.598320	295.50	4.00	299.50
8	43.355395	-78.597054	292.40	4.00	296.40

Route Receptors

Name: Haight Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.338322	-78.603224	299.40	9.00	308.40
2	43.337885	-78.590307	305.70	9.00	314.70
3	43.337588	-78.577153	309.20	9.00	318.20

Name: Hartland Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.360586	-78.575338	300.20	9.00	309.20
2	43.354104	-78.575252	296.50	9.00	305.50
3	43.347683	-78.575123	300.70	9.00	309.70
4	43.342963	-78.575080	304.50	9.00	313.50
5	43.335378	-78.575026	317.80	9.00	326.80

Name: Hess Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.346026	-78.649776	290.00	9.00	299.00
2	43.339815	-78.649636	308.10	9.00	317.10
3	43.332542	-78.649336	331.00	9.00	340.00

Name: Hosmer Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.348114	-78.604576	296.50	9.00	305.50
2	43.341353	-78.604737	301.30	9.00	310.30
3	43.331739	-78.605038	310.50	9.00	319.50

Name: Lake Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.349064	-78.628713	305.20	9.00	314.20
2	43.349033	-78.614551	299.90	9.00	308.90
3	43.348892	-78.602664	296.50	9.00	305.50
4	43.348619	-78.589360	296.90	9.00	305.90
5	43.348474	-78.579604	302.60	9.00	311.60

Name: West Somerset Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.327738	-78.644061	326.20	9.00	335.20
2	43.327715	-78.635327	322.60	9.00	331.60
3	43.327594	-78.619878	316.20	9.00	325.20

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.349443	-78.622970	302.70	16.00
OP 2	2	43.344999	-78.575574	301.60	16.00
OP 3	3	43.348732	-78.610493	297.60	16.00
OP 4	4	43.338599	-78.603221	301.90	16.00
OP 5	5	43.328082	-78.625908	319.00	16.00
OP 6	6	43.356237	-78.635125	277.60	16.00
OP 7	7	43.362499	-78.568200	303.10	16.00
OP 8	8	43.336269	-78.573222	317.70	16.00
OP 9	9	43.349026	-78.556088	299.30	16.00
OP 10	10	43.337457	-78.583344	306.40	16.00
OP 11	11	43.348497	-78.598519	296.10	16.00
OP 12	12	43.327588	-78.595706	339.70	16.00
OP 13	13	43.334412	-78.649973	330.30	16.00
OP 14	14	43.327261	-78.554950	328.10	16.00

Obstruction Components

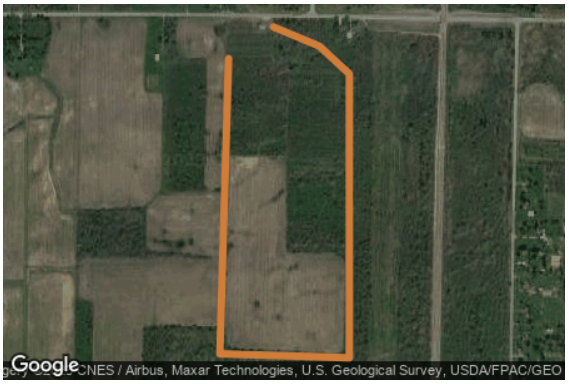
Name: Obstruction 1
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.355550	-78.585920	291.43
2	43.352970	-78.589250	334.36
3	43.352380	-78.593610	293.26
4	43.349400	-78.598880	296.28
5	43.349130	-78.598480	294.46
6	43.348460	-78.575390	298.74
7	43.357430	-78.575490	292.78
8	43.357500	-78.579671	293.68
9	43.356450	-78.579760	314.80
10	43.356480	-78.584390	320.77

Name: Obstruction 10
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.344410	-78.599220	294.93
2	43.344050	-78.599780	295.59
3	43.343980	-78.600570	298.51
4	43.343960	-78.601860	296.58
5	43.345820	-78.601930	295.02
6	43.345970	-78.604420	295.91

Name: Obstruction 2
Top height: 30.0 ft

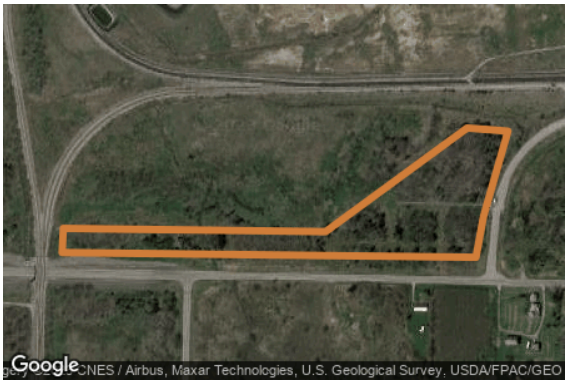


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348750	-78.612970	299.27
2	43.348270	-78.611390	299.02
3	43.347580	-78.610360	298.04
4	43.340510	-78.610360	366.51
5	43.340610	-78.614810	373.43
6	43.347960	-78.614510	300.63

Name: Obstruction 3
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349180	-78.619750	293.54
2	43.349160	-78.621890	302.36
3	43.349510	-78.622380	301.88
4	43.350040	-78.622590	299.87
5	43.350420	-78.622270	295.65
6	43.351000	-78.622570	294.04

Name: Obstruction 4
Top height: 30.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349200	-78.606730	296.95
2	43.349140	-78.599620	295.00
3	43.349650	-78.599490	297.47
4	43.350710	-78.599070	299.32
5	43.350750	-78.599770	306.07
6	43.349460	-78.602200	301.77
7	43.349500	-78.606710	296.41
8	43.349200	-78.606730	296.95

Name: Obstruction 5
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349350	-78.611280	299.00
2	43.349260	-78.607420	298.14
3	43.351410	-78.607800	300.28
4	43.351440	-78.610790	300.68
5	43.349350	-78.611280	299.00

Name: Obstruction 6
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.349340	-78.619460	294.73
2	43.349760	-78.619560	297.40
3	43.355180	-78.619520	280.59
4	43.359070	-78.619410	273.72

Name: Obstruction 7
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.588950	311.50
2	43.343200	-78.585820	350.56
3	43.343130	-78.582750	301.72
4	43.343030	-78.580050	299.89
5	43.345650	-78.580080	305.53
6	43.345770	-78.583060	298.52
7	43.347130	-78.583020	315.52
8	43.347050	-78.580230	336.29
9	43.347670	-78.580120	300.73
10	43.348250	-78.578510	300.57

Name: Obstruction 8
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.343000	-78.589050	309.98
2	43.344840	-78.588940	294.65
3	43.344900	-78.589950	296.31
4	43.345600	-78.590350	293.32
5	43.345660	-78.592310	299.70
6	43.342870	-78.592180	343.24
7	43.340900	-78.592350	369.50
8	43.340970	-78.594500	327.50
9	43.339440	-78.594470	298.37
10	43.339230	-78.592410	303.28

Name: Obstruction 9
Top height: 30.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	43.348670	-78.597710	293.35
2	43.347540	-78.597260	293.89
3	43.346880	-78.597230	293.46
4	43.346610	-78.596760	298.15
5	43.344670	-78.596850	318.73
6	43.344530	-78.599060	297.41
7	43.340390	-78.598930	317.40
8	43.340310	-78.596830	311.35
9	43.338250	-78.596890	304.43

Glare Analysis Results

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 16	20.0	180.0	17	0.3	0	0.0	-
PV array 17	20.0	180.0	344	5.7	0	0.0	-
PV array 18	20.0	180.0	0	0.0	0	0.0	-
PV array 19	20.0	180.0	604	10.1	0	0.0	-
PV array 20	20.0	180.0	0	0.0	0	0.0	-
PV array 21	20.0	180.0	915	15.2	0	0.0	-
PV array 22	20.0	180.0	0	0.0	0	0.0	-
PV array 23	20.0	180.0	0	0.0	0	0.0	-
PV array 24	20.0	180.0	0	0.0	0	0.0	-

Total annual 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
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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	5	0.1	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	1,803	30.1	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	72	1.2	0	0.0
OP 14	0	0.0	0	0.0

PV: PV array 16 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 13	17	0.3	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
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 16 and Haight Road

Receptor type: Route
No glare found

PV array 16 and Hartland Road

Receptor type: Route
No glare found

PV array 16 and Hess Road

Receptor type: Route
No glare found

PV array 16 and Hosmer Road

Receptor type: Route
No glare found

PV array 16 and Lake Road

Receptor type: Route
No glare found

PV array 16 and West Somerset Road

Receptor type: Route

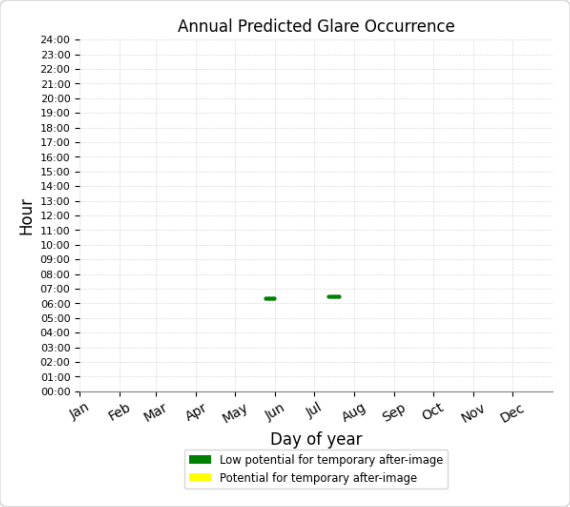
No glare found

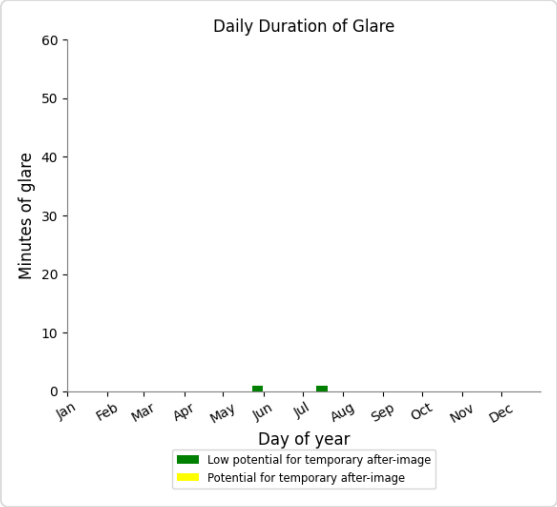
PV array 16 and OP 13

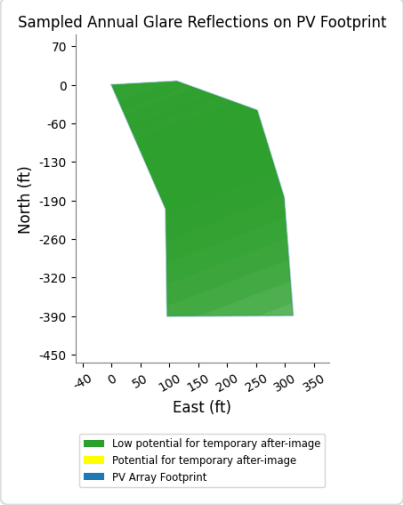
Receptor type: Observation Point

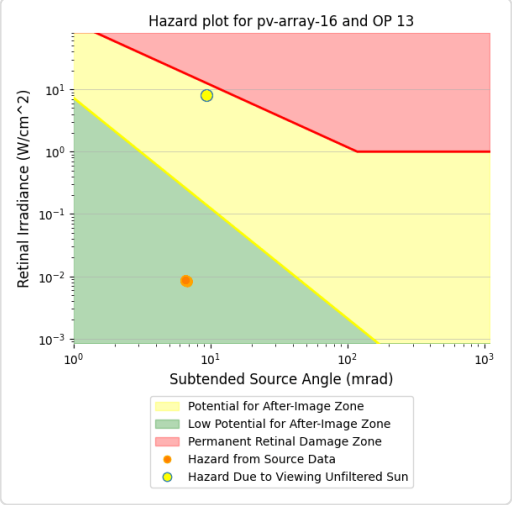
0 minutes of yellow glare

17 minutes of green glare









PV array 16 and OP 1

Receptor type: Observation Point

No glare found

PV array 16 and OP 2

Receptor type: Observation Point

No glare found

PV array 16 and OP 3

Receptor type: Observation Point

No glare found

PV array 16 and OP 4

Receptor type: Observation Point

No glare found

PV array 16 and OP 5

Receptor type: Observation Point
No glare found

PV array 16 and OP 6

Receptor type: Observation Point
No glare found

PV array 16 and OP 7

Receptor type: Observation Point
No glare found

PV array 16 and OP 8

Receptor type: Observation Point
No glare found

PV array 16 and OP 9

Receptor type: Observation Point
No glare found

PV array 16 and OP 10

Receptor type: Observation Point
No glare found

PV array 16 and OP 11

Receptor type: Observation Point
No glare found

PV array 16 and OP 12

Receptor type: Observation Point
No glare found

PV array 16 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 17 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 6	5	0.1	0	0.0
OP 9	312	5.2	0	0.0
OP 13	27	0.5	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 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 17 and Haight Road

Receptor type: Route

No glare found

PV array 17 and Hartland Road

Receptor type: Route

No glare found

PV array 17 and Hess Road

Receptor type: Route

No glare found

PV array 17 and Hosmer Road

Receptor type: Route

No glare found

PV array 17 and Lake Road

Receptor type: Route

No glare found

PV array 17 and West Somerset Road

Receptor type: Route

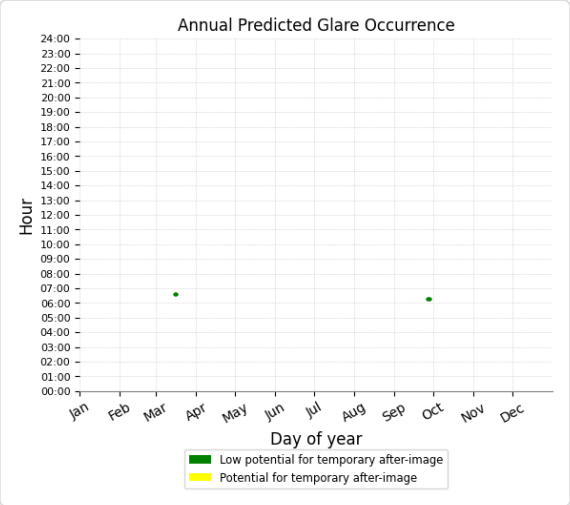
No glare found

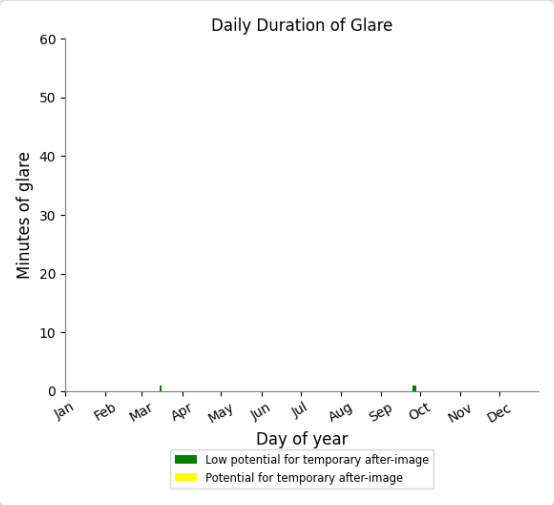
PV array 17 and OP 6

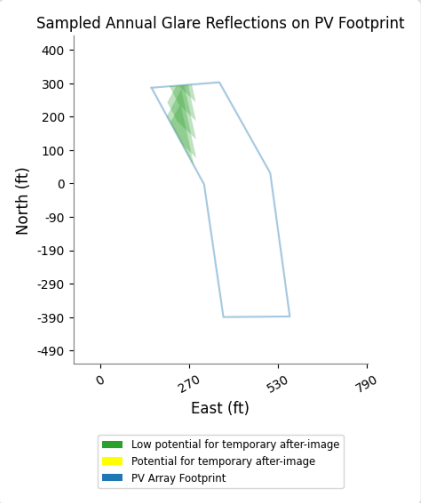
Receptor type: Observation Point

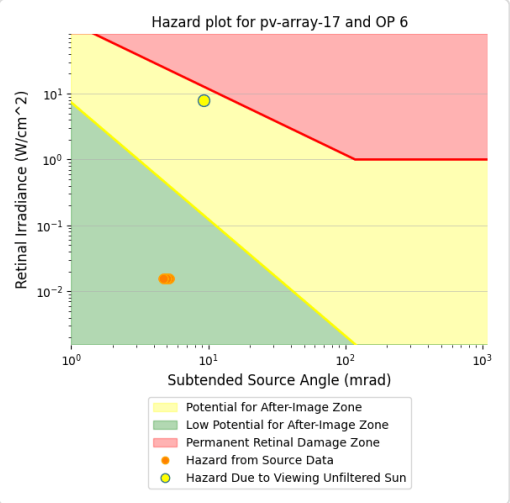
0 minutes of yellow glare

5 minutes of green glare



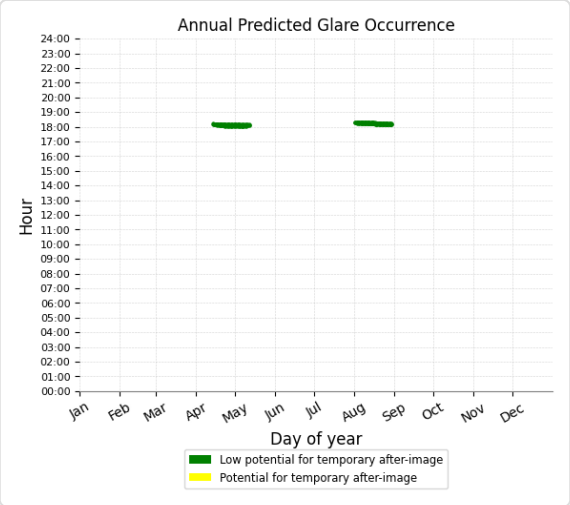


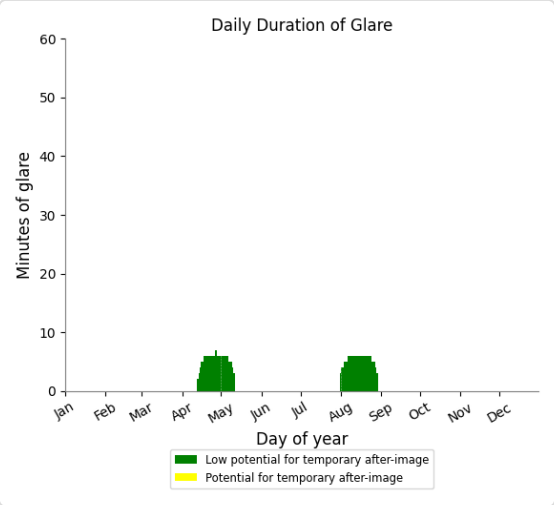


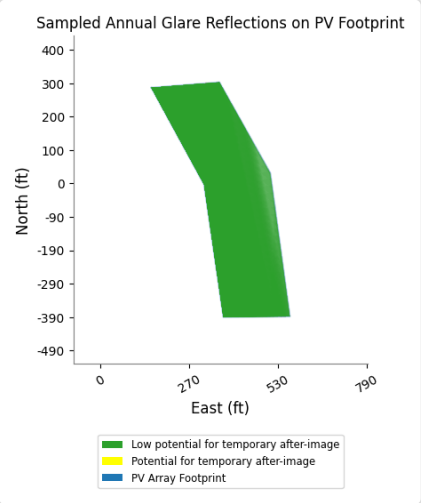


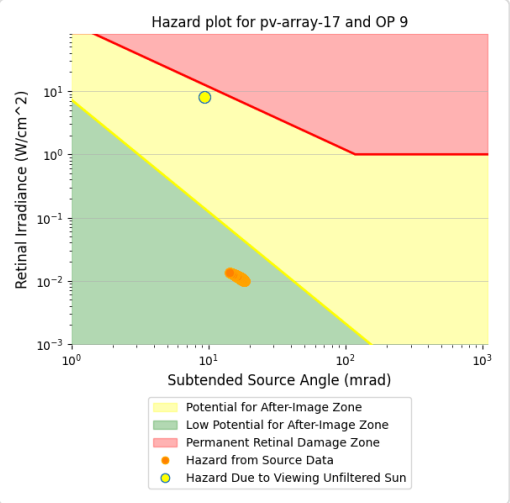
PV array 17 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
312 minutes of green glare



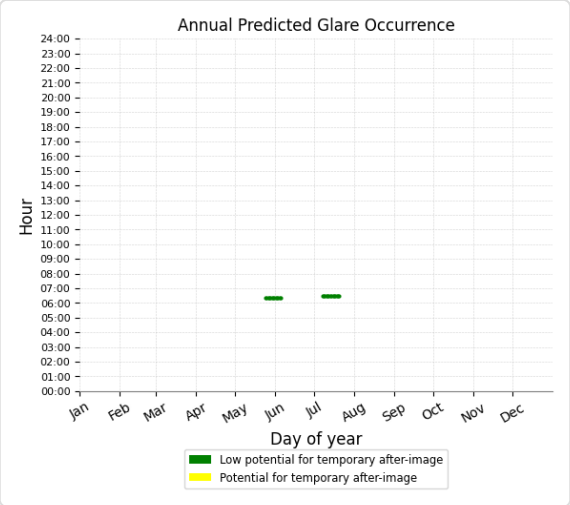


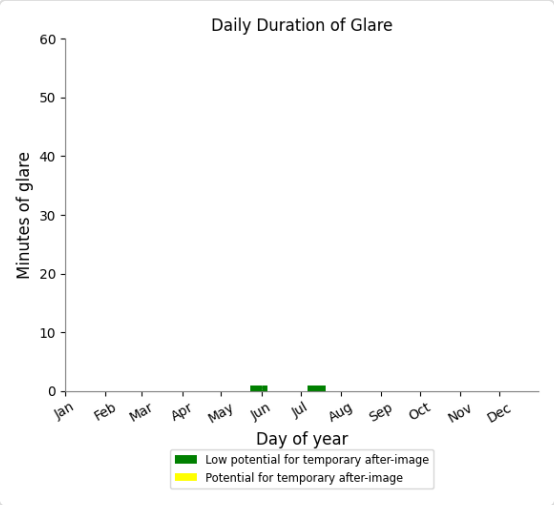


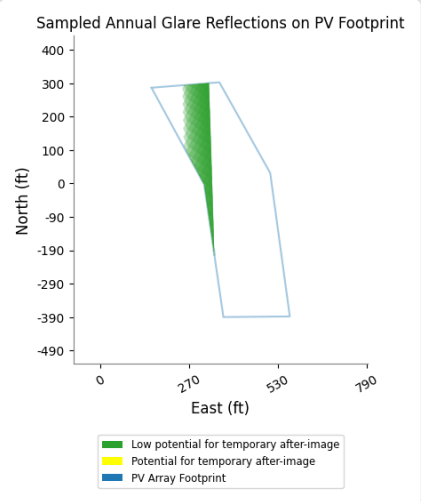


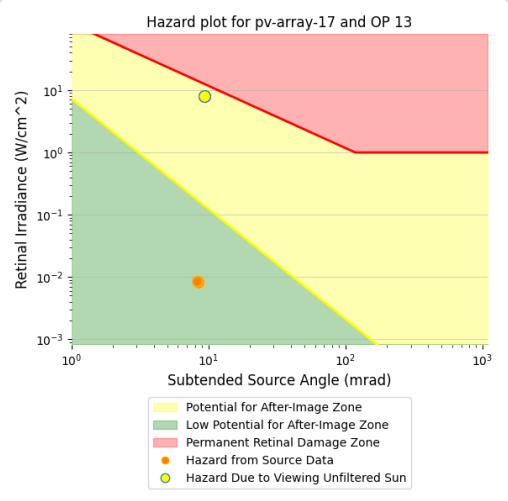
PV array 17 and OP 13

Receptor type: Observation Point
0 minutes of yellow glare
27 minutes of green glare









PV array 17 and OP 1

Receptor type: Observation Point
No glare found

PV array 17 and OP 2

Receptor type: Observation Point
No glare found

PV array 17 and OP 3

Receptor type: Observation Point
No glare found

PV array 17 and OP 4

Receptor type: Observation Point
No glare found

PV array 17 and OP 5

Receptor type: Observation Point
No glare found

PV array 17 and OP 7

Receptor type: Observation Point
No glare found

PV array 17 and OP 8

Receptor type: Observation Point
No glare found

PV array 17 and OP 10

Receptor type: Observation Point
No glare found

PV array 17 and OP 11

Receptor type: Observation Point
No glare found

PV array 17 and OP 12

Receptor type: Observation Point
No glare found

PV array 17 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 18 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 18 and Haight Road

Receptor type: Route
No glare found

PV array 18 and Hartland Road

Receptor type: Route
No glare found

PV array 18 and Hess Road

Receptor type: Route
No glare found

PV array 18 and Hosmer Road

Receptor type: Route
No glare found

PV array 18 and Lake Road

Receptor type: Route
No glare found

PV array 18 and West Somerset Road

Receptor type: Route
No glare found

PV array 18 and OP 1

Receptor type: Observation Point
No glare found

PV array 18 and OP 2

Receptor type: Observation Point
No glare found

PV array 18 and OP 3

Receptor type: Observation Point
No glare found

PV array 18 and OP 4

Receptor type: Observation Point
No glare found

PV array 18 and OP 5

Receptor type: Observation Point
No glare found

PV array 18 and OP 6

Receptor type: Observation Point
No glare found

PV array 18 and OP 7

Receptor type: Observation Point
No glare found

PV array 18 and OP 8

Receptor type: Observation Point
No glare found

PV array 18 and OP 9

Receptor type: Observation Point
No glare found

PV array 18 and OP 10

Receptor type: Observation Point
No glare found

PV array 18 and OP 11

Receptor type: Observation Point
No glare found

PV array 18 and OP 12

Receptor type: Observation Point
No glare found

PV array 18 and OP 13

Receptor type: Observation Point
No glare found

PV array 18 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 19 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 9	576	9.6	0	0.0
OP 13	28	0.5	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 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 19 and Haight Road

Receptor type: Route

No glare found

PV array 19 and Hartland Road

Receptor type: Route

No glare found

PV array 19 and Hess Road

Receptor type: Route

No glare found

PV array 19 and Hosmer Road

Receptor type: Route

No glare found

PV array 19 and Lake Road

Receptor type: Route

No glare found

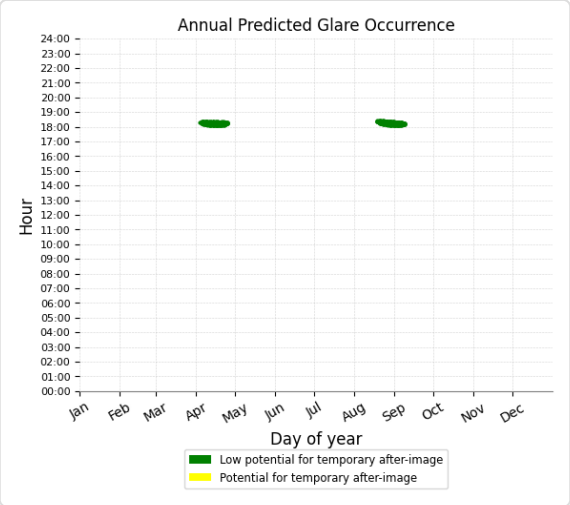
PV array 19 and West Somerset Road

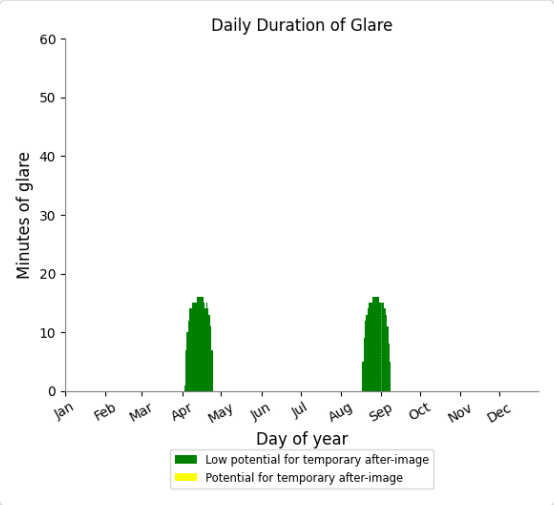
Receptor type: Route

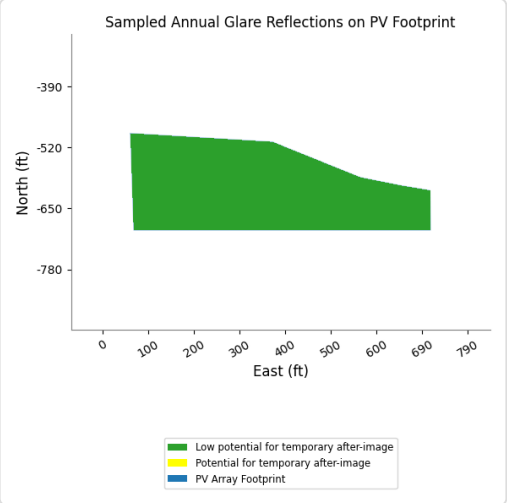
No glare found

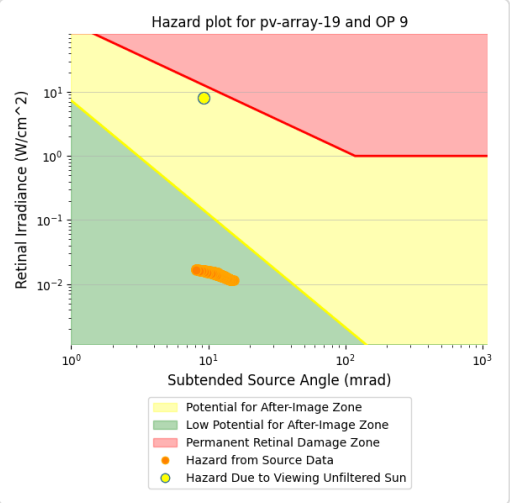
PV array 19 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
576 minutes of green glare



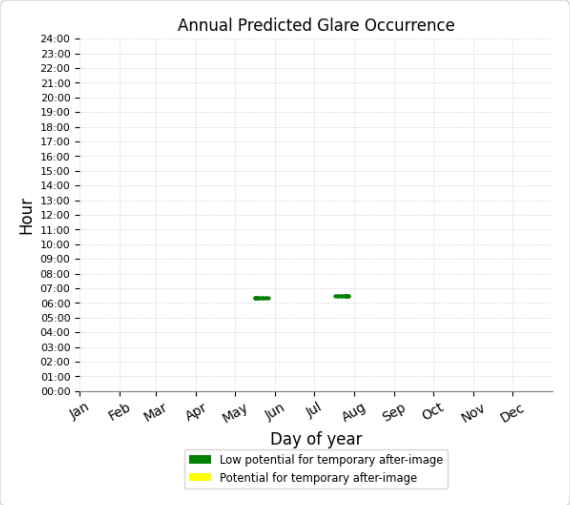


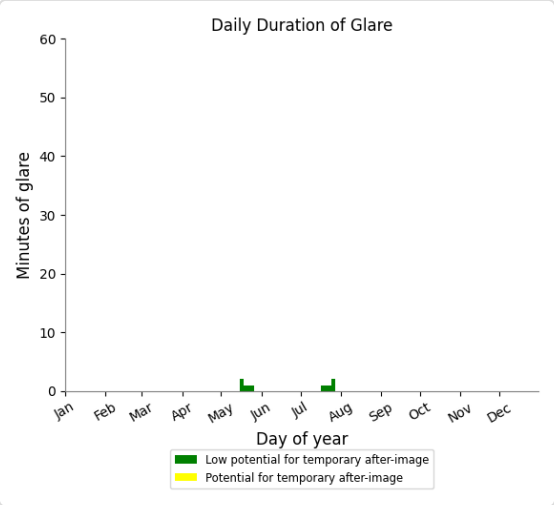


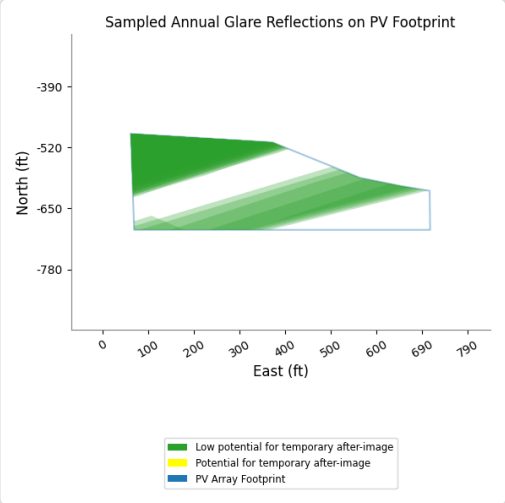


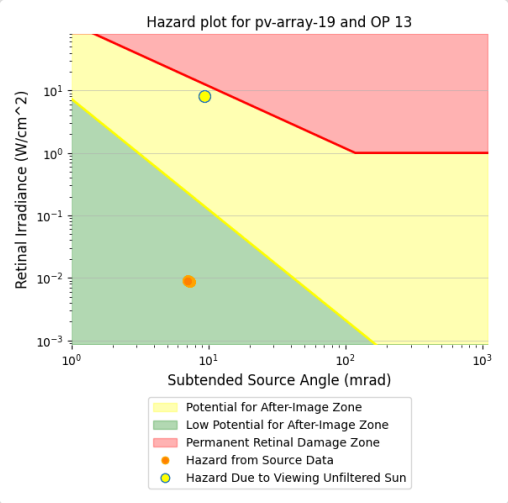
PV array 19 and OP 13

Receptor type: Observation Point
0 minutes of yellow glare
28 minutes of green glare









PV array 19 and OP 1

Receptor type: Observation Point
No glare found

PV array 19 and OP 2

Receptor type: Observation Point
No glare found

PV array 19 and OP 3

Receptor type: Observation Point
No glare found

PV array 19 and OP 4

Receptor type: Observation Point
No glare found

PV array 19 and OP 5

Receptor type: Observation Point
No glare found

PV array 19 and OP 6

Receptor type: Observation Point
No glare found

PV array 19 and OP 7

Receptor type: Observation Point
No glare found

PV array 19 and OP 8

Receptor type: Observation Point
No glare found

PV array 19 and OP 10

Receptor type: Observation Point
No glare found

PV array 19 and OP 11

Receptor type: Observation Point
No glare found

PV array 19 and OP 12

Receptor type: Observation Point
No glare found

PV array 19 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 20 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 20 and Haight Road

Receptor type: Route
No glare found

PV array 20 and Hartland Road

Receptor type: Route
No glare found

PV array 20 and Hess Road

Receptor type: Route
No glare found

PV array 20 and Hosmer Road

Receptor type: Route
No glare found

PV array 20 and Lake Road

Receptor type: Route
No glare found

PV array 20 and West Somerset Road

Receptor type: Route
No glare found

PV array 20 and OP 1

Receptor type: Observation Point
No glare found

PV array 20 and OP 2

Receptor type: Observation Point
No glare found

PV array 20 and OP 3

Receptor type: Observation Point
No glare found

PV array 20 and OP 4

Receptor type: Observation Point
No glare found

PV array 20 and OP 5

Receptor type: Observation Point
No glare found

PV array 20 and OP 6

Receptor type: Observation Point
No glare found

PV array 20 and OP 7

Receptor type: Observation Point
No glare found

PV array 20 and OP 8

Receptor type: Observation Point
No glare found

PV array 20 and OP 9

Receptor type: Observation Point
No glare found

PV array 20 and OP 10

Receptor type: Observation Point
No glare found

PV array 20 and OP 11

Receptor type: Observation Point
No glare found

PV array 20 and OP 12

Receptor type: Observation Point
No glare found

PV array 20 and OP 13

Receptor type: Observation Point
No glare found

PV array 20 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 21 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	0	0.0	0	0.0
OP 9	915	15.2	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 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 21 and Haight Road

Receptor type: Route

No glare found

PV array 21 and Hartland Road

Receptor type: Route

No glare found

PV array 21 and Hess Road

Receptor type: Route

No glare found

PV array 21 and Hosmer Road

Receptor type: Route

No glare found

PV array 21 and Lake Road

Receptor type: Route

No glare found

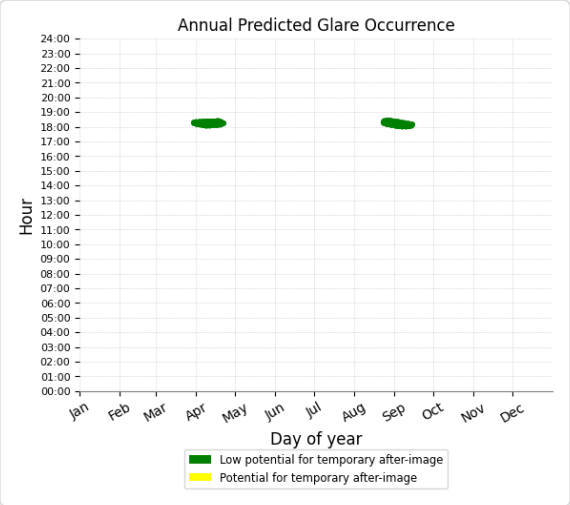
PV array 21 and West Somerset Road

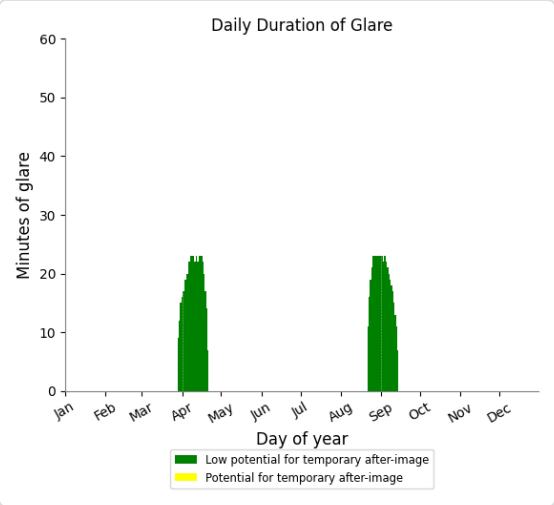
Receptor type: Route

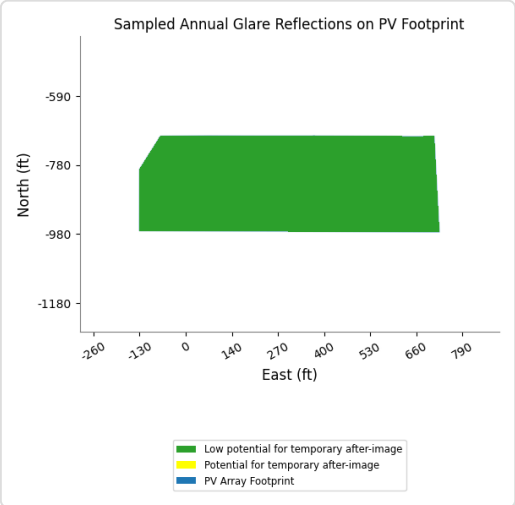
No glare found

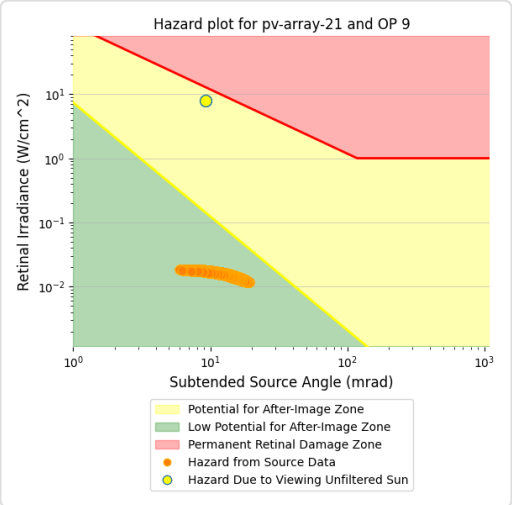
PV array 21 and OP 9

Receptor type: Observation Point
0 minutes of yellow glare
915 minutes of green glare









PV array 21 and OP 1

Receptor type: Observation Point
No glare found

PV array 21 and OP 2

Receptor type: Observation Point
No glare found

PV array 21 and OP 3

Receptor type: Observation Point
No glare found

PV array 21 and OP 4

Receptor type: Observation Point
No glare found

PV array 21 and OP 5

Receptor type: Observation Point
No glare found

PV array 21 and OP 6

Receptor type: Observation Point
No glare found

PV array 21 and OP 7

Receptor type: Observation Point
No glare found

PV array 21 and OP 8

Receptor type: Observation Point
No glare found

PV array 21 and OP 10

Receptor type: Observation Point
No glare found

PV array 21 and OP 11

Receptor type: Observation Point
No glare found

PV array 21 and OP 12

Receptor type: Observation Point
No glare found

PV array 21 and OP 13

Receptor type: Observation Point
No glare found

PV array 21 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 22 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 22 and Haight Road

Receptor type: Route
No glare found

PV array 22 and Hartland Road

Receptor type: Route
No glare found

PV array 22 and Hess Road

Receptor type: Route
No glare found

PV array 22 and Hosmer Road

Receptor type: Route
No glare found

PV array 22 and Lake Road

Receptor type: Route
No glare found

PV array 22 and West Somerset Road

Receptor type: Route
No glare found

PV array 22 and OP 1

Receptor type: Observation Point
No glare found

PV array 22 and OP 2

Receptor type: Observation Point
No glare found

PV array 22 and OP 3

Receptor type: Observation Point
No glare found

PV array 22 and OP 4

Receptor type: Observation Point
No glare found

PV array 22 and OP 5

Receptor type: Observation Point
No glare found

PV array 22 and OP 6

Receptor type: Observation Point
No glare found

PV array 22 and OP 7

Receptor type: Observation Point
No glare found

PV array 22 and OP 8

Receptor type: Observation Point
No glare found

PV array 22 and OP 9

Receptor type: Observation Point
No glare found

PV array 22 and OP 10

Receptor type: Observation Point
No glare found

PV array 22 and OP 11

Receptor type: Observation Point
No glare found

PV array 22 and OP 12

Receptor type: Observation Point
No glare found

PV array 22 and OP 13

Receptor type: Observation Point
No glare found

PV array 22 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 23 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 23 and Haight Road

Receptor type: Route
No glare found

PV array 23 and Hartland Road

Receptor type: Route
No glare found

PV array 23 and Hess Road

Receptor type: Route
No glare found

PV array 23 and Hosmer Road

Receptor type: Route
No glare found

PV array 23 and Lake Road

Receptor type: Route
No glare found

PV array 23 and West Somerset Road

Receptor type: Route
No glare found

PV array 23 and OP 1

Receptor type: Observation Point
No glare found

PV array 23 and OP 2

Receptor type: Observation Point
No glare found

PV array 23 and OP 3

Receptor type: Observation Point
No glare found

PV array 23 and OP 4

Receptor type: Observation Point
No glare found

PV array 23 and OP 5

Receptor type: Observation Point
No glare found

PV array 23 and OP 6

Receptor type: Observation Point
No glare found

PV array 23 and OP 7

Receptor type: Observation Point
No glare found

PV array 23 and OP 8

Receptor type: Observation Point
No glare found

PV array 23 and OP 9

Receptor type: Observation Point
No glare found

PV array 23 and OP 10

Receptor type: Observation Point
No glare found

PV array 23 and OP 11

Receptor type: Observation Point
No glare found

PV array 23 and OP 12

Receptor type: Observation Point
No glare found

PV array 23 and OP 13

Receptor type: Observation Point
No glare found

PV array 23 and OP 14

Receptor type: Observation Point
No glare found

PV: PV array 24 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Haight Road	0	0.0	0	0.0
Hartland Road	0	0.0	0	0.0
Hess Road	0	0.0	0	0.0
Hosmer Road	0	0.0	0	0.0
Lake Road	0	0.0	0	0.0
West Somerset Road	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
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0

PV array 24 and Haight Road

Receptor type: Route
No glare found

PV array 24 and Hartland Road

Receptor type: Route
No glare found

PV array 24 and Hess Road

Receptor type: Route
No glare found

PV array 24 and Hosmer Road

Receptor type: Route
No glare found

PV array 24 and Lake Road

Receptor type: Route
No glare found

PV array 24 and West Somerset Road

Receptor type: Route
No glare found

PV array 24 and OP 1

Receptor type: Observation Point
No glare found

PV array 24 and OP 2

Receptor type: Observation Point
No glare found

PV array 24 and OP 3

Receptor type: Observation Point
No glare found

PV array 24 and OP 4

Receptor type: Observation Point
No glare found

PV array 24 and OP 5

Receptor type: Observation Point
No glare found

PV array 24 and OP 6

Receptor type: Observation Point
No glare found

PV array 24 and OP 7

Receptor type: Observation Point
No glare found

PV array 24 and OP 8

Receptor type: Observation Point
No glare found

PV array 24 and OP 9

Receptor type: Observation Point
No glare found

PV array 24 and OP 10

Receptor type: Observation Point
No glare found

PV array 24 and OP 11

Receptor type: Observation Point
No glare found

PV array 24 and OP 12

Receptor type: Observation Point
No glare found

PV array 24 and OP 13

Receptor type: Observation Point
No glare found

PV array 24 and OP 14

Receptor type: Observation Point
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

Attachment C. FAA Notice Criteria Tool Results

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

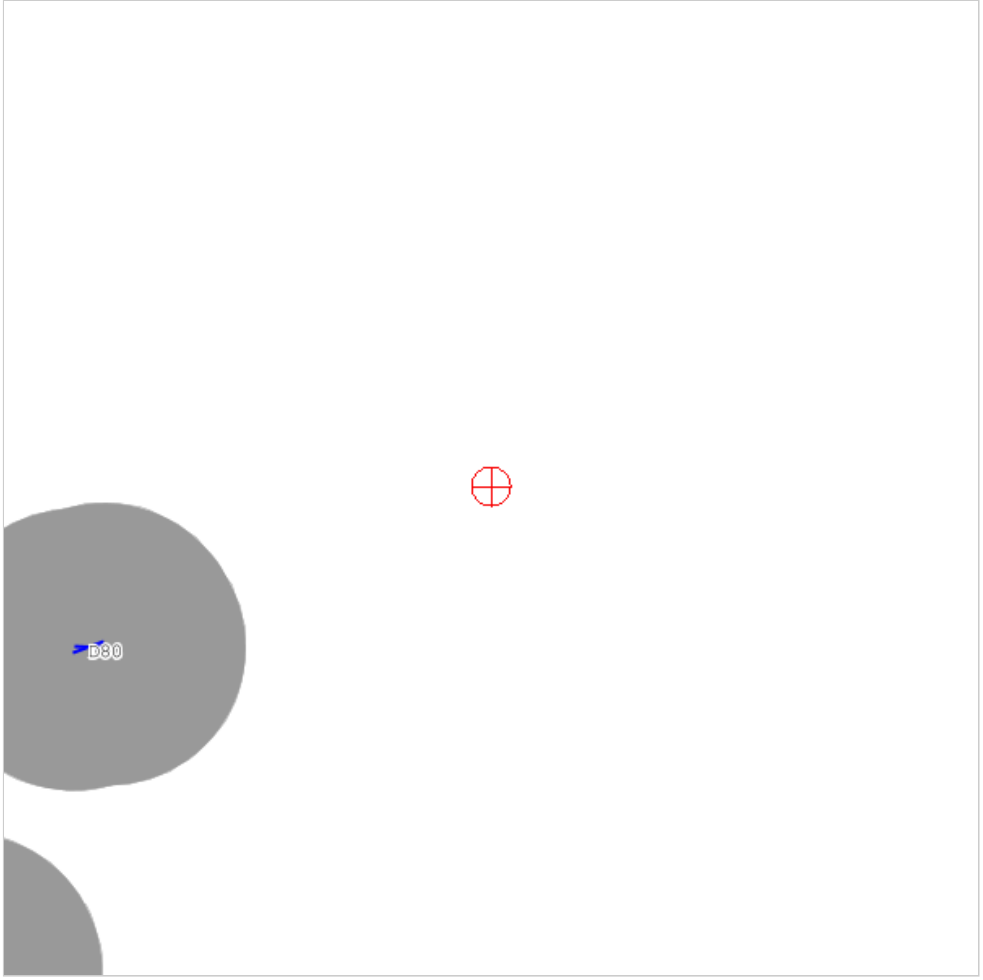
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	43 Deg 21 M 12.45 S N
Longitude:	78 Deg 36 M 57.47 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	290 (nearest foot)
Structure Height :	14 (nearest foot)
Traverseway:	No Traverseway (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.


D80

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	43 Deg 21 M 10.03 S N
Longitude:	78 Deg 35 M 39.63 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	294 (nearest foot)
Structure Height :	14 (nearest foot)
Traverseway:	No Traverseway (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.