Visual Resources Report

Big Rock 2 Cluster Solar and Storage Project, Imperial County, California

MARCH 2025

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Table of Contents

SECTION **PAGE NO.**

1 Introduction 1

2 Project Background 3
- 2.1 Project Location 3
- 2.2 Project Characteristics 3
  - 2.2.1 PV Module Configuration 3
  - 2.2.2 Collection, Inverter and Transformer Systems 4
  - 2.2.3 Battery Energy Storage System 4
  - 2.2.4 Substation(s) 4
  - 2.2.5 Transmission Line and Interconnection 5
  - 2.2.6 Operations and Maintenance (O&M) Building 5
  - 2.2.7 Site Security and Fencing 6
  - 2.2.8 Lighting 6
  - 2.2.9 Project Construction 6
  - 2.2.10 Project Operation and Maintenance 8

3 Regulatory Setting 9
- 3.1 Federal 9
- 3.2 State 9
- 3.3 Local 10

4 Existing Conditions 11
- 4.1 Scenic Vistas 11
- 4.2 Project Site and Surrounding Area 11
- 4.3 Scenic Highways 12
- 4.4 Visual Character and Quality 12
  - 4.4.1 Key Observation Points 12
- 4.5 Light and Glare 14

5 Methods 15

6 Impact Analysis 17

7 Mitigation Measures 23

8 References 25

FIGURES

Figure 1 Key Observation Points 27

Figure 2 KOP 1: Westbound Interstate 8 29
Figure 3 KOP 2: Eastbound Interstate 8 31
Figure 4 KOP 3: Southbound Derrick Road 33
Figure 5 KOP 4: Westbound Vaughn Road 35
Figure 6 KOP 5: Southbound Liebert Road 37
Figure 7 KOP 6: Eastbound Diehl Road 39

APPENDIX

A Glare Analysis Report

1 Introduction

Dudek completed a visual impact assessment (VIA) for the Big Rock 2 Cluster Solar and Storage Project (Project) located in Imperial County, California (Figure 1). This letter report was prepared by Josh Saunders, AICP, in accordance with state California Environmental Quality Act (CEQA) guidelines.

The purpose of this technical memorandum is to provide a VIA that describes the existing environmental and regulatory setting and describes the potential impacts to aesthetic resources resulting from development of the Project in Imperial County, California. For purpose of this technical memorandum, aesthetic resources include resources considered in the aesthetics thresholds of Appendix G of the CEQA Guidelines (i.e., scenic vista, scenic resources within a state Scenic Highway, existing visual quality and character, and day and nighttime views).

90FI 8me LLC (Applicant) is seeking approval Conditional Use Permits (CUPs) for construction and operation of a utility-scale photovoltaic (PV) solar energy generation and Battery Energy Storage System (BESS) facility known as the Big Rock 2 Cluster Solar and Storage Project (Big Rock 2 or the Project). The Project would include up to a 500-megawatt alternating current (MWac) PV solar power capacity, and the associated BESS would have up to a 500 MWac power capacity. Energy generated by the Project would be collected using up to 66 kilovolt (kV) collector lines which could run overhead and/or underground to a dedicated Project substation. A 230kV overhead generation intertie (gen-tie) transmission line would then link the Project substation to the planned Liebert Switchyard, which will be connected via an overhead 230kV gen-tie line to the existing San Diego Gas and Electric (SDG&E) Imperial Valley Substation. The collection line corridors utilized to connect the various building blocks are within the Project study area. (Figure 1).

The Project may include an operations & maintenance (O&M) building and/or transmission facilities, as necessary and is anticipated to require up to fifteen (15) full-time employees to operate and maintain the facility when constructed areas (a total of 15 employees split between daytime and nighttime shifts).

For purpose of this technical memorandum, aesthetic resources include resources considered in the aesthetics thresholds of Appendix G of the CEQA Guidelines. Specifically, this analysis inventories existing resources and evaluates impacts to scenic vistas, scenic resources within a state Scenic Highway, existing visual quality and character, and day and nighttime views. Regarding visual quality and character, the Imperial County General Plan Conservation and Open Space Element strives to protect and enhance the natural beauty of the desert and mountain landscape and as such, construction and operation of the Project is evaluated through the context of potential effects to the desert and mountain landscape of Imperial County.

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2 Project Background

2.1 Project Location

The proposed Project would be in unincorporated Imperial County, immediately south of Interstate 8, approximately one mile southwest of the town of Seeley, California, and approximately six miles north of the United States International Border with Mexico. The project comprises approximately 1,849 acres on 24 private parcels for proposed development of PV solar, BESS, and other associated infrastructure. The Project parcels are located west of Drew Road, east and north of Mandrapa Road, and south of Interstate 8 (Figure 1, Project Location).

2.2 Project Characteristics

PV solar energy generation and BESS facility within a 1,849-acre footprint, comprised of up to 500 MW ac of PV solar and up to 500 MW ac of BESS. Power generated by the Project would be collected using up to 66-kV collector lines which could run overhead and/or underground to a dedicated Project substation with a 230-kv gen-tie line linking the Project substation to the planned IID Liebert Switchyard, which will be connected to the SDG&E Imperial Valley substation via an overhead 230-kV transmission gen-tie line (Figure 2, KOP 1: Westbound Interstate 8). Note that this gen-tie line and interconnection to the Imperial Valley substation is a part of the applicants' approved and entitled Big Rock 1 BESS project, which is expected to be constructed and operational prior to the entitlement of the proposed Project.

In addition, and to avoid exposure of passing I-8 motorists to potential project-generated glare from single-axis tilt PV modules, the Project development footprint would be setback from the east-bound lanes of Interstate 8 along the northern project boundary, between approximately 1,100 feet to up to 2,000 feet, depending upon existing lot-lines on the parcels being developed.

2.2.1 PV Module Configuration

The Project would use PV panels on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, they would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 15 feet in height (H), depending on the mounting system used, panels are expected to remain between six (6) and eight (8) feet in height.

The solar panel array would be arranged in groups called blocks, with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to alternating current ("AC") at the inverter stations.

Each PV module would be placed on a fixed-tilt or tracker mounting structure. The foundations for the mounting structures can extend up to 10 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. A light-colored ground cover or palliative may be used to increase electricity production. Final solar panel layout and spacing would be optimized for the Project area characteristics and the desired energy production profile.

2.2.2 Collection, Inverter and Transformer Systems

DC energy is delivered from the PV panels via cable to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy which can be dispatched to the transmission system. PV Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 5-MW each, a unit transformer, and voltage switch gear. BESS units for the Project would be connected to bidirectional inverter stations, high-level control system(s), transformers, and ultimately the Project substation(s) bus bar via a series of overhead or underground electrical collector lines ranging from 66kV to 230kV. Utilizing these Project components, the DC onsite PV panel and battery energy would be converted to AC energy and dispatched to the regional transmission grid, and this process would be reversed to charge the batteries from electrical energy imported from the regional transmission grid for onsite energy storage. PV and BESS inverter stations are typically comprised of one or more inverter modules with a rated power of up to 10 MW each, and a unit transformer, and voltage switchgear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) and control system(s) are housed in cabinets. Depending on the vendor selected for the Project, the inverter stations may be located within an enclosed or canopied metal structure, typically a skid or concrete pad.

Overhead and/or underground collector lines may be bundled together as they approach the substation(s), sharing common poles or trenches. Collector lines would then connect to the Project substation bus bar before being stepped up to 230kV for transmission. The 66kV collector lines would be connected from the various PV parcels and the BESS system to the step-up project substation. The final location(s) of each component, height, and structure type(s) would be determined before the issuance of building permits for the Project by Imperial County.

2.2.3 Battery Energy Storage System

The Project will include one or more BESS, up to 500 MWac capacity and located at or near the Project substation(s)/switchyard(s), the inverter stations, or elsewhere onsite. BESS' consist of modular and scalable battery packs and battery control systems that conform to California and U.S. national safety standards. The BESS modules, which could include commercially available lithium or flow batteries, and typically consist of ISO standard all-weather containers (approximately 40 feet long x 8 feet wide x 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of a dedicated structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures vary depending on the application, supplier, and configuration chosen, as well as on off taker/power purchase agreement requirements for the Project.

The BESS would be in unmanned, remotely controlled containers that would be periodically inspected by Project personnel for maintenance purposes. The BESS would be designed to conform with Imperial County and national BESS fire standard NFPA 855 and/or other applicable national standards. The BESS would have all required UL9540A reports (or equivalent) and would be certified to UL9540 (or equivalent), if required. BESS' require additional components to be fully operational, and that allow the batteries to be connected to the regional transmission grid as discussed below.

2.2.4 Substation(s)

The proposed Project would have its own dedicated substation equipment located within the Project footprint. Dedicated equipment may incorporate several components, including high-voltage and auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, voltage switch

gear, transmission poles and racking, and bus bar(s) of various voltages for interconnection(s). The substation may also include telecommunications facilities, fiber optic communication cables, equipment, and associated structures for diverse path routing of communications. Substations typically occupy an area of up to approximately five (5) acres and are secured separately by a chain-link fence. The proposed Project substation location is shown in Figure 1, but as noted this proposed location is subject to change as the Project design progresses.

Substations typically include a small control building (approximately 500 square feet) standing approximately ten (10) feet tall. The building is either prefabricated concrete or steel housing with rooms for the voltage switch gear and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at an O&M building.

2.2.5 Transmission Line and Interconnection

The Project 230kV step-up substation would connect to the 230kV Liebert Switchyard, via one of the proposed gen-tie line alternatives (Figure 1). The Liebert Switchyard will have a direct connection to the existing SDG&E Imperial Valley Substation via an existing overhead 230kV gen-tie line. Overhead transmission conductors may be mounted on tubular steel poles up to 200 feet in height and would include associated insulator and hardware assemblies, the appropriate number of spans of conductor and optical ground wiring, and dead-end structures at both the

Project substation and the Liebert Switchyard. Portions (or all) of the gen-tie line may be undergrounded as necessary. The structure type(s), height, and final location(s) of each component would be determined before the issuance of building permits by Imperial County.

Alternative gen-tie routing(s) is depicted in Figure 1 and may utilize currently entitled lands and/or private easements; however, additional alternate routing may include gen-tie line(s) directly to the Imperial Valley substation, utilizing additional/other private and/or Bureau of Land Management (BLM) lands.

2.2.6 Operations and Maintenance (O&M) Building

The Project may include an O&M building of approximately 40 feet x 80 feet in size, with associated onsite parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

- Office
- Repair building/parts storage
- Control room
- Restroom
- Septic tank and leach field
- Water supply
- Heating, ventilation, and air conditioning (HVAC)

Roads, driveways, and parking lot entrances would be constructed in accordance with Imperial County standards. Parking spaces and walkways would be constructed in conformance with all California Accessibility Regulations.

Any unused O&M areas onsite may be covered by solar panels. The structure type(s), height, and final location(s) of each component would be determined before the issuance of building permits by Imperial County.

2.2.7 Site Security and Fencing

The Project area would be enclosed within chain link fence measuring up to seven (7) feet in height from finished grade. Note, a 7-foot-tall screening fence (i.e., chain link fence with slats) would be erected along the northern project boundary to assist with glare mitigation.

An intrusion alarm system comprised of sensor cables integrated into the perimeter fence, intrusion detection cabinets placed approximately every 1,500 feet along the perimeter fence, and an intrusions control unit, located either in the substation control room or at the O&M building, or similar technology, may be installed. Additionally, the Project may include additional security measures including, but not limited to, low voltage fencing with warning reflective signage, controlled access points, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the Project.

Controlled access gates would be maintained at the main entrances to the Project. Project area access would be provided to offsite emergency response teams that respond in an after-hours emergency. Enclosure gates would be manually operated with a code or key provided in an identified key box location.

2.2.8 Lighting

Outdoor lighting for the Project would be the minimum required for safety and will be directed away from public rights-of-way and adjacent private property. All outdoor lighting used onsite would be of the lowest intensity necessary to provide suitable light for site security and safe ingress and egress, in compliance with any applicable regulations, measured at the property line after dark. Outdoor lighting is anticipated to be necessary for the access gates, substation(s), O&M building, control room, and inverters to allow for safe access and emergency maintenance. Site lighting may also include motion sensor lights installed within the solar fields in proximity to the inverters for security purposes.

2.2.9 Project Construction

2.2.9.1 Construction Activities and Duration

The construction period for the Project is expected to occur for approximately 18 to 24 months.

Construction would include the following activities:

- Site preparation
- Access and internal circulation roads
- Grading and earthwork
- Concrete foundations
- Structural steel work
- Panel installation
- Electrical/instrumentation work

- Collector line installation
- Battery unit installation
- Stormwater management facilities
- Gen-tie line poles and conductor stringing

Roadways would only be temporarily affected, and only during the Project's construction period. Construction traffic would access the Project site from the north or south via Derrick Road, Jessip Road, Westside Road, and Hyde Road, and from the east via Diel Road and Wixom Road (or other nearby local roads). Large trucks would likely utilize Interstate 8 and S29 (Drew Road) for materials deliveries. It is anticipated that traffic would entirely avoid the town of Seely.

Noise generated during construction activities would comply with the Imperial County noise ordinances (Title 9 Land Use Code, Division 7). Heavy construction is expected to occur between 6:00 am and 5:00 pm, Monday through Saturday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low level noise activities may potentially occur between the hours of 10:00 pm and 7:00 am. Nighttime activities could potentially include, but are not limited to, refueling equipment, concrete pours, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies would be delivered to the Project Area by truck. Truck deliveries would normally and primarily occur during daylight hours. However, there would be occasional offloading and/or transporting to the Project on weekends and during evening hours.

Earthmoving activities are expected to be limited to the construction of the access roads, O&M building, substation, water storage tank(s), solar panel foundation supports, BESS(s), and any storm water protection or storage (detention) facilities. The Project is not anticipated to pave, remove, or significantly alter existing agricultural soil(s). Rather the solar panels would be installed atop the relatively flat lots, leaving the farming soil relatively undisturbed and available for crop cultivation at the end of the Project's life. Final grading may include revegetation with low lying grass or applying earth-binding materials to disturbed areas to control dust and increase the reflectivity of the ground surface.

Site preparation would be planned and designed to minimize the amount of earth movement required for the Project, to the extent feasible. The hydrology design would be given priority to protect the Project's facility components, as well as adjacent IID canals/drains and County roads from erosion during large storm events. The existing on-site drainage patterns would be maintained to the greatest extent feasible. Compaction of the soil to support the building and traffic loads as well as the PV module and BESS supports may be required and is dependent on final geotechnical investigations and engineering designs. These final engineering designs would be reviewed by IID and the County prior to Imperial County issuing building permits.

2.2.9.2 Laydown Areas

At full build-out, most of the Project development footprint would be disturbed by construction of the Project. Therefore, temporary construction lay down and materials staging areas, construction trailer locations, and construction parking areas will all be provided within the Project disturbance footprint. Due to the relatively large size of the Project, the lay down areas may be relocated periodically within the solar field acreage as the project is built out.

2.2.9.3 Workforce

It is estimated that up to 500 workers per day (during peak construction periods) would be required to construct the Project.

2.2.10 Project Operation and Maintenance

The PV solar and BESS facility would operate seven days a week, 24 hours a day. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available, while the BESS could dispatch energy at any time during the day or night.

Once constructed, maintenance of the PV solar and BESS facility would generally be limited to the following:

- Cleaning of PV panels
- Monitoring PV panel and BESS electricity generation
- Providing site security
- Maintenance of stormwater facilities
- Maintenance of PV solar and BESS facilities including replacing or repairing inverters, wiring, or electrical components, and maintaining, repairing, or replacing substation components.

It is expected that the Project would require an operational staff of up to 15 full-time employees. It is possible that the proposed project could share O&M, substation, and/or transmission facilities with other adjacent PV solar and BESS projects that have been approved and entitled by Imperial County, or with any future proposed renewable energy projects nearby. In such a scenario, the projects would share personnel, thereby potentially reducing the project's on-site staff.

3 Regulatory Setting

3.1 Federal

Federal Highway Administration

While the Project is not under the jurisdiction of the federal government, the Federal Highway Administration (FHWA) *Guideline for the Visual Impact Assessment of Highway Project* is referenced in this report and is used as a model for the assessment of visual impacts. Per the FHWA guidelines, the aesthetic quality of an area is determined through the variety and contrast of the area's visual features, the character of the features, and the scope and scale of the visible landscape.

An area's aesthetic quality is dependent on the relationship between it features and their significance/importance in the available view. The method for evaluating resource change requires consideration of visual character and an assessment of the attributes of visual quality (vividness, intactness, and unity). Viewer response is informed by viewer exposure and viewer sensitivity. The change in resource combined with viewer response is evaluated to determine the overall visual impact.

3.2 State

Caltrans Scenic Highways Program

California's Scenic Highway Program was created by the Legislature in 1963. Its purpose is to preserve and protect scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highway Code, Section 260 et seq. The Scenic Highways Program is comprised of officially designated scenic highways (i.e., highways for which corridor protection programs have been adopted and the highways are listed in the Streets and Highway Code) and eligible scenic highways (i.e., highways designated as scenic by the local planning department).

The nearest state scenic highway, State Route 111 (SR-111; an eligible state scenic highway) between Bombay Beach and State Route 195 near Mecca, is over 40 miles away from the project site. The nearest officially designated state scenic highway, SR-78 through Anza Borrego Desert State Park, is over 35 miles away from the project site.

California Environmental Quality Act

The CEQA Guidelines require that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to aesthetic resources. Aesthetic resources including scenic vistas and views (both day and night), views from state scenic highways, and existing visual character are recognized as part of the environment under these state guidelines.

3.3 Local

Imperial County General Plan

The Imperial County General Plan includes policies aimed at protecting and conserving the County's scenic resources and open spaces. The following goal and policy of the Conservation and Open Space Element of the General Plan are relevant to aesthetics and the project:

- **Goal 7:** The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial recreational, and tourist activity.
- **Objective 7.1:** Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.

County of Imperial Land Use Ordinance, Title 9

The County's Land Use Ordinance Code provides specific direction for lighting requirements.

Division 17: Renewable Energy Resources, Section 91702.00 – Specific Standards for All Renewable Energy Projects

- R. Lights should be directed or shielded to confine direct rays to the Project site and muted to the maximum extent consistent with safety and operational necessity.

4 Existing Conditions

4.1 Scenic Vistas

Scenic vistas are generally broad and expansive views that may or may not be sited at elevated areas. They may or may not be located at a designated scenic overlook or other area that offers a static, scenic view of a landscape. Lands within the Project Boundary are located in an agricultural area of the County and do not encompass lands containing a scenic vista designated as such by the State or the County General Plan. Scenic vistas are not specifically discussed in the Final Program EIR for the Imperial County General Plan; however, natural and developed areas including deserts, sand hills, mountains, the Salton Sea, agricultural lands, and urban areas are identified as County visual resources (County of Imperial 1993). Due to the general lack of dominant vertical development in the immediate Project area (and presence of agricultural lands), broad and long views to regional mountains including the Jacumba Mountains (located west of the Project area) and pyramidal El Centinela (also known as "Weeishpa" by local tribes; located south of the Project area) are generally available from Interstate 8 and local roads near the Project site.

Available views from Interstate 8 and local roads are further explored below in Section 4.4.

4.2 Project Site and Surrounding Area

The entire Project area is designated Agricultural in the Imperial County General Plan. The Project parcels are zoned Agricultural lands and/or Rural lands. Current land use of the Project parcels includes cropland and irrigated grain and hayfields.

The Project parcels occur adjacent and proximal to both Agricultural and Agricultural/Rural lands that have been rezoned for renewable energy (RE), specifically for PV solar and BESS projects that have been approved and entitled by Imperial County but have not yet constructed. In addition, one fully operational PV project and one proposed BESS project undergoing entitlement with Imperial County are located adjacent to the proposed Project parcels.

Nearby land uses include residential, commercial, transportation, military, electric utility, and renewable energy production. Nearby residential land uses include the town of Seely, and commercial land uses include the Rio Bend Golf Course (and associated Specific Plan Area) to the east of the Project. The Interstate 8 and Union Pacific Railroad transportation corridors are located to the north of the Project, and further north the Department of Defense (DOD) Naval Air Facility El Centro. To the south of the Project utility land uses include the SDG&E 230/500 kV Imperial Valley Substation, as well as additional agricultural lands that have been designated for geothermal, PV solar and BESS renewable energy projects.

Existing character and viewing conditions present in the Project area (i.e., on the Project site and in the surrounding area) are further explored and documented through the use of representative vantage points offering views to the Project site (also referred to as Key Observation Points). See Section 4.1.3, below, for additional detail regarding Key Observation Points and description of existing visual character.

4.3 Scenic Highways

There are no designated State scenic highways in Imperial County (County of Imperial 2016). Lands within the Project Boundary are not located within a state scenic highway corridor, nor are there any state scenic highways located near the Project site. The nearest state scenic highway, SR-111 (an eligible state scenic highway) between Bombay Beach and State Route 195 near Mecca, is over 40 miles away. The nearest officially designated state scenic highway, SR-78 through Anza Borrego Desert State Park, is over 35 miles away.

Due to distance and intervening topography and development, views to the Project site are not available from a designated scenic highway.

4.4 Visual Character and Quality

The existing visual character and quality of the Project site and surrounding area is described above in Section 4.1. Generally, the site and immediate surrounding area comprise a relatively flat agricultural landscape that supports low, green grasses and other agricultural crops, irrigation canals, electrical transmission infrastructure, and solar development. The Project's valley landscape is generally indistinct from other locations in the agricultural belt of Imperial Valley and is submissive to prominent mountain terrain that provides a scenic backdrop of visual interest.

As detailed previously, existing visual character and quality of site and surrounding area was further explored through the use of Key Observation Points (KOPs). As an initial step in this process, aerial imagery was reviewed to identify locations from which the Project would potentially be visible from public accessible vantage points. Following this review, preliminary representative viewpoints for site photography were established. A photographic field survey occurred in September 2023 during which representative viewpoints were visited and existing conditions and views towards the Project site were photo-documented. A subset of five photographed viewpoints were selected as Key Observation Points (KOPs). Assessments of existing visual conditions were made based on professional judgment that took into consideration sensitive receptors and sensitive viewing areas in the project area.

The location of KOPs is depicted on Figure 1, Key Observation Points.

4.4.1 Key Observation Points

Key Observation Point 1: Westbound Interstate 8

Located on the shoulder of the eastbound travel lanes of Interstate 8 approximately 200 feet from the northern boundary of the Project site. The view from KOP 1 is oriented to the southwest and looks across the paved interstate travel lanes, active agricultural lands marked by low and green, grass-like vegetation (likely alfalfa), the low, raised berm of irrigation canals and drainage ditches, clumped trees that have been erected as windbreaks, and more distant desert lands of western Imperial County. See Figure 2, KOP 1: Westbound Interstate 8. The dark and hazy silhouettes of distant hills and mountains are visible and the long mountain range forms the westerly horizon. The visual character of the scene is influenced by the grass-like vegetation of foreground lands and the lack of prominent vertical development. Electrical transmission infrastructure (i.e., lattice transmission towers) are present in the landscape but due to distance and lattice construction/materials, the structures are not visually dominant.

Key Observation Point 2: Eastbound Interstate 8

Situated 0.6 mile to the east of KOP 1, KOP 2 approximates the view to the project site available from the eastbound travel lanes of Interstate 8. See Figure 3, KOP 2: Eastbound Interstate 8. Located on the interstate shoulder, KOP 2 looks to the southeast across the project site and a landscape dominated by flat terrain and agricultural uses. The northern project boundary is situated approximately 125 feet away (i.e., beyond the existing post and wire fencing in the foreground) the visible reach of the project site is characterized by a wide, dirt roadway that abuts an expansive field of low, green, grass-like vegetation. The elevated profile of Derrick Road is visible to the west as is a collection of matures trees that are located along Derrick Road to the south of the interstate. A series of thin poles supporting electrical distribution lines run north-south along Derrick Road and then scatter in the landscape to the southeast of KOP 2. Lastly, a collection of rectangular hay bale stacks (also referred to as "dumps") covered with white tarps/fabric material is located to the southeast (the white of the tarps slightly stand out in a landscape dominated by brown and green tones).

Key Observation Point 3: Southbound Derrick Road

KOP 3 is located atop the elevated bridge profile of Derrick Road as it spans Interstate 8. The view is oriented to the south-southwest and due to an elevated vantage point, the landscape is somewhat expansive and visibility extends to prominent albeit somewhat hazy landforms to the south (mounded and pyramidal El Centinela) and southwest (Jacumba Mountains). In the foreground and beyond the deck and railing of the Derrick Road bridge, the landscape is marked by north-south alignment of wood poles supporting a local electrical distribution line. A concrete lined canal generally parallels the distribution line (and Derrick Road) and fronts active agricultural lands covered with low, green, grass-like vegetation. Rectangular hale bay stacks covered with white tarps occur off-center in the KOP 3 scene (see Figure 4, KOP 3: Southbound Derrick Road) and isolated or small clustered tree groupings are scattered throughout the landscape. Visible electrical infrastructure rises from the valley floor to the southwest and congregates at the existing Imperial Valley Substation that is located nearly 3.7 miles to the south-southwest of KOP 3 (in the KOP 3 view, the substation is marked by a collection of dark and thin, overlapping vertical lines near the northwesterly base of El Centinela). Despite the presence of multiple electrical transmission lines and a large substation, EL Centinela and the distant mountain range to the southwest-west are the dominant features in the landscape.

Key Observation Point 4: Westbound Vaughn Road

Located on westbound Vaughn Road adjacent to the Project boundary and the Westside Drain, KOP 4 looks southwest towards the southwestern corner of the Project site that is currently occupied by low, green, grass-like vegetation (likely alfalfa hay). See Figure 5, KOP 4: Westbound Vaughn Road is an unmarked, paved, east-west road (approximately 20 feet wide) that in the KOP 4 landscape, abuts the Westside Drain, rural residential lands, and agricultural lands to the north, and additional irrigation drains, and agricultural fields to the south. Beyond the Project site and agricultural lands, a visible, north-south line of mature trees (a planted windbreak) occurs to the west-southwest and several tall and vertical steel lattice towers supporting transmission lines extend from the desert floor and above the tree line. Lastly and as at other KOPs, the background of the KOP 4 landscape is marked by dark, slightly hazy, and rugged hill and mountain terrain.

Key Observation Point 5: Southbound Liebert Road

Situated adjacent to the concrete lined Fern Canal and on the dirt shoulder of Liebert Road (a paved road), KOP 5 view is oriented to the southeast and looks across active agricultural lands and undeveloped yet vegetated lands

occurring to the north and south of the nearby All-American Canal. See Figure 6: KOP 5: Southbound Liebert Road. The vegetation to the south of the All-American Canal presents as taller and more untamed than the agricultural grasses in the foreground of the KOP 5 view. A small, modest residential structure (assumed to be vacant) is visible to the southwest near the small cluster of palm trees and an assortment of numerous thin, dark, and vertical structures/lines occurs to the south and marks the Imperial Valley Substation (and lines terminating/originating at the substation). A transmission line is aligned along Liebert Road and while located nearly 6 miles away, the dark and mounded form of El Centinela dominates the southern horizon. Additional mountainous terrain is visible to the southeast but due to distance and apparent scale, these features are not visually dominant.

Lastly and while not visible in the KOP 5 view, an existing operational solar facility ("Campo Verde Solar Facility") that includes a project substation is located approximately 200 feet to the west of KOP 5 and Liebert Road.

Key Observation Point 6: Eastbound Diehl Road

Located at the intersection of Diehl Road and Jessup Road near the Wixom Drain, KOP 6 is located within 150 feet of the nearest project boundary that is located north of Diehl Road. As experienced from KOP 6, the local landscape is comprised of flat terrain with visible bermed land in the foreground that parallel Diehl Road and Jessup Road (and obscured irrigation drains). At the time of the field visit to obtain photographs of the view from KOP 6 the project site was partially inundated with water. See Figure 7: KOP 6: Eastbound Diehl Road. The remainder of the site appears to have been recently tilled or otherwise disturbed. Beyond the project site, several indeterminant, light-colored, boxy structures appear on the low horizon as do pockets of tall, dark green vegetation/trees. Lastly. thin and narrow poles supporting electrical transmission infrastructure dot the low horizon and are visible along the Diehl Road corridor in the distance.

4.5 Light and Glare

While glare is considered a continuous source of brightness (relative to diffused light), glint is a direct redirection of the sun beam in the surface of a PV solar module. Glint is highly directional, since its origin is purely reflective, whereas glare is the reflection of diffuse irradiance; it is not a direct reflection of the sun.

The Project site consists of active agricultural lands and thus, does not include existing sources of light or glare. Most existing light and glare in the project area is associated with motor vehicles traveling on surrounding roadways, air traffic, and farm vehicles/equipment. Local roadways generate glare both during the night hours when cars travel with lights on, and during daytime hours because of the sun's reflection from cars and pavement surfaces. Additional potential sources of glare include the operational solar farms in the immediate project vicinity. Overall, existing light and glare sources are muted and do not contribute significantly to the existing night or day environment.

5 Methods

Scenic Vistas

For purposes of this report, scenic vistas are considered formally designated public vantage points offering views of primarily natural settings containing recognized scenic features or landscapes of special importance. As stated in Section 4.1.1 above, they are no known designated scenic vistas in Imperial County.

The concepts of view blockage, interrupted, and degradation are used to determine the severity of potential impacts to scenic vista. If views from public vantage points across the Project site include recognized scenic features, Project components are examined to determine the likelihood for view obstruction (i.e., view blockage), view interruption (i.e., intrusion on available view due to contrasting features), or degradation (i.e., decline in scenic quality).

Scenic Highways

Scenic highways include those state facilities that have been officially designated or nominated for official designation through eligible status by Caltrans. If the Project site is located within the viewshed of a scenic highway, then the potential for impacts to scenic highways is informed by the presence of existing scenic resources on the Project site, project plans to avoid/protect or disturb existing scenic resources, and the visibility of scenic resource disturbance from an officially designated or eligible state scenic highway. Pursuant to CEQA Appendix G guidelines, scenic resources include trees, rock outcroppings, and historic buildings and may also include locally recognized scenic resources including oak trees, vineyards, and rolling hills.

No views of the Project site are available from a state scenic highway.

Visual Character and Quality

Impacts to existing visual character and quality are determined through a comparison of pre- and post-development conditions on the Project site. Specifically, the project is examined for potential contrast with existing onsite feature and features in the surrounding area.

Lighting and Glare

The potential for lighting and glare impacts are evaluated based on a comparative review of pre- and post-development lighting and glare sources operating in the project area. If a project in an urban or developed area currently contains existing nighttime lighting and glare sources, then the likelihood for a project with comparable lighting to result in significant lighting and glare impacts is low (assuming the installation of standard control measures). On the other hand, if a dissimilar project in a low-lighting rural environment with excessive or unusually bright lighting is implemented, then the likelihood for potentially significant lighting and glare impacts would be high.

A Project-specific glare analysis was prepared, and the results of the analysis are summarized below in Section 6; the Project specific glare analysis is included as Appendix A to this report.

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6 Impact Analysis

In accordance with significance thresholds for aesthetics established in Appendix G of the CEQA Guidelines, a significant impact would occur if the Project:

1. *Would have a substantial adverse effect on a scenic vista?*
2. *Would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*
3. *Would substantially degrade the existing visual character or quality of the site and its surroundings?*
4. *Would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Analysis

Impact AES-1: Would the Project have a substantial adverse effect on a scenic vista?

There are no designated scenic vistas near the Project site the County's General Plan (or General Plan EIR) does not identify specific scenic vistas. The Project site is located adjacent to Interstate 8 and local roads and thus, construction and operational activities associated with Project would be visible from and experienced by motorists and the limited residents in the immediate area. As previously discussed in Section 4.1, broad and long views to regional mountains including the Jacumba Mountains (located west of the Project area) and pyramidal El Centinela (also known as "Weeishpa" by local tribes; located south of the Project area) are generally available from Interstate 8 and local roads near the Project site. Since the County generally identifies mountains as "County visual resources," views to area mountains are considered scenic vistas for purposes of this analysis.

During construction, typical equipment including, but not limited to, tractors, graders, compactors, scrapers, loaders, forklifts, and cranes would be present and operate on site. Combined with a temporary influx of construction personnel and equipment/vehicles, and the visual effects of vegetation removal, construction within the project area would alter views of the existing agricultural fields to an active construction site. However, during construction, effects to existing views would be short-term, temporary, and be experienced by a limited number of permanent residents in the immediate surrounding area. A larger volume of viewers on nearby I-8 would experience construction activities as they approach and pass the Project (the northern boundary of the Project site parallels the eastbound I-8 travel lanes for approximately 2.1 miles); however, views to construction activities would be fleeting (and limited to the landscape to the south of the interstate). In addition, the visual effects of construction activities on the Project site as experienced from Interstate 8 would be diminished by the incorporation of development setbacks from the interstate. Specifically, project development would be pulled back between approximately 1,100 feet to up to 2,000 feet from the eastbound lanes of Interstate 8 and thus, project elements including solar arrays, perimeter fencing, and the visual effects of vegetation removal would not be visually prominent and would not detract from existing available views. Further and as westbound motorists and passengers travel alongside the Project site, views to distant mountains to the southwest and west would be maintained over the 18-to-24-month construction schedule and would not be substantially blocked by equipment/vehicles or the installation of project components.

During operations, mobile views to the prominent visual resources in the Project area landscape (i.e., rugged hills and distant mountain ranges) would remain available to motorists Interstate 8 and most local roads and would not be blocked or otherwise encumbered by project components. In addition, views to regional mountains from Interstate 8 would not be blocked by the installation of 7-foot-high perimeter fencing or other project components. As previously discussed, project development would be pulled back between approximately 1,100 feet to up to 2,000 feet from Interstate 8 and thus, solar arrays, perimeter fencing, and all other permanent features would appear small in the landscape and would not block or interrupt existing available views. While perimeter fencing would be visible from the interstate (see Figure 2, KOP 1 and Figure 3, KOP 2), the degree of visual change on the project site as experienced from the interstate would be minimal and overall effects to existing views would be minor. As shown in the figure, the existing, interrupted view to distant mountains would be maintained and no blockage or significant interruption of existing views from the interstate to regional mountains would occur. As such, impacts would be **less than significant**.

Impact AES-2: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There are no designated State scenic highways in Imperial County. The nearest state scenic highway, SR-111 (an eligible state scenic highway) between Bombay Beach and State Route 195 near Mecca, is over 40 miles from the Project site. The nearest officially designated state scenic highway, SR-78 through Anza Borrego Desert State Park, is over 35 miles from the Project site. Due to distance, and intervening development and topography, construction and operation of the Project would not be visible from a state scenic highway and thus, construction and operation would not result in substantial damage to scenic resources within a state scenic highway. Accordingly, **no impacts** to scenic resources within a state scenic highway would occur.

Impact AES-3: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?

The Project site is located in a nonurbanized, agricultural area of Imperial County. As proposed, the Proposed would convert existing active agricultural lands to a photovoltaic solar facility. Components to be installed on the Project site include rows of PV solar panels up to between 6 feet and 8 feet in height, up to 500 MW ac of BESS that would typically consist of ISO standard all-weather containers (approximately 40'L x 8'W x 8'H), 66-kV collector lines, and a dedicated approximately 5-acre Project substation. Temporary and permanent access roads would also be constructed. Slatted chain-link fencing would be installed along the northern perimeter of the Project site and non-slatted chain-link fencing would be installed around the remainder of the Project perimeter. Lastly, and to reduce the potential for glare exposure along Interstate 8, project development would be pulled back between approximately 1,100 feet to up to 2,000 feet from the eastbound lanes of interstate 8.

Construction

During construction of the Project, visual effects would be temporarily and intermittently experienced by most receptors/viewed over the phased 18-to-24-month construction period. Short-term visual impacts associated with Project construction would occur as construction equipment, materials delivery and movement, and additional traffic is drawn to the Project Site and utilizes roadways in the surrounding area. Additional changes occurring on the site including removal of existing vegetation, preparation of the site to accommodate components/facilities, and installation of those components/facilities previously identified in Section 2.2, above. These short-term impacts would be experienced by local motorists and by the limited number of residences in the immediate area. As

experienced from Interstate 8, construction activities would be visible but would not be visually prominent due to provided development setbacks from the interstate. As further described in the light and glare analysis presented below, there would also be potential for light and glare impacts during the construction period.

As individual construction phases are completed, the overall amount of equipment onsite would be reduced and/or moved to other areas of the Project Site to initiate other phases and activities. As such, the visual characteristics of construction would be spread out across a large area and difficult to fully experience from any single vantage point in the surrounding area. Due to the temporary and intermittent nature of construction activities, impacts to existing visual character and public views available in the surrounding area would be of a short-term duration, varied, and spread over distinct locations across a large geographical area (i.e., the nearly 1,500-acre Project footprint), thereby reducing the overall severity of visual impacts as experienced by most viewer groups in the area. While construction of the Project would result in noticeable change to the existing character of the site and existing site qualities/features would be removed to accommodate construction equipment and vehicles (and the installation/construction of Project components), construction impacts to existing visual character would be less than significant.

Operations

Project components to be installed across the Project Site are identified in Section 2 and summarized above under the Impact AES-3 heading. As previously disclosed, the assessment of visual character and view quality considered existing aesthetic conditions and anticipated visual change associated with Project development as experienced from five selected KOPs that include west- and eastbound Interstate 8, Derrick Road, Vaughn Road, and Liebert Road.

As experienced from KOPs 1 and 2 (west- and eastbound Interstate 8), the introduction of solar panels and slatted, chain-link fencing, and the transformation of the grass covered site to one surfaced with exposed local soils, would produce minimal visual change from existing conditions. See Figures 2 and 3. As previously discussed, project development would be pulled back from the interstate and intervening vegetation and terrain on the project site (i.e., vegetation and terrain between the interstate and development footprint) would be retained/would not be altered. As such, the foreground landscape as experienced from the interstate would retain its existing character and open qualities and existing views to regional mountains would remain largely unchanged. See Figure 2.

Similar to anticipated visual change at KOPs 1 and 2, the overall visual change at KOP 3 would be relatively minor as the low, grass-like covered fields in the foreground would be retained and unaltered. See Figure 4, KOP 3. As shown in the KOP 3 visual simulation, the tan slatted chain-link fence and solar arrays would be visible in the distance but would be contained to a relatively small portion of the seen landscape. The installation of rows of dark solar panels would be evident from the elevated vantage point available; however, the existing landscape character would remain and would continue to exude existing agricultural qualities.

The introduction of solar panels and removal of existing vegetation from the Project site would produce noticeable visual change as experienced from KOP 4 and KOP 6. See Figure 5, KOP 4 and Figure 7, KOP 6. The transformation of the site from active agricultural lands to an operational energy facility (and more specifically, the introduction of chain-link fencing in the immediate foreground), would produce strong visual change when viewed absent context; however, the anticipated severity of change would be like that associated with development of the approved but not yet constructed Big Rock Cluster (Laurel Solar 3 and 4) Energy Project (located to the immediate south and east of KOP 4) and the operational Campo Verde Solar Facility (located to immediate west of KOP 5 and west and south of KOP 6). Big Rock Cluster (Laurel Solar 4) Energy and Campo Verde Solar Facility Project components are not

visible in the specific views selected for KOPs 4 6 but will and have noticeably altered the existing landscapes near these KOPs. Given the proximity of approved and existing energy development that includes similar components as those anticipated to be installed on the Project site (Big Rock 2 Cluster Solar and Storage Project site), overall severity of visual change would be lessened as the Project would bear a resemblance to existing features (i.e., solar development) in the immediate landscape.

Lastly, the anticipated visual change associated with the development of the Project substation and gen-tie line as experienced from Liebert Street (KOP 5) is illustrated in Figure 6. As shown in the figure, the introduction of multiple vertical structures (e.g., bays and racks) within the footprint of the Project substation would create noticeable visual change and would alter the existing quality of the southeasterly view to distant mountain terrain. And while the existing grass-like covered footprint of the Project substation would be replaced by a fenced. electrical substation with a greyish gravel covered surface, overall visual change would be dampened by existing solar and electrical transmission/substation development in the immediate area. In addition to the transmission lines in the foreground and structures of the Imperial Valley Substation that are visible in the KOP 5 view, the existing Campo Verde Solar Facility (located across a 1,400-acre site) and Project substation are located approximately 200 feet to the west of KOP 5 and Liebert Road. While not visible in the specific view selected for KOP 5, an electrical substation and multiple rows of PV modules associated with the Campo Verde Solar Facility have permanently altered the local landscape. As such, the introduction of the Project substation to the KOP 5 landscape would result in overall minor visual change when considered in the context of the existing visual landscape that includes prominent electrical transmission and substation infrastructure and large, utility-scale solar development.

Conclusion

Project operations would convert existing agricultural fields across approximately 1,482 acres to a solar facility with BESS. The primary visual change that would be experienced by viewers in the surrounding area is the introduction of numerous rows of orderly solar panels, and installation of slatted/non-slatted chain-link fencing along the site perimeter. As illustrated in the Project visual simulations, proposed PV module frames are expected to be approximately 6 to 8 feet in height and as such, the introduction of solar panels would not result in substantial obstruction of views to distant mountain ranges such as those available from Interstate 8 and Derrick Road (i.e., KOPs 1 and 3). Furthermore, Project components would have an overall minor effect on existing visual character and quality as experienced from the interstate and from local roads, the visual change associated with development of a solar facility would be similar to development of the approved but not yet constructed Big Rock Cluster (Laurel Solar 3 and 4) Energy Project and existing operational Campo Verde Solar Facility that have altered the existing project area landscape. For these reasons, the introduction of a solar facility to the project site would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, impacts are considered **less than significant.**

Impact AES-4: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Light

Construction activities would generally occur between the hours of 6:00 am and 5:00 pm and therefore, construction would not generally require the use of mobile light fixtures/sources that could potentially illuminate the evening or night sky. However, additional hours beyond 5:00 p.m. may be necessary to make up schedule deficiencies and nighttime activities including but not limited to refueling equipment, concrete pours, staging

material for the following day's construction activities may potentially occur between the hours of 10:00 pm and 7:00 a.m.

While limited construction activities could require the use of mobile light fixtures/sources for general illumination of work areas, their frequency would be irregular and duration would be limited/short. In addition, public views to the Project site are mostly limited to Interstate 8 (views are also available from oft-travelled local roads in the immediate project area). Due to the anticipated infrequent use and short duration of nighttime lighting during construction, the limited presence of sensitive receptors in the immediate surrounding area, and because lighting sources would generally be hooded and directed downward onto the active area of construction, Project construction would not create a new source of substantial light and glare that would adversely affect nighttime views in the area. Accordingly, impacts associated with Project use of lighting during construction would be less than significant.

Lighting installed for use during Project operations would be minimal. For example, site lighting may include motion sensor lights for security purposes and these sources may be installed at site entrance gates or at the onsite O&M building (if an onsite building is constructed). Despite the inclusion of lighting on site and use during operations, the total number of lighting sources to be installed would be limited and occurrences of use/illumination would be infrequent due to motion sensor activation. Furter, lighting installed on the Project site (i.e., within the Project boundary) would be of the lowest intensity foot candle level available while still providing for safe working conditions/adequate deterrence and compliant with applicable local regulations (e.g., County Ordinance, Division 17: Renewable Energy Resources, Section 91702.00 – Specific Standards for All Renewable Energy Projects concerning shielding and directing of light to confine to the Project site to the maximum extent). Lastly, installed site lighting would be directed away from public right-of-way to avoid unsafe driving conditions during periods of lighting activation. For these reasons, the low number of fixtures and anticipated infrequent use of lighting on the Project site during operations would not create a new source of substantial light and glare that would adversely affect nighttime views in the area. Impacts would be less than significant.

Glare

The presence of heavy equipment and vehicles on the Project site during construction may momentarily generate glare that could be experienced from vantage points in the surrounding area. due to the presence of reflective construction equipment and materials. However, and as previously stated, public views of the project site are mostly limited to Interstate 8 and given the regular presence of construction vehicles in the landscape, construction-related glare associated with equipment and vehicle presence is not anticipated to adversely affect daytime views. The duration of equipment and vehicle-generated glare that may be experienced by viewers in the surrounding area during project construction would also be short-term. Therefore, constructed-generated glare is considered a less than significant impact.

The project would involve the installation of PV solar arrays which have low reflectivity. Solar PV modules are specifically designed to reduce reflection as any reflected light cannot be converted into energy. Research has shown that reflectivity from PV panels is similar to reflections from water (Appendix A of this report). Further and with the incorporation of development setbacks from Interstate 8 and the construction of 7-foot-high slatted chain-link fencing around the Project site northern perimeter, the PV panels would not create a significant source of glare that could impact views during daylight hours. Additionally, public views of the project site are relatively limited and, as such, operation-related glare and glint are not anticipated to adversely affect day or nighttime views. The project would not use other reflective materials such a fiberglass, aluminum or vinyl/plastic siding, galvanized products,

and brightly painted steel roofs that have the potential to create on- and off-site glare. Based on the rationale provided above, project-related glare impacts would be **less than significant**.

7 Mitigation Measures

Impacts would be less than significant and thus, mitigation measures are not required.

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8 References

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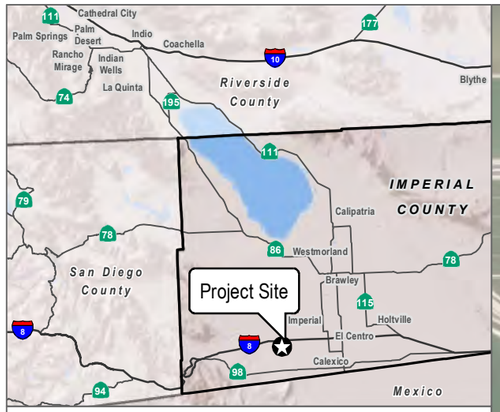
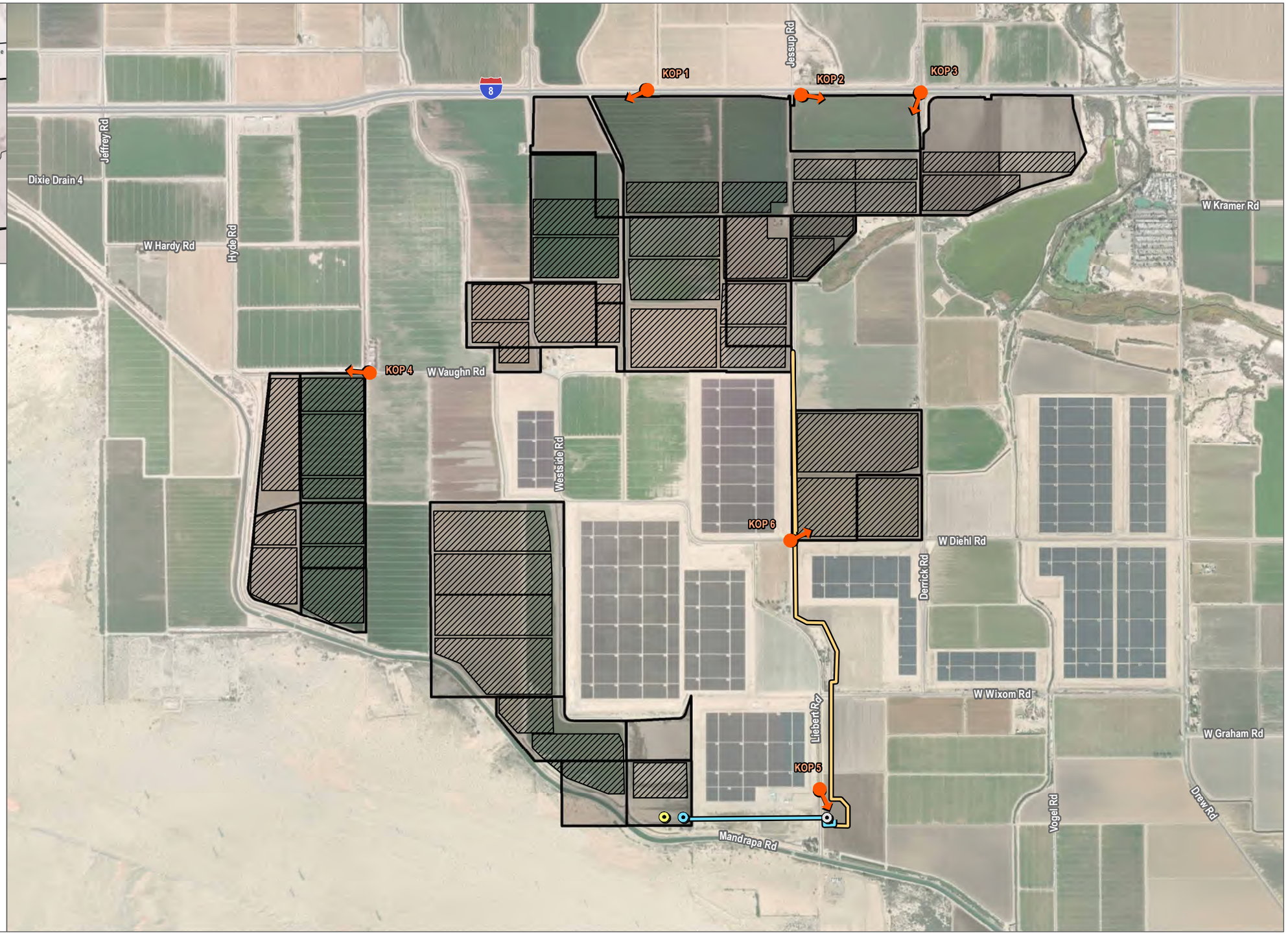


- Key Observation Points (KOP)
- Project Boundary
- Proposed Photovoltaic Panels
- Gen-Tie Line
- Alternative Gen-Tie Line
- Project BESS
- Project Substation
- Switchyard



SOURCE: Maxar 2022; Open Street Map 2023; Avantus 2023

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0 1,000 2,000 Feet

FIGURE 1

Key Observation Points

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Existing View from westbound Interstate 8 towards the Project site (approximately 200 feet away)

Visual Simulation of Project (visible segments of project fence line setback between approximately 1,700 to 2,000 feet from Interstate 8)

FIGURE 2

KOP 1: Westbound Interstate 8

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Existing View from eastbound Interstate 8 towards the Project site (approximately 125 feet away)

Visual Simulation of Project (visible segments of project fence line setback approximately 1,100 feet from Interstate 8)

FIGURE 3

KOP 2: Eastbound Interstate 8

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Existing View from southbound Derrick Road over Interstate 8

Visual Simulation of Project

FIGURE 4

KOP 3: Southbound Derrick Road

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Existing view from westbound Vaughn Road adjacent to Project site

Visual Simulation of Project

FIGURE 5

KOP 4: Westbound Vaughn Road

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Existing view from southbound Liebert Road (approximately 0.25 mile north of All-American Canal)

Visual Simulation of Project

FIGURE 6

KOP 5: Southbound Liebert Road

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Existing view from eastbound Diehl Road at Jessup Road intersection (approximately 150 feet from nearest project boundary)

Visual Simulation of Project

FIGURE 7

KOP 6: Eastbound Diehl Road

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Appendix A
Glare Analysis Report

DRAFT

Glare Analysis Report

Big Rock 2 Energy Project, Imperial County, California

MAY 2024

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Table of Contents

SECTION **PAGE NO.**

Acronyms and Abbreviations iii

1 Introduction 1
1.1 Purpose and Scope 1

2 Project Description 3
2.1 Project Location 3
2.2 Project Characteristics 3

3 Regulations and Regulatory Requirements 5
3.1 Federal 5
3.2 State 6
3.3 Local 6

4 Glare Impacts 7
4.1 General Concepts of Solar Technologies and Glare 7
4.2 Methodology 8
4.2.1 Airport Receptor Identification 8
4.2.2 Dwelling and Route Receptor Identification 9
4.2.3 Geometric Glare Analysis 11
4.2.4 Limitations of the Geometric Analysis 11
4.2.5 Baseline Glare Conditions 12
4.3 Glare Analysis Results 12
4.3.1 Results for Airport Receptors 12
4.3.2 Results for Point and Route Receptors 12
4.3.3 Comparison of Results to Other Sources of Glare 15

5 References 17

6 Document Preparers 19

TABLES

Table 1. Flight Path Receptor Parameters 9
Table 2. Observation Point Descriptions 10
Table 3. Highway/Road Observation Route Descriptions 10
Table 4. Solar Array Model Inputs 11
Table 5. Green and Yellow Glare Results for Airport Receptors 12
Table 6. Green Glare Results for Point and Route Receptors 13
Table 7. Yellow Glare Results for Point and Route Receptors 14

FIGURES

Figure 1 Project Location 21
Figure 2 Comparison of Photovoltaic Tracking Systems 23
Figure 3 Project Layout and Receptor Locations 25
Figure 4 Existing Solar Projects Within Study Area 27

APPENDIX

A Detailed Modeling Results

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
BESS	battery energy storage systems
CEQA	California Environmental Quality Act
FAA	Federal Aviation Administration
I	Interstate
kV	kilovolt
MW	megawatt
NJK	Naval Air Facility El Centro
OP	observation point
Project	Big Rock 2 Energy Project
PV	photovoltaic
report	Glare Analysis Report
SDG&E	San Diego Gas & Electric

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1 Introduction

1.1 Purpose and Scope

The purpose of this Glare Analysis Report (report) is to assess the potential glare impacts associated with implementation of the Big Rock 2 Energy Project (project). The analysis was conducted per U.S. Federal Aviation Administration's (FAA) recommended procedures described in the Technical Guidance for Evaluating Selected Solar Technologies on Airports (FAA 2018); the geometric glare modeling software used adheres to FAA policy regarding solar energy system projects on federally obligated airports (86 FR 25801–25803).

This report focuses on the potential for glare on sensitive receptors within a 5-mile glare study area as well as the four runway approach paths associated with Naval Air Facility El Centro (NJK), which is a U.S. Navy facility.

This report includes an introduction to the photovoltaic (PV) technologies proposed to be implemented on the project site and their potential to result in glare. Chapter 2, Project Description, provides a description of the project and the project location; Chapter 3, Regulations and Regulatory Requirements, describes the criteria that must be met for solar energy systems on airport property and relevant glare policies or standards adopted by Imperial County; and Chapter 4, Glare Impacts, describes the methodology used to perform the glare analysis and provides a summary of the analysis results. Chapter 5, References, provides a list of the references cited in this report, and Chapter 6, Document Preparers, provides a list of those involved in the preparation of this report. Lastly, the complete detailed glare results generated by the modeling software are provided in Appendix A.

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2 Project Description

2.1 Project Location

The proposed Project would be in unincorporated Imperial County, immediately south of Interstate (I) 8, approximately 1 mile southwest of the town of Seeley, California, and approximately 6 miles north of the United States international border with Mexico. The project comprises approximately 1,849 acres on 24 private parcels for proposed development of PV solar, battery energy storage systems (BESS), and other associated infrastructure. The project parcels are located west of Drew Road, east and north of Mandrapa Road, and south of Interstate 8 (Figure 1, Project Location).

2.2 Project Characteristics

The project would develop PV solar energy generation and a BESS facility within a 1,849-acre footprint, comprised of up to 500 megawatts alternating current (MW ac) of PV solar and up to 500 MW ac of BESS. Power generated by the project would be collected using up to 66 kilovolt (kV) collector lines, which could run overhead and/or underground to a dedicated project substation with a 230 kv gen-tie line linking the project substation to the planned IID Liebert Switchyard, which will be connected to the San Diego Gas and Electric Imperial Valley substation via an overhead 230 kV transmission gen-tie line. Note that this gen-tie line and interconnection to the Imperial Valley substation is a part of the applicants' approved and entitled Big Rock 1 BESS project, which is expected to be constructed and operational prior to the entitlement of the proposed project.

In addition, and to avoid exposure of passing I-8 motorists to potential project-generated glare from single-axis tilt PV modules, the project development footprint would be setback from the eastbound lanes of I-8 along the northern project boundary. between approximately 1,100 feet to up to 2,000 feet, depending upon existing lot-lines on the parcels being developed. In addition to this setback, a 7-foot-tall screening fence will be erected along the norther project boundary to assist with glare mitigation.

This report considers the impacts of the PV solar arrays and their potential to generate glare on nearby sensitive receptors. The project would include other components that do not have potential for significant glare and are therefore not analyzed in this report, including:

- BESS facilities
- Internal roads
- Project substation(s)
- Access roads
- Generation tie line (gen-tie line)
- Meteorological station
- Site security, fencing, and lighting

All of the project components are located off NJK airport property; outside of navigable airspace; and outside of the Runway Protection Zone (RPZ), Runway Safety Area (RSA), Object Free Area (OFA), and Clearway as defined by the FAA (FAA 2018).

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3 Regulations and Regulatory Requirements

3.1 Federal

U.S. Federal Aviation Administration

To understand and model glare, Dudek used FAA standards, which has approved the use of Sandia National Laboratories' Solar Glare Hazard Analysis Tool. With the Solar Glare Hazard Analysis Tool, standardized safety metrics define the anticipated glare intensity that would cause unwanted visual impacts to air traffic control towers and airplane pilots. Glare intensity is described according to potential for after-image and is illustrated on FAA's Solar Glare Ocular Hazard Plot. Low potential for after-image is referred to as "Green" glare, and potential for after-image is referred to as "Yellow" glare. "Red" glare is representative of glare conditions with potential for permanent eye damage.

The Solar Glare Hazard Analysis Tool and ForgeSolar (ForgeSolar 2019) are also able to evaluate the potential of a particular PV array to produce glare intensity, predicting when and where glare would occur from a proposed PV array at discrete observation points (e.g., from the air traffic control tower or runway approach). In instances where glare may be a concern, the tools can prescribe minor adjustments to the tilt, direction, and location of the panels to alleviate issues.

For this analysis, Dudek staff used the industry standard ForgeSolar 3-D geometric glare analysis software tool to disclose potential glare impacts associated with operation of the project. See Section 4.2.3, Geometric Glare Analysis, and Section 4.2.4, Limitations of the Geometric Analysis, for more information about the modeling parameters and limitations. Per FAA Policy 86 FR 25801–25803, the following criteria must be met for solar energy systems on airport property:

- No glare of any kind for Air Traffic Control Tower(s) at cab height

This policy only applies to proposed solar energy systems on federally obligated airport property and only those airports with control towers. NJK is not a federally obligated airport, and the project does not fall on airport property. For these reasons, this policy does not apply to the project, but was included in this report to describe the standard methodologies used to assess solar glare near operating airports.

PV glare for pilots on final landing approach is no longer a major concern for the FAA. Dudek has included the final approach paths as receptors in this analysis to comply with Department of Defense (DoD) guidance requiring a glare analysis for projects near DoD aviation operations.

U.S. Department of Defense

On June 11, 2014, the DoD issued guidance requiring the use of the Solar Glare Hazard Analysis Tool for renewable energy projects near DoD aviation operations.

- Solar renewable energy projects using the authority found in 10 U.S.C., 2922a or in 10 U.S.C., 2667 (Enhanced Use Lease) will require the Solar Glare Hazard Analysis Tool analysis for Office of the Secretary of Defense review/approval/certification.

3.2 State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires an analysis of aesthetic impacts when an agency or individual proposes an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. In Appendix G, Environmental Checklist Form, the 2021 CEQA Statute and Guidelines contains the following impact threshold related to glare:

- Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Other than the CEQA Guidelines, there are no state regulations pertaining to potential glare effects associated with the operation of solar facilities.

3.3 Local

Imperial County General Plan

The Imperial County General Plan includes policies aimed at protecting and conserving the County's scenic resources and open spaces. The following goal and policy of the Conservation and Open Space Element of the General Plan (County of Imperial 2016) are relevant to aesthetics and glare:

- **Goal 7:** The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial recreational, and tourist activity.
- **Objective 7.1:** Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.

4 Glare Impacts

4.1 General Concepts of Solar Technologies and Glare

The project would involve the installation of PV panels to convert the sun's light into electrical energy. To increase the efficiency of this conversion process, designers of solar systems strive to maximize the amount of solar energy that can be absorbed by solar cells. This work towards increasing efficiency has the added benefit of reducing the amount of light that could potentially reflect off the solar panels. Reflected light can cause glint (a quick reflection) and glare (reflection that lasts for a longer duration), which can create hazards for air-traffic-control personnel, motorists, and other potential receptors. For the purpose of this report, any light reflected off of the solar panels or any other reflective surface is referred to as "glare."

There are several key design considerations that can reduce glare from solar panels. One of the main factors of reflectance is the position of the PV modules relative to the sun. A panel that has been designed to absorb 90% of the sunlight that directly meets the face of the panels (perpendicular to the sun's rays) may have that absorption significantly reduced if the panel is not directly facing the sun (ForgeSolar 2019). Because the sun tracks across the sky over the course of a day, fixed-mount stationary panels can only maximize its efficiency for a few minutes out of the day when the sunlight is directly perpendicular to the face of the panel. To maximize the amount of solar energy generated from the solar array, some PV systems employ tracking mechanisms that adjust to track the sun's trajectory as it crosses the sky. Figure 2, Comparison of Photovoltaic Tracking Systems, provides an illustrative example of a fixed-mount panel system, single-axis tracking system, and dual-axis tracking system.

In addition to panel orientation, the materials used in the panel construction play an important role in reducing glare and maximizing efficiency. For example. different glass textures can be used to absorb light beams into the solar array, and anti-reflective coatings can be added to the glass to further reduce reflectivity at high-incidence angles (the angle at which the light hits the solar array).

The project is anticipated to employ a single-axis tracking system, as illustrated by the middle panel system in Figure 2. The axis of rotation would be aligned north–south with a maximum tracking angle of 60°. The surface of the panels would be constructed out of light textured glass and would include an anti-reflective coating, as further described in Section 4.2.3.

Glare can result in visual hazards and temporary loss of vision (also known as flash blindness). The hazard level of glare depends on the ocular impact to the observer. Generally, an ocular impact is calculated as a function of the size of the glare spot and the intensity of the light. For the purpose of this report, an ocular impact is classified in one of three categories, as follows:

- **Green:** Low potential for the glare to cause an after-image
- **Yellow:** Potential to cause a temporary after-image
- **Red:** Potential to cause retinal burn and permanent eye damage

4.2 Methodology

In order to determine where and when glare might occur as a result of development of the project, Dudek staff utilized a multi-step process that included a combination of spatial analysis, 3D geometric modeling, and aerial imagery interpolation. A typical 5-mile study radius was used because that distance approximates the maximum distance that an observer standing at ground-level could see the proposed photovoltaic panels before the curvature of the Earth would intervene (assuming a perfect sphere, no built environmental obstruction, and flat topography). Because of the project's vicinity to NJK (located approximately 3 miles to the northeast), the presence of I-8, and potential dwellings with direct view of the project, the 5-mile-radius study area was determined to be adequate for this analysis, as shown on Figure 3, Project Layout and Receptor Locations.

Dudek performed a visibility analysis on the surrounding terrain to predict where the project would be visible at any location within the study area. Using publicly available terrain data from the U.S. Geological Survey, Dudek staff created a detailed elevation model that covered the 5-mile study area. Results of the visibility analysis can be seen on Figure 3, which illustrates that much of the surrounding land uses will have a potential view of less than 20% of the project PV array modules. This estimate should be considered worst-case, as the visibility study does not consider aboveground features such as vegetation or structures. For information about technical limitations of the visibility analysis, please refer to section 4.2.4, Limitations of the Geometric Analysis.

Based on the visibility analysis, Dudek determined the location of potential receptors within the study area. All runway approach path receptors associated with NJK were included in this analysis regardless of visibility or distance. Areas within the Glare Study Area that were not predicted to have a direct line of site view of the project were not included in the glare analysis.

A geometric glare analysis was then conducted for the identified potential receptors to determine where and when glare might be encountered. Upon completion of the geometric analysis, Dudek reviewed the results for potential glare hazards and provided recommendations.

For compatibility with the modeling software, the project's PV arrays (shown on Figure 3) had to be grouped together to create 39 analysis groups, labeled "PV01" through "PV39." These analysis groups were analyzed in batches of up to 20, resulting in two separate geometric analyses referred to in this report as Analysis Batches A and B. The two analysis batches shared the same project parameters and potential receptors. The analysis batches are shown on Figure 3, and the detailed modeling results are presented according to these batches in Appendix A.

4.2.1 Airport Receptor Identification

Each modeled airport receptor type shown in Figure 3 is described in the following list, and the receptor's precise modeling parameters are provided in Appendix A:

- Air Traffic Control Tower Receptor – There is currently one operating air traffic control tower at NJK. The control tower's location was mapped using aerial photography, and its cab elevation was estimated to be at 90 feet above ground level. This height estimation was performed using triangulation of shadow lengths from aerial imagery with known fly dates.
- Airport Flight Approach Observation Route – Four flight approach observation routes were selected to simulate an aircraft following a straight-line approach toward each runway at the airport. Flight approach

routes use glide slopes, elevation parameters, and cockpit visibility angles. Modeled flight approaches extended out 2 miles from each runway threshold.

Table 1 shows the flight approach parameters used for Runways 8/26, and 12/30 at NJK. The locations of the flight approach paths are depicted on Figure 3.

Table 1. Flight Path Receptor Parameters

Runway Name	Threshold Crossing Height	Glide Slope	Direction (True Course)
Approach 8 (NJK08)	50 feet	3.0°	90.0°
Approach 12 (NJK12)	50 feet	3.0°	135.0°
Approach 26 (NJK26)	55 feet	3.0°	270.0°
Approach 30 (NJK30)	55 feet	3.0°	315.0°

4.2.2 Dwelling and Route Receptor Identification

Using the visibility analysis results in conjunction with aerial imagery, road centerline data, and land use data, Dudek staff selected potential receptors based on their distance from the project, orientation to the project, and the percentage of the project visible from the receptor's location. To avoid false positives in the glare results, only receptors that were predicted to be able to see the project from their location were selected for the analysis. Receptors to the north, west, and east of the project were prioritized because, in the northern hemisphere, these are the locations most likely to receive glare from a single-axis tracking system on flat terrain. Figure 3 shows the locations of analyzed receptors as well as the modeled array locations. Each modeled receptor type shown on Figure 3 is described below and the receptor's precise modeling parameters can be found in Appendix A:

- Observation Point (OP) – Analysis of the project included 19 existing potentially sensitive structures that were located adjacent to the project or more distant dwellings within direct line of sight of the project. Because modeling every dwelling within the 5-mile study area would not be feasible, Dudek staff selected representative dwellings from neighborhoods within the study area, making sure to include a variety of directions and distances from the project. The eye-level height of all point observers was set to 5.5 feet. Descriptions of each observation point can be found in Table 2, Observation Point Descriptions.

- Highway/Road Observation Route – Analysis of the project site included a combination of 11 developed road and highway observation routes, which were selected based on visibility, sensitivity, distance to the project site, and level of traffic expected on the roadways. To keep the number of receptor routes within the allowed limit by the geometric modeling software, Dudek staff selected routes that would be representative of each road type and road direction of travel within view of the project. Per the American Association of State Highway and Transportation Officials (AASHTO), the eye-level height of observers on the highway/road observation routes was set to 7.6 feet, the average height for observers in large trucks (AASHTO 2001). Descriptions of each route can be found in Table 3, Highway/Road Observation Route Descriptions.

Table 2. Observation Point Descriptions

Observation Point ID	Description
OP 1	Dwelling at 1802 Jeffery Road, El Centro
OP 2	2599-2593 W. Hardy Road, El Centro
OP 3	Dwelling at 1301 Hyde Road, Ocotillo
OP 4	Dwelling at 2358-2598 W. Vaughn Road, El Centro
OP 5	Dwelling Adjacent to Canal, Ocotillo
OP 6	Dwelling at 1651 Westside Road, El Centro
OP 7	Westside Elementary Schoolyard (vacant), El Centro
OP 8	Westside Elementary School (vacant), El Centro
OP 9	Dwelling at 2250 W. Vaughn Road, El Centro
OP 10	Representative Dwelling at 2213 W. Evan Hewes Highway, Imperial
OP 11	Dwelling at 1600 Jessup Road, El Centro
OP 12	Potential Dwelling at 1704 Jessup Road, El Centro
OP 13	Representative Dwelling at 1985 Highway 80, Seeley
OP 14	Potential Dwelling at 1706 Derrick Road, El Centro
OP 15	Rio Bend Golf Course, El Centro
OP 16	Potential Dwelling at 1859 W. Evan Hewes Highway, Seeley
OP 17	Representative Dwelling on Mountain View, Rio Bend RV & Golf Resort, El Centro
OP 18	Representative Dwelling on Willow Lane, Storm's Crossing Mobile Estates, El Centro
OP 19	Glen Haskell Sports Complex, Seeley

Table 3. Highway/Road Observation Route Descriptions

Route ID	Description
Route 1	Derrick Road A
Route 2	Derrick Road B
Route 3	*No route was analyzed using this ID.*
Route 4	Drew Road
Route 5	Interstate 8 Eastbound A
Route 6	Interstate 8 Eastbound B
Route 7	Interstate 8 Westbound B
Route 8	Jeffery Road and Hyde Road
Route 9	W. Vaughn Road
Route 10	Westside Road A
Route 11	Westside Road B
Route 12	Westside Road C

4.2.3 Geometric Glare Analysis

Dudek staff used an industry standard 3-D geometric glare analysis software tool developed by Sandia National Laboratories and licensed by ForgeSolar. Though initially developed for solar projects on airports, this software has been validated as effective for projects of this type. By inputting the solar panel locations and characteristics, and the locations and elevations of the receptors, the software can simulate the sun's progression across the sky over the course of a year and model the potential glare caused by the proposed solar arrays. If glare is detected, the software can quantify the level of ocular impact hazard (green, yellow, or red), and pinpoint the exact time of year the glare would occur. This analysis is automatically performed for every minute of the calendar year, for each module array analysis group, and for each potential receptor defined in the model.

Dudek staff consulted the project applicant to obtain the precise characteristics of the proposed solar array system. Data gathered included the physical location, orientation, build material, tilt angle, and tracking technology. All of these characteristics were entered into the modeling software, as provided in Table 4.

Table 4. Solar Array Model Inputs

Solar Array Characteristics	Proposed Project Configuration
Tracking method	Single-axis
Module surface material	Light textured glass with anti-reflective coating
Tracking axis orientation	North–south
Maximum tracking angle	60°
Resting angle (when sun leaves maximum tracking angle)	0°
Backtracking method	Shade

As described in Table 4, the project is anticipated to utilize a single-axis tracking system. This tracking system would be oriented running north–south with the panel faces rotating from east to west. The system would be able to track the sun's progression across the sky, within the system's 120° range of motion (60° to the east and 60° to the west). When the sun is not within the range of motion, the panels would backtrack and rest at 0° (flat).

To reflect the planned fence screening along the northern boundary of the project, Dudek staff used ForgeSolar's obstruction features that can model obstructions such as trees or fences. In total, six fences with upper edge heights of 7 feet were modeled; their precise locations and component characteristics can be found in Appendix A.

4.2.4 Limitations of the Geometric Analysis

The glare modeling software used in this analysis does not consider existing vegetation, structures, or terrain that might obscure the view of the panels from the receptor locations. Though the visibility analysis was performed to help mitigate this software limitation, there is still a possibility that glare could be predicted at receptors that are unable to clearly see the panels, which would exaggerate the level of predicted glare discussed in Section 4.3, Geometric Analysis Results.

The following features could partially conceal the solar panels from the receptors:

- Buildings and other structures between the receptors and the project site
- Trees, shrubs and other vegetation between the receptors and the project site
- Atmospheric conditions such as clouds, fog, dust, or haze

4.2.5 Baseline Glare Conditions

There are currently several sources of potentially impactful glare in the vicinity of the project, which this analysis will refer to as "baseline conditions." While the level of glare caused by these sources was not assessed in this analysis, the potential glare caused by the project should be considered in the context of the existing baseline conditions. The following list describes existing humanmade features in the vicinity of the project that could create potential for hazardous glare (also, see Figure 4 for their locations):

- **Existing Utility-Scale Photovoltaic Systems:** Figure 4, Existing Solar Projects Within Study Area, shows the locations of several existing utility-scale solar facilities within the study area. Like the project, these facilities have the potential to produce glare in the "Green" or "Yellow" ocular impact categories.

4.3 Glare Analysis Results

This glare analysis was conducted per the FAA's recommended procedures described in the Technical Guidance for Evaluating Selected Solar Technologies on Airports (FAA 2018), and the geometric glare modeling software used adheres to FAA policy regarding solar energy system projects on federally obligated airports (86 FR 25801–25803). This policy does not apply to the project but was included in this reporting to describe the standard methodologies used to assess solar glare near operating airports. Specifically, the glare analysis and software quantify the level of ocular impact hazard (reported as green or yellow glare) and pinpoints the exact time of year the glare would occur.

4.3.1 Results for Airport Receptors

Dudek determined that, according to the results of the geometric analysis, the project would likely not result in any glare in the "Green" or "Yellow" ocular hazard levels to any of the receptors associated with airport operations at NJK. The results for airport receptors can be found in Table 5,

Table 5. Green and Yellow Glare Results for Airport Receptors

Airport Receptor	Daily Average Minutes of Green or Yellow Glare	Daily Maximum Minutes of Green or Yellow Glare	Days Per Year With Green or Yellow Glare
Approach 8 (NJK08)	0	0	0
Approach 12 (NJK12)	0	0	0
Approach 26 (NJK26)	0	0	0
Approach 30 (NJK30)	0	0	0
Air Traffic Control Tower	0	0	0

4.3.2 Results for Point and Route Receptors

The results of the analysis indicate that, under the proposed project parameters described in Section 4.1, most of the point and route receptors analyzed will receive some "green" glare (low potential for after image) and some will receive "yellow" glare (potential for after image). The summarized results can be found in Table 6, Green Glare Results for Point and Route Receptors, and Table 7, Yellow Glare Results for Point and Route Receptors, and the detailed modeling output can be found in Appendix A.

Interstate 8 Receptors

According to the analysis results, the eastbound and westbound lanes of I-8 (Route IDs 5, 6, and 7) will receive a small duration of "green" glare and no "yellow" glare from the proposed PV arrays. This "green" glare will occur around 6 minutes per day, on average, during the fall and winter months, and only when the sun is low in the sky (in the early mornings and early evenings). There are currently no thresholds for acceptable levels of glare towards road receptors, but because this low-hazard glare is predicted to occur at a time when there will be considerable baseline levels of glare from the rising or setting sun, it is not anticipated that the project will have a significant impact on motorists traveling on I-8.

Dwelling Receptors

A total of 13 of the 19 dwellings analyzed are predicted to receive some amount of "green" glare (low potential for after image), with 2 of the dwellings predicted to also receive "yellow" glare (potential for after image). The average daily duration of glare is predicted to occur for less than 7 minutes, with maximum daily durations less than 14 minutes. All the glare predicted towards dwelling receptors is anticipated to occur when the sun is around 1° above the horizon, in the very early mornings and very early evenings. There are currently no thresholds for acceptable levels of glare towards dwelling receptors, but because the glare predicted towards these receptors occurs for less than 15 minutes per day and is coincident with the glare from the rising and setting sun, it is not anticipated that the project will have a significant impact on nearby dwelling receptors.

Other Route Receptors

Of the non-interstate routes analyzed, four were predicted to receive glare in the "green" (low potential for after image) or "yellow" (potential for after image) ocular impact categories. These routes are identified in this report as Routes 8, 9, 11, and 12. As shown on Figure 3, all four of these routes are located south of I-8 and west of New River. After the completion of the project, all the affected portions of these routes will likely be used primarily as access roads for the operation and maintenance of the various solar facilities in the area.

The results of the analysis predict that these four routes will receive, on average, between 4 and 12 daily minutes of "green" glare, and between 1 and 16 daily minutes of "yellow" glare. This glare could occur on most days of the year and would be limited to times when the sun is less than 1° above the horizon, in the early mornings and early evenings. During these times, the glare will be aligned coincident with the glare from the rising/setting sun, which is a significantly more intense source of glare. Because of this and the fact that these routes will be traveled at relatively low speeds by vehicles associated with the operation and maintenance of the solar facilities, it is not anticipated that the project will have a significant effect on these route receptors.

Table 6. Green Glare Results for Point and Route Receptors

Point and Route Receptors	Daily Average Minutes of Green Glare	Daily Maximum Minutes of Green Glare	Days Per Year With Green Glare
OP 1	0	0	0
OP 2	3	5	51
OP 3	4	7	88
OP 4	4	8	177
OP 5	6	12	86
OP 6	1	3	37

Table 6. Green Glare Results for Point and Route Receptors

Point and Route Receptors	Daily Average Minutes of Green Glare	Daily Maximum Minutes of Green Glare	Days Per Year With Green Glare
OP 7	6	11	278
OP 8	6	12	276
OP 9	7	14	276
OP 10	0	0	0
OP 11	6	12	290
OP 12	0	0	0
OP 13	0	0	0
OP 14	1	2	19
OP 15	5	5	43
OP 16	0	0	0
OP 17	4	11	197
OP 18	4	6	83
Route 1	0	0	0
Route 2	0	0	0
Route 3	*No route was analyzed using this ID.*		
Route 4	0	0	0
Route 5	6	9	177
Route 6	5	6	169
Route 7	3	6	102
Route 8	4	7	352
Route 9	12	19	366*
Route 10	0	0	0
Route 11	5	9	243
Route 12	5	10	363

Note: * Analysis included an extra day due to 2024 being a leap year.

Table 7. Yellow Glare Results for Point and Route Receptors

Point and Route Receptors	Daily Average Minutes of Yellow Glare	Daily Maximum Minutes of Yellow Glare	Days Per Year With Yellow Glare
OP 1	0	0	0
OP 2	0	0	0
OP 3	0	0	0
OP 4	2	3	21
OP 5	0	0	22
OP 6	0	0	0
OP 7	0	0	0
OP 8	0	0	0
OP 9	0	0	0
OP 10	0	0	0
OP 11	2	3	92

Table 7. Yellow Glare Results for Point and Route Receptors

Point and Route Receptors	Daily Average Minutes of Yellow Glare	Daily Maximum Minutes of Yellow Glare	Days Per Year With Yellow Glare
OP 12	0	0	0
OP 13	0	0	0
OP 14	0	0	0
OP 15	0	0	0
OP 16	0	0	0
OP 17	0	0	0
OP 18	0	0	0
Route 1	0	0	0
Route 2	0	0	0
Route 3	*No route was analyzed using this ID.*		
Route 4	0	0	0
Route 5	0	0	0
Route 6	0	0	0
Route 7	0	0	0
Route 8	1	3	64
Route 9	16	33	350
Route 10	0	0	0
Route 11	9	14	247
Route 12	4	6	366*

Note: * Analysis included an extra day due to 2024 being a leap year.

4.3.3 Comparison of Results to Other Sources of Glare

Nearly all the glare predicted towards receptors will occur when the sun is less than 1° above the horizon, during sunrise and sunset. From the observer's point of view, this glare will be aligned with the setting/rising sun, similar to what would be seen over a lake or ocean during these times, but less intense (Riley and Olson 2011) due to the implementation of antireflective coatings on the project's PV modules.

The results indicate that the glare produced by the project will not result in more ocular impact than a smooth water body under conservative assumptions (Riley and Olson 2011) and will result in far less impact than the hazards posed due to viewing the unfiltered sun (ForgeSolar 2019).

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5 References

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6 Document Preparers

This Glare Analysis Report was prepared by Christopher Starbird.

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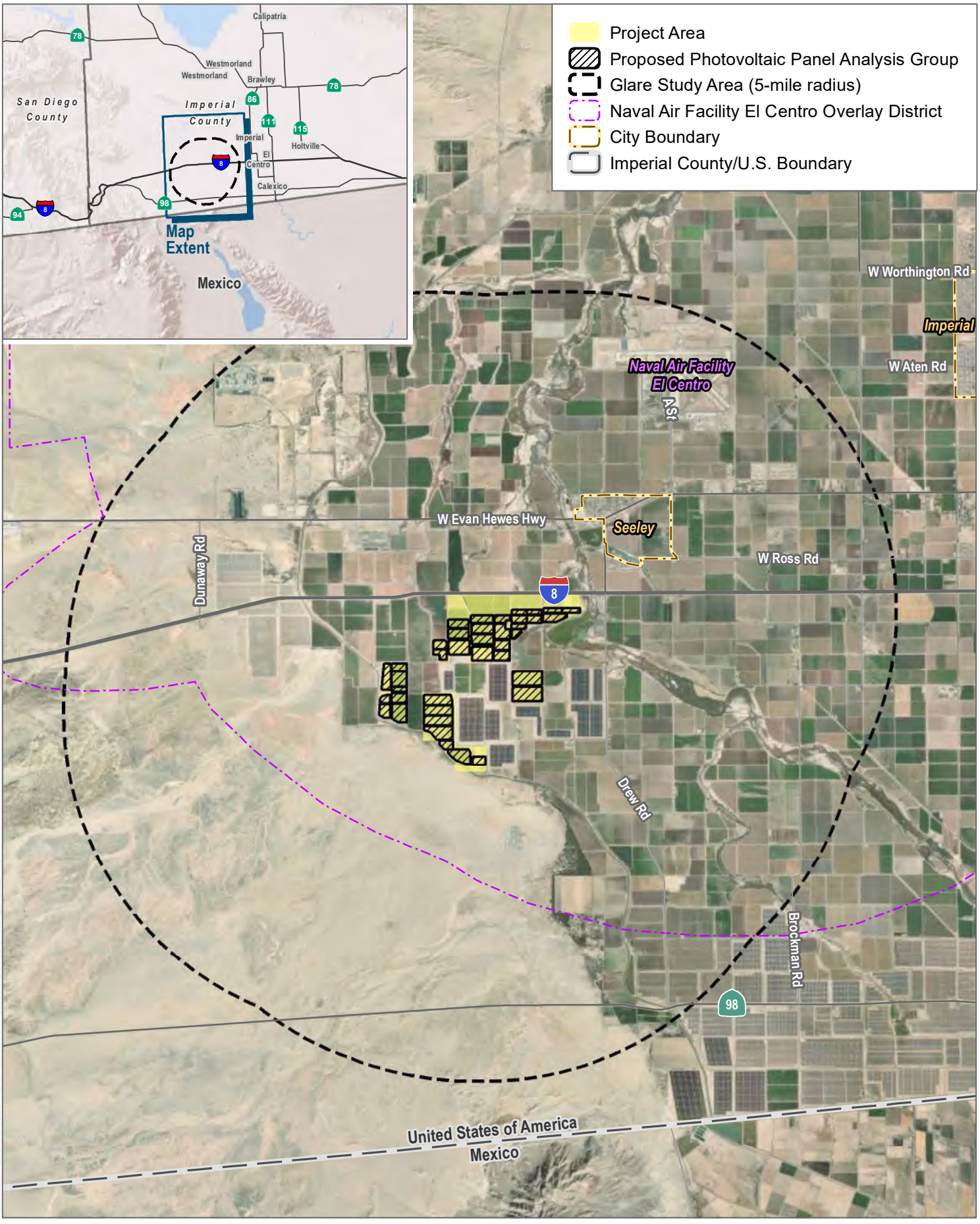

SOURCE: Esri 2020

FIGURE 1

Project Location

Big Rock 2 Energy Project Glare Analysis Report

DUDEK

0 1 2 Miles

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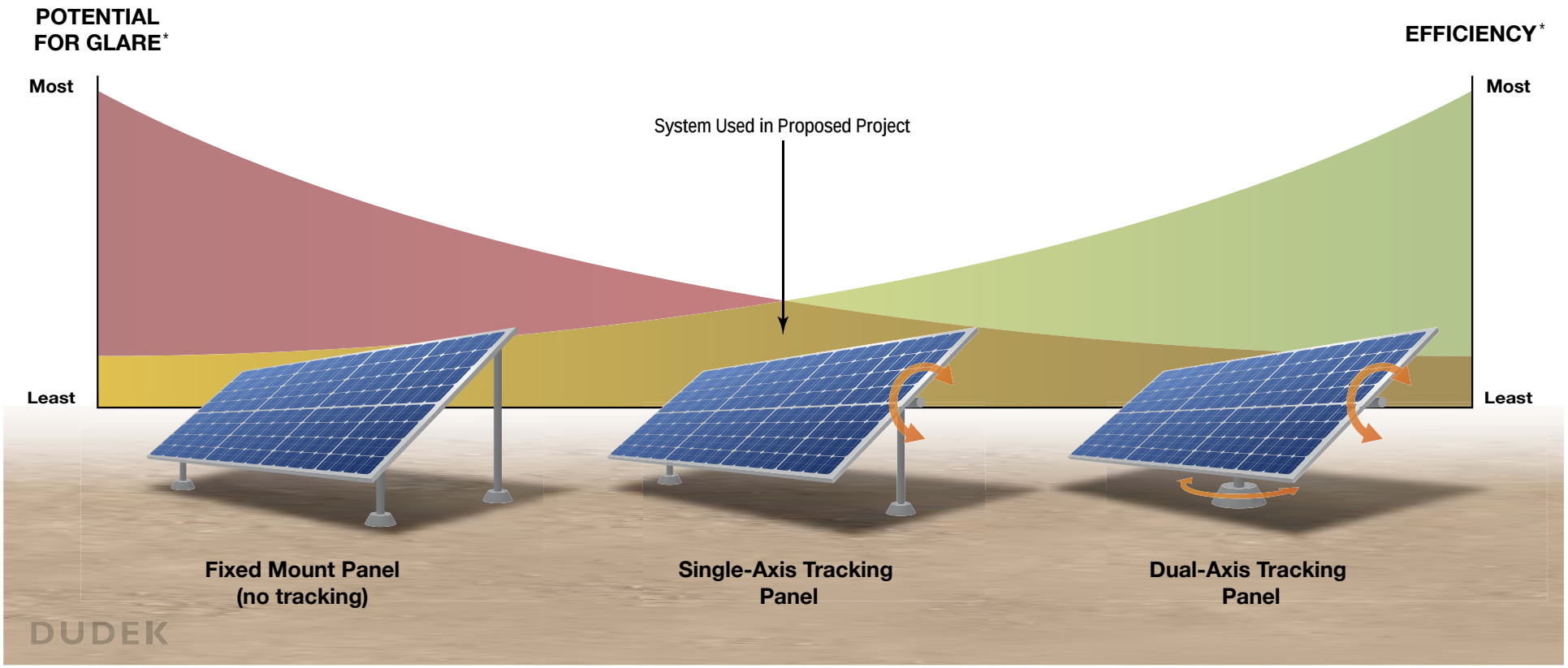

** Efficiency and glare relationships represented in this graphic have been exaggerated and are for illustrative purposes only.*

SOURCE: DUDEK 2023

DUDEK

FIGURE 2

Comparison of Photovoltaic Tracking Systems

Big Rock 2 Energy Project Glare Analysis Report

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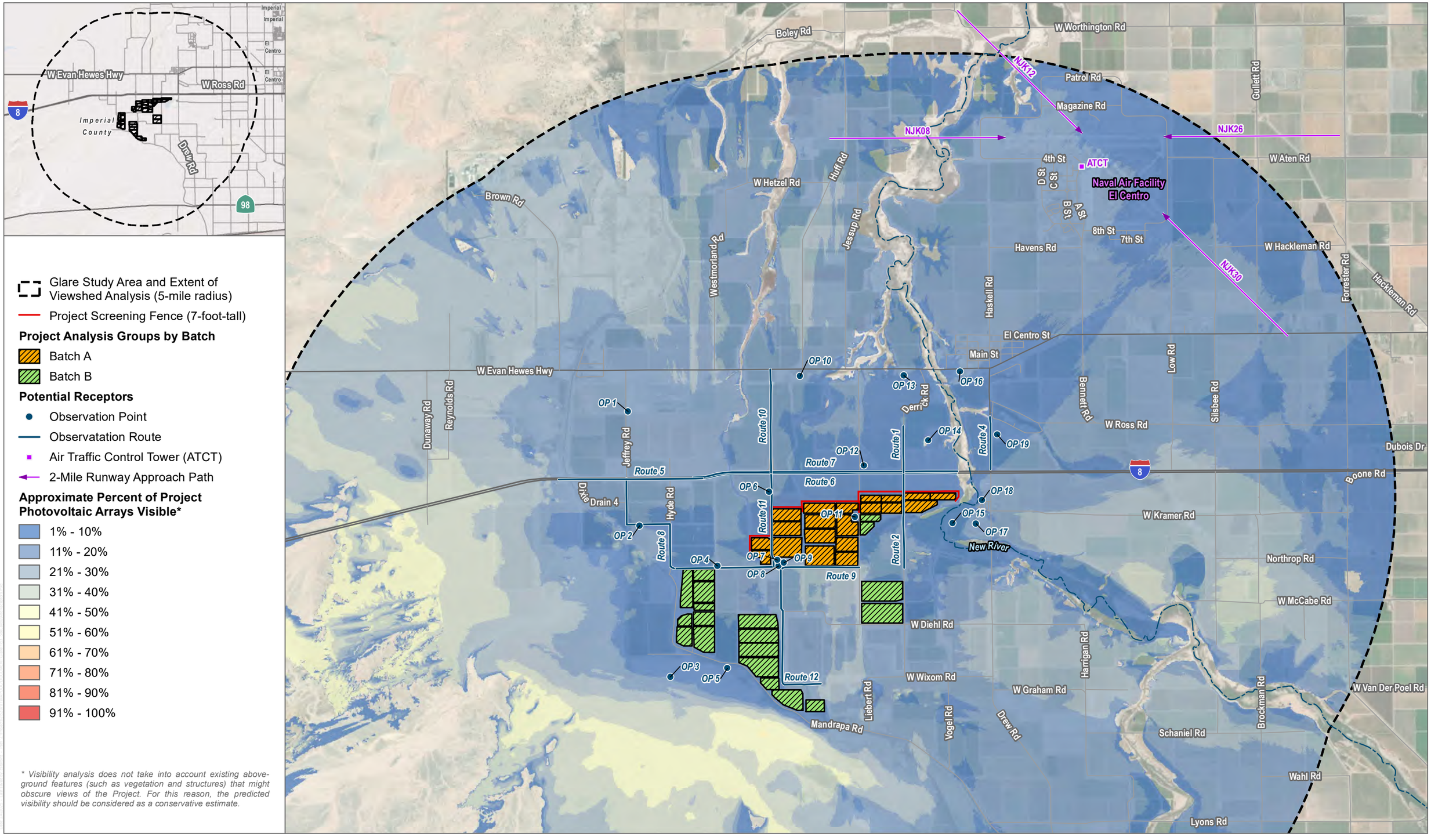

SOURCE: Esri Imagery (Accessed 2023)

DUDEK

0 0.7 1.4 Miles

FIGURE 3

Project Layout and Receptor Locations

Big Rock 2 Energy Project Glare Analysis Report

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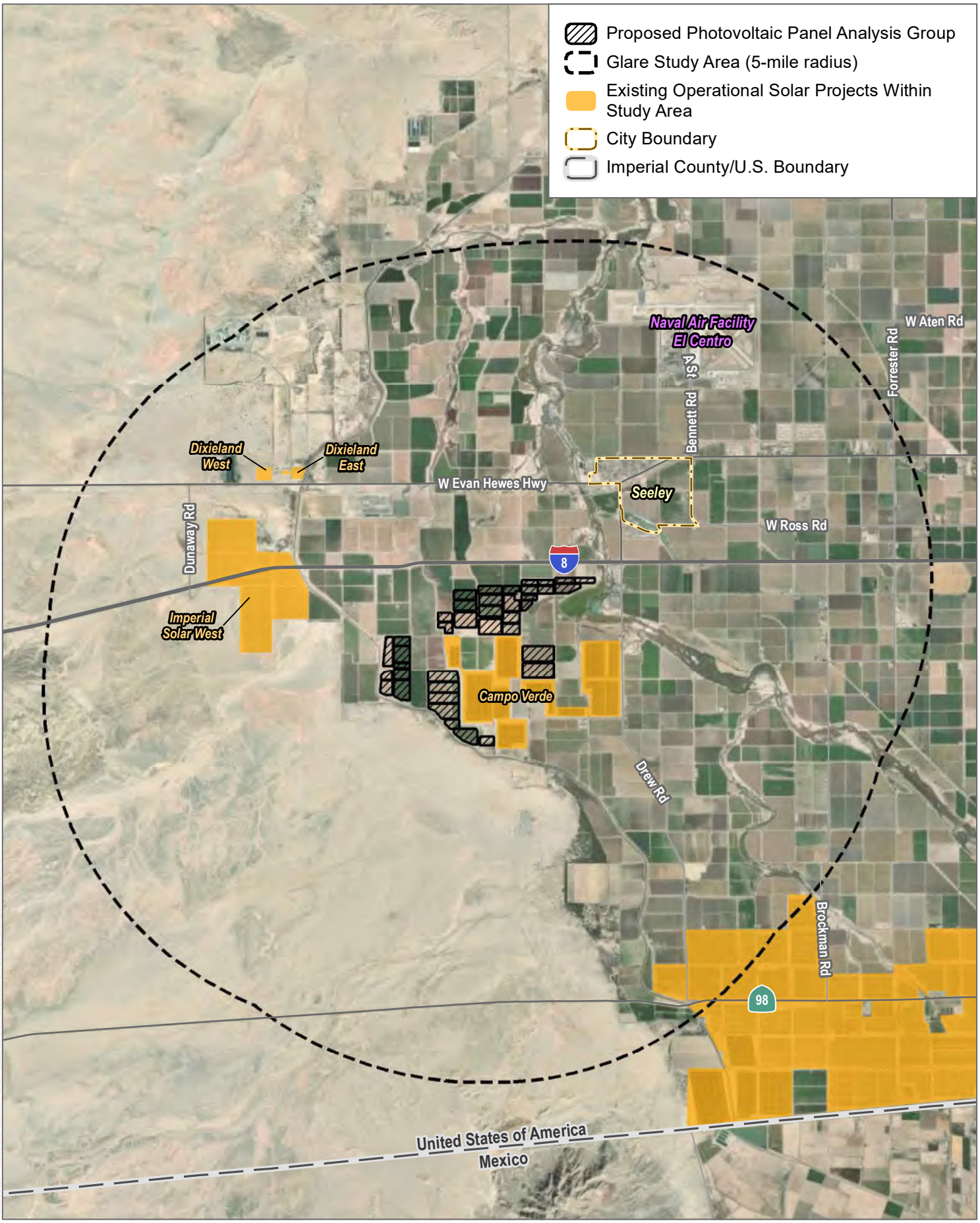

SOURCE: Esri 2020

DUDEK

0 1 2 Miles

FIGURE 4

Existing Solar Projects Within Study Area

Big Rock 2 Energy Project Glare Analysis Report

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Appendix A
Detailed Modeling Results

FORGESOLAR GLARE ANALYSIS

Project: **Big Rock Solar Nov 2023**
Site configuration: **Big Rock Solar May 2024 Group A**

Created 02 May, 2024
Updated 02 May, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 118221.18188

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 potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV01	SA tracking	SA tracking	1,219	20.3	0	0.0	-
PV02	SA tracking	SA tracking	861	14.3	0	0.0	-
PV03	SA tracking	SA tracking	360	6.0	0	0.0	-
PV04	SA tracking	SA tracking	359	6.0	0	0.0	-
PV05	SA tracking	SA tracking	879	14.7	0	0.0	-
PV06	SA tracking	SA tracking	1,979	33.0	135	2.2	-
PV07	SA tracking	SA tracking	303	5.0	0	0.0	-
PV08	SA tracking	SA tracking	839	14.0	0	0.0	-
PV09	SA tracking	SA tracking	604	10.1	1	0.0	-
PV10	SA tracking	SA tracking	1,040	17.3	0	0.0	-
PV11	SA tracking	SA tracking	258	4.3	0	0.0	-
PV12	SA tracking	SA tracking	531	8.8	0	0.0	-
PV13	SA tracking	SA tracking	454	7.6	0	0.0	-
PV14	SA tracking	SA tracking	1,621	27.0	250	4.2	-
PV15	SA tracking	SA tracking	3,458	57.6	2,314	38.6	-
PV16	SA tracking	SA tracking	2,074	34.6	922	15.4	-
PV17	SA tracking	SA tracking	377	6.3	0	0.0	-
PV18	SA tracking	SA tracking	3,058	51.0	3,204	53.4	-
PV19	SA tracking	SA tracking	897	14.9	120	2.0	-
PV20	SA tracking	SA tracking	502	8.4	1,515	25.2	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

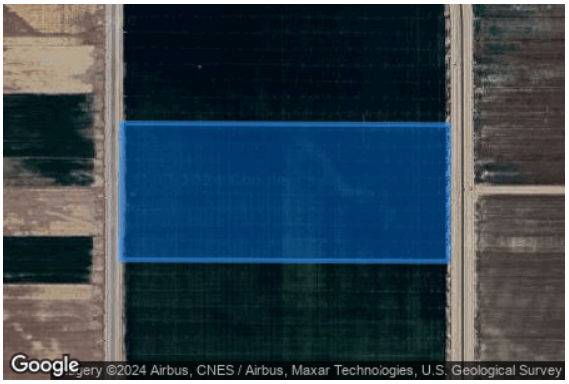
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route04	0	0.0	0	0.0
Route05	2,003	33.4	0	0.0
Route06	2,031	33.9	0	0.0
Route07	474	7.9	0	0.0
Route08	1,399	23.3	0	0.0
Route09	6,314	105.2	5,811	96.8
Route10	0	0.0	0	0.0
Route11	758	12.6	2,514	41.9
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	149	2.5	0	0.0
OP 3	0	0.0	0	0.0
OP 4	313	5.2	0	0.0
OP 5	0	0.0	0	0.0
OP 6	55	0.9	0	0.0
OP 7	1,755	29.2	0	0.0
OP 8	1,342	22.4	0	0.0
OP 9	2,336	38.9	0	0.0
OP 10	0	0.0	0	0.0
OP 11	1,946	32.4	136	2.3
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	24	0.4	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	671	11.2	0	0.0
OP 18	103	1.7	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

Component Data

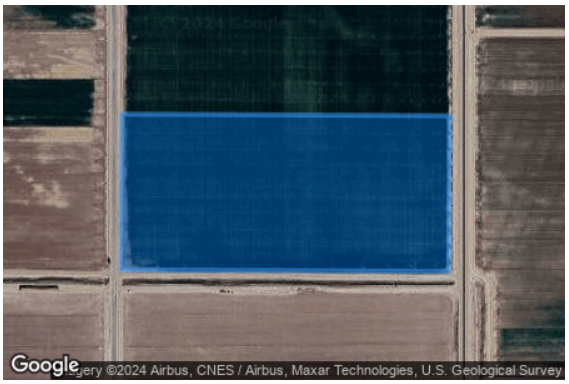
PV Arrays

Name: PV01
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.768052	-115.733092	-39.53	5.00	-34.53
2	32.768029	-115.727456	-37.21	5.00	-32.21
3	32.766058	-115.727468	-36.08	5.00	-31.08
4	32.766082	-115.733103	-40.90	5.00	-35.90

Name: PV02
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

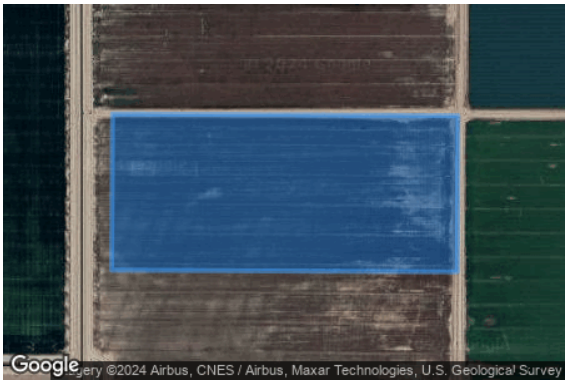


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.765918	-115.733104	-40.95	5.00	-35.95
2	32.765894	-115.727469	-37.86	5.00	-32.86
3	32.763645	-115.727482	-37.02	5.00	-32.02
4	32.763669	-115.733117	-39.82	5.00	-34.82

Name: PV03
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

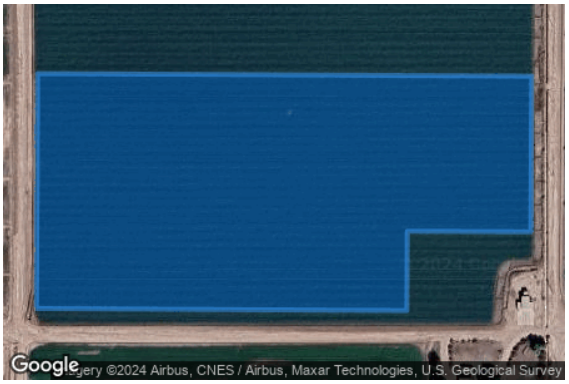
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.768981	-115.726917	-38.81	5.00	-33.81
2	32.768955	-115.720826	-42.15	5.00	-37.15
3	32.767263	-115.720837	-41.55	5.00	-36.55
4	32.767289	-115.726927	-37.02	5.00	-32.02

Name: PV04
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.767082	-115.726694	-37.28	5.00	-32.28
2	32.767057	-115.720755	-41.22	5.00	-36.22
3	32.764808	-115.720769	-40.83	5.00	-35.83
4	32.764833	-115.726707	-37.93	5.00	-32.93

Name: PV05
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

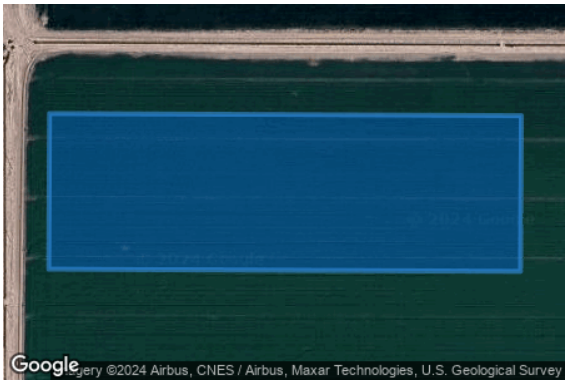


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.768953	-115.720547	-40.17	5.00	-35.17
2	32.768935	-115.716303	-36.48	5.00	-31.48
3	32.767814	-115.716310	-38.25	5.00	-33.25
4	32.767819	-115.717371	-38.50	5.00	-33.50
5	32.767248	-115.717375	-38.11	5.00	-33.11
6	32.767262	-115.720558	-41.50	5.00	-36.50

Name: PV06
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

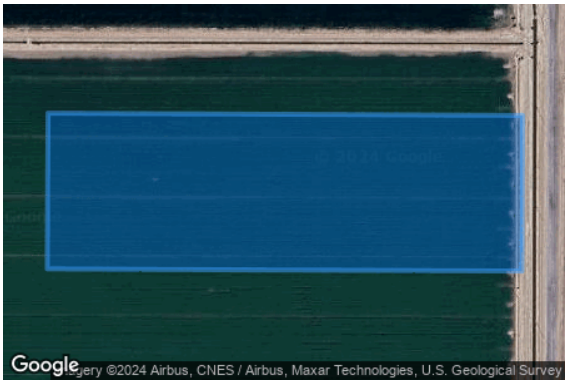
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.767056	-115.720476	-40.27	5.00	-35.27
2	32.767043	-115.717594	-37.00	5.00	-32.00
3	32.765809	-115.717601	-38.84	5.00	-33.84
4	32.765804	-115.716312	-37.73	5.00	-32.73
5	32.763589	-115.716326	-37.85	5.00	-32.85
6	32.763572	-115.720497	-39.30	5.00	-34.30

Name: PV07
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



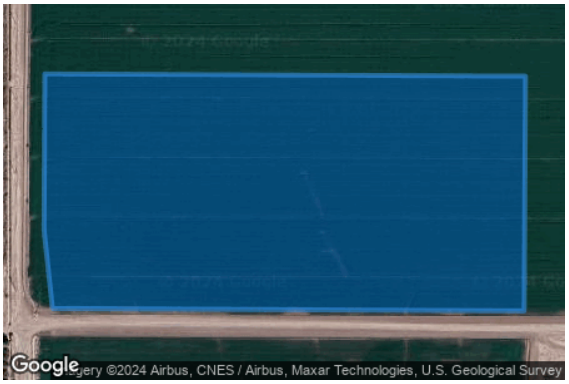
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.769082	-115.711742	-36.09	5.00	-31.09
2	32.769097	-115.715796	-36.04	5.00	-31.04
3	32.770218	-115.715789	-36.84	5.00	-31.84
4	32.770202	-115.711735	-36.75	5.00	-31.75

Name: PV08
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.769082	-115.711742	-36.09	5.00	-31.09
2	32.770202	-115.711735	-36.75	5.00	-31.75
3	32.770186	-115.707658	-33.84	5.00	-28.84
4	32.769066	-115.707665	-33.38	5.00	-28.38

Name: PV09
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.767227	-115.711753	-35.65	5.00	-30.65
2	32.767245	-115.715807	-38.23	5.00	-33.23
3	32.767813	-115.715879	-37.72	5.00	-32.72
4	32.768933	-115.715872	-36.86	5.00	-31.86
5	32.768917	-115.711743	-36.01	5.00	-31.01

Name: PV10
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.767227	-115.711753	-35.65	5.00	-30.65
2	32.768917	-115.711743	-36.01	5.00	-31.01
3	32.768902	-115.707742	-34.45	5.00	-29.45
4	32.767210	-115.707752	-33.81	5.00	-28.81

Name: PV11
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.770562	-115.702224	-44.35	5.00	-39.35
2	32.769442	-115.702231	-45.26	5.00	-40.26
3	32.769464	-115.707274	-33.52	5.00	-28.52
4	32.770585	-115.707241	-33.60	5.00	-28.60

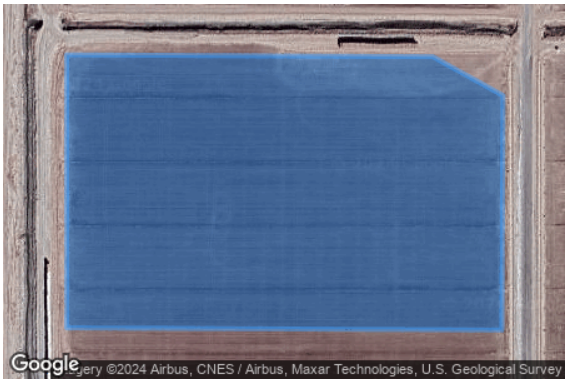
Name: PV12
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.769442	-115.702231	-45.26	5.00	-40.26
2	32.770562	-115.702224	-44.35	5.00	-39.35
3	32.770540	-115.697207	-39.71	5.00	-34.71
4	32.769698	-115.697212	-40.26	5.00	-35.26
5	32.769420	-115.697466	-39.58	5.00	-34.58

Name: PV13
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

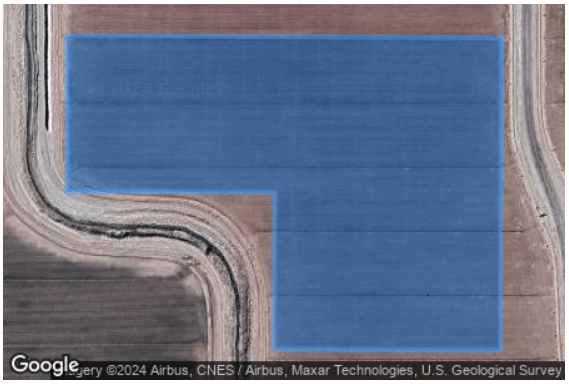
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.769271	-115.700855	-50.60	5.00	-45.60
2	32.768592	-115.700859	-54.98	5.00	-49.98
3	32.767314	-115.703924	-35.29	5.00	-30.29
4	32.767329	-115.707337	-33.50	5.00	-28.50
5	32.769300	-115.707279	-33.43	5.00	-28.43

Name: PV14
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.761343	-115.737183	-42.67	5.00	-37.67
2	32.763314	-115.737184	-41.79	5.00	-36.79
3	32.763301	-115.734041	-38.62	5.00	-33.62
4	32.763019	-115.733436	-38.75	5.00	-33.75
5	32.761328	-115.733446	-39.00	5.00	-34.00

Name: PV15
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.758922	-115.735404	-38.49	5.00	-33.49
2	32.760051	-115.735397	-38.61	5.00	-33.61
3	32.760058	-115.737182	-38.71	5.00	-33.71
4	32.761179	-115.737183	-41.71	5.00	-36.71
5	32.761163	-115.733447	-39.10	5.00	-34.10
6	32.758914	-115.733460	-36.79	5.00	-31.79

Name: PV16
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.763318	-115.733055	-38.51	5.00	-33.51
2	32.763294	-115.727334	-36.45	5.00	-31.45
3	32.760038	-115.727429	-36.51	5.00	-31.51
4	32.760061	-115.732779	-35.00	5.00	-30.00
5	32.760620	-115.733061	-36.49	5.00	-31.49

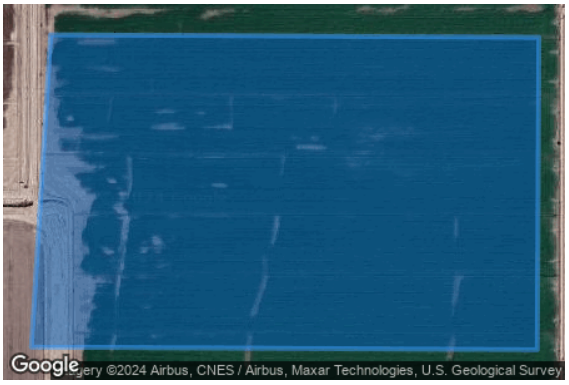
Name: PV17
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.764669	-115.726784	-37.86	5.00	-32.86
2	32.764644	-115.720770	-40.71	5.00	-35.71
3	32.762394	-115.720783	-40.98	5.00	-35.98
4	32.762419	-115.726646	-36.30	5.00	-31.30
5	32.763827	-115.726789	-37.46	5.00	-32.46

Name: PV18
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

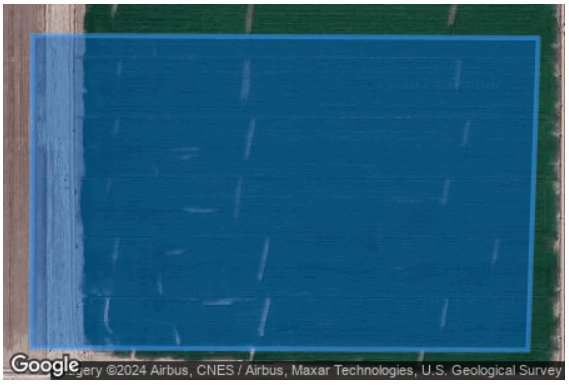
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.758609	-115.721034	-38.02	5.00	-33.02
2	32.758633	-115.726669	-38.43	5.00	-33.43
3	32.761888	-115.726649	-39.72	5.00	-34.72
4	32.761872	-115.721013	-38.10	5.00	-33.10
5	32.761864	-115.721014	-38.14	5.00	-33.14

Name: PV19
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.761002	-115.716394	-38.01	5.00	-33.01
2	32.761021	-115.720740	-37.68	5.00	-32.68
3	32.763270	-115.720575	-41.69	5.00	-36.69
4	32.763252	-115.716380	-37.64	5.00	-32.64

Name: PV20
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.760857	-115.720741	-37.60	5.00	-32.60
2	32.760838	-115.716395	-39.10	5.00	-34.10
3	32.758589	-115.716485	-37.79	5.00	-32.79
4	32.758608	-115.720755	-38.03	5.00	-33.03

Route Receptors

Name: Route01
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.781612	-115.707405	-38.47	7.60	-30.87
2	32.779286	-115.707392	-38.01	7.60	-30.41
3	32.777115	-115.707405	-37.41	7.60	-29.81
4	32.775659	-115.707400	-29.17	7.60	-21.57
5	32.773996	-115.707407	-31.94	7.60	-24.34

Name: Route02
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773996	-115.707407	-31.94	7.60	-24.34
2	32.773325	-115.707405	-31.14	7.60	-23.54
3	32.772457	-115.707405	-33.93	7.60	-26.33
4	32.771565	-115.707399	-33.56	7.60	-25.96
5	32.770066	-115.707397	-33.74	7.60	-26.14
6	32.769041	-115.707420	-33.24	7.60	-25.64
7	32.768296	-115.707425	-34.29	7.60	-26.69
8	32.767714	-115.707440	-33.75	7.60	-26.15
9	32.767032	-115.707455	-34.51	7.60	-26.91
10	32.766545	-115.707498	-36.12	7.60	-28.52
11	32.765400	-115.707499	-39.73	7.60	-32.13
12	32.764266	-115.707468	-37.65	7.60	-30.05
13	32.761319	-115.707359	-36.54	7.60	-28.94
14	32.758160	-115.707340	-36.79	7.60	-29.19

Name: Route04
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.783056	-115.690449	-41.67	7.60	-34.07
2	32.782746	-115.690423	-42.03	7.60	-34.43
3	32.781994	-115.690357	-39.42	7.60	-31.82
4	32.781386	-115.690332	-38.20	7.60	-30.60
5	32.778869	-115.690348	-38.34	7.60	-30.74
6	32.776376	-115.690364	-36.39	7.60	-28.79
7	32.774419	-115.690363	-31.14	7.60	-23.54

Name: Route05
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773078	-115.774795	-27.24	7.60	-19.64
2	32.773104	-115.770524	-32.45	7.60	-24.85
3	32.773070	-115.765509	-34.95	7.60	-27.35
4	32.773064	-115.760189	-37.51	7.60	-29.91
5	32.773086	-115.747972	-38.34	7.60	-30.74
6	32.773138	-115.746684	-36.78	7.60	-29.18

Name: Route06
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773138	-115.746684	-36.78	7.60	-29.18
2	32.773403	-115.745039	-36.46	7.60	-28.86
3	32.773741	-115.743478	-37.37	7.60	-29.77
4	32.773907	-115.742155	-37.18	7.60	-29.58
5	32.773956	-115.740207	-37.16	7.60	-29.56
6	32.773954	-115.736309	-34.96	7.60	-27.36
7	32.773954	-115.732802	-33.40	7.60	-25.80
8	32.773940	-115.729532	-33.54	7.60	-25.94
9	32.773946	-115.724211	-40.50	7.60	-32.90
10	32.773923	-115.718857	-38.49	7.60	-30.89
11	32.773926	-115.716214	-36.70	7.60	-29.10
12	32.773910	-115.709131	-32.79	7.60	-25.19
13	32.773905	-115.704844	-32.87	7.60	-25.27
14	32.773894	-115.699185	-44.61	7.60	-37.01
15	32.773858	-115.697037	-58.11	7.60	-50.51

Name: Route07
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.774083	-115.696832	-59.25	7.60	-51.65
2	32.774088	-115.698627	-45.62	7.60	-38.02
3	32.774107	-115.702779	-34.99	7.60	-27.39
4	32.774117	-115.707932	-32.78	7.60	-25.18
5	32.774130	-115.710912	-32.86	7.60	-25.26
6	32.774140	-115.715797	-36.25	7.60	-28.65
7	32.774140	-115.721276	-40.57	7.60	-32.97
8	32.774138	-115.726543	-39.60	7.60	-32.00
9	32.774148	-115.731711	-35.85	7.60	-28.25
10	32.774141	-115.735834	-34.52	7.60	-26.92
11	32.774143	-115.739166	-35.71	7.60	-28.11
12	32.774139	-115.740903	-37.02	7.60	-29.42
13	32.774121	-115.741765	-37.32	7.60	-29.72
14	32.774025	-115.742816	-36.43	7.60	-28.83
15	32.773843	-115.743935	-36.54	7.60	-28.94
16	32.773576	-115.745174	-36.50	7.60	-28.90
17	32.773409	-115.746208	-36.90	7.60	-29.30
18	32.773340	-115.746937	-37.58	7.60	-29.98
19	32.773289	-115.748463	-36.70	7.60	-29.10

Name: Route08
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773178	-115.761580	-36.92	7.60	-29.32
2	32.770429	-115.761544	-37.91	7.60	-30.31
3	32.767709	-115.761543	-36.11	7.60	-28.51
4	32.765576	-115.761554	-34.20	7.60	-26.60
5	32.765603	-115.757420	-35.66	7.60	-28.06
6	32.765643	-115.753049	-37.07	7.60	-29.47
7	32.764727	-115.753071	-36.33	7.60	-28.73
8	32.762035	-115.753069	-33.79	7.60	-26.19
9	32.760003	-115.753047	-35.47	7.60	-27.87
10	32.758657	-115.753037	-32.40	7.60	-24.80
11	32.758470	-115.752767	-33.34	7.60	-25.74
12	32.758299	-115.752313	-35.56	7.60	-27.96

Name: Route09
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.758299	-115.752313	-35.56	7.60	-27.96
2	32.758343	-115.744757	-37.43	7.60	-29.83
3	32.758411	-115.737144	-37.62	7.60	-30.02
4	32.758477	-115.732757	-33.98	7.60	-26.38
5	32.757971	-115.731483	-36.52	7.60	-28.92
6	32.758230	-115.731186	-35.61	7.60	-28.01
7	32.758360	-115.730838	-38.69	7.60	-31.09
8	32.758407	-115.729442	-37.83	7.60	-30.23
9	32.758400	-115.726483	-37.57	7.60	-29.97
10	32.758379	-115.722417	-37.95	7.60	-30.35
11	32.758347	-115.718509	-36.69	7.60	-29.09
12	32.758321	-115.716148	-37.86	7.60	-30.26

Name: Route10
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.791073	-115.733319	-41.31	7.60	-33.71
2	32.789227	-115.733304	-40.88	7.60	-33.28
3	32.788997	-115.733263	-39.46	7.60	-31.86
4	32.788783	-115.733222	-39.13	7.60	-31.53
5	32.788475	-115.733198	-39.14	7.60	-31.54
6	32.786957	-115.733224	-39.67	7.60	-32.07
7	32.783765	-115.733277	-40.79	7.60	-33.19
8	32.781554	-115.733315	-39.89	7.60	-32.29
9	32.778619	-115.733324	-40.33	7.60	-32.73
10	32.776451	-115.733303	-35.94	7.60	-28.34
11	32.775169	-115.733276	-37.93	7.60	-30.33
12	32.774030	-115.733242	-33.91	7.60	-26.31

Name: Route11
Path type: Two-way
Observer view angle: 50.0°

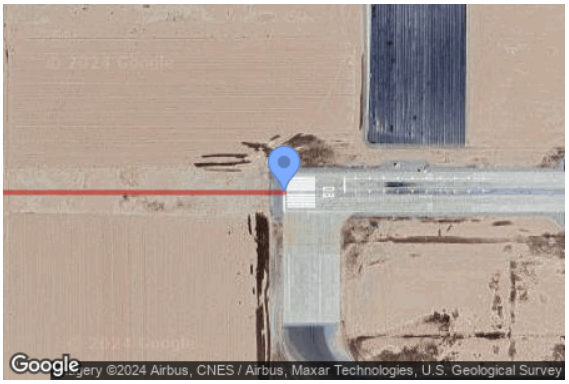
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.774030	-115.733242	-33.91	7.60	-26.31
2	32.771081	-115.733188	-35.92	7.60	-28.32
3	32.769728	-115.733204	-38.14	7.60	-30.54
4	32.767681	-115.733225	-40.05	7.60	-32.45
5	32.765727	-115.733228	-41.13	7.60	-33.53
6	32.764582	-115.733226	-40.60	7.60	-33.00
7	32.763165	-115.733226	-38.65	7.60	-31.05
8	32.761111	-115.733247	-36.97	7.60	-29.37
9	32.760624	-115.733224	-36.73	7.60	-29.13
10	32.760316	-115.733150	-33.77	7.60	-26.17
11	32.760022	-115.733007	-34.79	7.60	-27.19
12	32.759750	-115.732907	-35.86	7.60	-28.26
13	32.759284	-115.732868	-36.20	7.60	-28.60
14	32.758783	-115.732837	-36.44	7.60	-28.84
15	32.758633	-115.732778	-36.35	7.60	-28.75
16	32.758477	-115.732757	-33.98	7.60	-26.38

Name: Route12
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.757971	-115.731483	-36.52	7.60	-28.92
2	32.752093	-115.731458	-36.36	7.60	-28.76
3	32.751576	-115.731456	-36.20	7.60	-28.60
4	32.751220	-115.731121	-33.46	7.60	-25.86
5	32.749496	-115.731138	-38.51	7.60	-30.91
6	32.747645	-115.731170	-39.30	7.60	-31.70
7	32.744820	-115.731219	-38.75	7.60	-31.15
8	32.741767	-115.731273	-37.42	7.60	-29.82
9	32.739648	-115.731310	-36.41	7.60	-28.81
10	32.739328	-115.731264	-35.81	7.60	-28.21
11	32.739119	-115.731065	-35.56	7.60	-27.96
12	32.739044	-115.730899	-36.58	7.60	-28.98
13	32.739042	-115.727491	-36.74	7.60	-29.14
14	32.739039	-115.727061	-36.13	7.60	-28.53
15	32.739088	-115.725130	-35.32	7.60	-27.72
16	32.739158	-115.723752	-33.49	7.60	-25.89

Flight Path Receptors

Name: NJK08
Description: None
Threshold height: 50 ft
Direction: 90.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

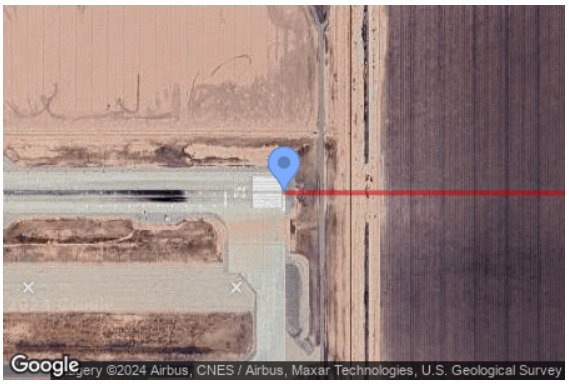


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829135	-115.687092	-50.00	50.00	0.00
Two-mile	32.829135	-115.721540	-42.90	596.30	553.40

Name: NJK12
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829764	-115.672093	-48.80	50.00	1.20
Two-mile	32.850208	-115.696452	-52.30	606.90	554.60

Name: NJK26
Description: None
Threshold height: 55 ft
Direction: 270.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829156	-115.656186	-49.00	55.00	6.00
Two-mile	32.829156	-115.621738	-48.10	607.50	559.40

Name: NJK30
Description: None
Threshold height: 55 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.816530	-115.656494	-42.50	55.00	12.50
Two-mile	32.796089	-115.632135	-35.60	601.60	566.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	32.784232	-115.761123	-37.55	5.50
OP 2	2	32.765361	-115.759028	-27.47	5.50
OP 3	3	32.740398	-115.753116	-2.82	5.50
OP 4	4	32.758689	-115.743834	-28.81	5.50
OP 5	5	32.741795	-115.741975	-13.53	5.50
OP 6	6	32.770851	-115.733700	-30.33	5.50
OP 7	7	32.759604	-115.732076	-35.55	5.50
OP 8	8	32.758638	-115.731863	-32.10	5.50
OP 9	9	32.759149	-115.730843	-29.05	5.50
OP 10	10	32.789932	-115.727501	-41.53	5.50
OP 11	11	32.766648	-115.716886	-34.91	5.50
OP 12	12	32.775113	-115.715136	-39.10	5.50
OP 13	13	32.789968	-115.707252	-41.08	5.50
OP 14	14	32.779210	-115.702460	-34.14	5.50
OP 15	15	32.765555	-115.697826	-65.36	5.50
OP 16	16	32.790545	-115.696241	-37.01	5.50
OP 17	17	32.765415	-115.693275	-38.29	5.50
OP 18	18	32.769290	-115.692077	-41.60	5.50
OP 19	19	32.780102	-115.689035	-37.60	5.50
20-ATCT	20	32.824282	-115.672259	-46.30	90.00

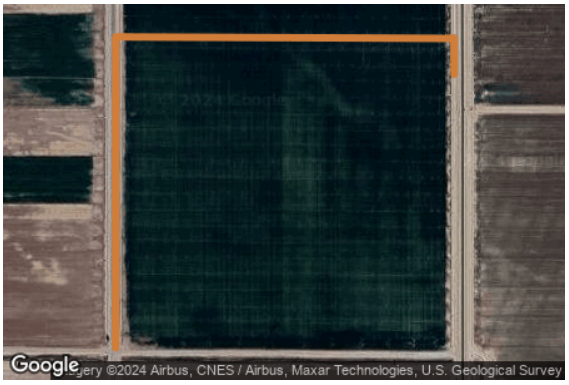
Map image of 20-ATCT

Obstruction Components

Name: Fence01
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.760064	-115.737290	-40.83
2	32.761688	-115.737291	-42.47
3	32.763409	-115.737292	-41.61
4	32.763408	-115.736213	-40.35
5	32.763407	-115.734803	-37.36
6	32.763407	-115.734000	-38.74
7	32.763406	-115.733370	-38.60

Name: Fence02
Top height: 7.0 ft

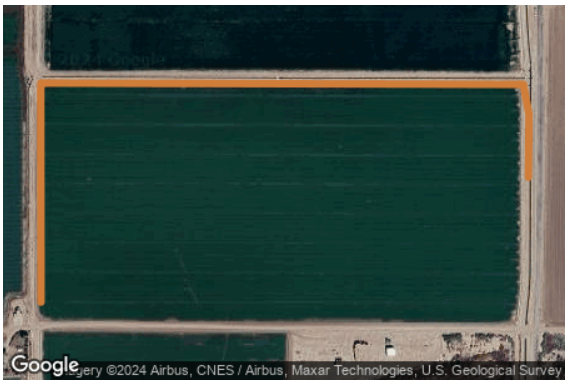


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.763663	-115.733184	-39.07
2	32.765888	-115.733185	-41.04
3	32.768137	-115.733186	-39.42
4	32.768133	-115.732034	-39.66
5	32.768127	-115.730534	-39.33
6	32.768122	-115.729043	-38.72
7	32.768117	-115.727959	-37.82
8	32.768115	-115.727368	-36.36
9	32.767600	-115.727366	-36.96

Name: Fence03
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.767598	-115.727076	-37.24
2	32.768343	-115.727075	-37.01
3	32.769085	-115.727077	-37.55
4	32.769077	-115.724853	-39.24
5	32.769064	-115.721295	-41.52
6	32.769053	-115.718423	-37.82
7	32.769045	-115.716243	-36.68
8	32.768318	-115.716247	-38.26
9	32.767459	-115.716252	-37.38

Name: Fence04
Top height: 7.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.767479	-115.715969	-38.20
2	32.768732	-115.715971	-36.84
3	32.769999	-115.715973	-36.91
4	32.770642	-115.715974	-35.24
5	32.770637	-115.714084	-36.20
6	32.770631	-115.711407	-36.03
7	32.770625	-115.709145	-35.63
8	32.770622	-115.707681	-33.53
9	32.770189	-115.707586	-33.81
10	32.769283	-115.707595	-33.38

Name: Fence05
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.769300	-115.707324	-33.43
2	32.769949	-115.707329	-33.72
3	32.770625	-115.707327	-33.62
4	32.770620	-115.705965	-36.59
5	32.770613	-115.704108	-40.17
6	32.770603	-115.701256	-46.01
7	32.770597	-115.699392	-45.83
8	32.770588	-115.696893	-38.57
9	32.769980	-115.696901	-39.07
10	32.769339	-115.697486	-38.67

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV01	SA tracking	SA tracking	1,219	20.3	0	0.0	-
PV02	SA tracking	SA tracking	861	14.3	0	0.0	-
PV03	SA tracking	SA tracking	360	6.0	0	0.0	-
PV04	SA tracking	SA tracking	359	6.0	0	0.0	-
PV05	SA tracking	SA tracking	879	14.7	0	0.0	-
PV06	SA tracking	SA tracking	1,979	33.0	135	2.2	-
PV07	SA tracking	SA tracking	303	5.0	0	0.0	-
PV08	SA tracking	SA tracking	839	14.0	0	0.0	-
PV09	SA tracking	SA tracking	604	10.1	1	0.0	-
PV10	SA tracking	SA tracking	1,040	17.3	0	0.0	-
PV11	SA tracking	SA tracking	258	4.3	0	0.0	-
PV12	SA tracking	SA tracking	531	8.8	0	0.0	-
PV13	SA tracking	SA tracking	454	7.6	0	0.0	-
PV14	SA tracking	SA tracking	1,621	27.0	250	4.2	-
PV15	SA tracking	SA tracking	3,458	57.6	2,314	38.6	-
PV16	SA tracking	SA tracking	2,074	34.6	922	15.4	-
PV17	SA tracking	SA tracking	377	6.3	0	0.0	-
PV18	SA tracking	SA tracking	3,058	51.0	3,204	53.4	-
PV19	SA tracking	SA tracking	897	14.9	120	2.0	-
PV20	SA tracking	SA tracking	502	8.4	1,515	25.2	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	2,003	33.4	0	0.0
Route06	2,031	33.9	0	0.0
Route07	474	7.9	0	0.0
Route08	1,399	23.3	0	0.0
Route09	6,314	105.2	5,811	96.8
Route10	0	0.0	0	0.0
Route11	758	12.6	2,514	41.9
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	149	2.5	0	0.0
OP 3	0	0.0	0	0.0
OP 4	313	5.2	0	0.0
OP 5	0	0.0	0	0.0
OP 6	55	0.9	0	0.0
OP 7	1,755	29.2	0	0.0
OP 8	1,342	22.4	0	0.0
OP 9	2,336	38.9	0	0.0
OP 10	0	0.0	0	0.0
OP 11	1,946	32.4	136	2.3
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	24	0.4	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	671	11.2	0	0.0
OP 18	103	1.7	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV: PV01 low potential for temporary after-image

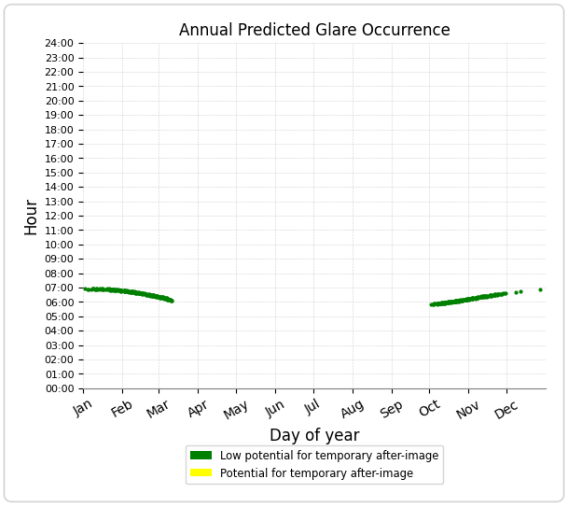
Receptor results ordered by category of glare

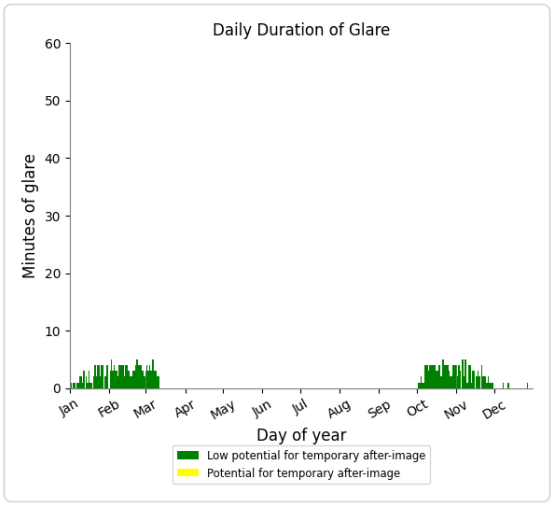
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	355	5.9	0	0.0
Route06	450	7.5	0	0.0
Route08	222	3.7	0	0.0
Route09	192	3.2	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

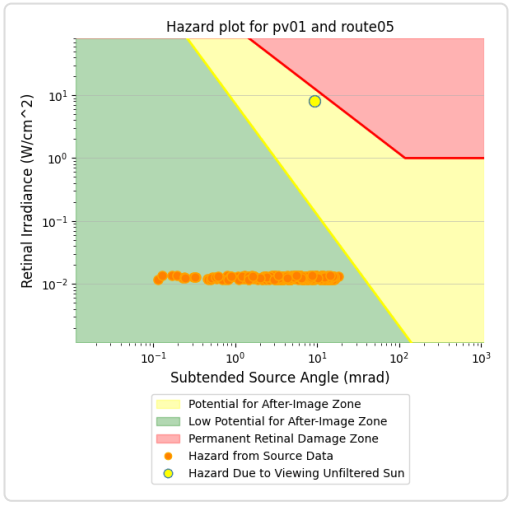
PV01 and Route: Route05

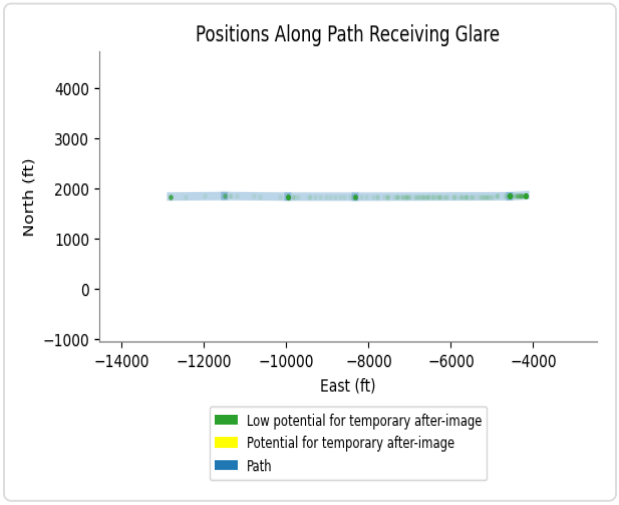
Yellow glare: none

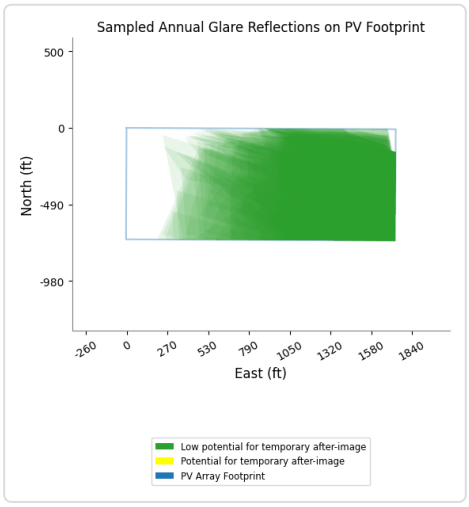
Green glare: 355 min.







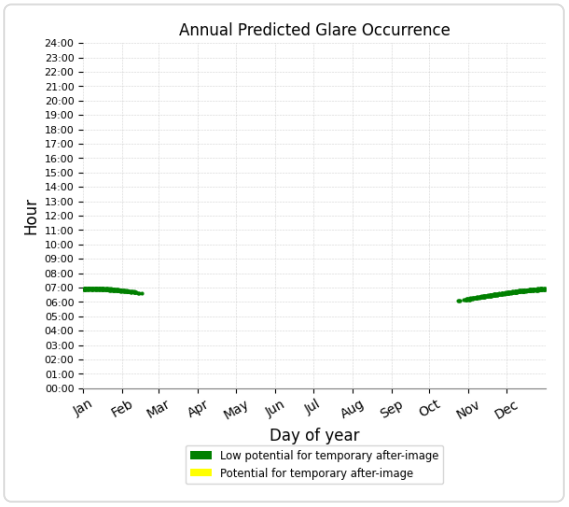


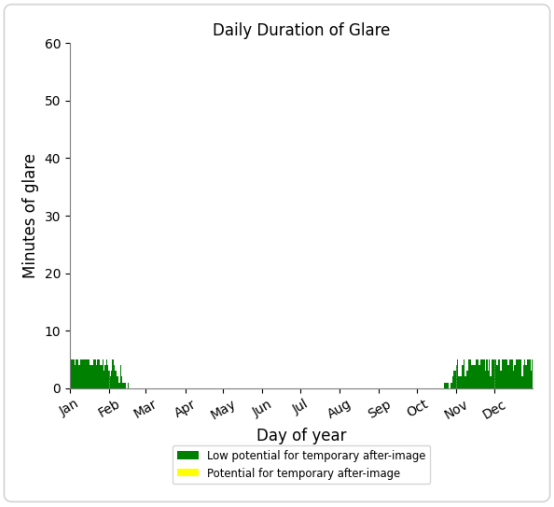


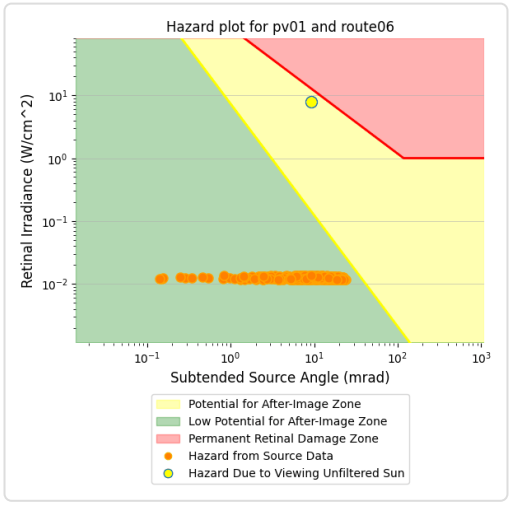
PV01 and Route: Route06

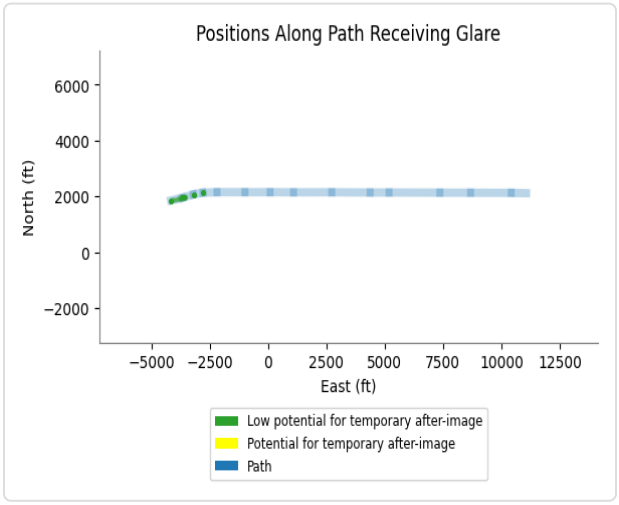
Yellow glare: none

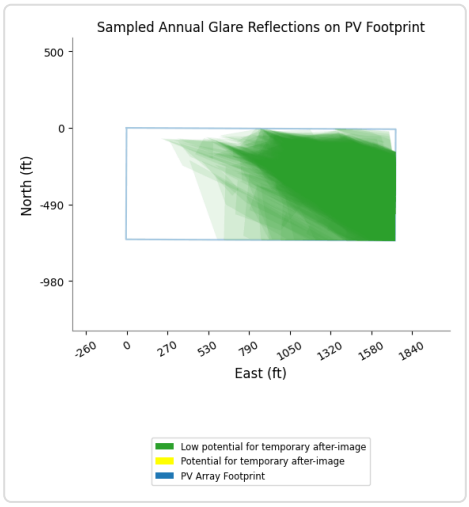
Green glare: 450 min.







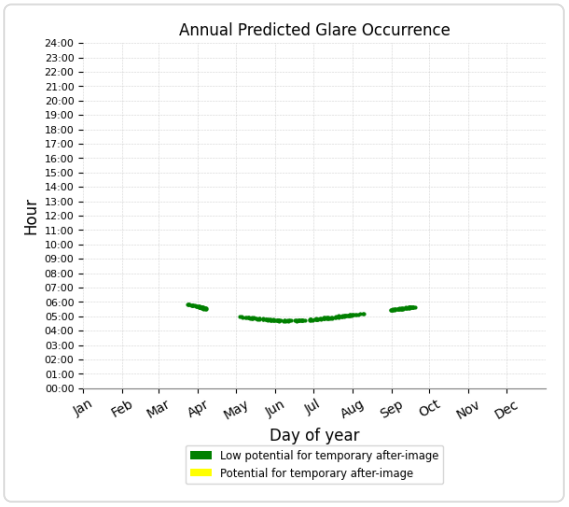


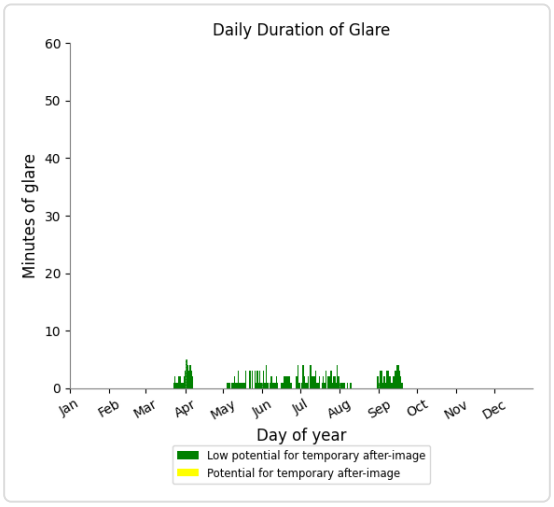


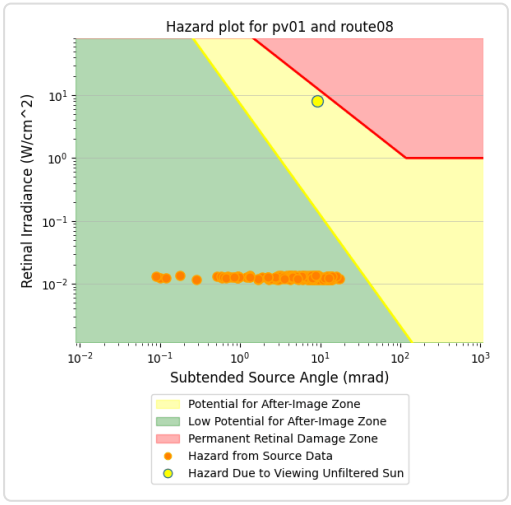
PV01 and Route: Route08

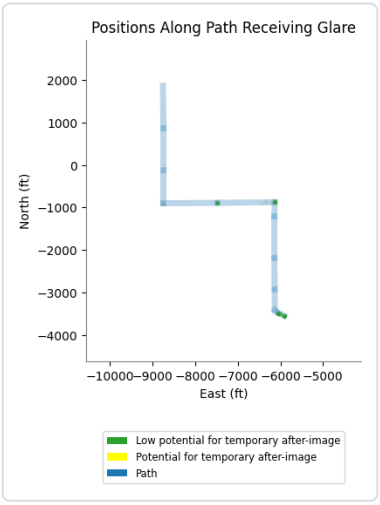
Yellow glare: none

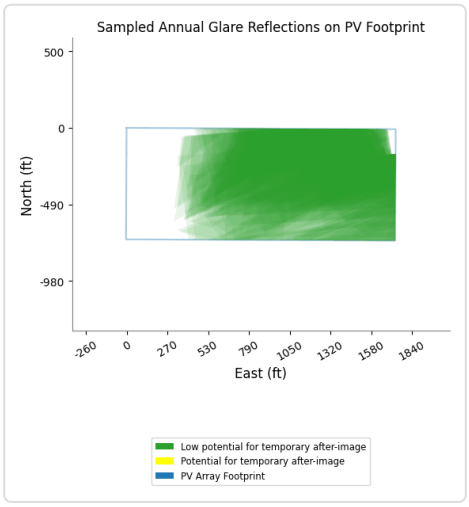
Green glare: 222 min.







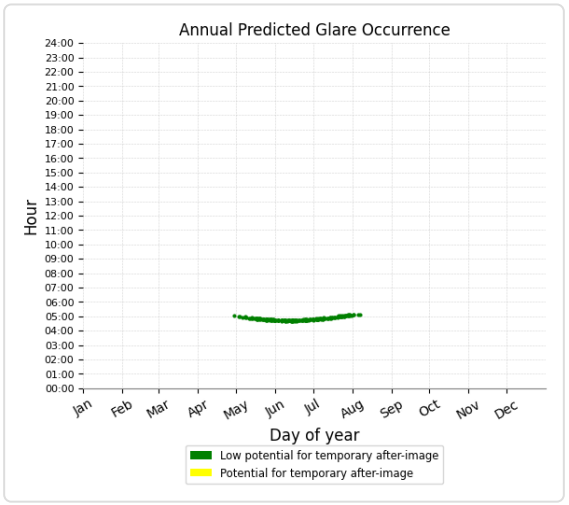


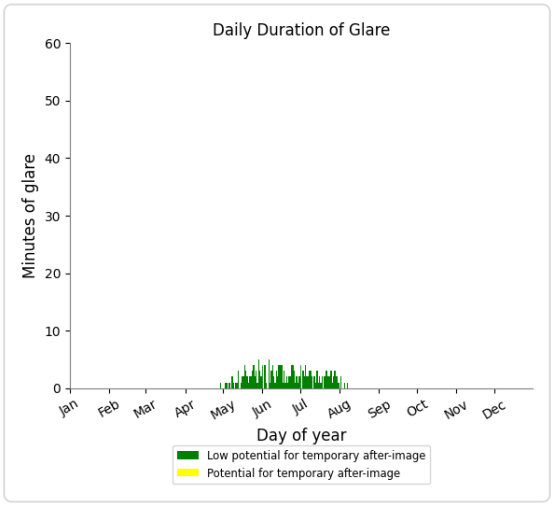


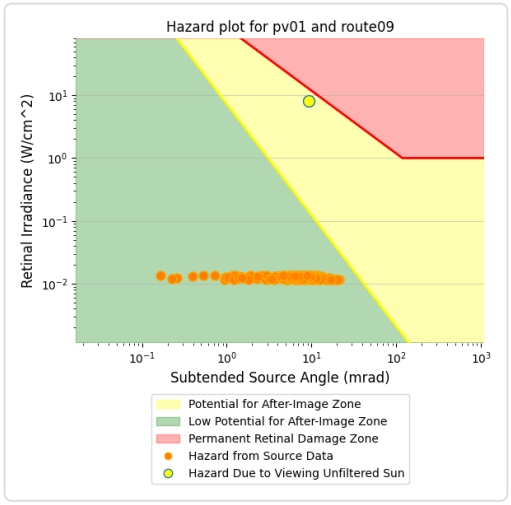
PV01 and Route: Route09

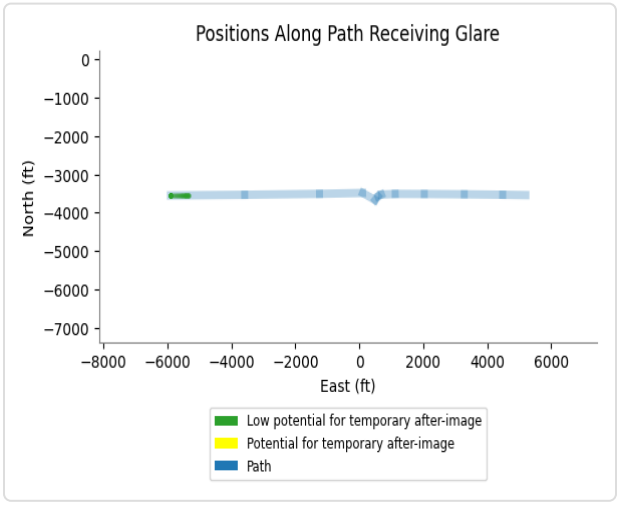
Yellow glare: none

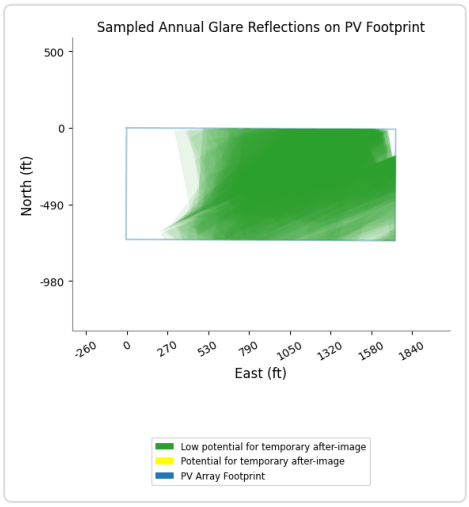
Green glare: 192 min.











PV01 and Route: Route01

No glare found

PV01 and Route: Route02

No glare found

PV01 and Route: Route04

No glare found

PV01 and Route: Route07

No glare found

PV01 and Route: Route10

No glare found

PV01 and Route: Route11

No glare found

PV01 and Route: Route12

No glare found

PV01 and FP: NJK08

No glare found

PV01 and FP: NJK12

No glare found

PV01 and FP: NJK26

No glare found

PV01 and FP: NJK30

No glare found

PV01 and OP 1

No glare found

PV01 and OP 2

No glare found

PV01 and OP 3

No glare found

PV01 and OP 4

No glare found

PV01 and OP 5

No glare found

PV01 and OP 6

No glare found

PV01 and OP 7

No glare found

PV01 and OP 8

No glare found

PV01 and OP 9

No glare found

PV01 and OP 10

No glare found

PV01 and OP 11

No glare found

PV01 and OP 12

No glare found

PV01 and OP 13

No glare found

PV01 and OP 14

No glare found

PV01 and OP 15

No glare found

PV01 and OP 16

No glare found

PV01 and OP 17

No glare found

PV01 and OP 18

No glare found

PV01 and OP 19

No glare found

PV01 and 20-ATCT

No glare found

PV: PV02 low potential for temporary after-image

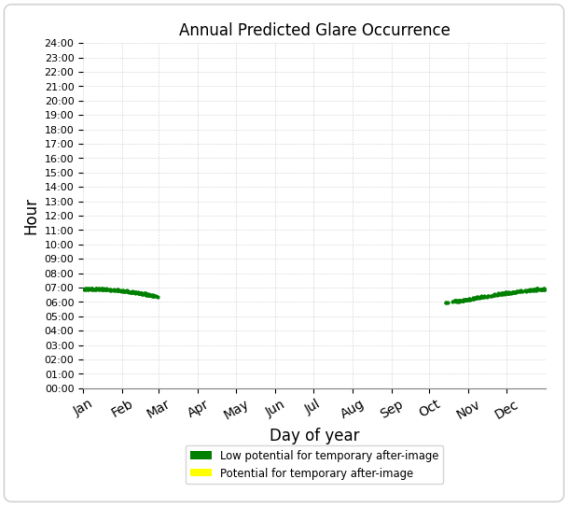
Receptor results ordered by category of glare

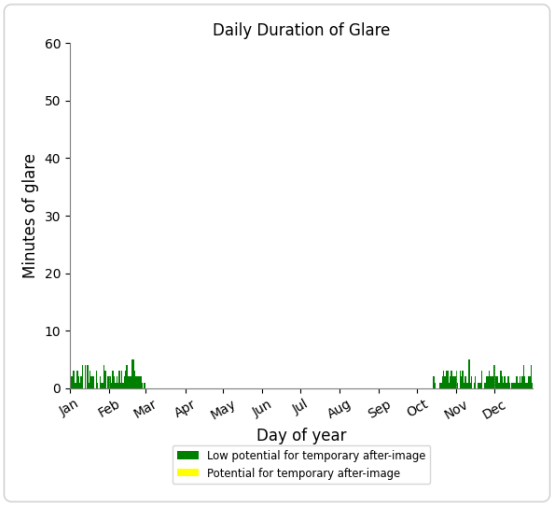
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	251	4.2	0	0.0
Route06	85	1.4	0	0.0
Route08	85	1.4	0	0.0
Route09	362	6.0	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	78	1.3	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

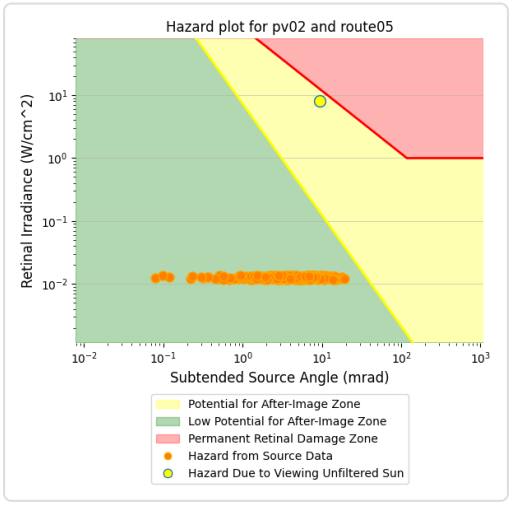
PV02 and Route: Route05

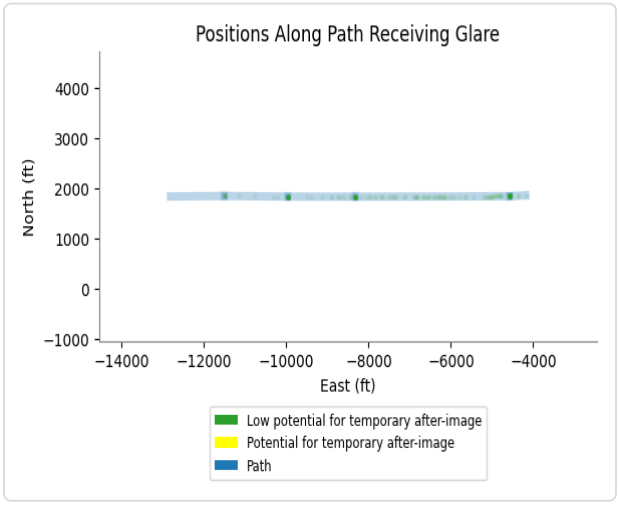
Yellow glare: none

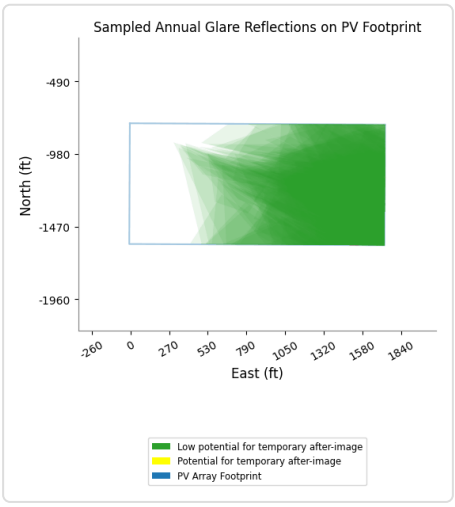
Green glare: 251 min.







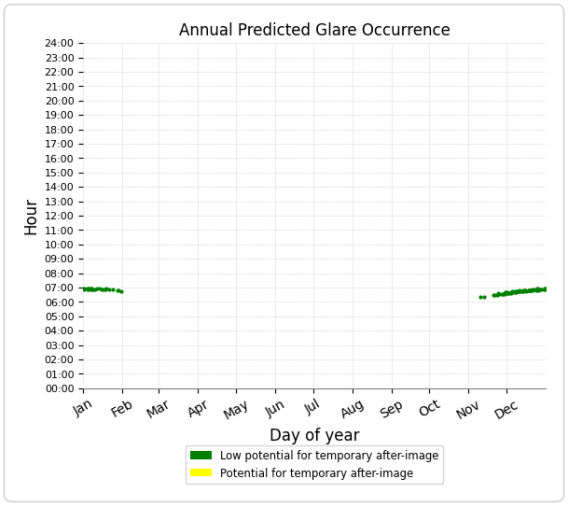


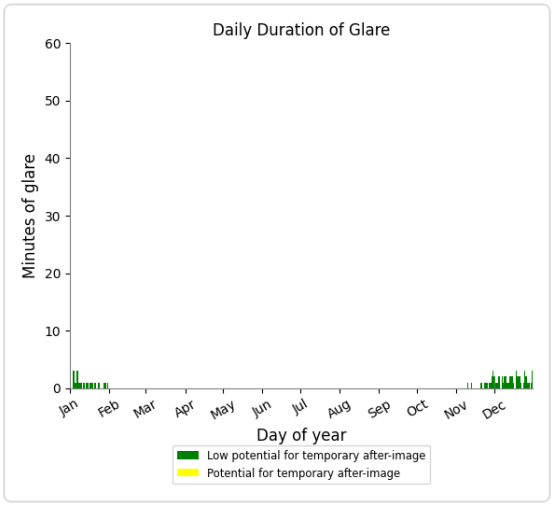


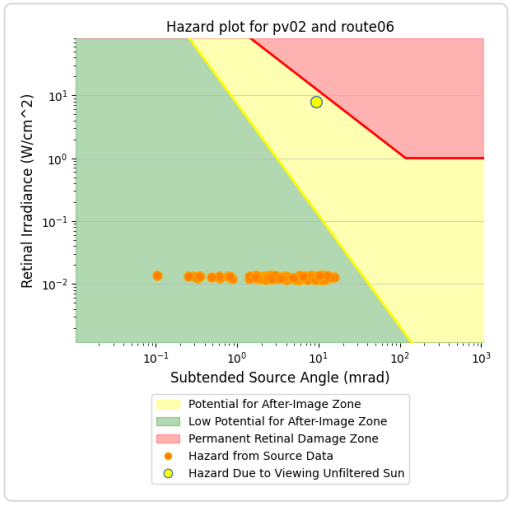
PV02 and Route: Route06

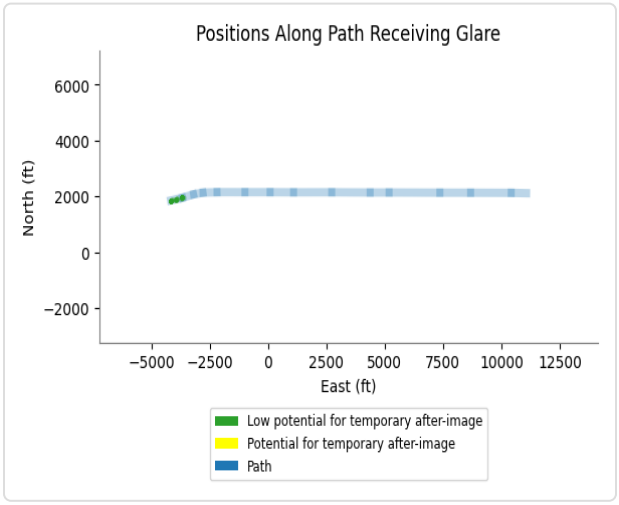
Yellow glare: none

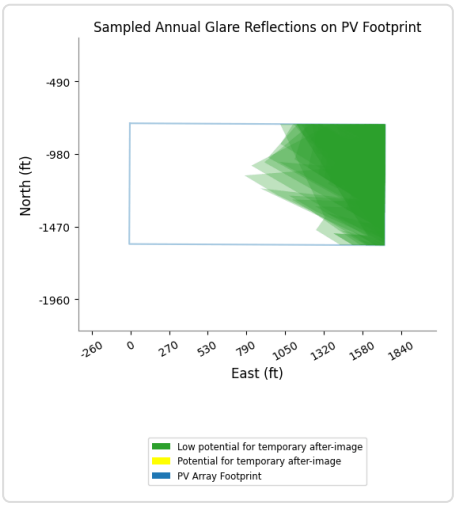
Green glare: 85 min.







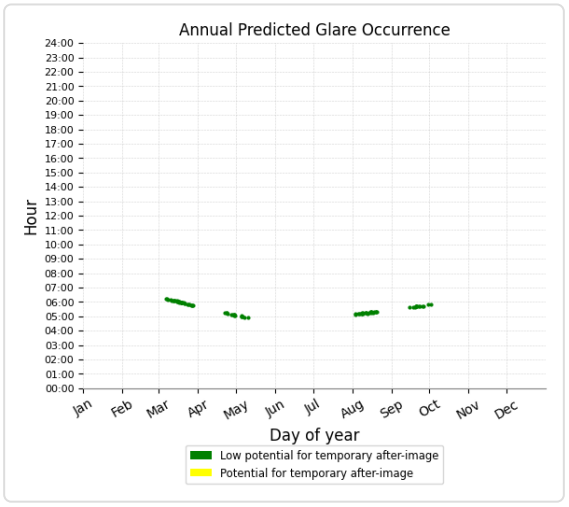


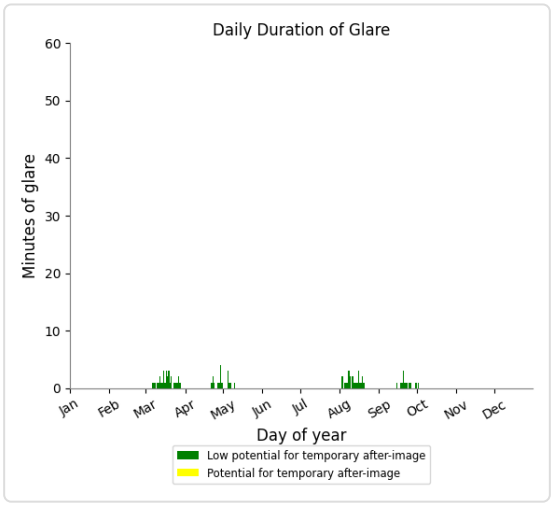


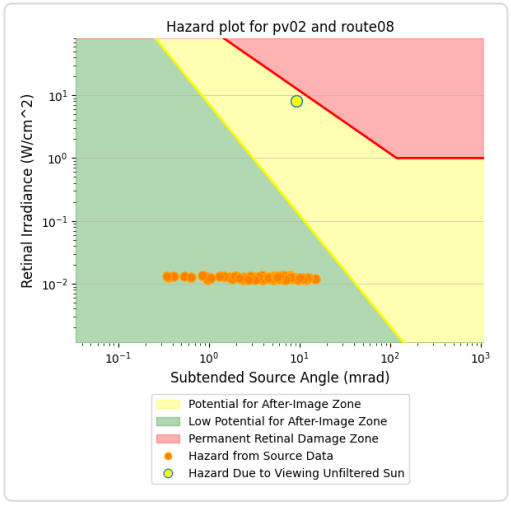
PV02 and Route: Route08

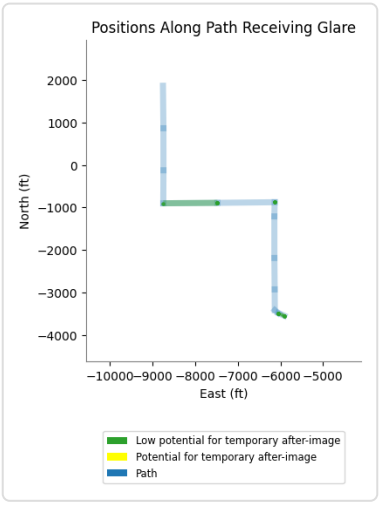
Yellow glare: none

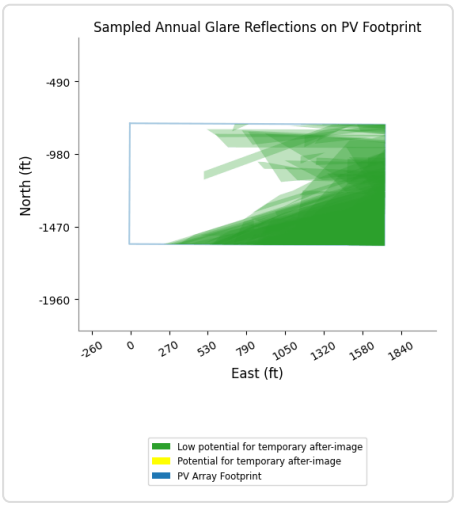
Green glare: 85 min.







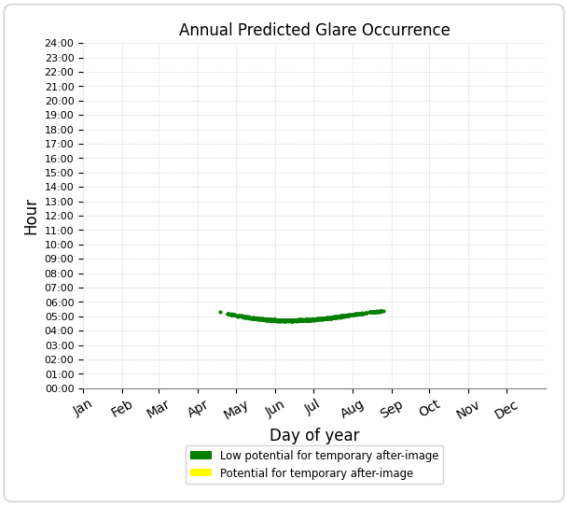


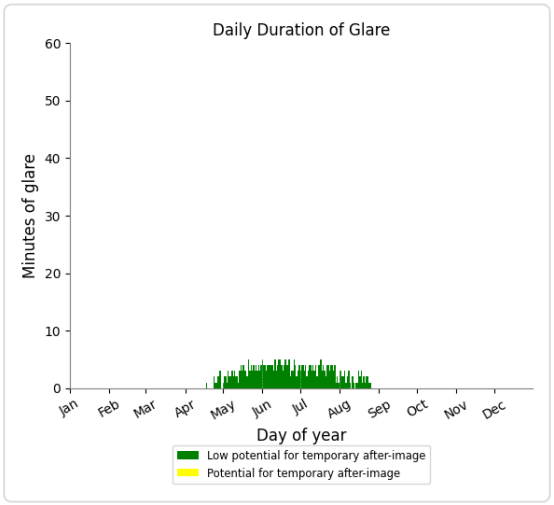


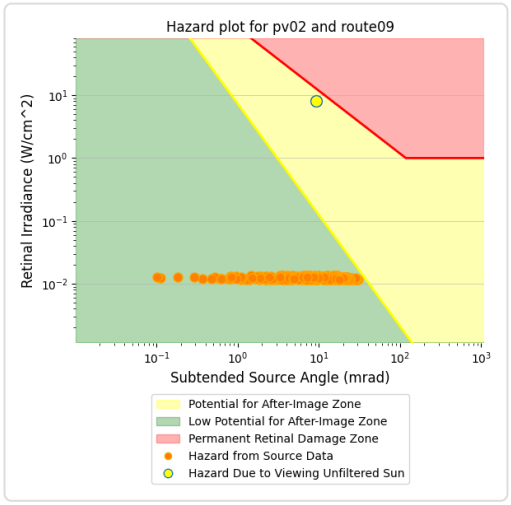
PV02 and Route: Route09

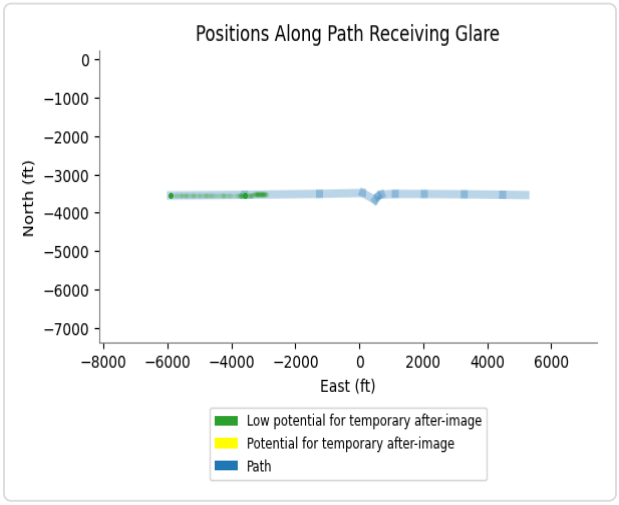
Yellow glare: none

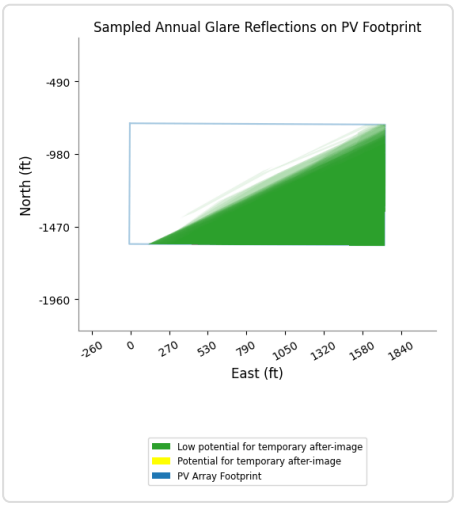
Green glare: 362 min.











PV02 and Route: Route01

No glare found

PV02 and Route: Route02

No glare found

PV02 and Route: Route04

No glare found

PV02 and Route: Route07

No glare found

PV02 and Route: Route10

No glare found

PV02 and Route: Route11

No glare found

PV02 and Route: Route12

No glare found

PV02 and FP: NJK08

No glare found

PV02 and FP: NJK12

No glare found

PV02 and FP: NJK26

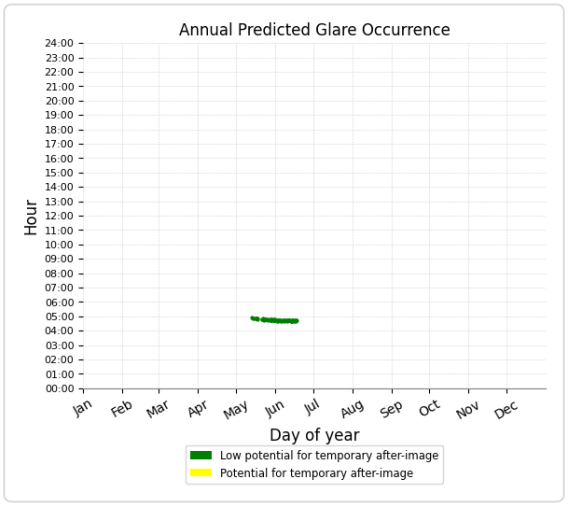
No glare found

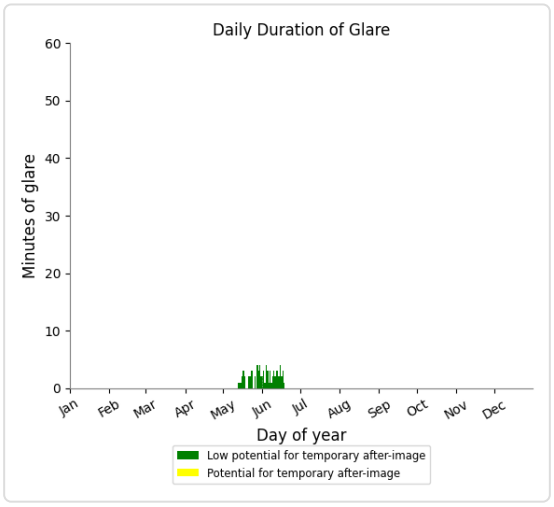
PV02 and FP: NJK30

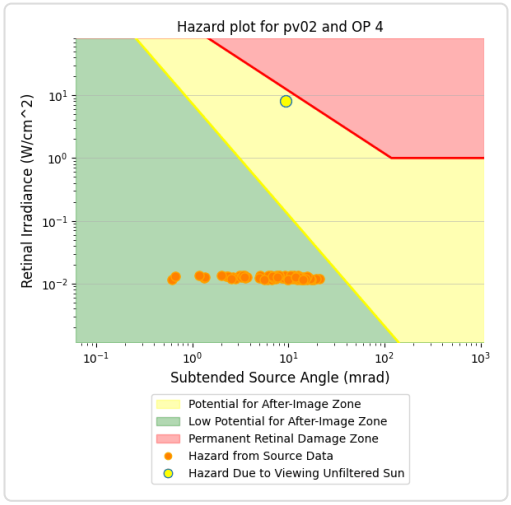
No glare found

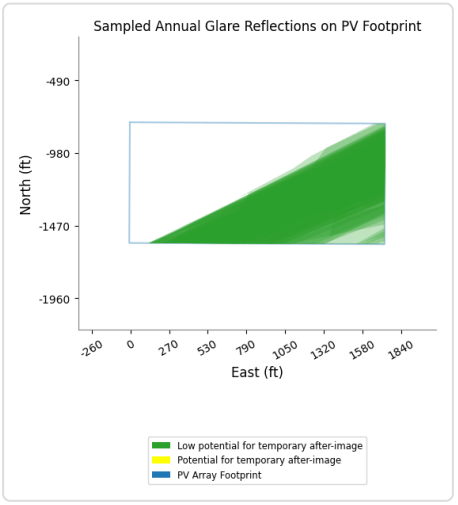
PV02 and OP 4

Yellow glare: none
Green glare: 78 min.









PV02 and OP 1

No glare found

PV02 and OP 2

No glare found

PV02 and OP 3

No glare found

PV02 and OP 5

No glare found

PV02 and OP 6

No glare found

PV02 and OP 7

No glare found

PV02 and OP 8

No glare found

PV02 and OP 9

No glare found

PV02 and OP 10

No glare found

PV02 and OP 11

No glare found

PV02 and OP 12

No glare found

PV02 and OP 13

No glare found

PV02 and OP 14

No glare found

PV02 and OP 15

No glare found

PV02 and OP 16

No glare found

PV02 and OP 17

No glare found

PV02 and OP 18

No glare found

PV02 and OP 19

No glare found

PV02 and 20-ATCT

No glare found

PV: PV03 low potential for temporary after-image

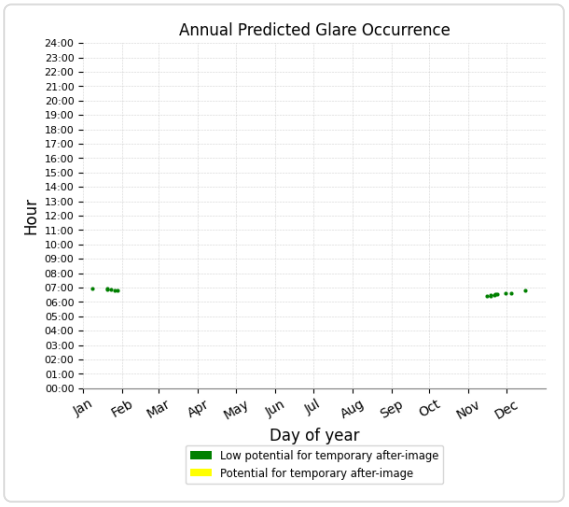
Receptor results ordered by category of glare

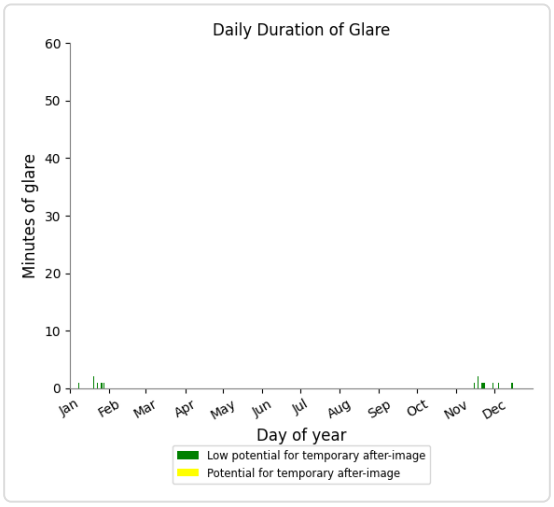
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route06	15	0.2	0	0.0
Route07	73	1.2	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 6	16	0.3	0	0.0
OP 11	256	4.3	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 9	0	0.0	0	0.0
OP 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

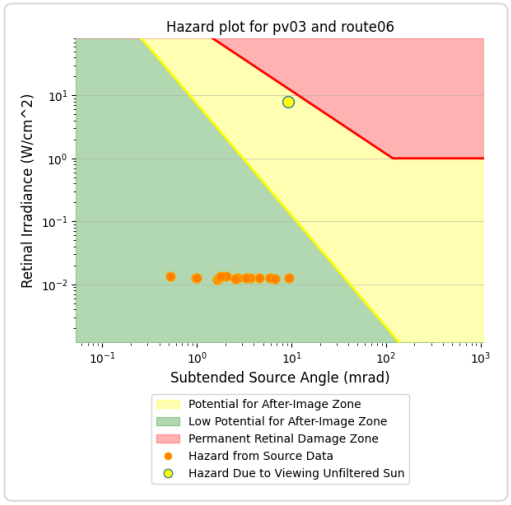
PV03 and Route: Route06

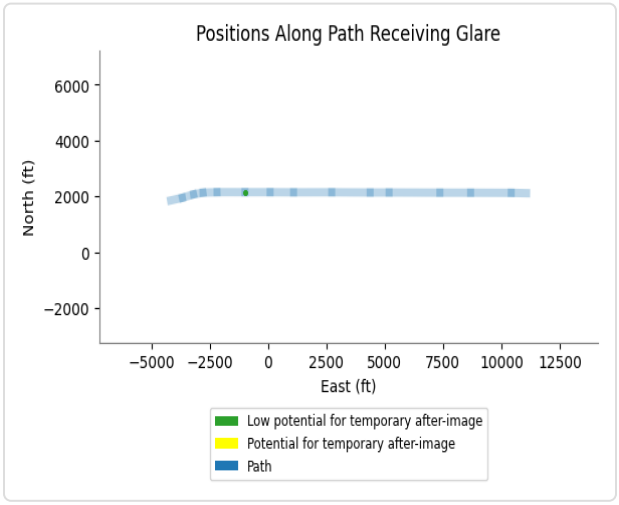
Yellow glare: none

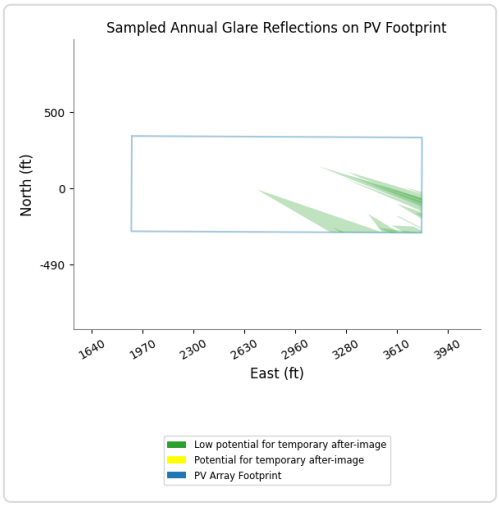
Green glare: 15 min.







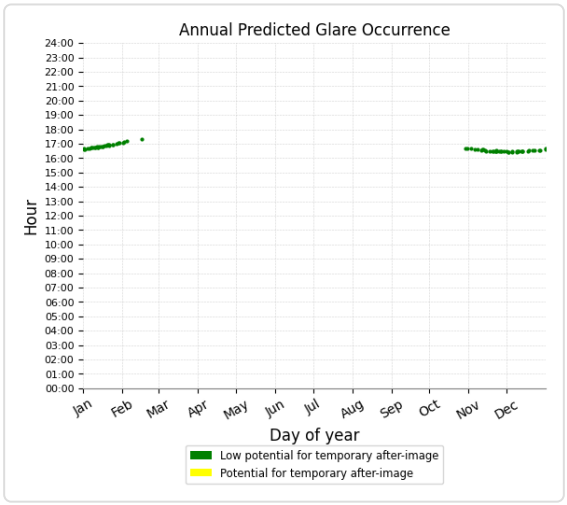


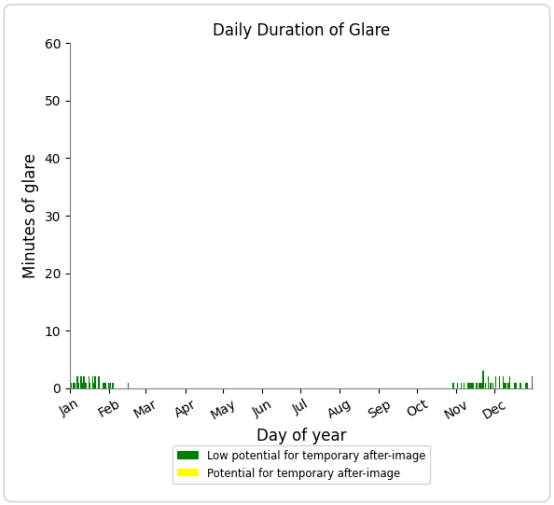


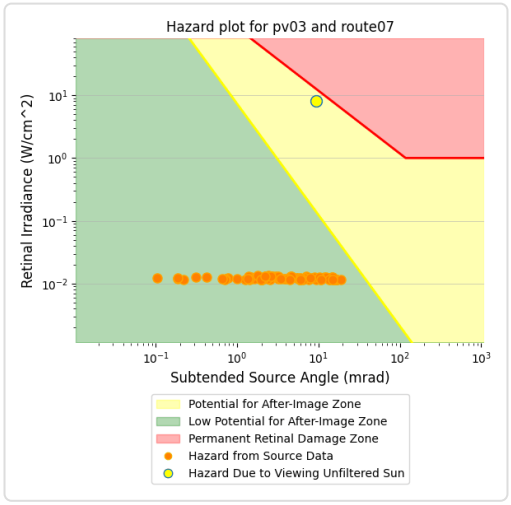
PV03 and Route: Route07

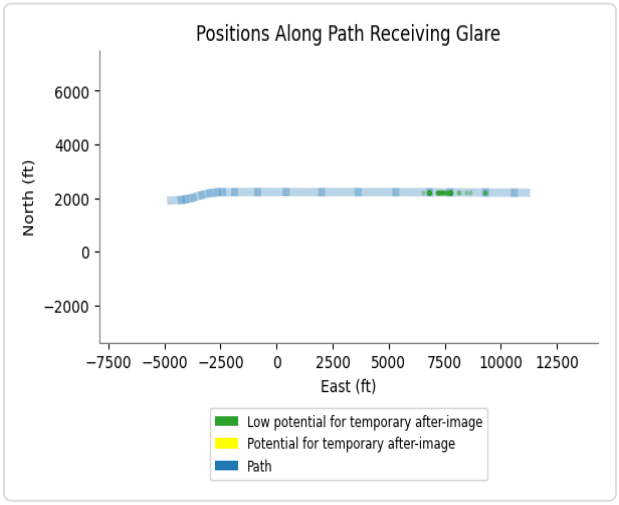
Yellow glare: none

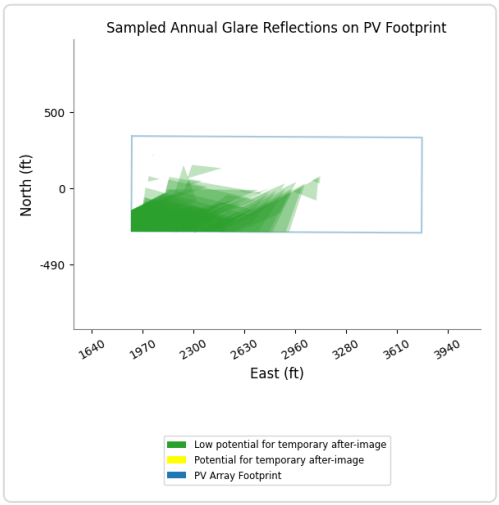
Green glare: 73 min.











PV03 and Route: Route01

No glare found

PV03 and Route: Route02

No glare found

PV03 and Route: Route04

No glare found

PV03 and Route: Route05

No glare found

PV03 and Route: Route08

No glare found

PV03 and Route: Route09

No glare found

PV03 and Route: Route10

No glare found

PV03 and Route: Route11

No glare found

PV03 and Route: Route12

No glare found

PV03 and FP: NJK08

No glare found

PV03 and FP: NJK12

No glare found

PV03 and FP: NJK26

No glare found

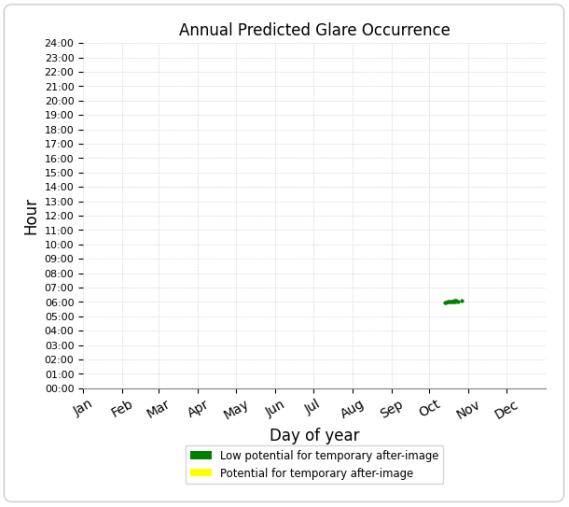
PV03 and FP: NJK30

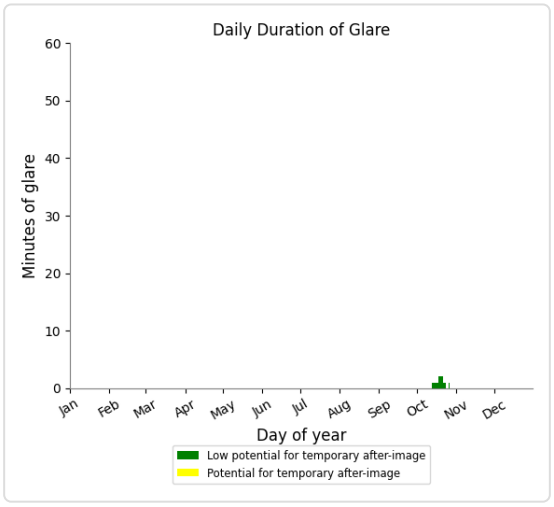
No glare found

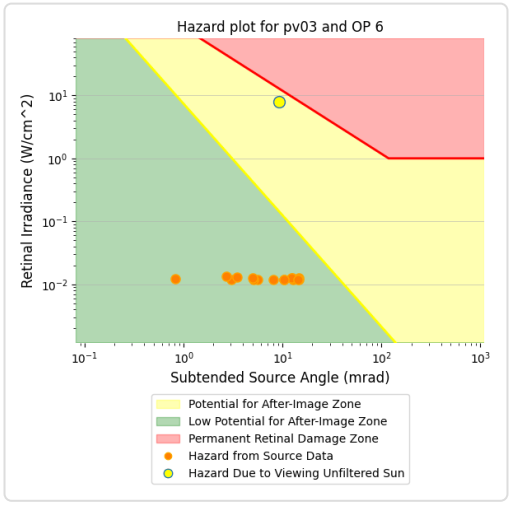
PV03 and OP 6

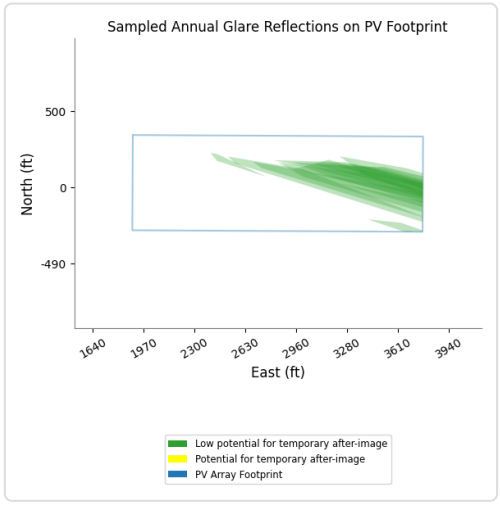
Yellow glare: none

Green glare: 16 min.



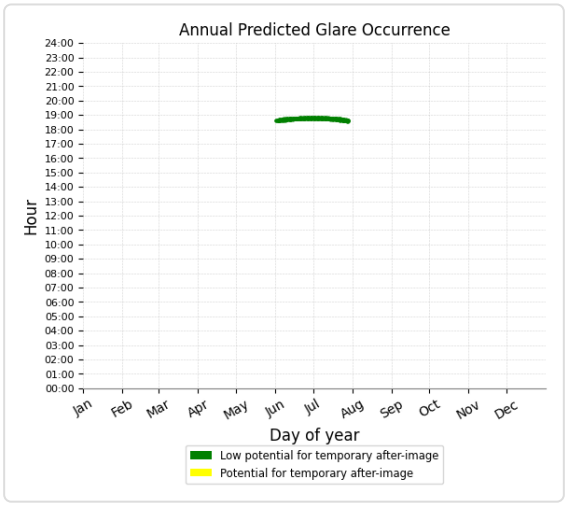


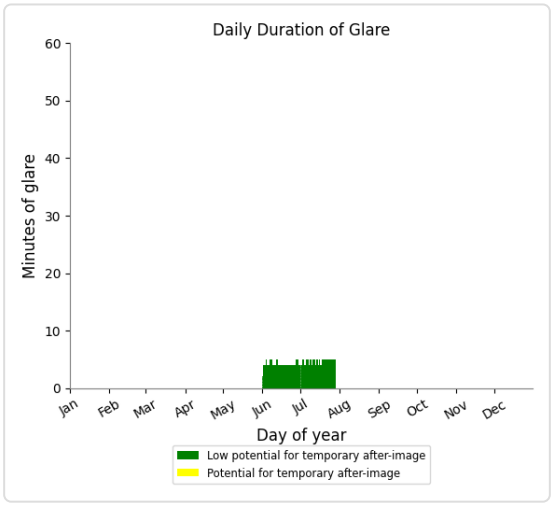


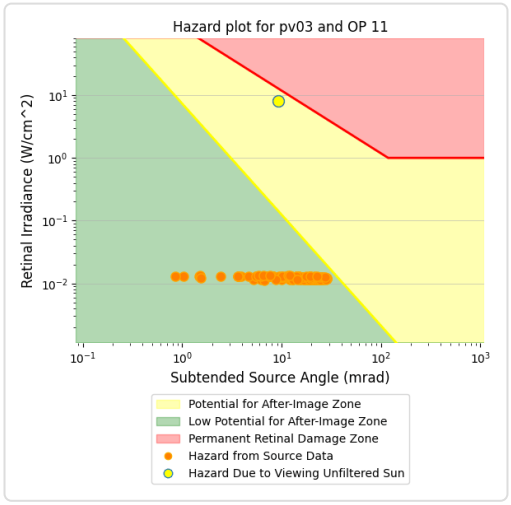


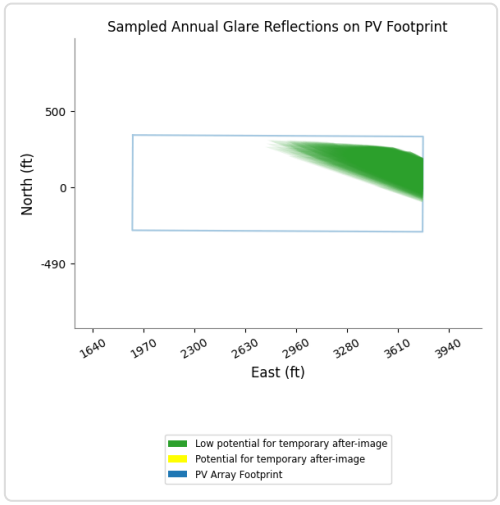
PV03 and OP 11

Yellow glare: none
Green glare: 256 min.









PV03 and OP 1

No glare found

PV03 and OP 2

No glare found

PV03 and OP 3

No glare found

PV03 and OP 4

No glare found

PV03 and OP 5

No glare found

PV03 and OP 7

No glare found

PV03 and OP 8

No glare found

PV03 and OP 9

No glare found

PV03 and OP 10

No glare found

PV03 and OP 12

No glare found

PV03 and OP 13

No glare found

PV03 and OP 14

No glare found

PV03 and OP 15

No glare found

PV03 and OP 16

No glare found

PV03 and OP 17

No glare found

PV03 and OP 18

No glare found

PV03 and OP 19

No glare found

PV03 and 20-ATCT

No glare found

PV: PV04 low potential for temporary after-image

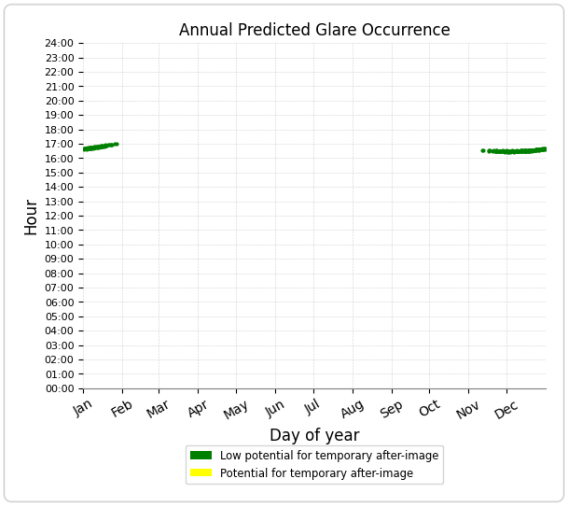
Receptor results ordered by category of glare

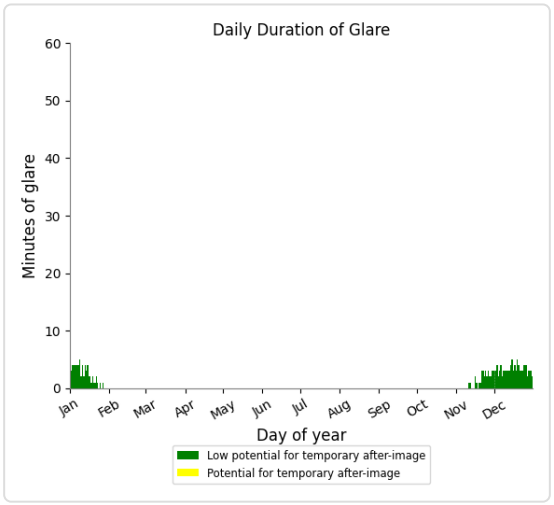
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route07	201	3.4	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 11	134	2.2	0	0.0
OP 14	24	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 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

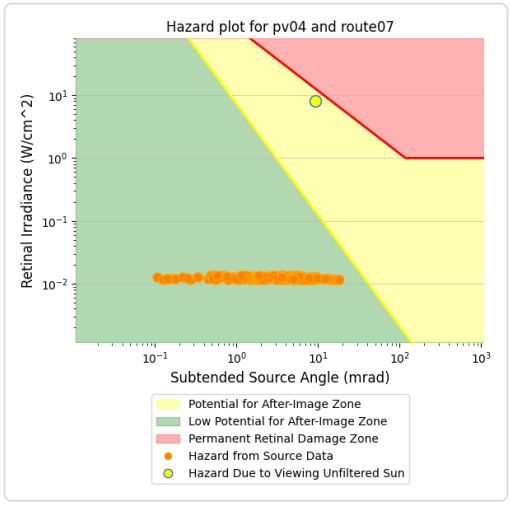
PV04 and Route: Route07

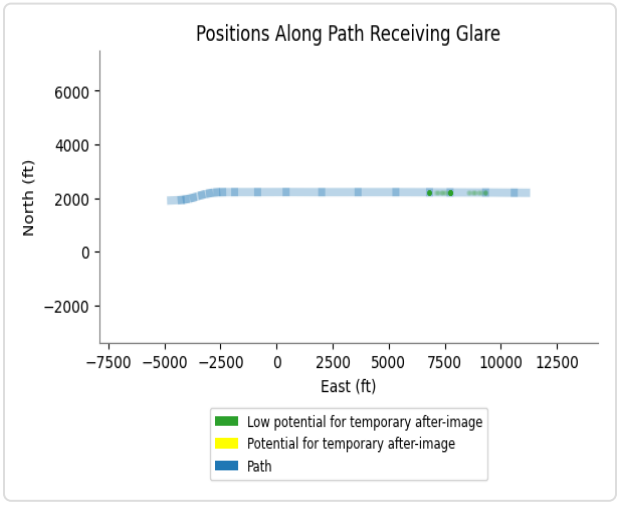
Yellow glare: none

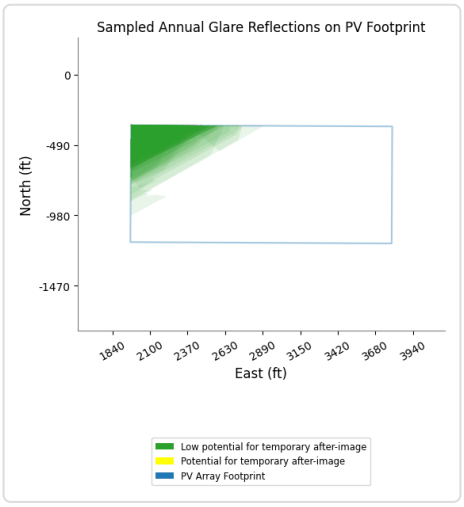
Green glare: 201 min.











PV04 and Route: Route01

No glare found

PV04 and Route: Route02

No glare found

PV04 and Route: Route04

No glare found

PV04 and Route: Route05

No glare found

PV04 and Route: Route06

No glare found

PV04 and Route: Route08

No glare found

PV04 and Route: Route09

No glare found

PV04 and Route: Route10

No glare found

PV04 and Route: Route11

No glare found

PV04 and Route: Route12

No glare found

PV04 and FP: NJK08

No glare found

PV04 and FP: NJK12

No glare found

PV04 and FP: NJK26

No glare found

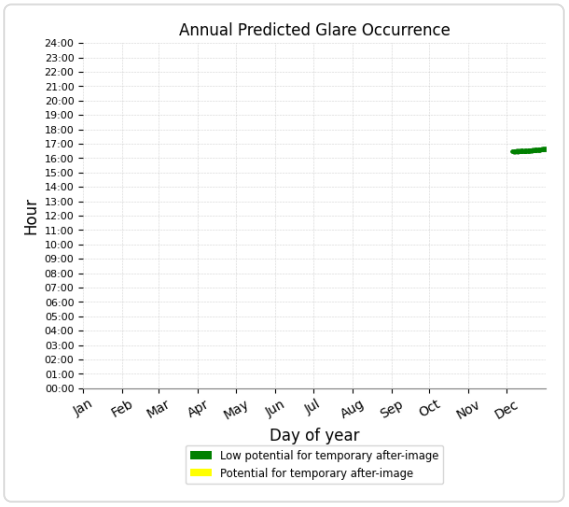
PV04 and FP: NJK30

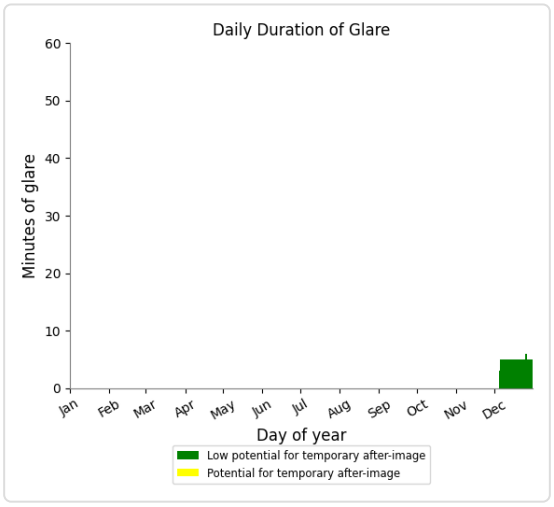
No glare found

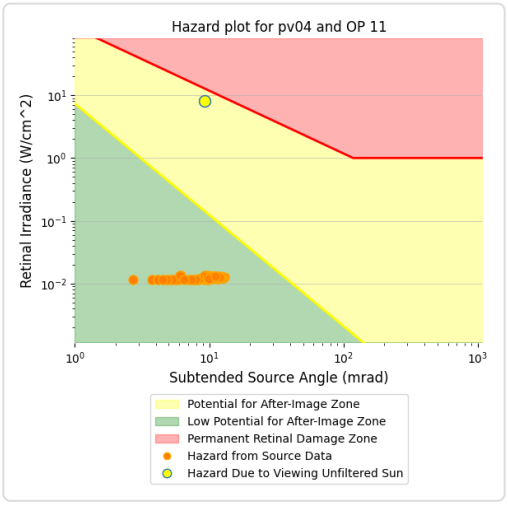
PV04 and OP 11

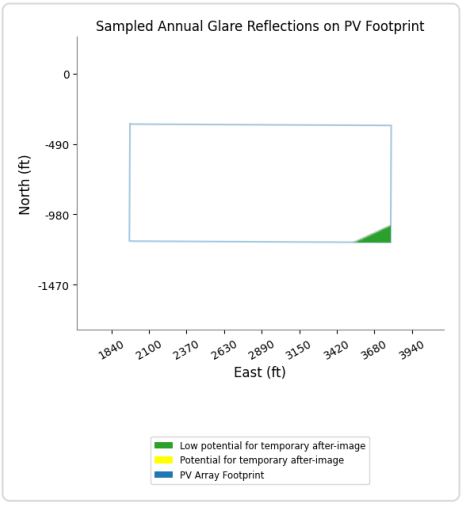
Yellow glare: none

Green glare: 134 min.



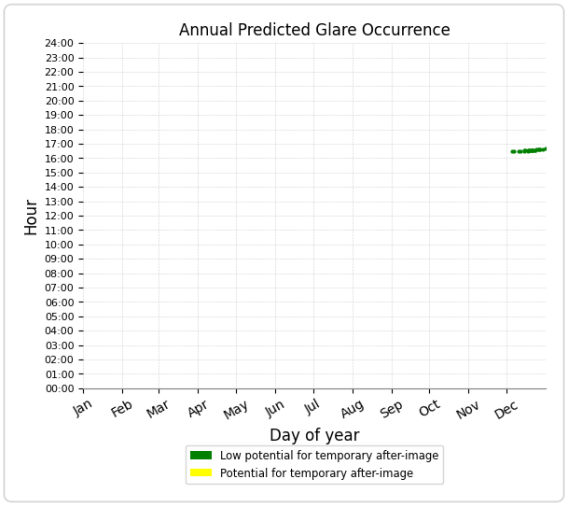


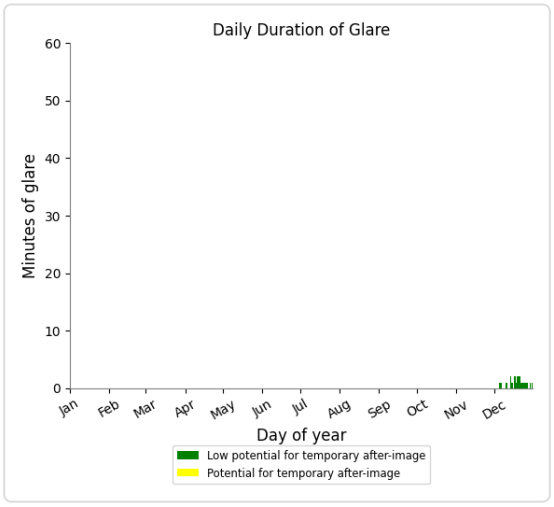


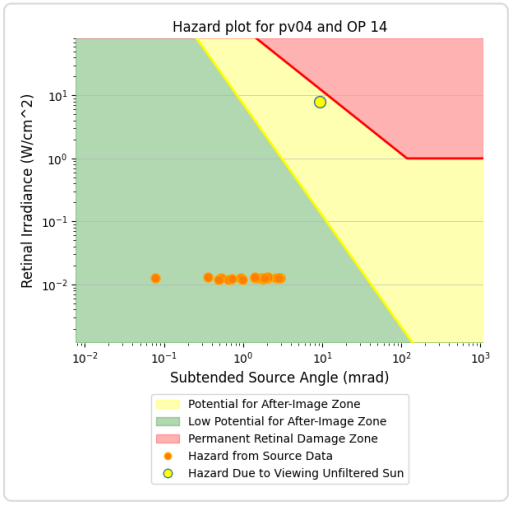


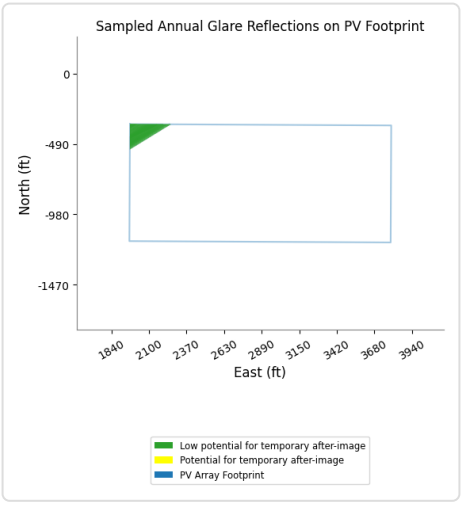
PV04 and OP 14

Yellow glare: none
Green glare: 24 min.









PV04 and OP 1

No glare found

PV04 and OP 2

No glare found

PV04 and OP 3

No glare found

PV04 and OP 4

No glare found

PV04 and OP 5

No glare found

PV04 and OP 6

No glare found

PV04 and OP 7

No glare found

PV04 and OP 8

No glare found

PV04 and OP 9

No glare found

PV04 and OP 10

No glare found

PV04 and OP 12

No glare found

PV04 and OP 13

No glare found

PV04 and OP 15

No glare found

PV04 and OP 16

No glare found

PV04 and OP 17

No glare found

PV04 and OP 18

No glare found

PV04 and OP 19

No glare found

PV04 and 20-ATCT

No glare found

PV: PV05 low potential for temporary after-image

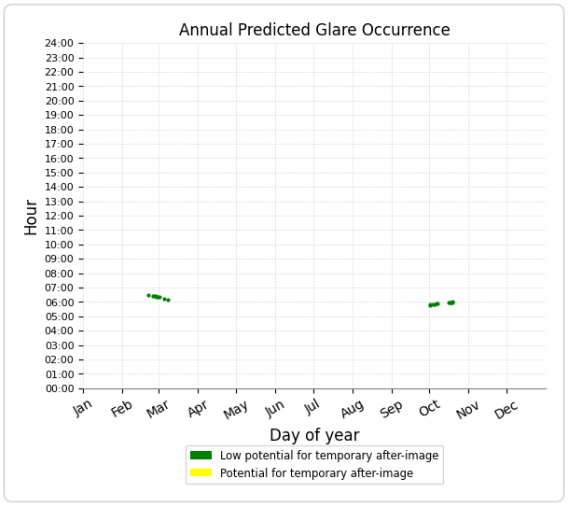
Receptor results ordered by category of glare

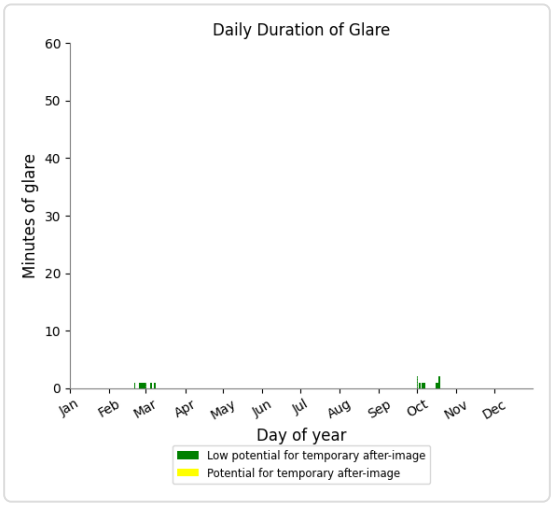
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	21	0.3	0	0.0
Route06	286	4.8	0	0.0
Route09	198	3.3	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 11	374	6.2	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 9	0	0.0	0	0.0
OP 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

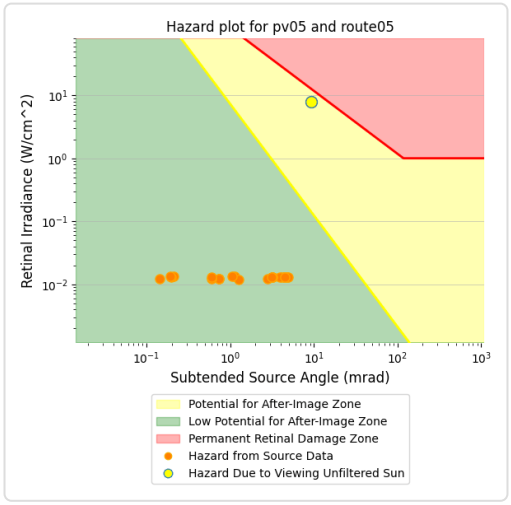
PV05 and Route: Route05

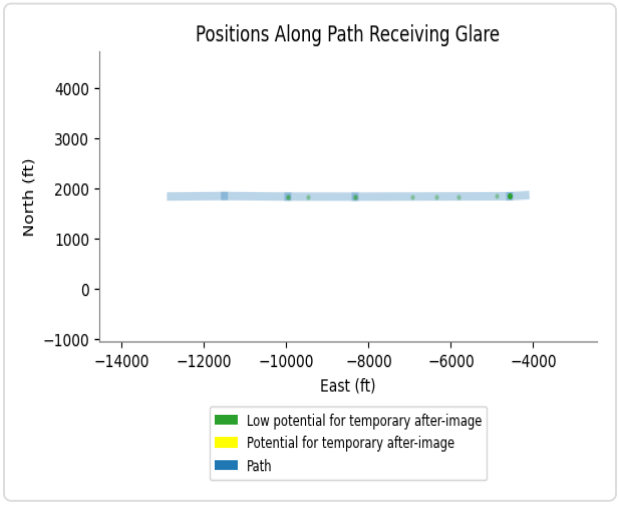
Yellow glare: none

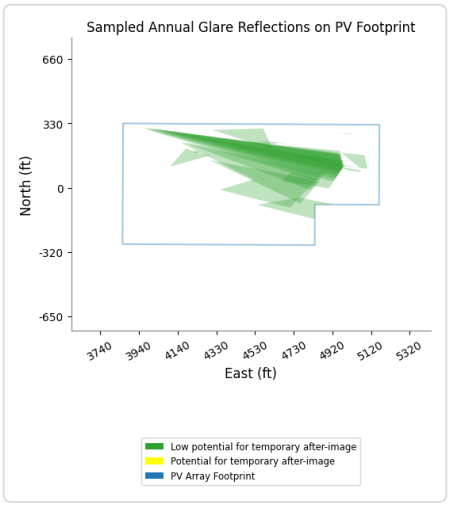
Green glare: 21 min.







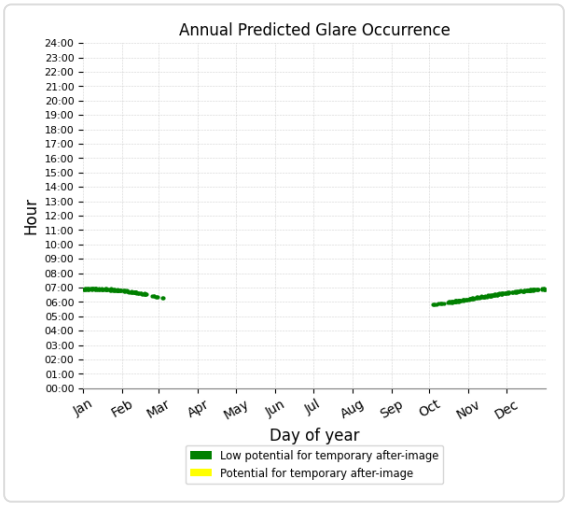


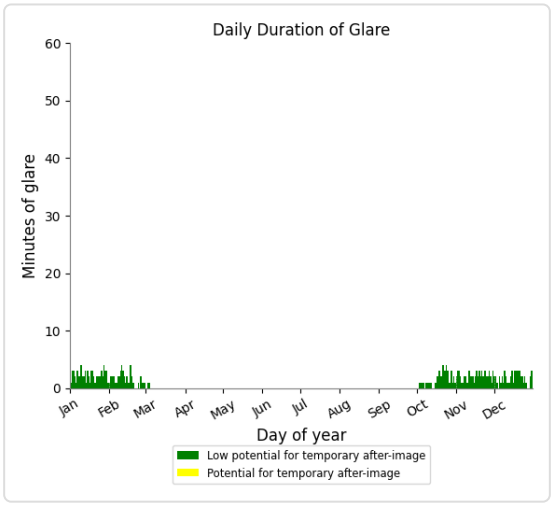


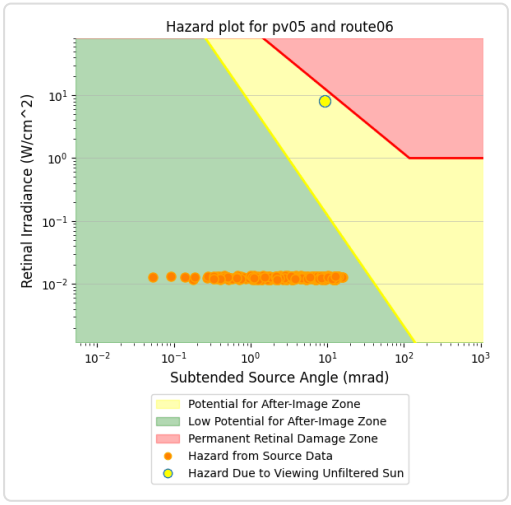
PV05 and Route: Route06

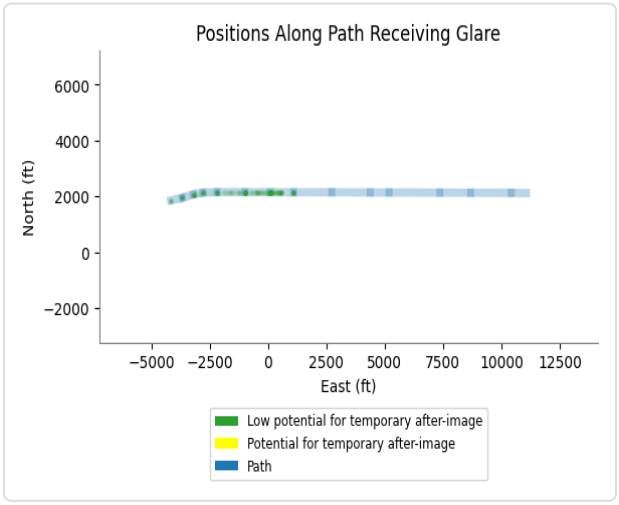
Yellow glare: none

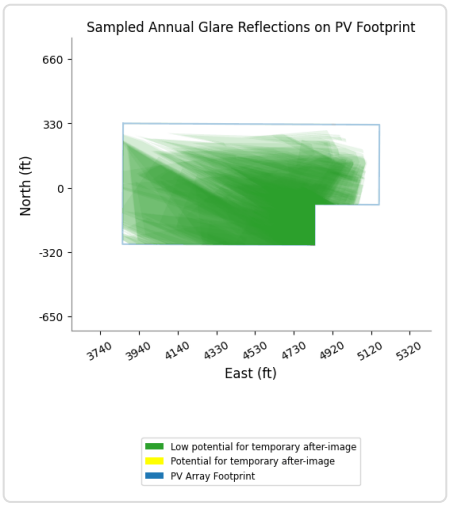
Green glare: 286 min.







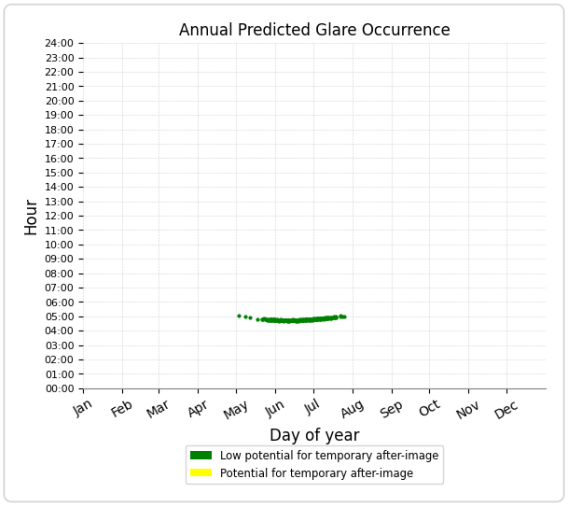


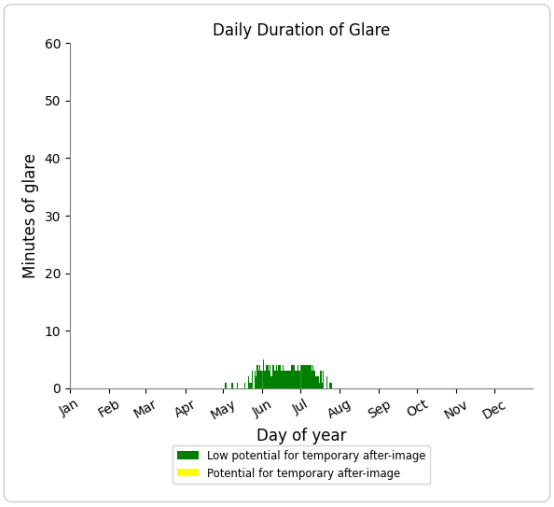


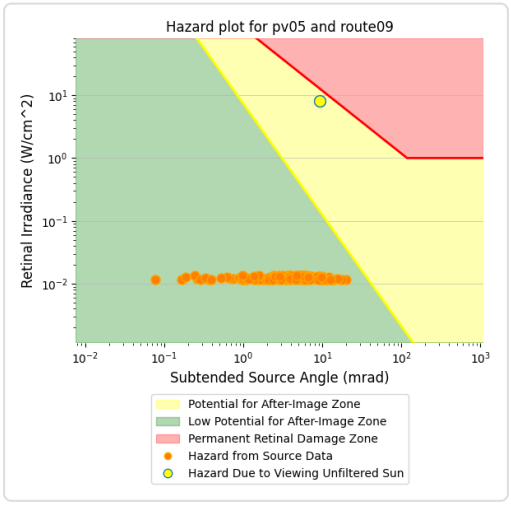
PV05 and Route: Route09

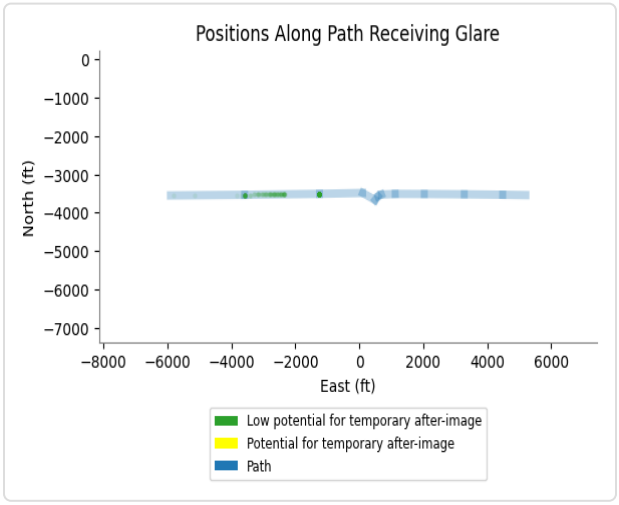
Yellow glare: none

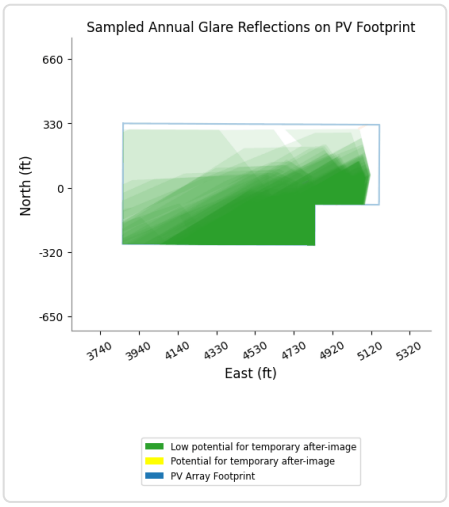
Green glare: 198 min.











PV05 and Route: Route01

No glare found

PV05 and Route: Route02

No glare found

PV05 and Route: Route04

No glare found

PV05 and Route: Route07

No glare found

PV05 and Route: Route08

No glare found

PV05 and Route: Route10

No glare found

PV05 and Route: Route11

No glare found

PV05 and Route: Route12

No glare found

PV05 and FP: NJK08

No glare found

PV05 and FP: NJK12

No glare found

PV05 and FP: NJK26

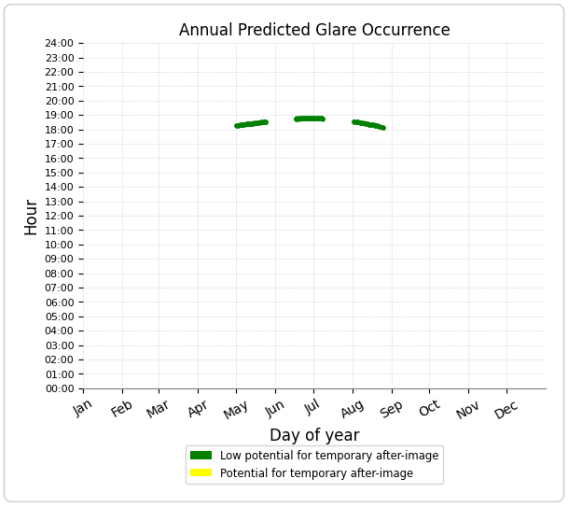
No glare found

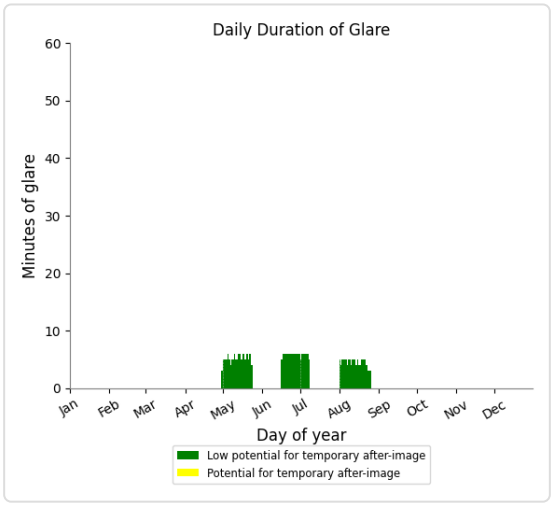
PV05 and FP: NJK30

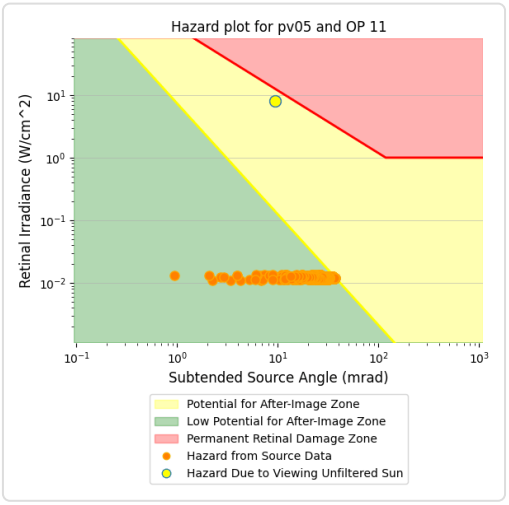
No glare found

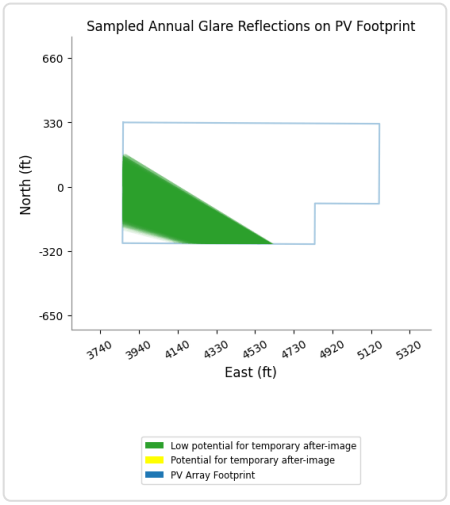
PV05 and OP 11

Yellow glare: none
Green glare: 374 min.









PV05 and OP 1

No glare found

PV05 and OP 2

No glare found

PV05 and OP 3

No glare found

PV05 and OP 4

No glare found

PV05 and OP 5

No glare found

PV05 and OP 6

No glare found

PV05 and OP 7

No glare found

PV05 and OP 8

No glare found

PV05 and OP 9

No glare found

PV05 and OP 10

No glare found

PV05 and OP 12

No glare found

PV05 and OP 13

No glare found

PV05 and OP 14

No glare found

PV05 and OP 15

No glare found

PV05 and OP 16

No glare found

PV05 and OP 17

No glare found

PV05 and OP 18

No glare found

PV05 and OP 19

No glare found

PV05 and 20-ATCT

No glare found

PV: PV06 potential temporary after-image

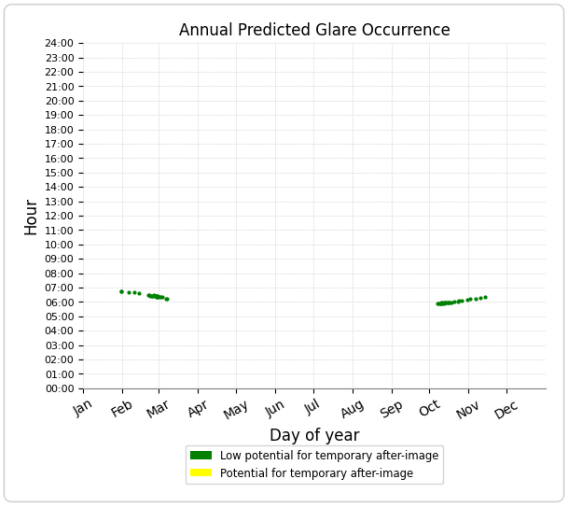
Receptor results ordered by category of glare

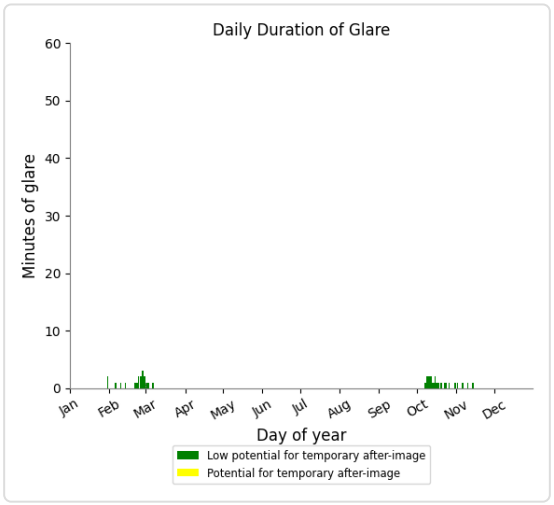
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	51	0.8	0	0.0
Route06	201	3.4	0	0.0
Route08	21	0.3	0	0.0
Route09	591	9.8	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 11	794	13.2	135	2.2
OP 7	100	1.7	0	0.0
OP 8	110	1.8	0	0.0
OP 9	111	1.9	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

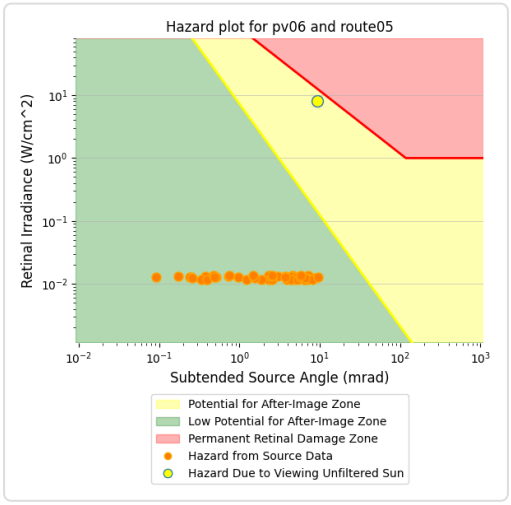
PV06 and Route: Route05

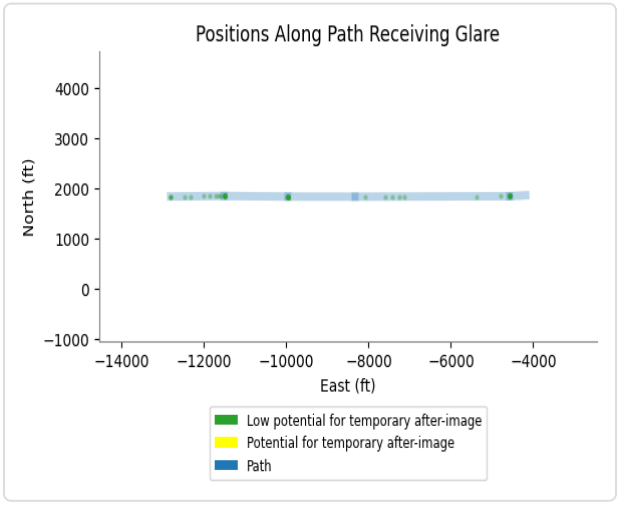
Yellow glare: none

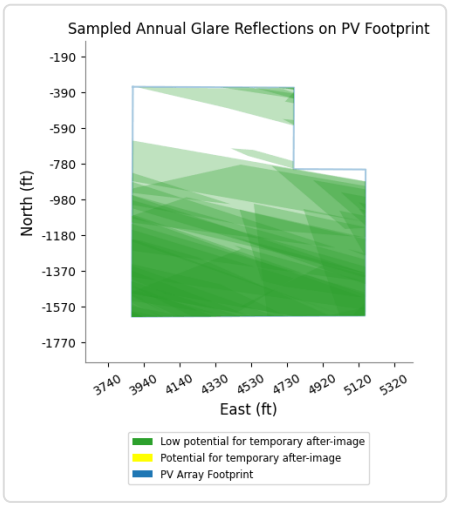
Green glare: 51 min.







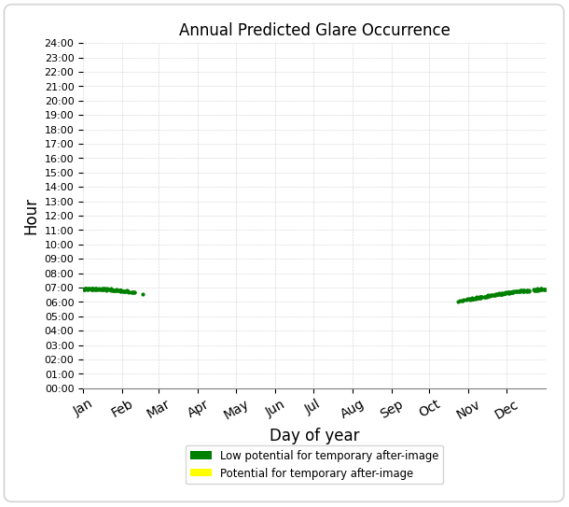


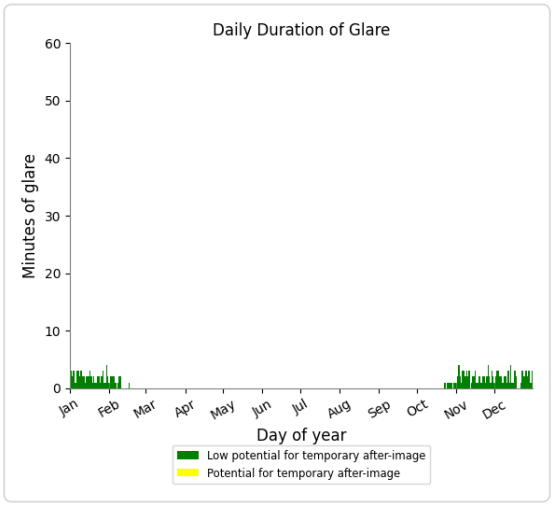


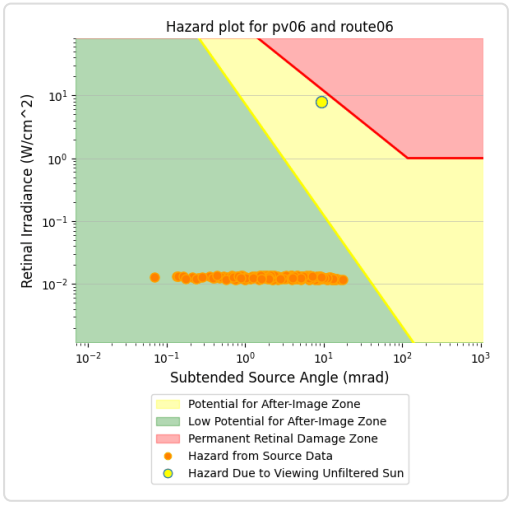
PV06 and Route: Route06

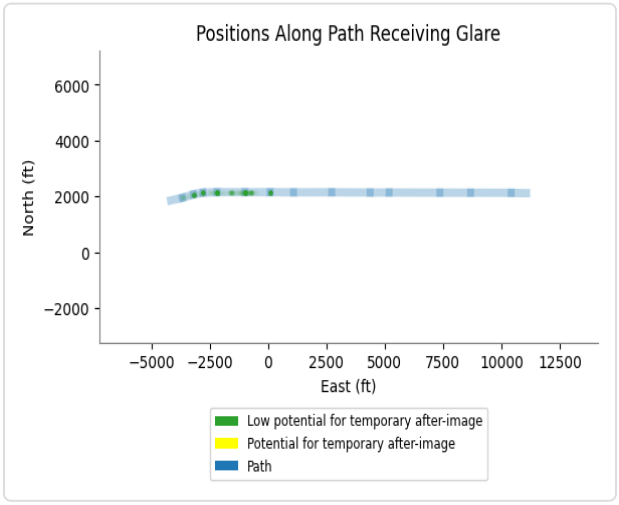
Yellow glare: none

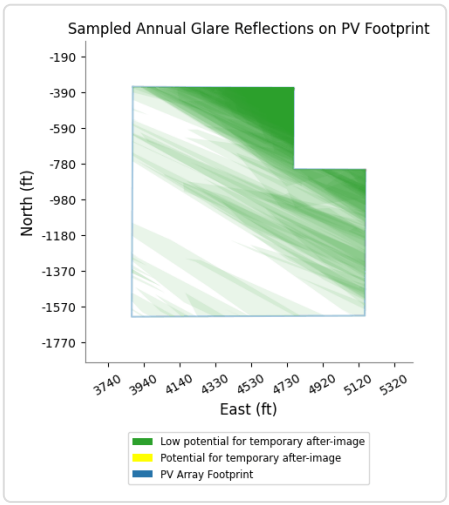
Green glare: 201 min.







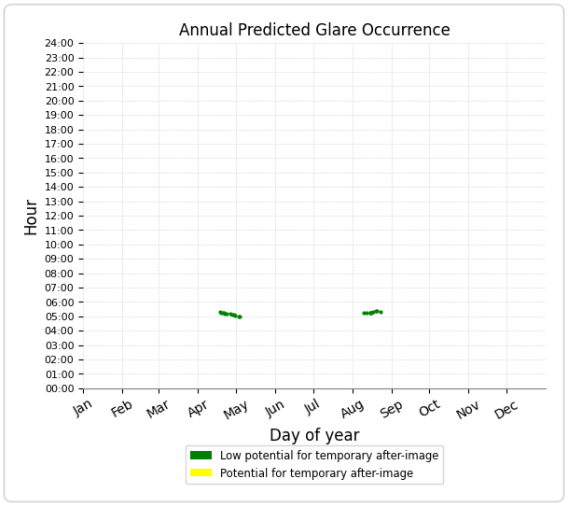


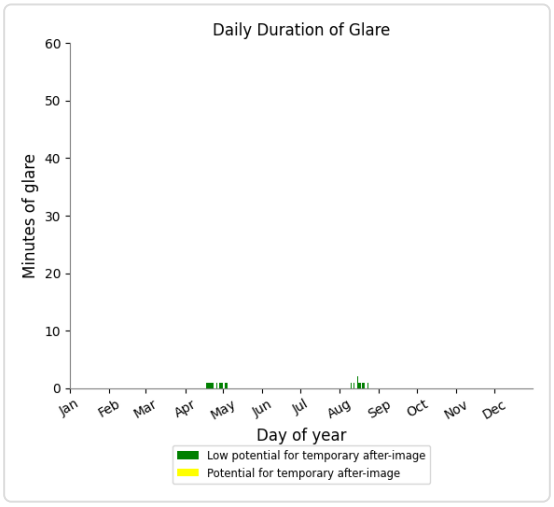


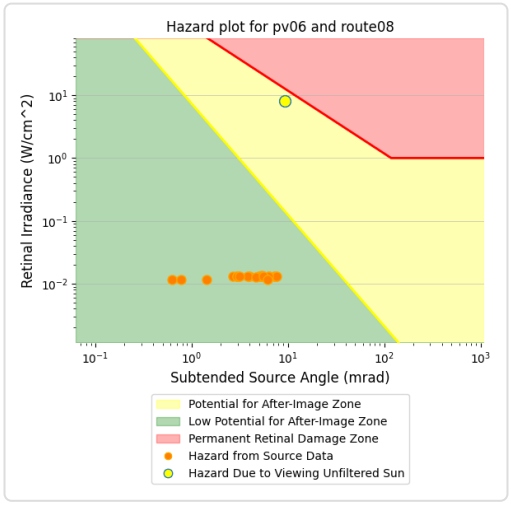
PV06 and Route: Route08

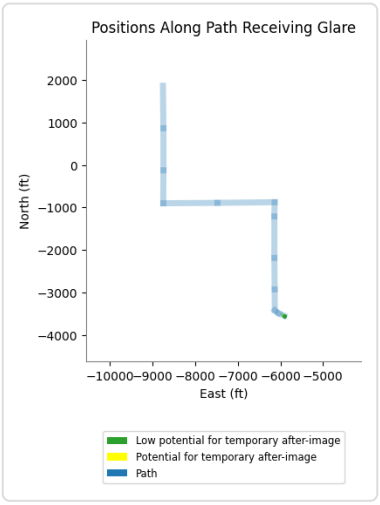
Yellow glare: none

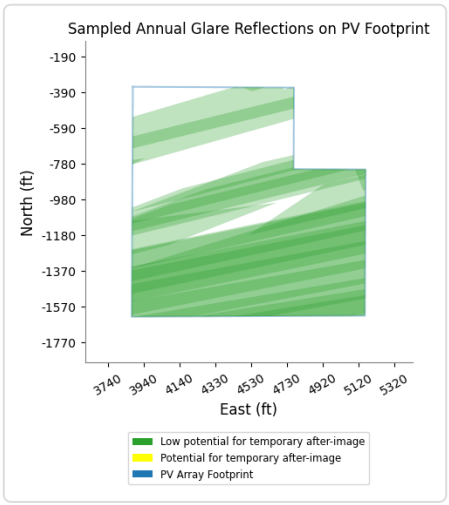
Green glare: 21 min.







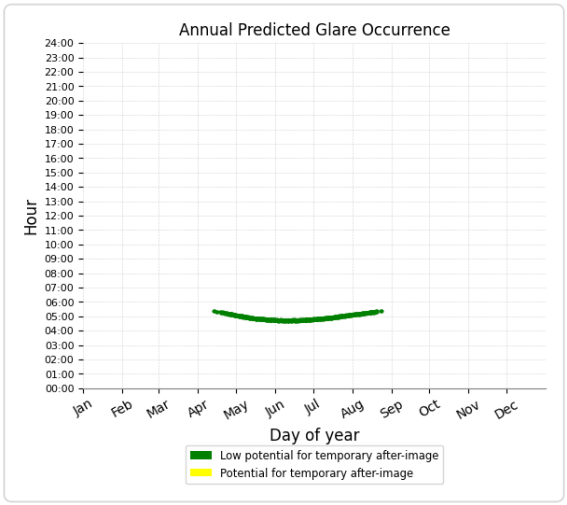


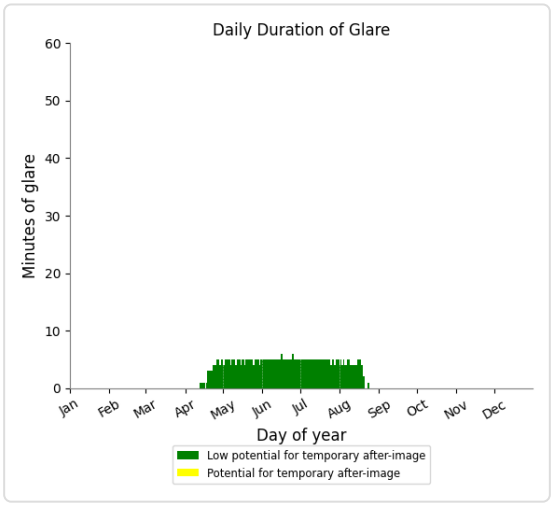


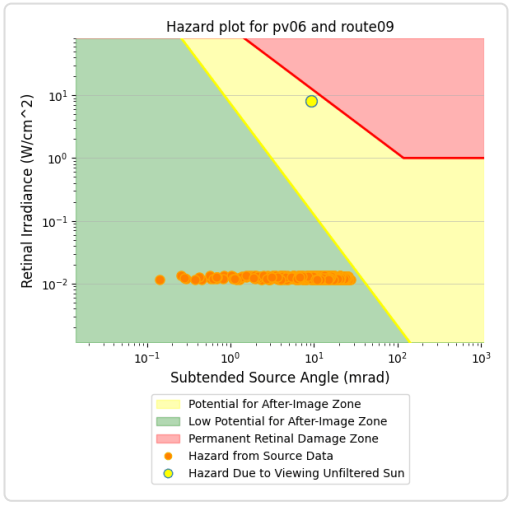
PV06 and Route: Route09

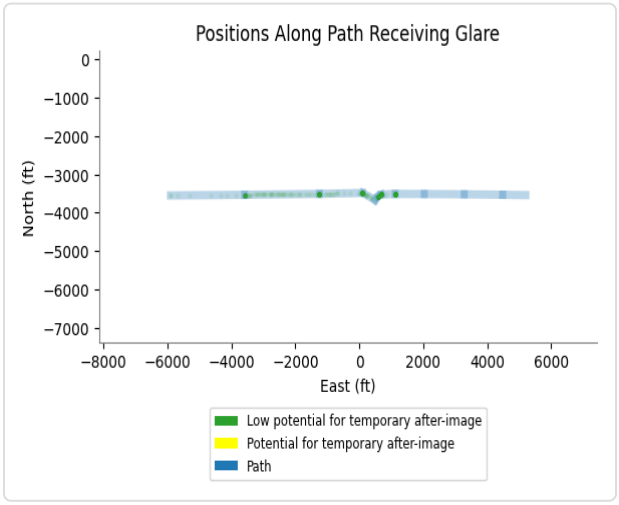
Yellow glare: none

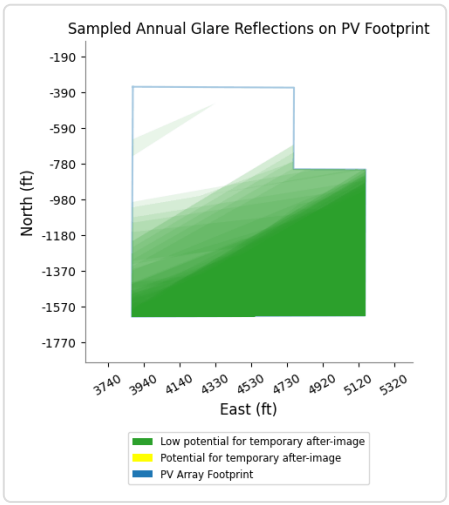
Green glare: 591 min.











PV06 and Route: Route01

No glare found

PV06 and Route: Route02

No glare found

PV06 and Route: Route04

No glare found

PV06 and Route: Route07

No glare found

PV06 and Route: Route10

No glare found

PV06 and Route: Route11

No glare found

PV06 and Route: Route12

No glare found

PV06 and FP: NJK08

No glare found

PV06 and FP: NJK12

No glare found

PV06 and FP: NJK26

No glare found

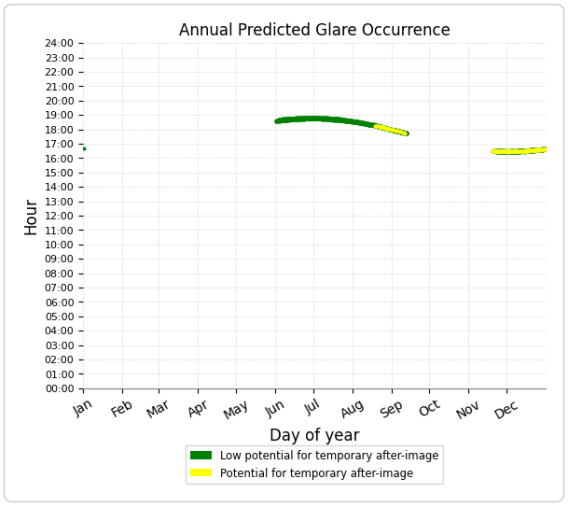
PV06 and FP: NJK30

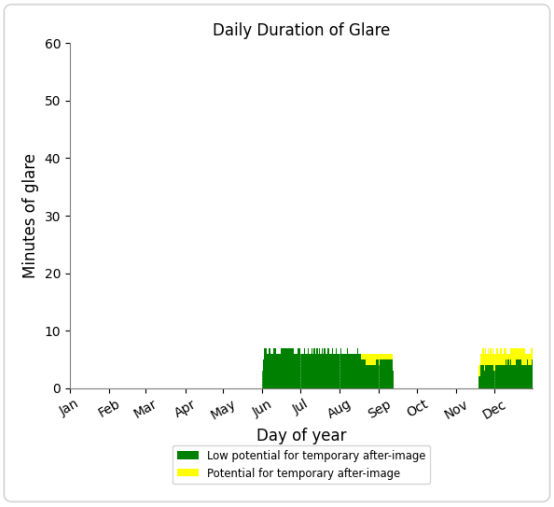
No glare found

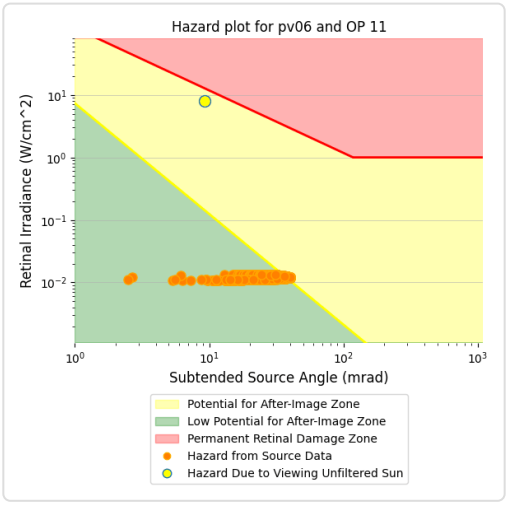
PV06 and OP 11

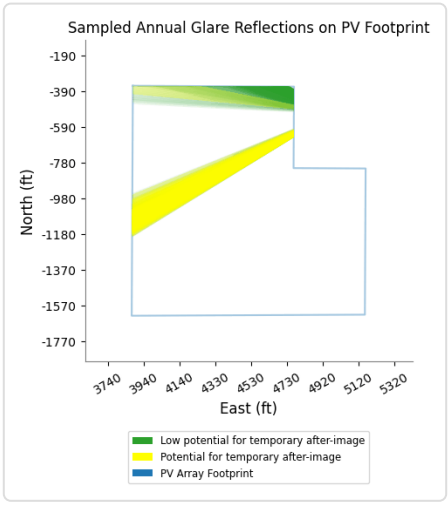
Yellow glare: 135 min.

Green glare: 794 min.





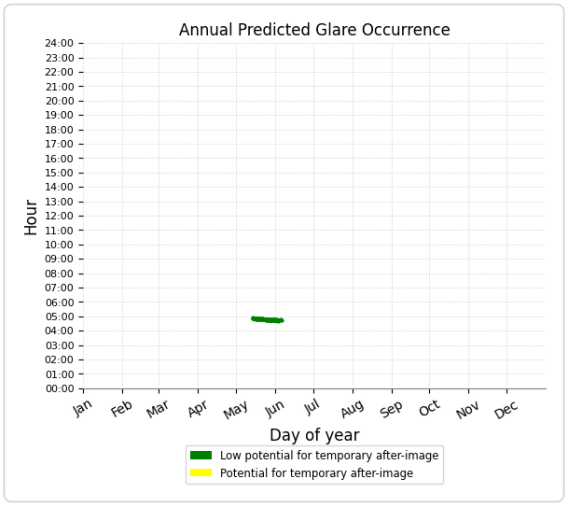


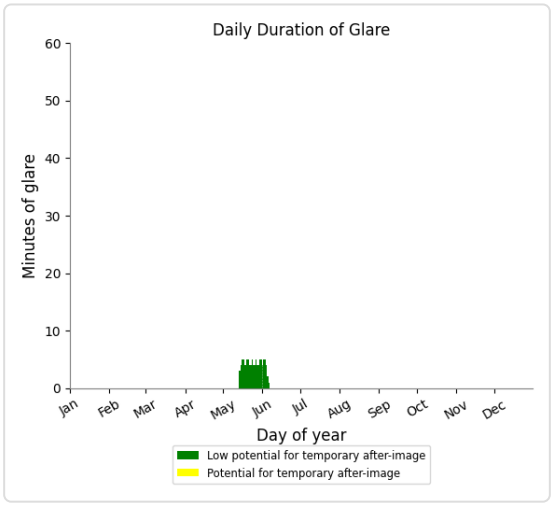


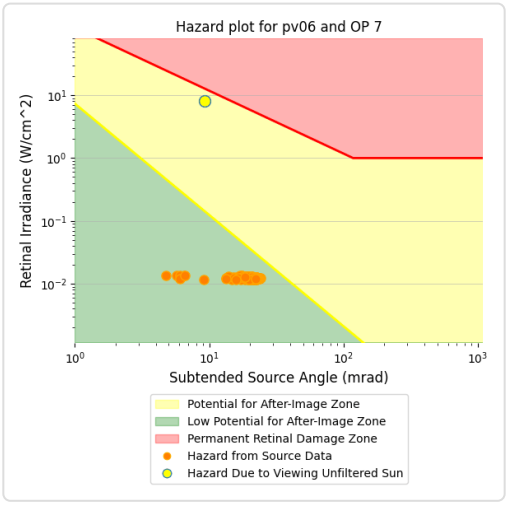
PV06 and OP 7

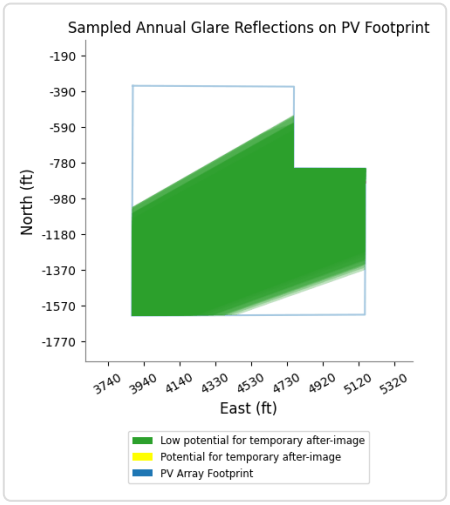
Yellow glare: none

Green glare: 100 min.





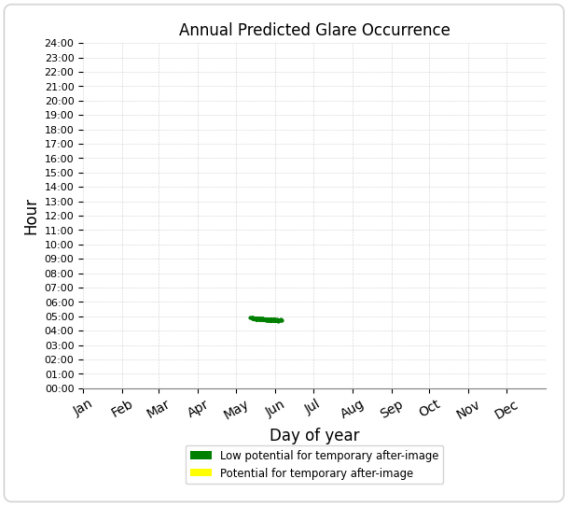


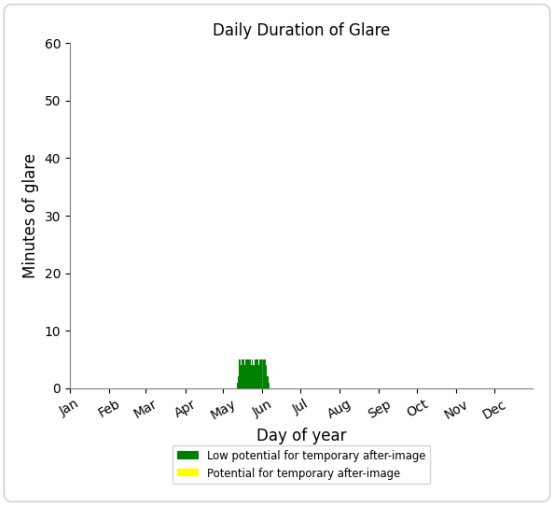


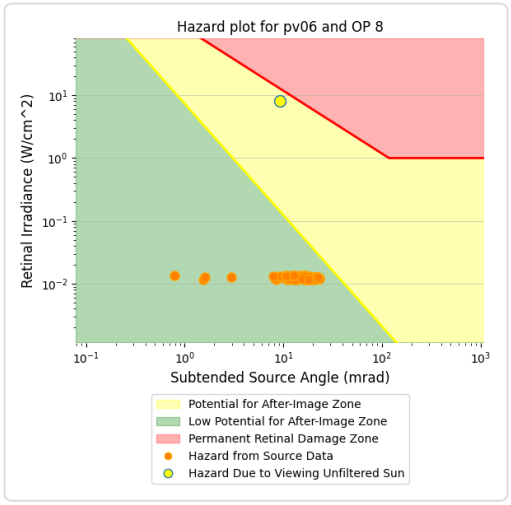
PV06 and OP 8

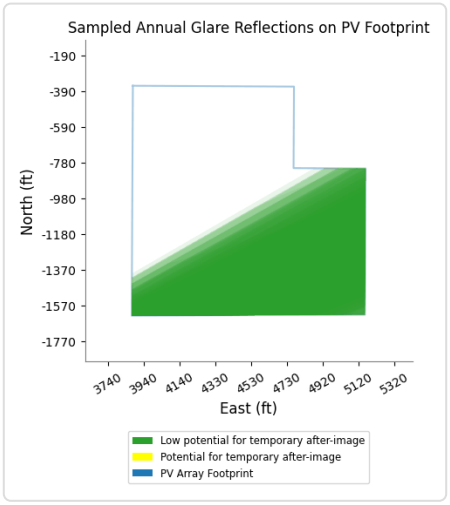
Yellow glare: none

Green glare: 110 min.



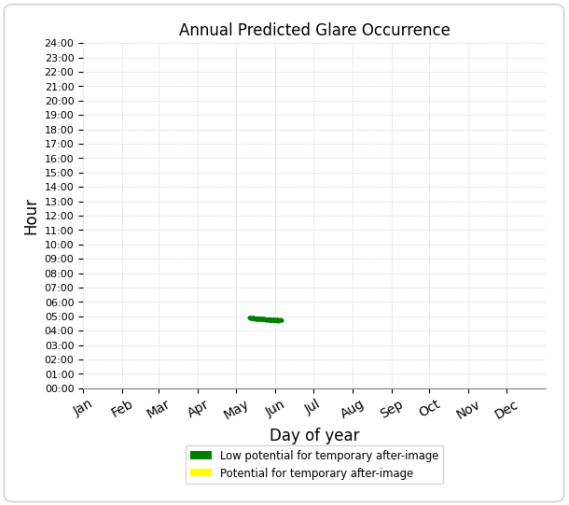


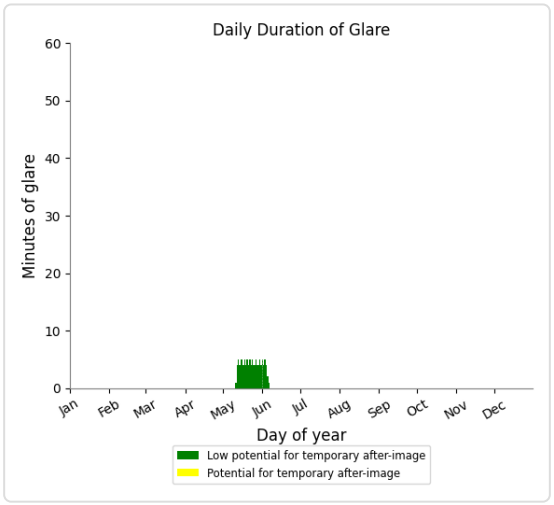


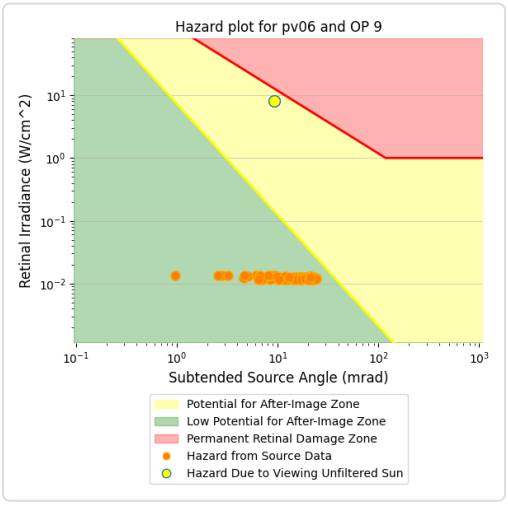


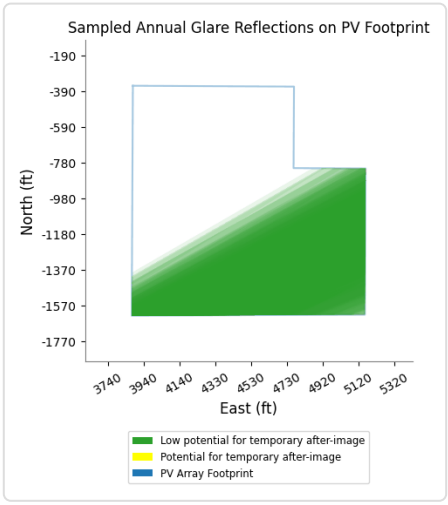
PV06 and OP 9

Yellow glare: none
Green glare: 111 min.









PV06 and OP 1

No glare found

PV06 and OP 2

No glare found

PV06 and OP 3

No glare found

PV06 and OP 4

No glare found

PV06 and OP 5

No glare found

PV06 and OP 6

No glare found

PV06 and OP 10

No glare found

PV06 and OP 12

No glare found

PV06 and OP 13

No glare found

PV06 and OP 14

No glare found

PV06 and OP 15

No glare found

PV06 and OP 16

No glare found

PV06 and OP 17

No glare found

PV06 and OP 18

No glare found

PV06 and OP 19

No glare found

PV06 and 20-ATCT

No glare found

PV: PV07 low potential for temporary after-image

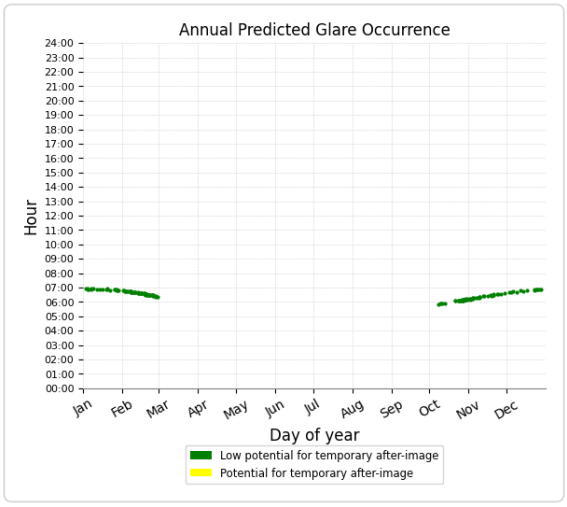
Receptor results ordered by category of glare

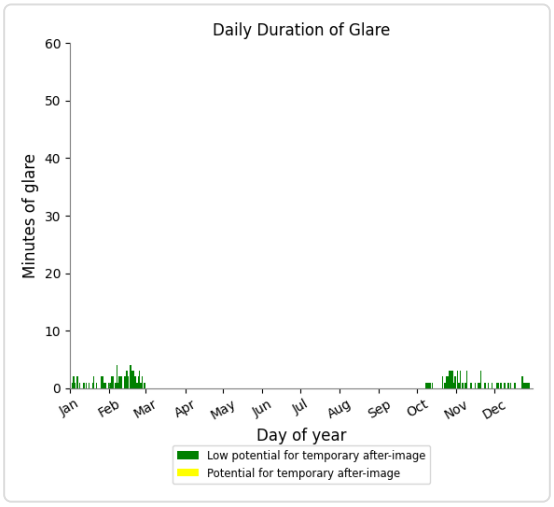
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route06	136	2.3	0	0.0
Route07	167	2.8	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

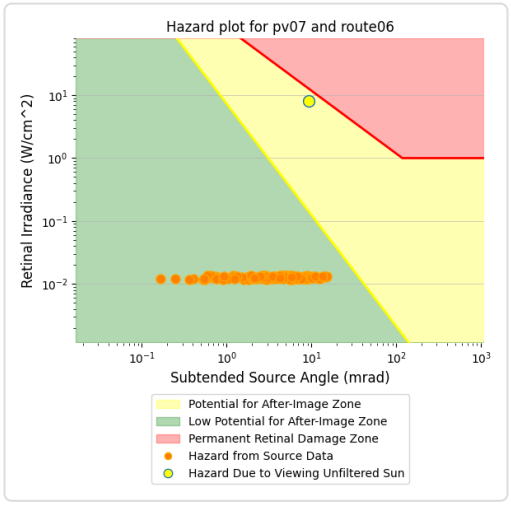
PV07 and Route: Route06

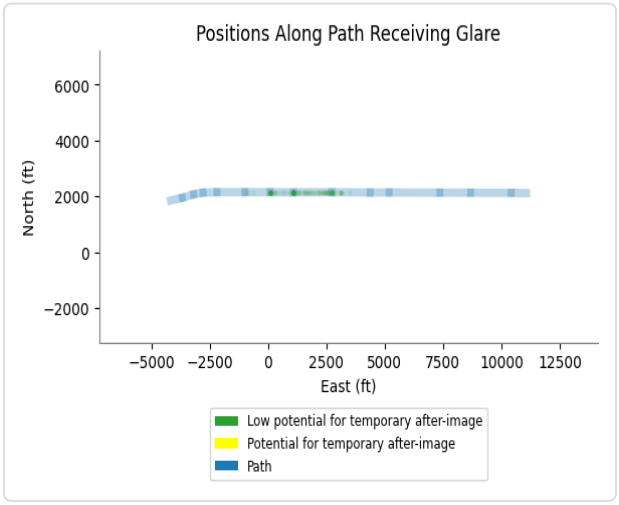
Yellow glare: none

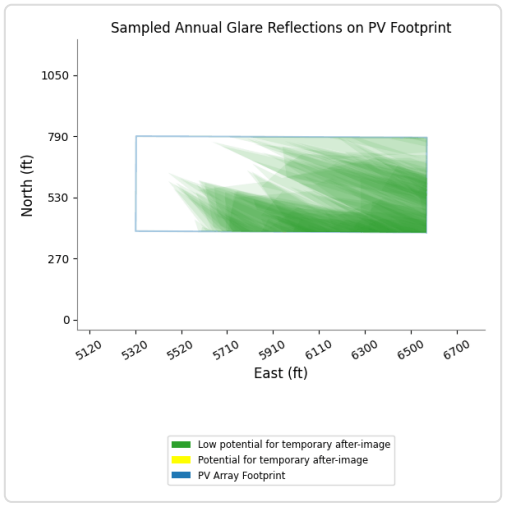
Green glare: 136 min.







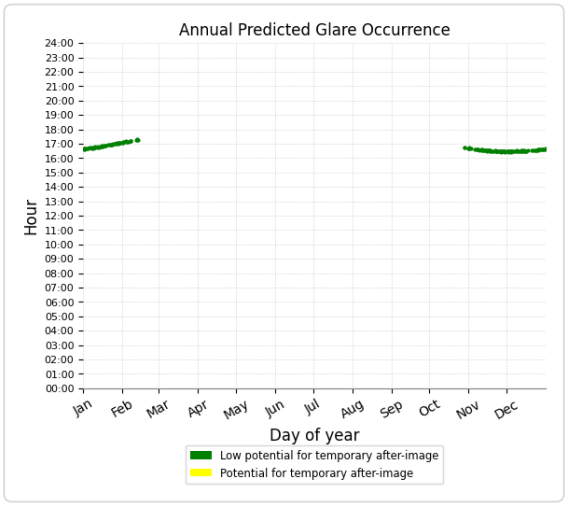


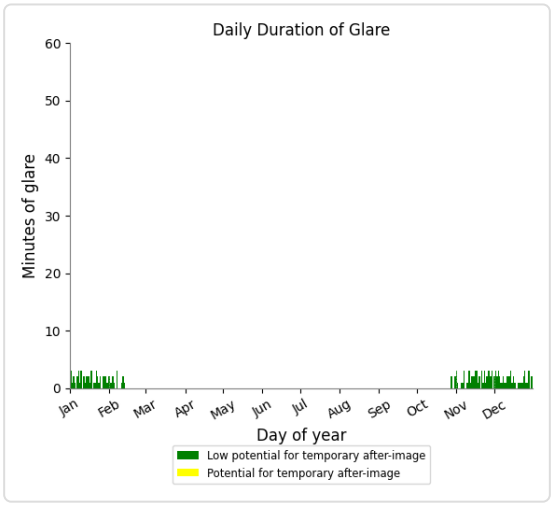


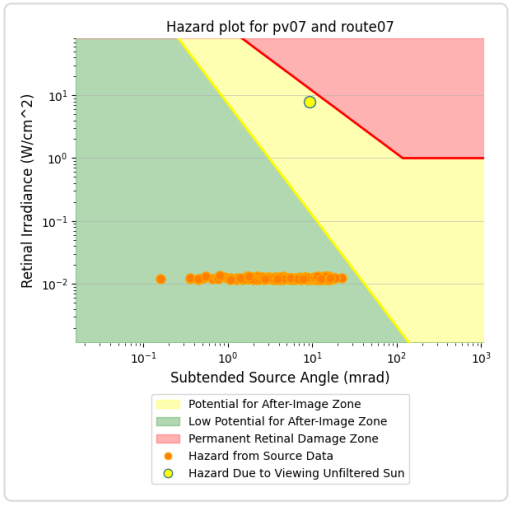
PV07 and Route: Route07

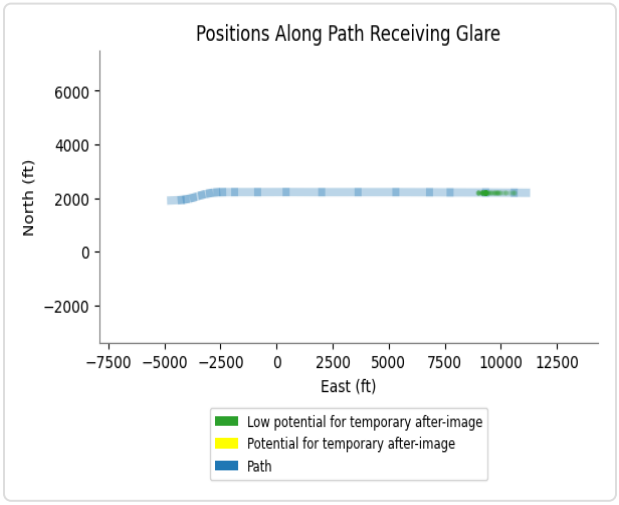
Yellow glare: none

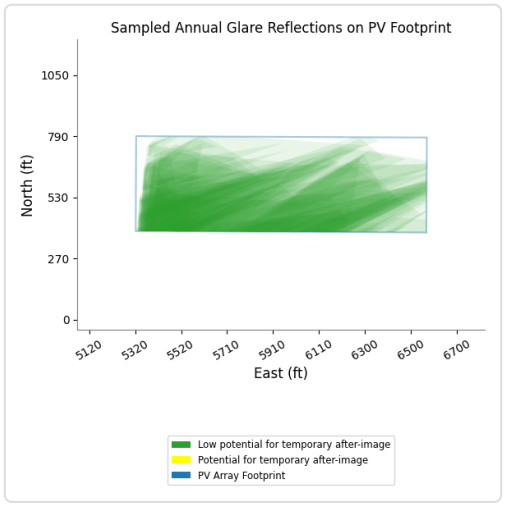
Green glare: 167 min.











PV07 and Route: Route01

No glare found

PV07 and Route: Route02

No glare found

PV07 and Route: Route04

No glare found

PV07 and Route: Route05

No glare found

PV07 and Route: Route08

No glare found

PV07 and Route: Route09

No glare found

PV07 and Route: Route10

No glare found

PV07 and Route: Route11

No glare found

PV07 and Route: Route12

No glare found

PV07 and FP: NJK08

No glare found

PV07 and FP: NJK12

No glare found

PV07 and FP: NJK26

No glare found

PV07 and FP: NJK30

No glare found

PV07 and OP 1

No glare found

PV07 and OP 2

No glare found

PV07 and OP 3

No glare found

PV07 and OP 4

No glare found

PV07 and OP 5

No glare found

PV07 and OP 6

No glare found

PV07 and OP 7

No glare found

PV07 and OP 8

No glare found

PV07 and OP 9

No glare found

PV07 and OP 10

No glare found

PV07 and OP 11

No glare found

PV07 and OP 12

No glare found

PV07 and OP 13

No glare found

PV07 and OP 14

No glare found

PV07 and OP 15

No glare found

PV07 and OP 16

No glare found

PV07 and OP 17

No glare found

PV07 and OP 18

No glare found

PV07 and OP 19

No glare found

PV07 and 20-ATCT

No glare found

PV: PV08 low potential for temporary after-image

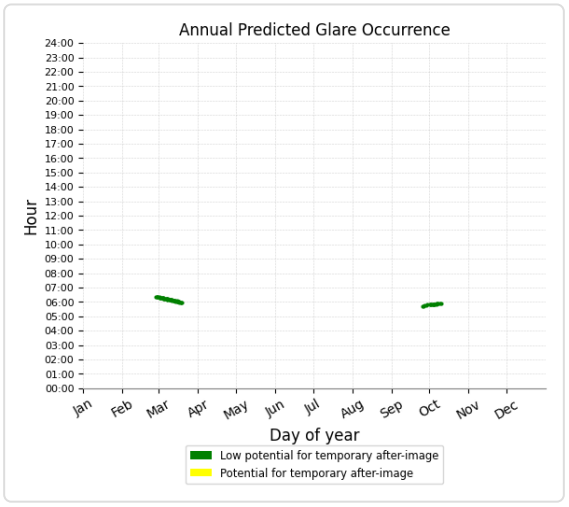
Receptor results ordered by category of glare

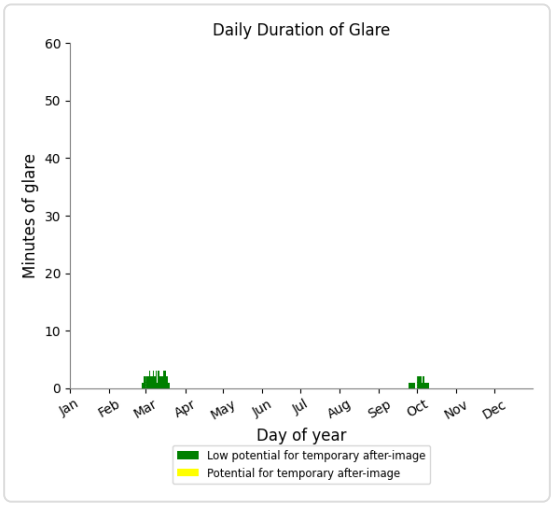
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	66	1.1	0	0.0
Route06	323	5.4	0	0.0
Route09	299	5.0	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 6	19	0.3	0	0.0
OP 7	39	0.7	0	0.0
OP 8	26	0.4	0	0.0
OP 9	15	0.2	0	0.0
OP 11	52	0.9	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

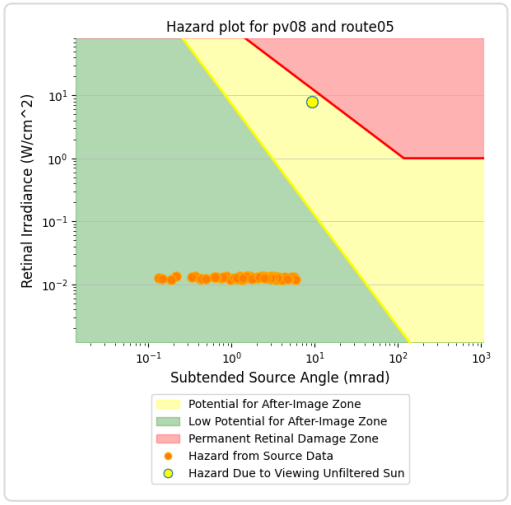
PV08 and Route: Route05

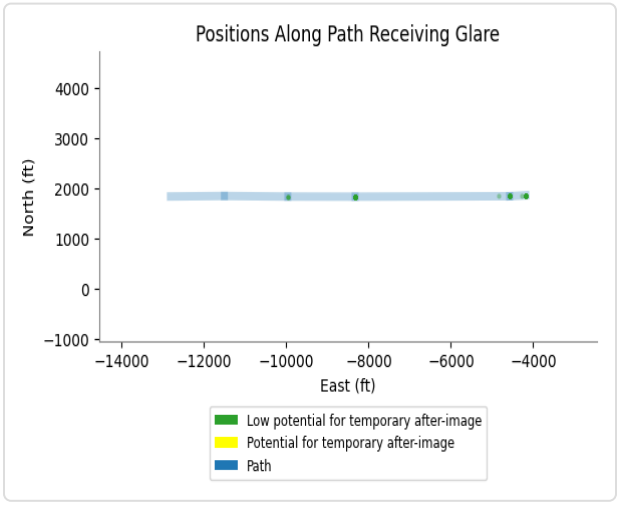
Yellow glare: none

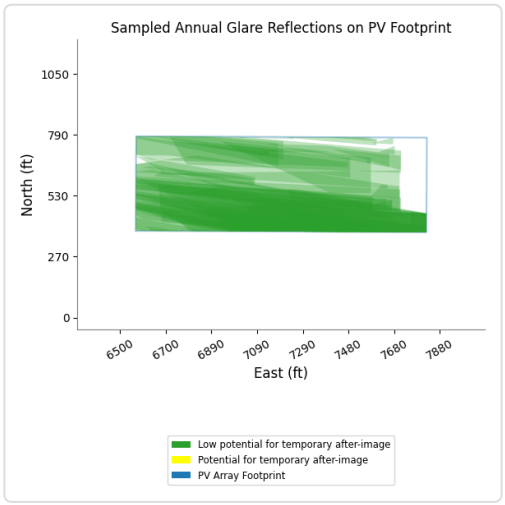
Green glare: 66 min.







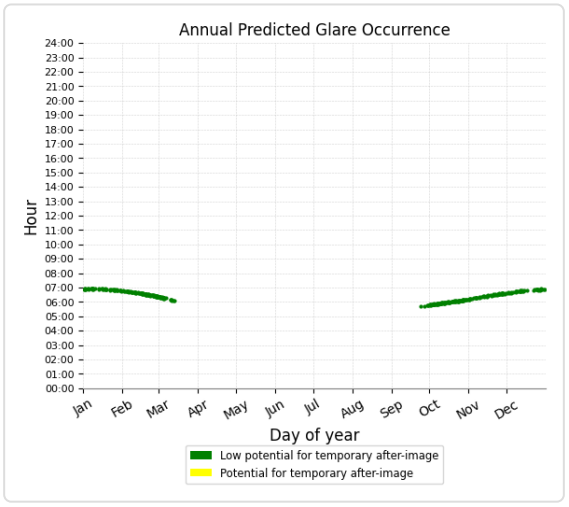


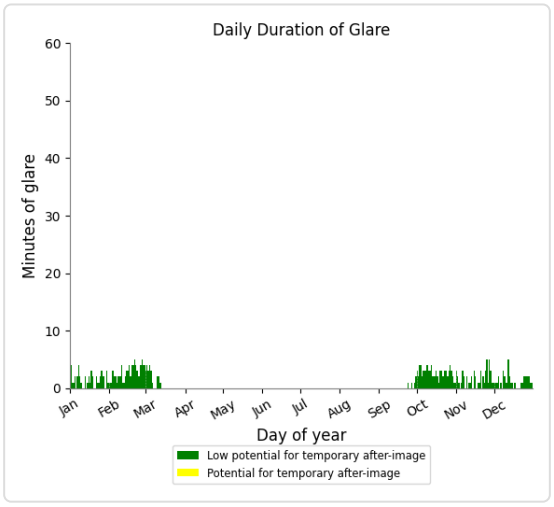


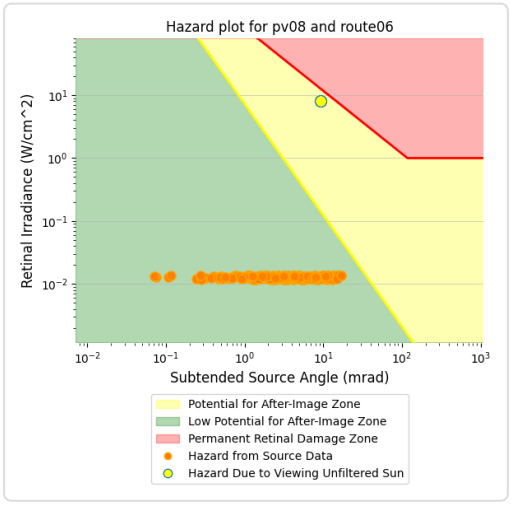
PV08 and Route: Route06

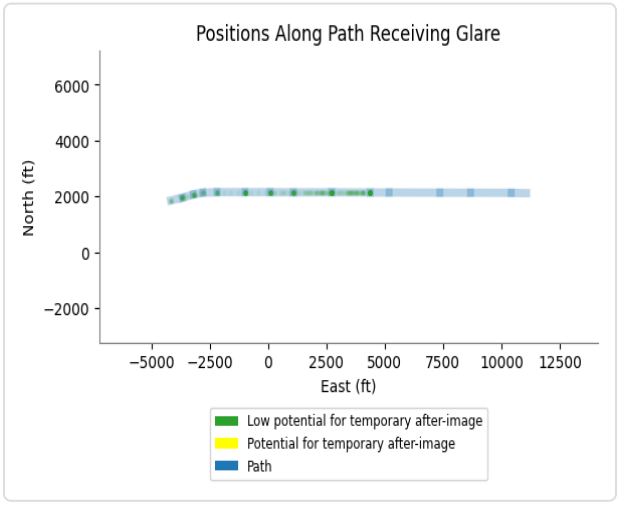
Yellow glare: none

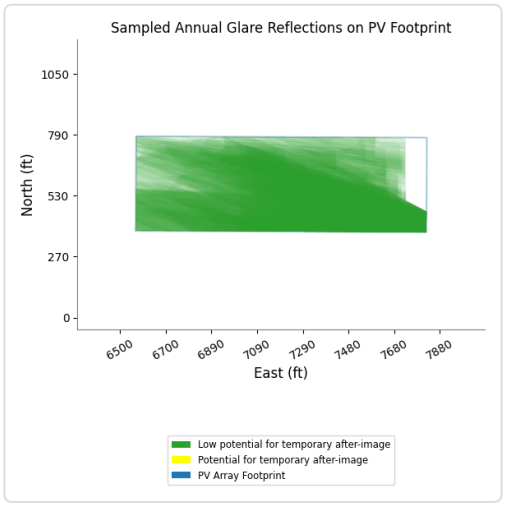
Green glare: 323 min.







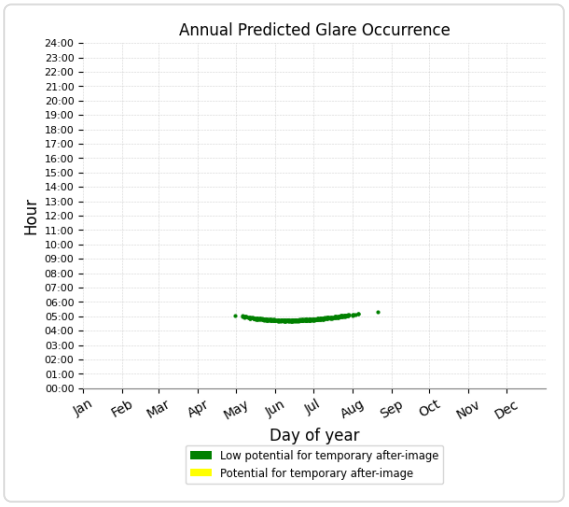


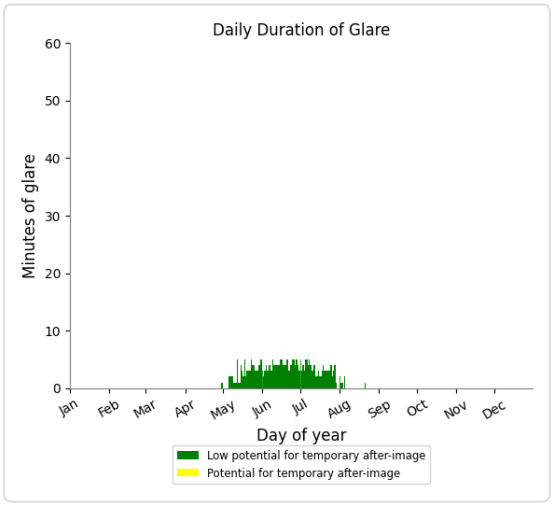


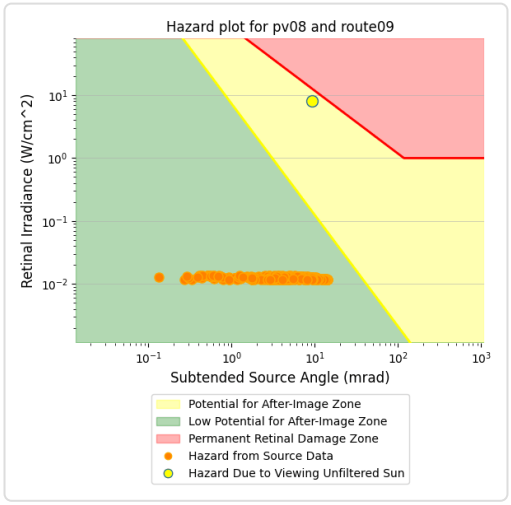
PV08 and Route: Route09

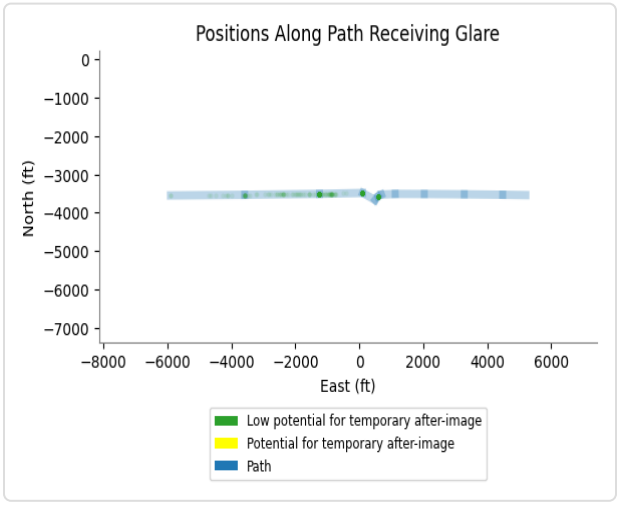
Yellow glare: none

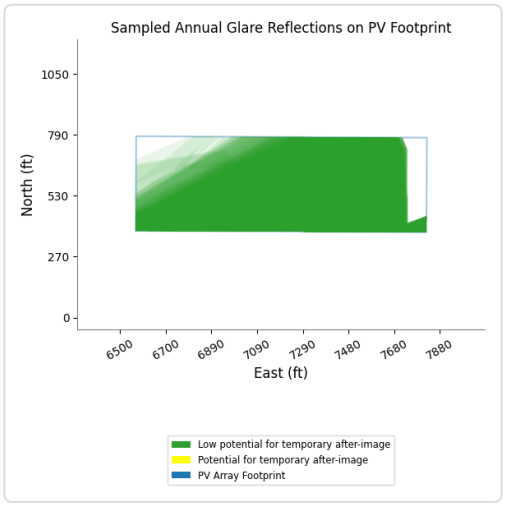
Green glare: 299 min.











PV08 and Route: Route01

No glare found

PV08 and Route: Route02

No glare found

PV08 and Route: Route04

No glare found

PV08 and Route: Route07

No glare found

PV08 and Route: Route08

No glare found

PV08 and Route: Route10

No glare found

PV08 and Route: Route11

No glare found

PV08 and Route: Route12

No glare found

PV08 and FP: NJK08

No glare found

PV08 and FP: NJK12

No glare found

PV08 and FP: NJK26

No glare found

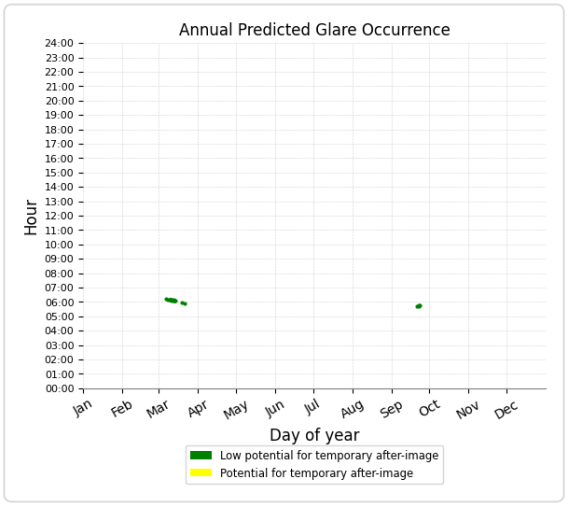
PV08 and FP: NJK30

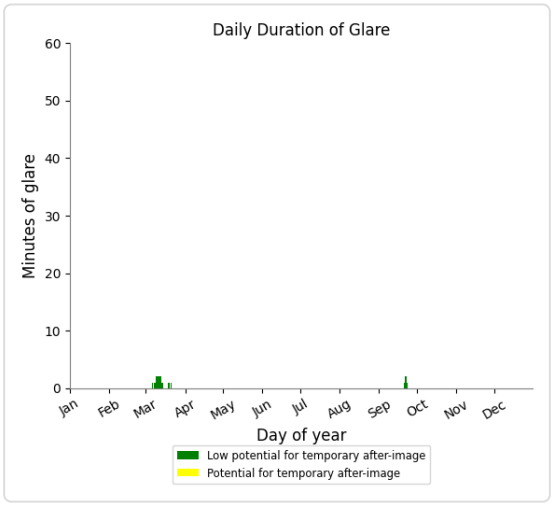
No glare found

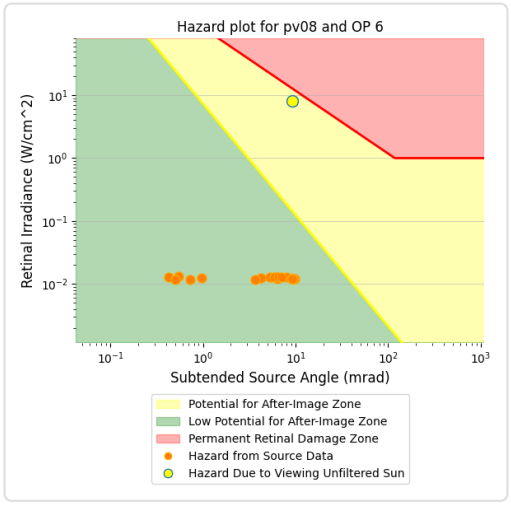
PV08 and OP 6

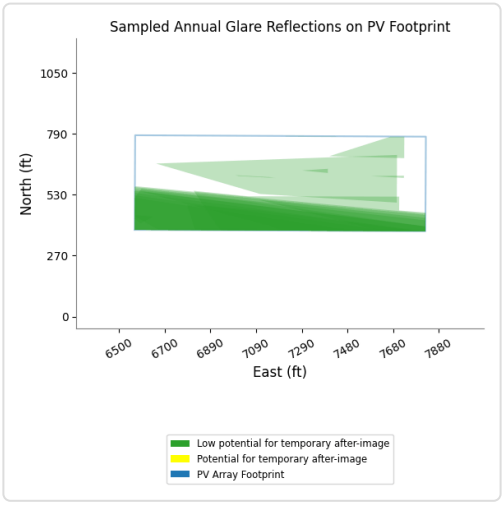
Yellow glare: none

Green glare: 19 min.





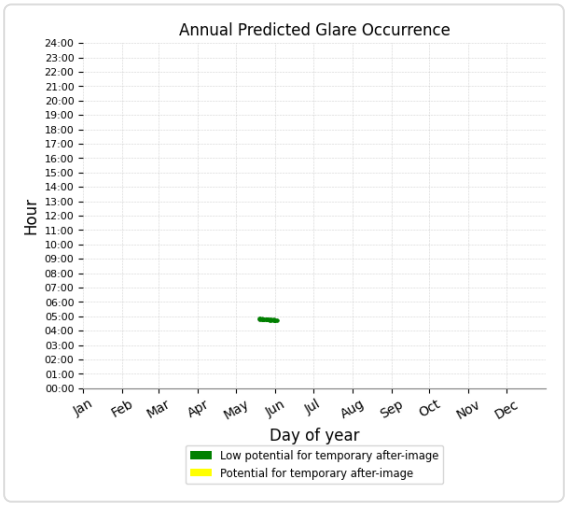


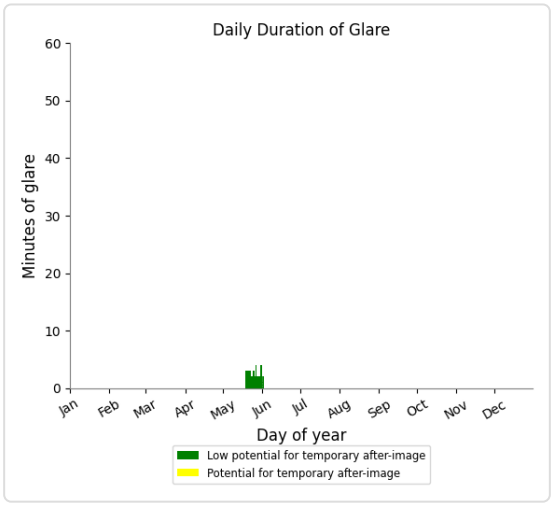


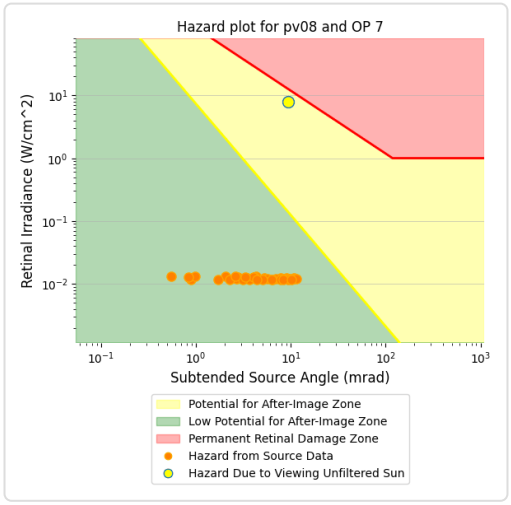
PV08 and OP 7

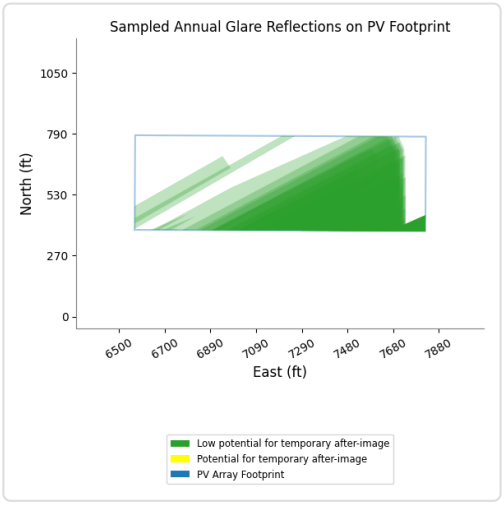
Yellow glare: none

Green glare: 39 min.





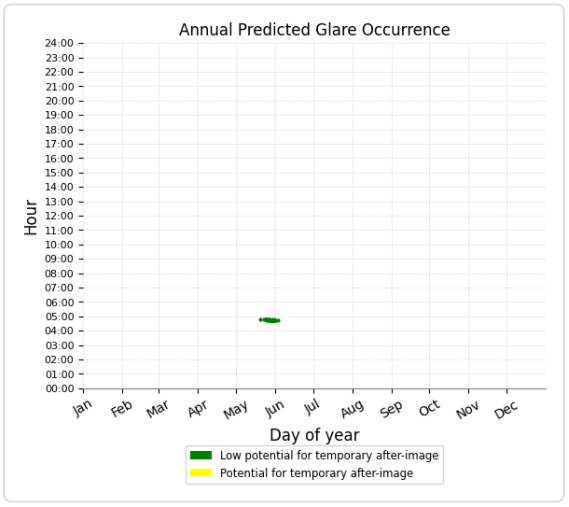


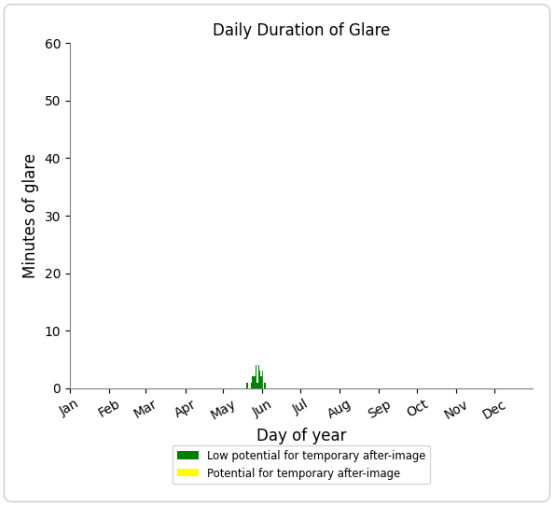


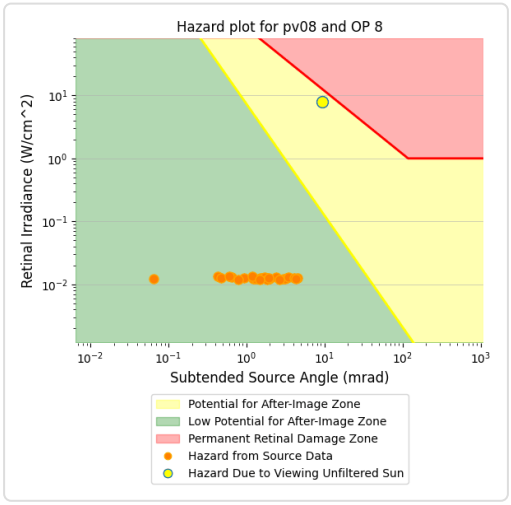
PV08 and OP 8

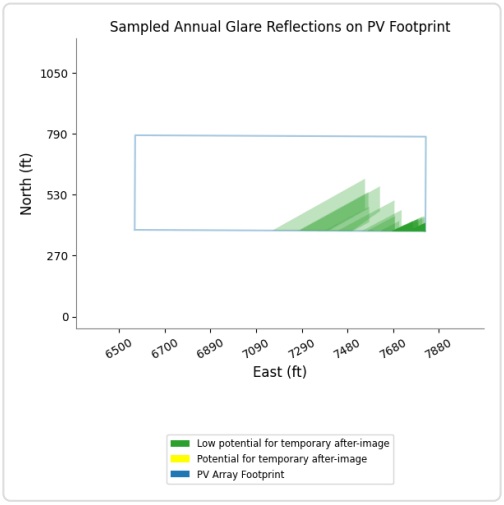
Yellow glare: none

Green glare: 26 min.





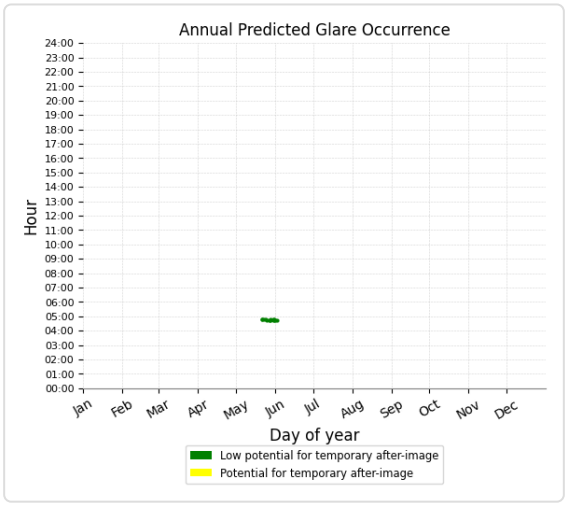


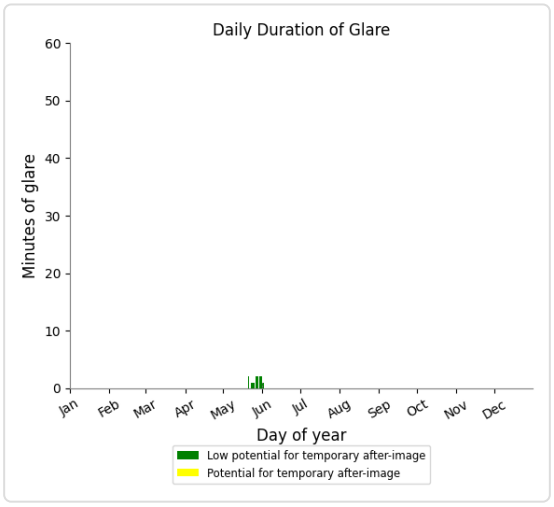


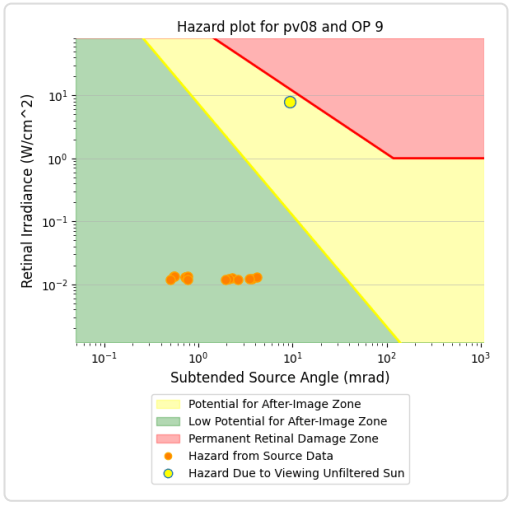
PV08 and OP 9

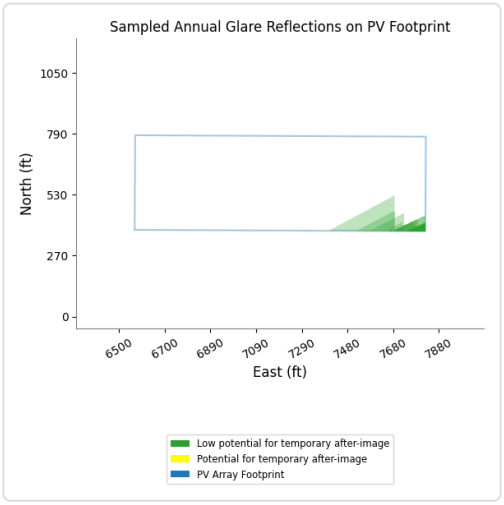
Yellow glare: none

Green glare: 15 min.



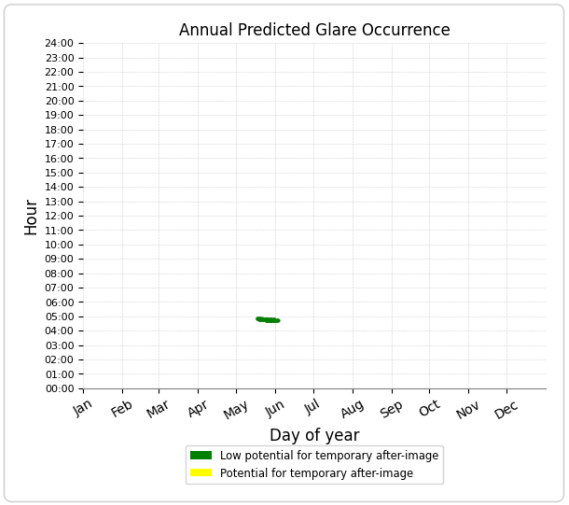


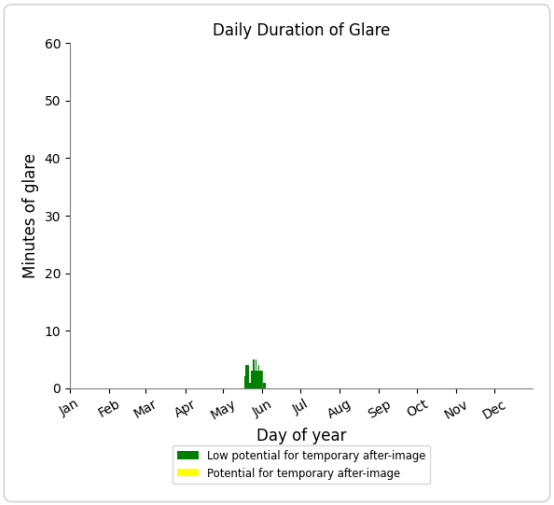


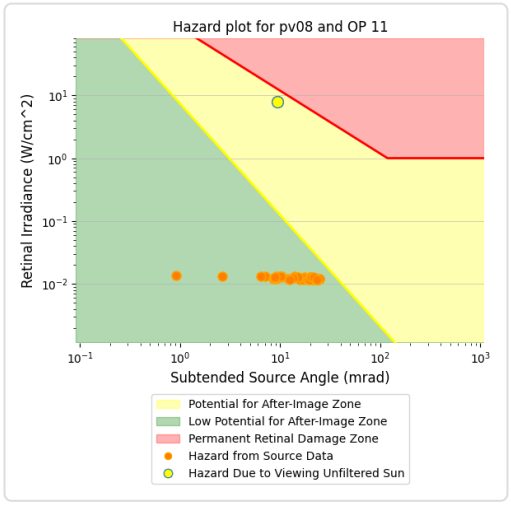


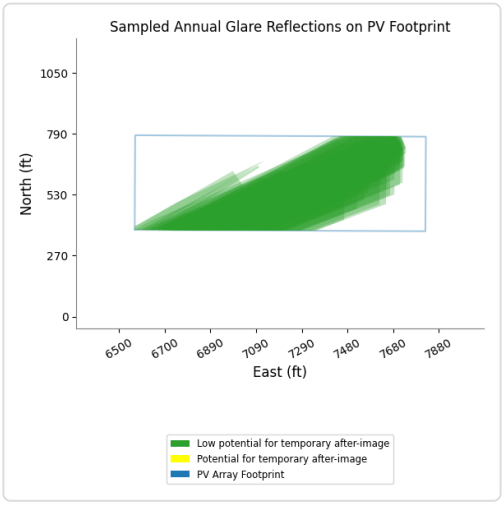
PV08 and OP 11

Yellow glare: none
Green glare: 52 min.









PV08 and OP 1

No glare found

PV08 and OP 2

No glare found

PV08 and OP 3

No glare found

PV08 and OP 4

No glare found

PV08 and OP 5

No glare found

PV08 and OP 10

No glare found

PV08 and OP 12

No glare found

PV08 and OP 13

No glare found

PV08 and OP 14

No glare found

PV08 and OP 15

No glare found

PV08 and OP 16

No glare found

PV08 and OP 17

No glare found

PV08 and OP 18

No glare found

PV08 and OP 19

No glare found

PV08 and 20-ATCT

No glare found

PV: PV09 potential temporary after-image

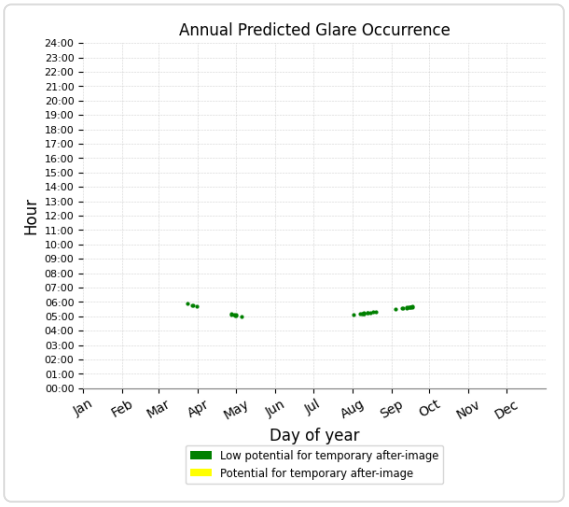
Receptor results ordered by category of glare

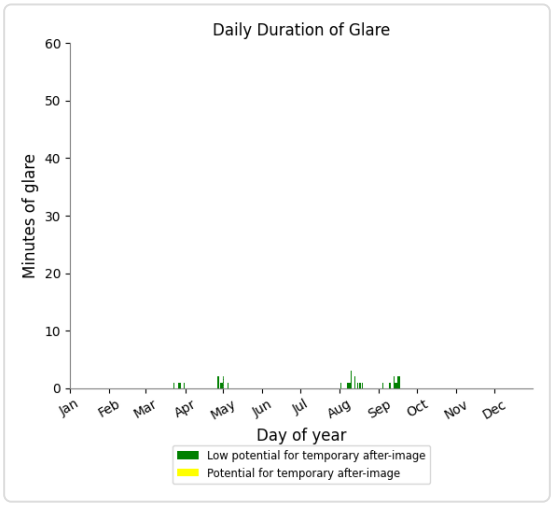
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route08	34	0.6	0	0.0
Route09	373	6.2	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 11	122	2.0	1	0.0
OP 7	33	0.6	0	0.0
OP 8	16	0.3	0	0.0
OP 9	26	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

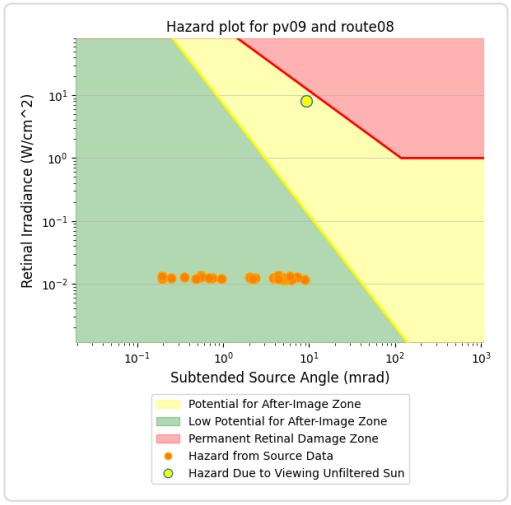
PV09 and Route: Route08

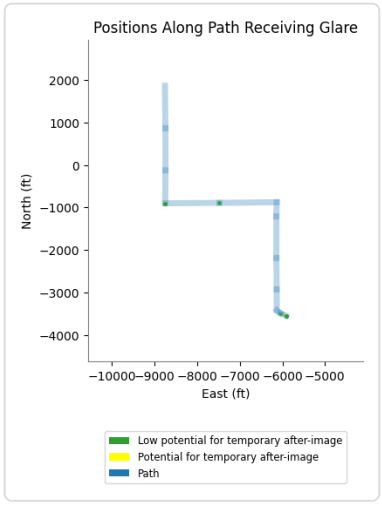
Yellow glare: none

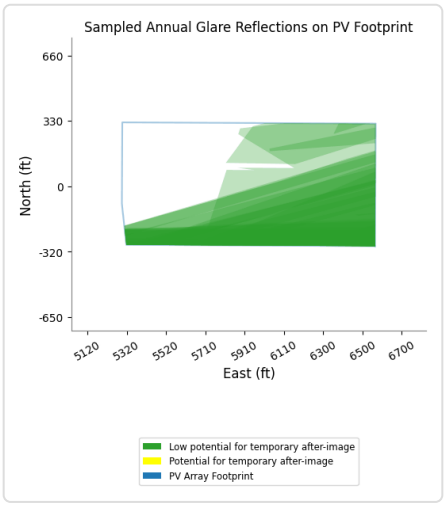
Green glare: 34 min.







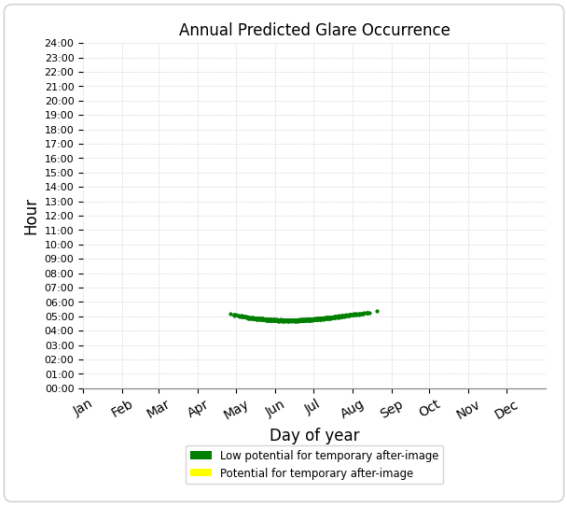


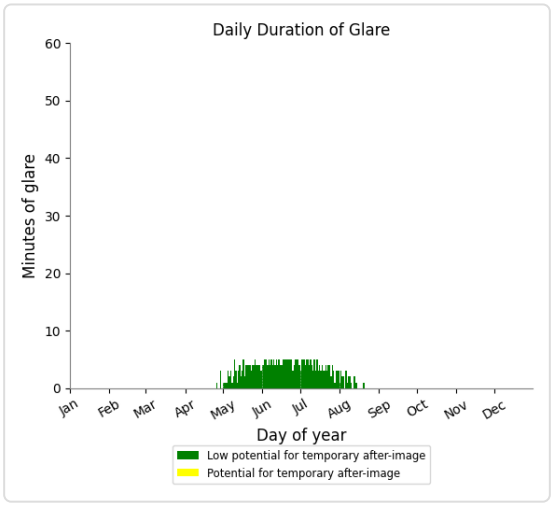


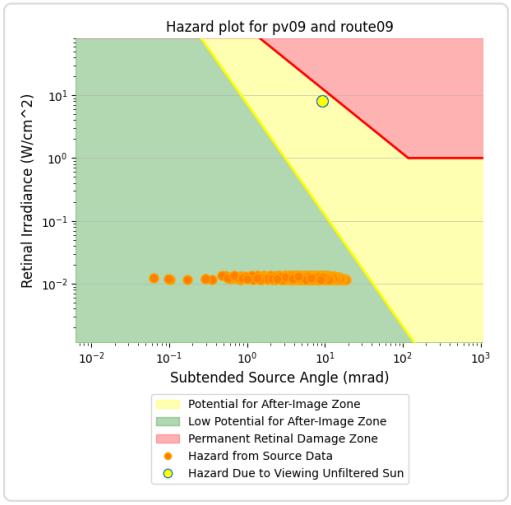
PV09 and Route: Route09

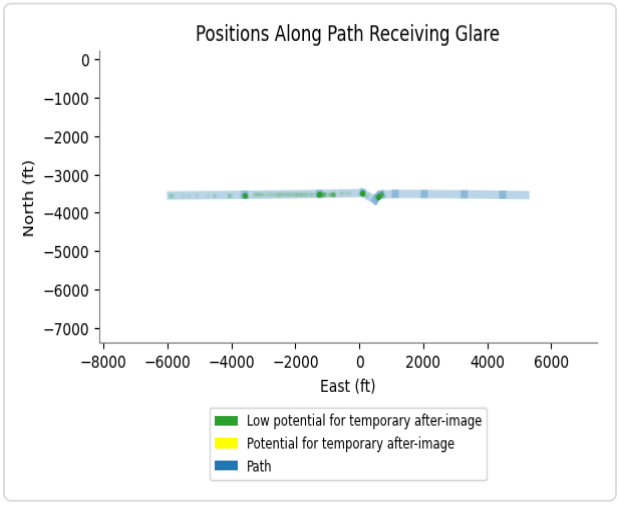
Yellow glare: none

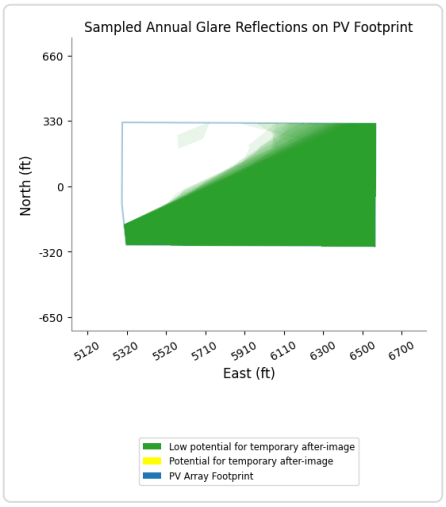
Green glare: 373 min.











PV09 and Route: Route01

No glare found

PV09 and Route: Route02

No glare found

PV09 and Route: Route04

No glare found

PV09 and Route: Route05

No glare found

PV09 and Route: Route06

No glare found

PV09 and Route: Route07

No glare found

PV09 and Route: Route10

No glare found

PV09 and Route: Route11

No glare found

PV09 and Route: Route12

No glare found

PV09 and FP: NJK08

No glare found

PV09 and FP: NJK12

No glare found

PV09 and FP: NJK26

No glare found

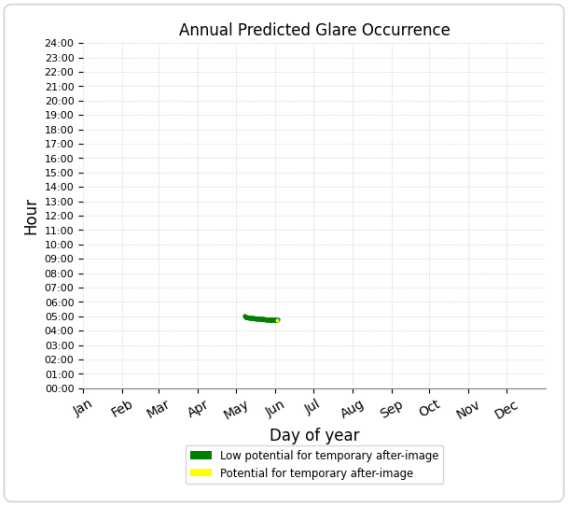
PV09 and FP: NJK30

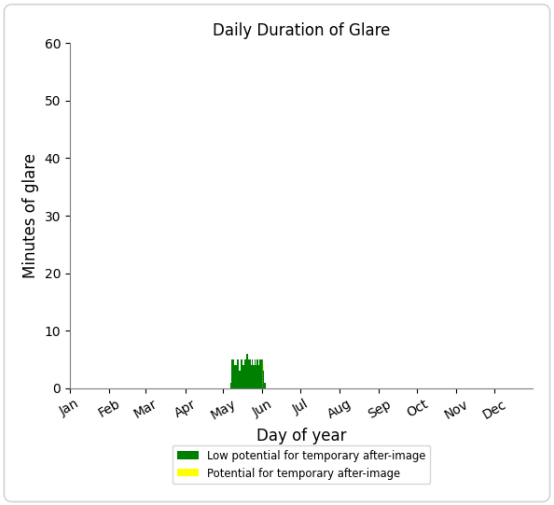
No glare found

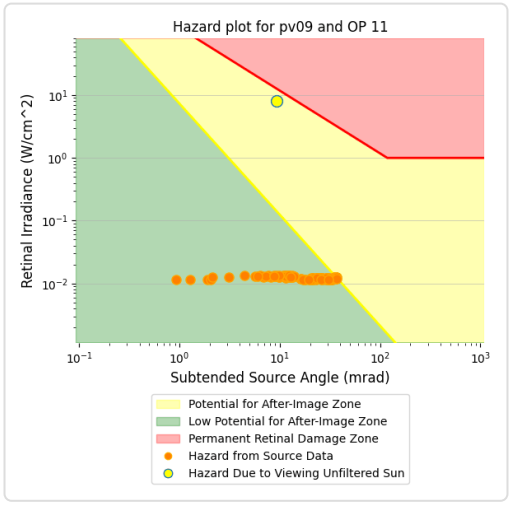
PV09 and OP 11

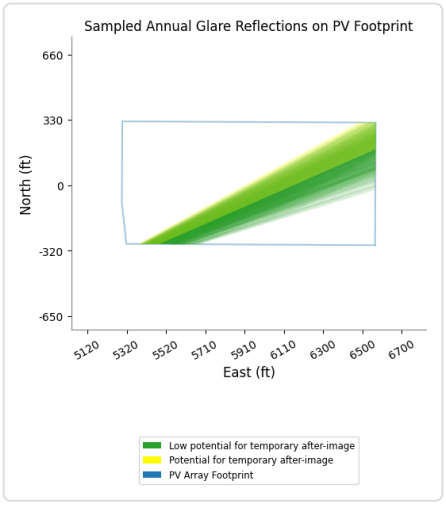
Yellow glare: 1 min.

Green glare: 122 min.





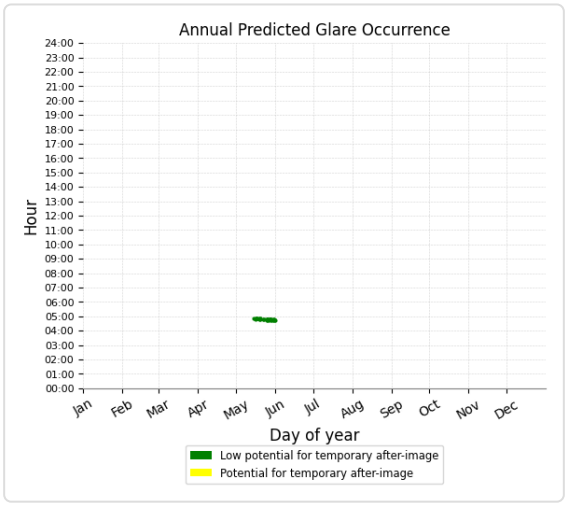


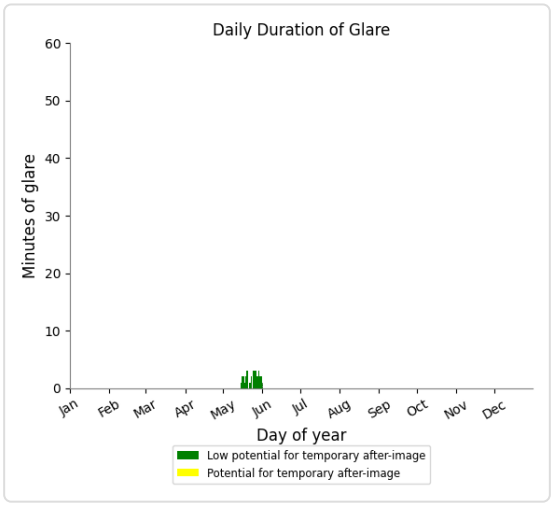


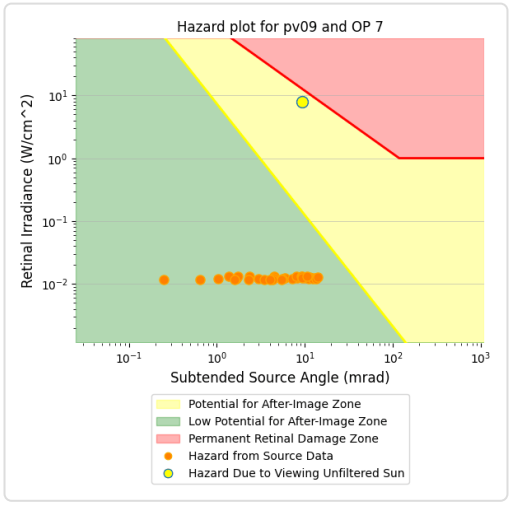
PV09 and OP 7

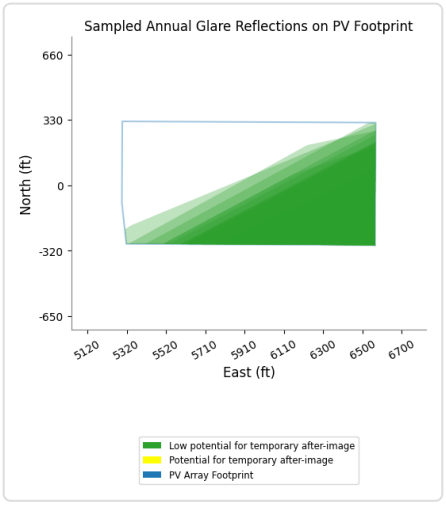
Yellow glare: none

Green glare: 33 min.





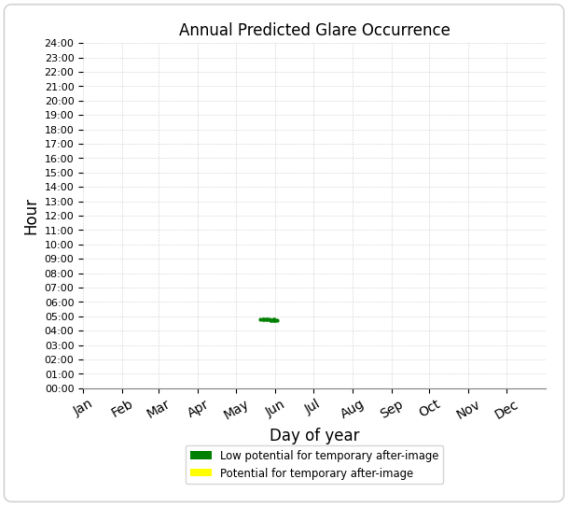


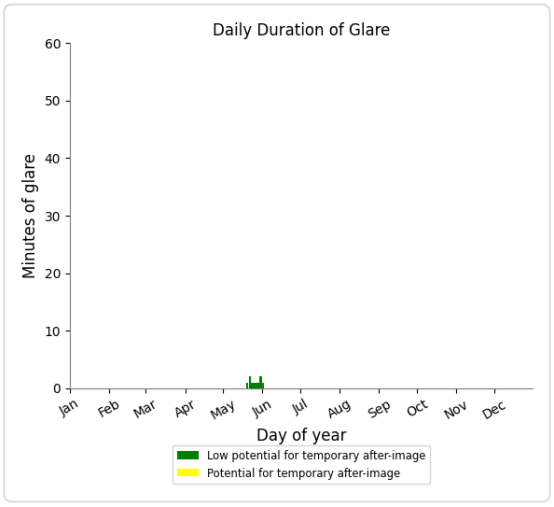


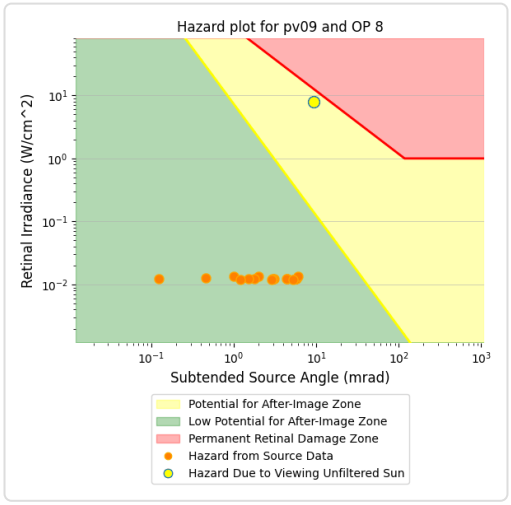
PV09 and OP 8

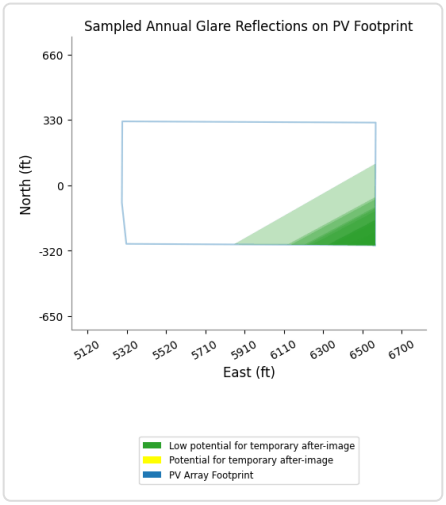
Yellow glare: none

Green glare: 16 min.



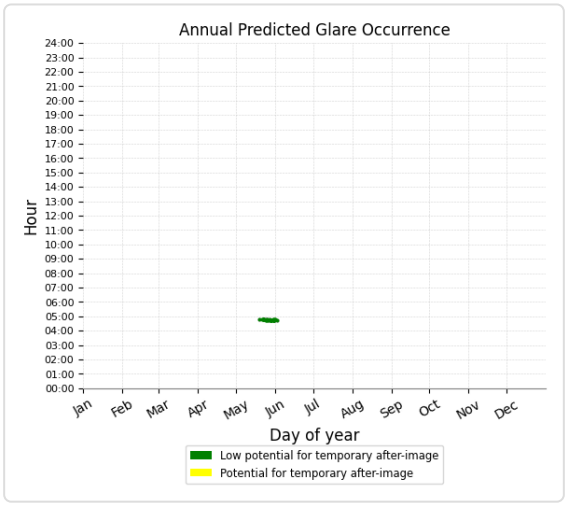


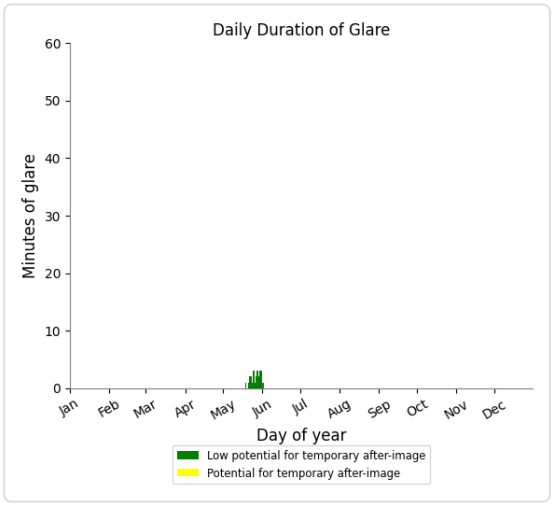


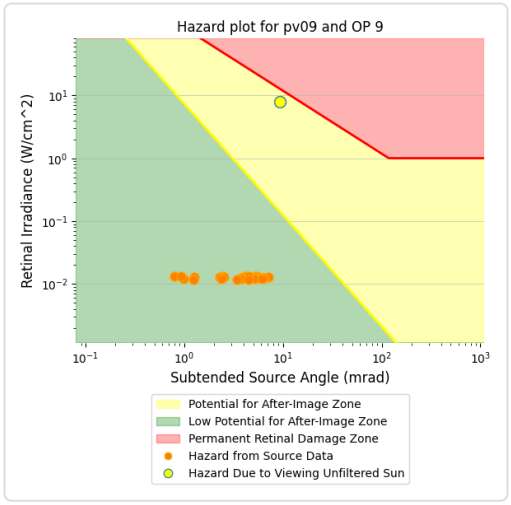


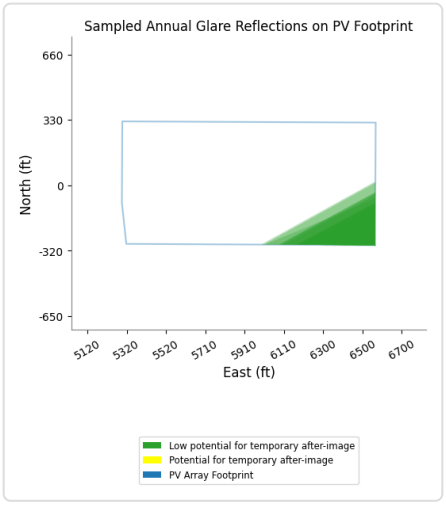
PV09 and OP 9

Yellow glare: none
Green glare: 26 min.









PV09 and OP 1

No glare found

PV09 and OP 2

No glare found

PV09 and OP 3

No glare found

PV09 and OP 4

No glare found

PV09 and OP 5

No glare found

PV09 and OP 6

No glare found

PV09 and OP 10

No glare found

PV09 and OP 12

No glare found

PV09 and OP 13

No glare found

PV09 and OP 14

No glare found

PV09 and OP 15

No glare found

PV09 and OP 16

No glare found

PV09 and OP 17

No glare found

PV09 and OP 18

No glare found

PV09 and OP 19

No glare found

PV09 and 20-ATCT

No glare found

PV: PV10 low potential for temporary after-image

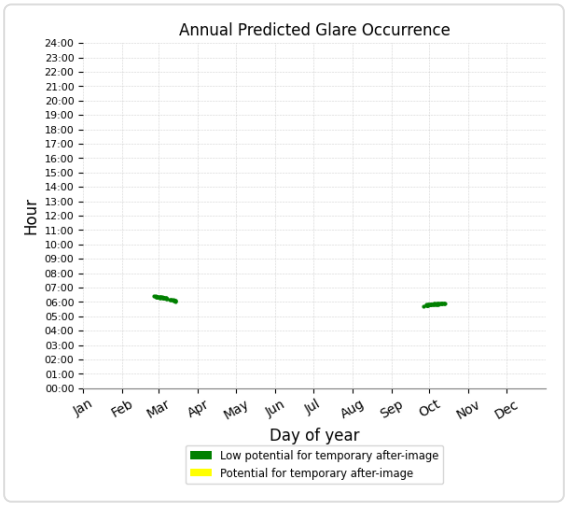
Receptor results ordered by category of glare

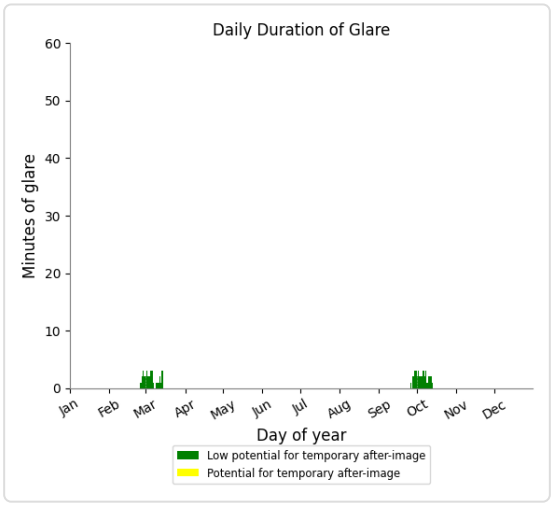
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route05	69	1.1	0	0.0
Route06	498	8.3	0	0.0
Route08	47	0.8	0	0.0
Route09	258	4.3	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 6	20	0.3	0	0.0
OP 8	35	0.6	0	0.0
OP 9	53	0.9	0	0.0
OP 11	60	1.0	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 7	0	0.0	0	0.0
OP 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

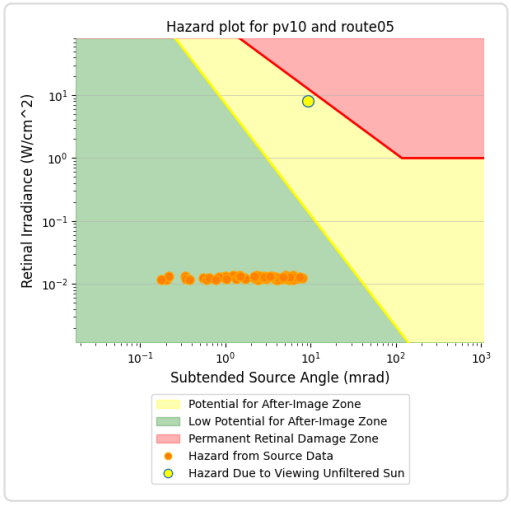
PV10 and Route: Route05

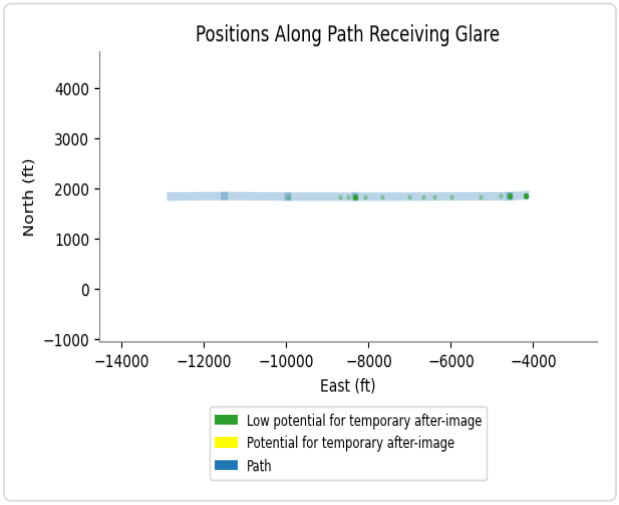
Yellow glare: none

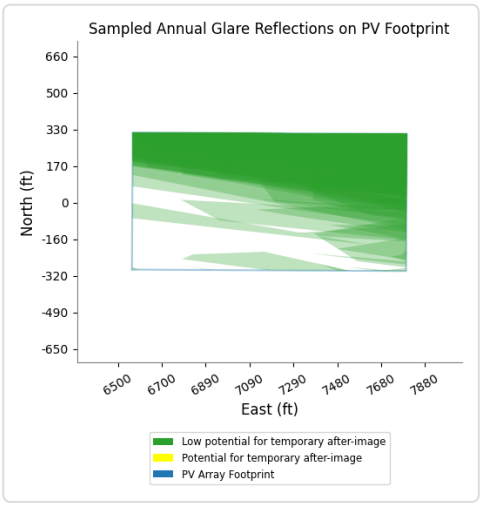
Green glare: 69 min.







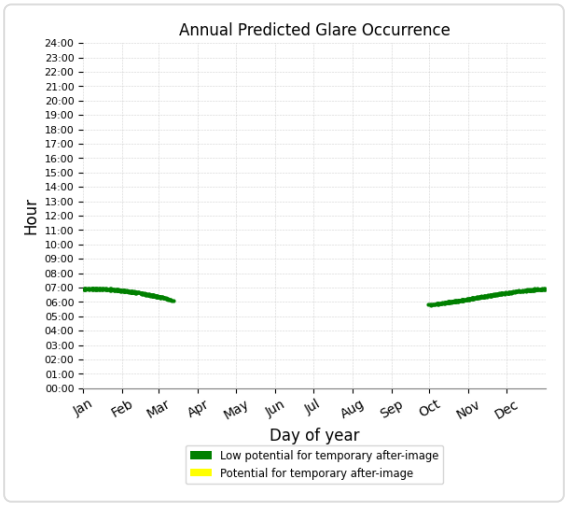


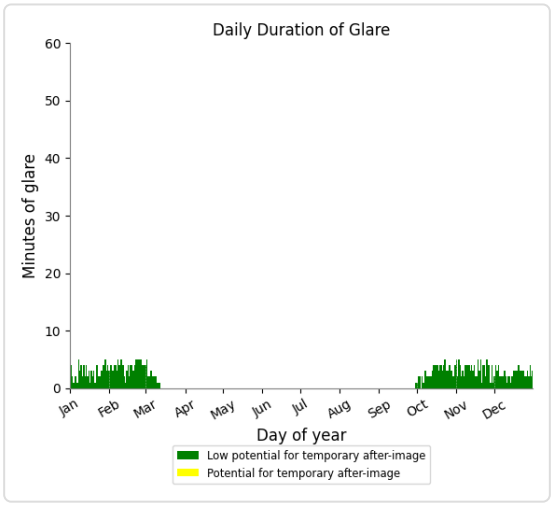


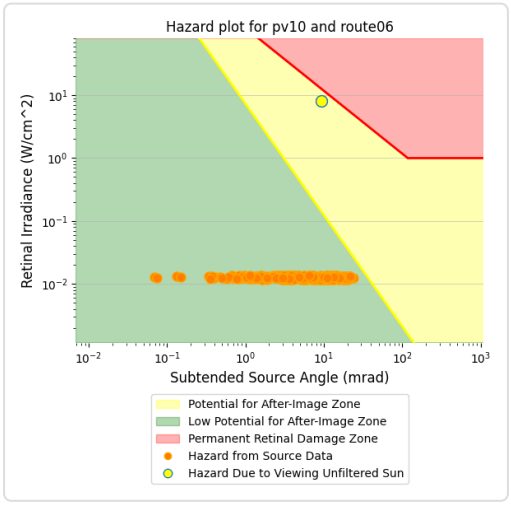
PV10 and Route: Route06

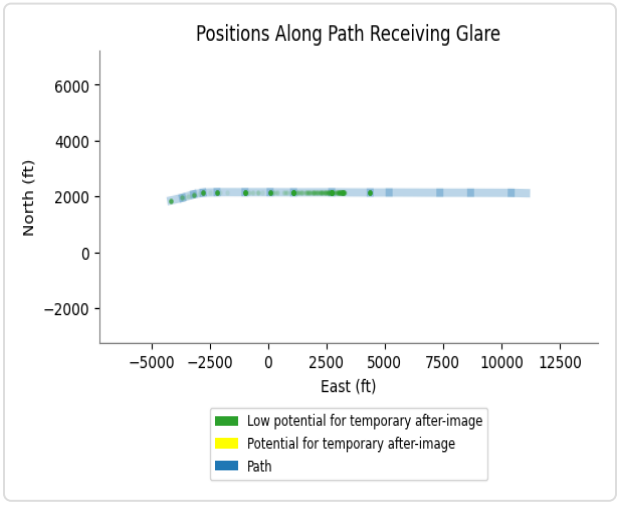
Yellow glare: none

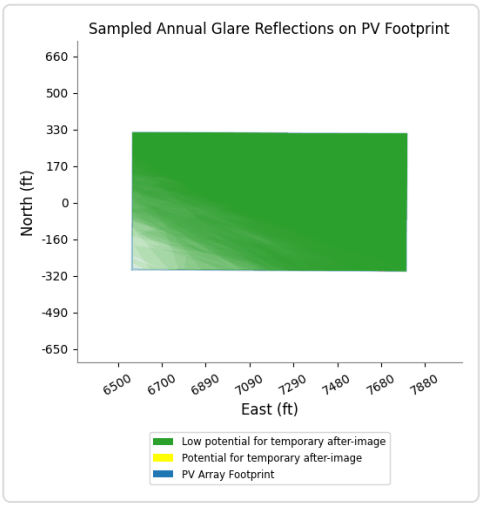
Green glare: 498 min.







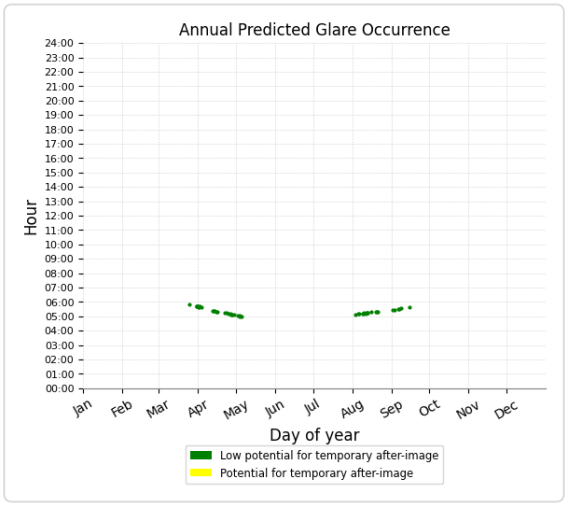


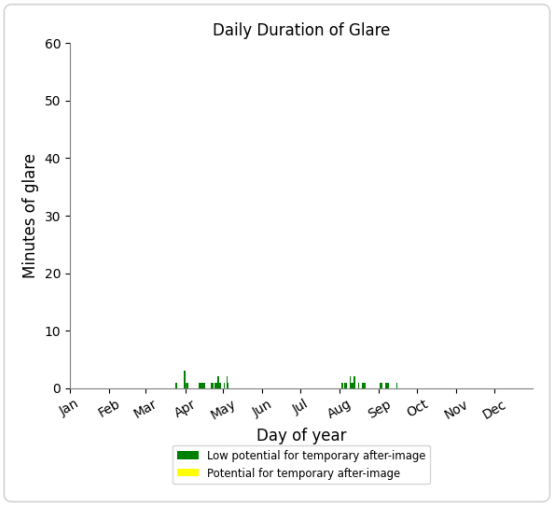


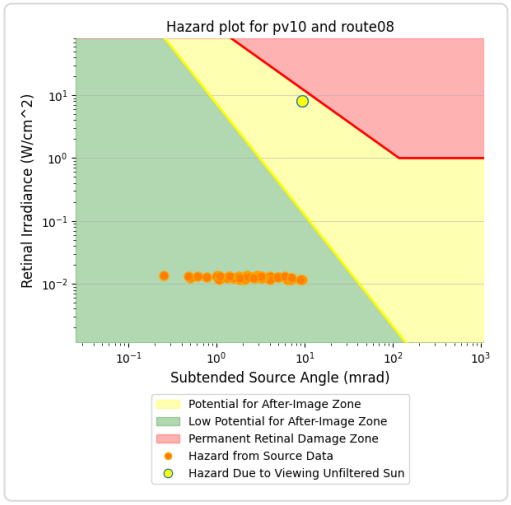
PV10 and Route: Route08

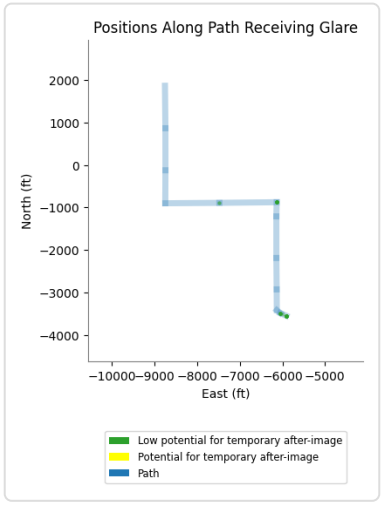
Yellow glare: none

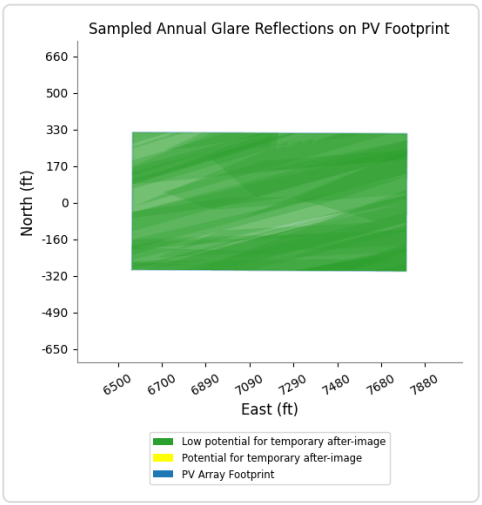
Green glare: 47 min.







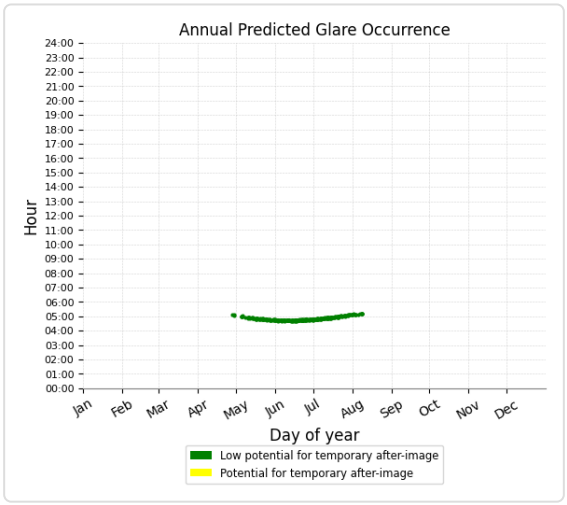


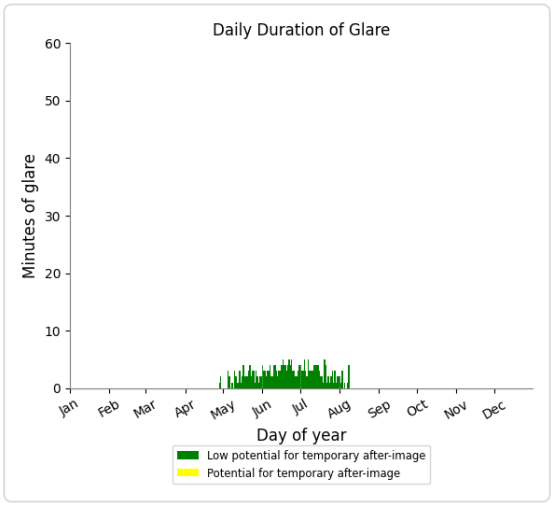


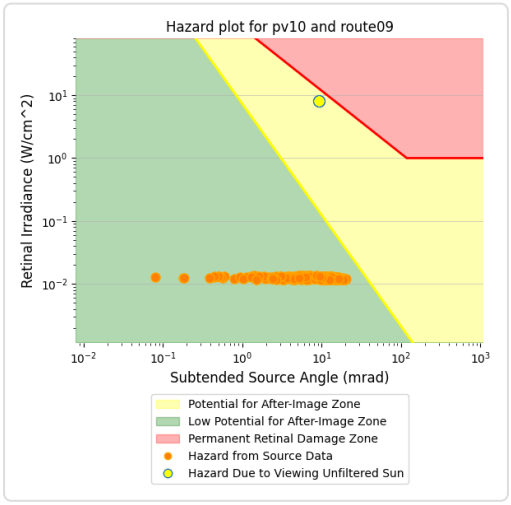
PV10 and Route: Route09

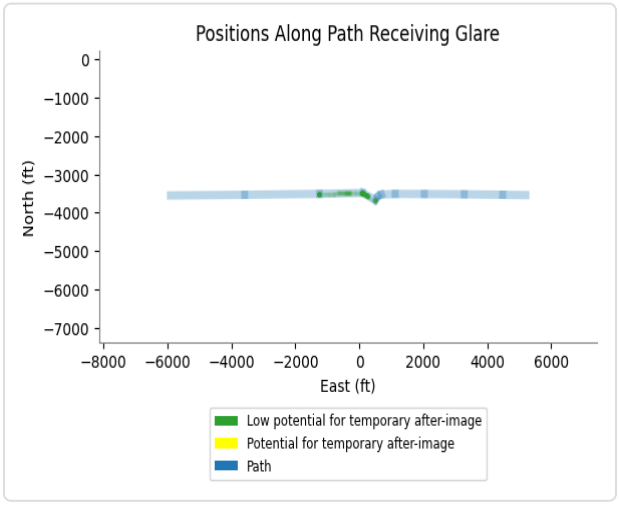
Yellow glare: none

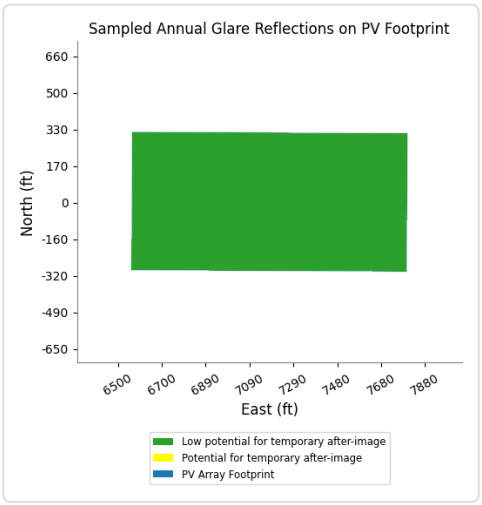
Green glare: 258 min.











PV10 and Route: Route01

No glare found

PV10 and Route: Route02

No glare found

PV10 and Route: Route04

No glare found

PV10 and Route: Route07

No glare found

PV10 and Route: Route10

No glare found

PV10 and Route: Route11

No glare found

PV10 and Route: Route12

No glare found

PV10 and FP: NJK08

No glare found

PV10 and FP: NJK12

No glare found

PV10 and FP: NJK26

No glare found

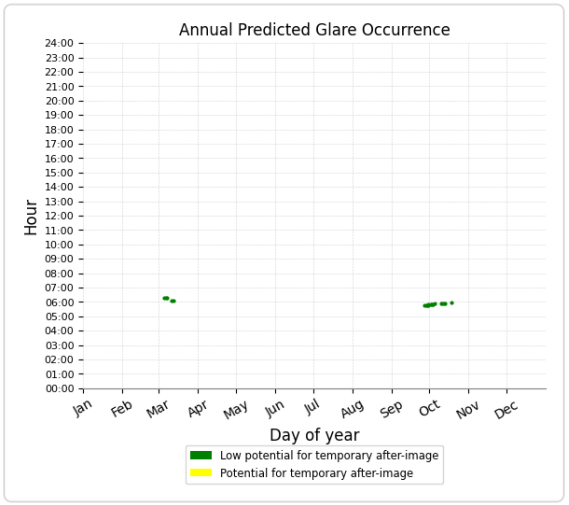
PV10 and FP: NJK30

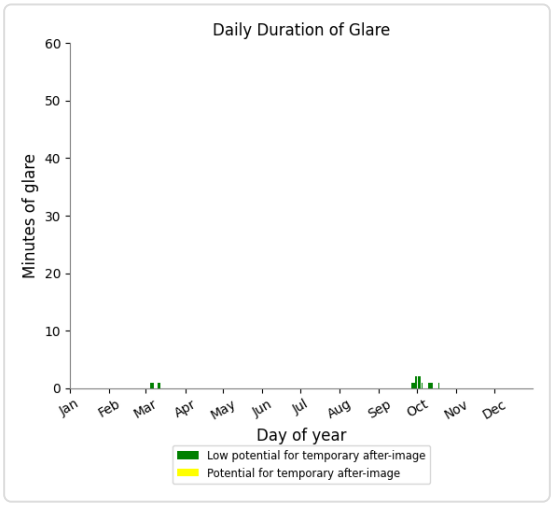
No glare found

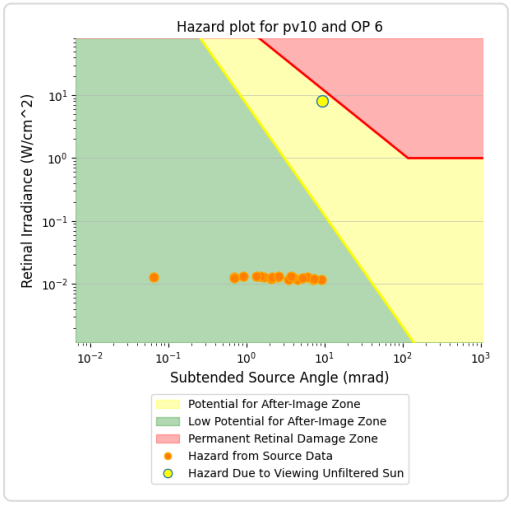
PV10 and OP 6

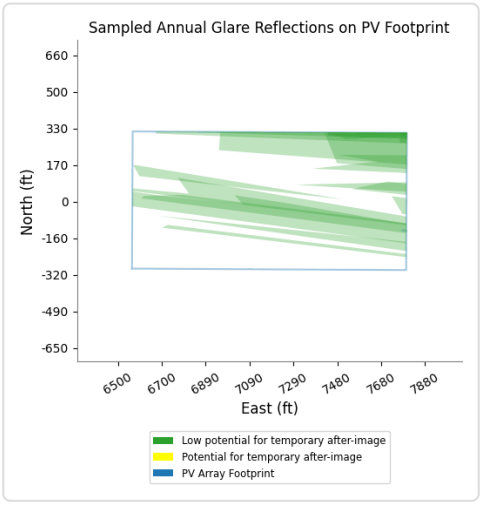
Yellow glare: none

Green glare: 20 min.





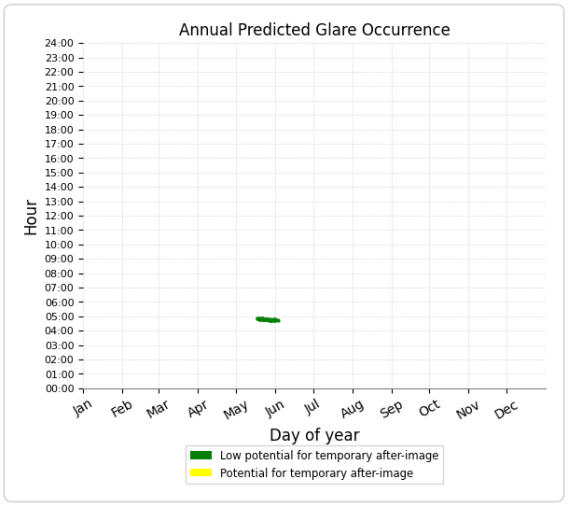


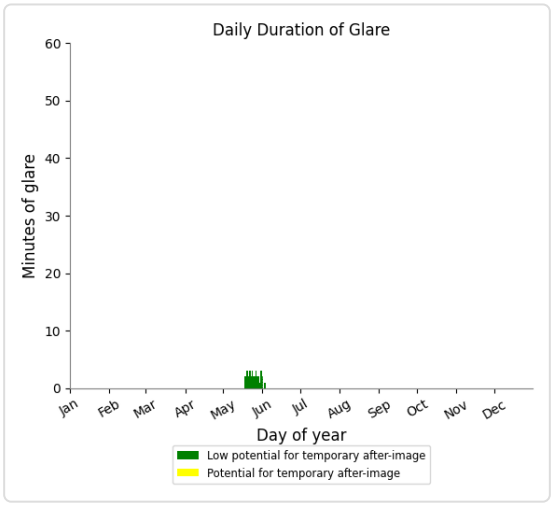


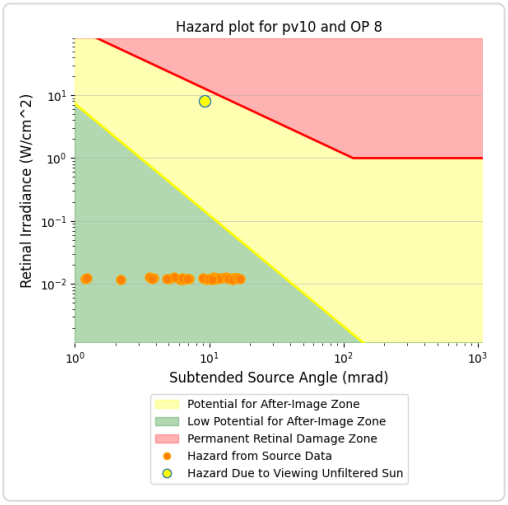
PV10 and OP 8

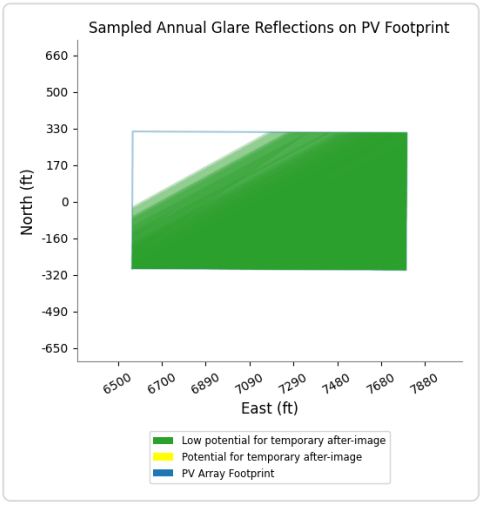
Yellow glare: none

Green glare: 35 min.





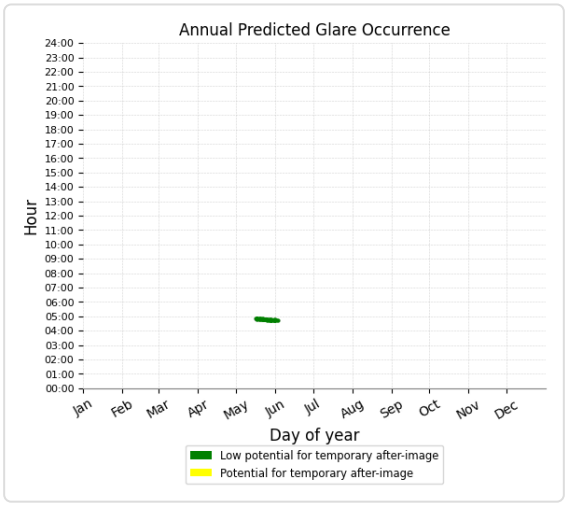


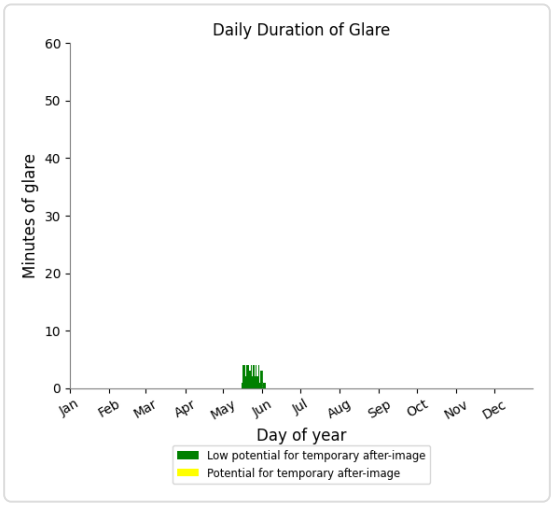


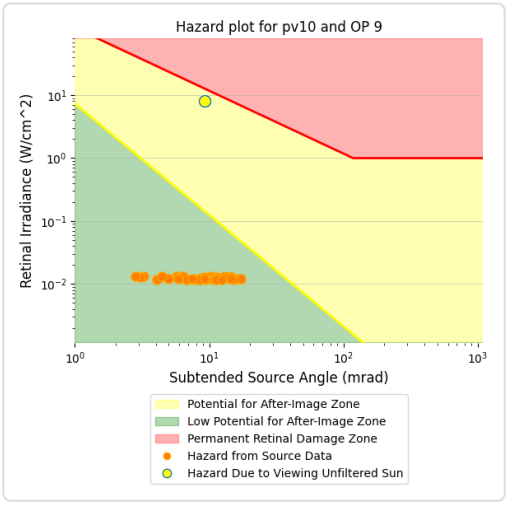
PV10 and OP 9

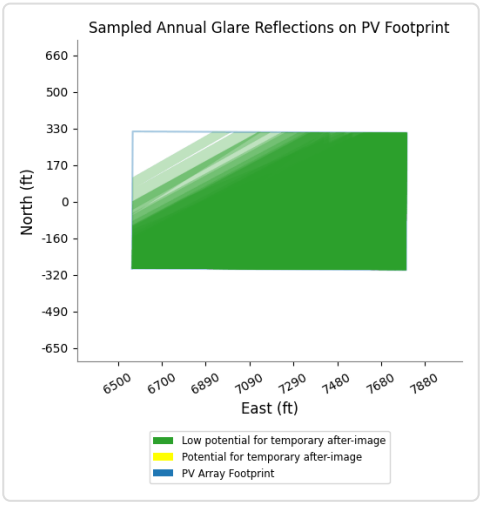
Yellow glare: none

Green glare: 53 min.



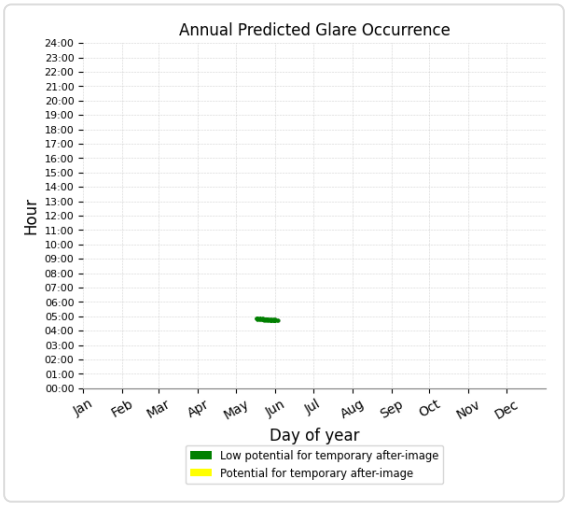


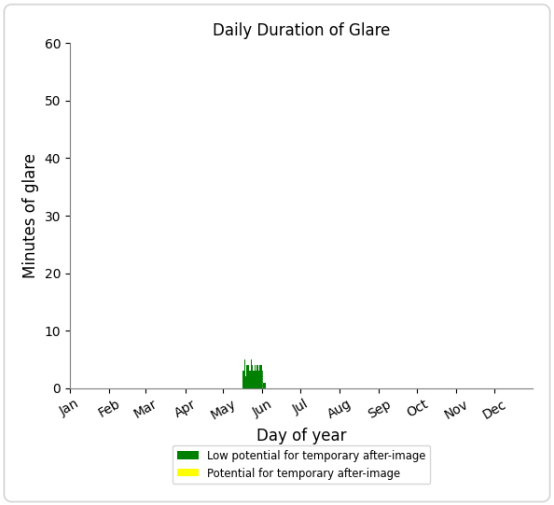


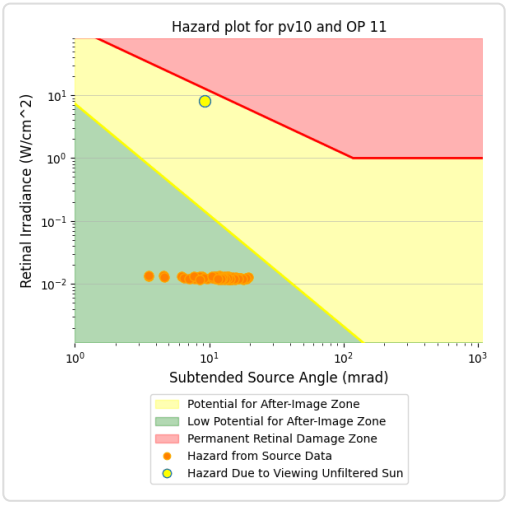


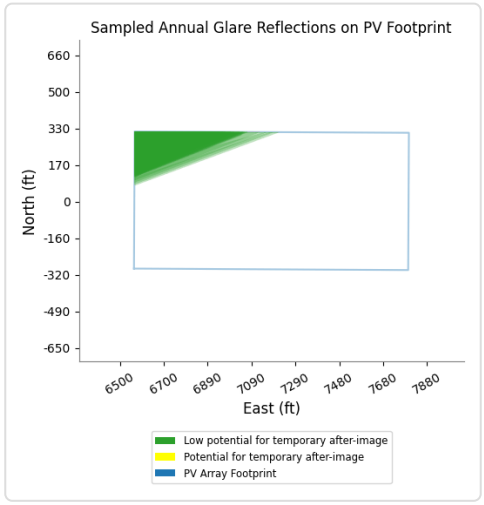
PV10 and OP 11

Yellow glare: none
Green glare: 60 min.









PV10 and OP 1

No glare found

PV10 and OP 2

No glare found

PV10 and OP 3

No glare found

PV10 and OP 4

No glare found

PV10 and OP 5

No glare found

PV10 and OP 7

No glare found

PV10 and OP 10

No glare found

PV10 and OP 12

No glare found

PV10 and OP 13

No glare found

PV10 and OP 14

No glare found

PV10 and OP 15

No glare found

PV10 and OP 16

No glare found

PV10 and OP 17

No glare found

PV10 and OP 18

No glare found

PV10 and OP 19

No glare found

PV10 and 20-ATCT

No glare found

PV: PV11 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 17	258	4.3	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 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV11 and Route: Route01

No glare found

PV11 and Route: Route02

No glare found

PV11 and Route: Route04

No glare found

PV11 and Route: Route05

No glare found

PV11 and Route: Route06

No glare found

PV11 and Route: Route07

No glare found

PV11 and Route: Route08

No glare found

PV11 and Route: Route09

No glare found

PV11 and Route: Route10

No glare found

PV11 and Route: Route11

No glare found

PV11 and Route: Route12

No glare found

PV11 and FP: NJK08

No glare found

PV11 and FP: NJK12

No glare found

PV11 and FP: NJK26

No glare found

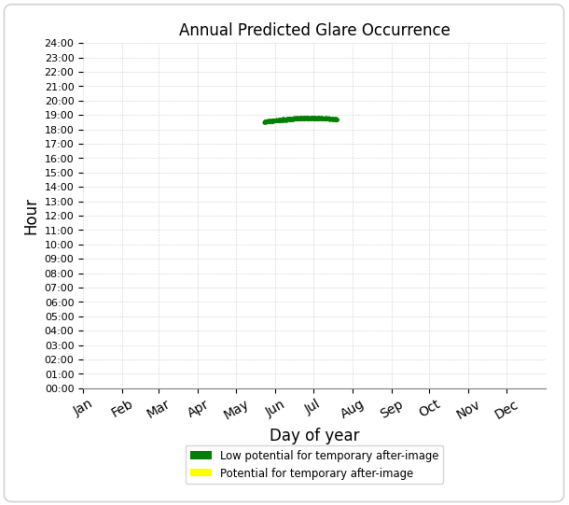
PV11 and FP: NJK30

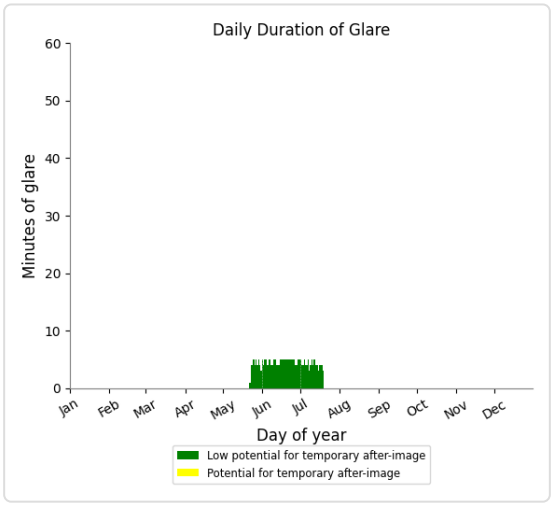
No glare found

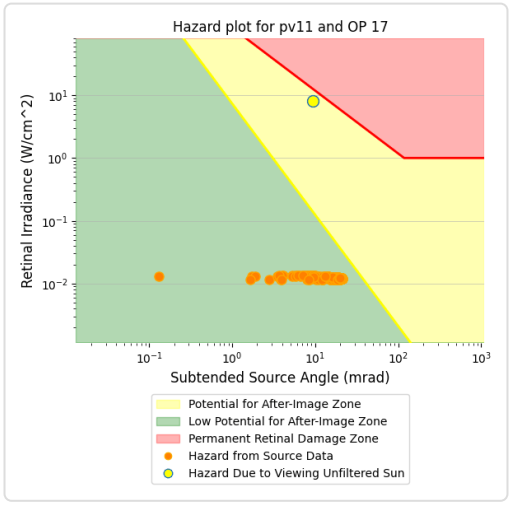
PV11 and OP 17

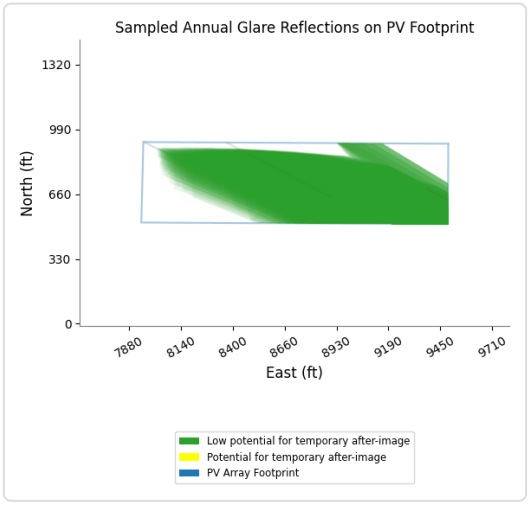
Yellow glare: none

Green glare: 258 min.









PV11 and OP 1

No glare found

PV11 and OP 2

No glare found

PV11 and OP 3

No glare found

PV11 and OP 4

No glare found

PV11 and OP 5

No glare found

PV11 and OP 6

No glare found

PV11 and OP 7

No glare found

PV11 and OP 8

No glare found

PV11 and OP 9

No glare found

PV11 and OP 10

No glare found

PV11 and OP 11

No glare found

PV11 and OP 12

No glare found

PV11 and OP 13

No glare found

PV11 and OP 14

No glare found

PV11 and OP 15

No glare found

PV11 and OP 16

No glare found

PV11 and OP 18

No glare found

PV11 and OP 19

No glare found

PV11 and 20-ATCT

No glare found

PV: PV12 low potential for temporary after-image

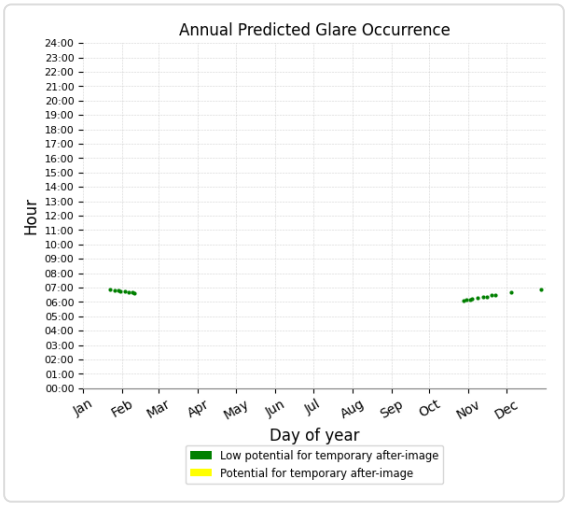
Receptor results ordered by category of glare

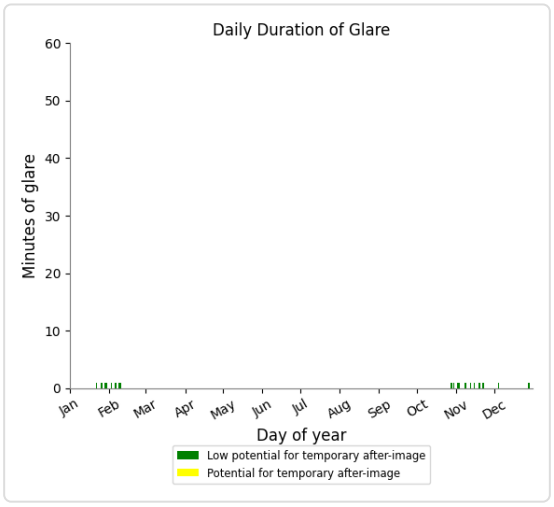
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route06	19	0.3	0	0.0
Route09	336	5.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 7	29	0.5	0	0.0
OP 8	72	1.2	0	0.0
OP 9	75	1.2	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

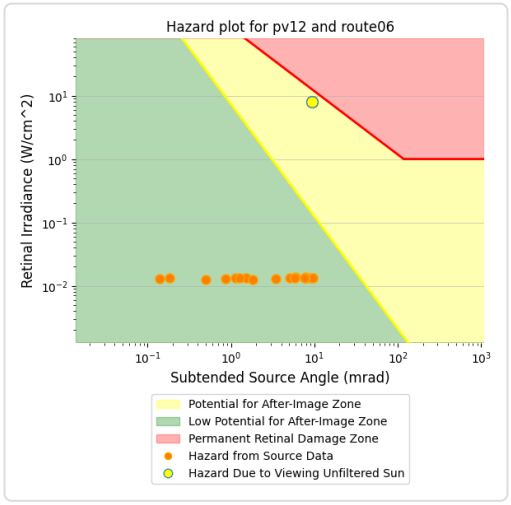
PV12 and Route: Route06

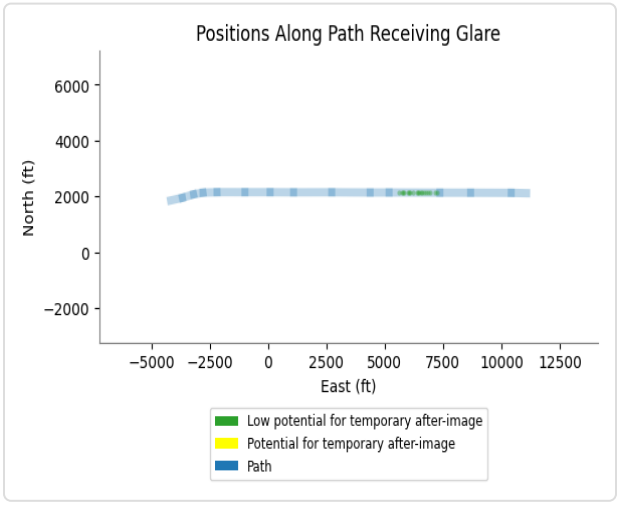
Yellow glare: none

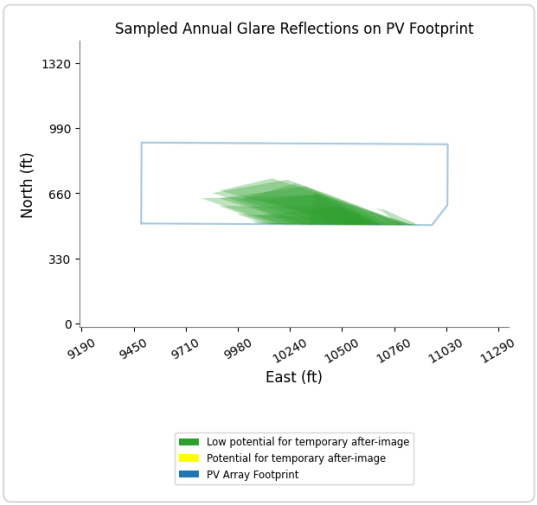
Green glare: 19 min.







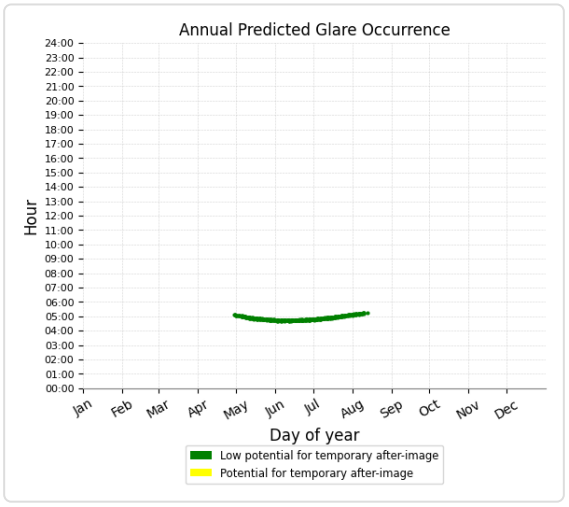


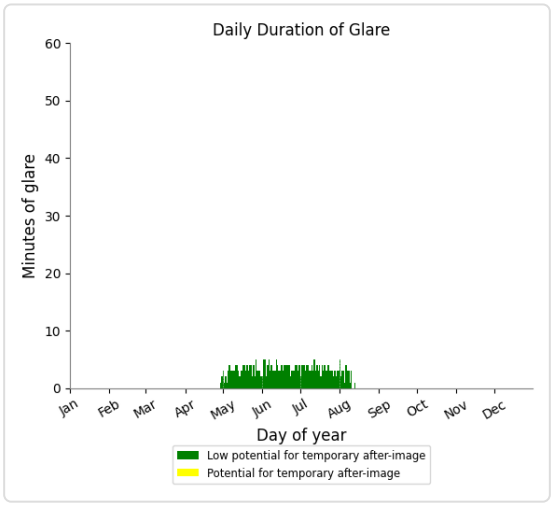


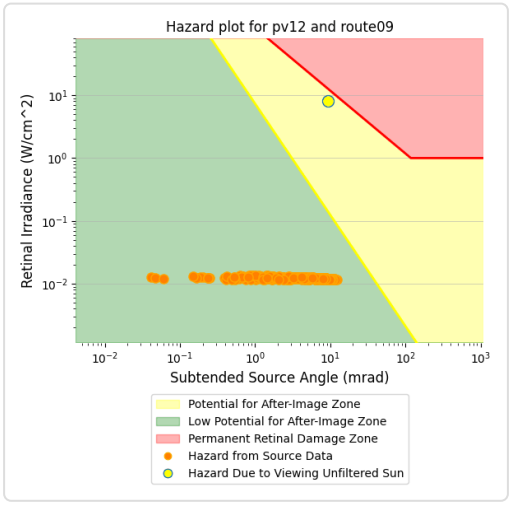
PV12 and Route: Route09

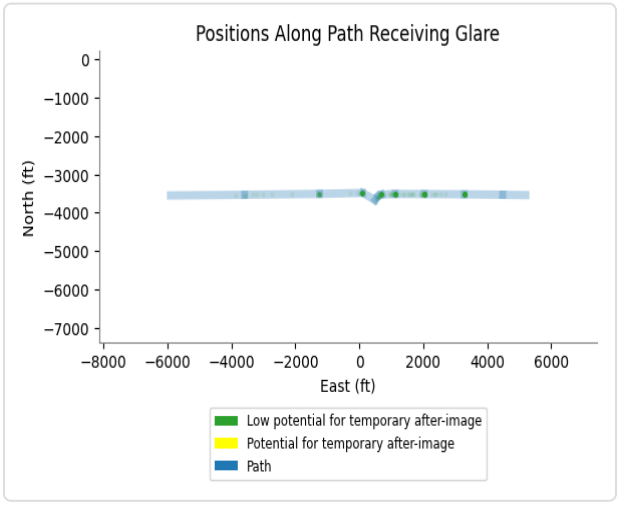
Yellow glare: none

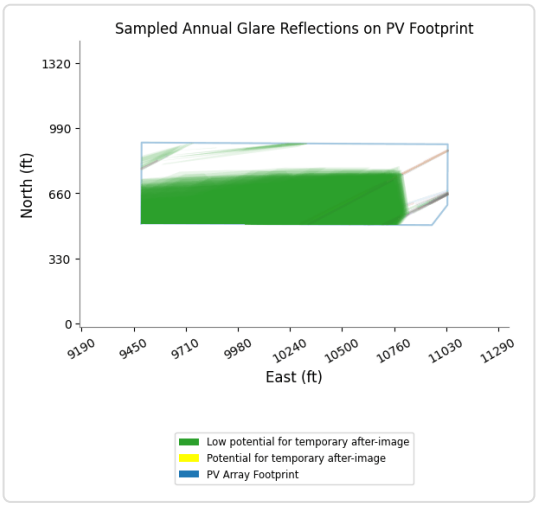
Green glare: 336 min.











PV12 and Route: Route01

No glare found

PV12 and Route: Route02

No glare found

PV12 and Route: Route04

No glare found

PV12 and Route: Route05

No glare found

PV12 and Route: Route07

No glare found

PV12 and Route: Route08

No glare found

PV12 and Route: Route10

No glare found

PV12 and Route: Route11

No glare found

PV12 and Route: Route12

No glare found

PV12 and FP: NJK08

No glare found

PV12 and FP: NJK12

No glare found

PV12 and FP: NJK26

No glare found

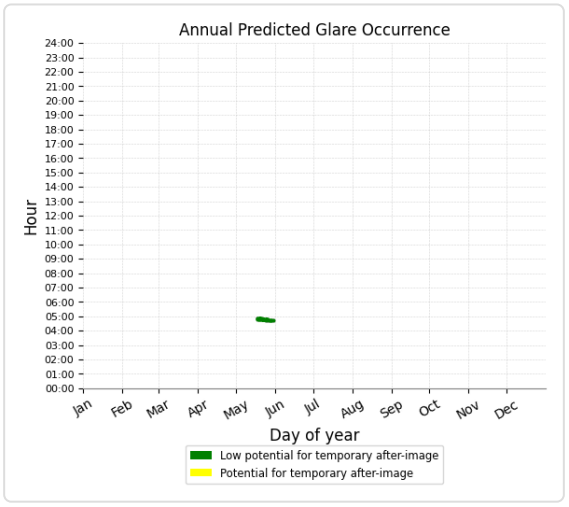
PV12 and FP: NJK30

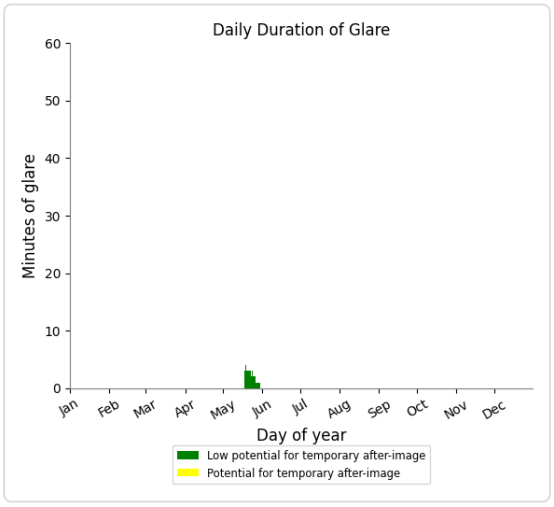
No glare found

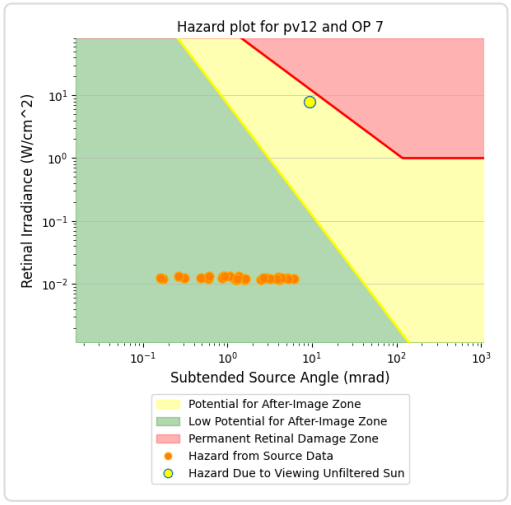
PV12 and OP 7

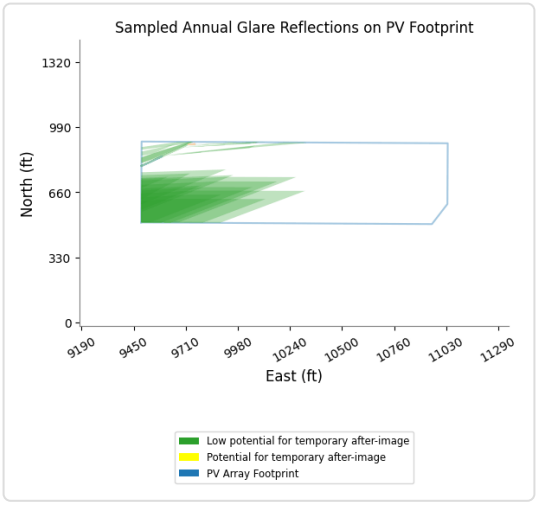
Yellow glare: none

Green glare: 29 min.





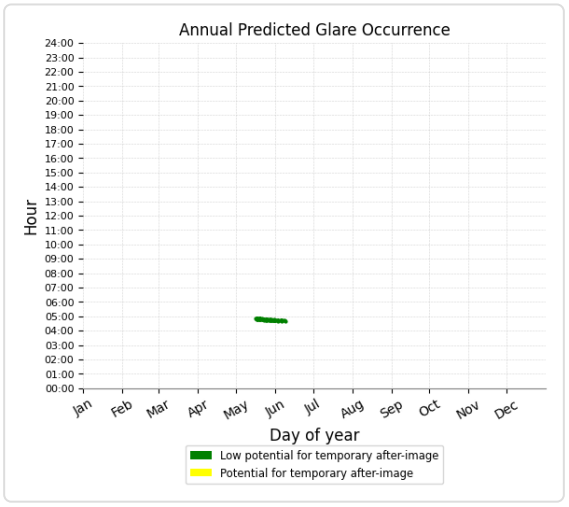


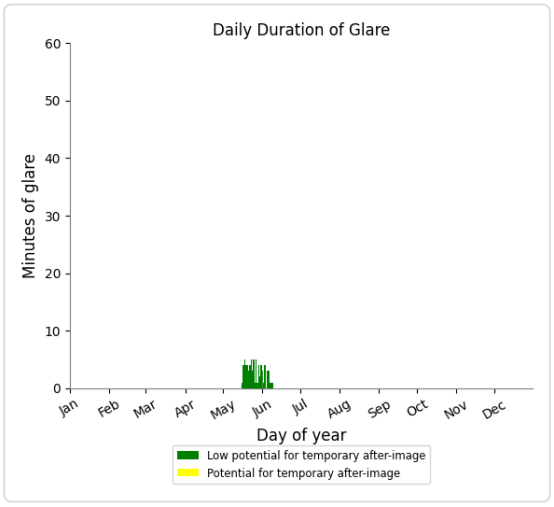


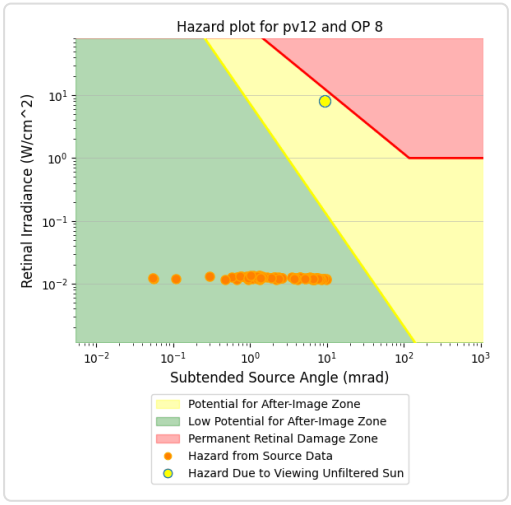
PV12 and OP 8

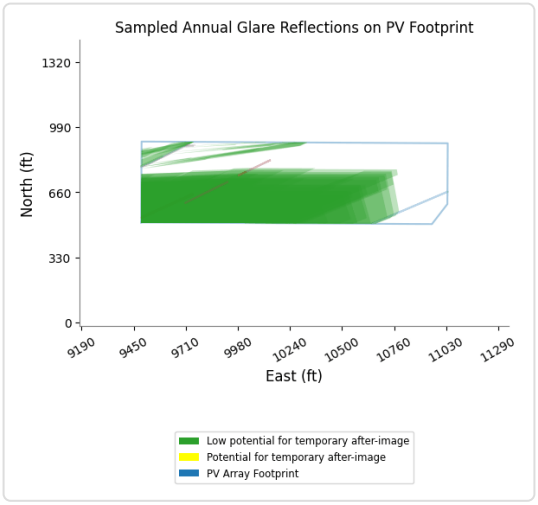
Yellow glare: none

Green glare: 72 min.



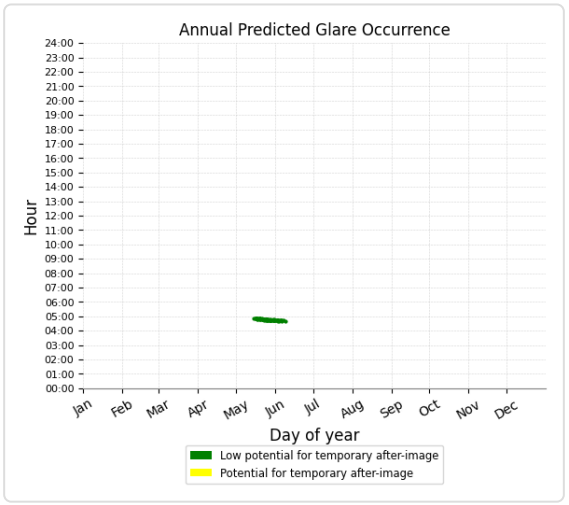


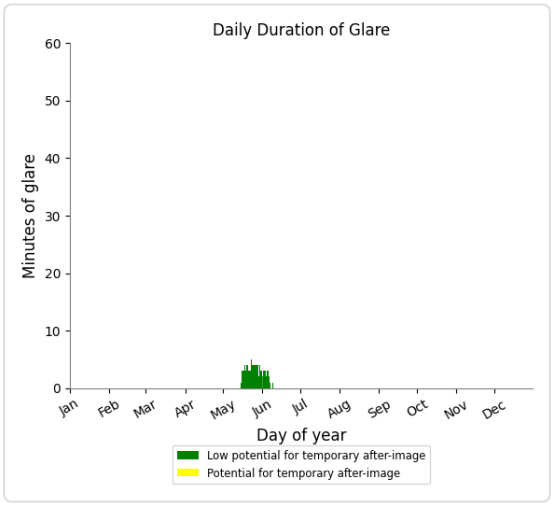


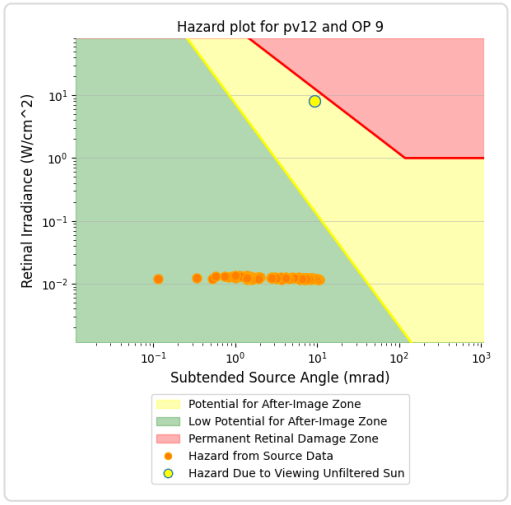


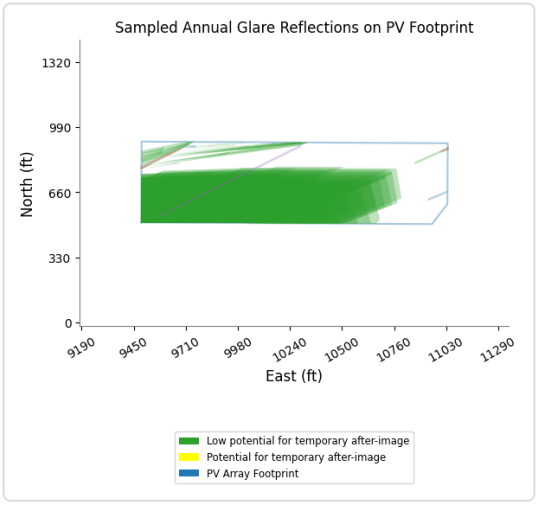
PV12 and OP 9

Yellow glare: none
Green glare: 75 min.









PV12 and OP 1

No glare found

PV12 and OP 2

No glare found

PV12 and OP 3

No glare found

PV12 and OP 4

No glare found

PV12 and OP 5

No glare found

PV12 and OP 6

No glare found

PV12 and OP 10

No glare found

PV12 and OP 11

No glare found

PV12 and OP 12

No glare found

PV12 and OP 13

No glare found

PV12 and OP 14

No glare found

PV12 and OP 15

No glare found

PV12 and OP 16

No glare found

PV12 and OP 17

No glare found

PV12 and OP 18

No glare found

PV12 and OP 19

No glare found

PV12 and 20-ATCT

No glare found

PV: PV13 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 17	368	6.1	0	0.0
OP 18	86	1.4	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV13 and Route: Route01

No glare found

PV13 and Route: Route02

No glare found

PV13 and Route: Route04

No glare found

PV13 and Route: Route05

No glare found

PV13 and Route: Route06

No glare found

PV13 and Route: Route07

No glare found

PV13 and Route: Route08

No glare found

PV13 and Route: Route09

No glare found

PV13 and Route: Route10

No glare found

PV13 and Route: Route11

No glare found

PV13 and Route: Route12

No glare found

PV13 and FP: NJK08

No glare found

PV13 and FP: NJK12

No glare found

PV13 and FP: NJK26

No glare found

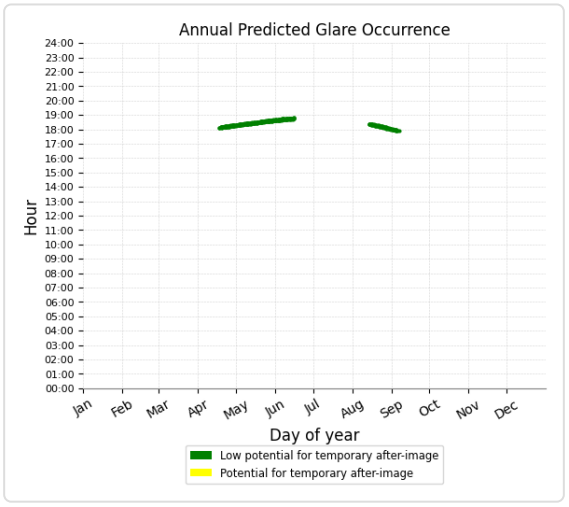
PV13 and FP: NJK30

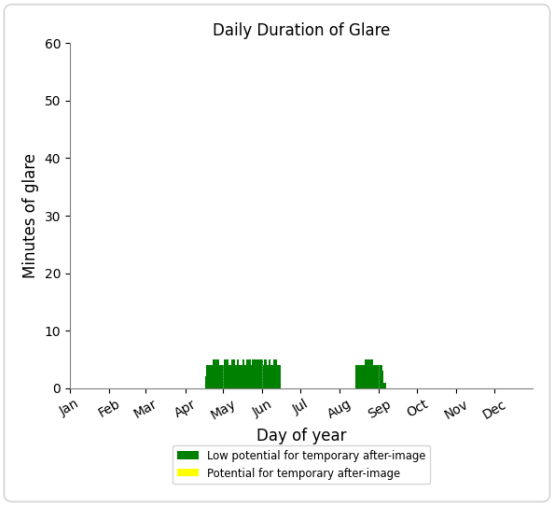
No glare found

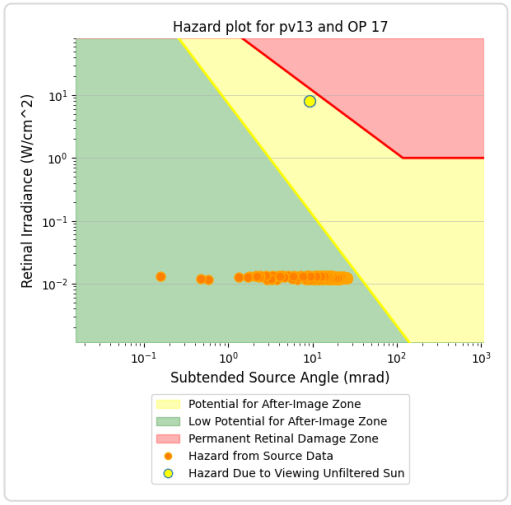
PV13 and OP 17

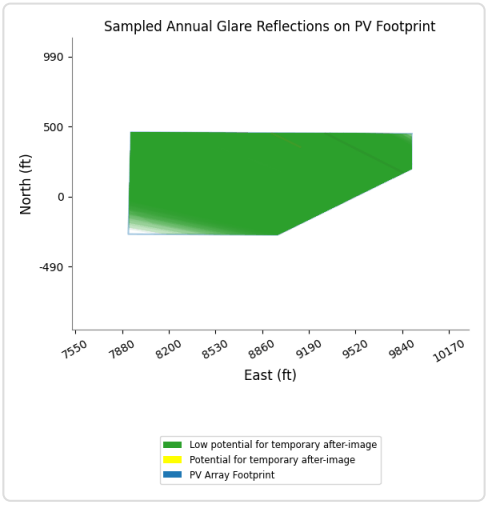
Yellow glare: none

Green glare: 368 min.



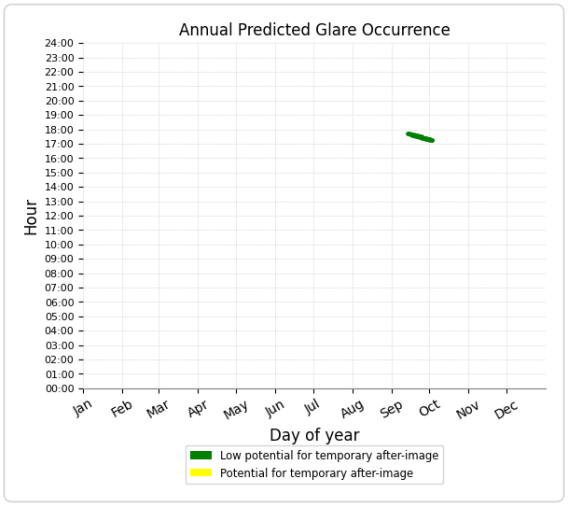


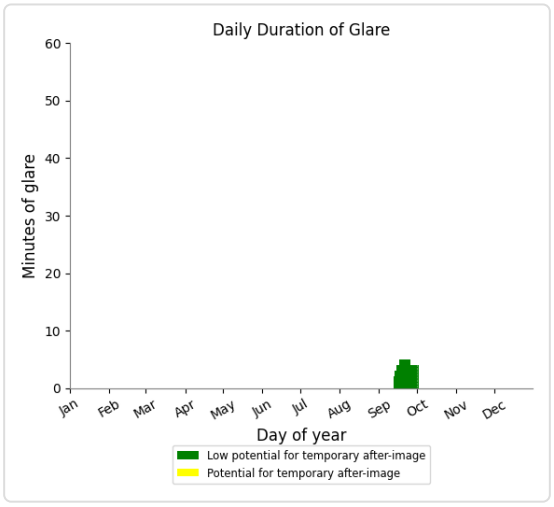


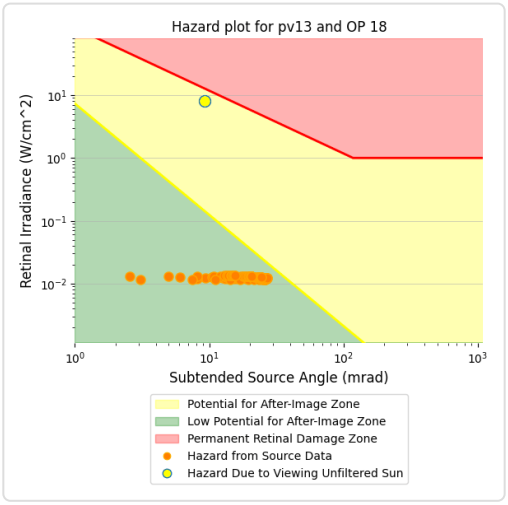


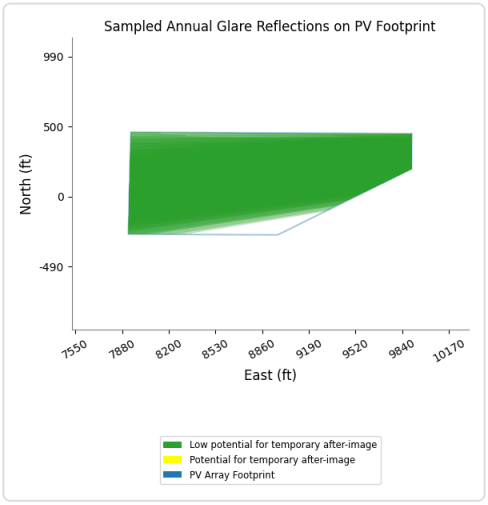
PV13 and OP 18

Yellow glare: none
Green glare: 86 min.









PV13 and OP 1

No glare found

PV13 and OP 2

No glare found

PV13 and OP 3

No glare found

PV13 and OP 4

No glare found

PV13 and OP 5

No glare found

PV13 and OP 6

No glare found

PV13 and OP 7

No glare found

PV13 and OP 8

No glare found

PV13 and OP 9

No glare found

PV13 and OP 10

No glare found

PV13 and OP 11

No glare found

PV13 and OP 12

No glare found

PV13 and OP 13

No glare found

PV13 and OP 14

No glare found

PV13 and OP 15

No glare found

PV13 and OP 16

No glare found

PV13 and OP 19

No glare found

PV13 and 20-ATCT

No glare found

PV: PV14 potential temporary after-image

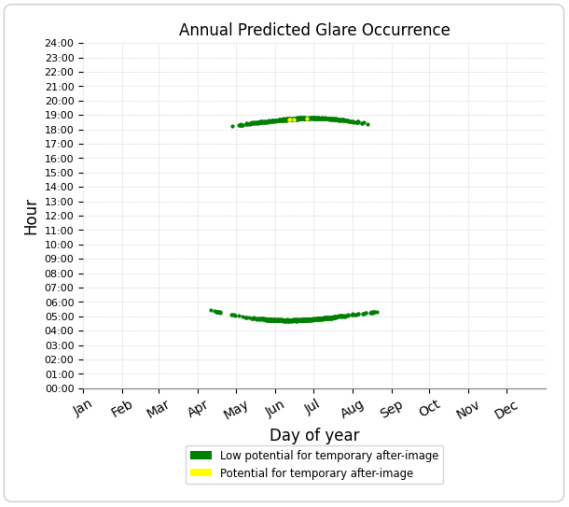
Receptor results ordered by category of glare

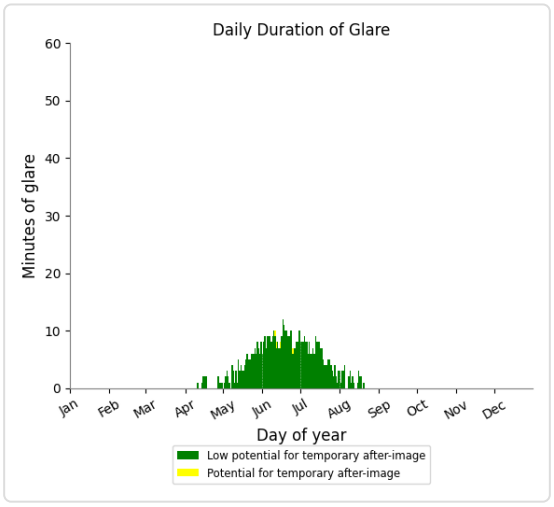
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	610	10.2	4	0.1
Route11	359	6.0	246	4.1
Route05	100	1.7	0	0.0
Route08	55	0.9	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	29	0.5	0	0.0
OP 7	227	3.8	0	0.0
OP 9	241	4.0	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 5	0	0.0	0	0.0
OP 6	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

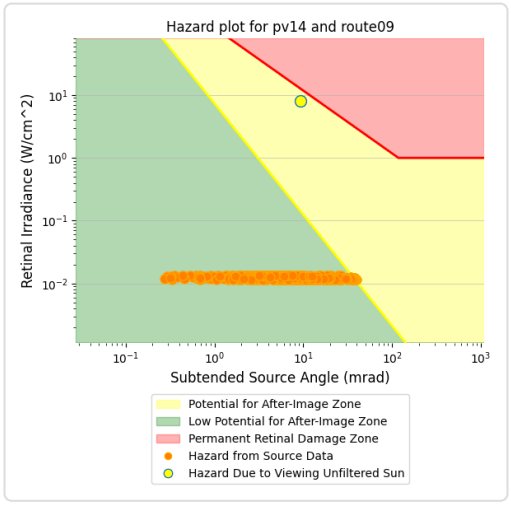
PV14 and Route: Route09

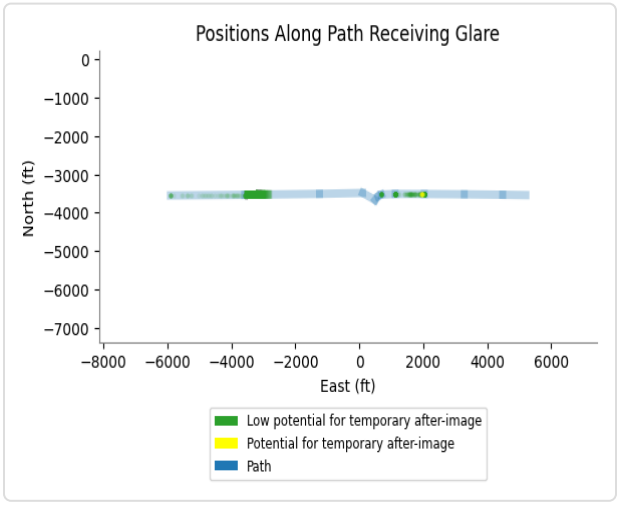
Yellow glare: 4 min.

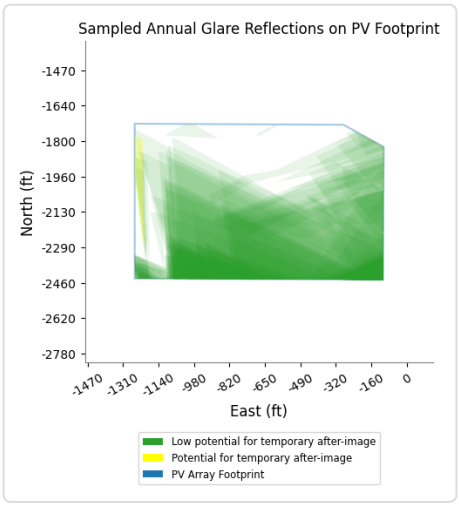
Green glare: 610 min.







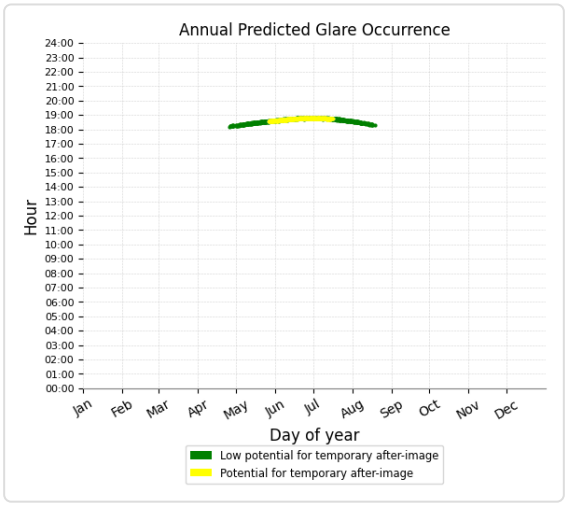


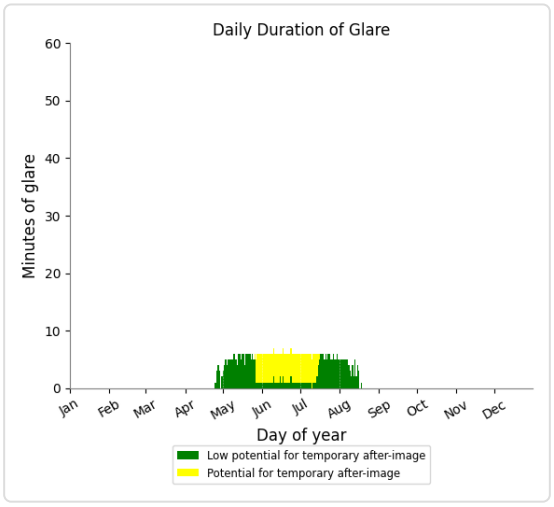


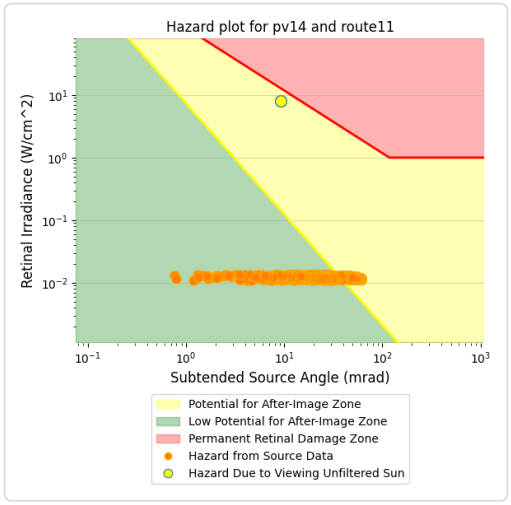
PV14 and Route: Route11

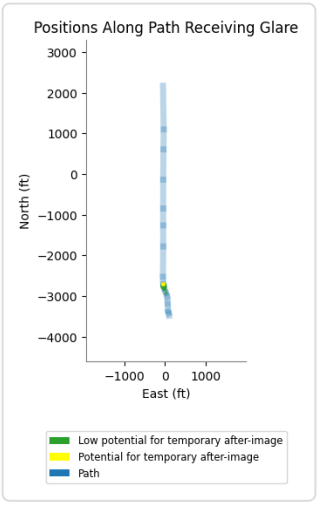
Yellow glare: 246 min.

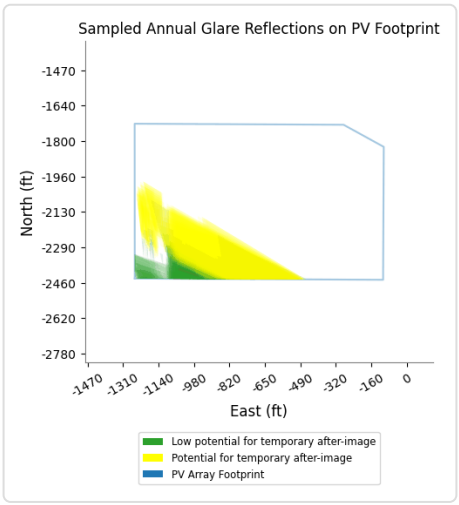
Green glare: 359 min.







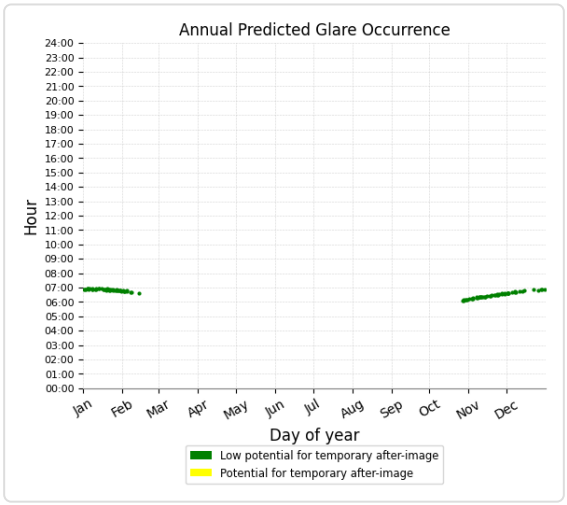


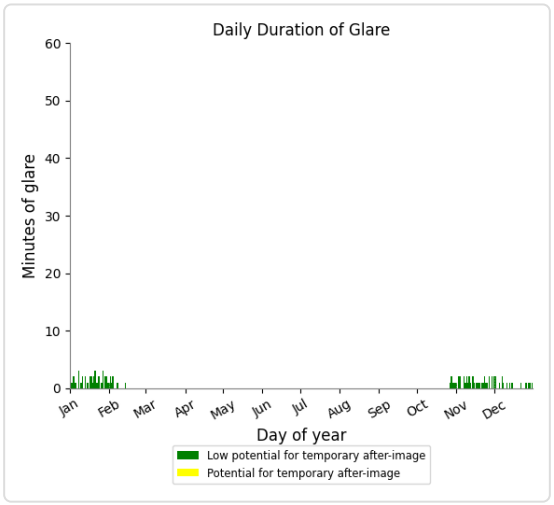


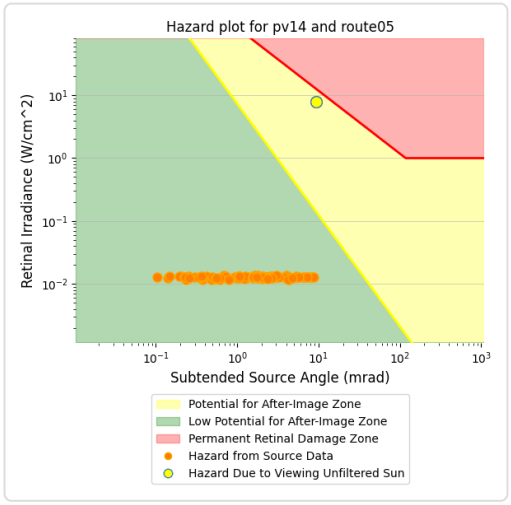
PV14 and Route: Route05

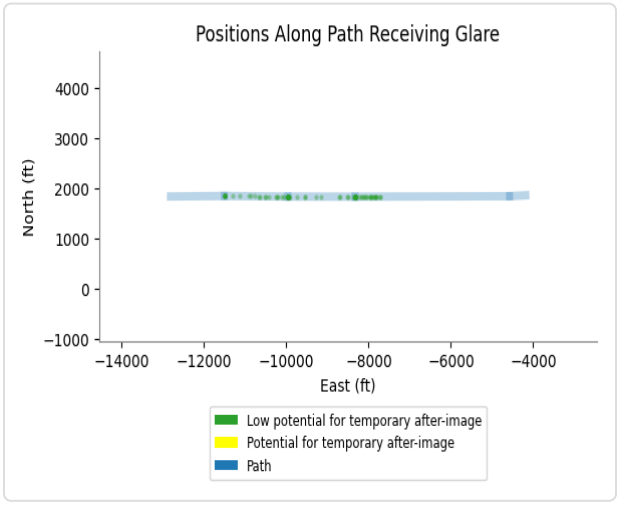
Yellow glare: none

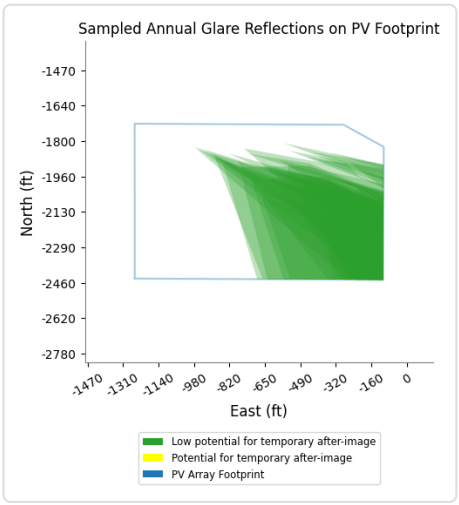
Green glare: 100 min.







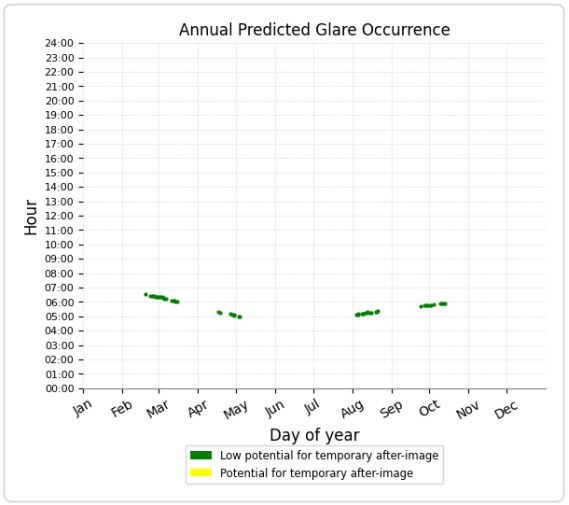


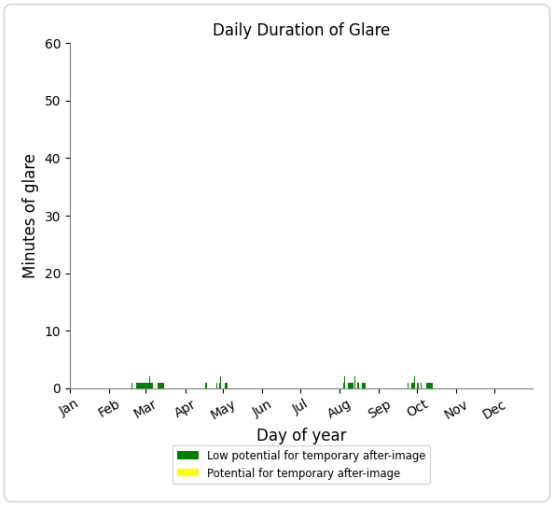


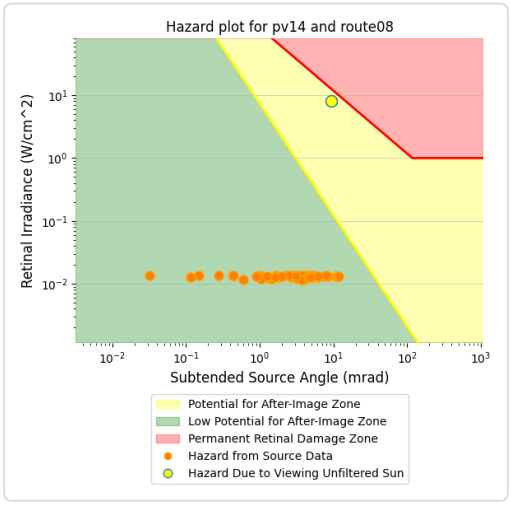
PV14 and Route: Route08

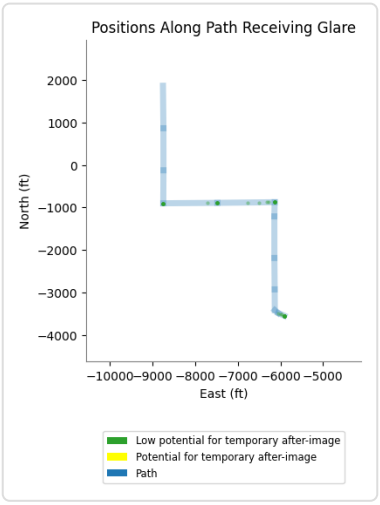
Yellow glare: none

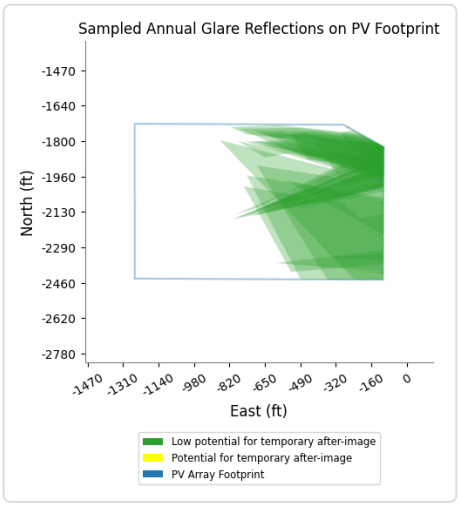
Green glare: 55 min.











PV14 and Route: Route01

No glare found

PV14 and Route: Route02

No glare found

PV14 and Route: Route04

No glare found

PV14 and Route: Route06

No glare found

PV14 and Route: Route07

No glare found

PV14 and Route: Route10

No glare found

PV14 and Route: Route12

No glare found

PV14 and FP: NJK08

No glare found

PV14 and FP: NJK12

No glare found

PV14 and FP: NJK26

No glare found

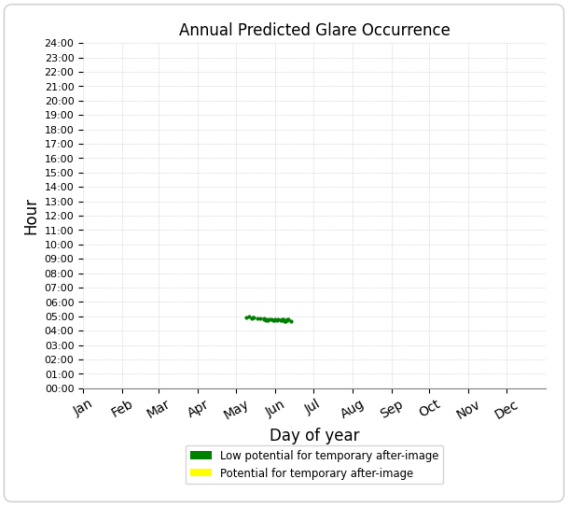
PV14 and FP: NJK30

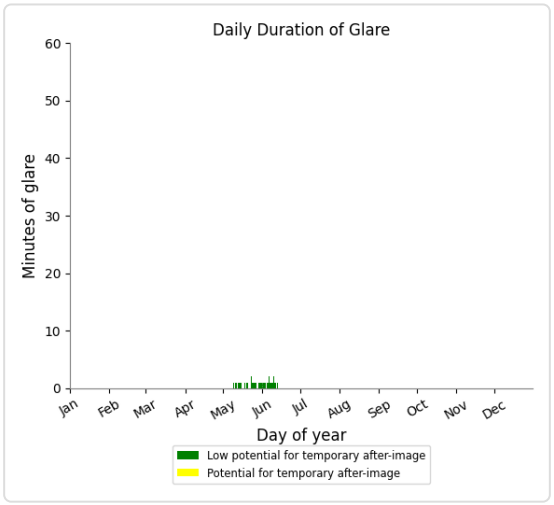
No glare found

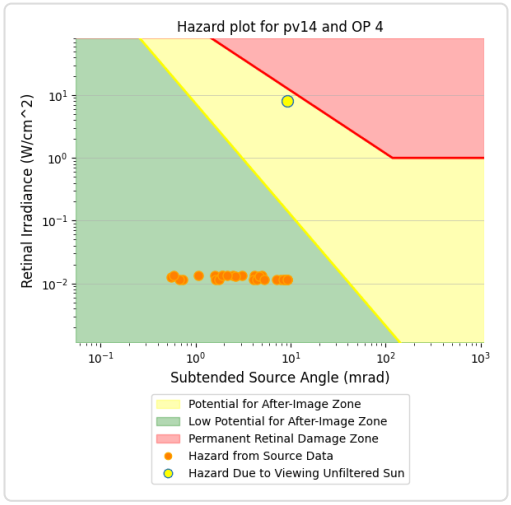
PV14 and OP 4

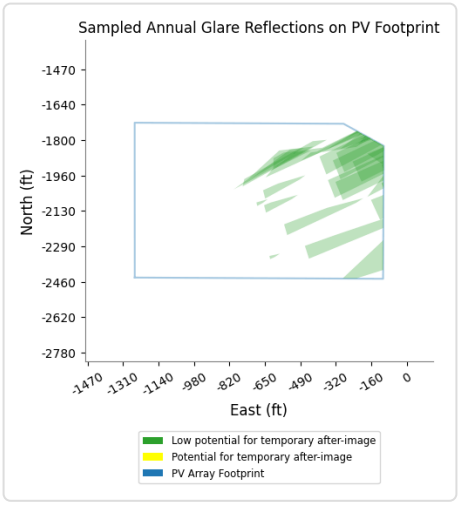
Yellow glare: none

Green glare: 29 min.





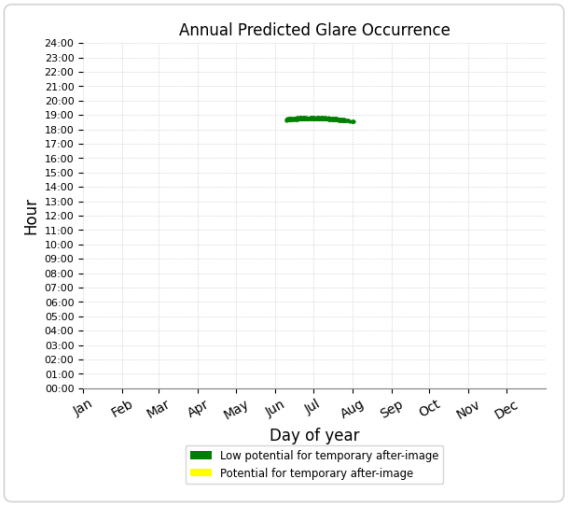


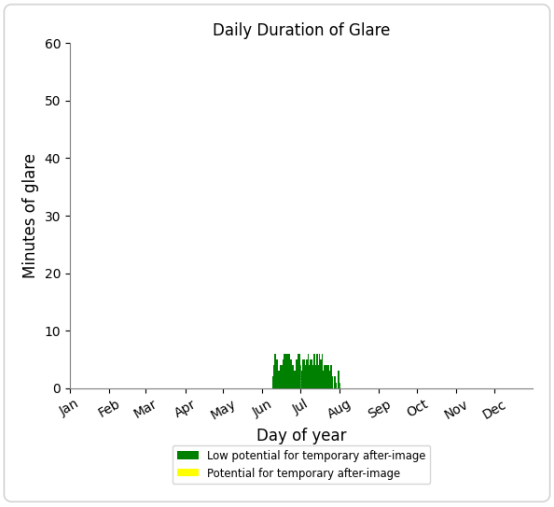


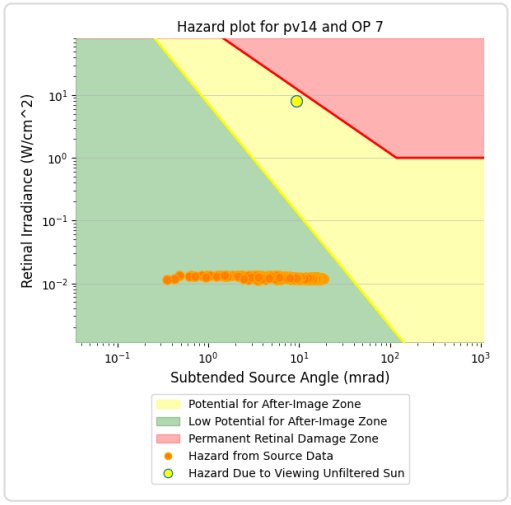
PV14 and OP 7

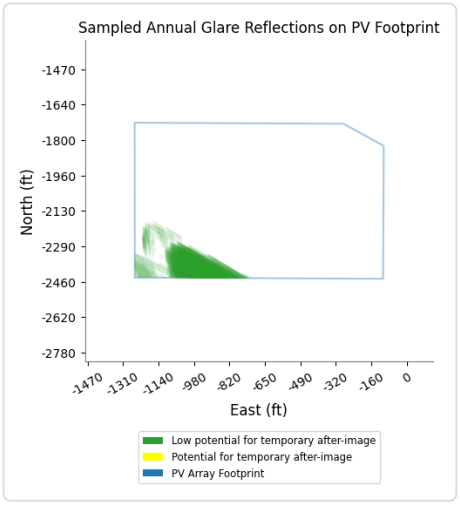
Yellow glare: none

Green glare: 227 min.



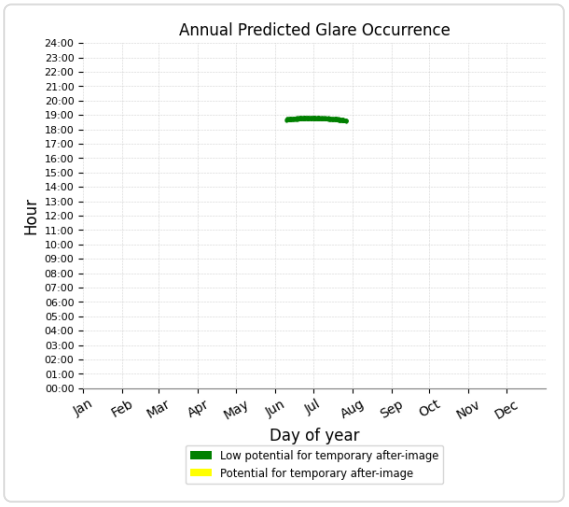


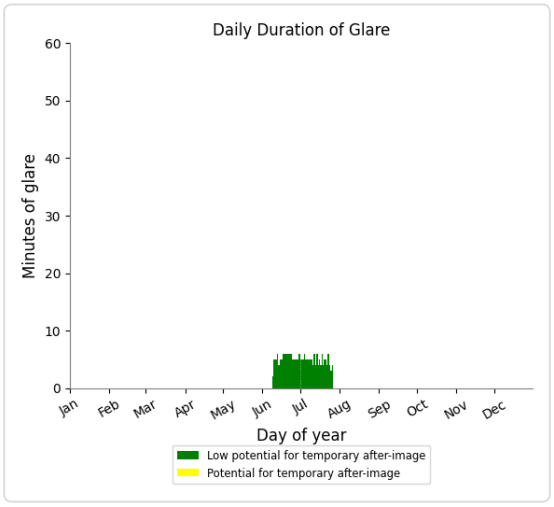


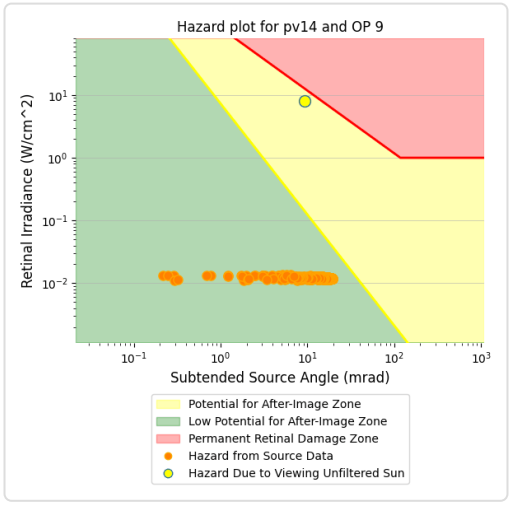


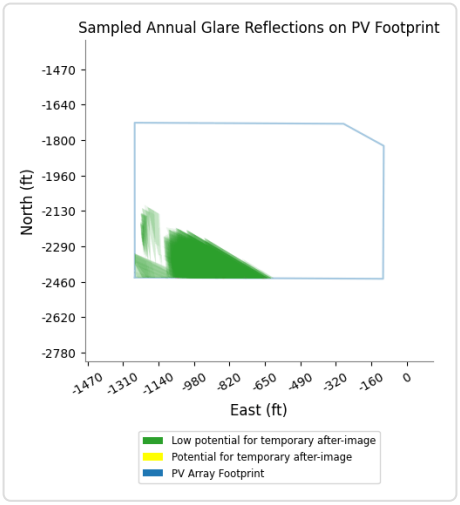
PV14 and OP 9

Yellow glare: none
Green glare: 241 min.









PV14 and OP 1

No glare found

PV14 and OP 2

No glare found

PV14 and OP 3

No glare found

PV14 and OP 5

No glare found

PV14 and OP 6

No glare found

PV14 and OP 8

No glare found

PV14 and OP 10

No glare found

PV14 and OP 11

No glare found

PV14 and OP 12

No glare found

PV14 and OP 13

No glare found

PV14 and OP 14

No glare found

PV14 and OP 15

No glare found

PV14 and OP 16

No glare found

PV14 and OP 17

No glare found

PV14 and OP 18

No glare found

PV14 and OP 19

No glare found

PV14 and 20-ATCT

No glare found

PV: PV15 potential temporary after-image

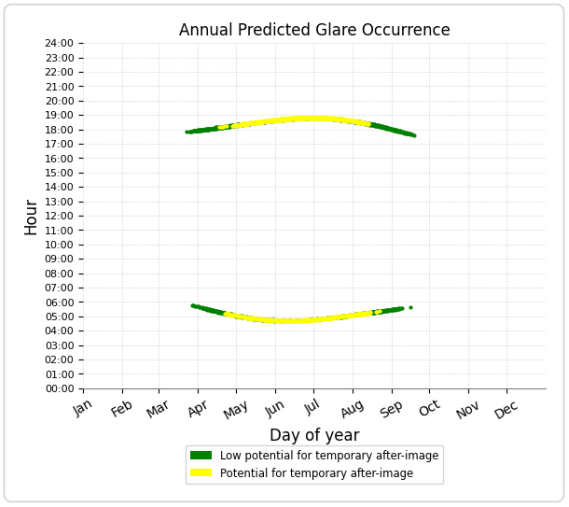
Receptor results ordered by category of glare

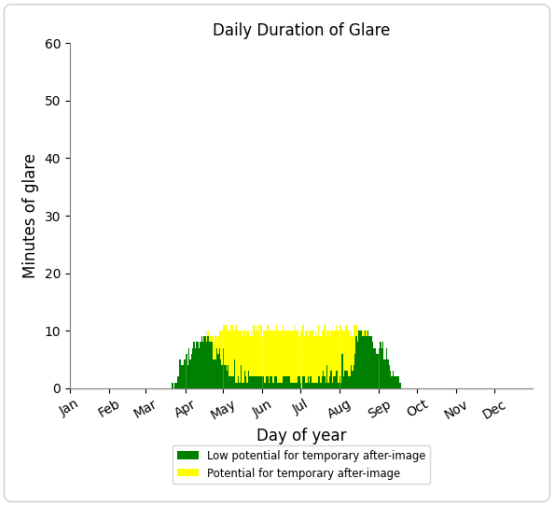
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	674	11.2	886	14.8
Route11	159	2.6	1,428	23.8
Route05	457	7.6	0	0.0
Route08	246	4.1	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 2	34	0.6	0	0.0
OP 7	783	13.1	0	0.0
OP 8	477	8.0	0	0.0
OP 9	566	9.4	0	0.0
OP 17	45	0.8	0	0.0
OP 18	17	0.3	0	0.0
OP 1	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

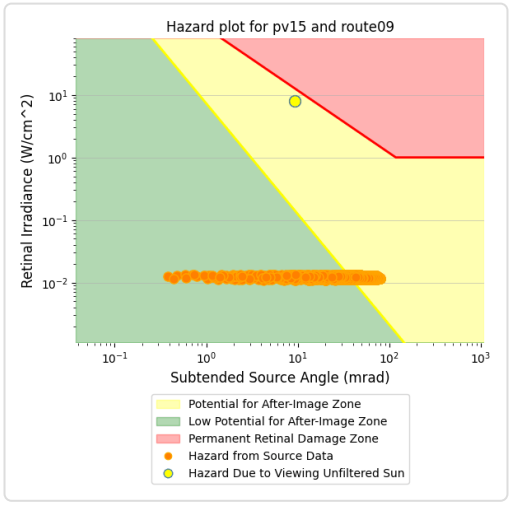
PV15 and Route: Route09

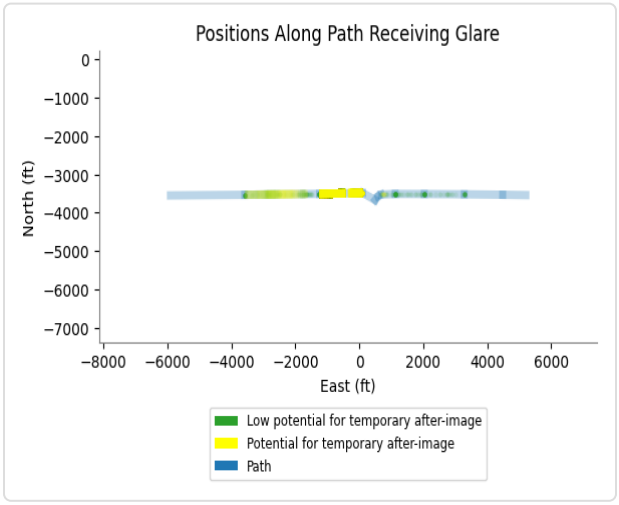
Yellow glare: 886 min.

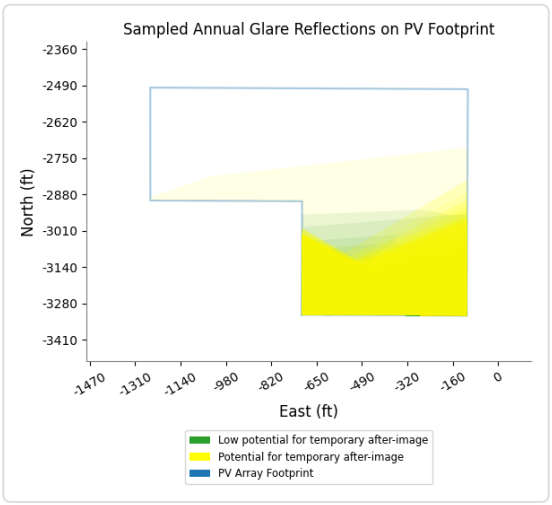
Green glare: 674 min.







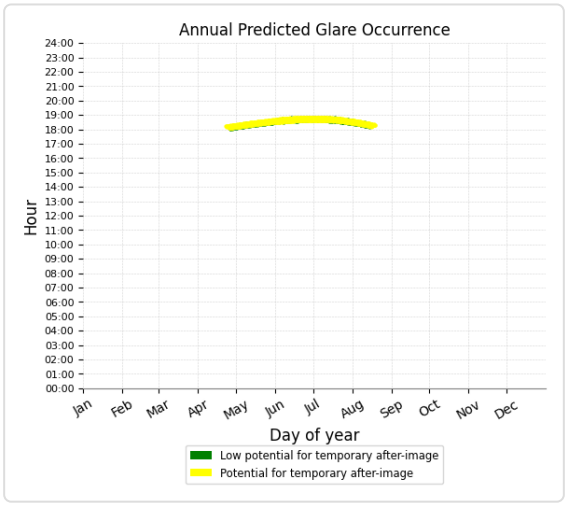


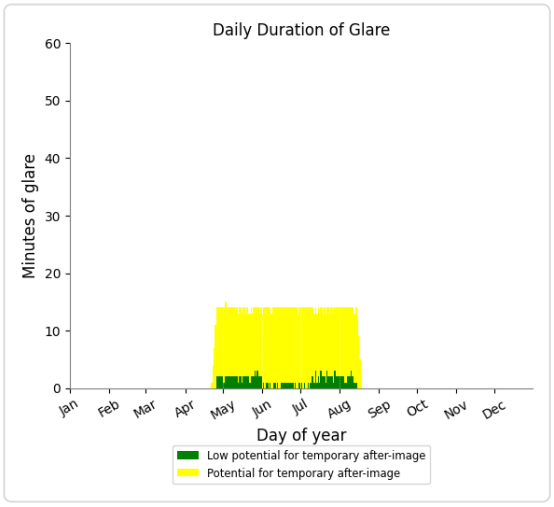


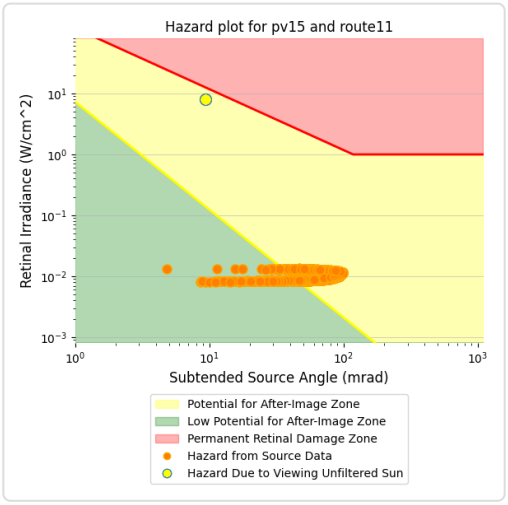
PV15 and Route: Route11

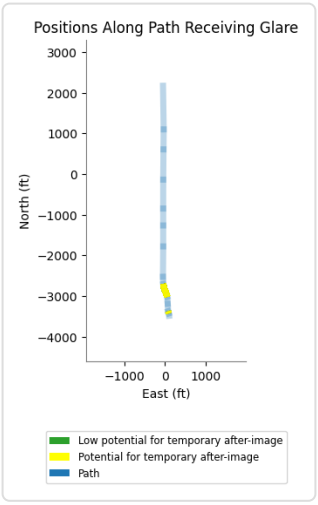
Yellow glare: 1,428 min.

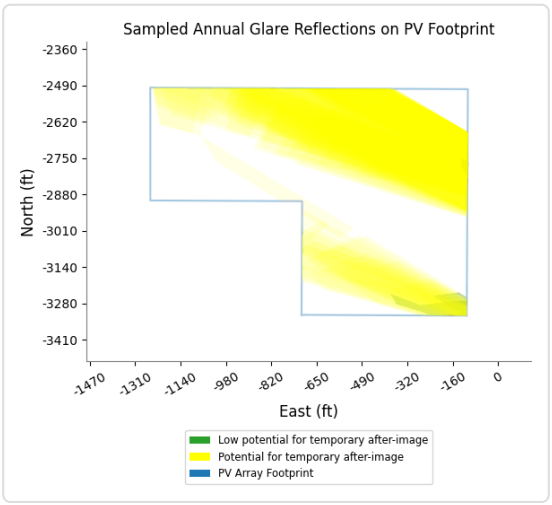
Green glare: 159 min.







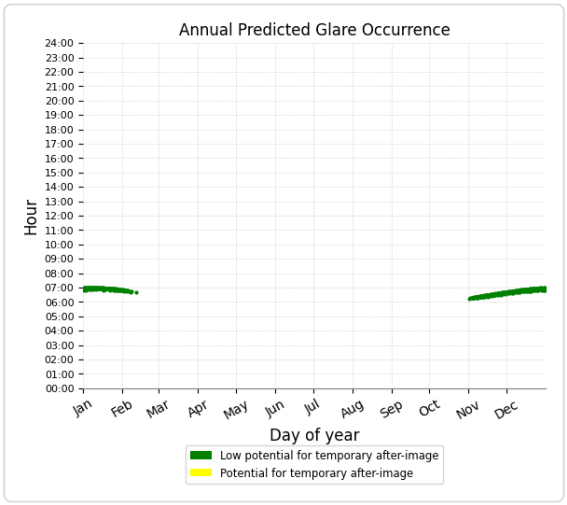


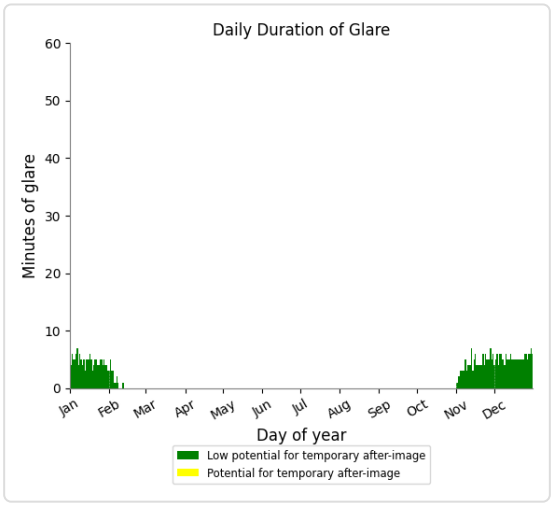


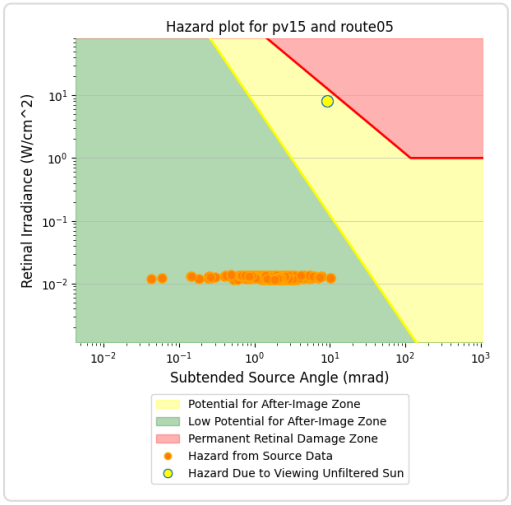
PV15 and Route: Route05

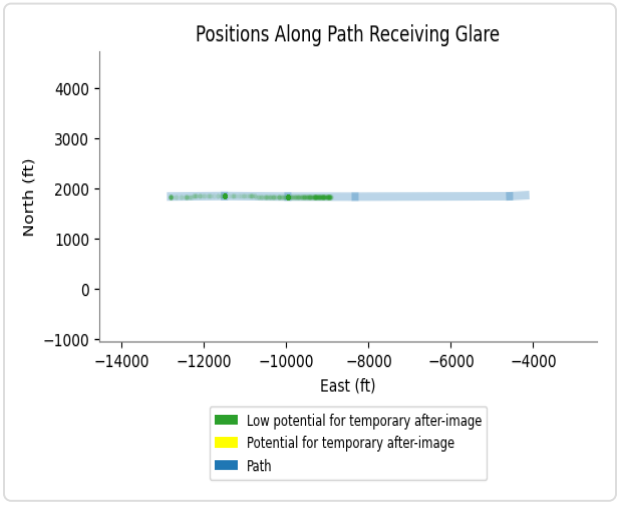
Yellow glare: none

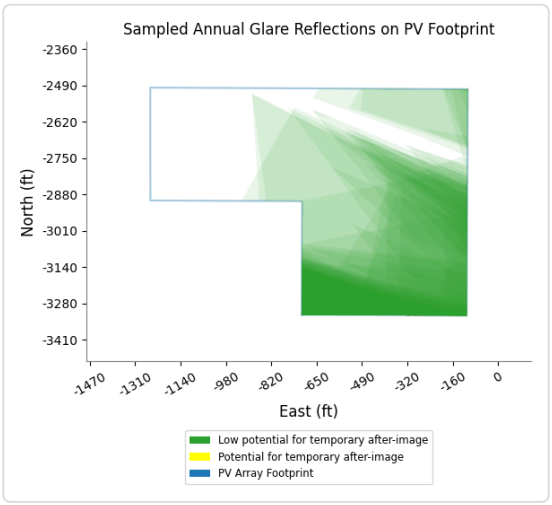
Green glare: 457 min.







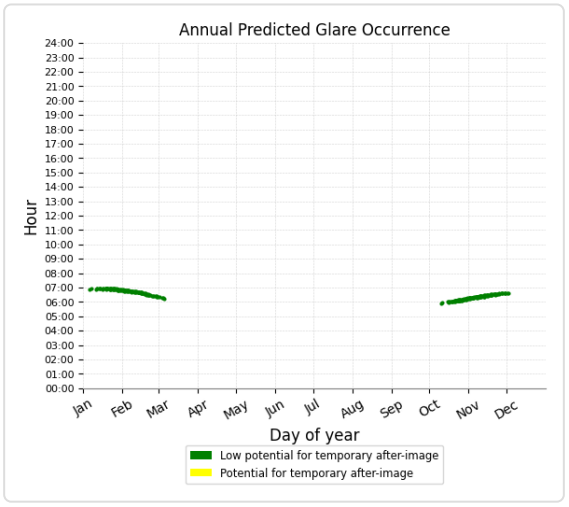


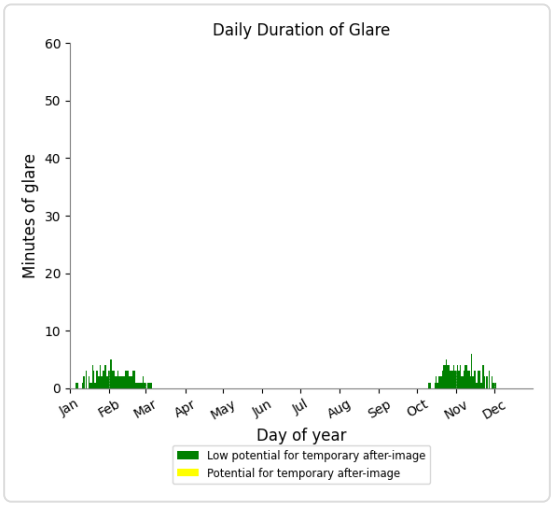


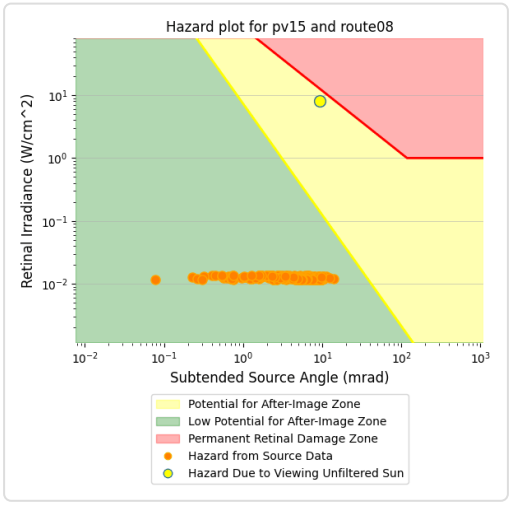
PV15 and Route: Route08

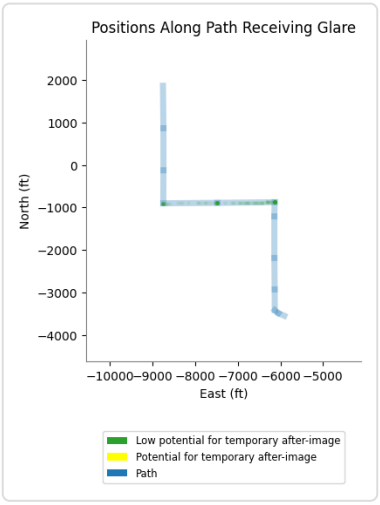
Yellow glare: none

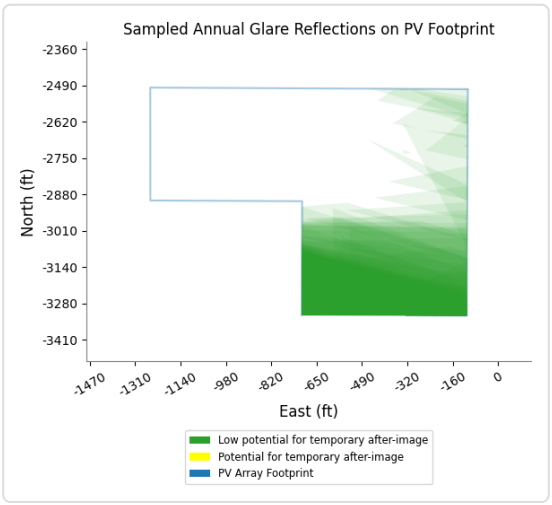
Green glare: 246 min.











PV15 and Route: Route01

No glare found

PV15 and Route: Route02

No glare found

PV15 and Route: Route04

No glare found

PV15 and Route: Route06

No glare found

PV15 and Route: Route07

No glare found

PV15 and Route: Route10

No glare found

PV15 and Route: Route12

No glare found

PV15 and FP: NJK08

No glare found

PV15 and FP: NJK12

No glare found

PV15 and FP: NJK26

No glare found

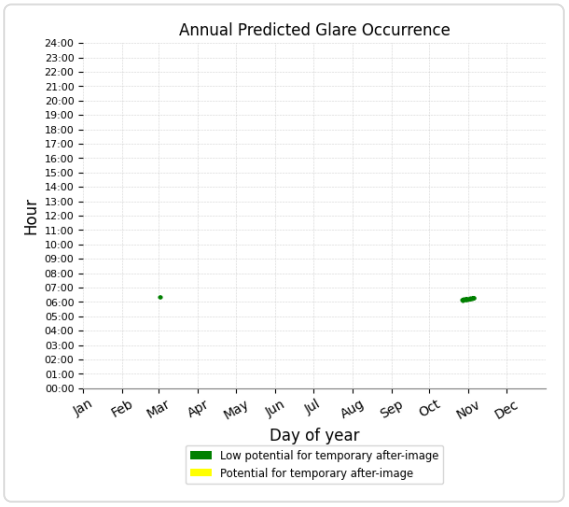
PV15 and FP: NJK30

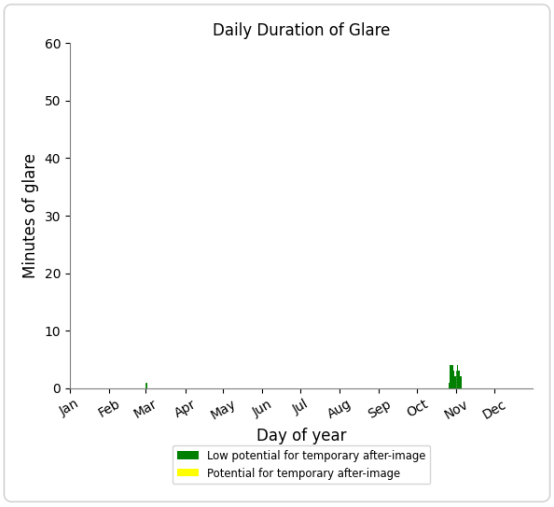
No glare found

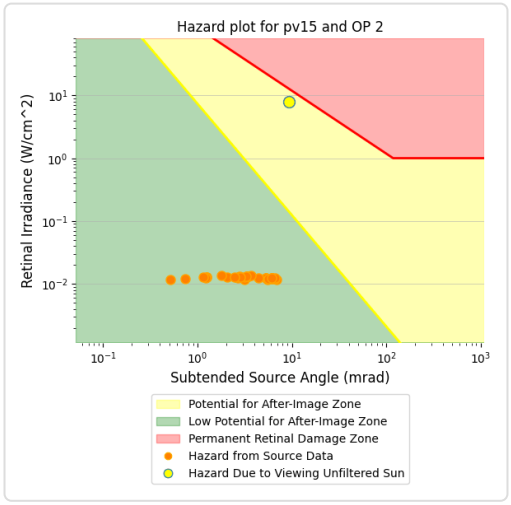
PV15 and OP 2

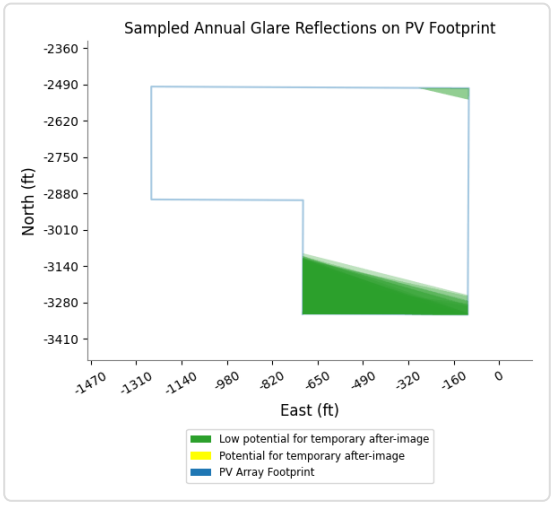
Yellow glare: none

Green glare: 34 min.





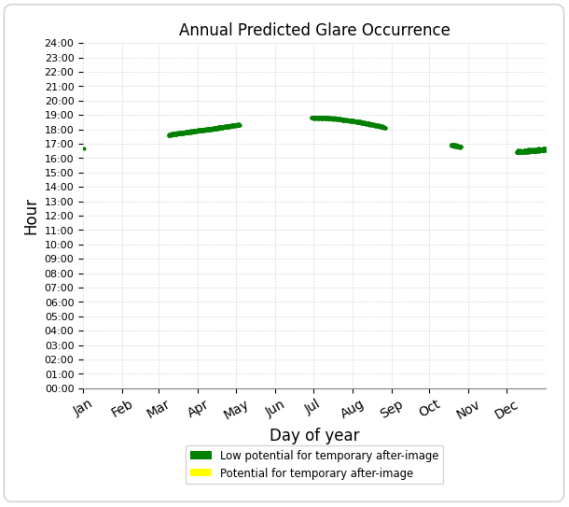


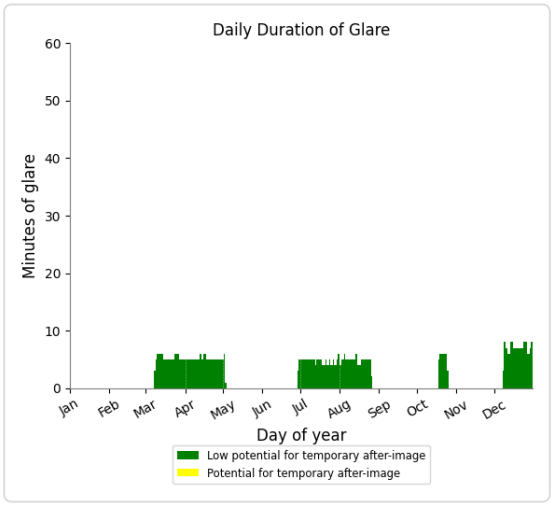


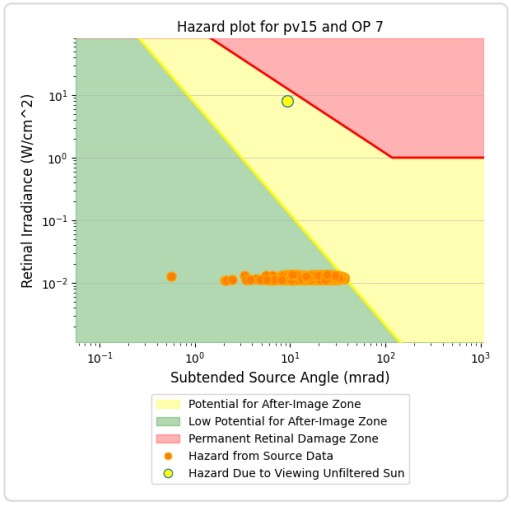
PV15 and OP 7

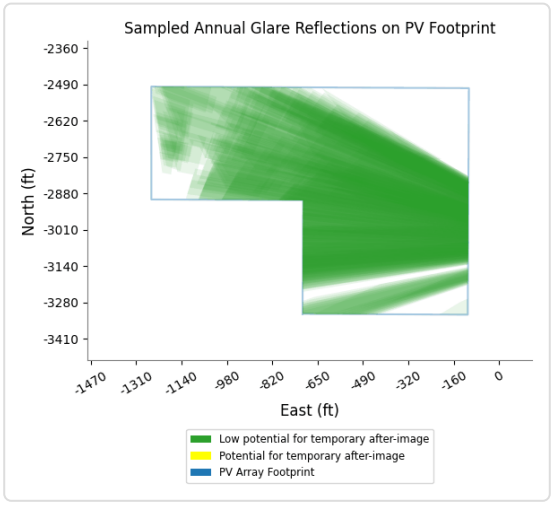
Yellow glare: none

Green glare: 783 min.





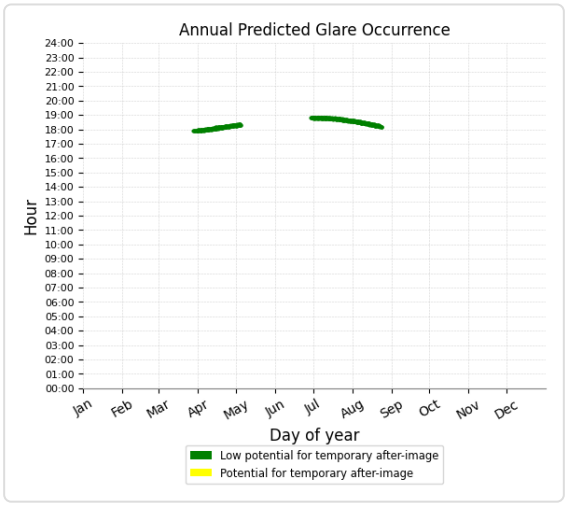


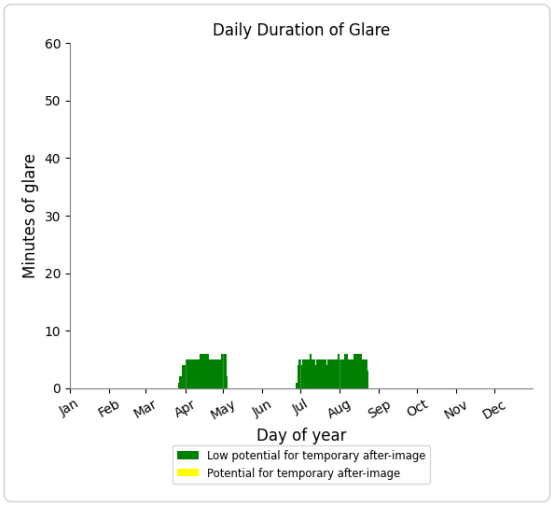


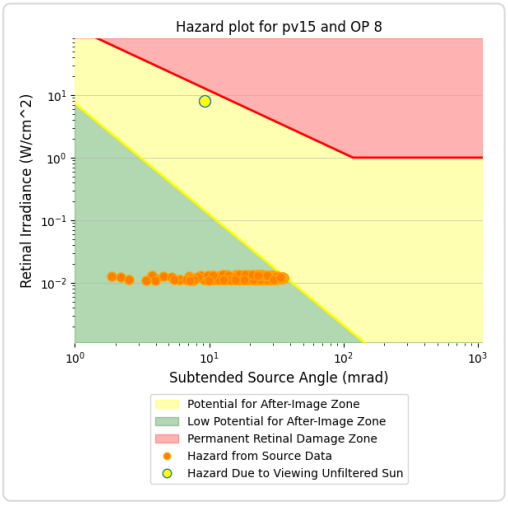
PV15 and OP 8

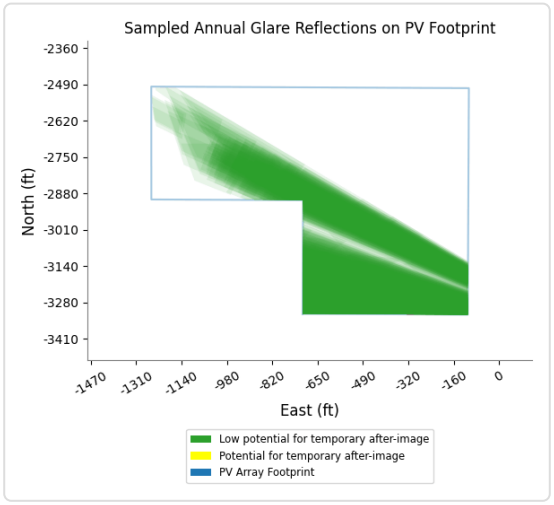
Yellow glare: none

Green glare: 477 min.





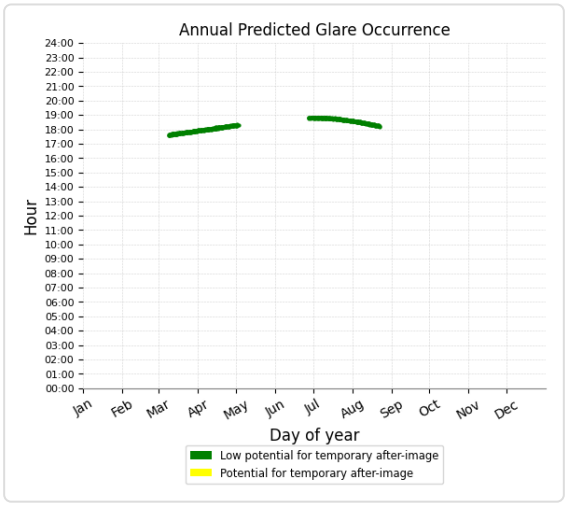


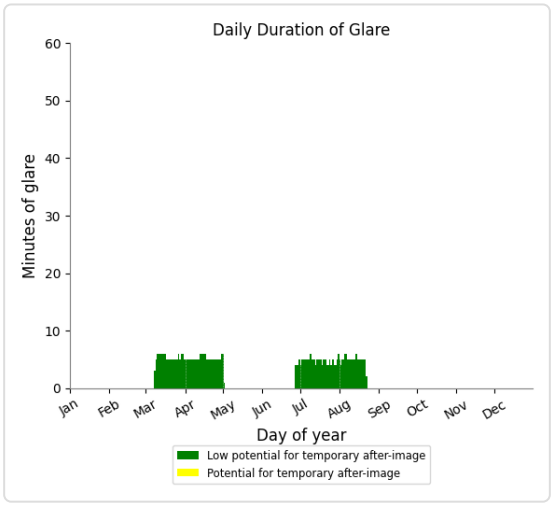


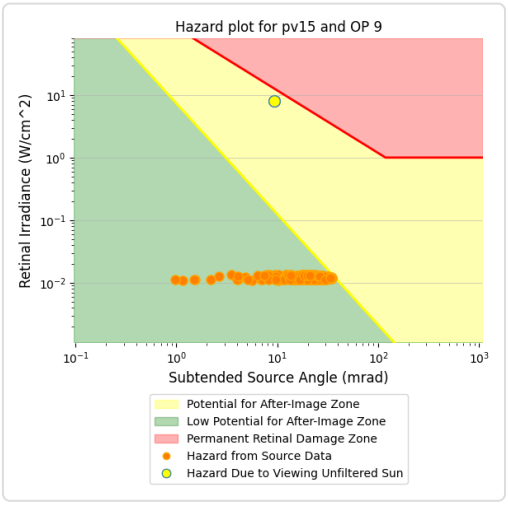
PV15 and OP 9

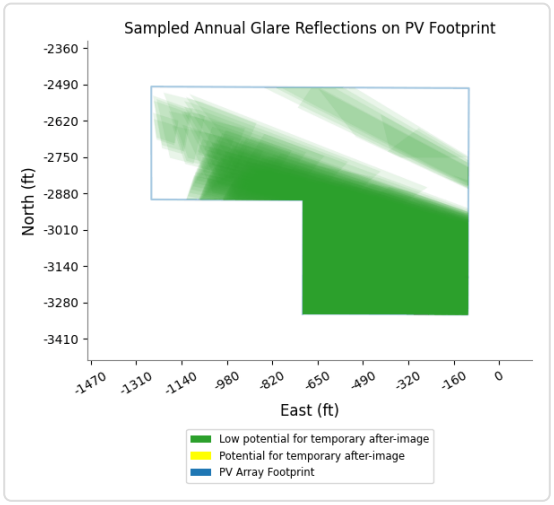
Yellow glare: none

Green glare: 566 min.





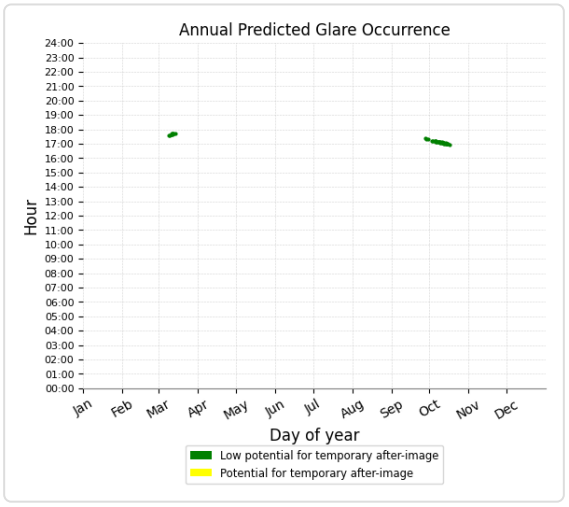


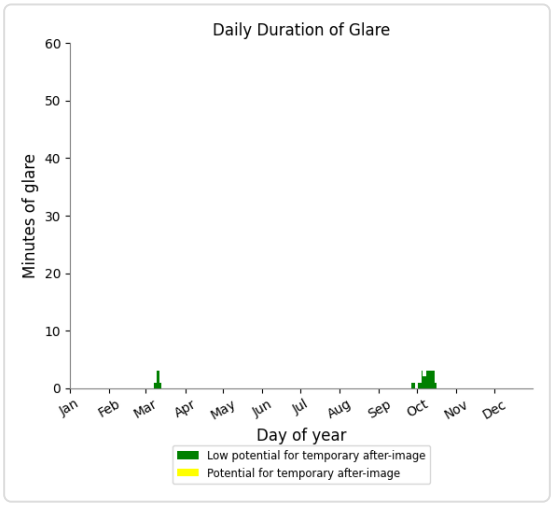


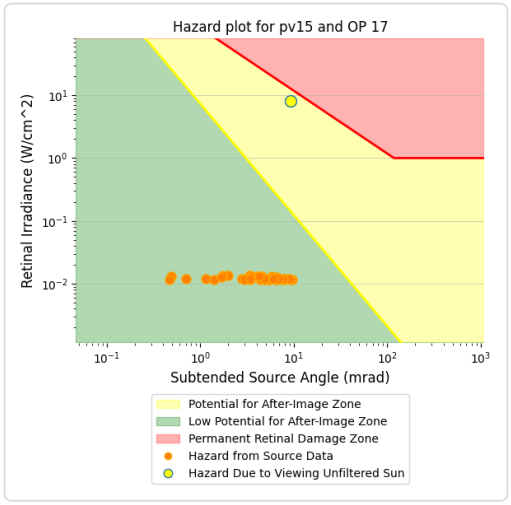
PV15 and OP 17

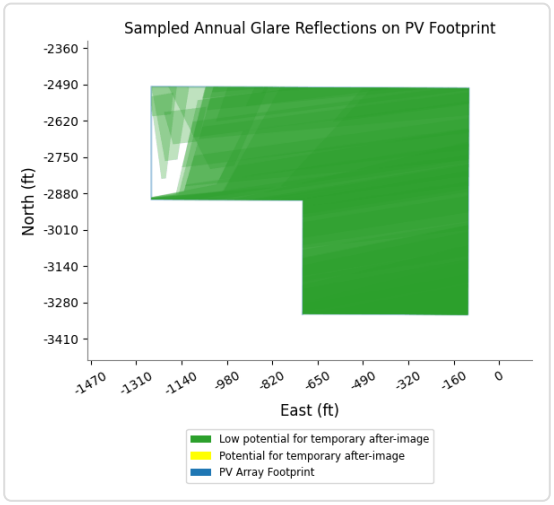
Yellow glare: none

Green glare: 45 min.



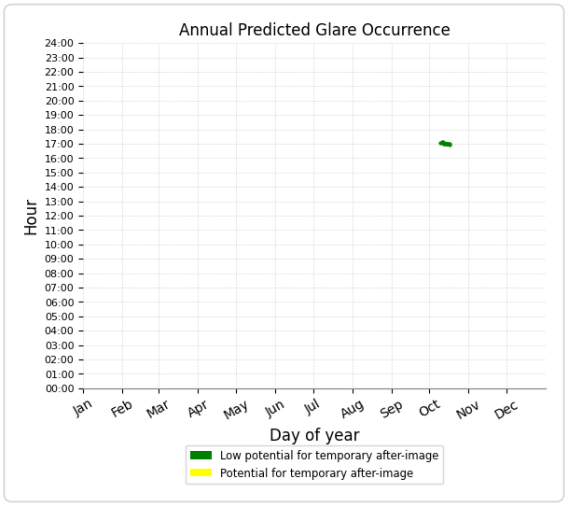


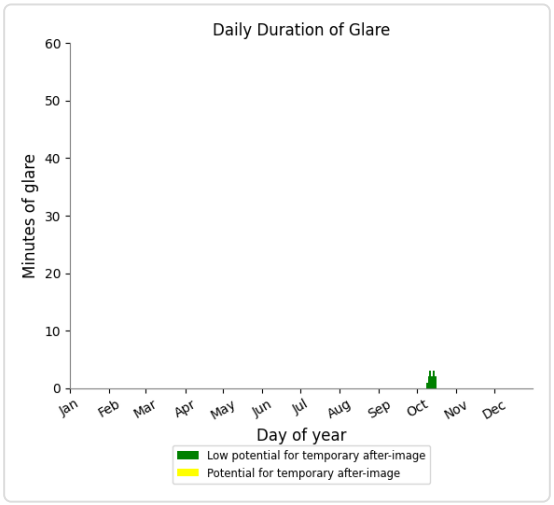


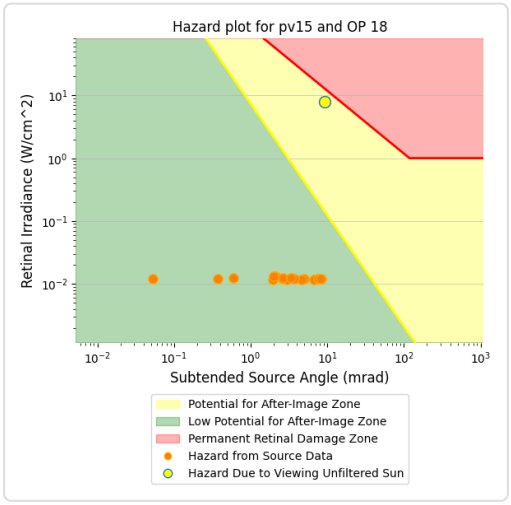


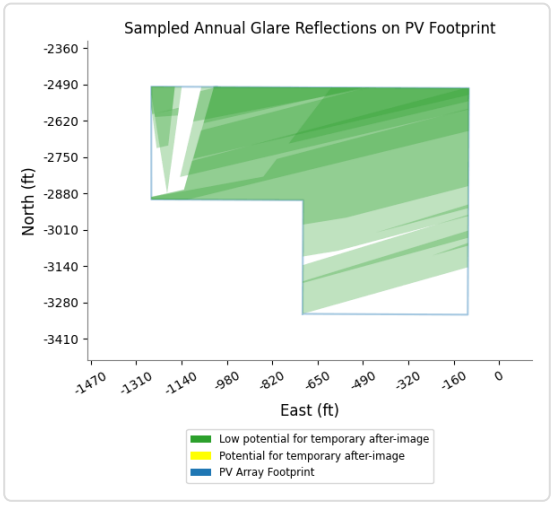
PV15 and OP 18

Yellow glare: none
Green glare: 17 min.









PV15 and OP 1

No glare found

PV15 and OP 3

No glare found

PV15 and OP 4

No glare found

PV15 and OP 5

No glare found

PV15 and OP 6

No glare found

PV15 and OP 10

No glare found

PV15 and OP 11

No glare found

PV15 and OP 12

No glare found

PV15 and OP 13

No glare found

PV15 and OP 14

No glare found

PV15 and OP 15

No glare found

PV15 and OP 16

No glare found

PV15 and OP 19

No glare found

PV15 and 20-ATCT

No glare found

PV: PV16 potential temporary after-image

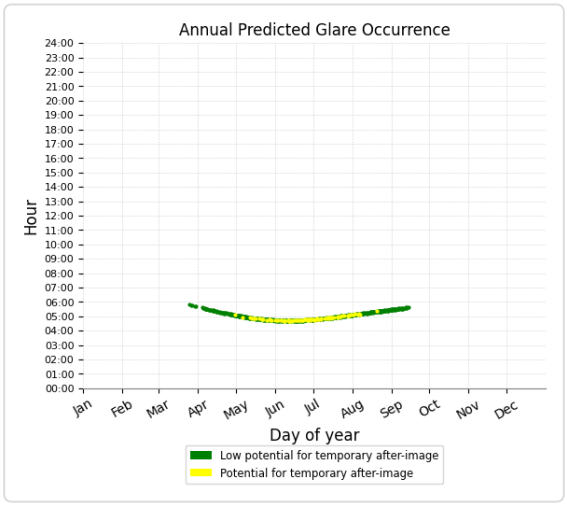
Receptor results ordered by category of glare

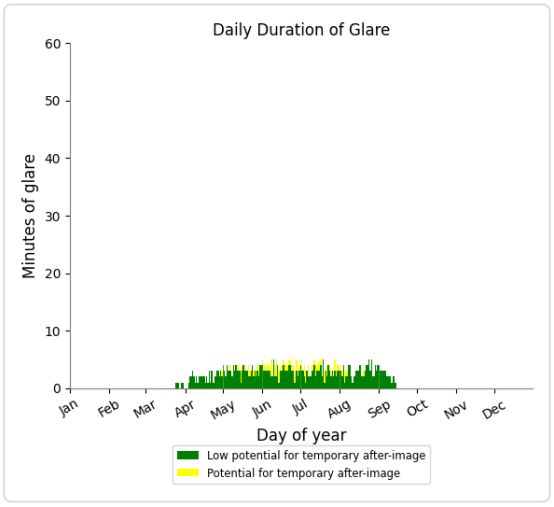
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	444	7.4	82	1.4
Route11	98	1.6	840	14.0
Route05	569	9.5	0	0.0
Route07	33	0.6	0	0.0
Route08	340	5.7	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 2	96	1.6	0	0.0
OP 4	27	0.5	0	0.0
OP 8	133	2.2	0	0.0
OP 9	334	5.6	0	0.0
OP 1	0	0.0	0	0.0
OP 3	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

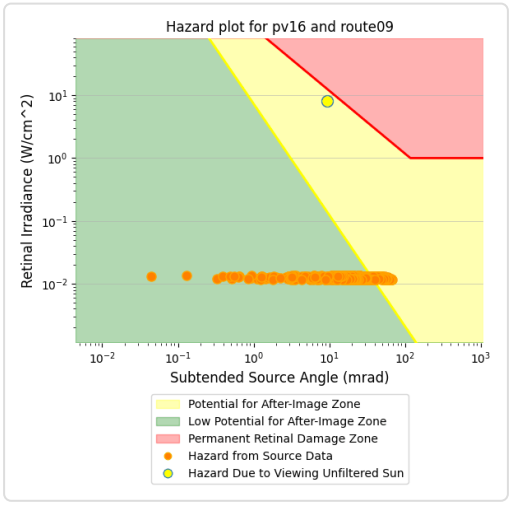
PV16 and Route: Route09

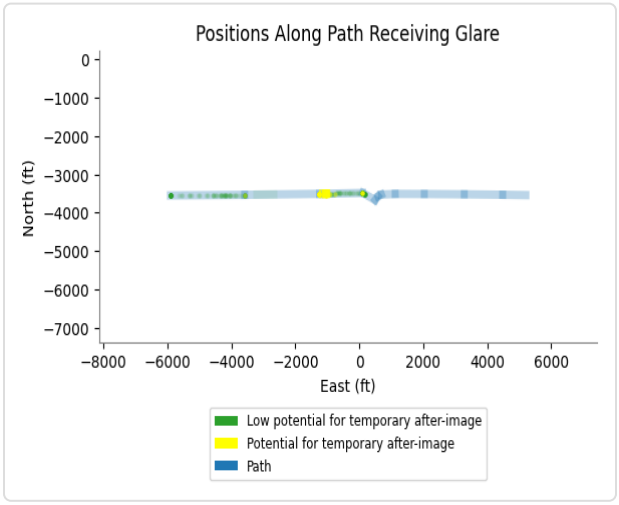
Yellow glare: 82 min.

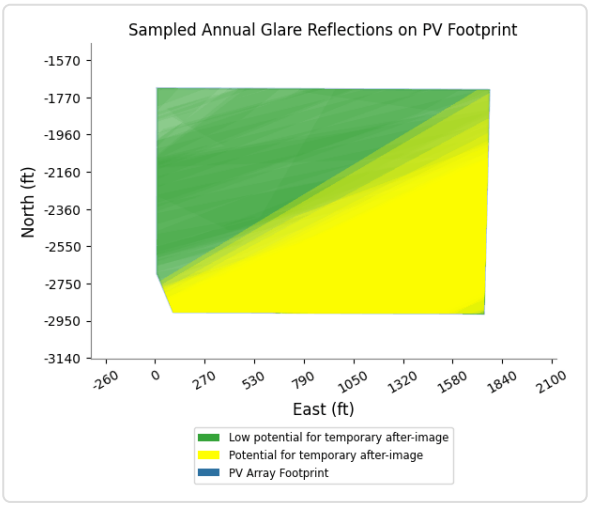
Green glare: 444 min.







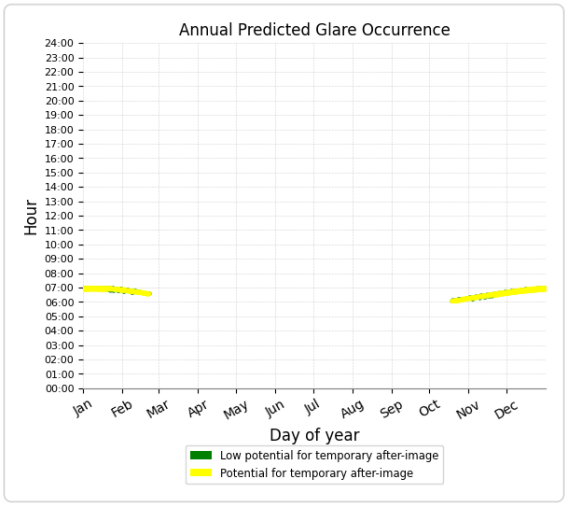


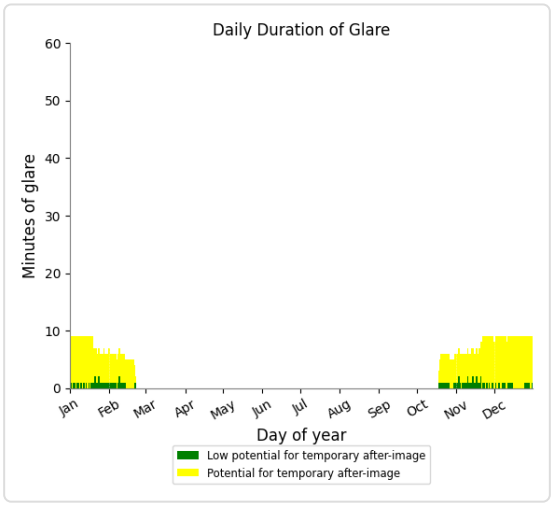


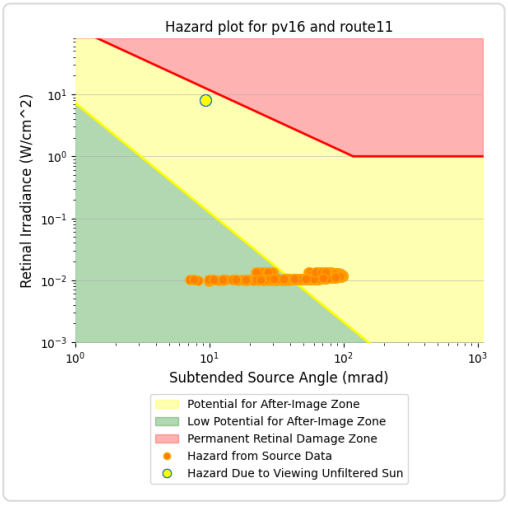
PV16 and Route: Route11

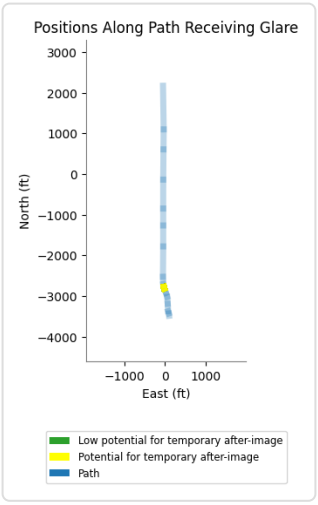
Yellow glare: 840 min.

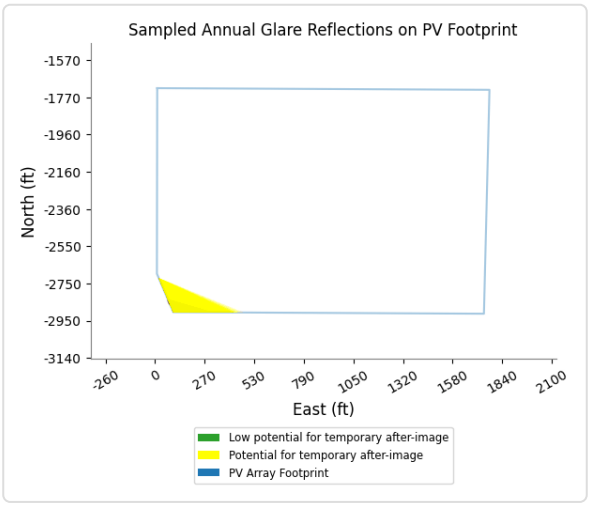
Green glare: 98 min.







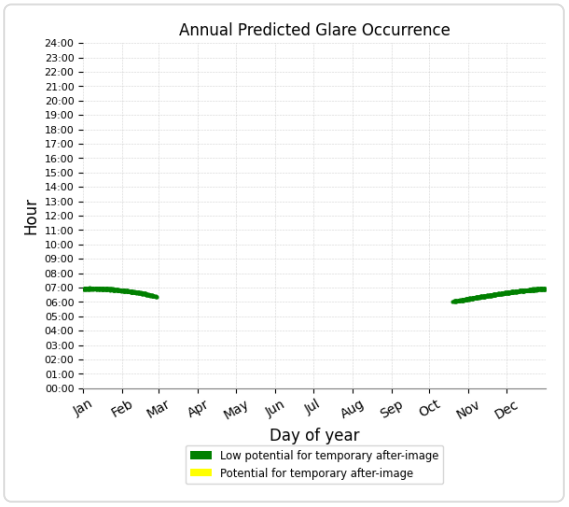


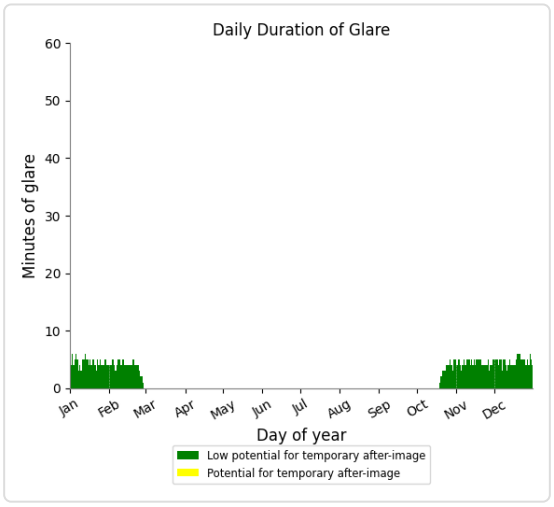


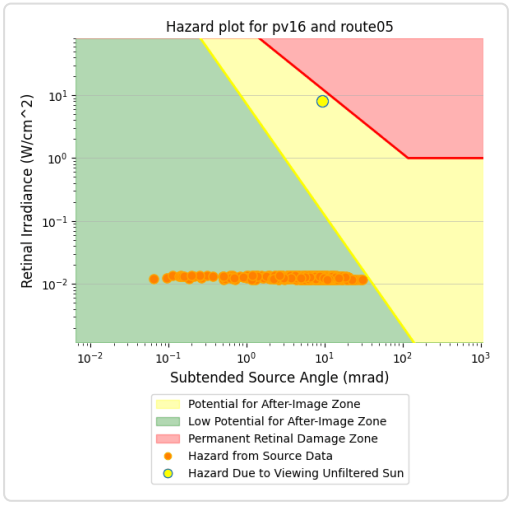
PV16 and Route: Route05

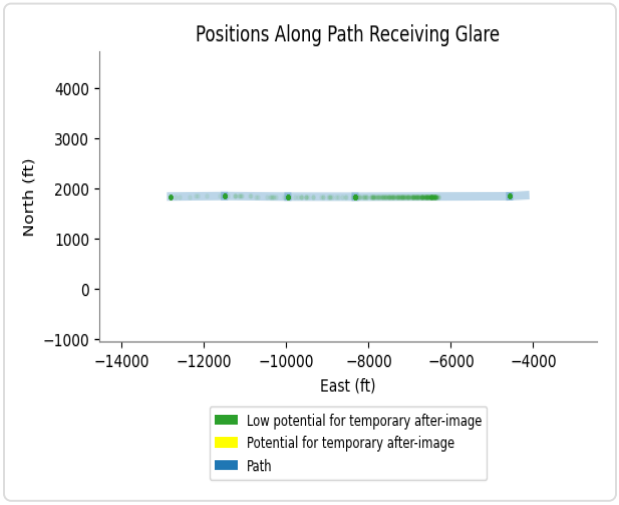
Yellow glare: none

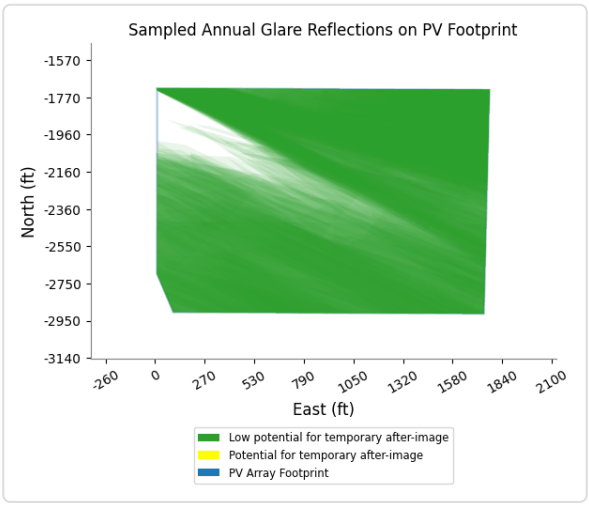
Green glare: 569 min.







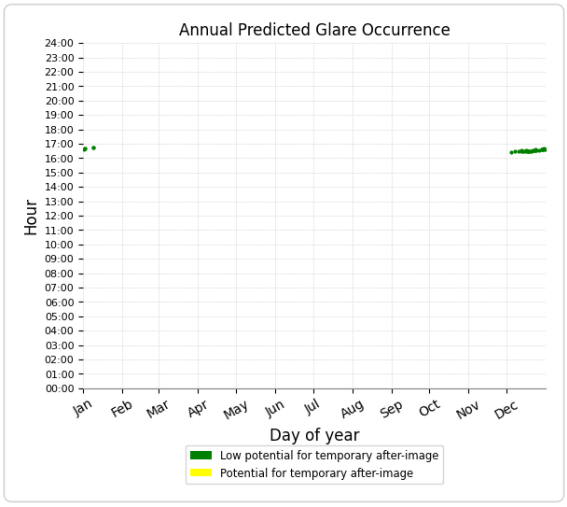


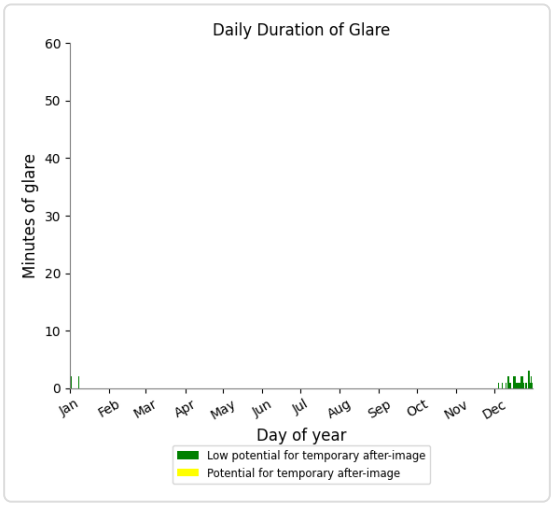


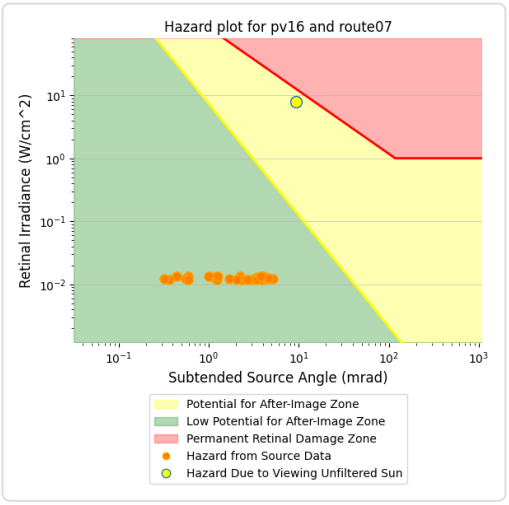
PV16 and Route: Route07

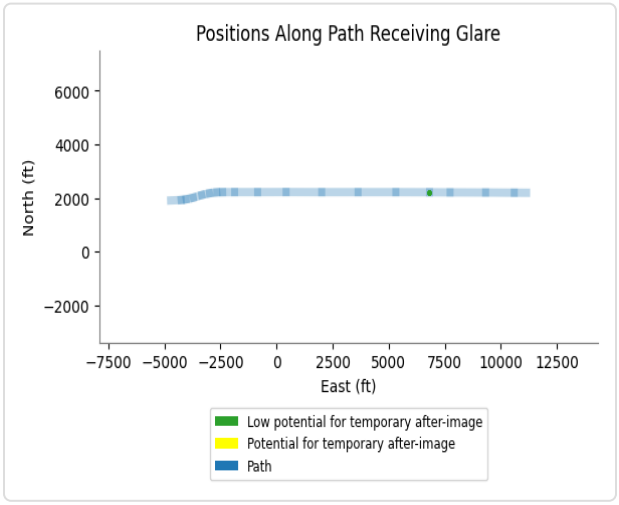
Yellow glare: none

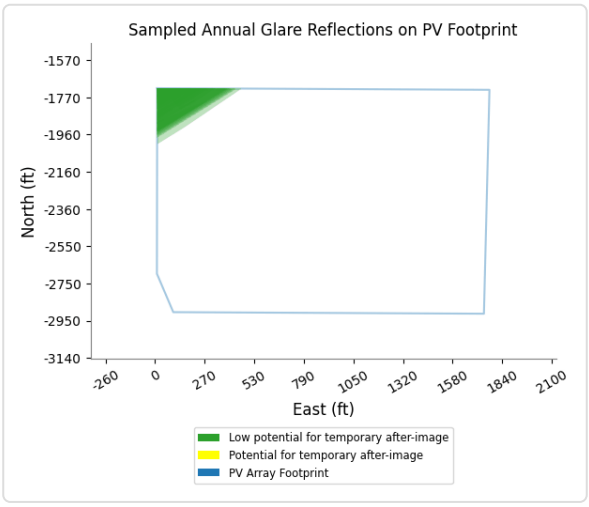
Green glare: 33 min.







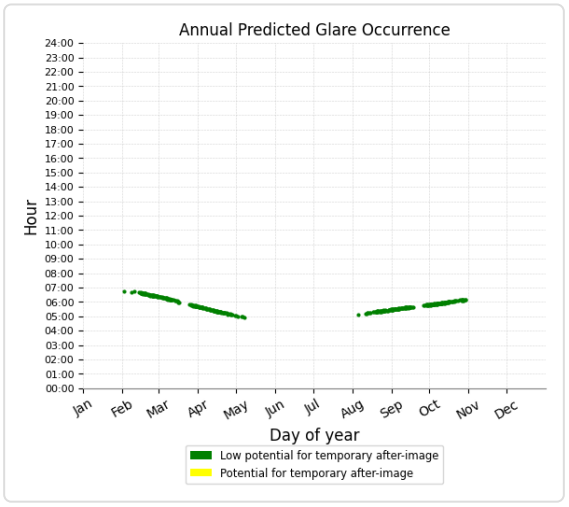


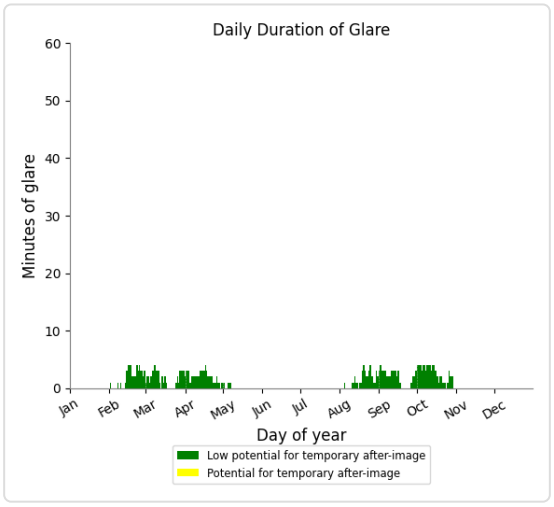


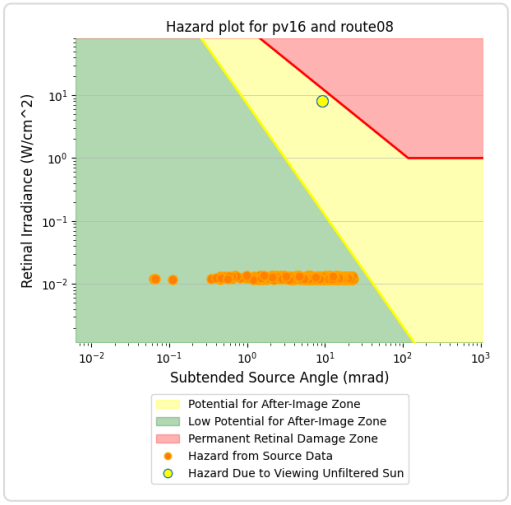
PV16 and Route: Route08

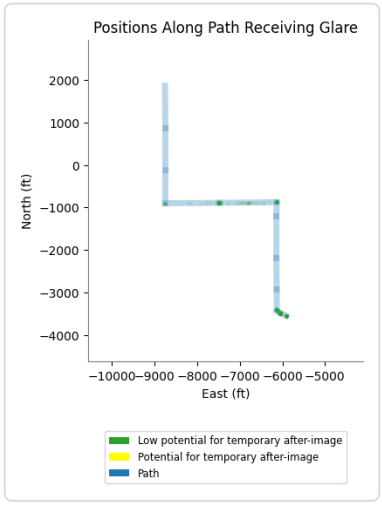
Yellow glare: none

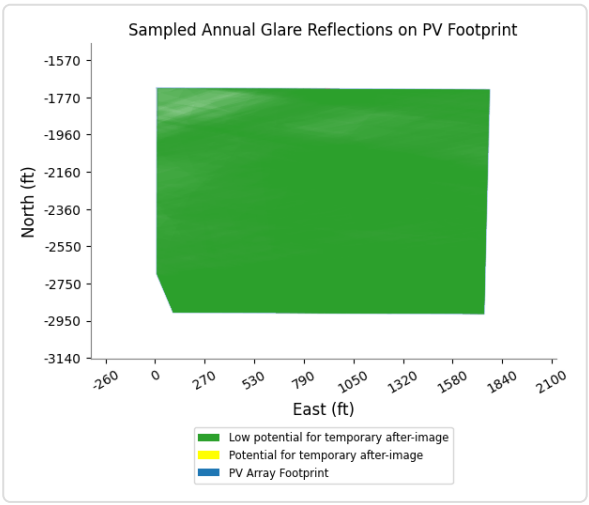
Green glare: 340 min.











PV16 and Route: Route01

No glare found

PV16 and Route: Route02

No glare found

PV16 and Route: Route04

No glare found

PV16 and Route: Route06

No glare found

PV16 and Route: Route10

No glare found

PV16 and Route: Route12

No glare found

PV16 and FP: NJK08

No glare found

PV16 and FP: NJK12

No glare found

PV16 and FP: NJK26

No glare found

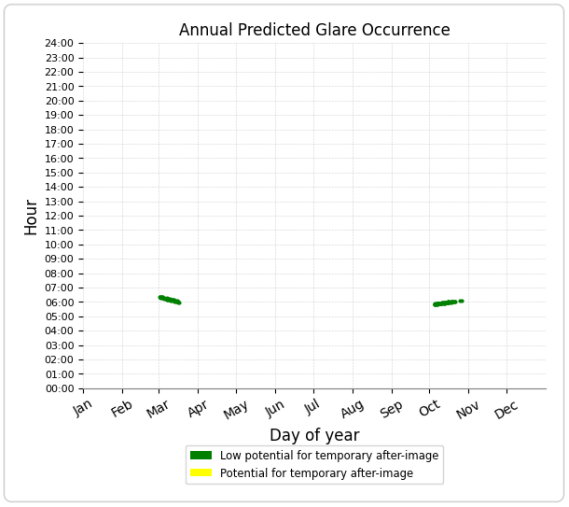
PV16 and FP: NJK30

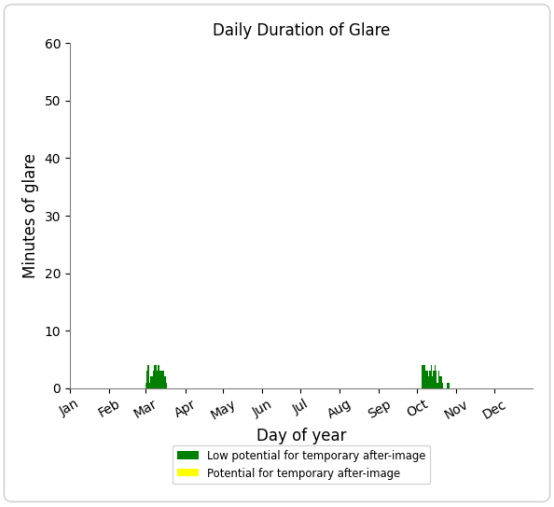
No glare found

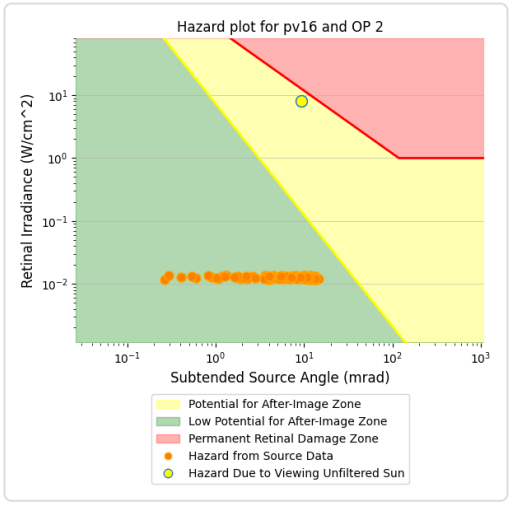
PV16 and OP 2

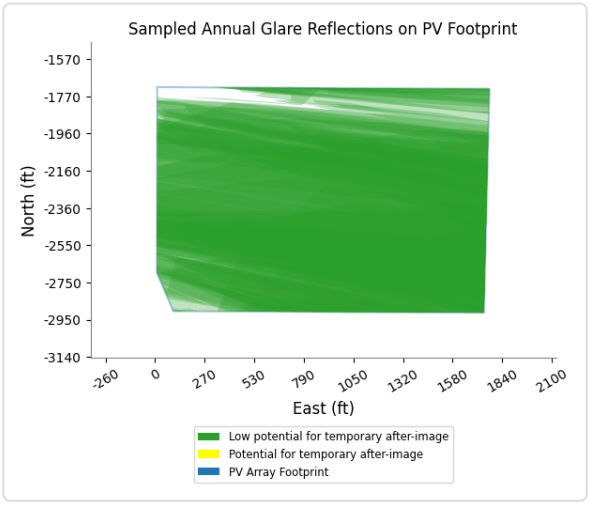
Yellow glare: none

Green glare: 96 min.





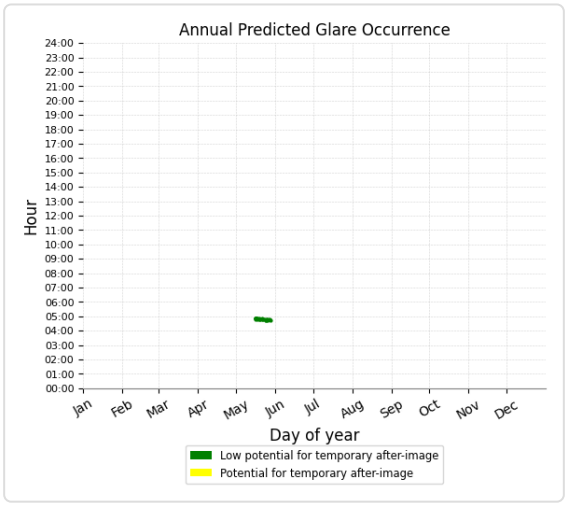


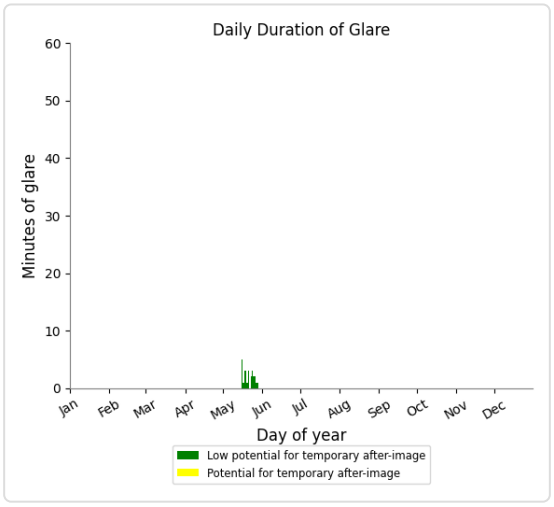


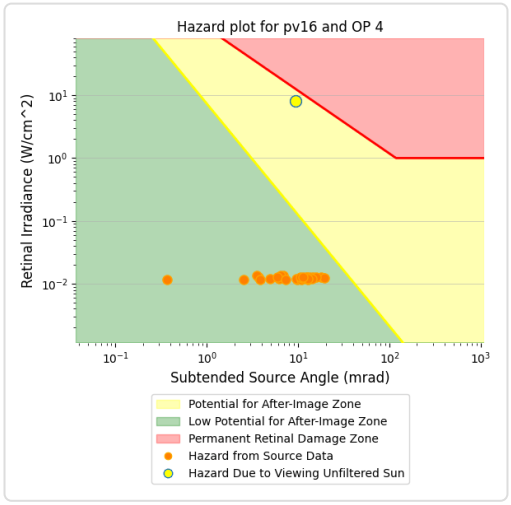
PV16 and OP 4

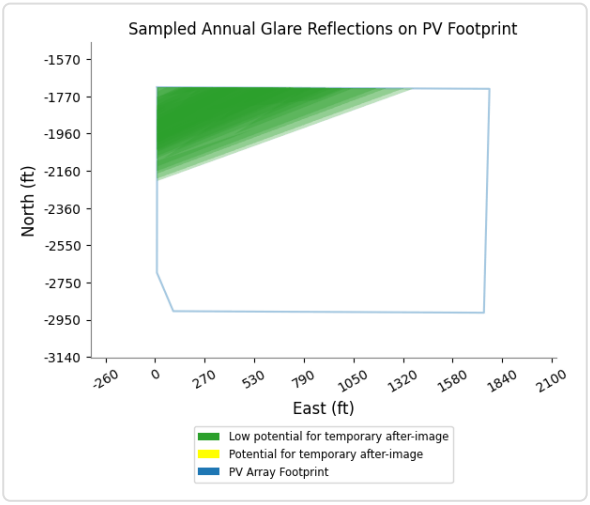
Yellow glare: none

Green glare: 27 min.





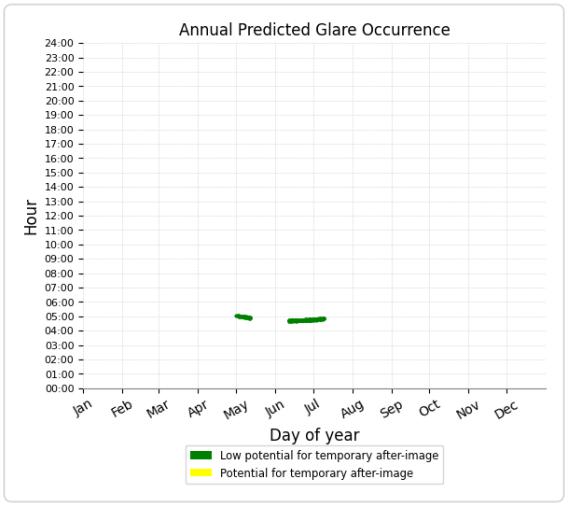


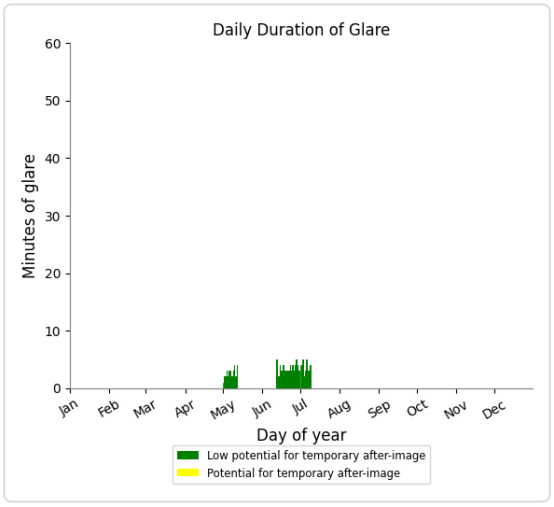


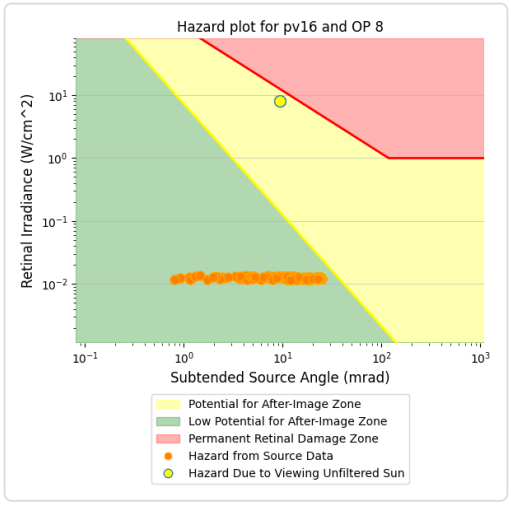
PV16 and OP 8

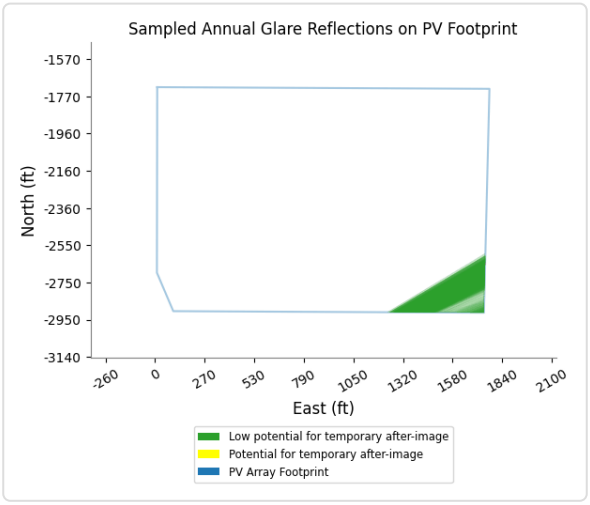
Yellow glare: none

Green glare: 133 min.



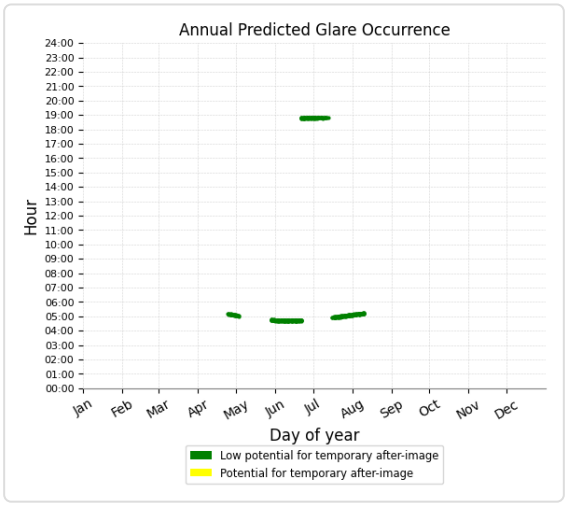


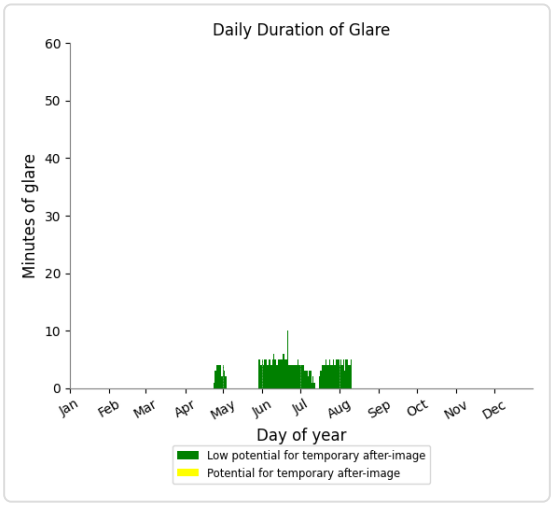


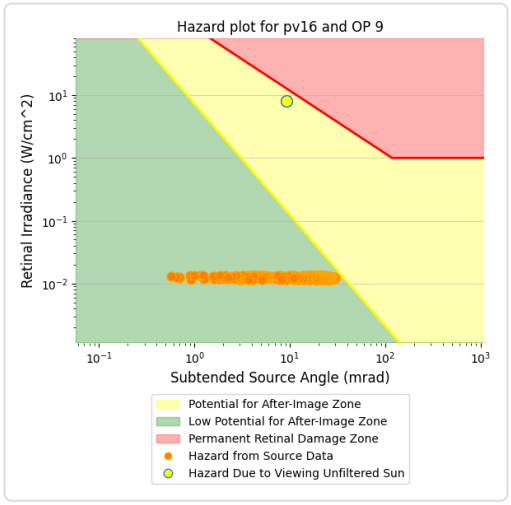


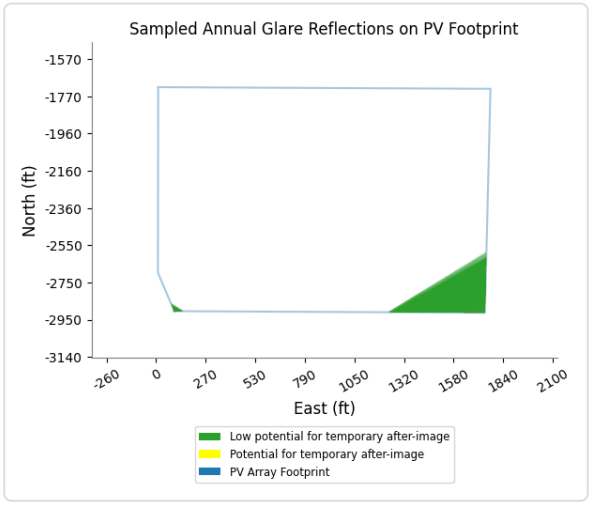
PV16 and OP 9

Yellow glare: none
Green glare: 334 min.









PV16 and OP 1

No glare found

PV16 and OP 3

No glare found

PV16 and OP 5

No glare found

PV16 and OP 6

No glare found

PV16 and OP 7

No glare found

PV16 and OP 10

No glare found

PV16 and OP 11

No glare found

PV16 and OP 12

No glare found

PV16 and OP 13

No glare found

PV16 and OP 14

No glare found

PV16 and OP 15

No glare found

PV16 and OP 16

No glare found

PV16 and OP 17

No glare found

PV16 and OP 18

No glare found

PV16 and OP 19

No glare found

PV16 and 20-ATCT

No glare found

PV: PV17 low potential for temporary after-image

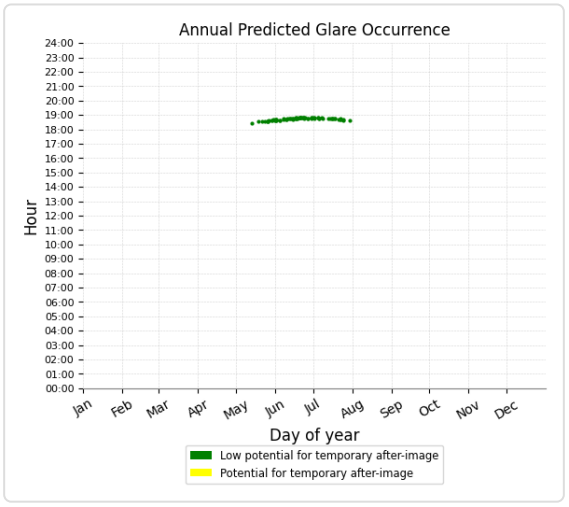
Receptor results ordered by category of glare

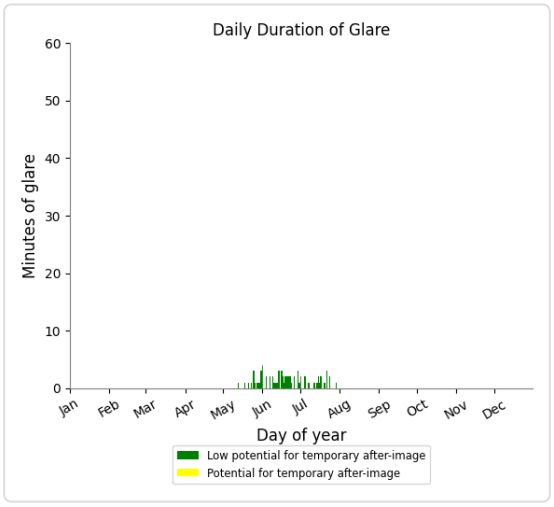
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	76	1.3	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 9	147	2.5	0	0.0
OP 11	154	2.6	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 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

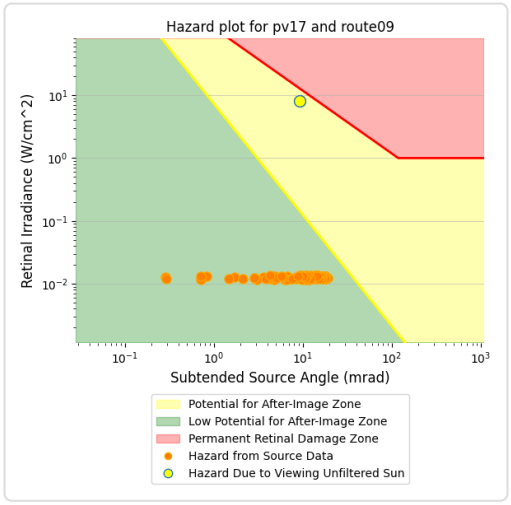
PV17 and Route: Route09

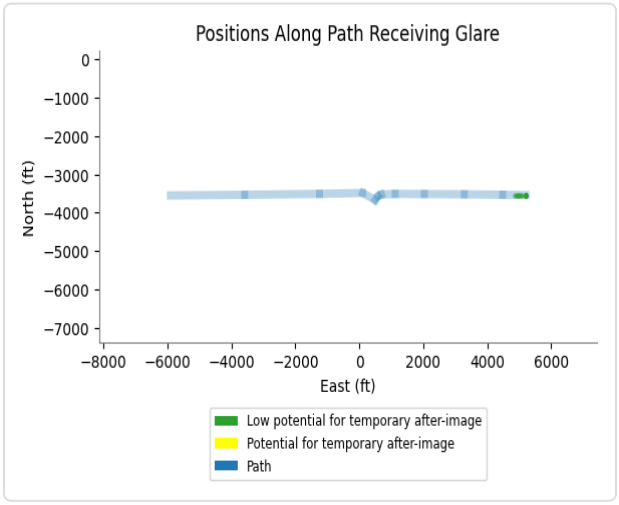
Yellow glare: none

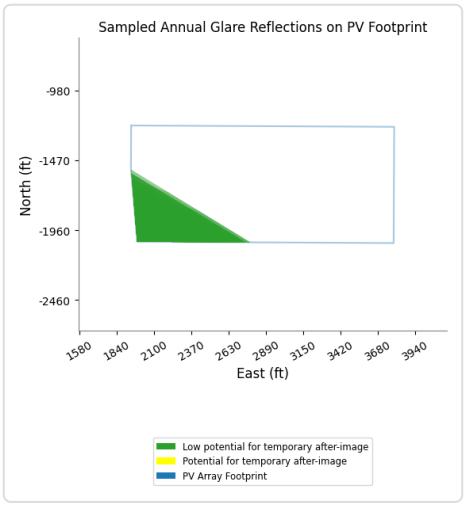
Green glare: 76 min.











PV17 and Route: Route01

No glare found

PV17 and Route: Route02

No glare found

PV17 and Route: Route04

No glare found

PV17 and Route: Route05

No glare found

PV17 and Route: Route06

No glare found

PV17 and Route: Route07

No glare found

PV17 and Route: Route08

No glare found

PV17 and Route: Route10

No glare found

PV17 and Route: Route11

No glare found

PV17 and Route: Route12

No glare found

PV17 and FP: NJK08

No glare found

PV17 and FP: NJK12

No glare found

PV17 and FP: NJK26

No glare found

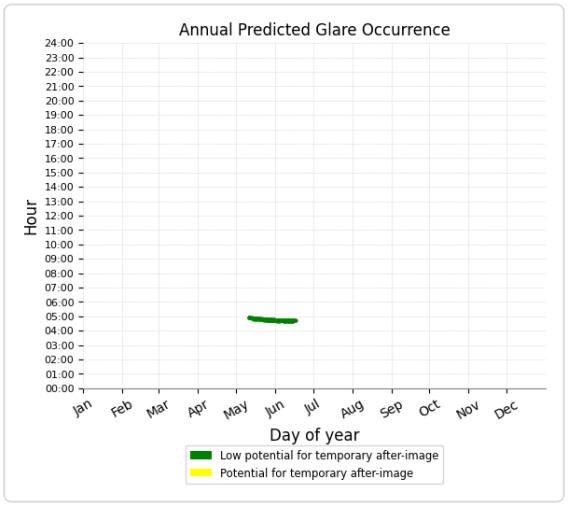
PV17 and FP: NJK30

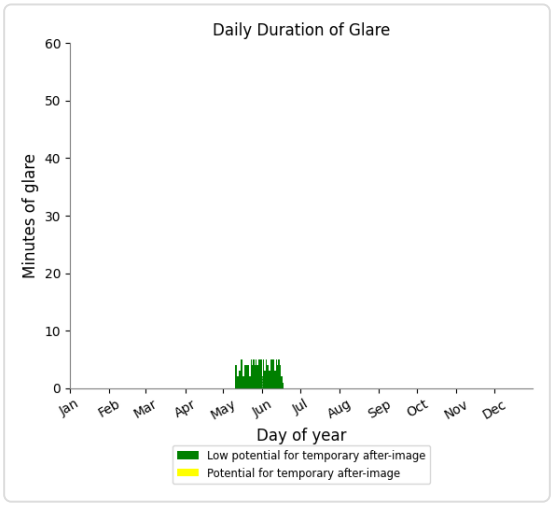
No glare found

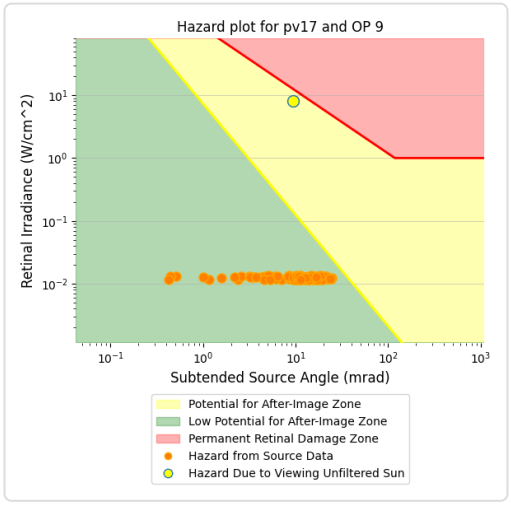
PV17 and OP 9

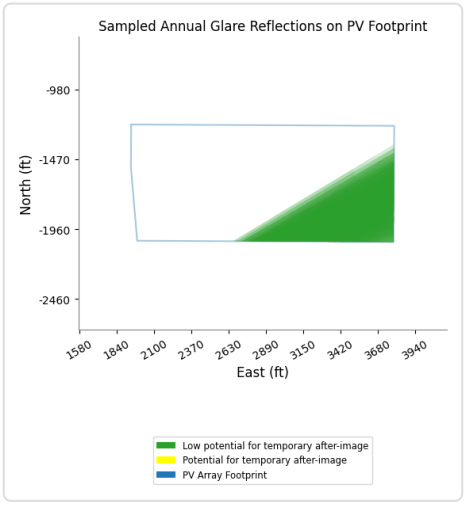
Yellow glare: none

Green glare: 147 min.



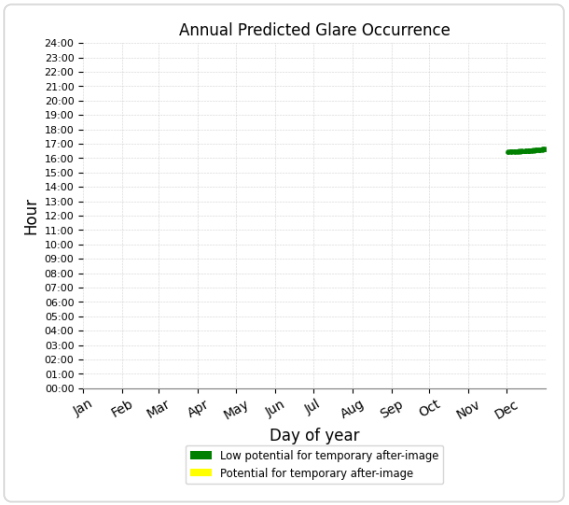


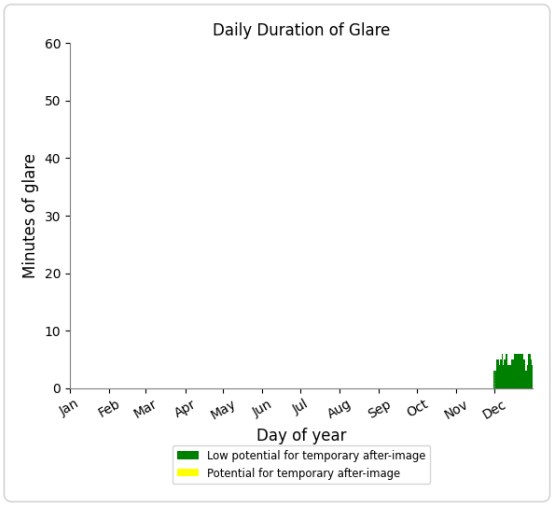


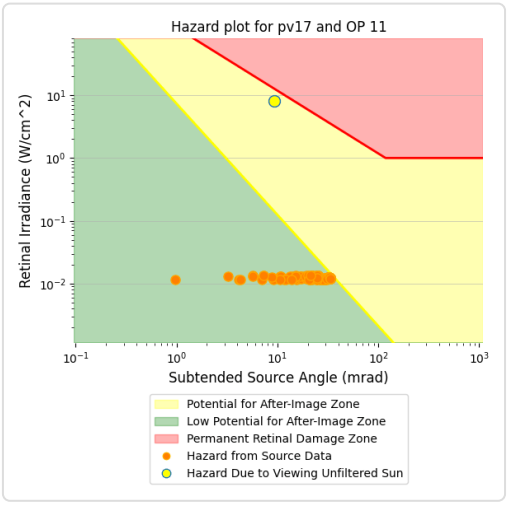


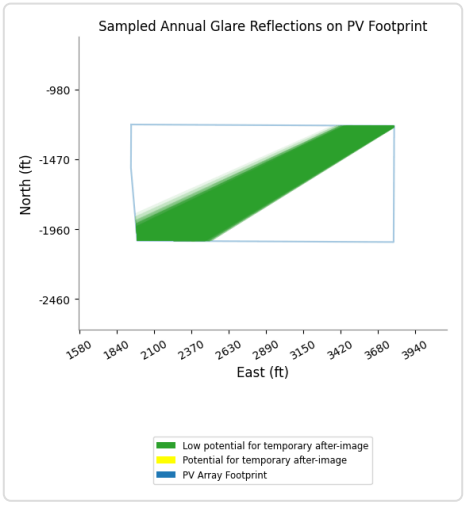
PV17 and OP 11

Yellow glare: none
Green glare: 154 min.









PV17 and OP 1

No glare found

PV17 and OP 2

No glare found

PV17 and OP 3

No glare found

PV17 and OP 4

No glare found

PV17 and OP 5

No glare found

PV17 and OP 6

No glare found

PV17 and OP 7

No glare found

PV17 and OP 8

No glare found

PV17 and OP 10

No glare found

PV17 and OP 12

No glare found

PV17 and OP 13

No glare found

PV17 and OP 14

No glare found

PV17 and OP 15

No glare found

PV17 and OP 16

No glare found

PV17 and OP 17

No glare found

PV17 and OP 18

No glare found

PV17 and OP 19

No glare found

PV17 and 20-ATCT

No glare found

PV: PV18 potential temporary after-image

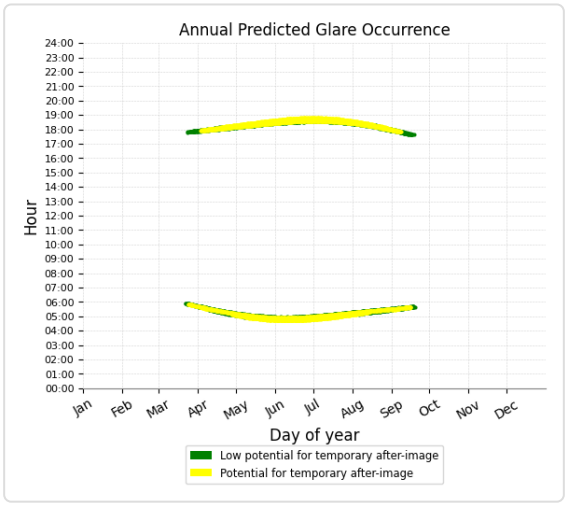
Receptor results ordered by category of glare

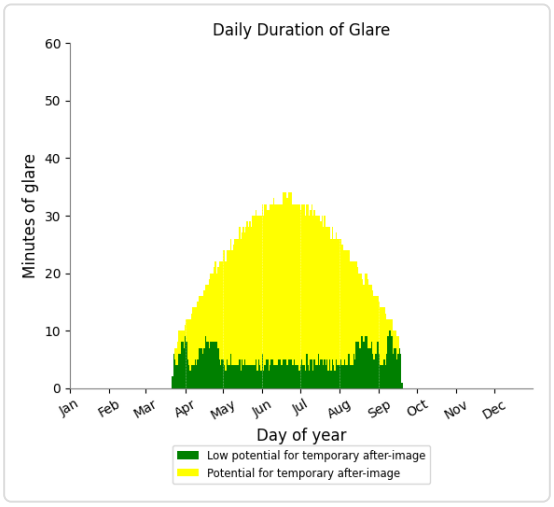
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	950	15.8	3,204	53.4
Route05	26	0.4	0	0.0
Route08	250	4.2	0	0.0
Route11	142	2.4	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	179	3.0	0	0.0
OP 7	544	9.1	0	0.0
OP 8	410	6.8	0	0.0
OP 9	557	9.3	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 5	0	0.0	0	0.0
OP 6	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

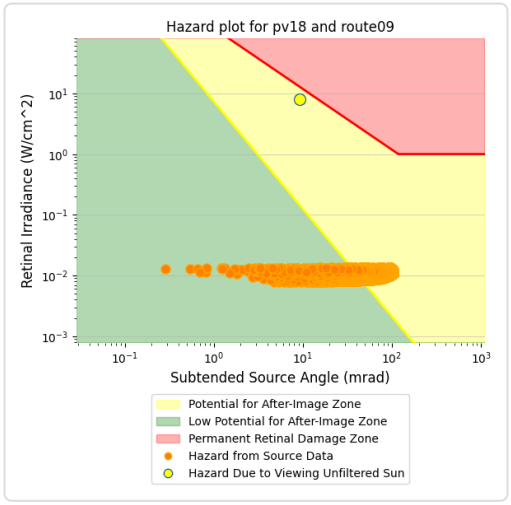
PV18 and Route: Route09

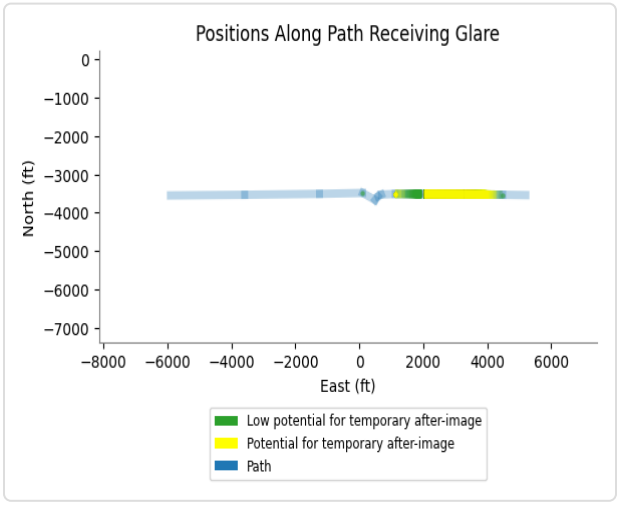
Yellow glare: 3,204 min.

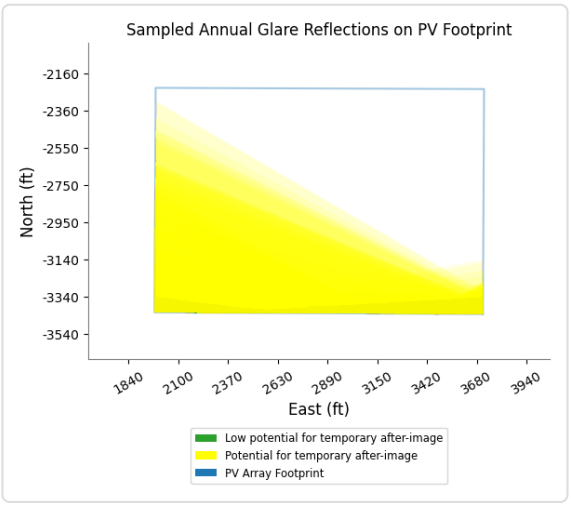
Green glare: 950 min.







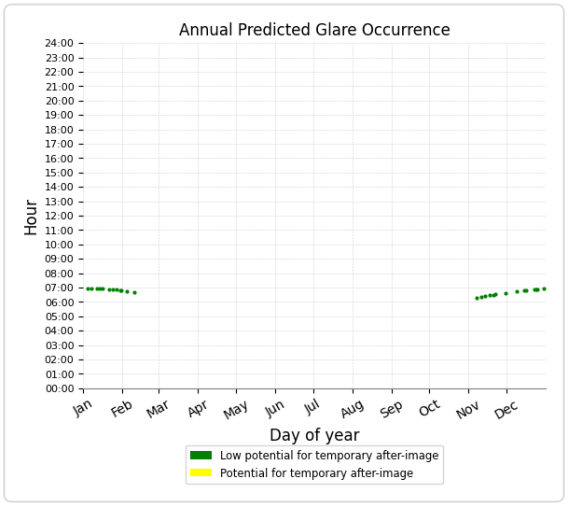


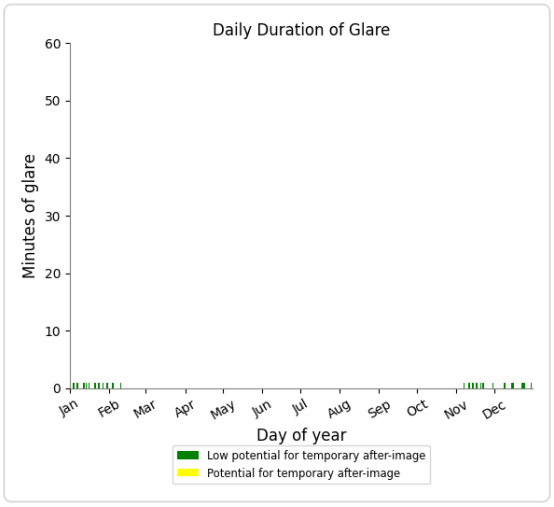


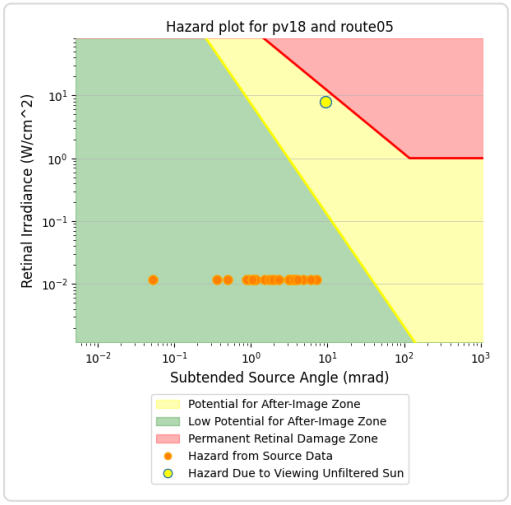
PV18 and Route: Route05

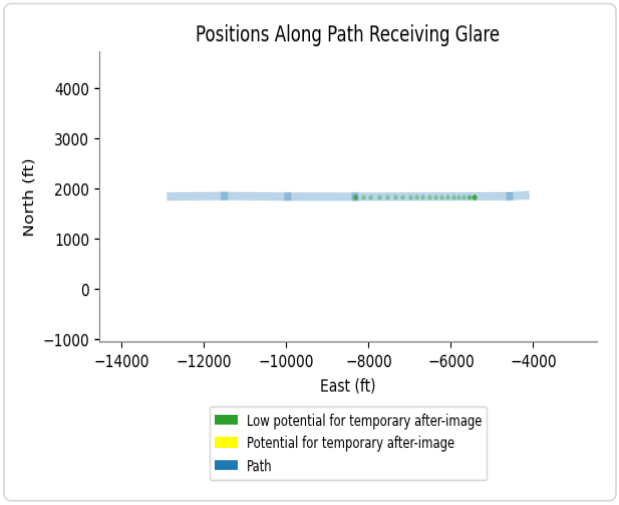
Yellow glare: none

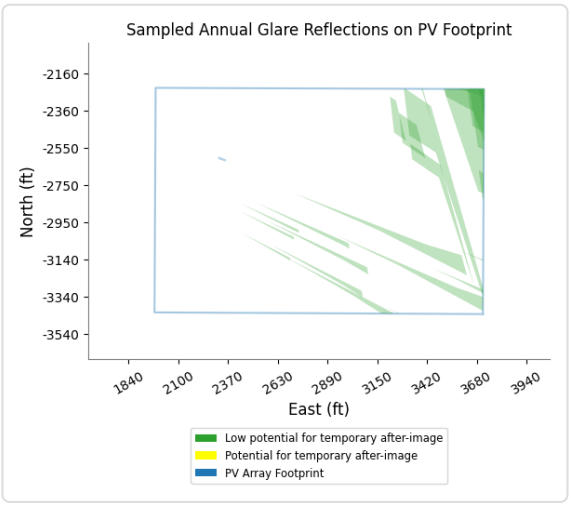
Green glare: 26 min.







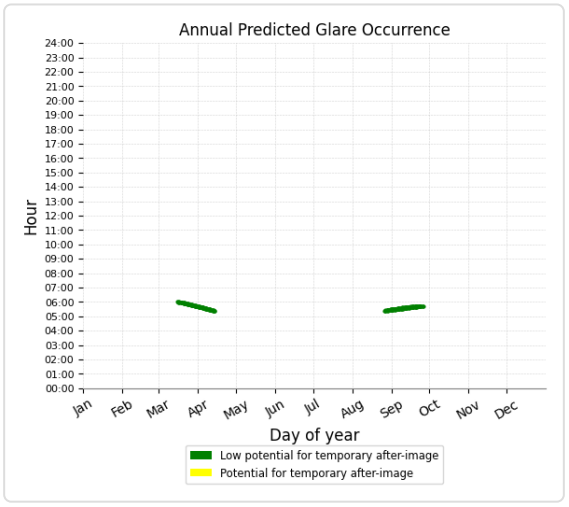


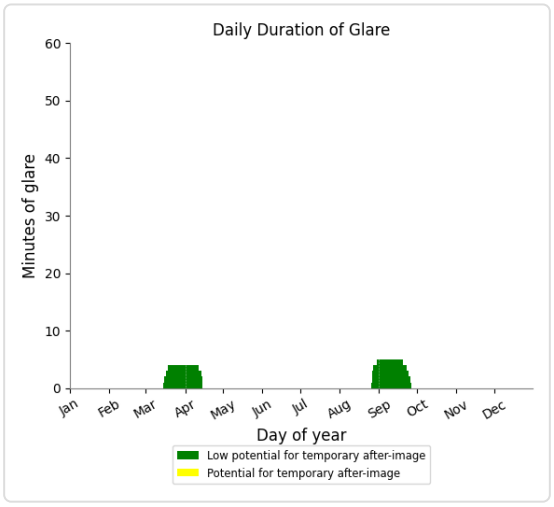


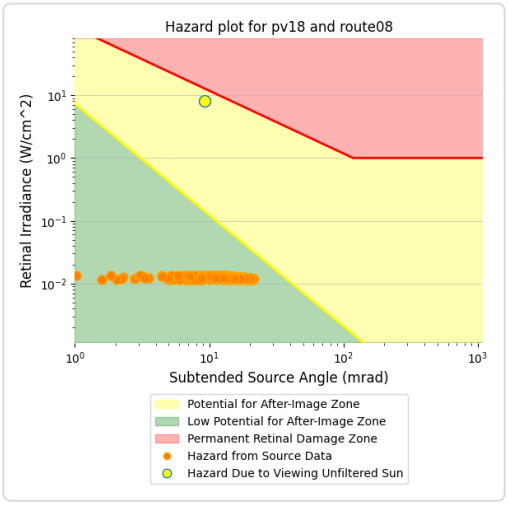
PV18 and Route: Route08

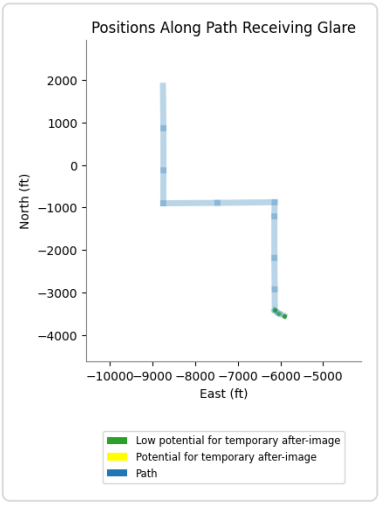
Yellow glare: none

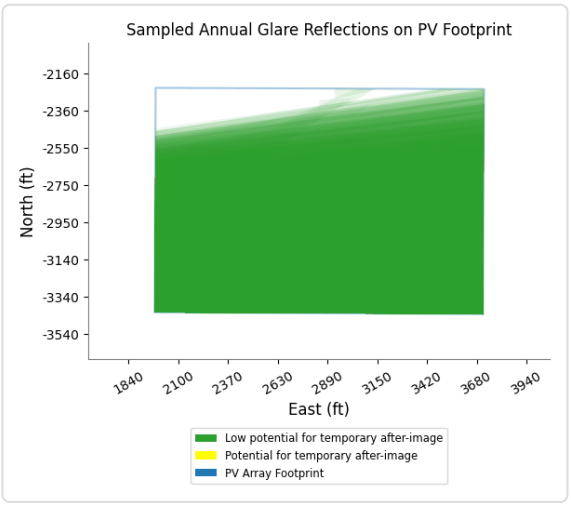
Green glare: 250 min.







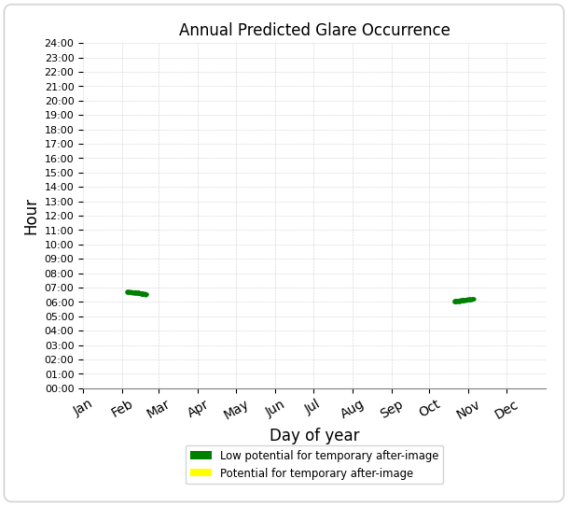


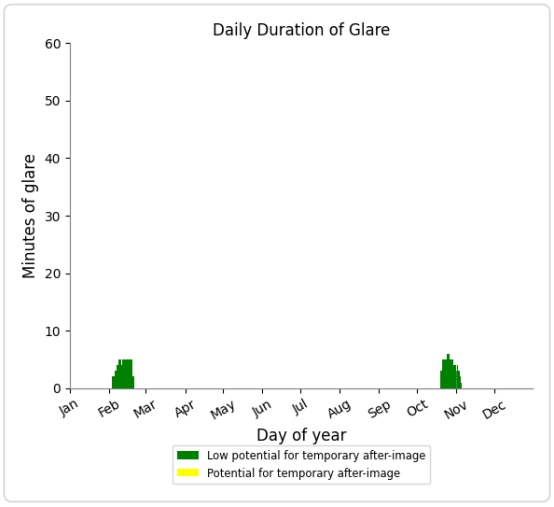


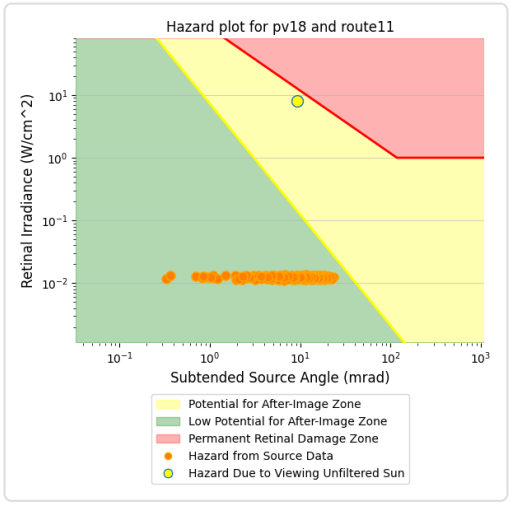
PV18 and Route: Route11

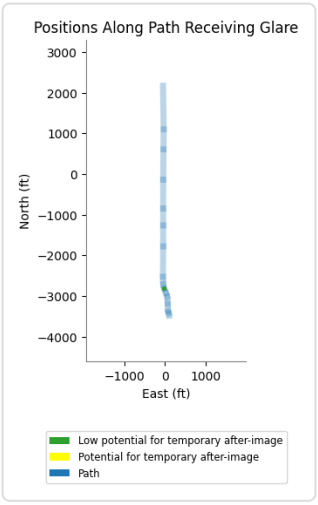
Yellow glare: none

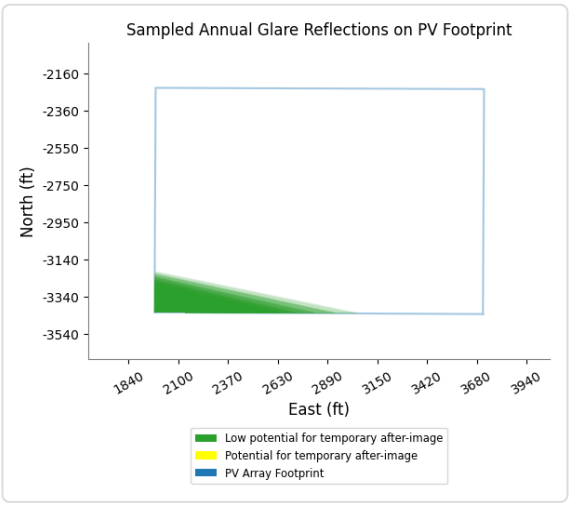
Green glare: 142 min.











PV18 and Route: Route01

No glare found

PV18 and Route: Route02

No glare found

PV18 and Route: Route04

No glare found

PV18 and Route: Route06

No glare found

PV18 and Route: Route07

No glare found

PV18 and Route: Route10

No glare found

PV18 and Route: Route12

No glare found

PV18 and FP: NJK08

No glare found

PV18 and FP: NJK12

No glare found

PV18 and FP: NJK26

No glare found

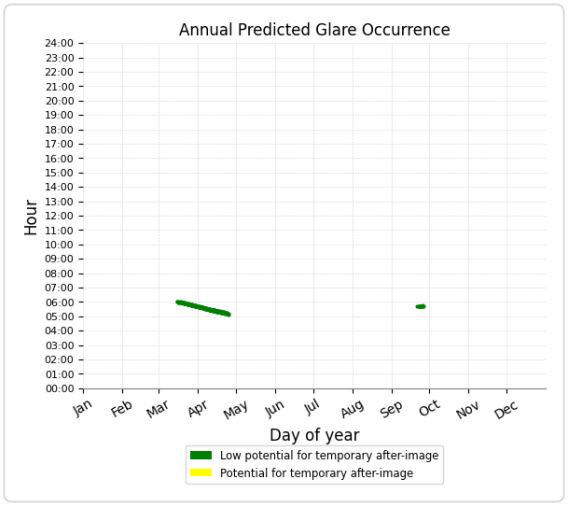
PV18 and FP: NJK30

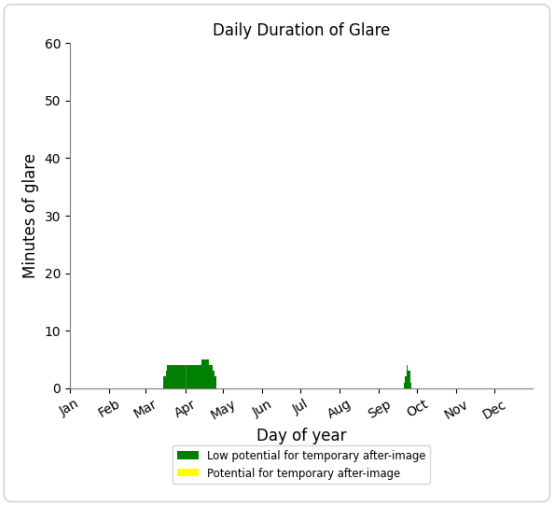
No glare found

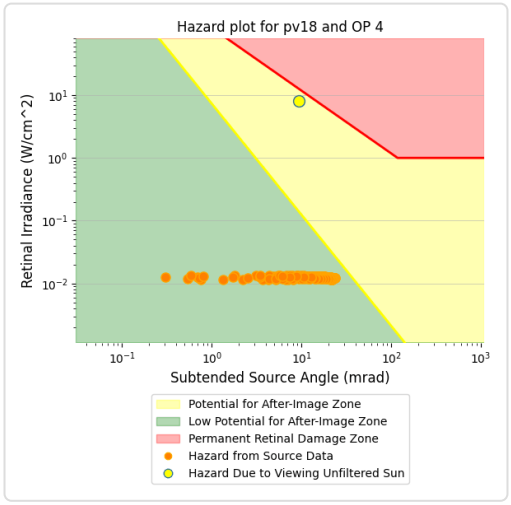
PV18 and OP 4

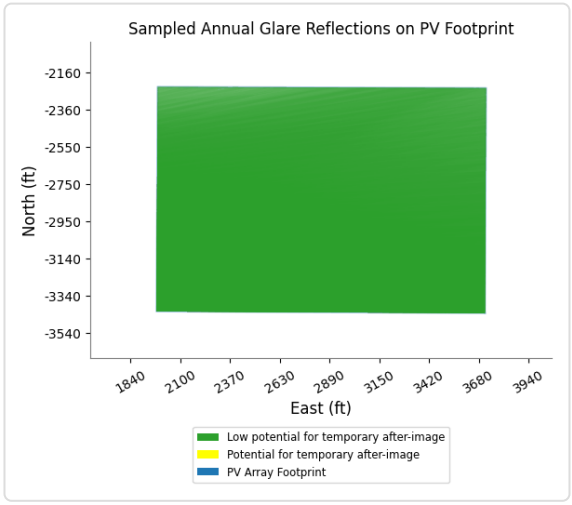
Yellow glare: none

Green glare: 179 min.





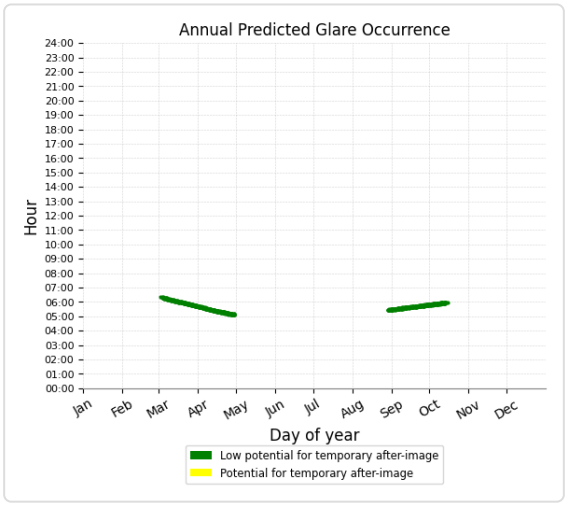


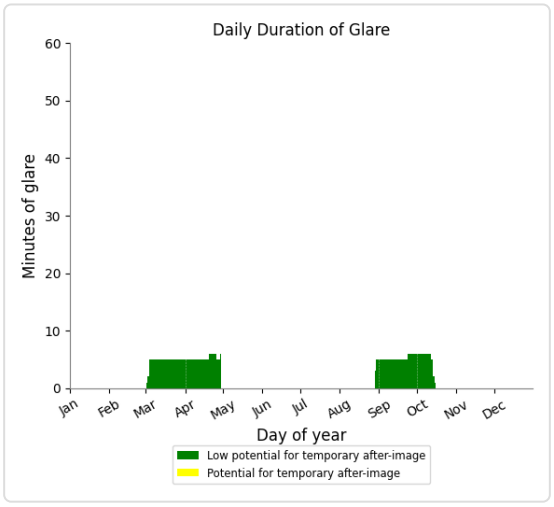


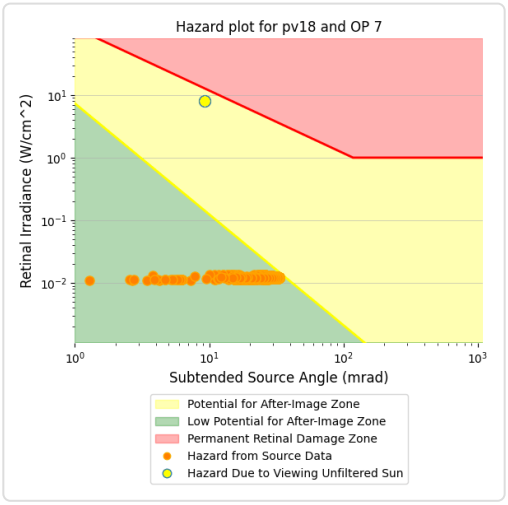
PV18 and OP 7

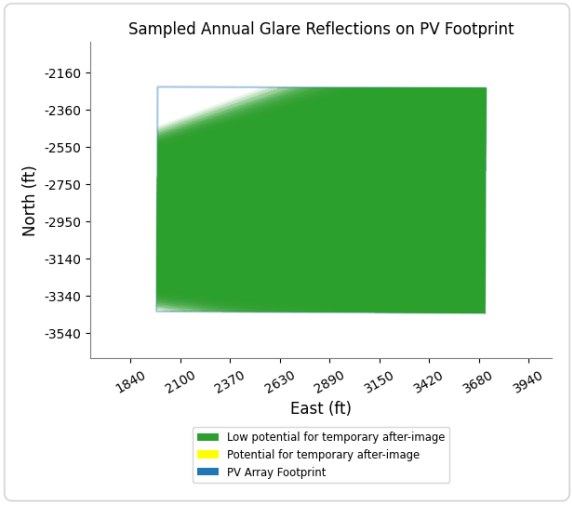
Yellow glare: none

Green glare: 544 min.





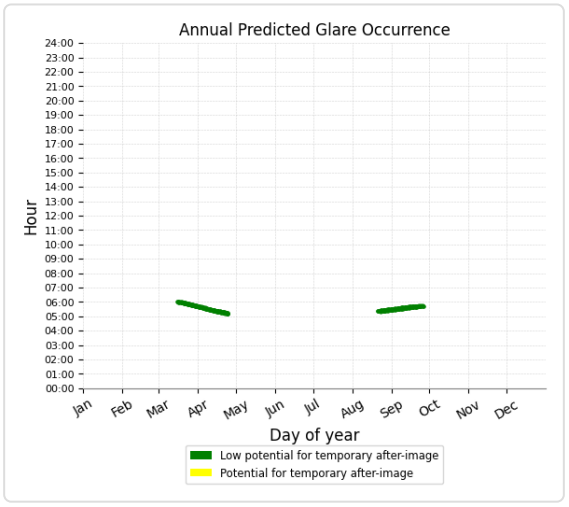


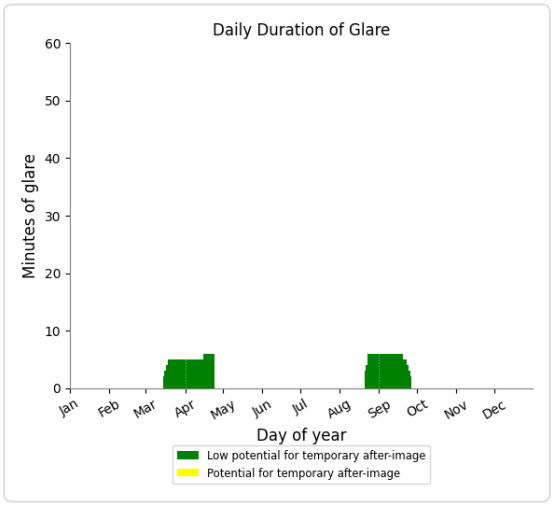


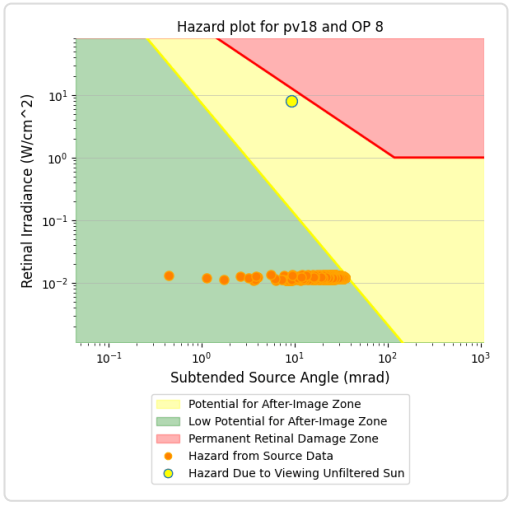
PV18 and OP 8

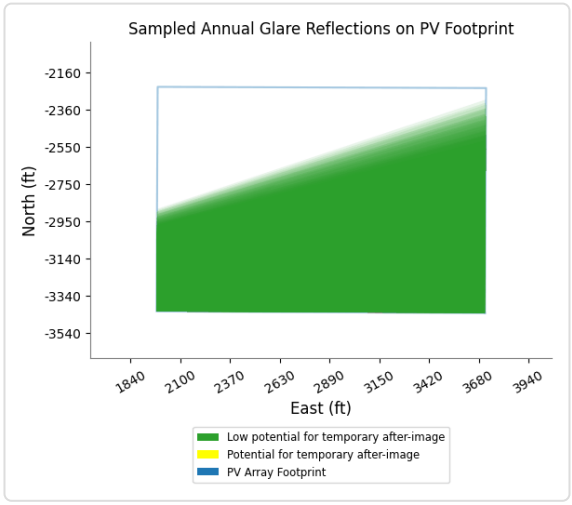
Yellow glare: none

Green glare: 410 min.



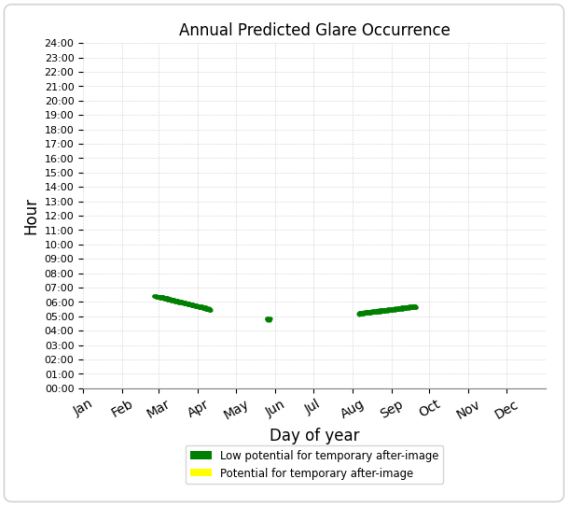


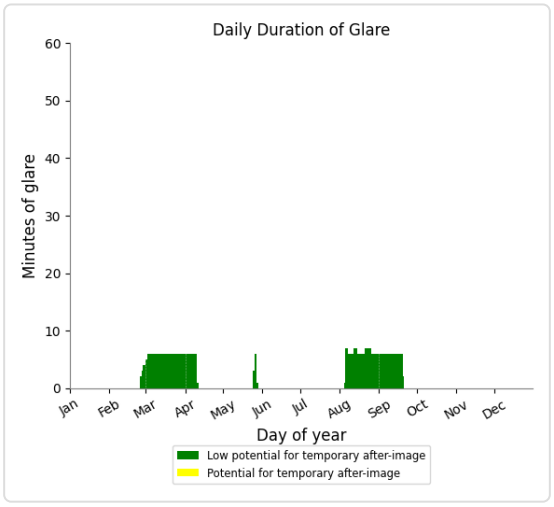


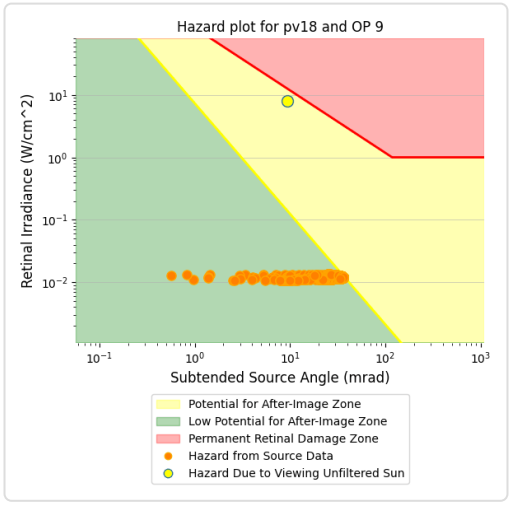


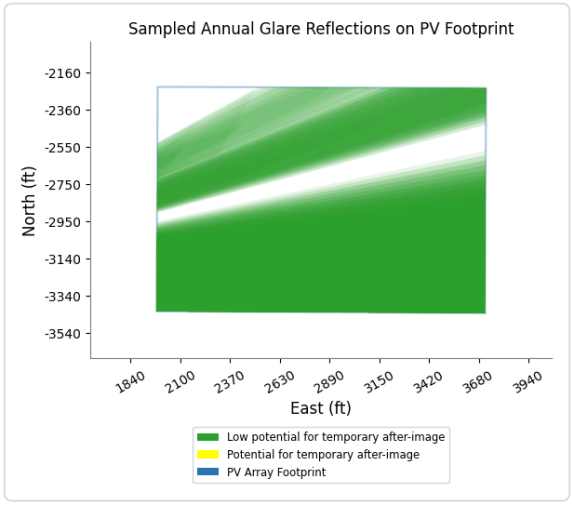
PV18 and OP 9

Yellow glare: none
Green glare: 557 min.









PV18 and OP 1

No glare found

PV18 and OP 2

No glare found

PV18 and OP 3

No glare found

PV18 and OP 5

No glare found

PV18 and OP 6

No glare found

PV18 and OP 10

No glare found

PV18 and OP 11

No glare found

PV18 and OP 12

No glare found

PV18 and OP 13

No glare found

PV18 and OP 14

No glare found

PV18 and OP 15

No glare found

PV18 and OP 16

No glare found

PV18 and OP 17

No glare found

PV18 and OP 18

No glare found

PV18 and OP 19

No glare found

PV18 and 20-ATCT

No glare found

PV: PV19 potential temporary after-image

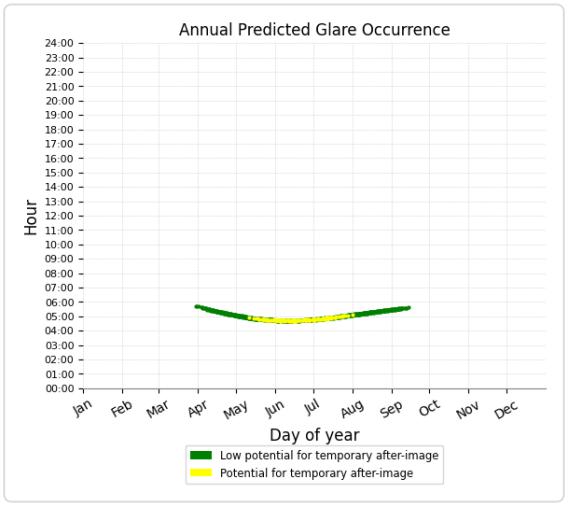
Receptor results ordered by category of glare

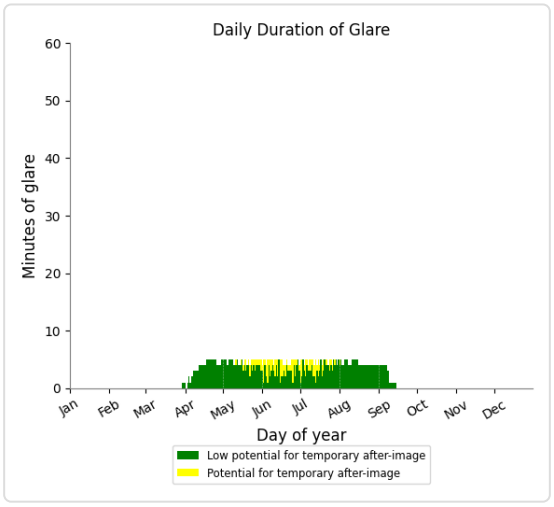
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	591	9.8	120	2.0
Route05	38	0.6	0	0.0
Route06	18	0.3	0	0.0
Route08	99	1.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 2	19	0.3	0	0.0
OP 8	63	1.1	0	0.0
OP 9	69	1.1	0	0.0
OP 1	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

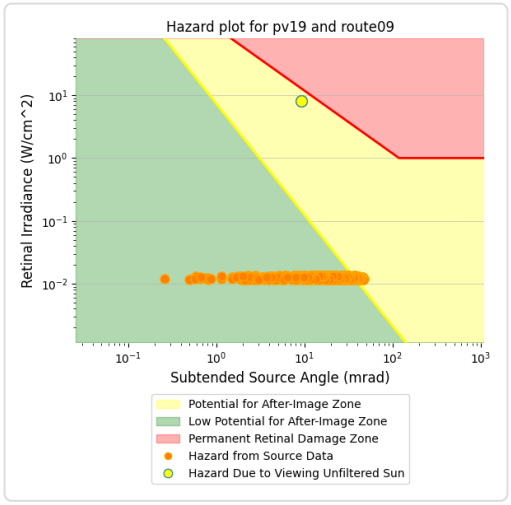
PV19 and Route: Route09

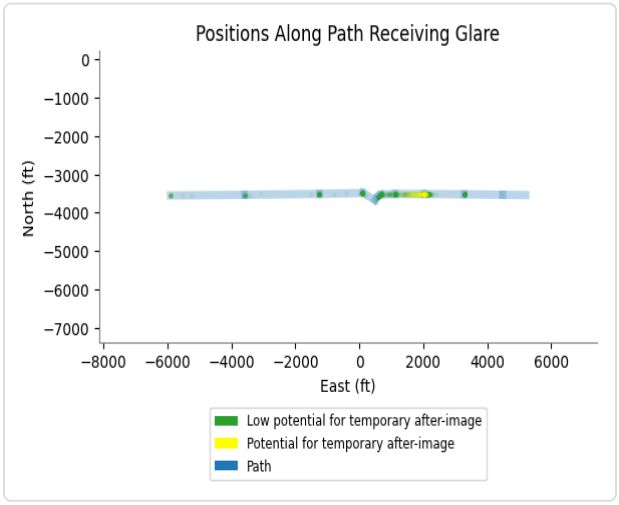
Yellow glare: 120 min.

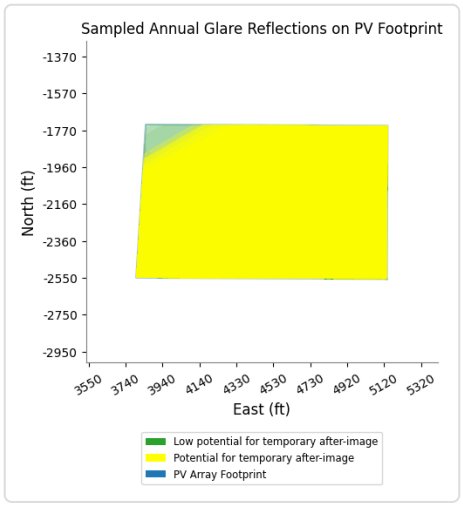
Green glare: 591 min.







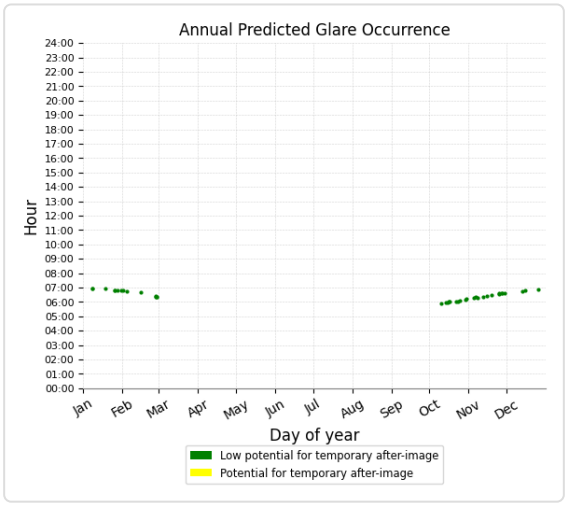


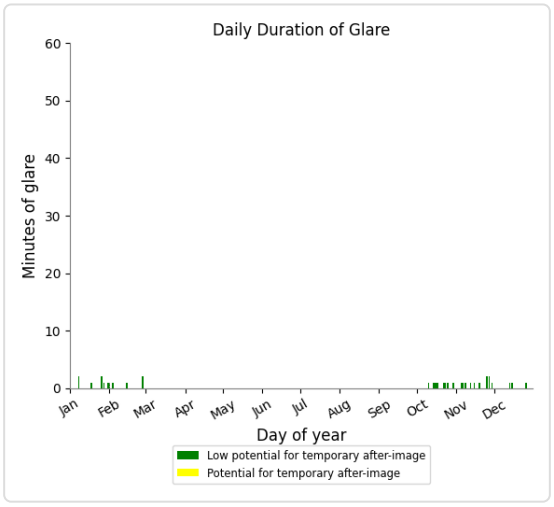


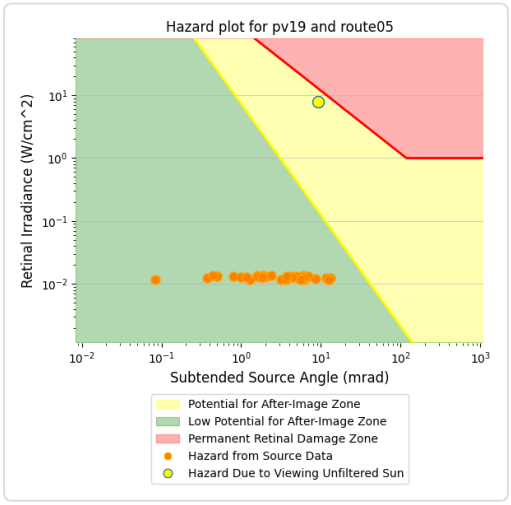
PV19 and Route: Route05

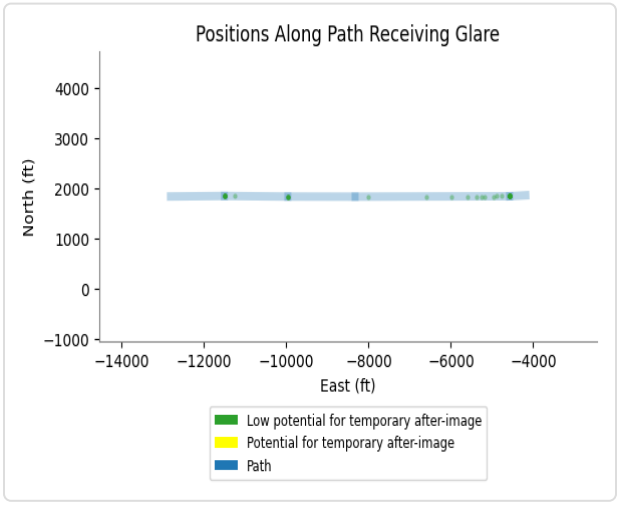
Yellow glare: none

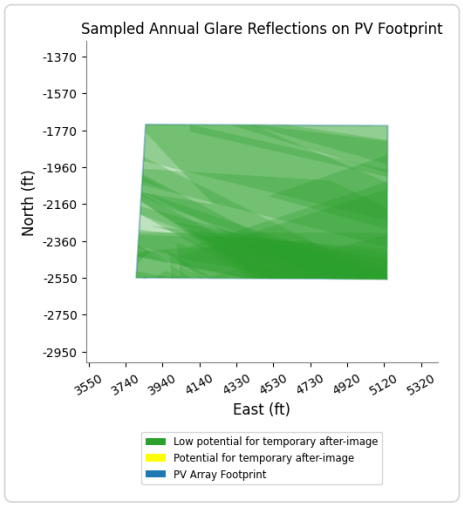
Green glare: 38 min.







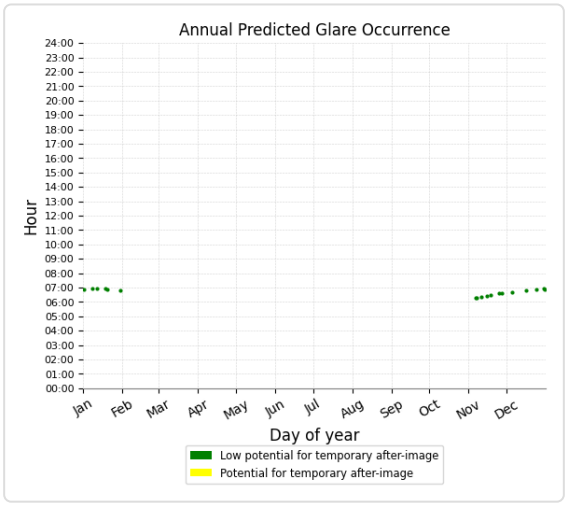


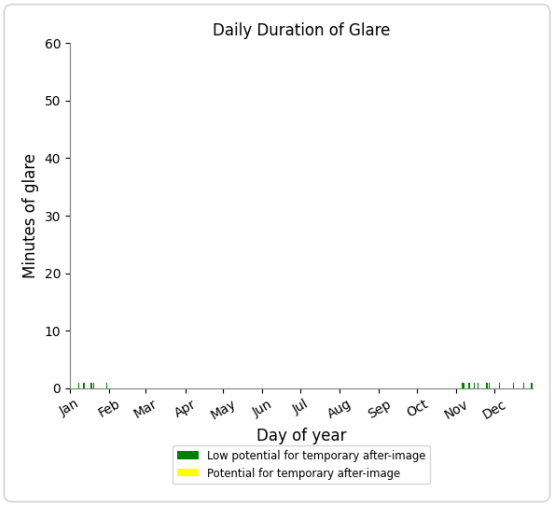


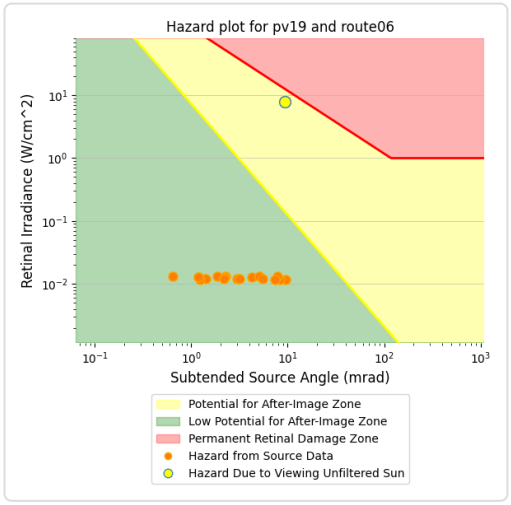
PV19 and Route: Route06

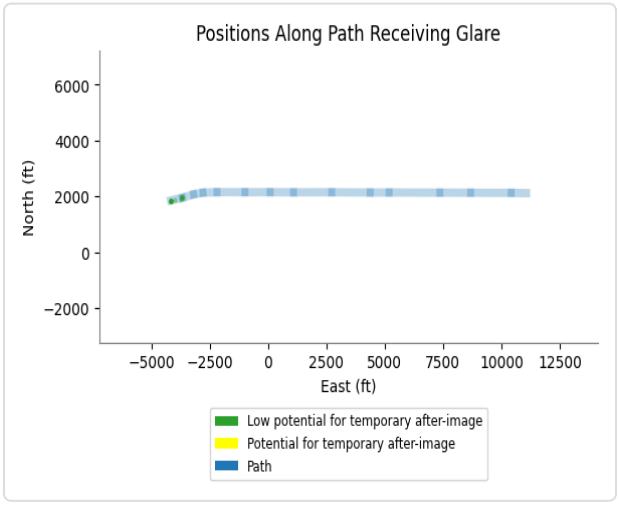
Yellow glare: none

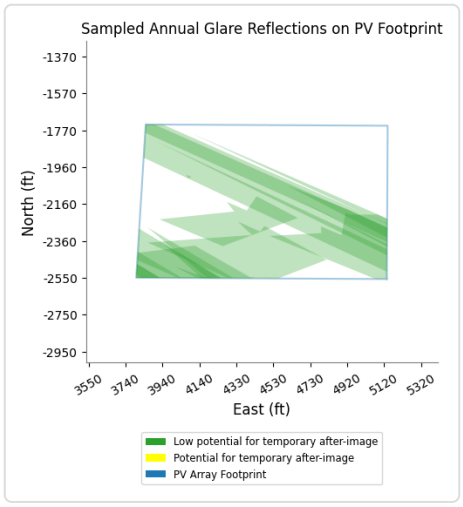
Green glare: 18 min.







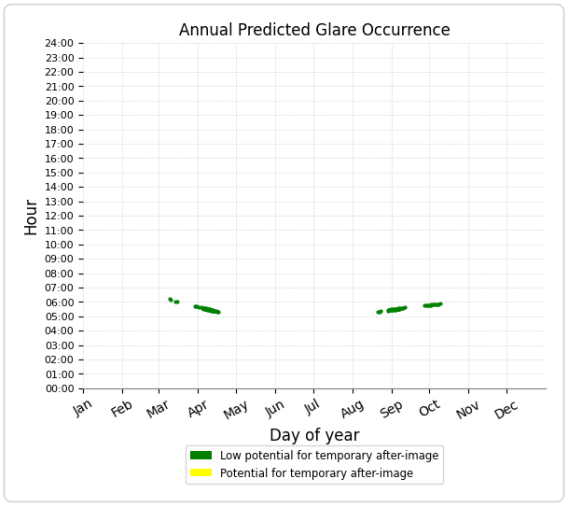


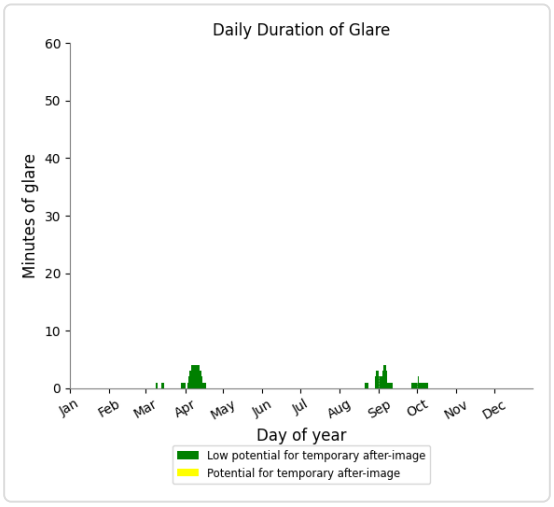


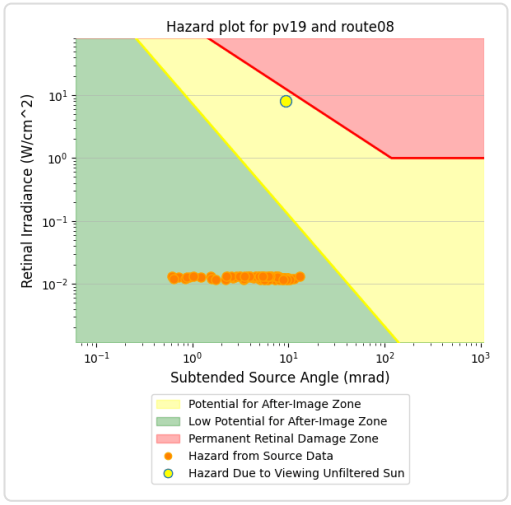
PV19 and Route: Route08

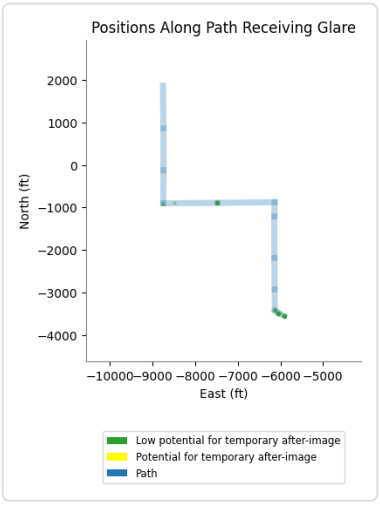
Yellow glare: none

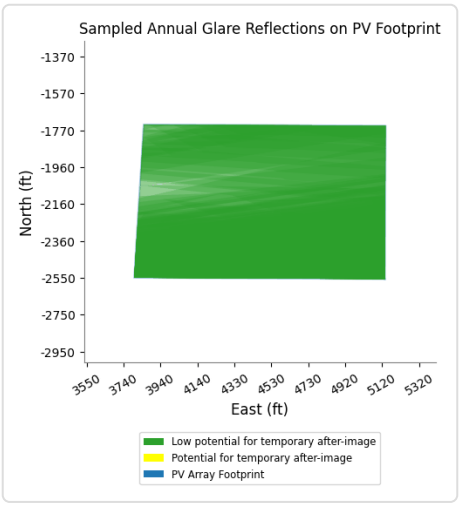
Green glare: 99 min.











PV19 and Route: Route01

No glare found

PV19 and Route: Route02

No glare found

PV19 and Route: Route04

No glare found

PV19 and Route: Route07

No glare found

PV19 and Route: Route10

No glare found

PV19 and Route: Route11

No glare found

PV19 and Route: Route12

No glare found

PV19 and FP: NJK08

No glare found

PV19 and FP: NJK12

No glare found

PV19 and FP: NJK26

No glare found

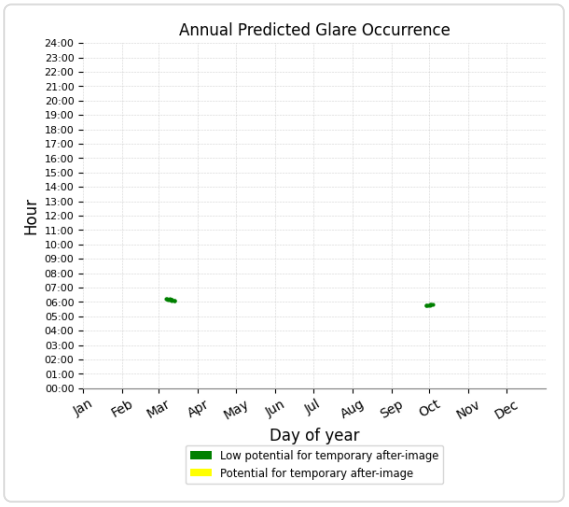
PV19 and FP: NJK30

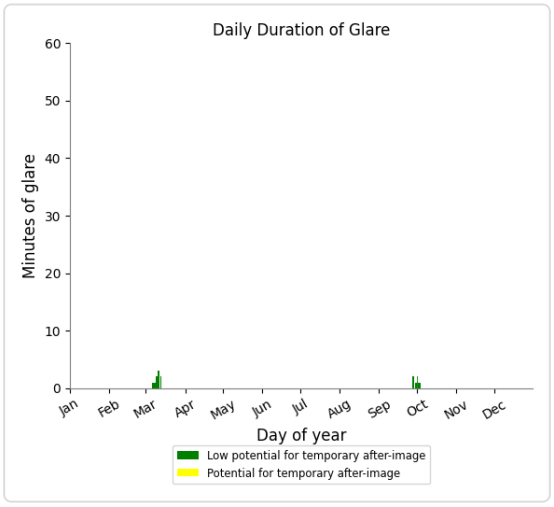
No glare found

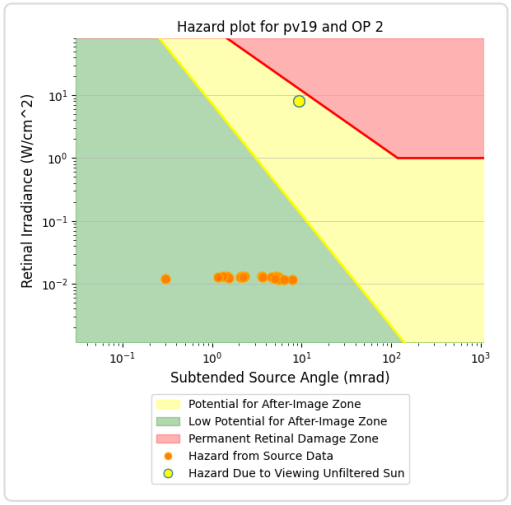
PV19 and OP 2

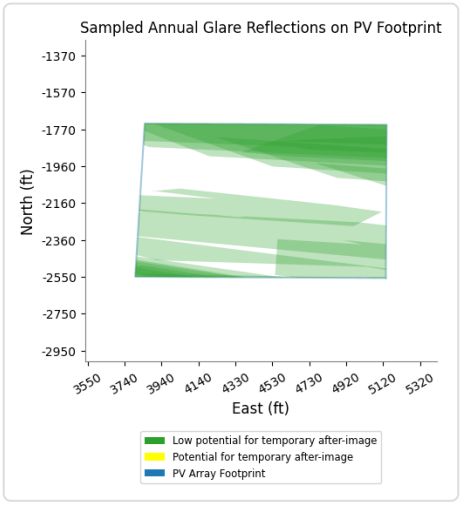
Yellow glare: none

Green glare: 19 min.





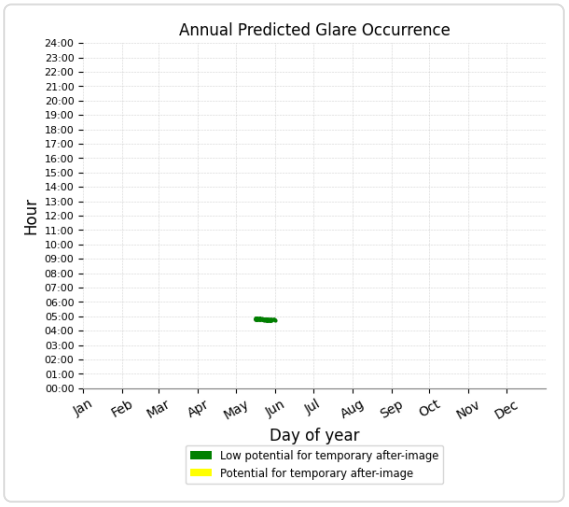


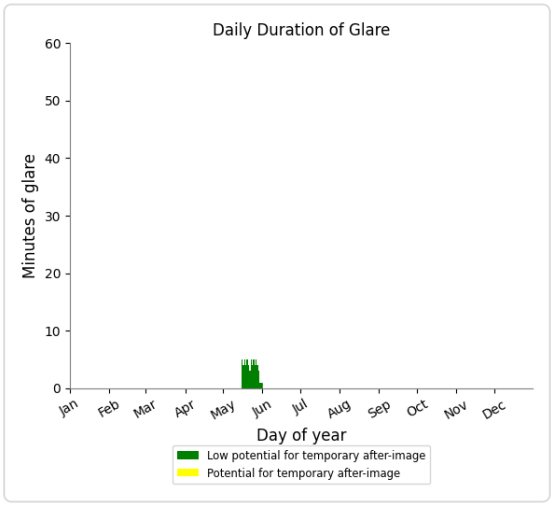


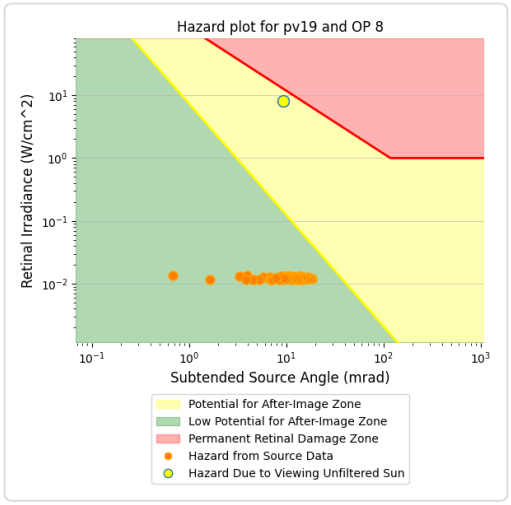
PV19 and OP 8

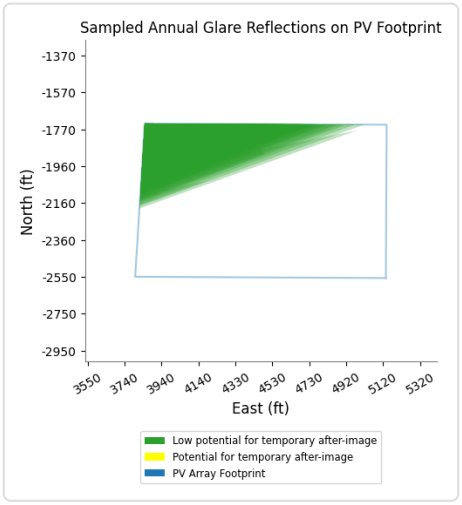
Yellow glare: none

Green glare: 63 min.



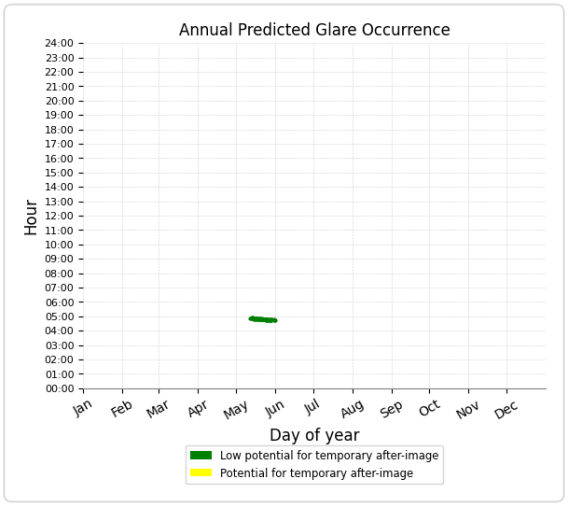


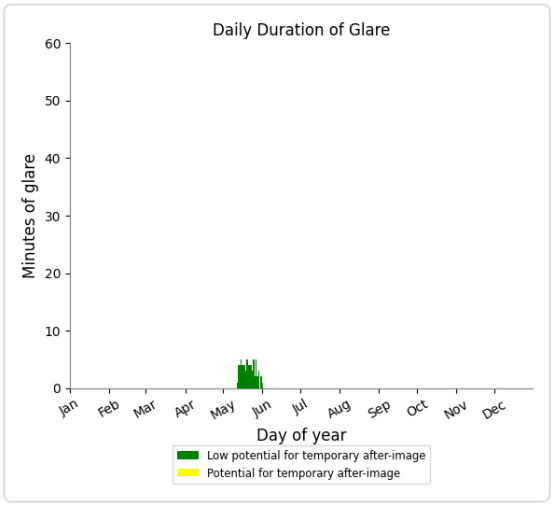


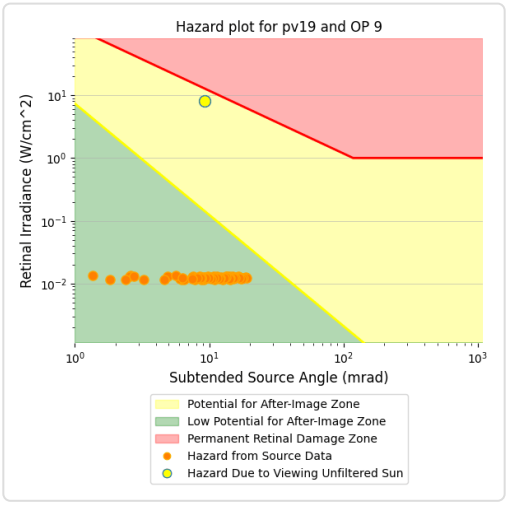


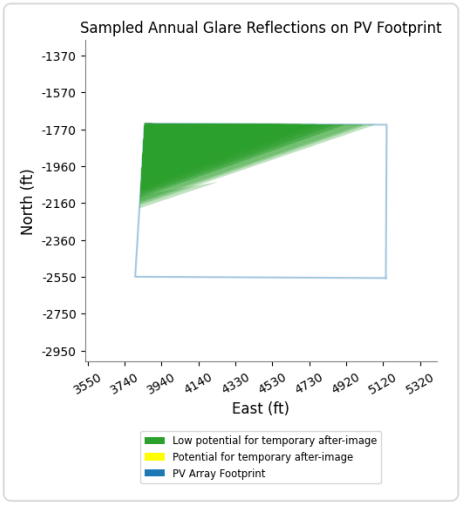
PV19 and OP 9

Yellow glare: none
Green glare: 69 min.









PV19 and OP 1

No glare found

PV19 and OP 3

No glare found

PV19 and OP 4

No glare found

PV19 and OP 5

No glare found

PV19 and OP 6

No glare found

PV19 and OP 7

No glare found

PV19 and OP 10

No glare found

PV19 and OP 11

No glare found

PV19 and OP 12

No glare found

PV19 and OP 13

No glare found

PV19 and OP 14

No glare found

PV19 and OP 15

No glare found

PV19 and OP 16

No glare found

PV19 and OP 17

No glare found

PV19 and OP 18

No glare found

PV19 and OP 19

No glare found

PV19 and 20-ATCT

No glare found

PV: PV20 potential temporary after-image

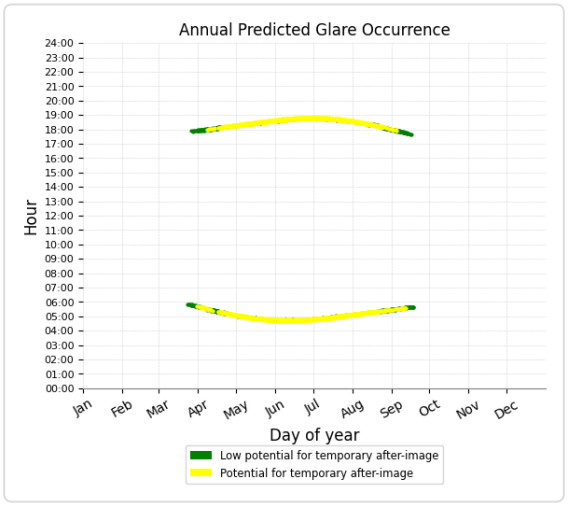
Receptor results ordered by category of glare

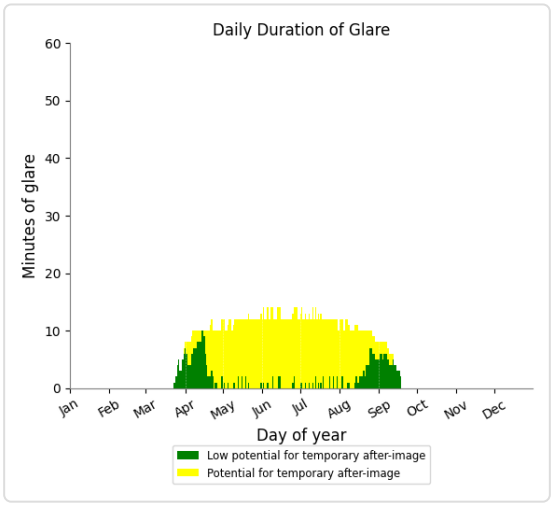
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	360	6.0	1,515	25.2
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 9	142	2.4	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 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

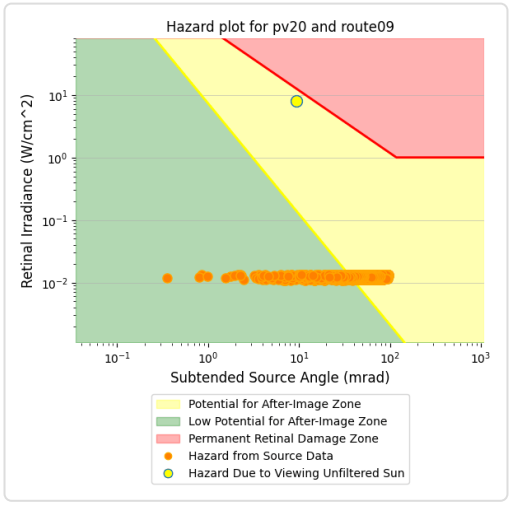
PV20 and Route: Route09

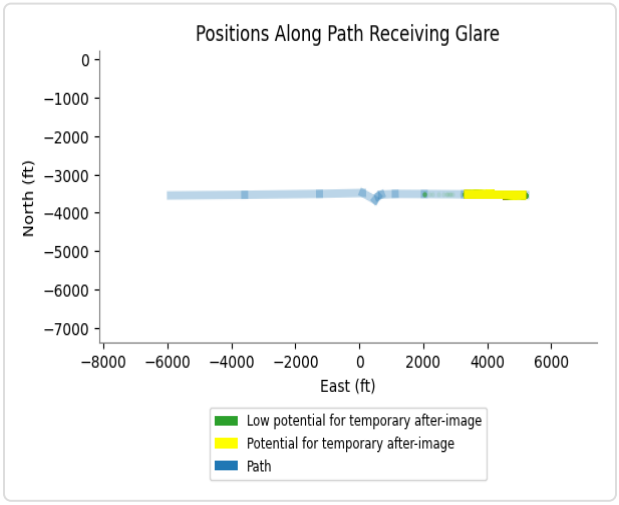
Yellow glare: 1,515 min.

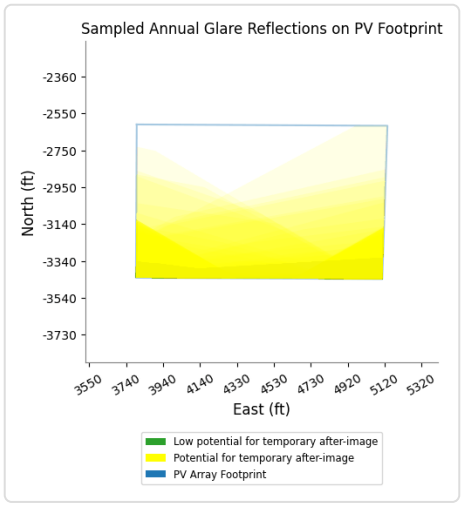
Green glare: 360 min.











PV20 and Route: Route01

No glare found

PV20 and Route: Route02

No glare found

PV20 and Route: Route04

No glare found

PV20 and Route: Route05

No glare found

PV20 and Route: Route06

No glare found

PV20 and Route: Route07

No glare found

PV20 and Route: Route08

No glare found

PV20 and Route: Route10

No glare found

PV20 and Route: Route11

No glare found

PV20 and Route: Route12

No glare found

PV20 and FP: NJK08

No glare found

PV20 and FP: NJK12

No glare found

PV20 and FP: NJK26

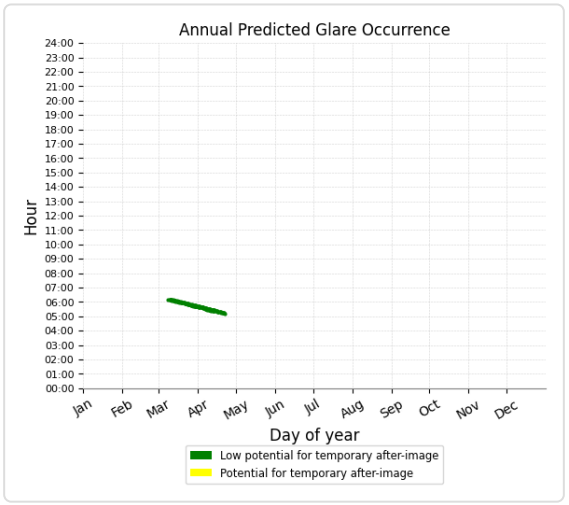
No glare found

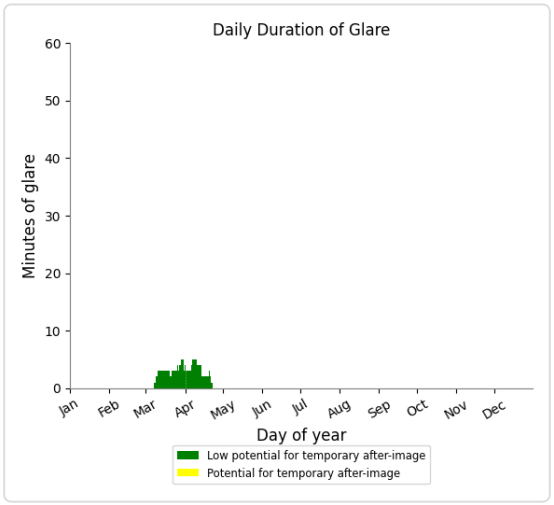
PV20 and FP: NJK30

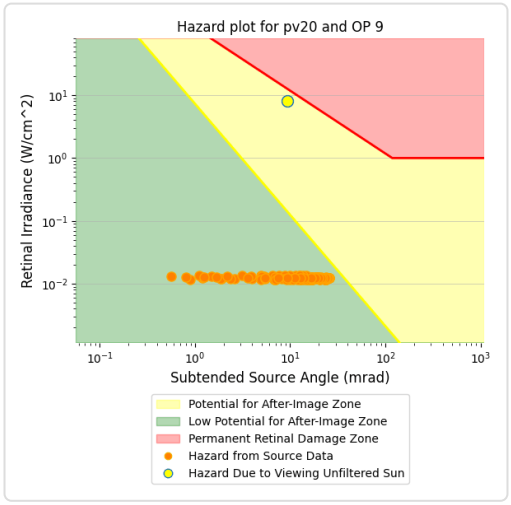
No glare found

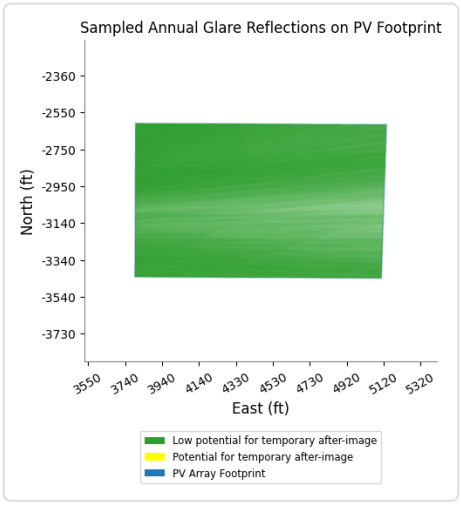
PV20 and OP 9

Yellow glare: none
Green glare: 142 min.









PV20 and OP 1

No glare found

PV20 and OP 2

No glare found

PV20 and OP 3

No glare found

PV20 and OP 4

No glare found

PV20 and OP 5

No glare found

PV20 and OP 6

No glare found

PV20 and OP 7

No glare found

PV20 and OP 8

No glare found

PV20 and OP 10

No glare found

PV20 and OP 11

No glare found

PV20 and OP 12

No glare found

PV20 and OP 13

No glare found

PV20 and OP 14

No glare found

PV20 and OP 15

No glare found

PV20 and OP 16

No glare found

PV20 and OP 17

No glare found

PV20 and OP 18

No glare found

PV20 and OP 19

No glare found

PV20 and 20-ATCT

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

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FORGESOLAR GLARE ANALYSIS

Project: **Big Rock Solar Nov 2023**
Site configuration: **Big Rock Solar May 2024 Group B**

Created 02 May, 2024
Updated 02 May, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 100 MW to 1 GW
Site ID 118223.18188

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 potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV21	SA tracking	SA tracking	485	8.1	26	0.4	-
PV22	SA tracking	SA tracking	0	0.0	0	0.0	-
PV23	SA tracking	SA tracking	1,760	29.3	1,592	26.5	-
PV24	SA tracking	SA tracking	1,355	22.6	1,920	32.0	-
PV25	SA tracking	SA tracking	2,117	35.3	292	4.9	-
PV26	SA tracking	SA tracking	869	14.5	0	0.0	-
PV27	SA tracking	SA tracking	1,774	29.6	328	5.5	-
PV28	SA tracking	SA tracking	2,255	37.6	12	0.2	-
PV29	SA tracking	SA tracking	1,258	21.0	0	0.0	-
PV30	SA tracking	SA tracking	1,530	25.5	0	0.0	-
PV31	SA tracking	SA tracking	885	14.8	0	0.0	-
PV32	SA tracking	SA tracking	612	10.2	0	0.0	-
PV33	SA tracking	SA tracking	991	16.5	0	0.0	-
PV34	SA tracking	SA tracking	163	2.7	0	0.0	-
PV35	SA tracking	SA tracking	1,021	17.0	8	0.1	-
PV36	SA tracking	SA tracking	257	4.3	204	3.4	-
PV37	SA tracking	SA tracking	295	4.9	1,266	21.1	-
PV38	SA tracking	SA tracking	566	9.4	383	6.4	-
PV39	SA tracking	SA tracking	175	2.9	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

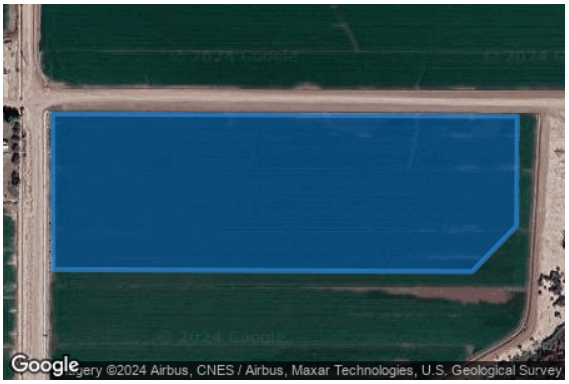
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	627	10.4	0	0.0
Route06	56	0.9	0	0.0
Route07	0	0.0	0	0.0
Route08	1,815	30.2	88	1.5
Route09	5,376	89.6	4,005	66.8
Route10	0	0.0	0	0.0
Route11	976	16.3	0	0.0
Route12	3,967	66.1	1,861	31.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	428	7.1	0	0.0
OP 4	418	7.0	51	0.8
OP 5	640	10.7	0	0.0
OP 6	0	0.0	0	0.0
OP 7	406	6.8	0	0.0
OP 8	780	13.0	0	0.0
OP 9	803	13.4	0	0.0
OP 10	0	0.0	0	0.0
OP 11	985	16.4	26	0.4
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	293	4.9	0	0.0
OP 16	0	0.0	0	0.0
OP 17	375	6.2	0	0.0
OP 18	423	7.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV21
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.765902	-115.715901	-37.23	5.00	-32.23
2	32.767023	-115.715903	-36.05	5.00	-31.05
3	32.767005	-115.711910	-40.60	5.00	-35.60
4	32.766215	-115.711914	-40.02	5.00	-35.02
5	32.765886	-115.712298	-40.06	5.00	-35.06

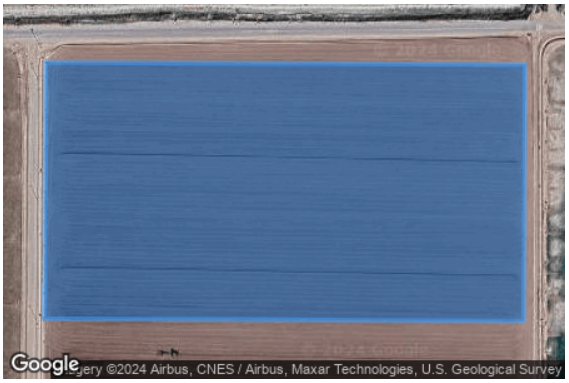
Name: PV22
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.763664	-115.715897	-37.83	5.00	-32.83
2	32.765802	-115.715901	-37.59	5.00	-32.59
3	32.765790	-115.713209	-38.70	5.00	-33.70
4	32.765095	-115.713214	-39.04	5.00	-34.04
5	32.763660	-115.714966	-38.78	5.00	-33.78

Name: PV23
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

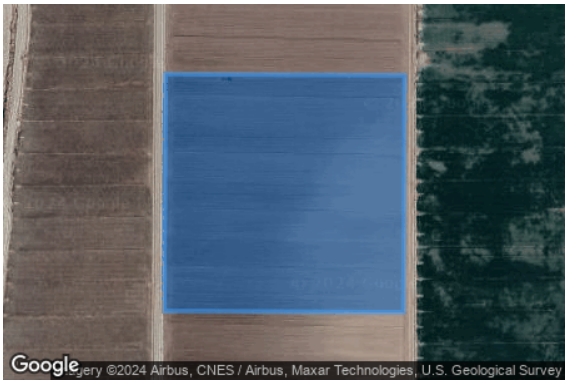
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.758099	-115.748696	-37.29	5.00	-32.29
2	32.751824	-115.748695	-33.76	5.00	-28.76
3	32.751834	-115.751163	-32.72	5.00	-27.72
4	32.752955	-115.751156	-32.33	5.00	-27.33
5	32.758107	-115.750528	-36.26	5.00	-31.26

Name: PV24
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.758092	-115.744383	-38.13	5.00	-33.13
2	32.756239	-115.744393	-35.84	5.00	-30.84
3	32.756256	-115.748512	-34.45	5.00	-29.45
4	32.758108	-115.748501	-35.68	5.00	-30.68

Name: PV25
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

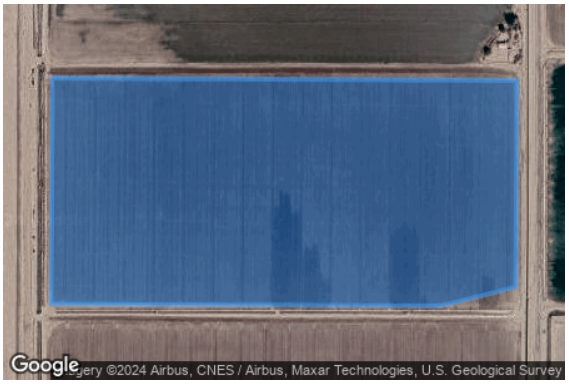


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.756092	-115.748513	-34.58	5.00	-29.58
2	32.756075	-115.744394	-35.89	5.00	-30.89
3	32.752660	-115.744414	-35.33	5.00	-30.33
4	32.752676	-115.748532	-33.46	5.00	-28.46

Name: PV26
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

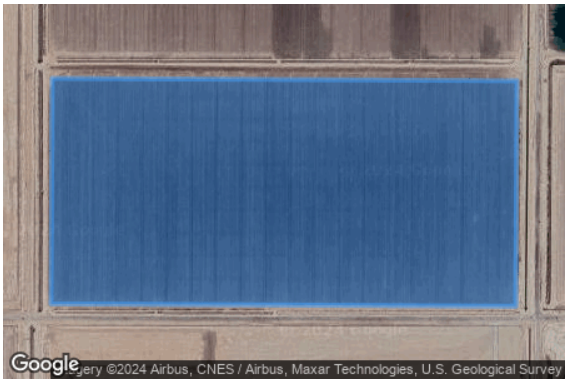
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.752512	-115.748533	-33.49	5.00	-28.49
2	32.752495	-115.744415	-34.59	5.00	-29.59
3	32.751375	-115.744421	-34.71	5.00	-29.71
4	32.751391	-115.748464	-33.19	5.00	-28.19

Name: PV27
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.755997	-115.715669	-39.02	5.00	-34.02
2	32.755962	-115.707684	-36.57	5.00	-31.57
3	32.752985	-115.707703	-35.02	5.00	-30.02
4	32.752712	-115.708993	-35.21	5.00	-30.21
5	32.752741	-115.715689	-36.40	5.00	-31.40

Name: PV28
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.752380	-115.715691	-40.06	5.00	-35.06
2	32.752345	-115.707706	-37.22	5.00	-32.22
3	32.749090	-115.707726	-34.39	5.00	-29.39
4	32.749125	-115.715711	-36.30	5.00	-31.30

Name: PV29
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.748796	-115.751685	-29.21	5.00	-24.21
2	32.749916	-115.751679	-31.39	5.00	-26.39
3	32.750484	-115.750918	-30.11	5.00	-25.11
4	32.750758	-115.749779	-32.02	5.00	-27.02
5	32.750755	-115.748921	-33.17	5.00	-28.17
6	32.748784	-115.748932	-31.55	5.00	-26.55

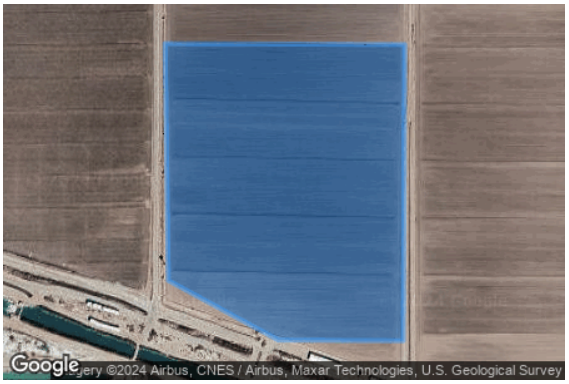
Name: PV30
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.745484	-115.748875	-30.78	5.00	-25.78
2	32.745491	-115.750567	-30.69	5.00	-25.69
3	32.746067	-115.751928	-29.50	5.00	-24.50
4	32.747188	-115.751922	-28.74	5.00	-23.74
5	32.748632	-115.751762	-29.28	5.00	-24.28
6	32.748620	-115.748857	-31.47	5.00	-26.47

Name: PV31
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.748845	-115.744438	-32.55	5.00	-27.55
2	32.748862	-115.748556	-30.71	5.00	-25.71
3	32.751111	-115.748543	-30.90	5.00	-25.90
4	32.751094	-115.744425	-33.39	5.00	-28.39

Name: PV32
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

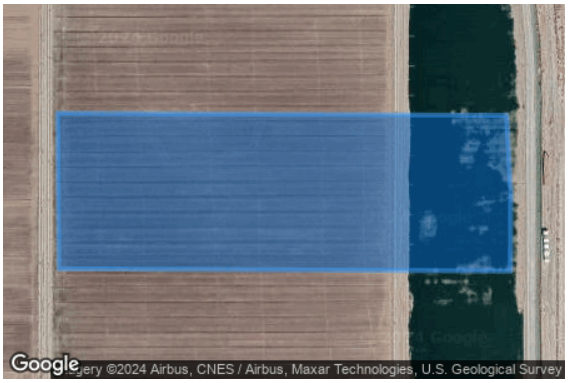


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.748698	-115.748557	-30.37	5.00	-25.37
2	32.748681	-115.744439	-31.53	5.00	-26.53
3	32.744418	-115.744464	-31.46	5.00	-26.46
4	32.744427	-115.746610	-29.30	5.00	-24.30
5	32.745284	-115.748501	-29.45	5.00	-24.45

Name: PV33
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

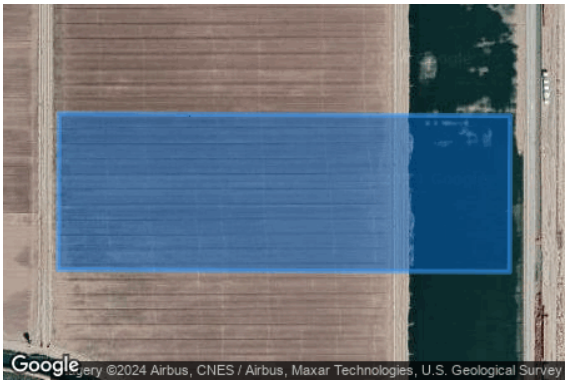
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.748365	-115.732054	-35.98	5.00	-30.98
2	32.748397	-115.739762	-25.80	5.00	-20.80
3	32.750646	-115.739786	-28.53	5.00	-23.53
4	32.750616	-115.732484	-37.85	5.00	-32.85
5	32.749207	-115.732113	-37.11	5.00	-32.11

Name: PV34
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.748233	-115.739761	-25.83	5.00	-20.83
2	32.748201	-115.732043	-36.06	5.00	-31.06
3	32.747072	-115.731974	-36.60	5.00	-31.60
4	32.745951	-115.731980	-37.94	5.00	-32.94
5	32.745984	-115.739737	-24.41	5.00	-19.41

Name: PV35
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

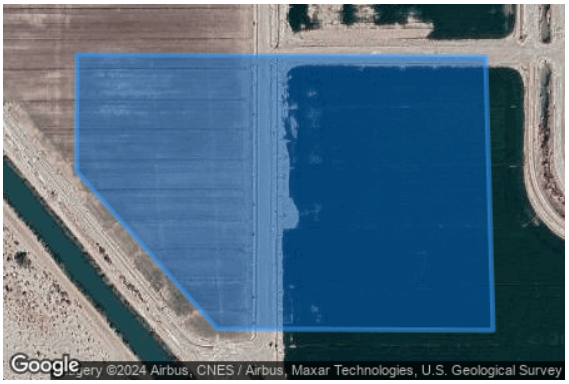


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.743658	-115.731994	-37.39	5.00	-32.39
2	32.743690	-115.739750	-23.85	5.00	-18.85
3	32.745939	-115.739737	-24.42	5.00	-19.42
4	32.745907	-115.731981	-37.32	5.00	-32.32

Name: PV36
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.743526	-115.739751	-23.19	5.00	-18.19
2	32.743494	-115.731995	-37.43	5.00	-32.43
3	32.740358	-115.732013	-34.80	5.00	-29.80
4	32.740376	-115.736358	-22.60	5.00	-17.60
5	32.742110	-115.738092	-22.70	5.00	-17.70
6	32.742684	-115.739756	-23.24	5.00	-18.24

Name: PV37
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

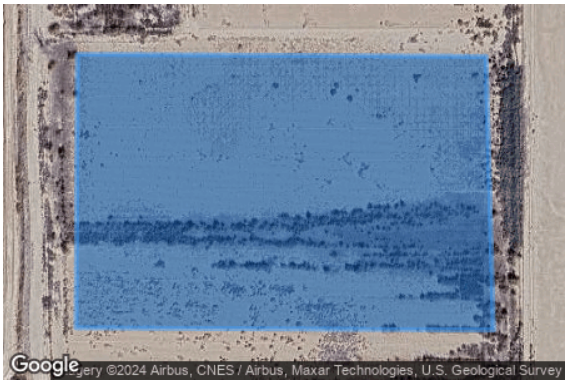


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.739340	-115.735514	-23.58	5.00	-18.58
2	32.740182	-115.735509	-24.11	5.00	-19.11
3	32.740167	-115.731997	-32.99	5.00	-27.99
4	32.738196	-115.731933	-32.37	5.00	-27.37
5	32.738206	-115.734307	-25.21	5.00	-20.21

Name: PV38
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.735685	-115.731074	-29.99	5.00	-24.99
2	32.736906	-115.732789	-29.48	5.00	-24.48
3	32.737376	-115.733334	-28.44	5.00	-23.44
4	32.738148	-115.733330	-30.29	5.00	-25.29
5	32.738124	-115.727620	-36.59	5.00	-31.59
6	32.737552	-115.727321	-35.12	5.00	-30.12
7	32.734766	-115.727261	-33.80	5.00	-28.80
8	32.734771	-115.728323	-32.43	5.00	-27.43

Name: PV39
Axis tracking: Single-axis rotation
Backtracking: Shade
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Light textured 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	32.734549	-115.726666	-30.61	5.00	-25.61
2	32.736519	-115.726654	-31.05	5.00	-26.05
3	32.736504	-115.723143	-29.73	5.00	-24.73
4	32.734534	-115.723079	-29.10	5.00	-24.10

Route Receptors

Name: Route01
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.781612	-115.707405	-38.47	7.60	-30.87
2	32.779286	-115.707392	-38.01	7.60	-30.41
3	32.777115	-115.707405	-37.41	7.60	-29.81
4	32.775659	-115.707400	-29.17	7.60	-21.57
5	32.773996	-115.707407	-31.94	7.60	-24.34

Name: Route02
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773996	-115.707407	-31.94	7.60	-24.34
2	32.773325	-115.707405	-31.14	7.60	-23.54
3	32.772457	-115.707405	-33.93	7.60	-26.33
4	32.771565	-115.707399	-33.56	7.60	-25.96
5	32.770066	-115.707397	-33.74	7.60	-26.14
6	32.769041	-115.707420	-33.24	7.60	-25.64
7	32.768296	-115.707425	-34.29	7.60	-26.69
8	32.767714	-115.707440	-33.75	7.60	-26.15
9	32.767032	-115.707455	-34.51	7.60	-26.91
10	32.766545	-115.707498	-36.12	7.60	-28.52
11	32.765400	-115.707499	-39.73	7.60	-32.13
12	32.764266	-115.707468	-37.65	7.60	-30.05
13	32.761319	-115.707359	-36.54	7.60	-28.94
14	32.758160	-115.707340	-36.79	7.60	-29.19

Name: Route04
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.783056	-115.690449	-41.67	7.60	-34.07
2	32.782746	-115.690423	-42.03	7.60	-34.43
3	32.781994	-115.690357	-39.42	7.60	-31.82
4	32.781386	-115.690332	-38.20	7.60	-30.60
5	32.778869	-115.690348	-38.34	7.60	-30.74
6	32.776376	-115.690364	-36.39	7.60	-28.79
7	32.774419	-115.690363	-31.14	7.60	-23.54

Name: Route05
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773078	-115.774795	-27.24	7.60	-19.64
2	32.773104	-115.770524	-32.45	7.60	-24.85
3	32.773070	-115.765509	-34.95	7.60	-27.35
4	32.773064	-115.760189	-37.51	7.60	-29.91
5	32.773086	-115.747972	-38.34	7.60	-30.74
6	32.773138	-115.746684	-36.78	7.60	-29.18

Name: Route06
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773138	-115.746684	-36.78	7.60	-29.18
2	32.773403	-115.745039	-36.46	7.60	-28.86
3	32.773741	-115.743478	-37.37	7.60	-29.77
4	32.773907	-115.742155	-37.18	7.60	-29.58
5	32.773956	-115.740207	-37.16	7.60	-29.56
6	32.773954	-115.736309	-34.96	7.60	-27.36
7	32.773954	-115.732802	-33.40	7.60	-25.80
8	32.773940	-115.729532	-33.54	7.60	-25.94
9	32.773946	-115.724211	-40.50	7.60	-32.90
10	32.773923	-115.718857	-38.49	7.60	-30.89
11	32.773926	-115.716214	-36.70	7.60	-29.10
12	32.773910	-115.709131	-32.79	7.60	-25.19
13	32.773905	-115.704844	-32.87	7.60	-25.27
14	32.773894	-115.699185	-44.61	7.60	-37.01
15	32.773858	-115.697037	-58.11	7.60	-50.51

Name: Route07
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.774083	-115.696832	-59.25	7.60	-51.65
2	32.774088	-115.698627	-45.62	7.60	-38.02
3	32.774107	-115.702779	-34.99	7.60	-27.39
4	32.774117	-115.707932	-32.78	7.60	-25.18
5	32.774130	-115.710912	-32.86	7.60	-25.26
6	32.774140	-115.715797	-36.25	7.60	-28.65
7	32.774140	-115.721276	-40.57	7.60	-32.97
8	32.774138	-115.726543	-39.60	7.60	-32.00
9	32.774148	-115.731711	-35.85	7.60	-28.25
10	32.774141	-115.735834	-34.52	7.60	-26.92
11	32.774143	-115.739166	-35.71	7.60	-28.11
12	32.774139	-115.740903	-37.02	7.60	-29.42
13	32.774121	-115.741765	-37.32	7.60	-29.72
14	32.774025	-115.742816	-36.43	7.60	-28.83
15	32.773843	-115.743935	-36.54	7.60	-28.94
16	32.773576	-115.745174	-36.50	7.60	-28.90
17	32.773409	-115.746208	-36.90	7.60	-29.30
18	32.773340	-115.746937	-37.58	7.60	-29.98
19	32.773289	-115.748463	-36.70	7.60	-29.10

Name: Route08
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.773178	-115.761580	-36.92	7.60	-29.32
2	32.770429	-115.761544	-37.91	7.60	-30.31
3	32.767709	-115.761543	-36.11	7.60	-28.51
4	32.765576	-115.761554	-34.20	7.60	-26.60
5	32.765603	-115.757420	-35.66	7.60	-28.06
6	32.765643	-115.753049	-37.07	7.60	-29.47
7	32.764727	-115.753071	-36.33	7.60	-28.73
8	32.762035	-115.753069	-33.79	7.60	-26.19
9	32.760003	-115.753047	-35.47	7.60	-27.87
10	32.758657	-115.753037	-32.40	7.60	-24.80
11	32.758470	-115.752767	-33.34	7.60	-25.74
12	32.758299	-115.752313	-35.56	7.60	-27.96

Name: Route09
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.758299	-115.752313	-35.56	7.60	-27.96
2	32.758343	-115.744757	-37.43	7.60	-29.83
3	32.758411	-115.737144	-37.62	7.60	-30.02
4	32.758477	-115.732757	-33.98	7.60	-26.38
5	32.757971	-115.731483	-36.52	7.60	-28.92
6	32.758230	-115.731186	-35.61	7.60	-28.01
7	32.758360	-115.730838	-38.69	7.60	-31.09
8	32.758407	-115.729442	-37.83	7.60	-30.23
9	32.758400	-115.726483	-37.57	7.60	-29.97
10	32.758379	-115.722417	-37.95	7.60	-30.35
11	32.758347	-115.718509	-36.69	7.60	-29.09
12	32.758321	-115.716148	-37.86	7.60	-30.26

Name: Route10
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.791073	-115.733319	-41.31	7.60	-33.71
2	32.789227	-115.733304	-40.88	7.60	-33.28
3	32.788997	-115.733263	-39.46	7.60	-31.86
4	32.788783	-115.733222	-39.13	7.60	-31.53
5	32.788475	-115.733198	-39.14	7.60	-31.54
6	32.786957	-115.733224	-39.67	7.60	-32.07
7	32.783765	-115.733277	-40.79	7.60	-33.19
8	32.781554	-115.733315	-39.89	7.60	-32.29
9	32.778619	-115.733324	-40.33	7.60	-32.73
10	32.776451	-115.733303	-35.94	7.60	-28.34
11	32.775169	-115.733276	-37.93	7.60	-30.33
12	32.774030	-115.733242	-33.91	7.60	-26.31

Name: Route11
Path type: Two-way
Observer view angle: 50.0°

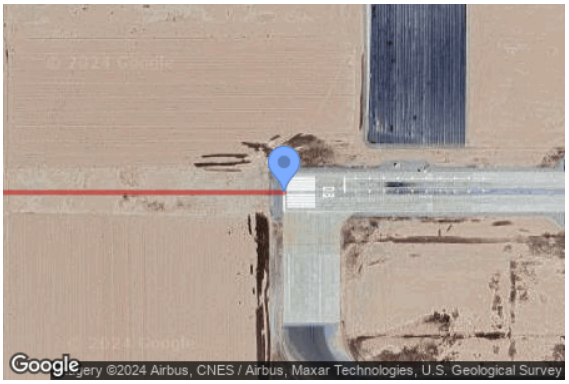
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.774030	-115.733242	-33.91	7.60	-26.31
2	32.771081	-115.733188	-35.92	7.60	-28.32
3	32.769728	-115.733204	-38.14	7.60	-30.54
4	32.767681	-115.733225	-40.05	7.60	-32.45
5	32.765727	-115.733228	-41.13	7.60	-33.53
6	32.764582	-115.733226	-40.60	7.60	-33.00
7	32.763165	-115.733226	-38.65	7.60	-31.05
8	32.761111	-115.733247	-36.97	7.60	-29.37
9	32.760624	-115.733224	-36.73	7.60	-29.13
10	32.760316	-115.733150	-33.77	7.60	-26.17
11	32.760022	-115.733007	-34.79	7.60	-27.19
12	32.759750	-115.732907	-35.86	7.60	-28.26
13	32.759284	-115.732868	-36.20	7.60	-28.60
14	32.758783	-115.732837	-36.44	7.60	-28.84
15	32.758633	-115.732778	-36.35	7.60	-28.75
16	32.758477	-115.732757	-33.98	7.60	-26.38

Name: Route12
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	32.757971	-115.731483	-36.52	7.60	-28.92
2	32.752093	-115.731458	-36.36	7.60	-28.76
3	32.751576	-115.731456	-36.20	7.60	-28.60
4	32.751220	-115.731121	-33.46	7.60	-25.86
5	32.749496	-115.731138	-38.51	7.60	-30.91
6	32.747645	-115.731170	-39.30	7.60	-31.70
7	32.744820	-115.731219	-38.75	7.60	-31.15
8	32.741767	-115.731273	-37.42	7.60	-29.82
9	32.739648	-115.731310	-36.41	7.60	-28.81
10	32.739328	-115.731264	-35.81	7.60	-28.21
11	32.739119	-115.731065	-35.56	7.60	-27.96
12	32.739044	-115.730899	-36.58	7.60	-28.98
13	32.739042	-115.727491	-36.74	7.60	-29.14
14	32.739039	-115.727061	-36.13	7.60	-28.53
15	32.739088	-115.725130	-35.32	7.60	-27.72
16	32.739158	-115.723752	-33.49	7.60	-25.89

Flight Path Receptors

Name: NJK08
Description: None
Threshold height: 50 ft
Direction: 90.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

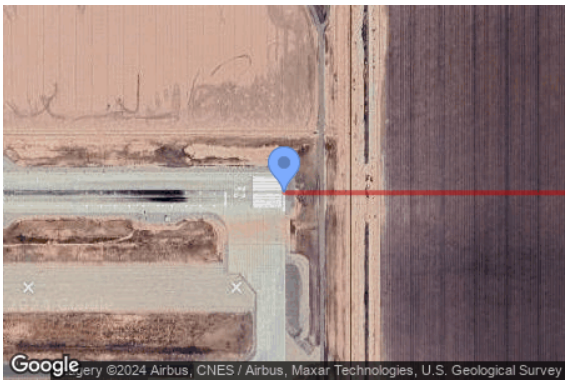


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829135	-115.687092	-50.00	50.00	0.00
Two-mile	32.829135	-115.721540	-42.90	596.30	553.40

Name: NJK12
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829764	-115.672093	-48.80	50.00	1.20
Two-mile	32.850208	-115.696452	-52.30	606.90	554.60

Name: NJK26
Description: None
Threshold height: 55 ft
Direction: 270.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.829156	-115.656186	-49.00	55.00	6.00
Two-mile	32.829156	-115.621738	-48.10	607.50	559.40

Name: NJK30
Description: None
Threshold height: 55 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	32.816530	-115.656494	-42.50	55.00	12.50
Two-mile	32.796089	-115.632135	-35.60	601.60	566.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	32.784232	-115.761123	-37.55	5.50
OP 2	2	32.765361	-115.759028	-27.47	5.50
OP 3	3	32.740398	-115.753116	-2.82	5.50
OP 4	4	32.758689	-115.743834	-28.81	5.50
OP 5	5	32.741795	-115.741975	-13.53	5.50
OP 6	6	32.770851	-115.733700	-30.33	5.50
OP 7	7	32.759604	-115.732076	-35.55	5.50
OP 8	8	32.758638	-115.731863	-32.10	5.50
OP 9	9	32.759149	-115.730843	-29.05	5.50
OP 10	10	32.789932	-115.727501	-41.53	5.50
OP 11	11	32.766648	-115.716886	-34.91	5.50
OP 12	12	32.775113	-115.715136	-39.10	5.50
OP 13	13	32.789968	-115.707252	-41.08	5.50
OP 14	14	32.779210	-115.702460	-34.14	5.50
OP 15	15	32.765555	-115.697826	-65.36	5.50
OP 16	16	32.790545	-115.696241	-37.01	5.50
OP 17	17	32.765415	-115.693275	-38.29	5.50
OP 18	18	32.769290	-115.692077	-41.60	5.50
OP 19	19	32.780102	-115.689035	-37.60	5.50
20-ATCT	20	32.824282	-115.672259	-46.30	90.00

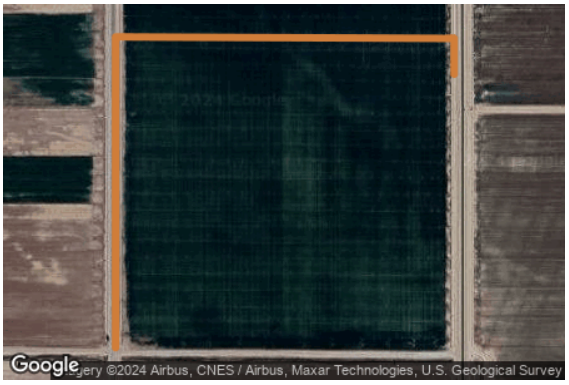
Map image of 20-ATCT

Obstruction Components

Name: Fence01
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.760064	-115.737290	-40.83
2	32.761688	-115.737291	-42.47
3	32.763409	-115.737292	-41.61
4	32.763408	-115.736213	-40.35
5	32.763407	-115.734803	-37.36
6	32.763407	-115.734000	-38.74
7	32.763406	-115.733370	-38.60

Name: Fence02
Top height: 7.0 ft

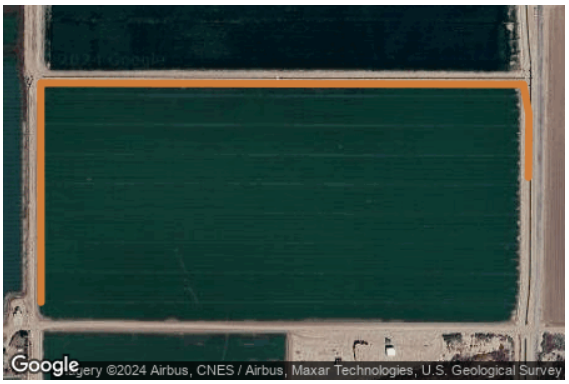


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.763663	-115.733184	-39.07
2	32.765888	-115.733185	-41.04
3	32.768137	-115.733186	-39.42
4	32.768133	-115.732034	-39.66
5	32.768127	-115.730534	-39.33
6	32.768122	-115.729043	-38.72
7	32.768117	-115.727959	-37.82
8	32.768115	-115.727368	-36.36
9	32.767600	-115.727366	-36.96

Name: Fence03
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.767598	-115.727076	-37.24
2	32.768343	-115.727075	-37.01
3	32.769085	-115.727077	-37.55
4	32.769077	-115.724853	-39.24
5	32.769064	-115.721295	-41.52
6	32.769053	-115.718423	-37.82
7	32.769045	-115.716243	-36.68
8	32.768318	-115.716247	-38.26
9	32.767459	-115.716252	-37.38

Name: Fence04
Top height: 7.0 ft



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.767479	-115.715969	-38.20
2	32.768732	-115.715971	-36.84
3	32.769999	-115.715973	-36.91
4	32.770642	-115.715974	-35.24
5	32.770637	-115.714084	-36.20
6	32.770631	-115.711407	-36.03
7	32.770625	-115.709145	-35.63
8	32.770622	-115.707681	-33.53
9	32.770189	-115.707586	-33.81
10	32.769283	-115.707595	-33.38

Name: Fence05
Top height: 7.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	32.769300	-115.707324	-33.43
2	32.769949	-115.707329	-33.72
3	32.770625	-115.707327	-33.62
4	32.770620	-115.705965	-36.59
5	32.770613	-115.704108	-40.17
6	32.770603	-115.701256	-46.01
7	32.770597	-115.699392	-45.83
8	32.770588	-115.696893	-38.57
9	32.769980	-115.696901	-39.07
10	32.769339	-115.697486	-38.67

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV21	SA tracking	SA tracking	485	8.1	26	0.4	-
PV22	SA tracking	SA tracking	0	0.0	0	0.0	-
PV23	SA tracking	SA tracking	1,760	29.3	1,592	26.5	-
PV24	SA tracking	SA tracking	1,355	22.6	1,920	32.0	-
PV25	SA tracking	SA tracking	2,117	35.3	292	4.9	-
PV26	SA tracking	SA tracking	869	14.5	0	0.0	-
PV27	SA tracking	SA tracking	1,774	29.6	328	5.5	-
PV28	SA tracking	SA tracking	2,255	37.6	12	0.2	-
PV29	SA tracking	SA tracking	1,258	21.0	0	0.0	-
PV30	SA tracking	SA tracking	1,530	25.5	0	0.0	-
PV31	SA tracking	SA tracking	885	14.8	0	0.0	-
PV32	SA tracking	SA tracking	612	10.2	0	0.0	-
PV33	SA tracking	SA tracking	991	16.5	0	0.0	-
PV34	SA tracking	SA tracking	163	2.7	0	0.0	-
PV35	SA tracking	SA tracking	1,021	17.0	8	0.1	-
PV36	SA tracking	SA tracking	257	4.3	204	3.4	-
PV37	SA tracking	SA tracking	295	4.9	1,266	21.1	-
PV38	SA tracking	SA tracking	566	9.4	383	6.4	-
PV39	SA tracking	SA tracking	175	2.9	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route04	0	0.0	0	0.0
Route05	627	10.4	0	0.0
Route06	56	0.9	0	0.0
Route07	0	0.0	0	0.0
Route08	1,815	30.2	88	1.5
Route09	5,376	89.6	4,005	66.8
Route10	0	0.0	0	0.0
Route11	976	16.3	0	0.0
Route12	3,967	66.1	1,861	31.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	428	7.1	0	0.0
OP 4	418	7.0	51	0.8
OP 5	640	10.7	0	0.0
OP 6	0	0.0	0	0.0
OP 7	406	6.8	0	0.0
OP 8	780	13.0	0	0.0
OP 9	803	13.4	0	0.0
OP 10	0	0.0	0	0.0
OP 11	985	16.4	26	0.4
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	293	4.9	0	0.0
OP 16	0	0.0	0	0.0
OP 17	375	6.2	0	0.0
OP 18	423	7.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV: PV21 potential temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 11	485	8.1	26	0.4
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 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV21 and Route: Route01

No glare found

PV21 and Route: Route02

No glare found

PV21 and Route: Route04

No glare found

PV21 and Route: Route05

No glare found

PV21 and Route: Route06

No glare found

PV21 and Route: Route07

No glare found

PV21 and Route: Route08

No glare found

PV21 and Route: Route09

No glare found

PV21 and Route: Route10

No glare found

PV21 and Route: Route11

No glare found

PV21 and Route: Route12

No glare found

PV21 and FP: NJK08

No glare found

PV21 and FP: NJK12

No glare found

PV21 and FP: NJK26

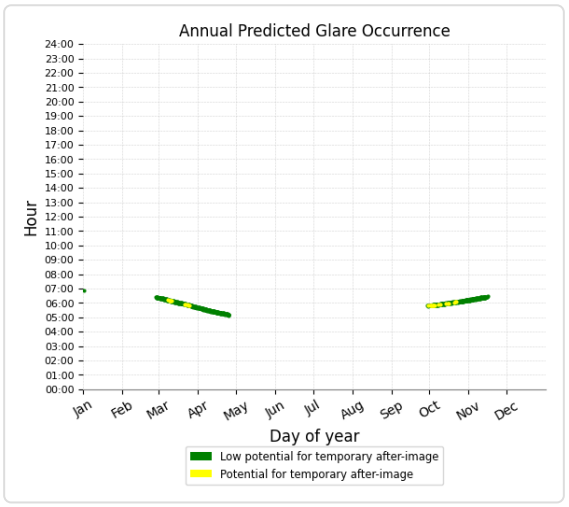
No glare found

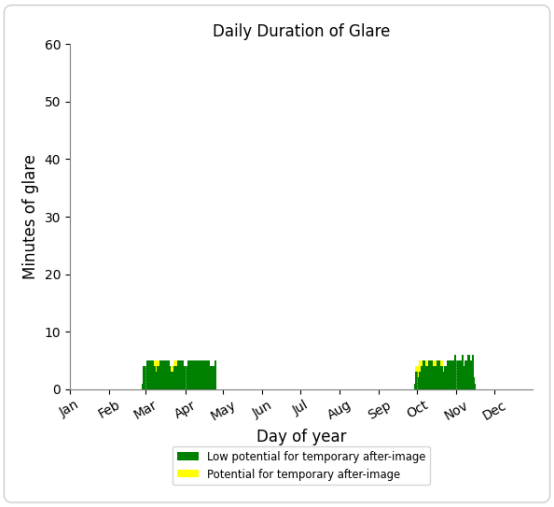
PV21 and FP: NJK30

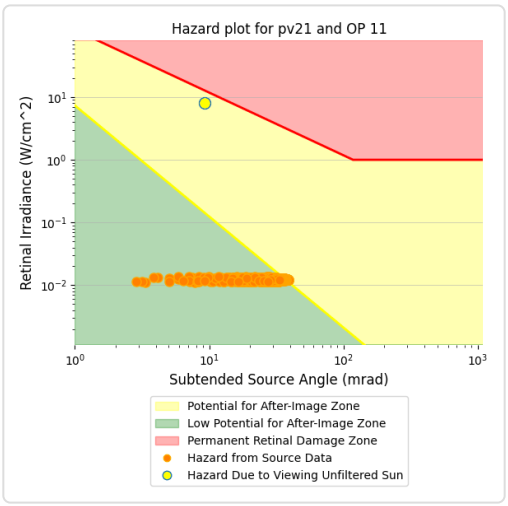
No glare found

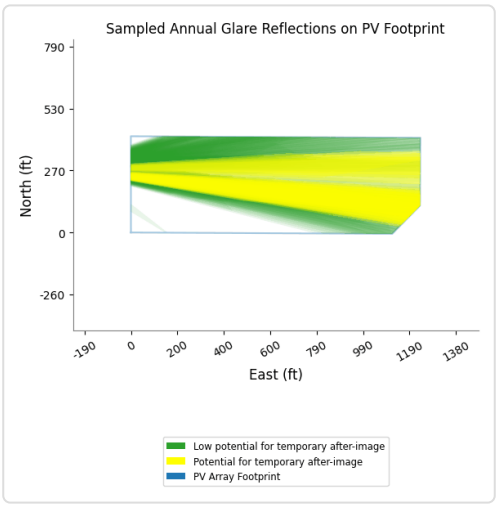
PV21 and OP 11

Yellow glare: 26 min.
Green glare: 485 min.









PV21 and OP 1

No glare found

PV21 and OP 2

No glare found

PV21 and OP 3

No glare found

PV21 and OP 4

No glare found

PV21 and OP 5

No glare found

PV21 and OP 6

No glare found

PV21 and OP 7

No glare found

PV21 and OP 8

No glare found

PV21 and OP 9

No glare found

PV21 and OP 10

No glare found

PV21 and OP 12

No glare found

PV21 and OP 13

No glare found

PV21 and OP 14

No glare found

PV21 and OP 15

No glare found

PV21 and OP 16

No glare found

PV21 and OP 17

No glare found

PV21 and OP 18

No glare found

PV21 and OP 19

No glare found

PV21 and 20-ATCT

No glare found

PV: PV22 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV22 and Route: Route01

No glare found

PV22 and Route: Route02

No glare found

PV22 and Route: Route04

No glare found

PV22 and Route: Route05

No glare found

PV22 and Route: Route06

No glare found

PV22 and Route: Route07

No glare found

PV22 and Route: Route08

No glare found

PV22 and Route: Route09

No glare found

PV22 and Route: Route10

No glare found

PV22 and Route: Route11

No glare found

PV22 and Route: Route12

No glare found

PV22 and FP: NJK08

No glare found

PV22 and FP: NJK12

No glare found

PV22 and FP: NJK26

No glare found

PV22 and FP: NJK30

No glare found

PV22 and OP 1

No glare found

PV22 and OP 2

No glare found

PV22 and OP 3

No glare found

PV22 and OP 4

No glare found

PV22 and OP 5

No glare found

PV22 and OP 6

No glare found

PV22 and OP 7

No glare found

PV22 and OP 8

No glare found

PV22 and OP 9

No glare found

PV22 and OP 10

No glare found

PV22 and OP 11

No glare found

PV22 and OP 12

No glare found

PV22 and OP 13

No glare found

PV22 and OP 14

No glare found

PV22 and OP 15

No glare found

PV22 and OP 16

No glare found

PV22 and OP 17

No glare found

PV22 and OP 18

No glare found

PV22 and OP 19

No glare found

PV22 and 20-ATCT

No glare found

PV: PV23 potential temporary after-image

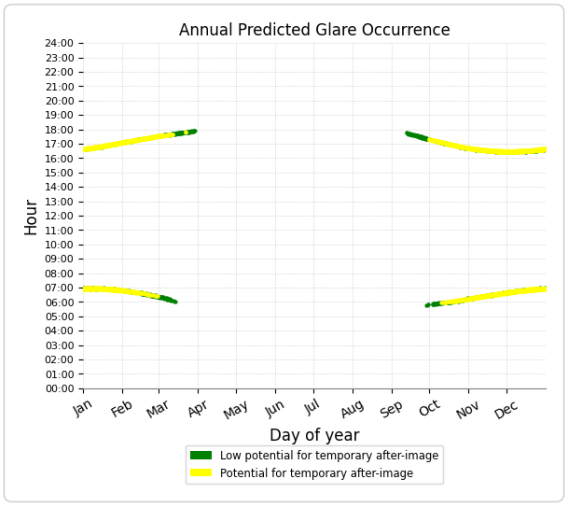
Receptor results ordered by category of glare

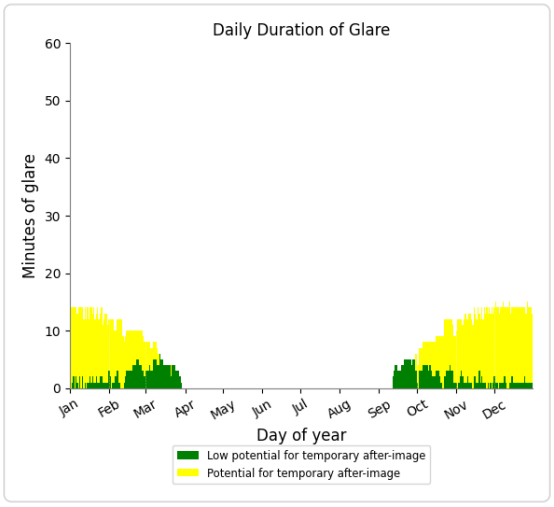
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	435	7.2	1,592	26.5
Route12	695	11.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	171	2.9	0	0.0
OP 7	146	2.4	0	0.0
OP 8	82	1.4	0	0.0
OP 9	104	1.7	0	0.0
OP 11	127	2.1	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 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

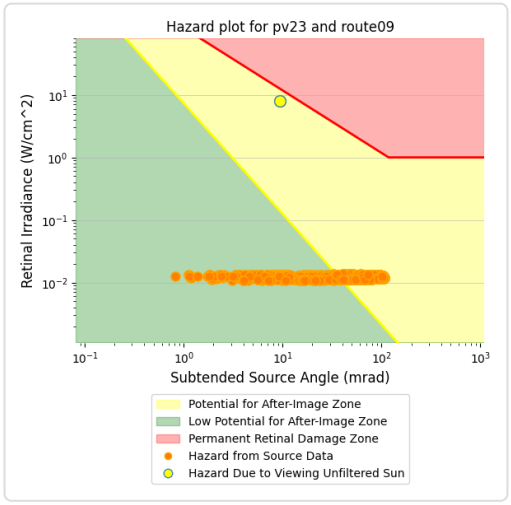
PV23 and Route: Route09

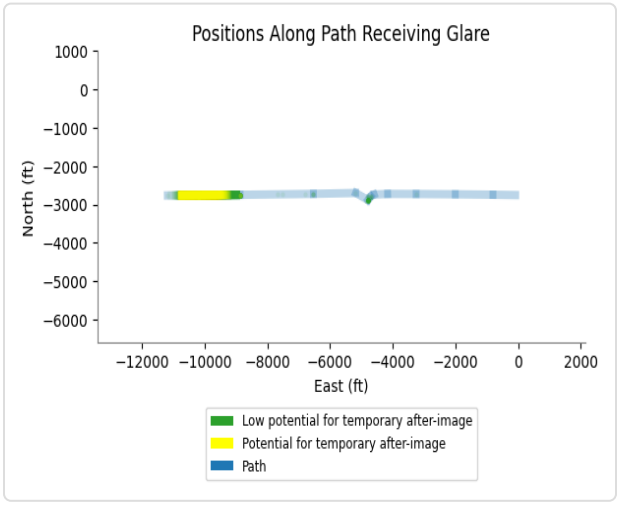
Yellow glare: 1,592 min.

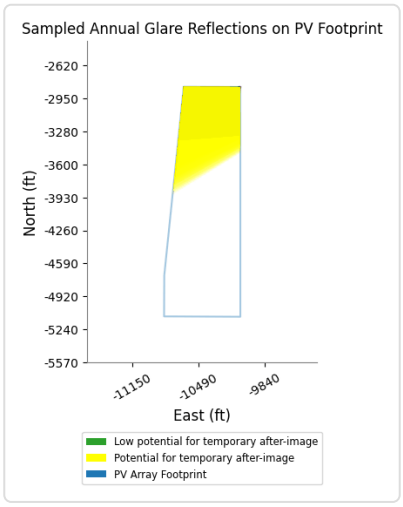
Green glare: 435 min.







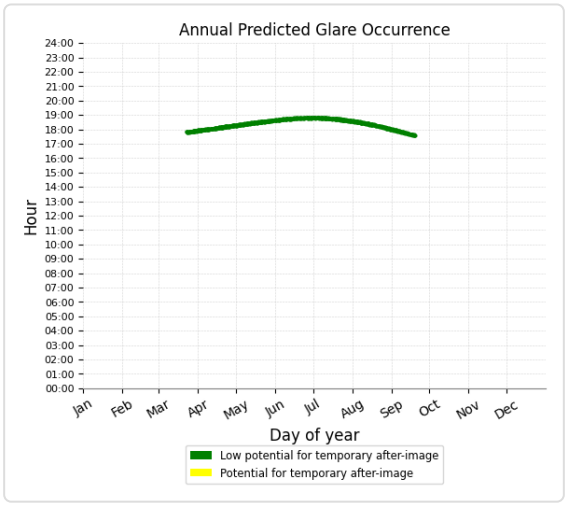


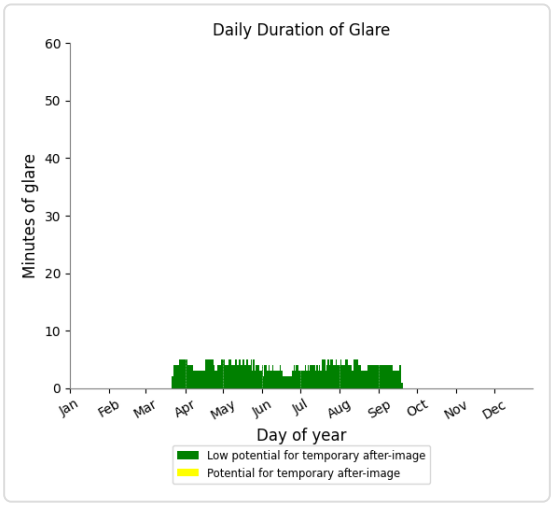


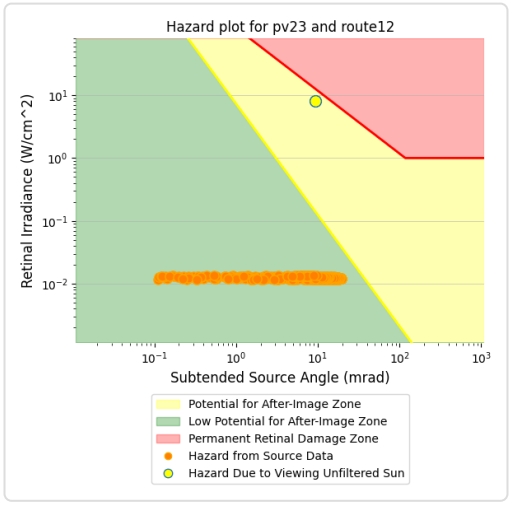
PV23 and Route: Route12

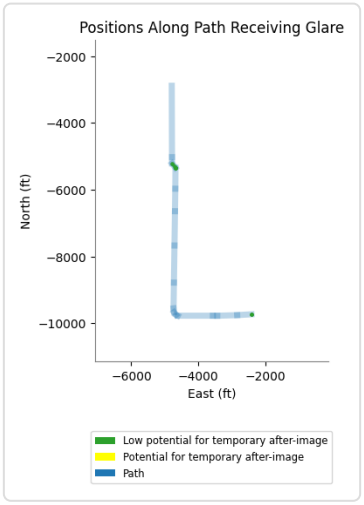
Yellow glare: none

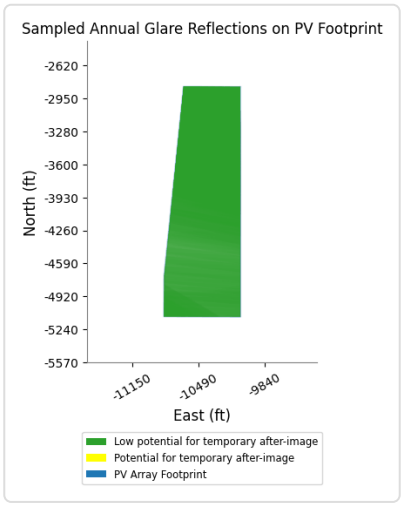
Green glare: 695 min.











PV23 and Route: Route01

No glare found

PV23 and Route: Route02

No glare found

PV23 and Route: Route04

No glare found

PV23 and Route: Route05

No glare found

PV23 and Route: Route06

No glare found

PV23 and Route: Route07

No glare found

PV23 and Route: Route08

No glare found

PV23 and Route: Route10

No glare found

PV23 and Route: Route11

No glare found

PV23 and FP: NJK08

No glare found

PV23 and FP: NJK12

No glare found

PV23 and FP: NJK26

No glare found

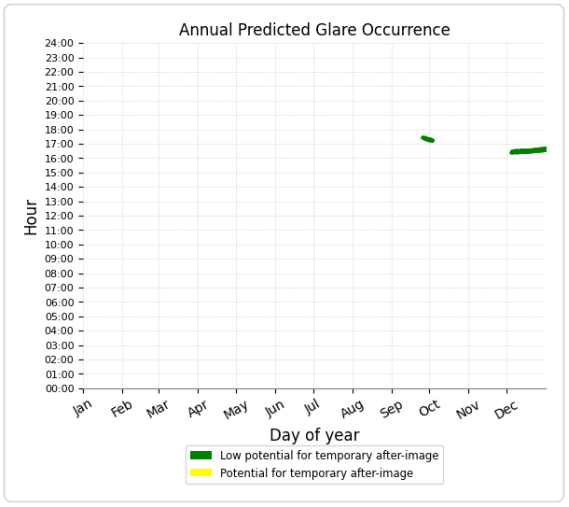
PV23 and FP: NJK30

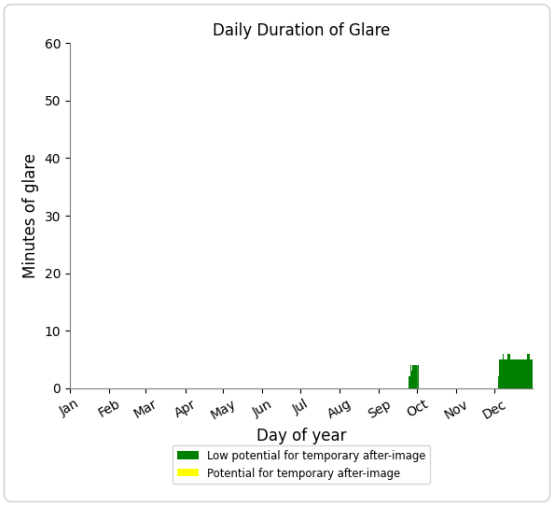
No glare found

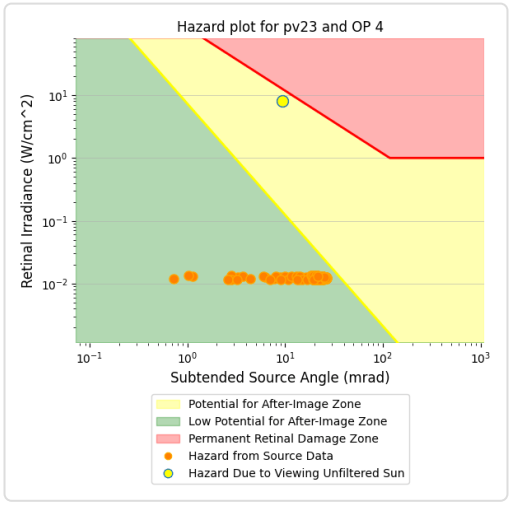
PV23 and OP 4

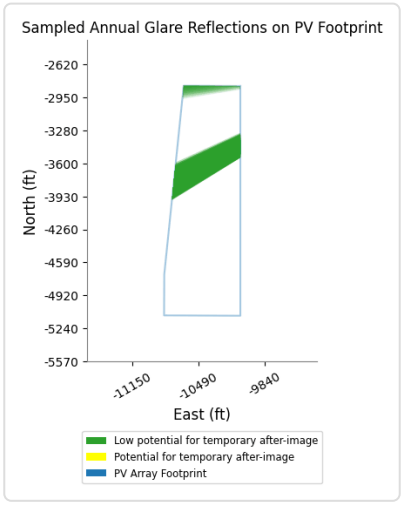
Yellow glare: none

Green glare: 171 min.





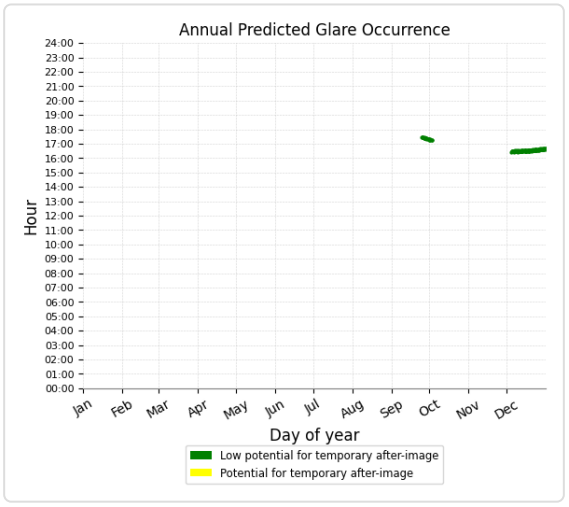


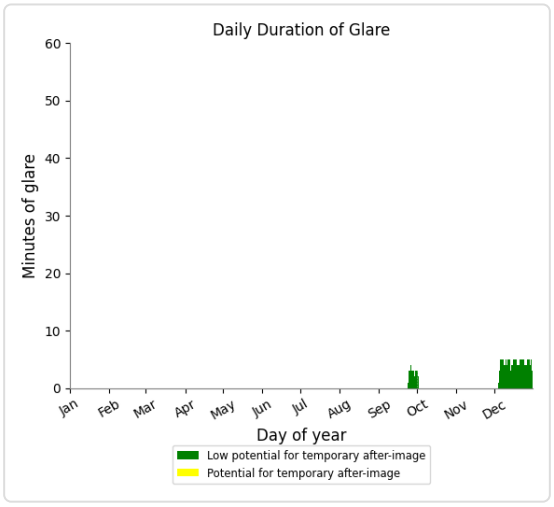


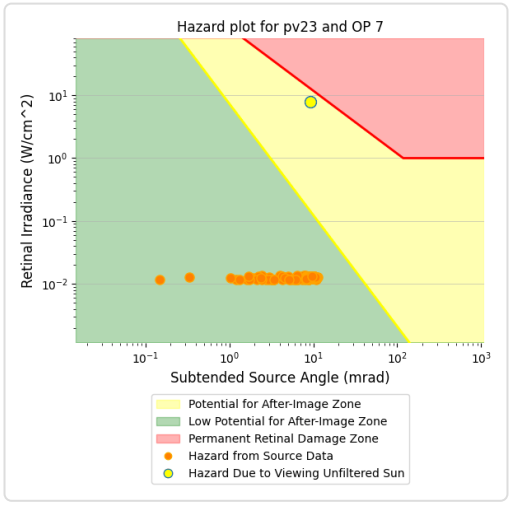
PV23 and OP 7

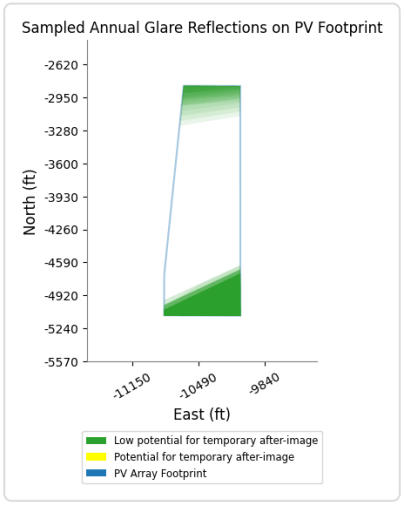
Yellow glare: none

Green glare: 146 min.





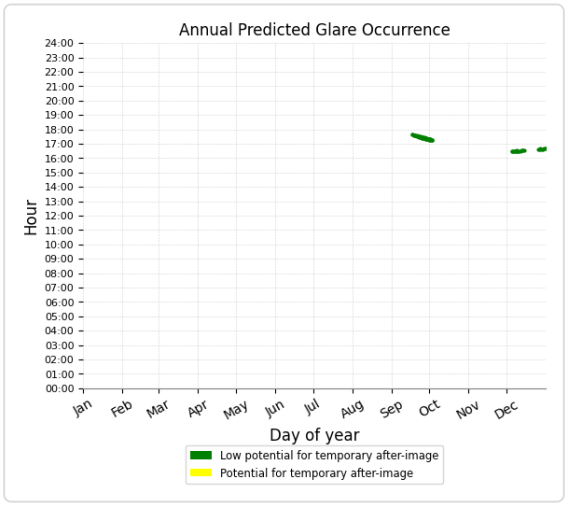


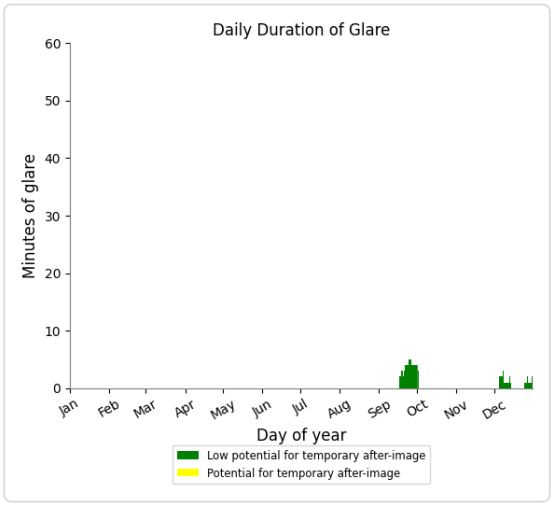


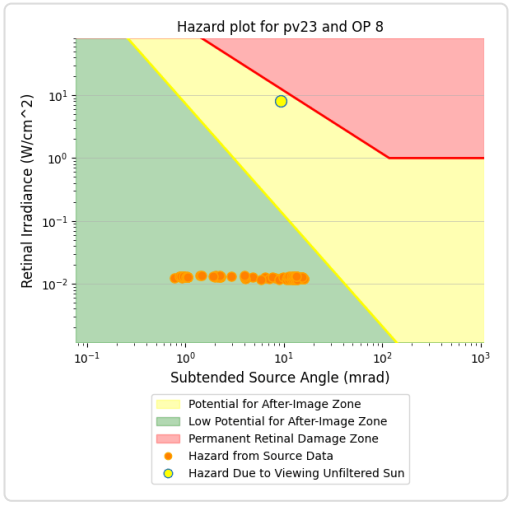
PV23 and OP 8

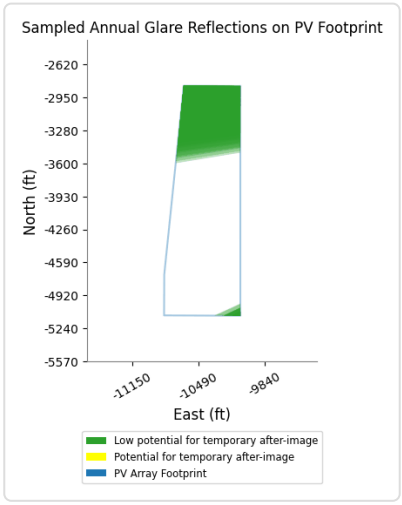
Yellow glare: none

Green glare: 82 min.





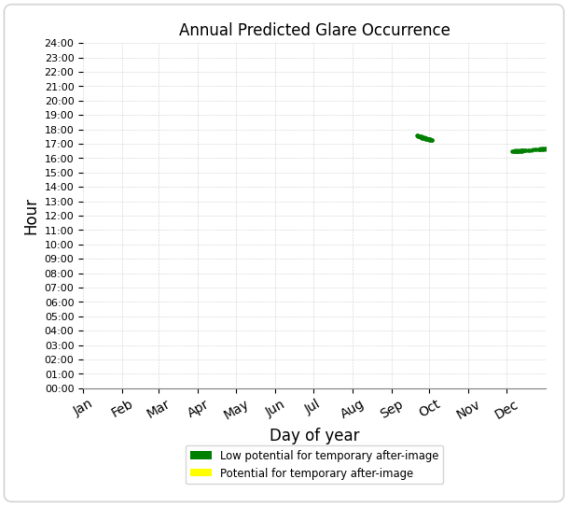


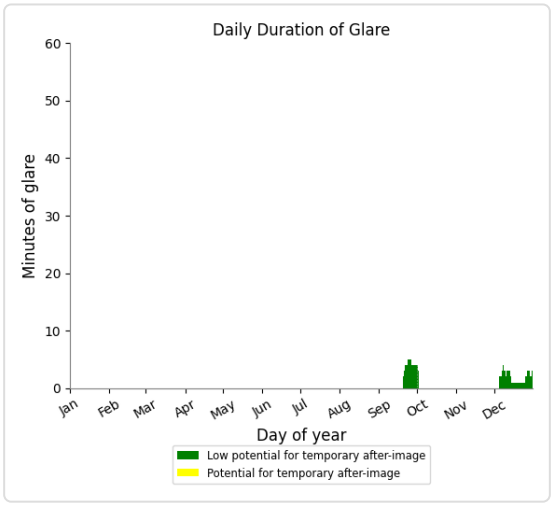


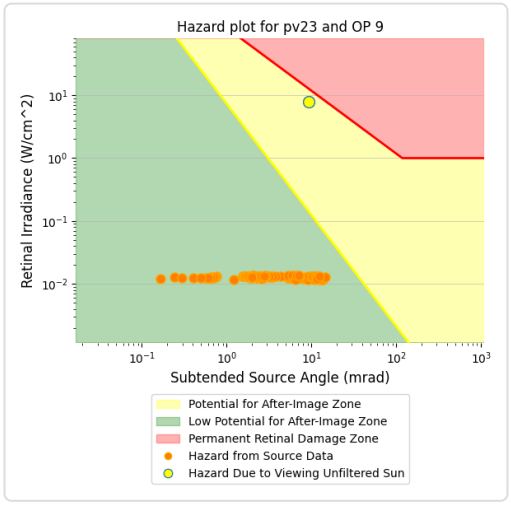
PV23 and OP 9

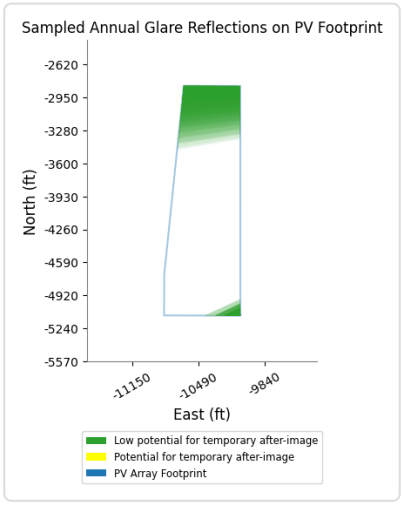
Yellow glare: none

Green glare: 104 min.



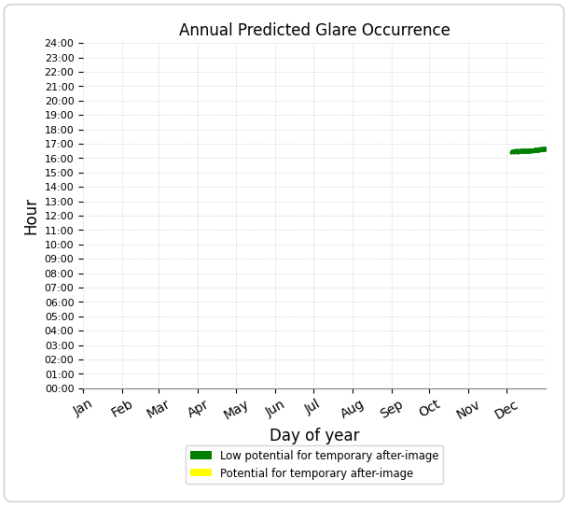


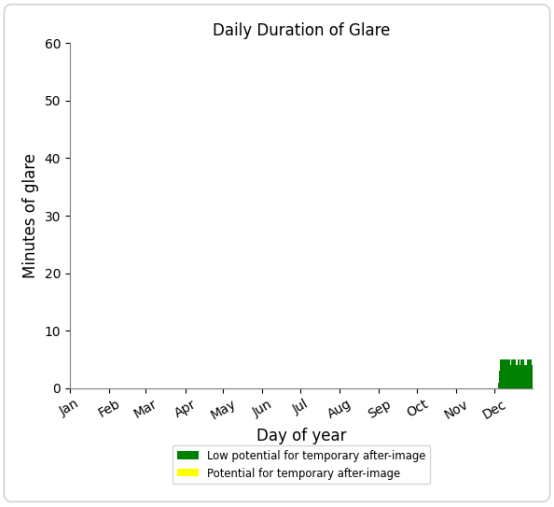


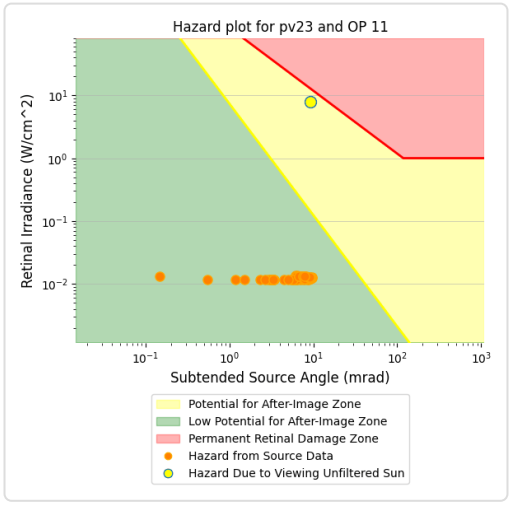


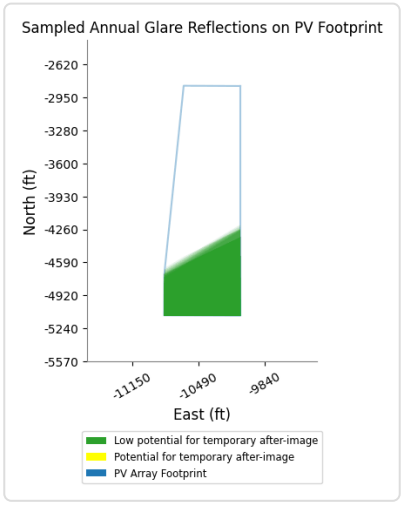
PV23 and OP 11

Yellow glare: none
Green glare: 127 min.









PV23 and OP 1

No glare found

PV23 and OP 2

No glare found

PV23 and OP 3

No glare found

PV23 and OP 5

No glare found

PV23 and OP 6

No glare found

PV23 and OP 10

No glare found

PV23 and OP 12

No glare found

PV23 and OP 13

No glare found

PV23 and OP 14

No glare found

PV23 and OP 15

No glare found

PV23 and OP 16

No glare found

PV23 and OP 17

No glare found

PV23 and OP 18

No glare found

PV23 and OP 19

No glare found

PV23 and 20-ATCT

No glare found

PV: PV24 potential temporary after-image

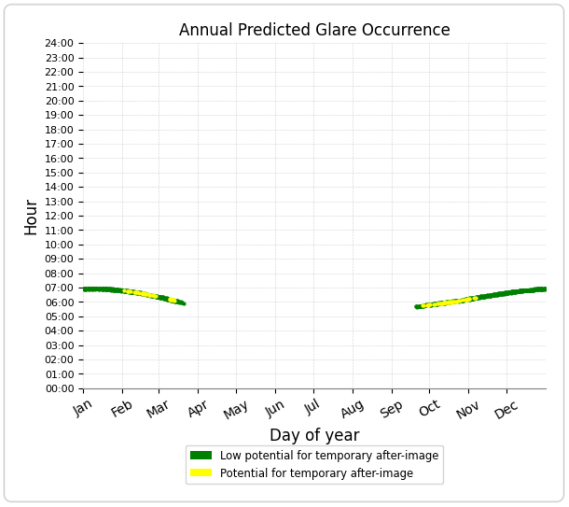
Receptor results ordered by category of glare

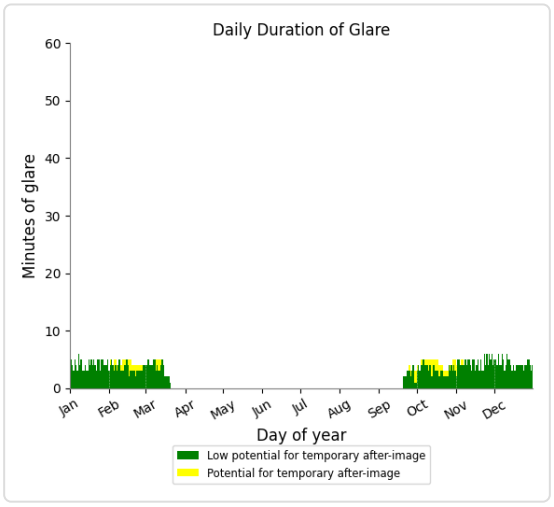
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route08	686	11.4	83	1.4
Route09	295	4.9	1,786	29.8
Route05	36	0.6	0	0.0
Route12	230	3.8	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	92	1.5	51	0.8
OP 11	16	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 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 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

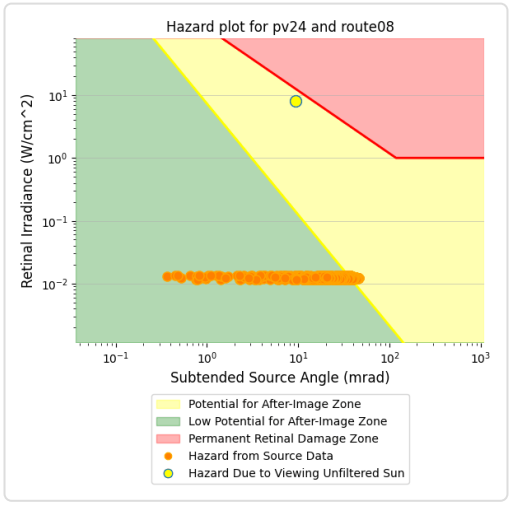
PV24 and Route: Route08

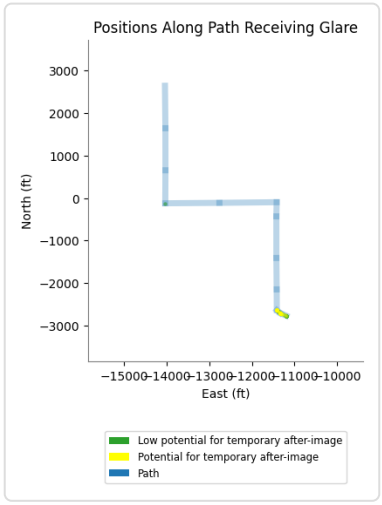
Yellow glare: 83 min.

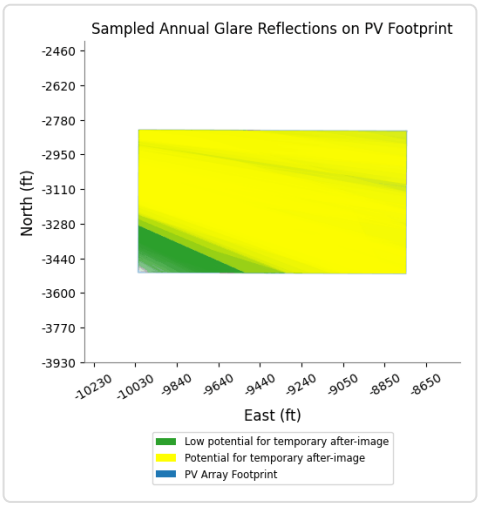
Green glare: 686 min.







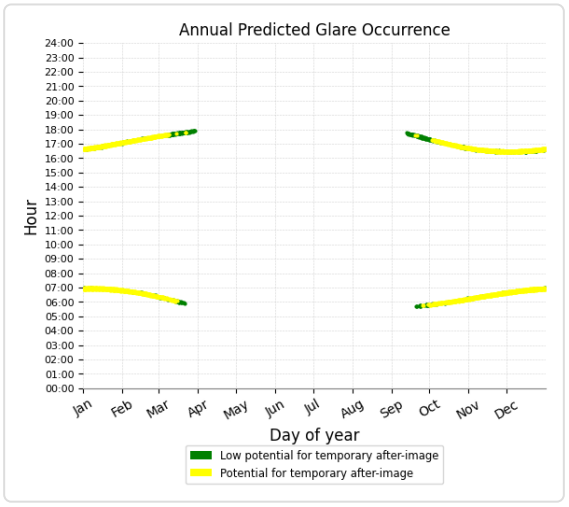


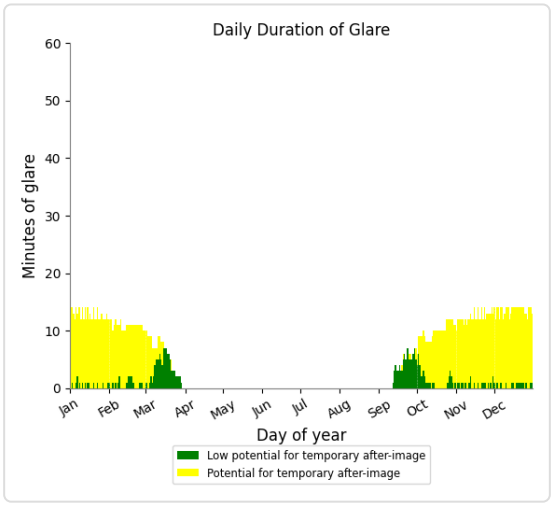


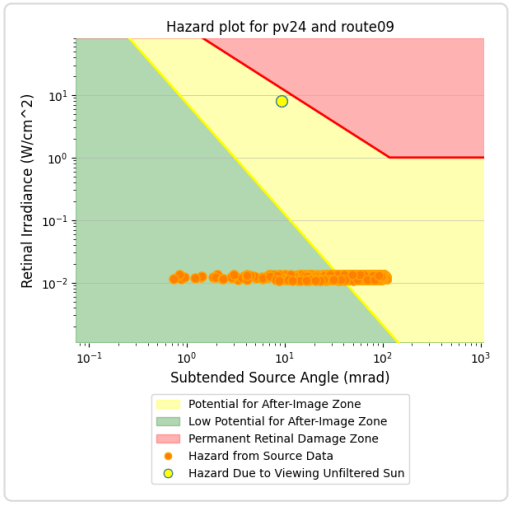
PV24 and Route: Route09

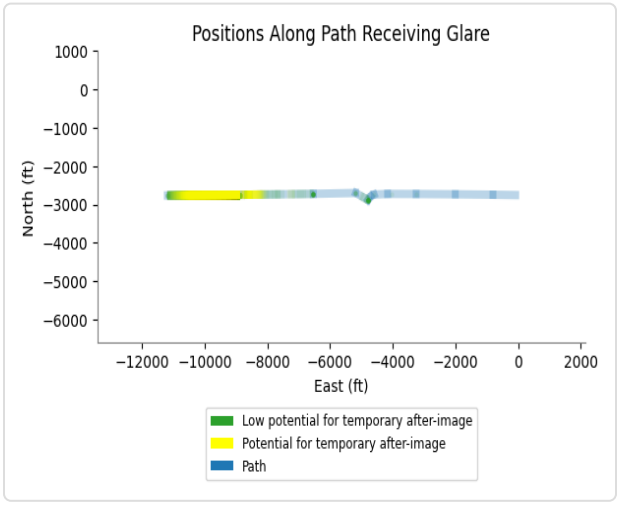
Yellow glare: 1,786 min.

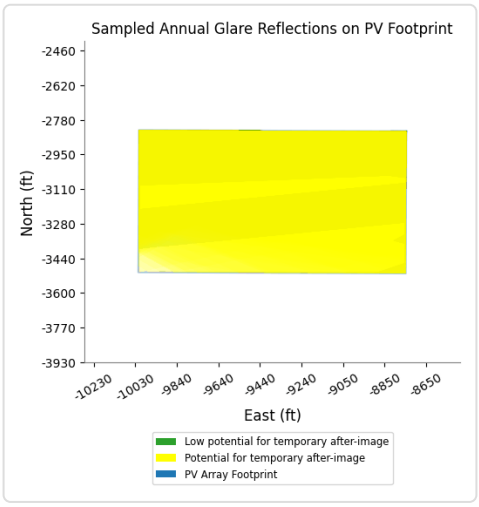
Green glare: 295 min.







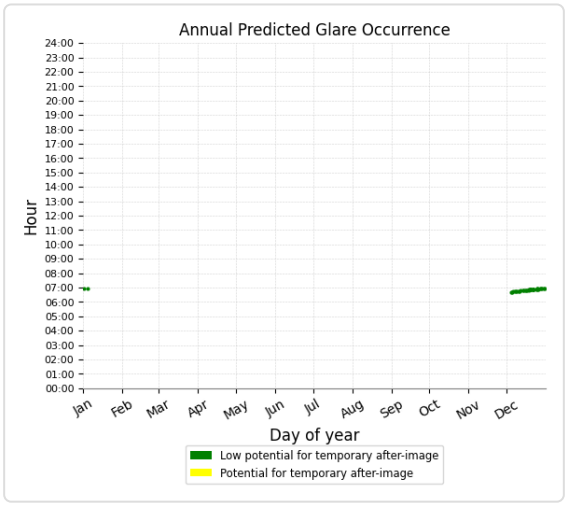


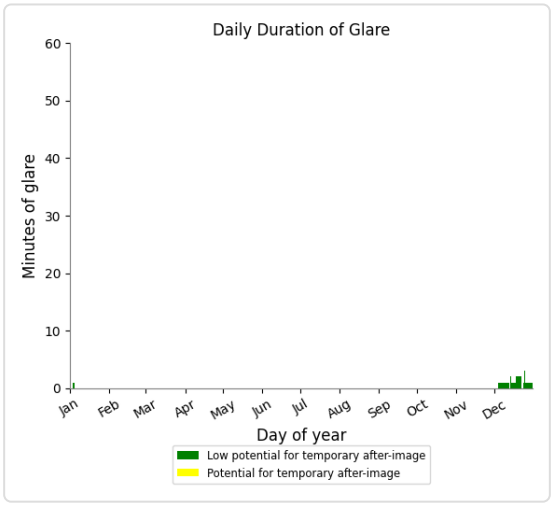


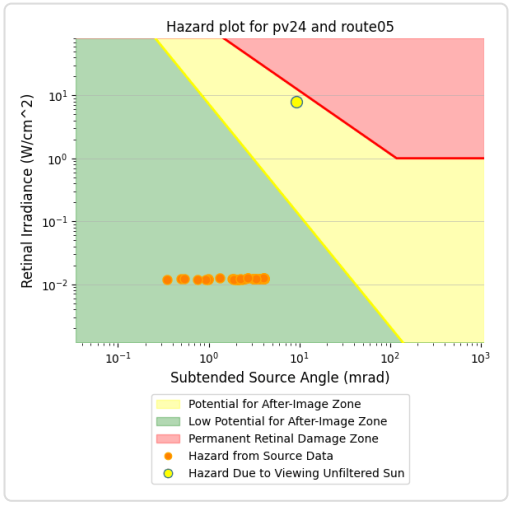
PV24 and Route: Route05

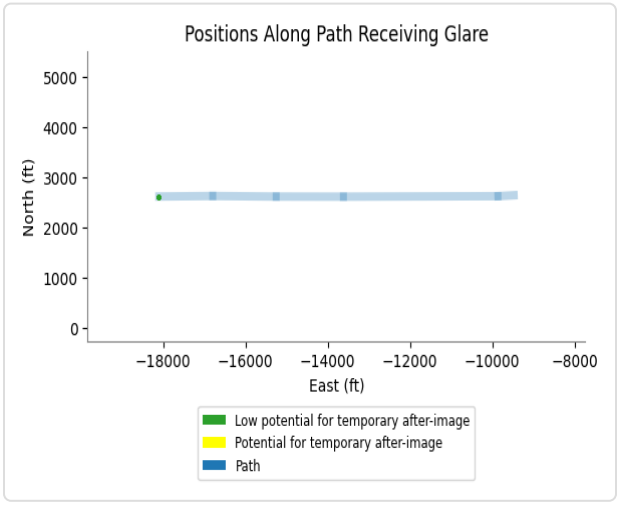
Yellow glare: none

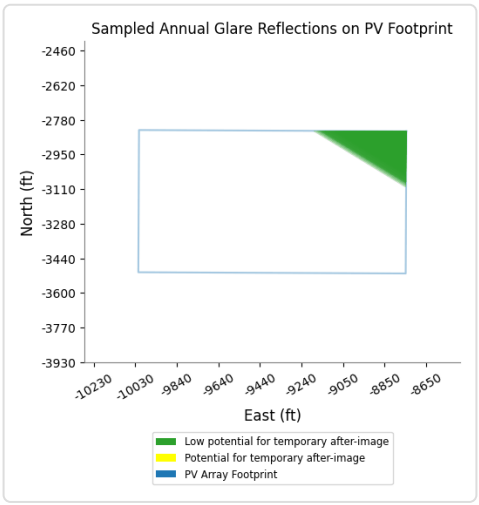
Green glare: 36 min.







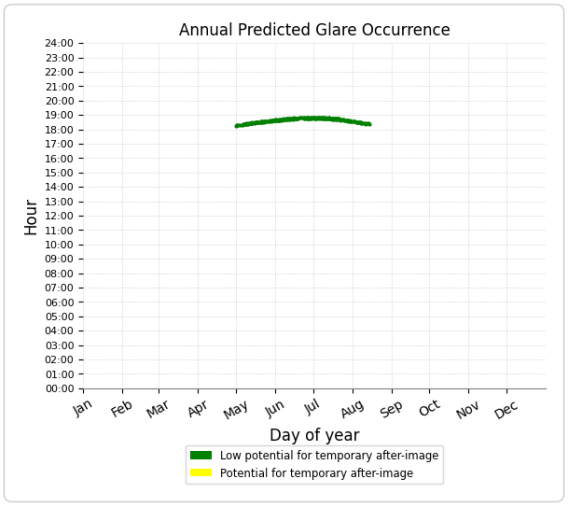


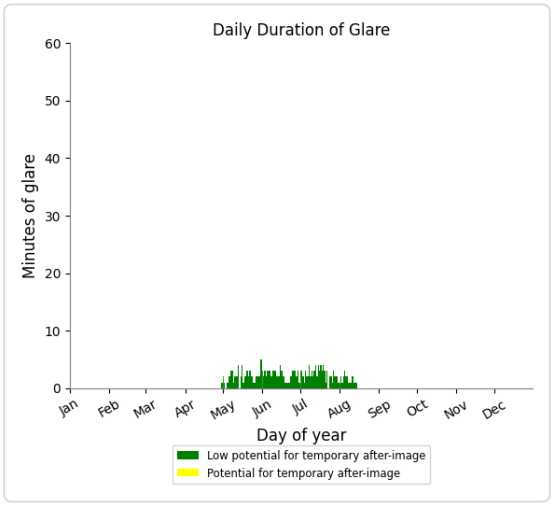


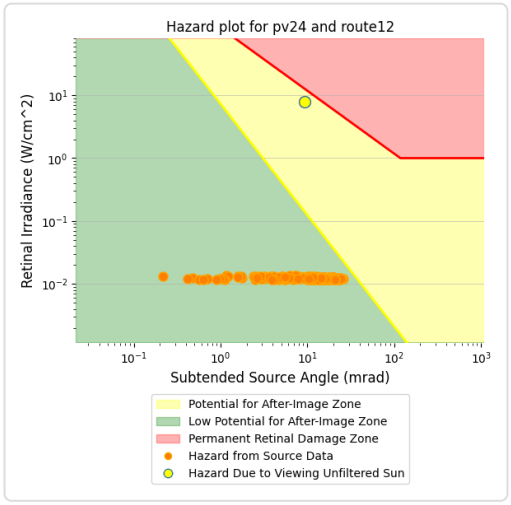
PV24 and Route: Route12

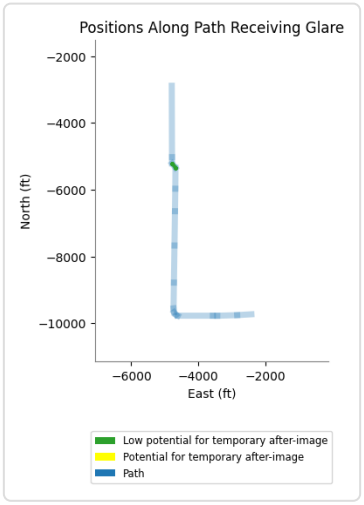
Yellow glare: none

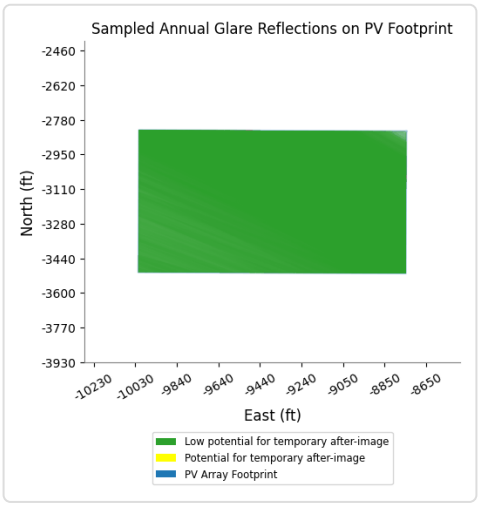
Green glare: 230 min.











PV24 and Route: Route01

No glare found

PV24 and Route: Route02

No glare found

PV24 and Route: Route04

No glare found

PV24 and Route: Route06

No glare found

PV24 and Route: Route07

No glare found

PV24 and Route: Route10

No glare found

PV24 and Route: Route11

No glare found

PV24 and FP: NJK08

No glare found

PV24 and FP: NJK12

No glare found

PV24 and FP: NJK26

No glare found

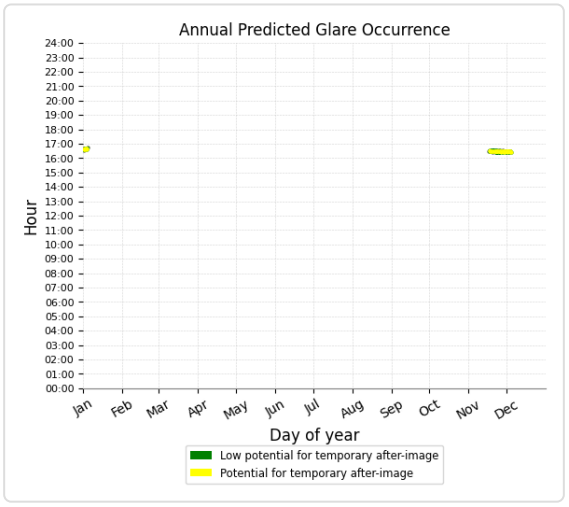
PV24 and FP: NJK30

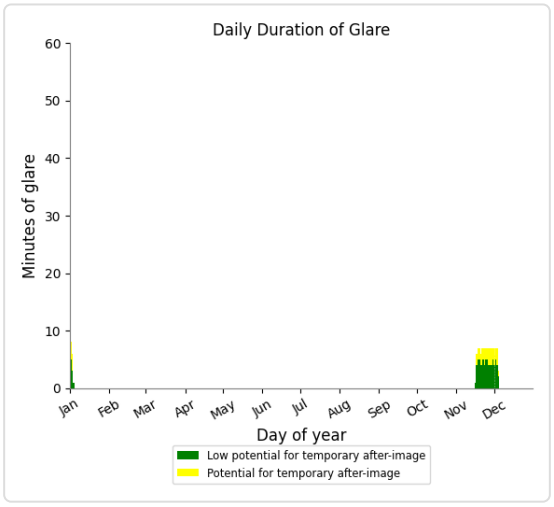
No glare found

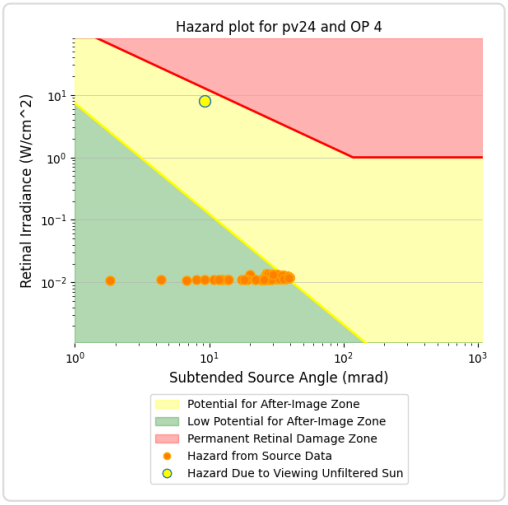
PV24 and OP 4

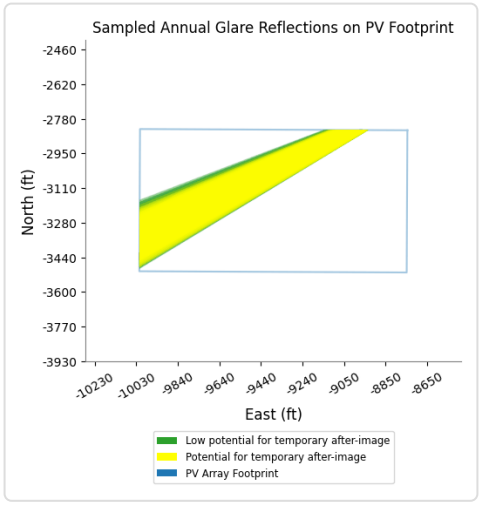
Yellow glare: 51 min.

Green glare: 92 min.



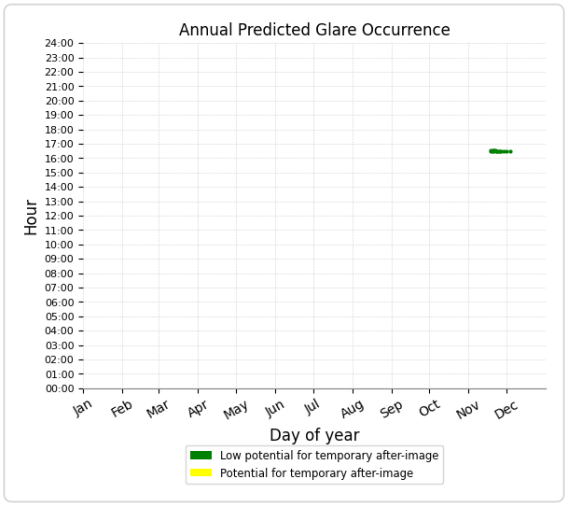


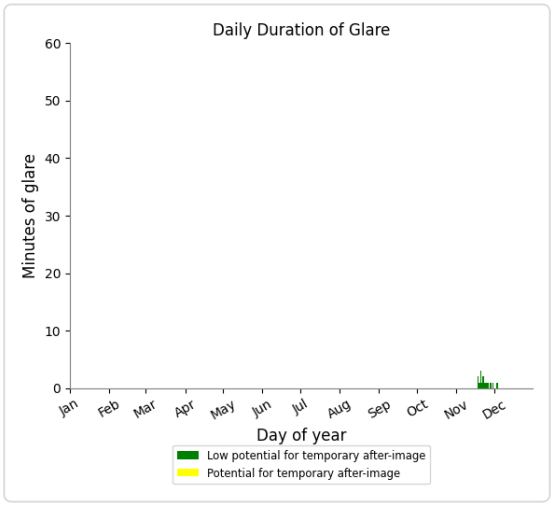


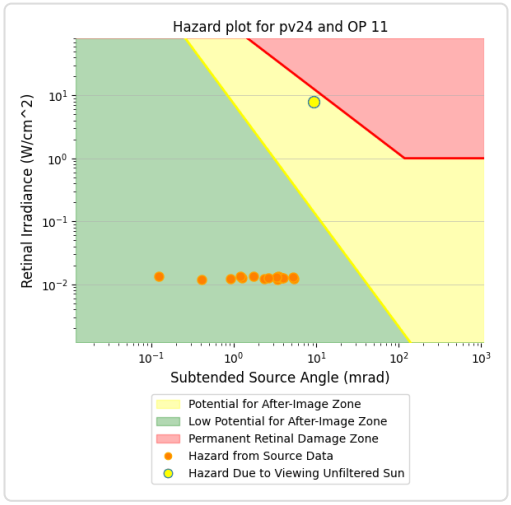


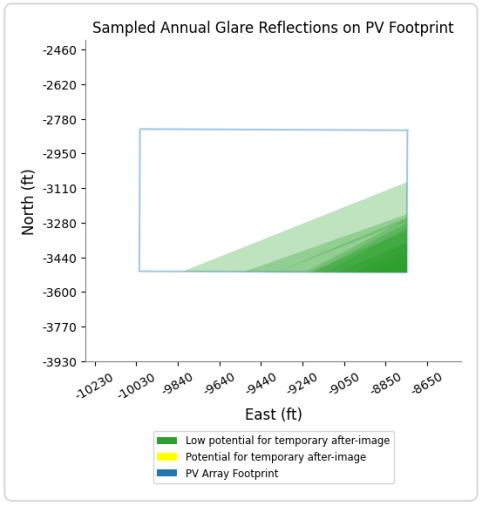
PV24 and OP 11

Yellow glare: none
Green glare: 16 min.









PV24 and OP 1

No glare found

PV24 and OP 2

No glare found

PV24 and OP 3

No glare found

PV24 and OP 5

No glare found

PV24 and OP 6

No glare found

PV24 and OP 7

No glare found

PV24 and OP 8

No glare found

PV24 and OP 9

No glare found

PV24 and OP 10

No glare found

PV24 and OP 12

No glare found

PV24 and OP 13

No glare found

PV24 and OP 14

No glare found

PV24 and OP 15

No glare found

PV24 and OP 16

No glare found

PV24 and OP 17

No glare found

PV24 and OP 18

No glare found

PV24 and OP 19

No glare found

PV24 and 20-ATCT

No glare found

PV: PV25 potential temporary after-image

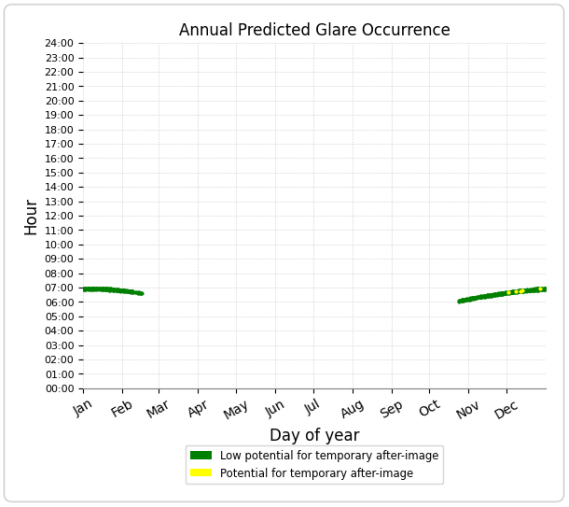
Receptor results ordered by category of glare

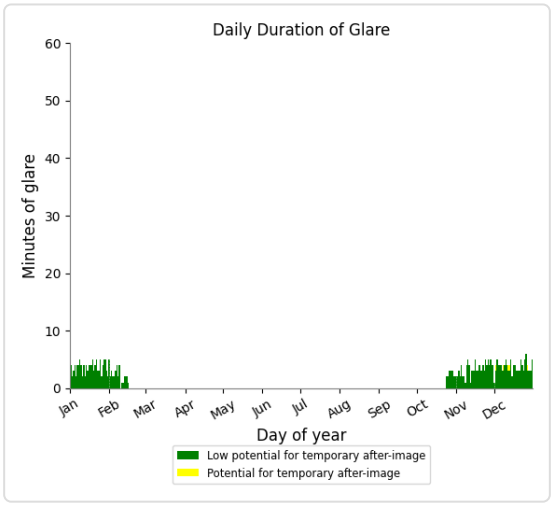
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route08	382	6.4	5	0.1
Route09	571	9.5	287	4.8
Route12	334	5.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 7	178	3.0	0	0.0
OP 8	193	3.2	0	0.0
OP 9	253	4.2	0	0.0
OP 11	206	3.4	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

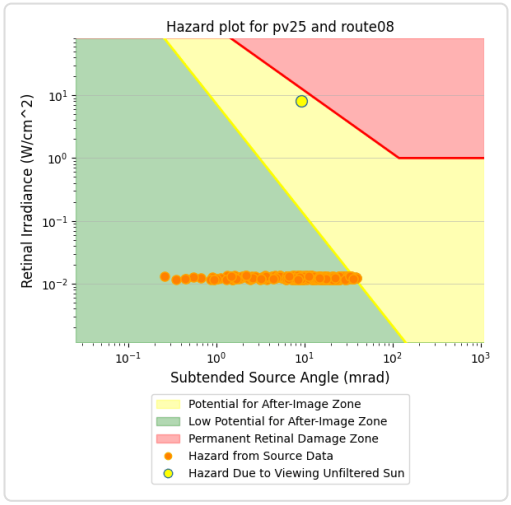
PV25 and Route: Route08

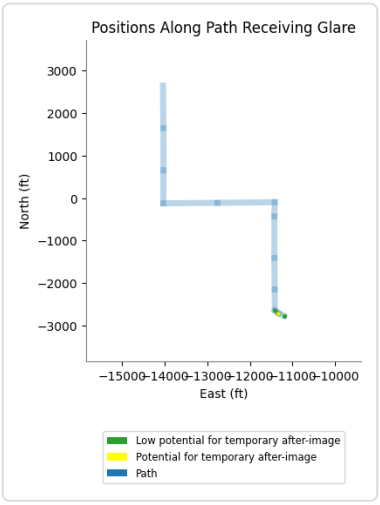
Yellow glare: 5 min.

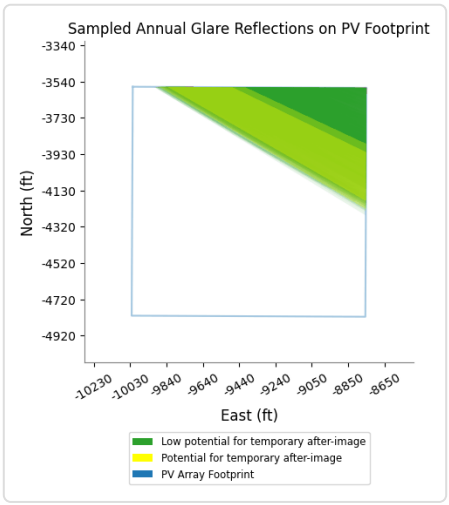
Green glare: 382 min.







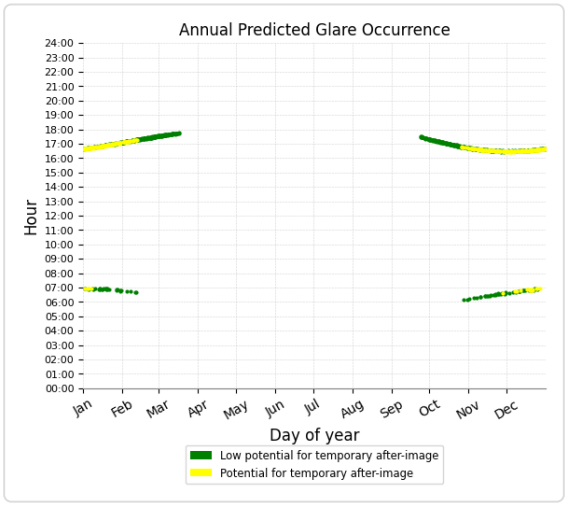


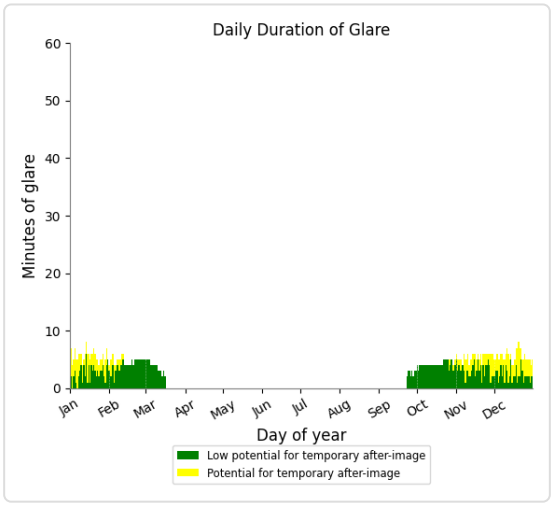


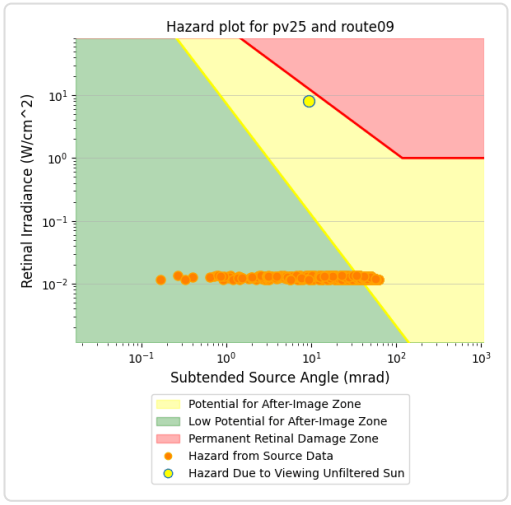
PV25 and Route: Route09

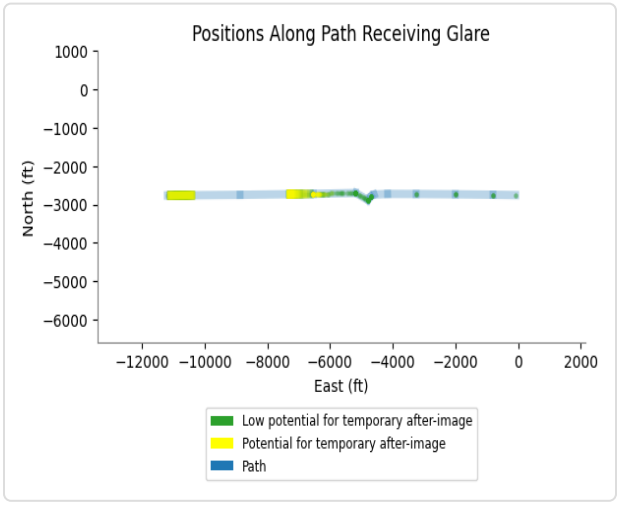
Yellow glare: 287 min.

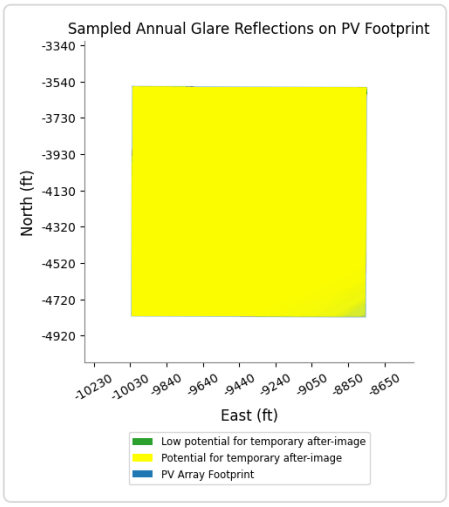
Green glare: 571 min.







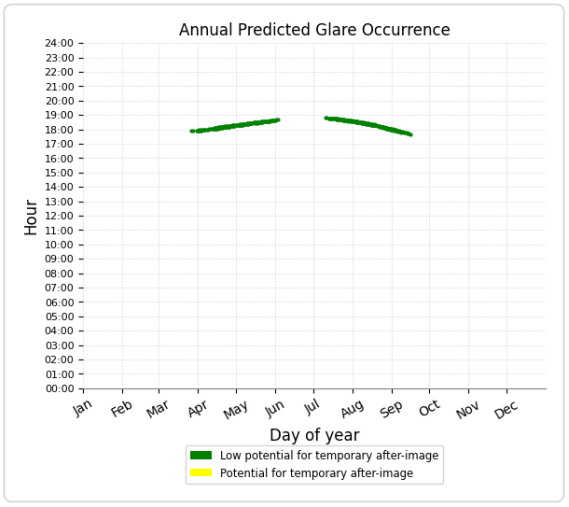


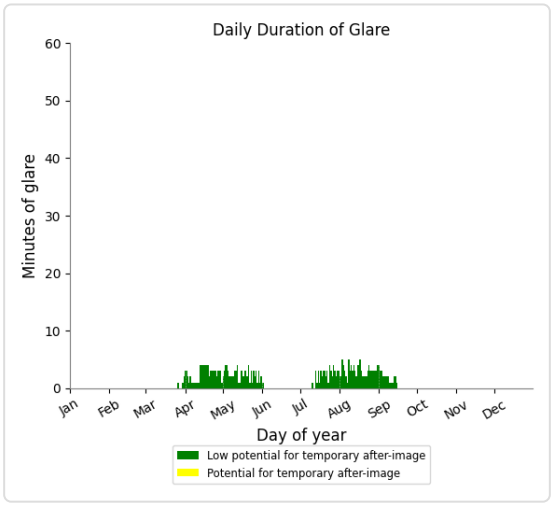


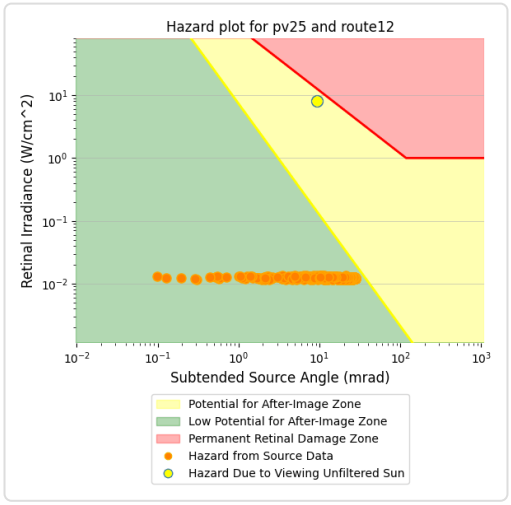
PV25 and Route: Route12

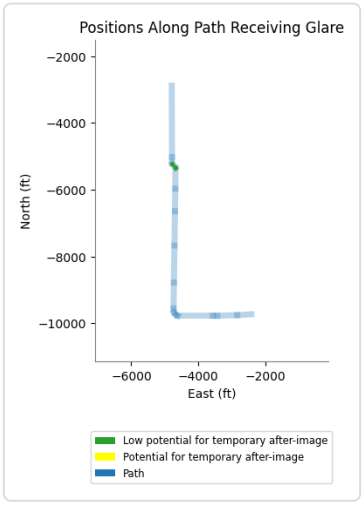
Yellow glare: none

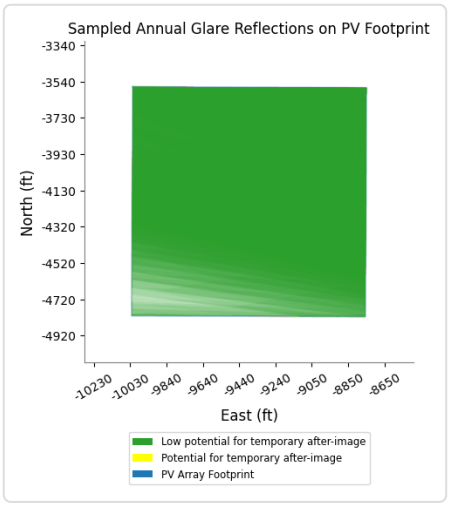
Green glare: 334 min.











PV25 and Route: Route01

No glare found

PV25 and Route: Route02

No glare found

PV25 and Route: Route04

No glare found

PV25 and Route: Route05

No glare found

PV25 and Route: Route06

No glare found

PV25 and Route: Route07

No glare found

PV25 and Route: Route10

No glare found

PV25 and Route: Route11

No glare found

PV25 and FP: NJK08

No glare found

PV25 and FP: NJK12

No glare found

PV25 and FP: NJK26

No glare found

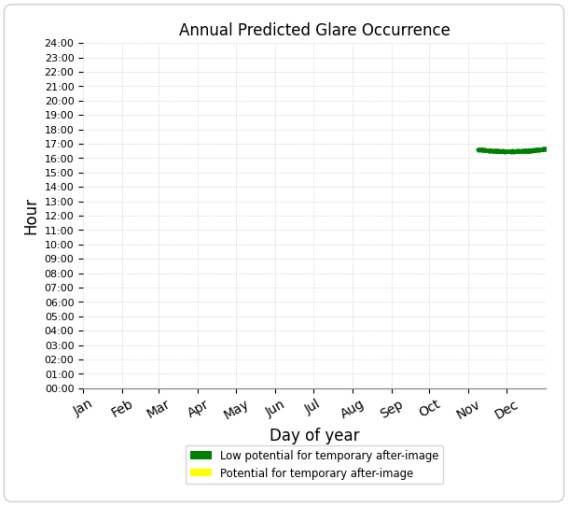
PV25 and FP: NJK30

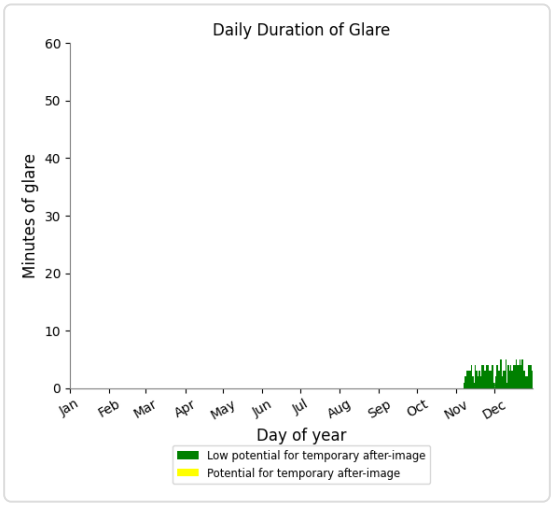
No glare found

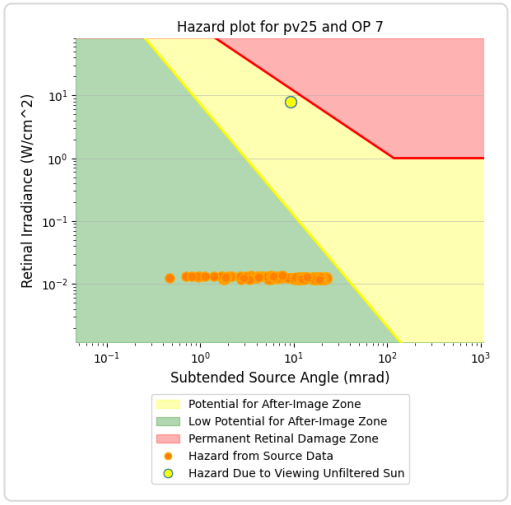
PV25 and OP 7

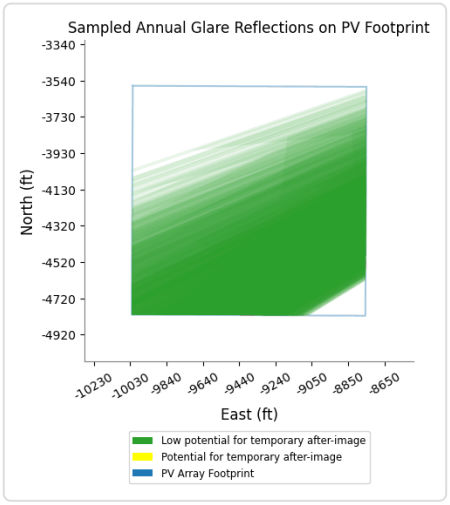
Yellow glare: none

Green glare: 178 min.





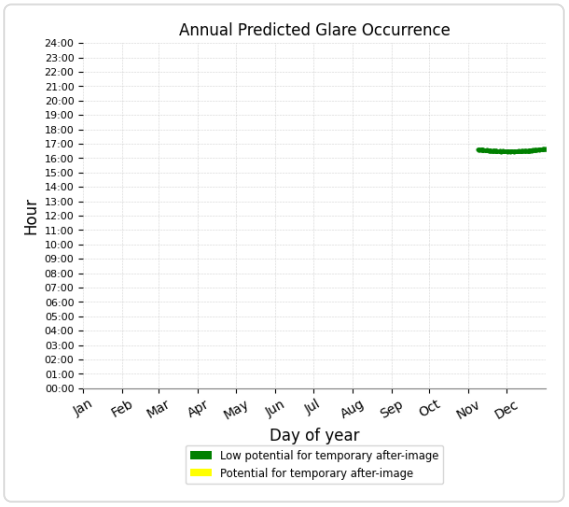


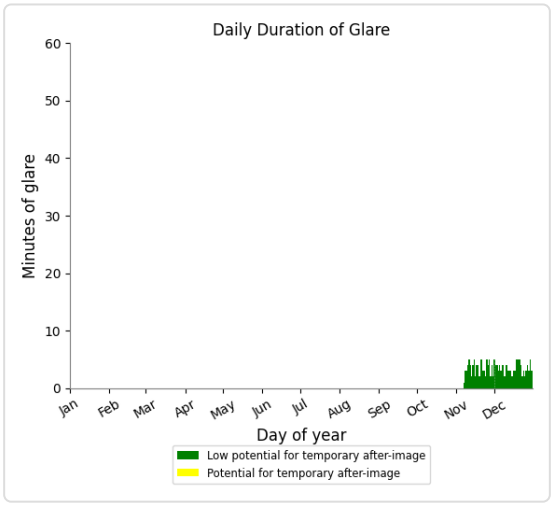


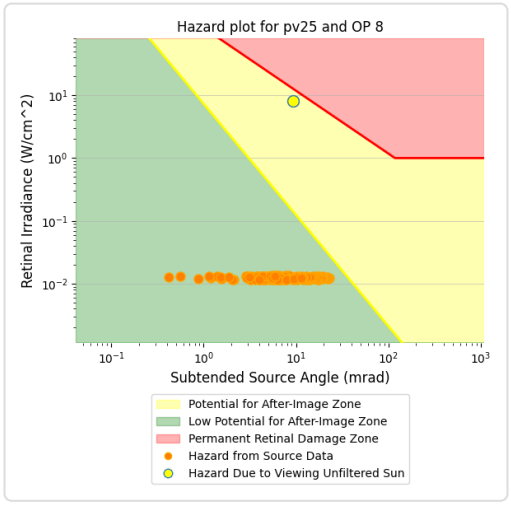
PV25 and OP 8

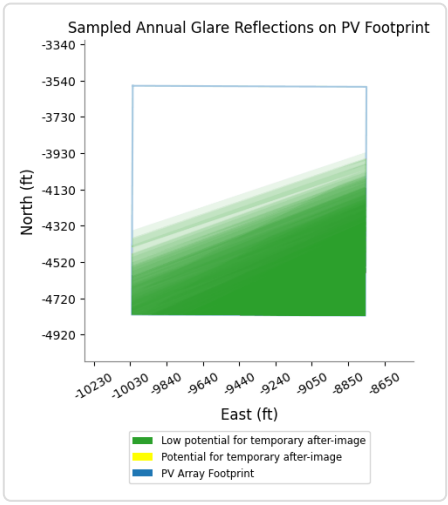
Yellow glare: none

Green glare: 193 min.





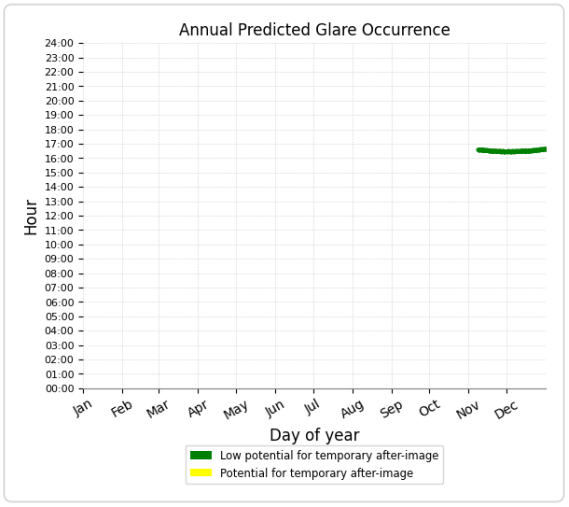


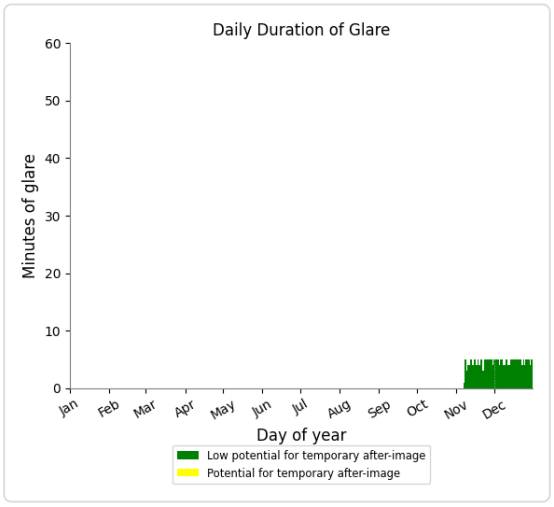


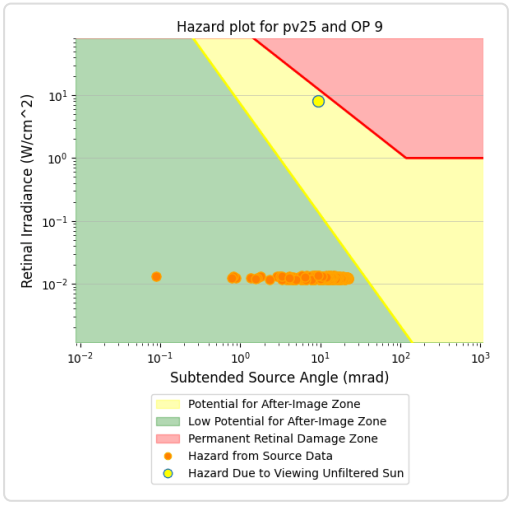
PV25 and OP 9

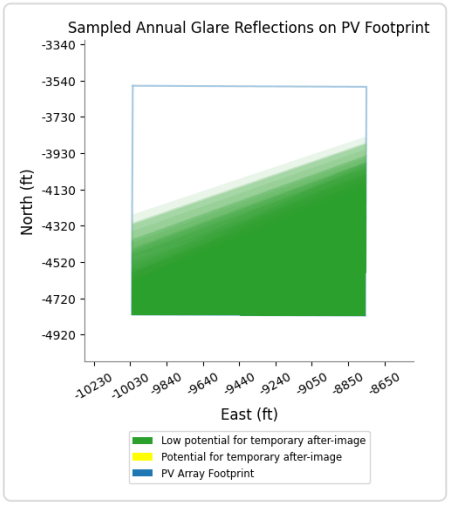
Yellow glare: none

Green glare: 253 min.



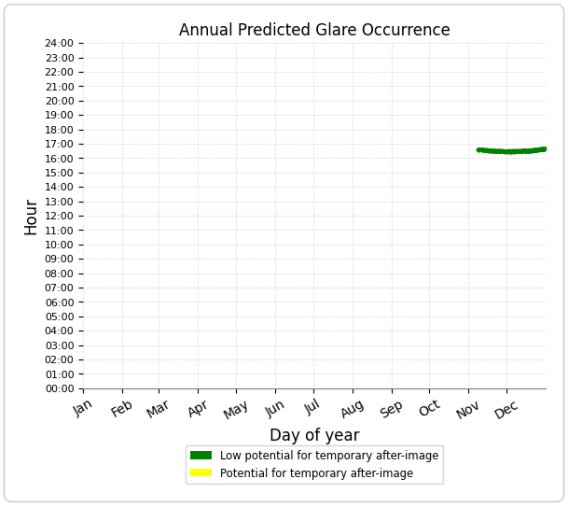


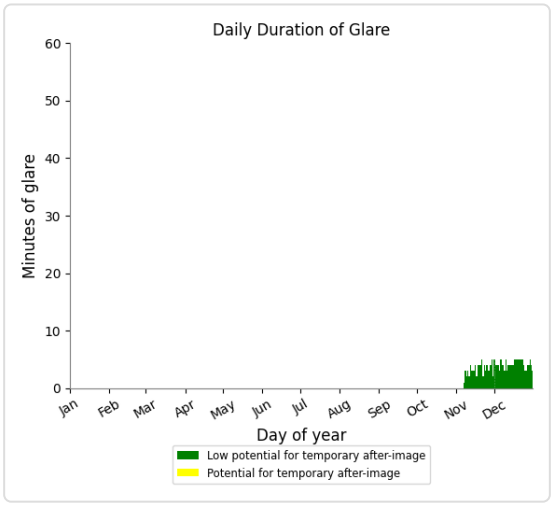


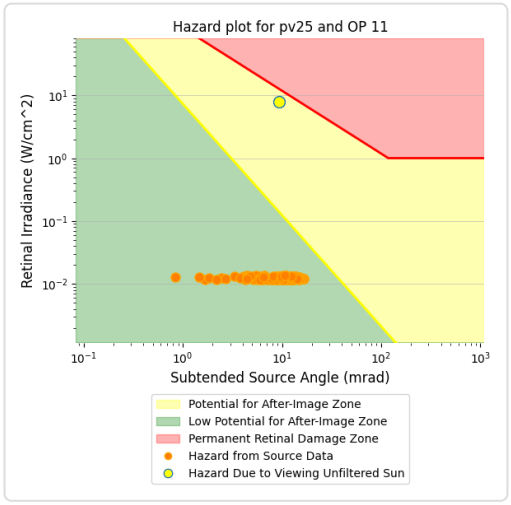


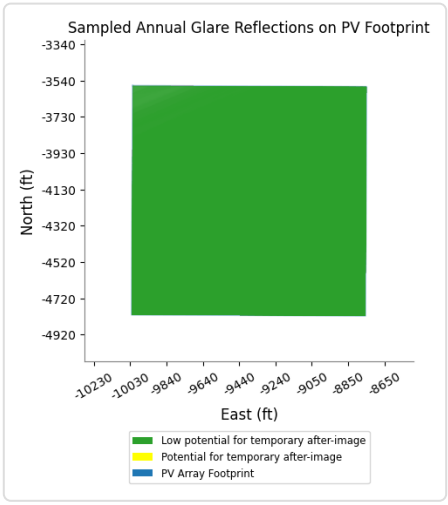
PV25 and OP 11

Yellow glare: none
Green glare: 206 min.









PV25 and OP 1

No glare found

PV25 and OP 2

No glare found

PV25 and OP 3

No glare found

PV25 and OP 4

No glare found

PV25 and OP 5

No glare found

PV25 and OP 6

No glare found

PV25 and OP 10

No glare found

PV25 and OP 12

No glare found

PV25 and OP 13

No glare found

PV25 and OP 14

No glare found

PV25 and OP 15

No glare found

PV25 and OP 16

No glare found

PV25 and OP 17

No glare found

PV25 and OP 18

No glare found

PV25 and OP 19

No glare found

PV25 and 20-ATCT

No glare found

PV: PV26 low potential for temporary after-image

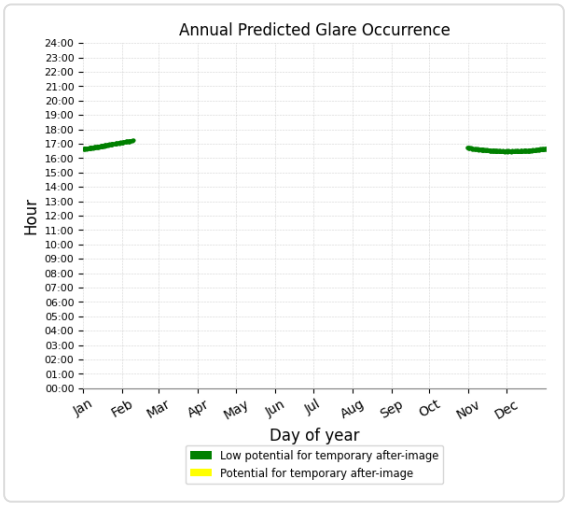
Receptor results ordered by category of glare

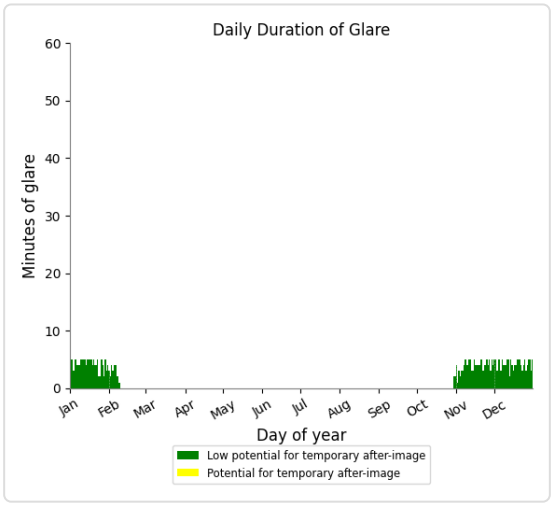
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	410	6.8	0	0.0
Route12	84	1.4	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 8	190	3.2	0	0.0
OP 9	185	3.1	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

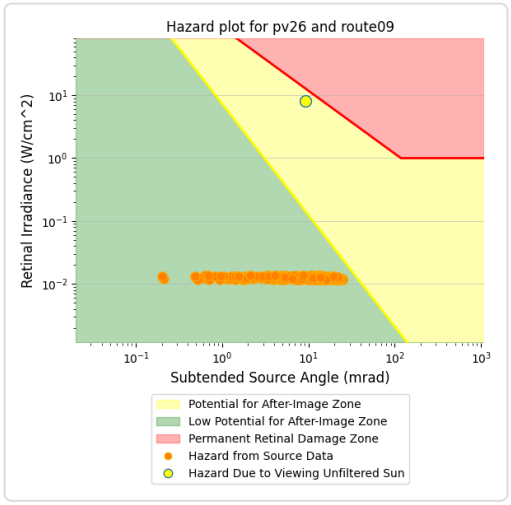
PV26 and Route: Route09

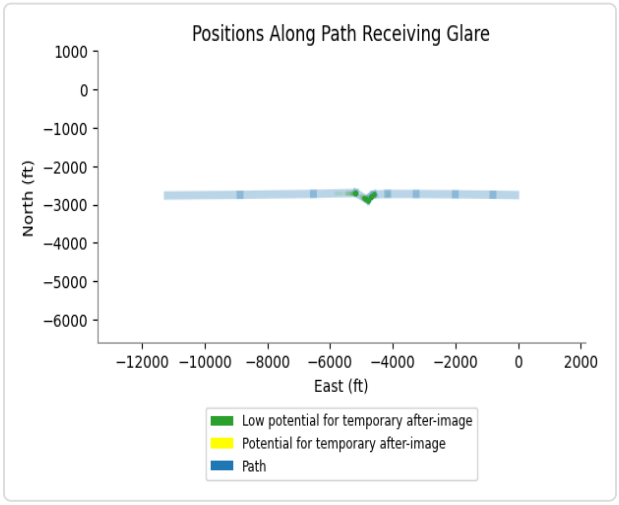
Yellow glare: none

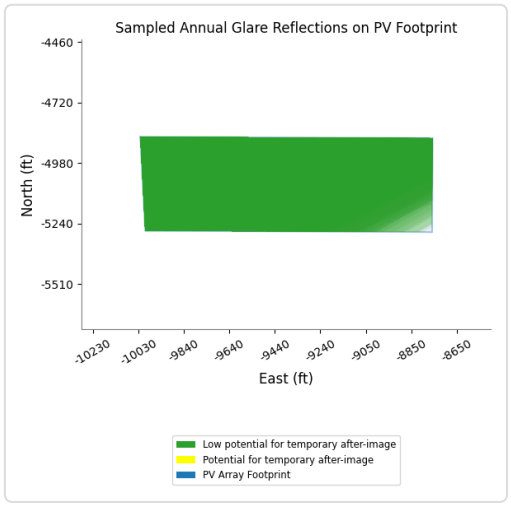
Green glare: 410 min.







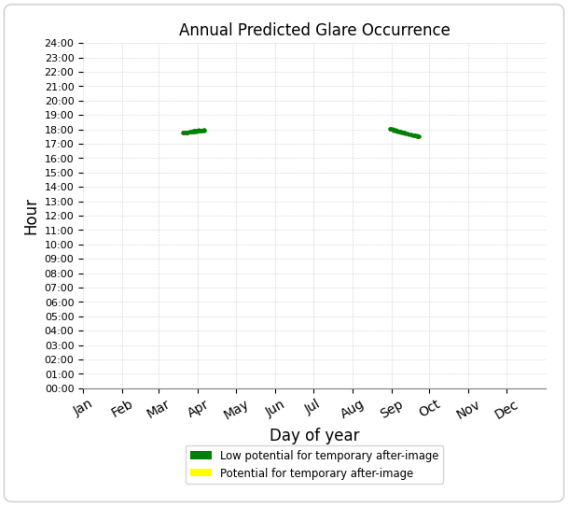


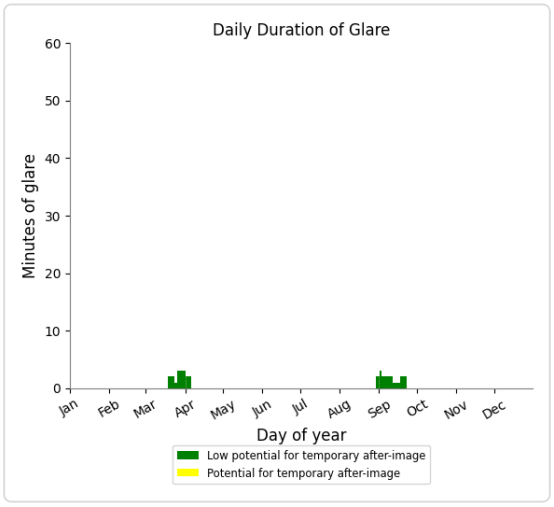


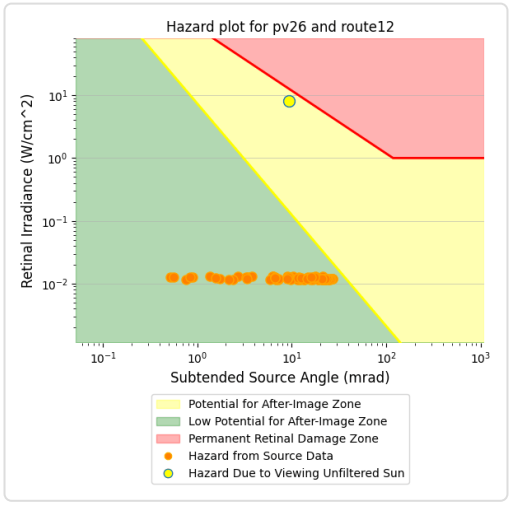
PV26 and Route: Route12

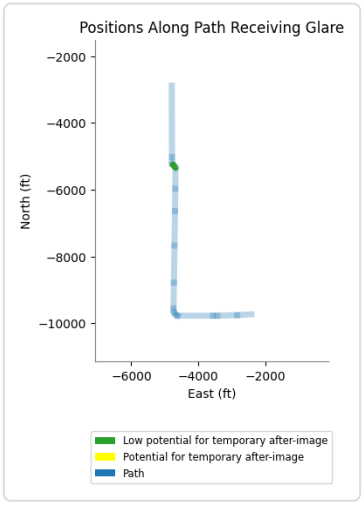
Yellow glare: none

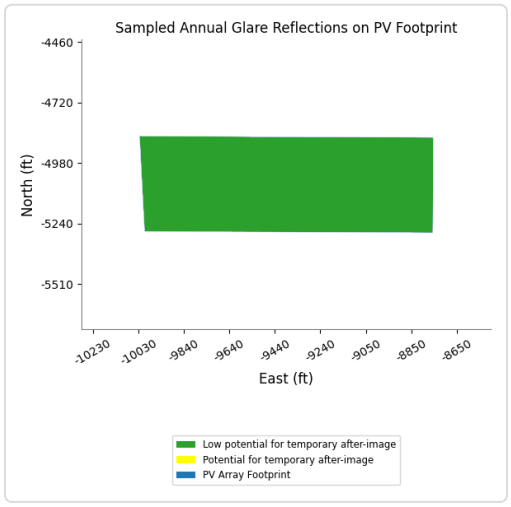
Green glare: 84 min.











PV26 and Route: Route01

No glare found

PV26 and Route: Route02

No glare found

PV26 and Route: Route04

No glare found

PV26 and Route: Route05

No glare found

PV26 and Route: Route06

No glare found

PV26 and Route: Route07

No glare found

PV26 and Route: Route08

No glare found

PV26 and Route: Route10

No glare found

PV26 and Route: Route11

No glare found

PV26 and FP: NJK08

No glare found

PV26 and FP: NJK12

No glare found

PV26 and FP: NJK26

No glare found

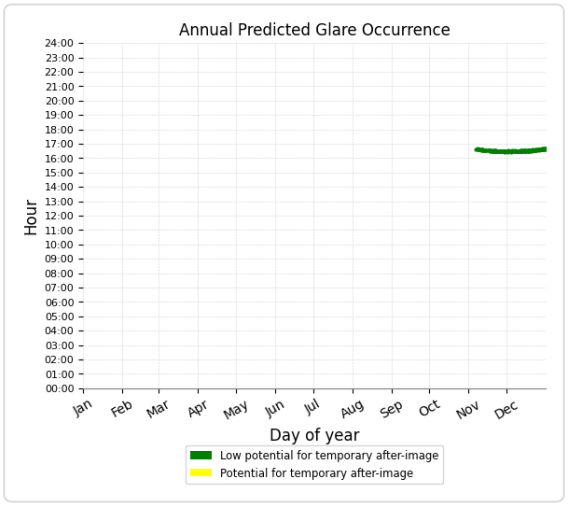
PV26 and FP: NJK30

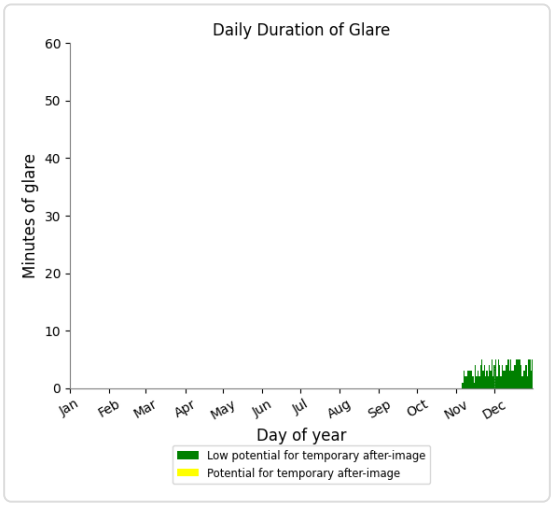
No glare found

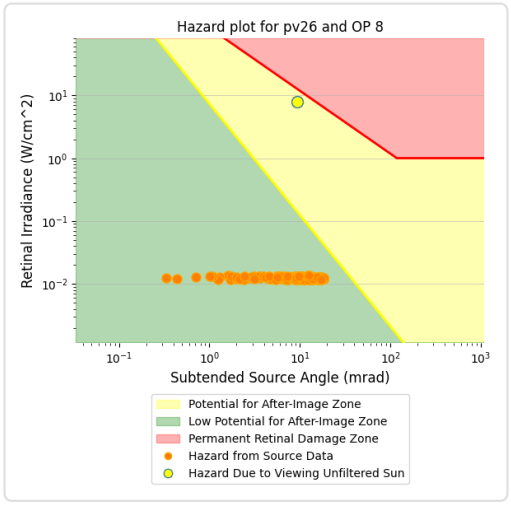
PV26 and OP 8

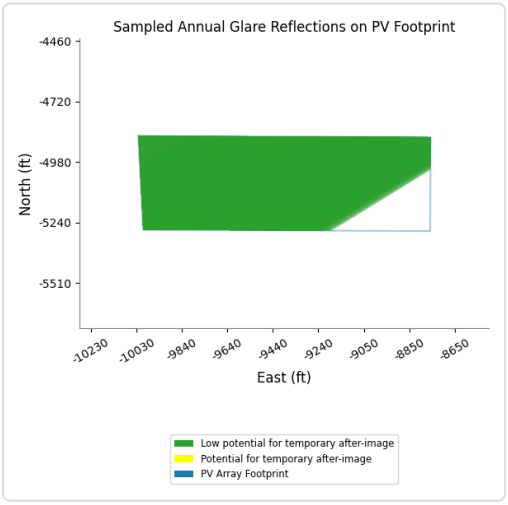
Yellow glare: none

Green glare: 190 min.



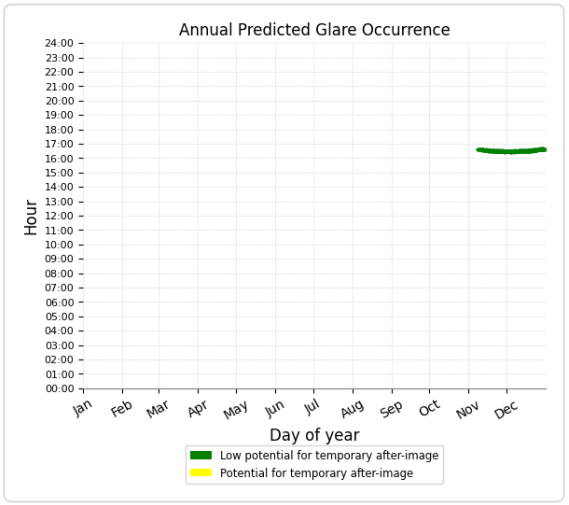


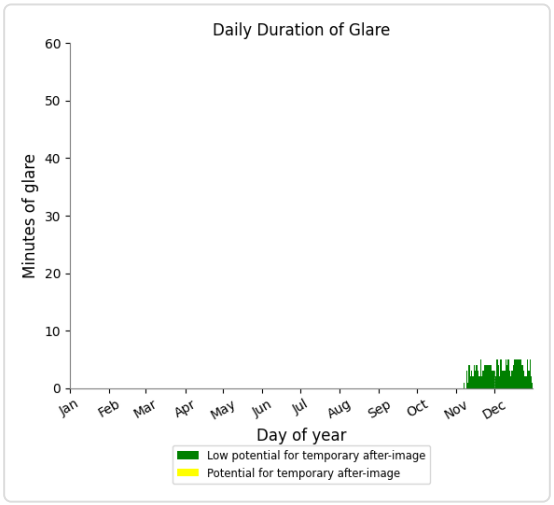


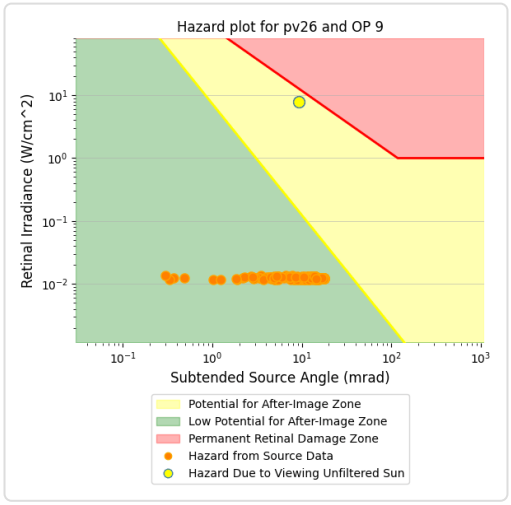


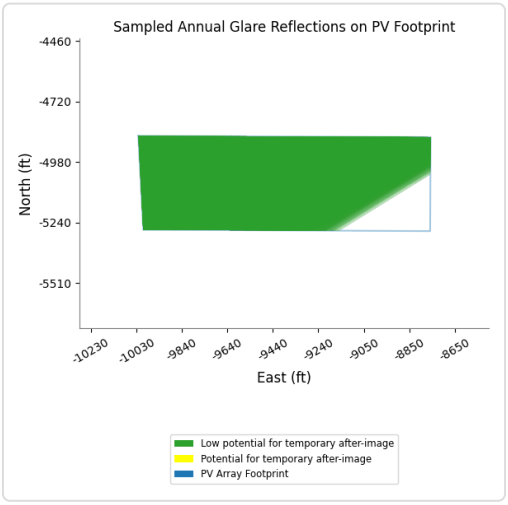
PV26 and OP 9

Yellow glare: none
Green glare: 185 min.









PV26 and OP 1

No glare found

PV26 and OP 2

No glare found

PV26 and OP 3

No glare found

PV26 and OP 4

No glare found

PV26 and OP 5

No glare found

PV26 and OP 6

No glare found

PV26 and OP 7

No glare found

PV26 and OP 10

No glare found

PV26 and OP 11

No glare found

PV26 and OP 12

No glare found

PV26 and OP 13

No glare found

PV26 and OP 14

No glare found

PV26 and OP 15

No glare found

PV26 and OP 16

No glare found

PV26 and OP 17

No glare found

PV26 and OP 18

No glare found

PV26 and OP 19

No glare found

PV26 and 20-ATCT

No glare found

PV: PV27 potential temporary after-image

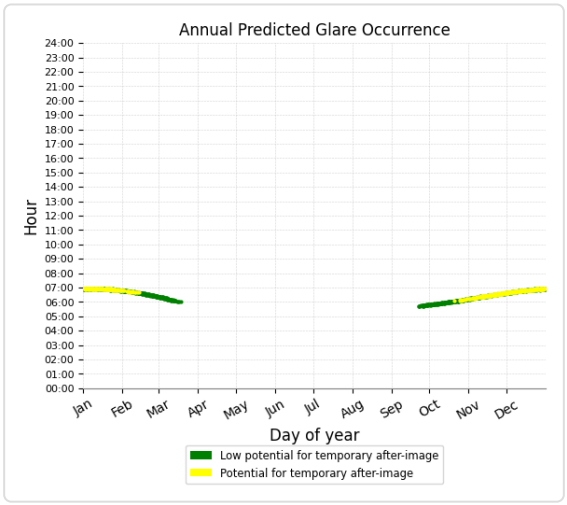
Receptor results ordered by category of glare

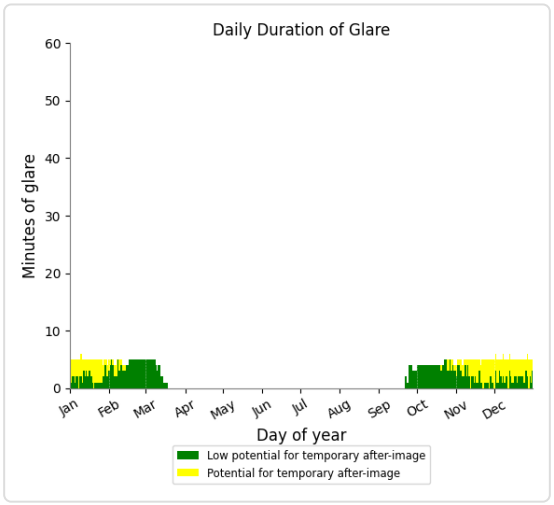
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	489	8.2	328	5.5
Route05	245	4.1	0	0.0
Route06	56	0.9	0	0.0
Route08	288	4.8	0	0.0
Route11	486	8.1	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	107	1.8	0	0.0
OP 7	28	0.5	0	0.0
OP 8	53	0.9	0	0.0
OP 9	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 5	0	0.0	0	0.0
OP 6	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

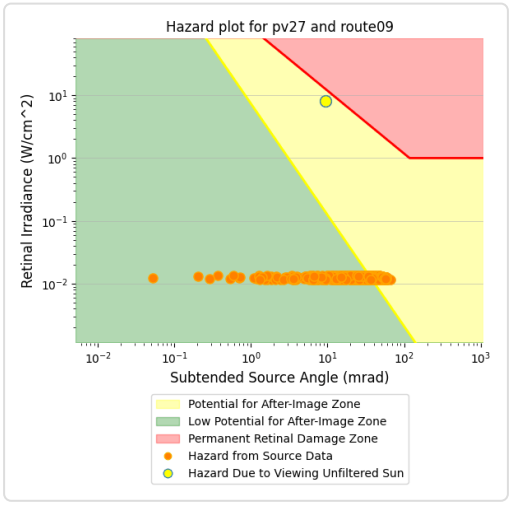
PV27 and Route: Route09

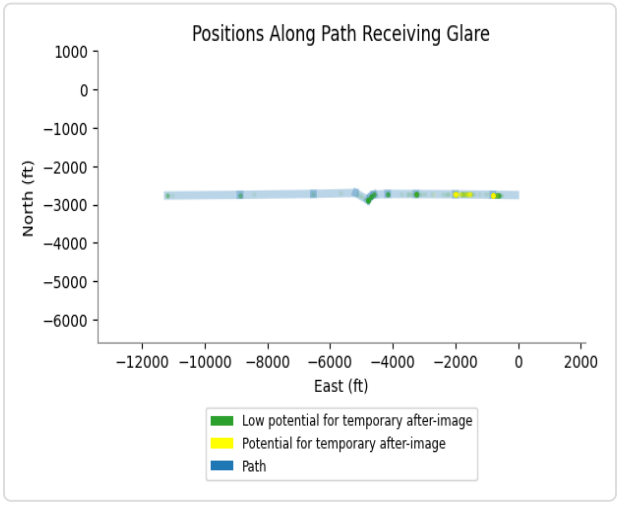
Yellow glare: 328 min.

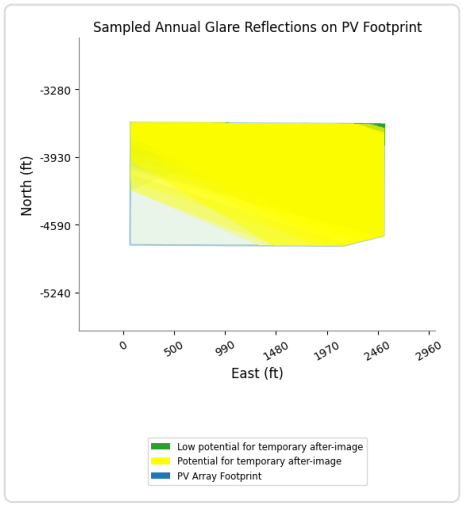
Green glare: 489 min.







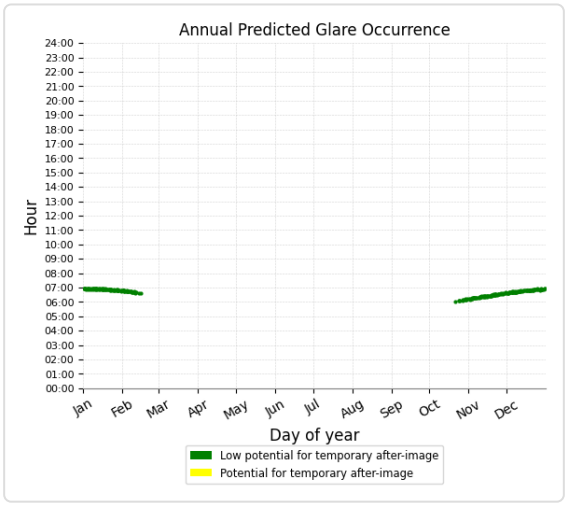


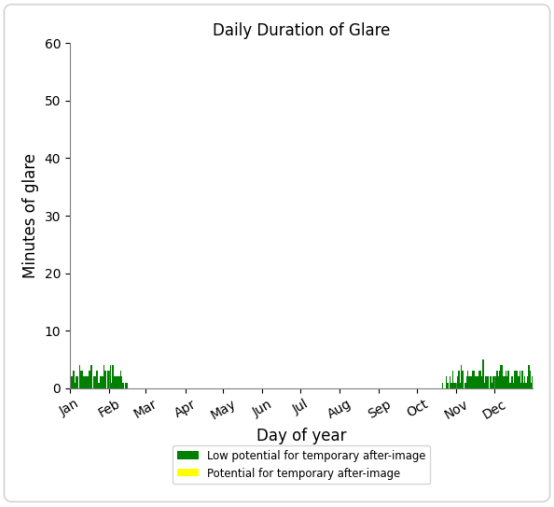


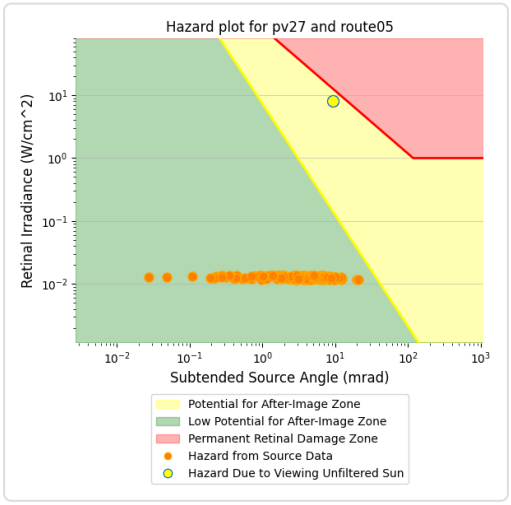
PV27 and Route: Route05

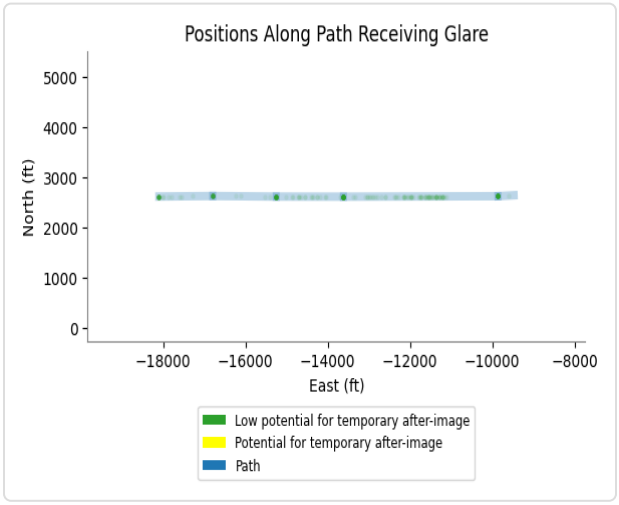
Yellow glare: none

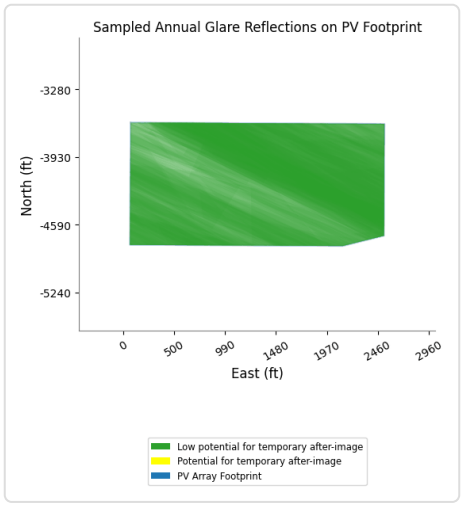
Green glare: 245 min.







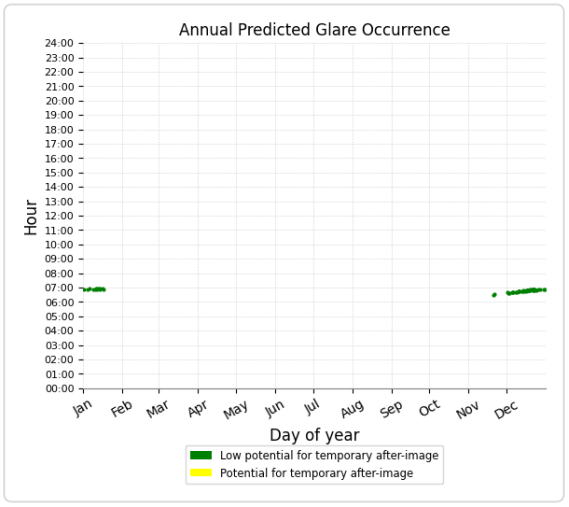


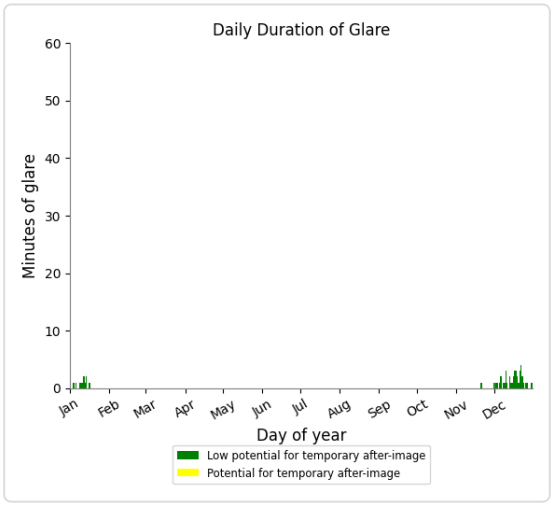


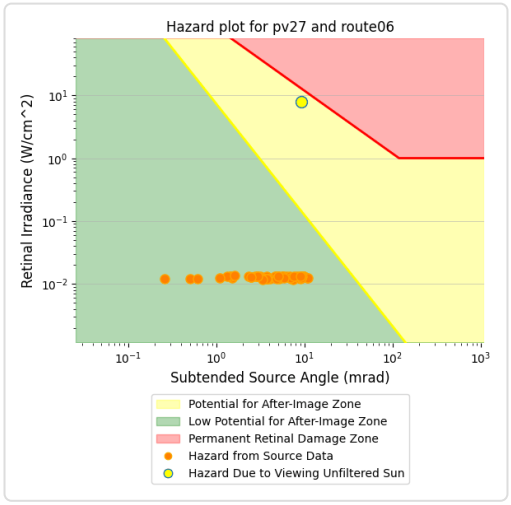
PV27 and Route: Route06

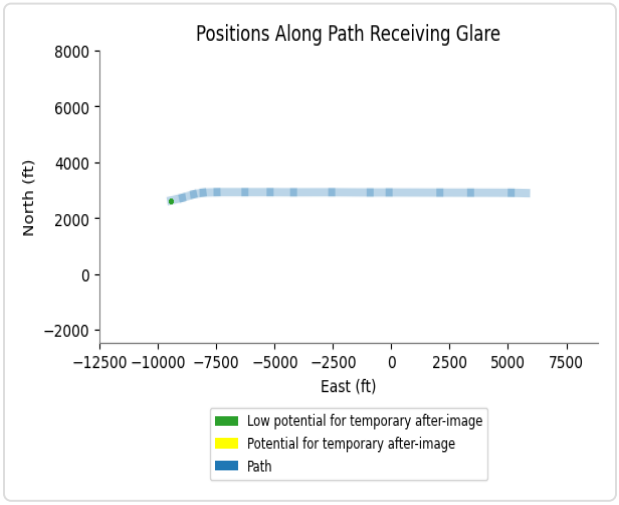
Yellow glare: none

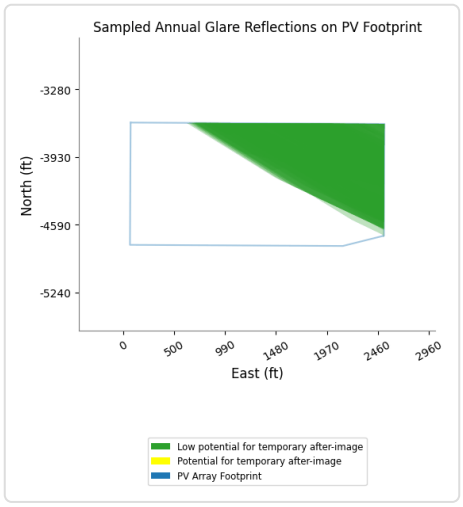
Green glare: 56 min.







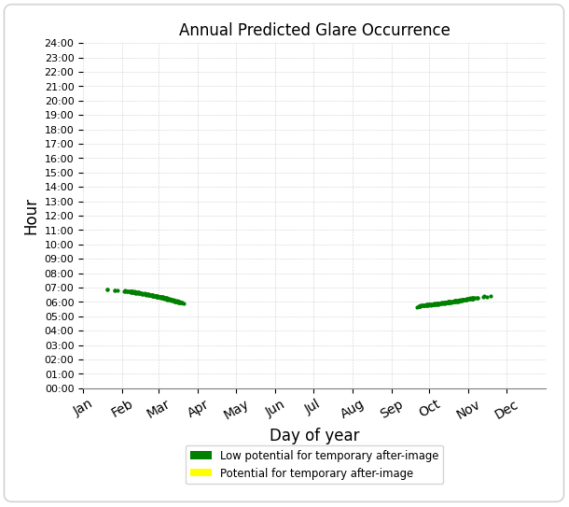


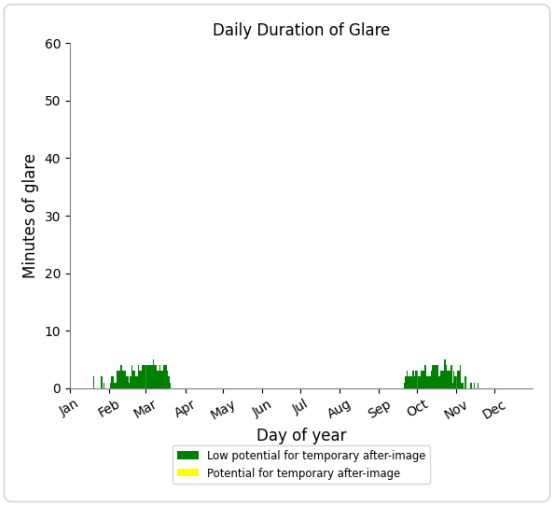


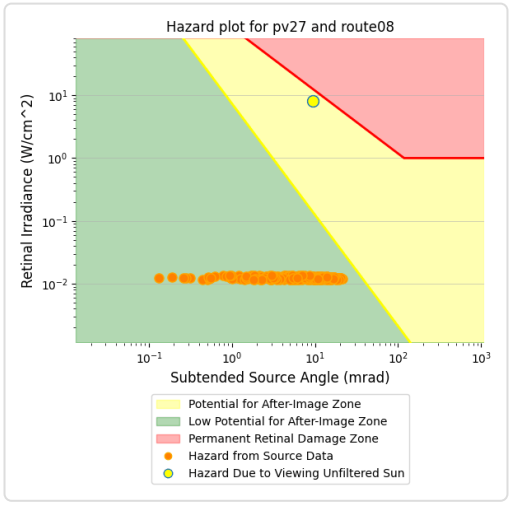
PV27 and Route: Route08

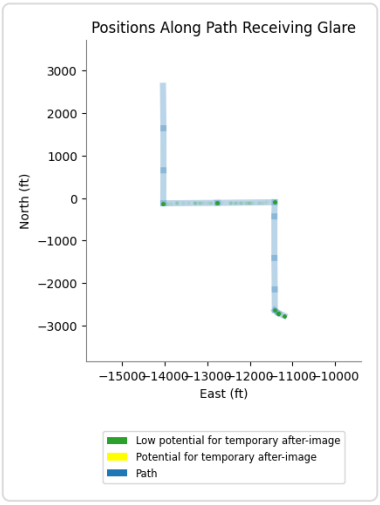
Yellow glare: none

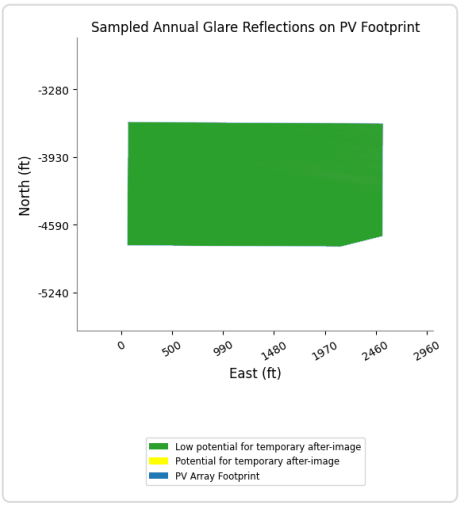
Green glare: 288 min.







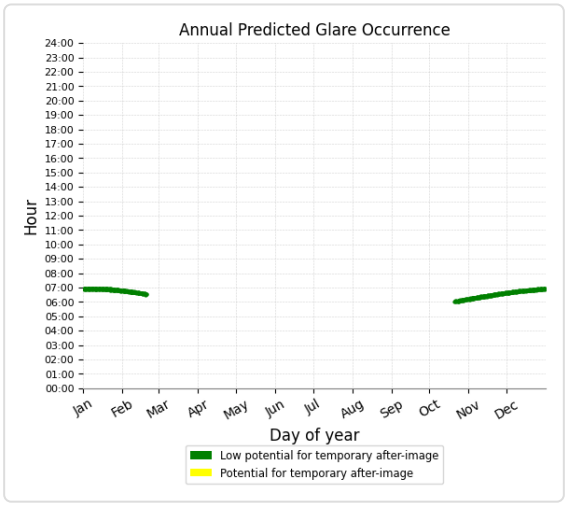


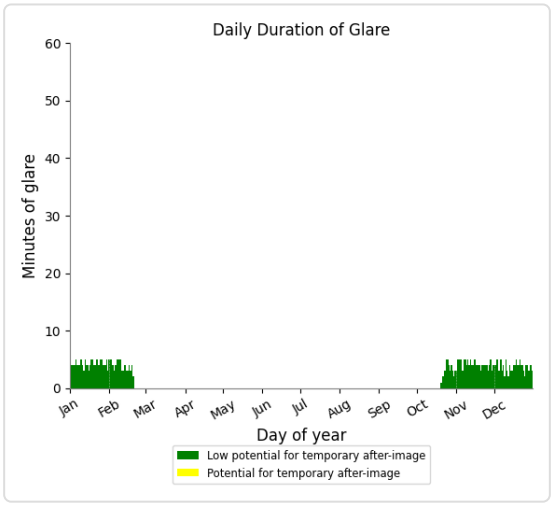


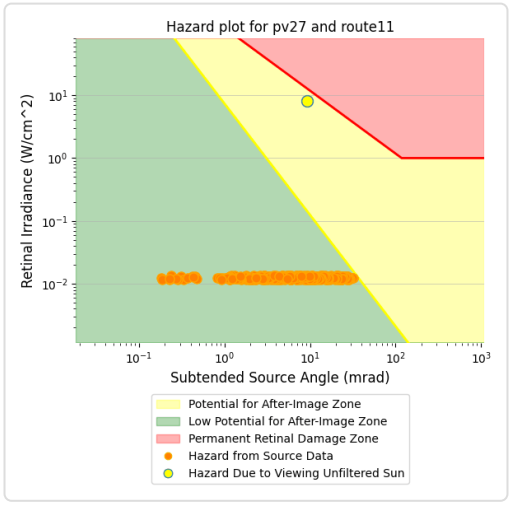
PV27 and Route: Route11

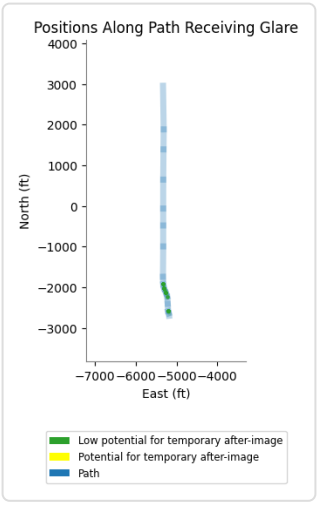
Yellow glare: none

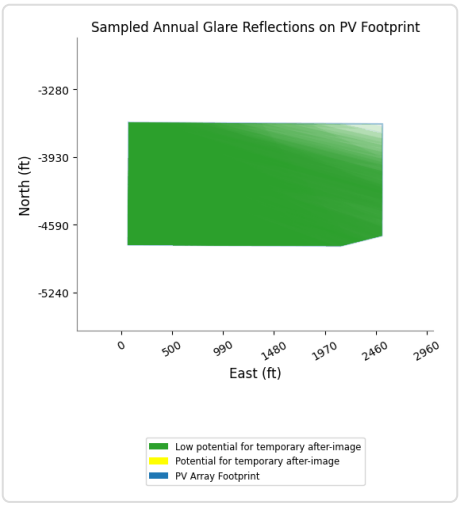
Green glare: 486 min.











PV27 and Route: Route01

No glare found

PV27 and Route: Route02

No glare found

PV27 and Route: Route04

No glare found

PV27 and Route: Route07

No glare found

PV27 and Route: Route10

No glare found

PV27 and Route: Route12

No glare found

PV27 and FP: NJK08

No glare found

PV27 and FP: NJK12

No glare found

PV27 and FP: NJK26

No glare found

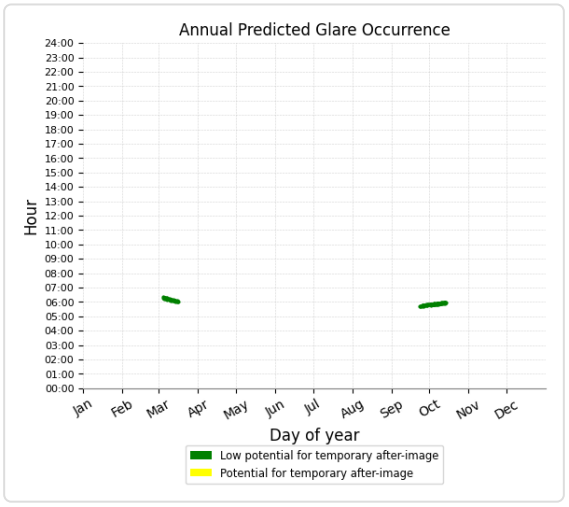
PV27 and FP: NJK30

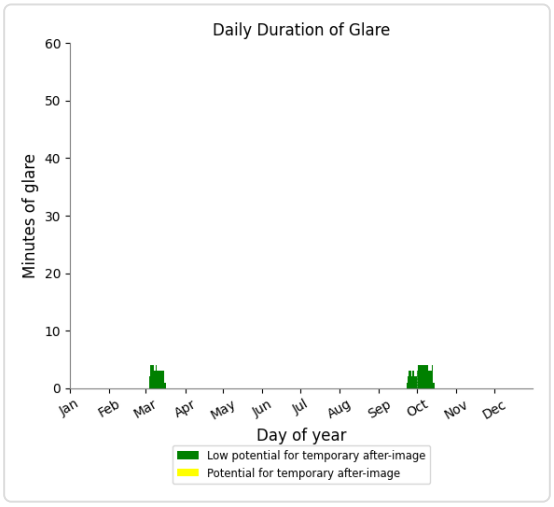
No glare found

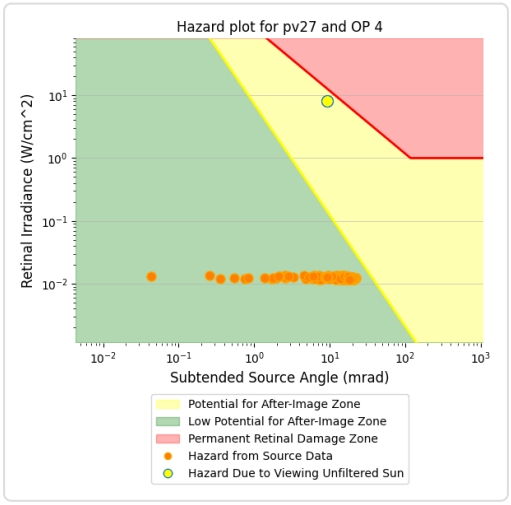
PV27 and OP 4

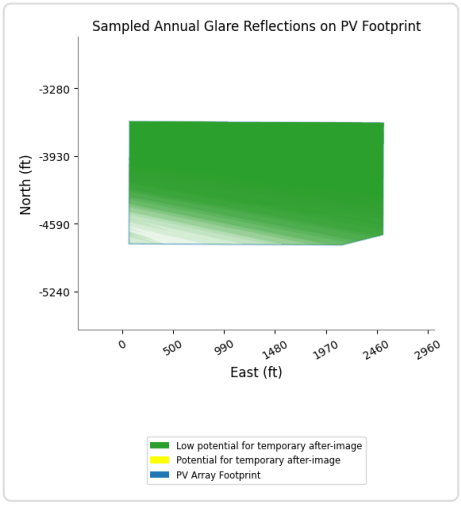
Yellow glare: none

Green glare: 107 min.





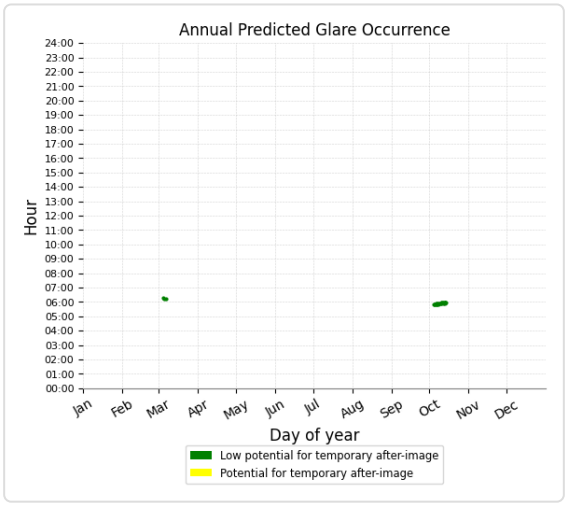


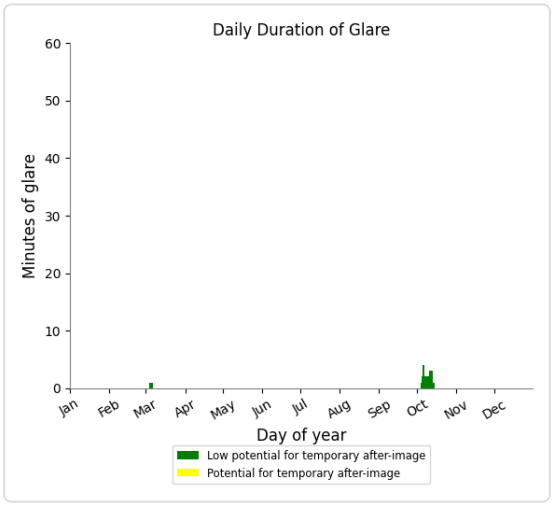


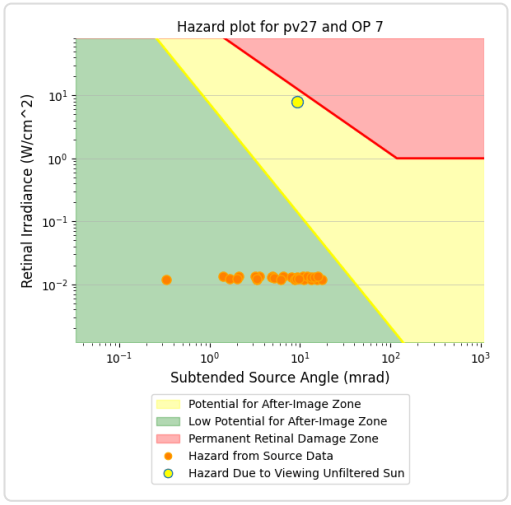
PV27 and OP 7

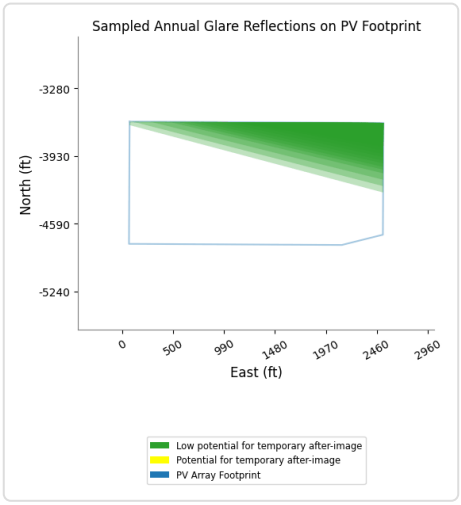
Yellow glare: none

Green glare: 28 min.





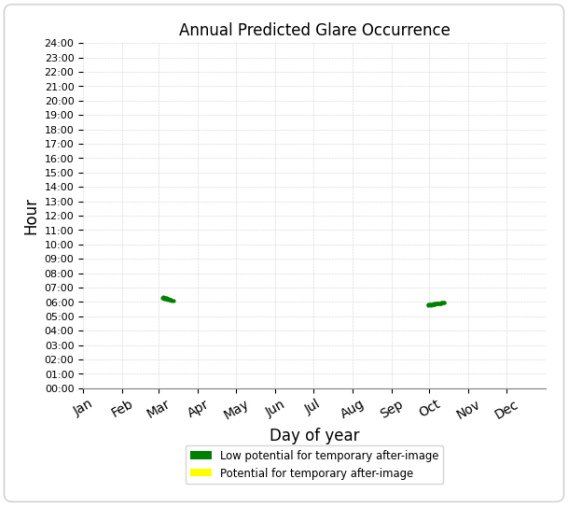


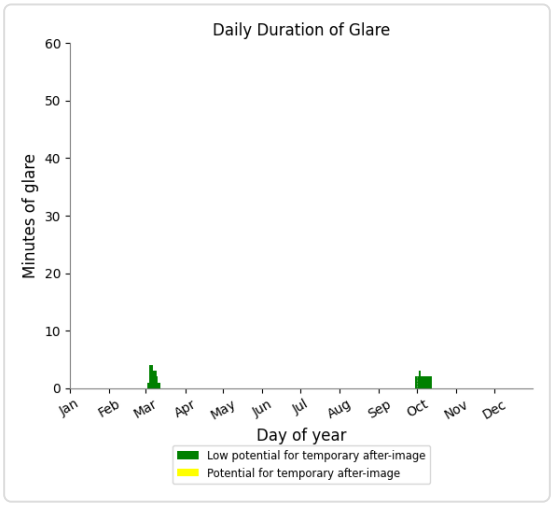


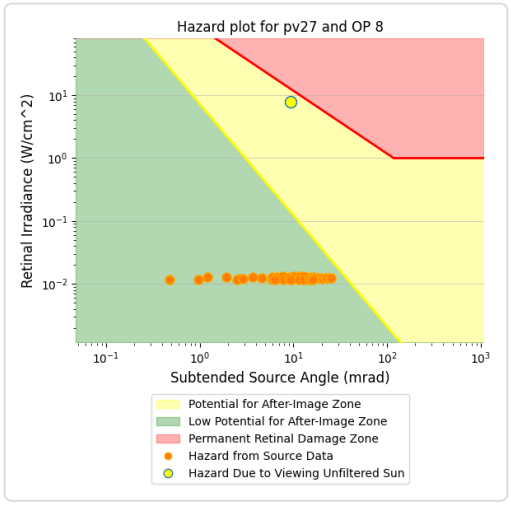
PV27 and OP 8

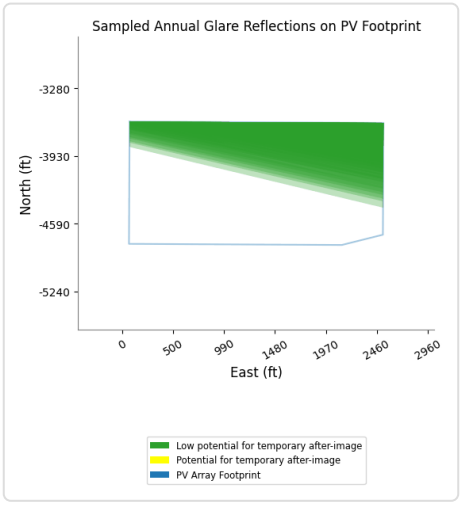
Yellow glare: none

Green glare: 53 min.



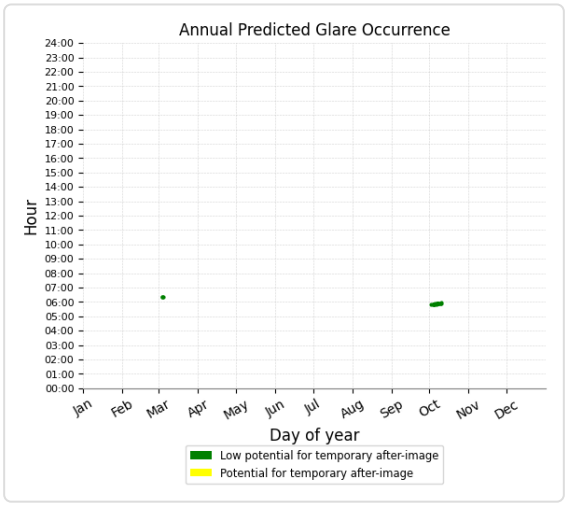


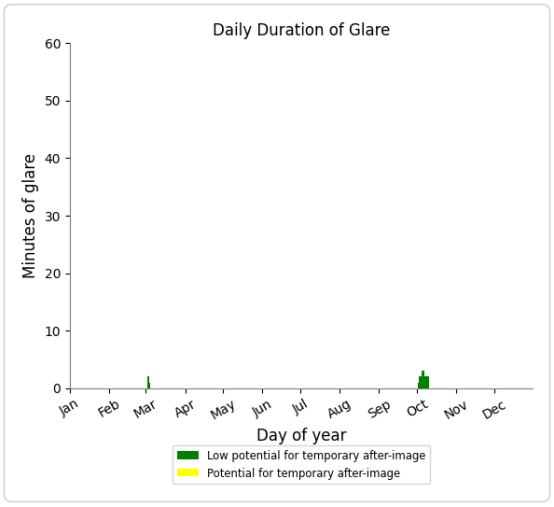


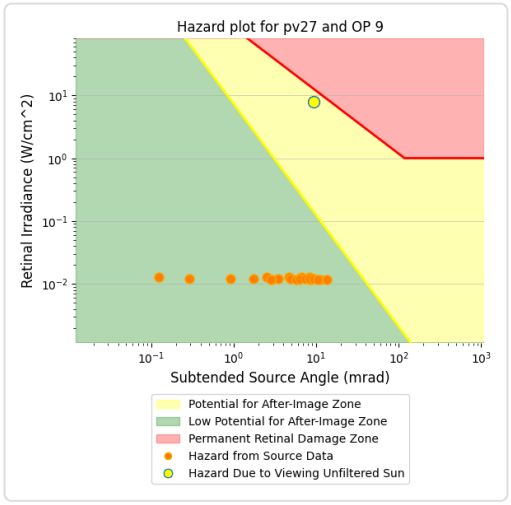


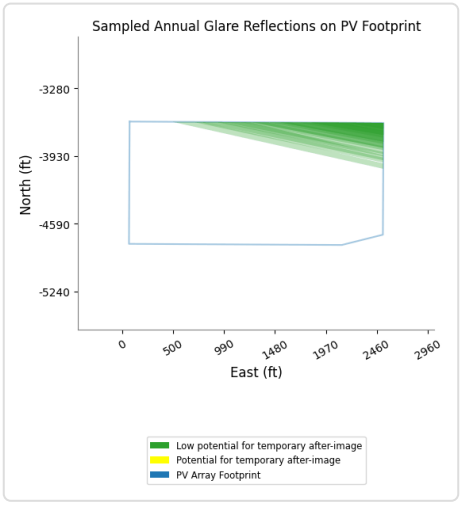
PV27 and OP 9

Yellow glare: none
Green glare: 22 min.









PV27 and OP 1

No glare found

PV27 and OP 2

No glare found

PV27 and OP 3

No glare found

PV27 and OP 5

No glare found

PV27 and OP 6

No glare found

PV27 and OP 10

No glare found

PV27 and OP 11

No glare found

PV27 and OP 12

No glare found

PV27 and OP 13

No glare found

PV27 and OP 14

No glare found

PV27 and OP 15

No glare found

PV27 and OP 16

No glare found

PV27 and OP 17

No glare found

PV27 and OP 18

No glare found

PV27 and OP 19

No glare found

PV27 and 20-ATCT

No glare found

PV: PV28 potential temporary after-image

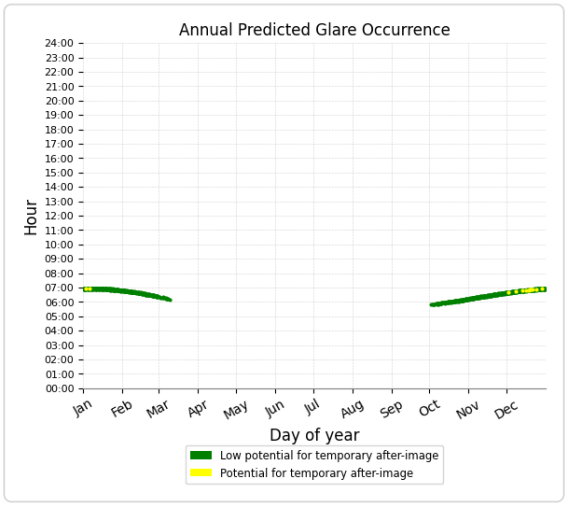
Receptor results ordered by category of glare

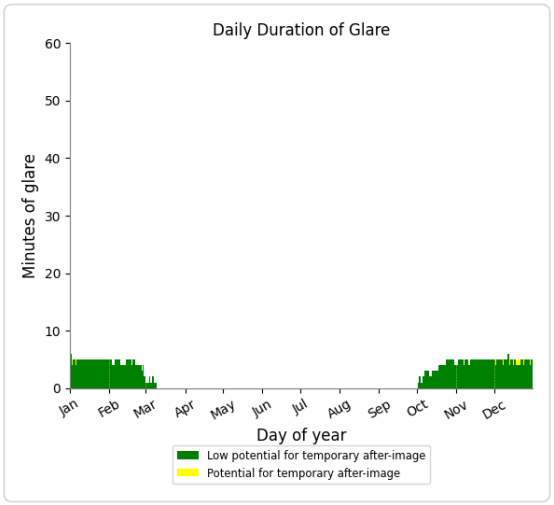
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	685	11.4	12	0.2
Route05	346	5.8	0	0.0
Route08	459	7.7	0	0.0
Route11	490	8.2	0	0.0
Route12	165	2.8	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route10	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 4	48	0.8	0	0.0
OP 5	62	1.0	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

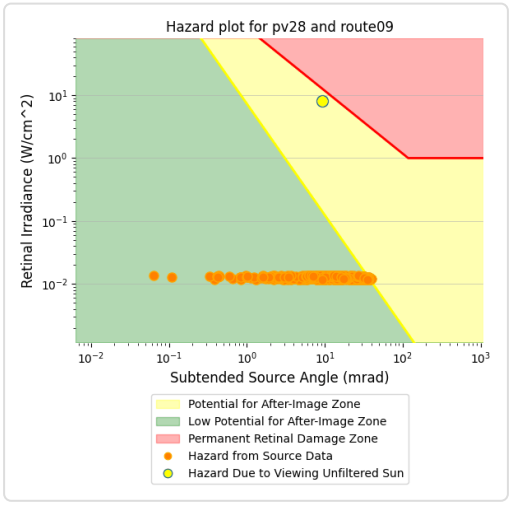
PV28 and Route: Route09

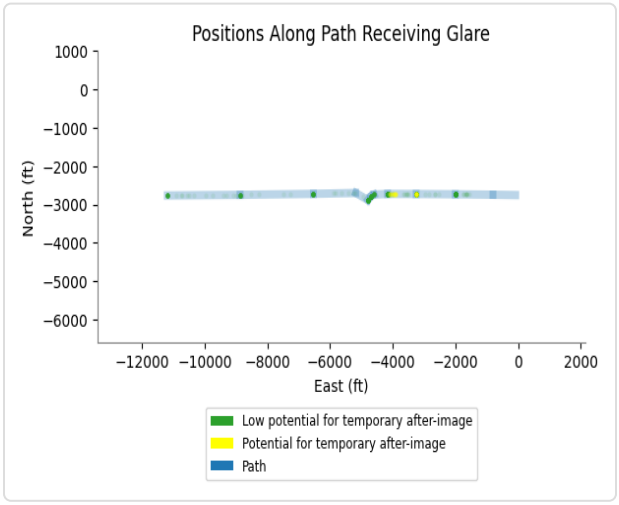
Yellow glare: 12 min.

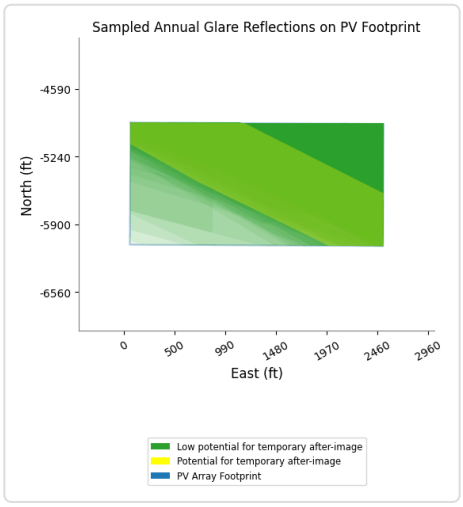
Green glare: 685 min.







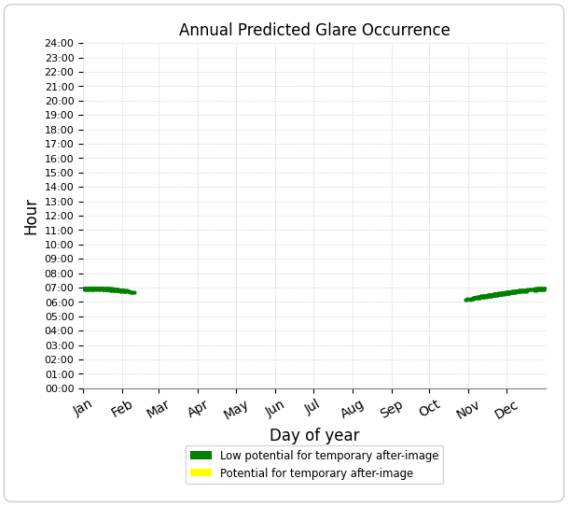


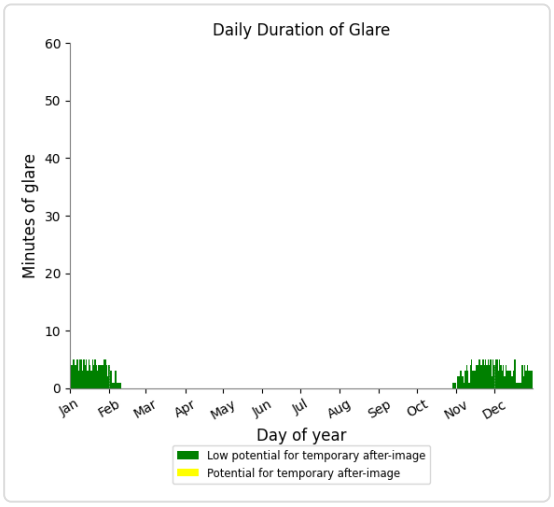


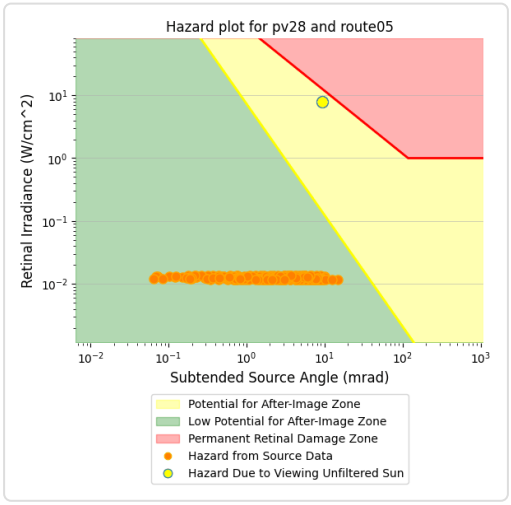
PV28 and Route: Route05

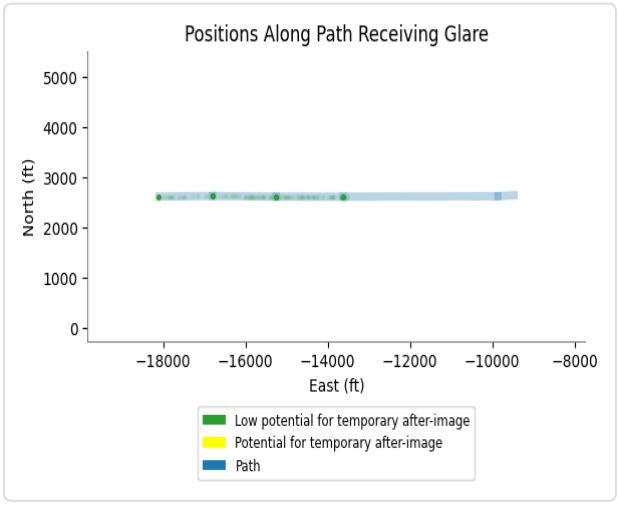
Yellow glare: none

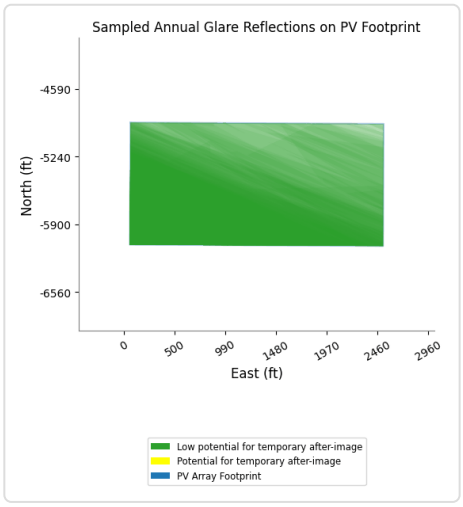
Green glare: 346 min.







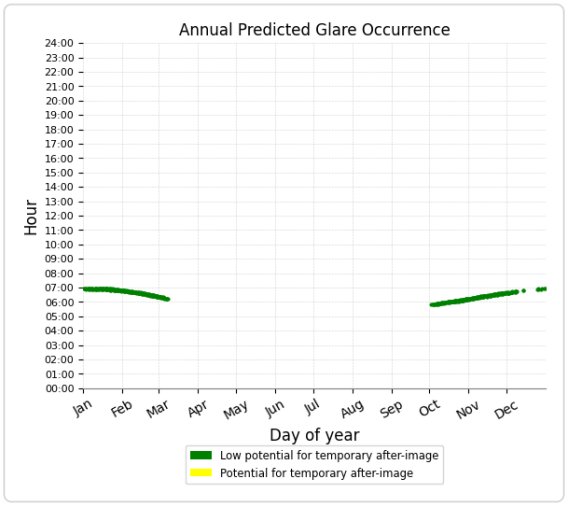


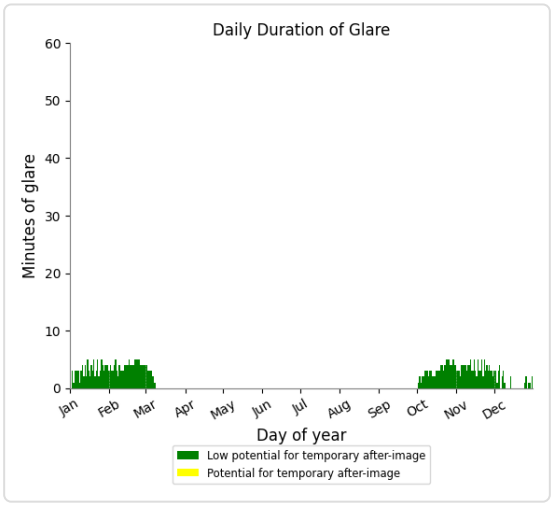


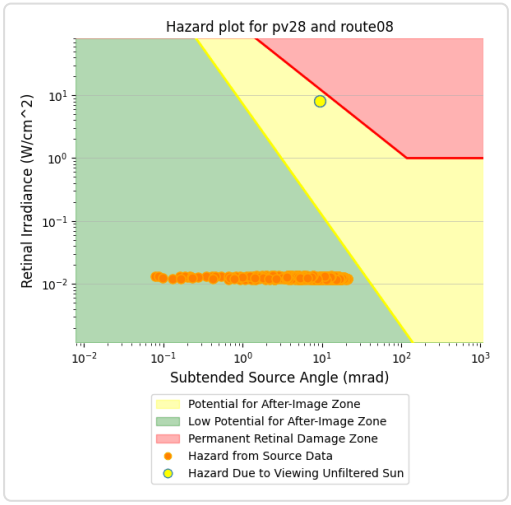
PV28 and Route: Route08

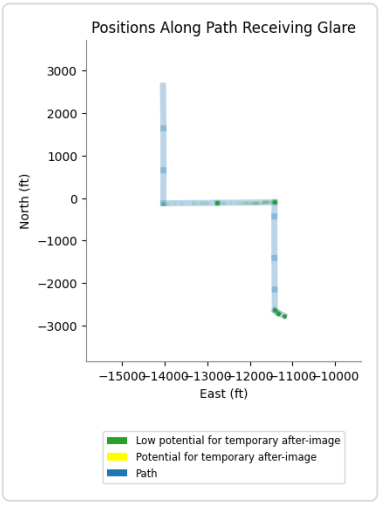
Yellow glare: none

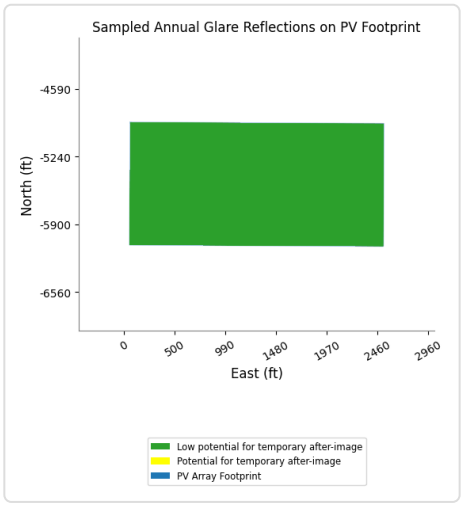
Green glare: 459 min.







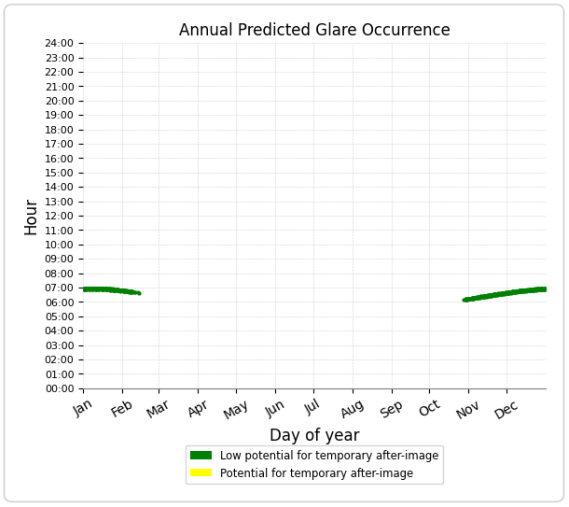


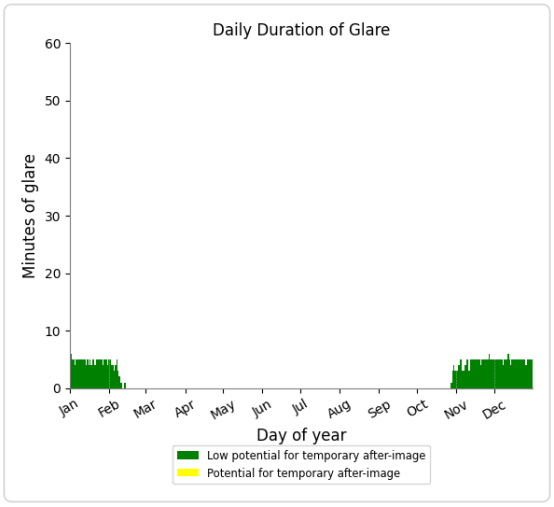


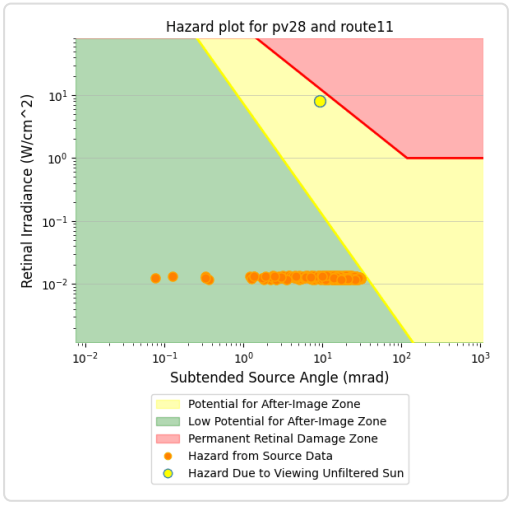
PV28 and Route: Route11

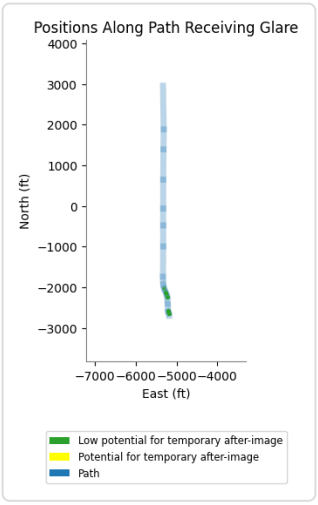
Yellow glare: none

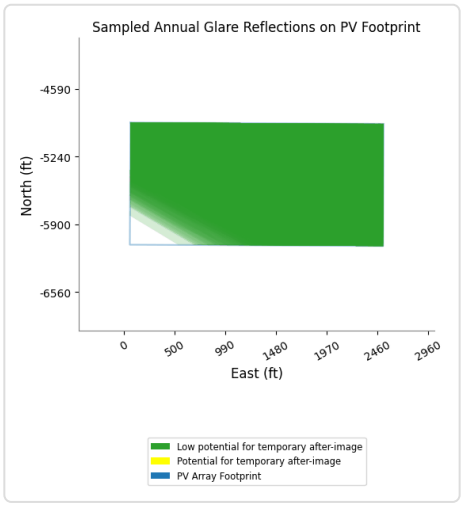
Green glare: 490 min.







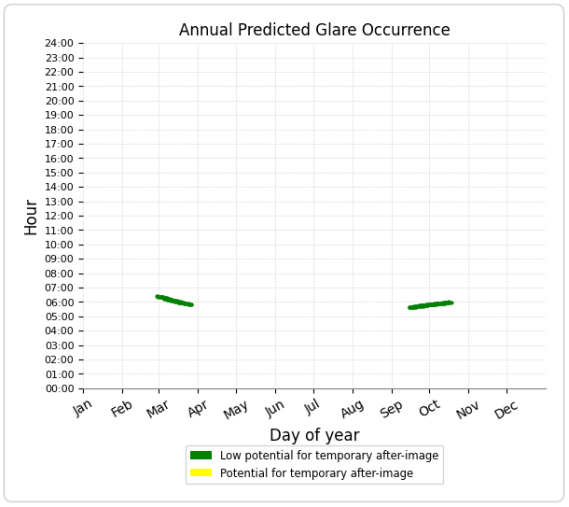


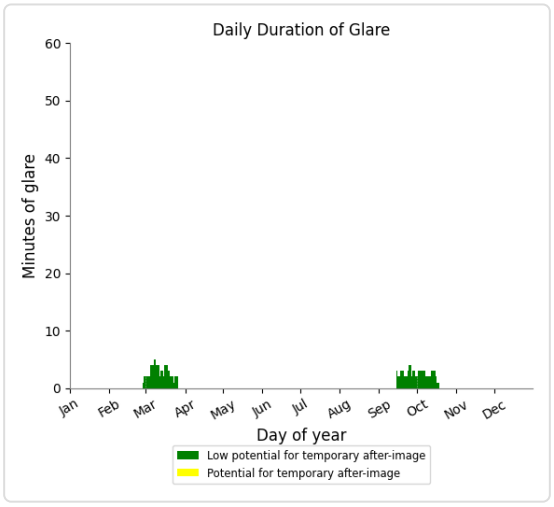


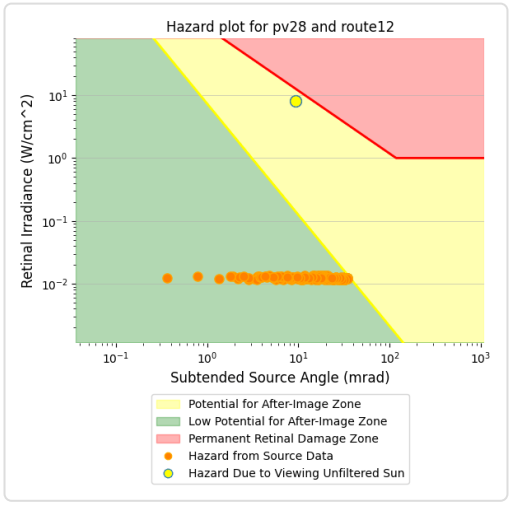
PV28 and Route: Route12

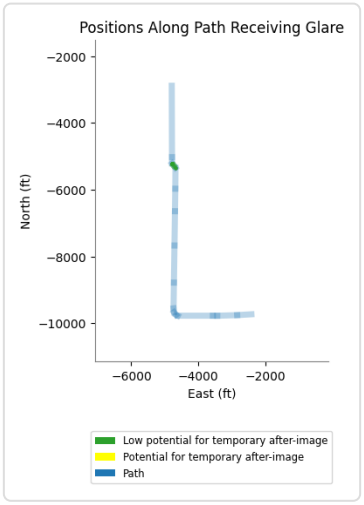
Yellow glare: none

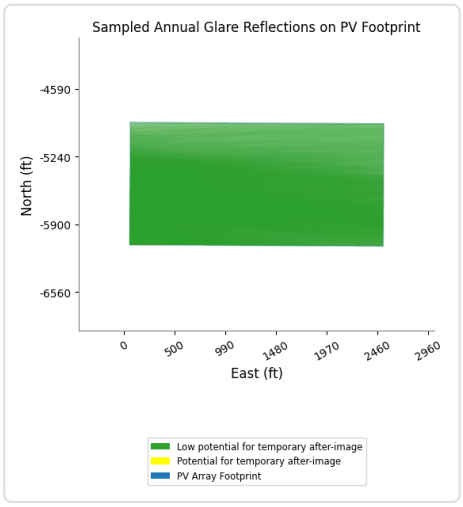
Green glare: 165 min.











PV28 and Route: Route01

No glare found

PV28 and Route: Route02

No glare found

PV28 and Route: Route04

No glare found

PV28 and Route: Route06

No glare found

PV28 and Route: Route07

No glare found

PV28 and Route: Route10

No glare found

PV28 and FP: NJK08

No glare found

PV28 and FP: NJK12

No glare found

PV28 and FP: NJK26

No glare found

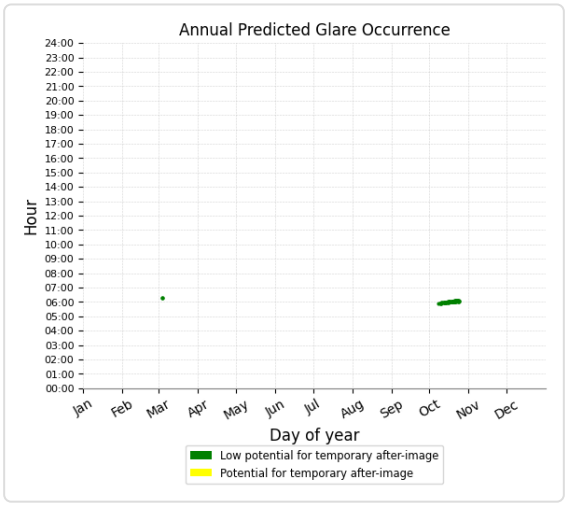
PV28 and FP: NJK30

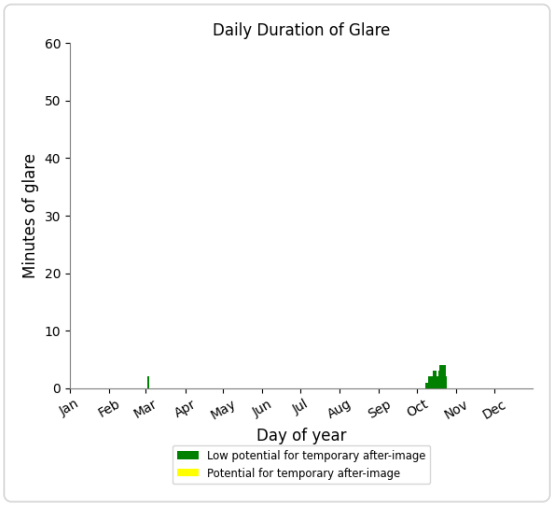
No glare found

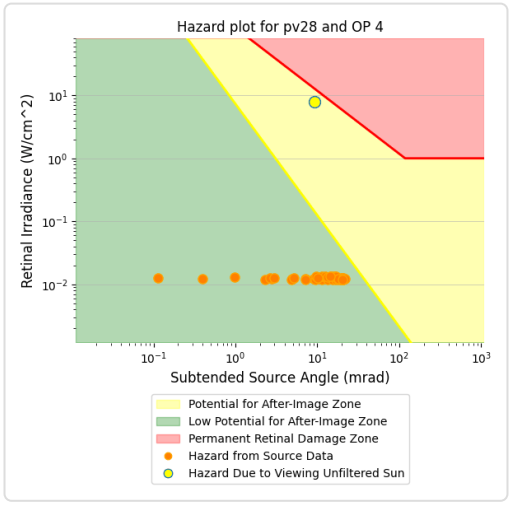
PV28 and OP 4

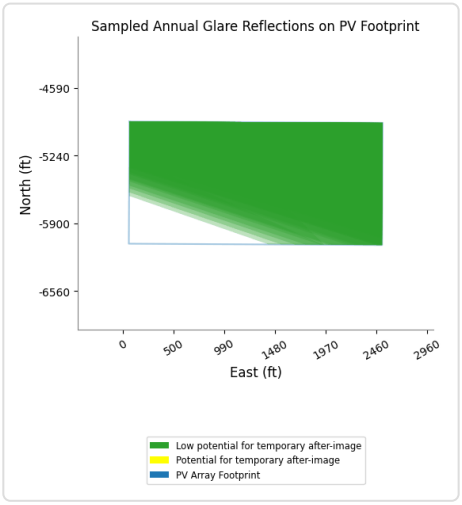
Yellow glare: none

Green glare: 48 min.



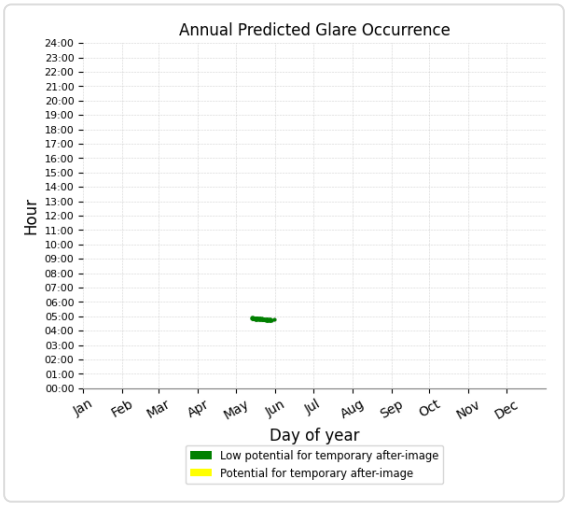


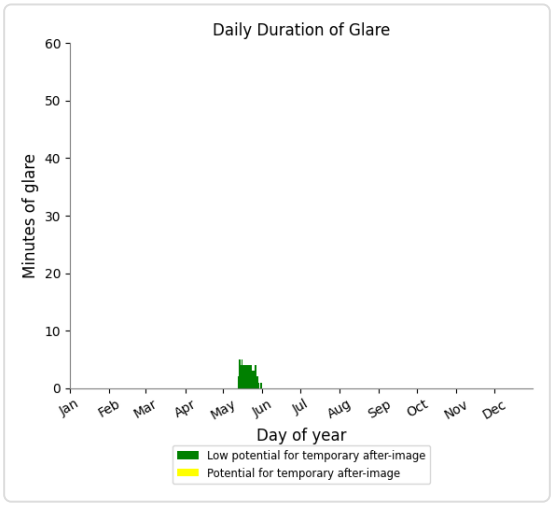


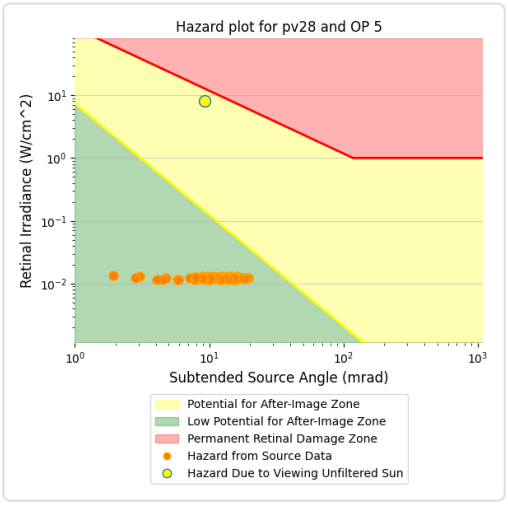


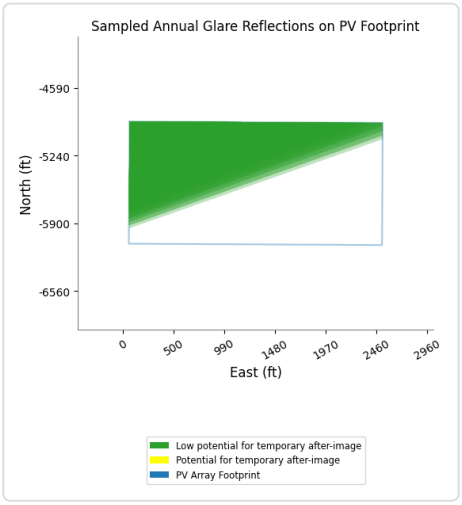
PV28 and OP 5

Yellow glare: none
Green glare: 62 min.









PV28 and OP 1

No glare found

PV28 and OP 2

No glare found

PV28 and OP 3

No glare found

PV28 and OP 6

No glare found

PV28 and OP 7

No glare found

PV28 and OP 8

No glare found

PV28 and OP 9

No glare found

PV28 and OP 10

No glare found

PV28 and OP 11

No glare found

PV28 and OP 12

No glare found

PV28 and OP 13

No glare found

PV28 and OP 14

No glare found

PV28 and OP 15

No glare found

PV28 and OP 16

No glare found

PV28 and OP 17

No glare found

PV28 and OP 18

No glare found

PV28 and OP 19

No glare found

PV28 and 20-ATCT

No glare found

PV: PV29 low potential for temporary after-image

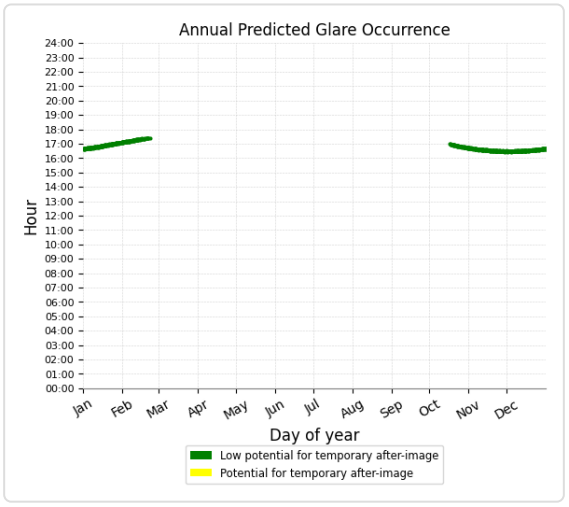
Receptor results ordered by category of glare

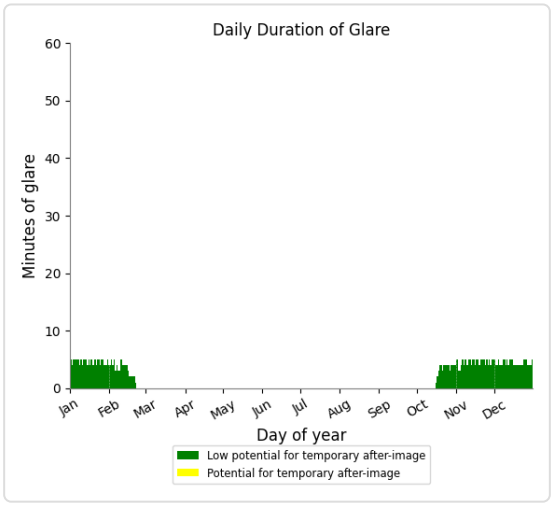
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	546	9.1	0	0.0
Route12	355	5.9	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 7	54	0.9	0	0.0
OP 8	128	2.1	0	0.0
OP 9	96	1.6	0	0.0
OP 11	79	1.3	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

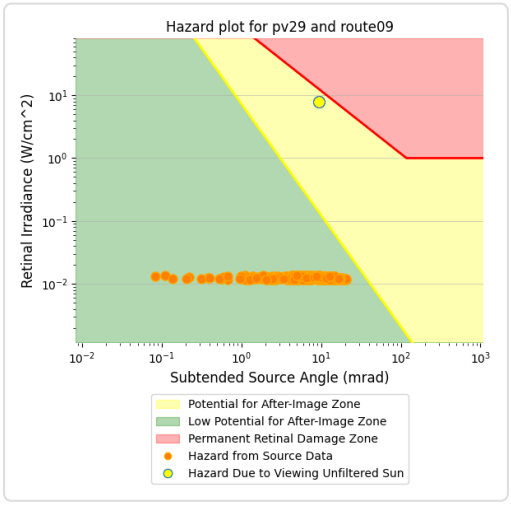
PV29 and Route: Route09

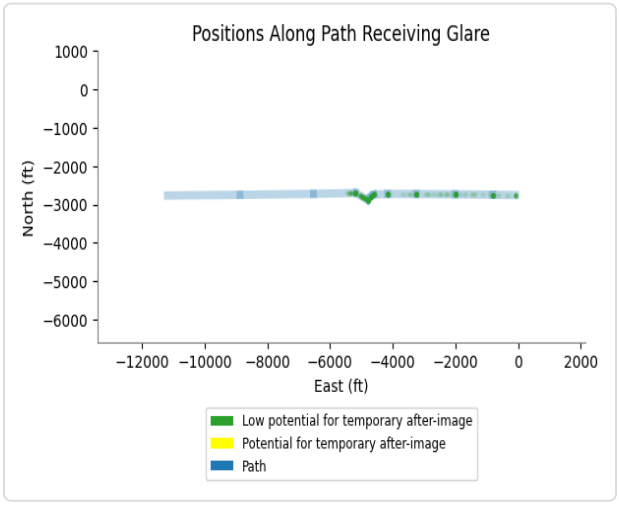
Yellow glare: none

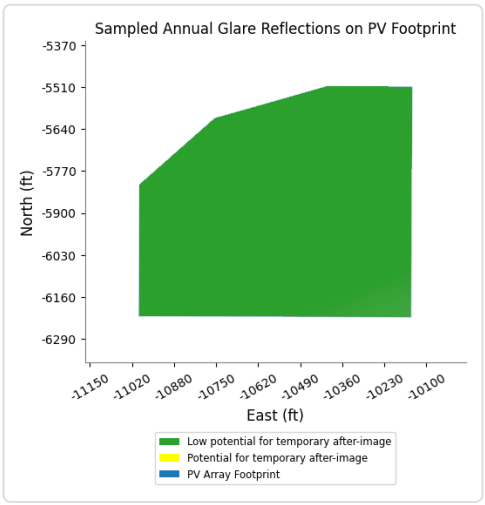
Green glare: 546 min.







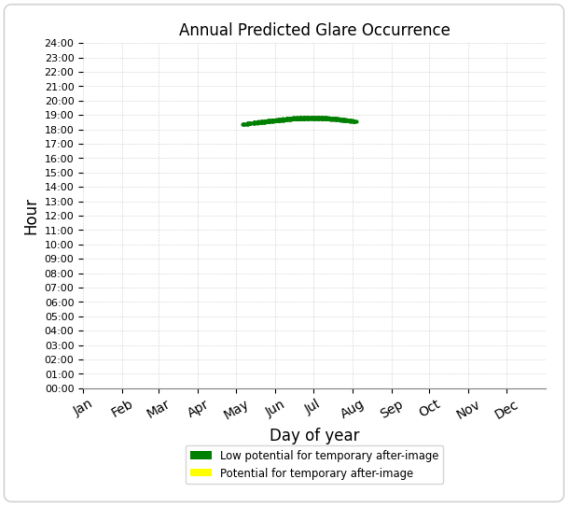


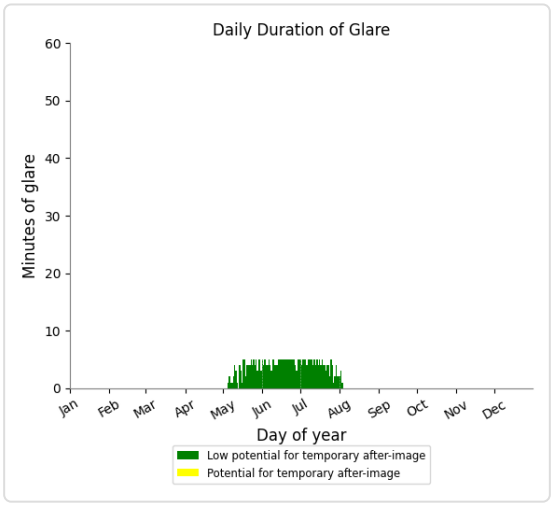


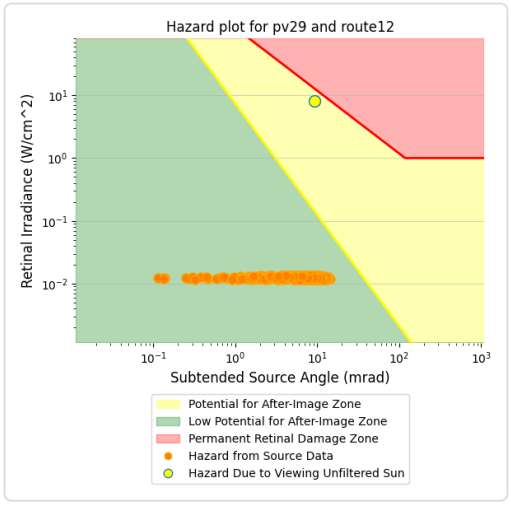
PV29 and Route: Route12

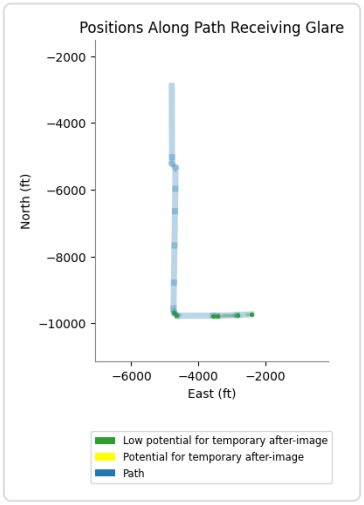
Yellow glare: none

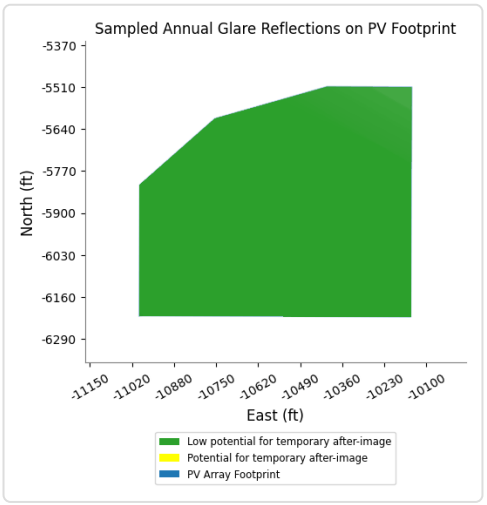
Green glare: 355 min.











PV29 and Route: Route01

No glare found

PV29 and Route: Route02

No glare found

PV29 and Route: Route04

No glare found

PV29 and Route: Route05

No glare found

PV29 and Route: Route06

No glare found

PV29 and Route: Route07

No glare found

PV29 and Route: Route08

No glare found

PV29 and Route: Route10

No glare found

PV29 and Route: Route11

No glare found

PV29 and FP: NJK08

No glare found

PV29 and FP: NJK12

No glare found

PV29 and FP: NJK26

No glare found

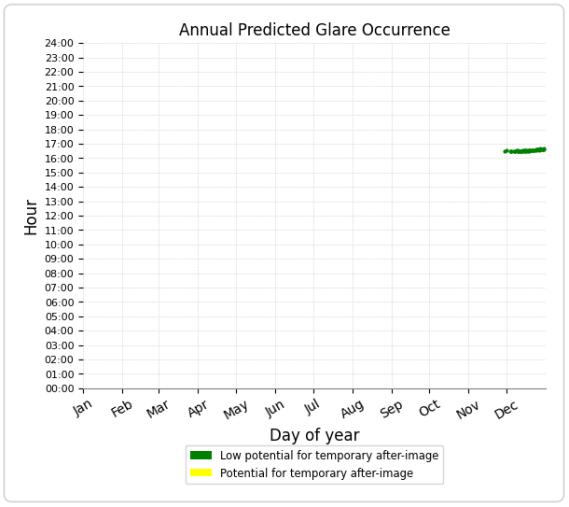
PV29 and FP: NJK30

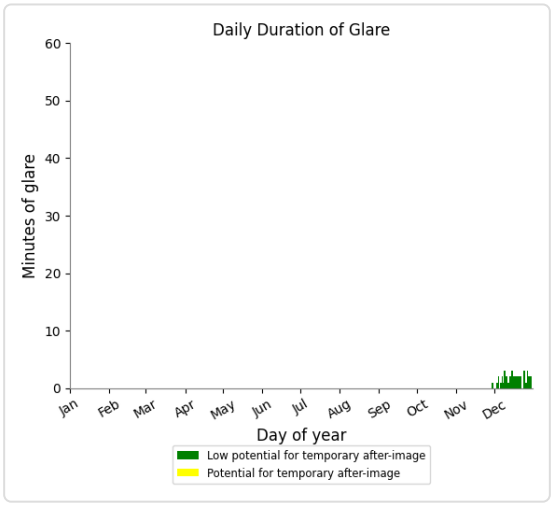
No glare found

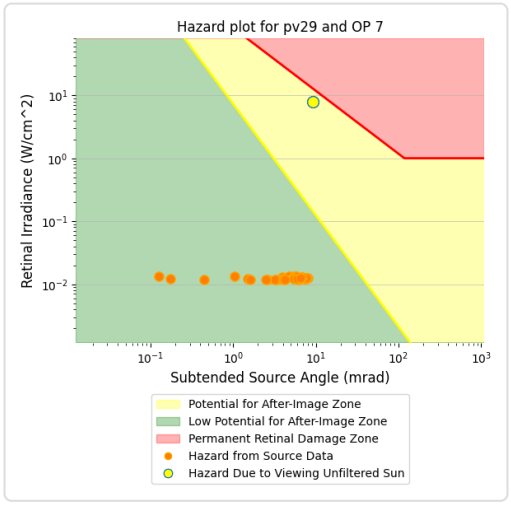
PV29 and OP 7

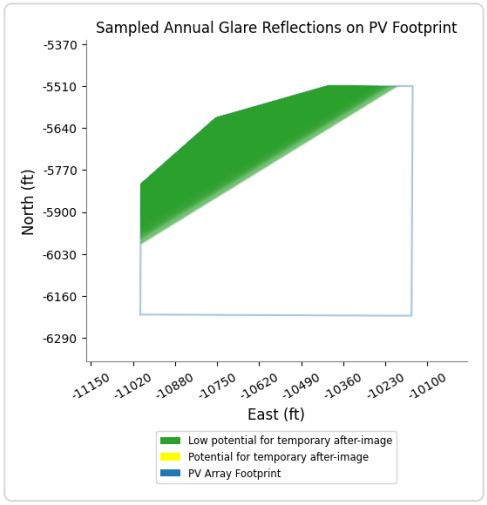
Yellow glare: none

Green glare: 54 min.





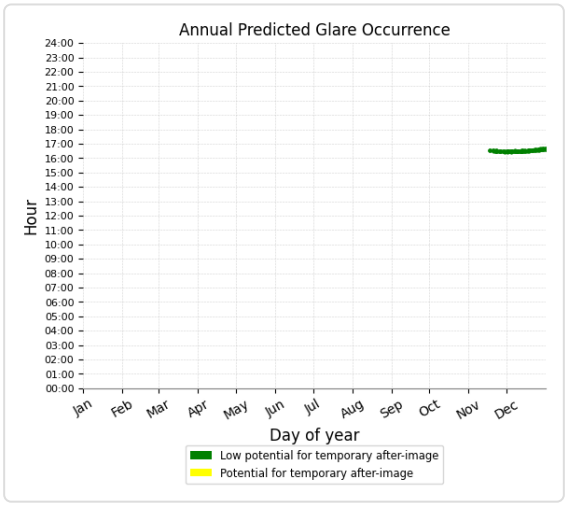


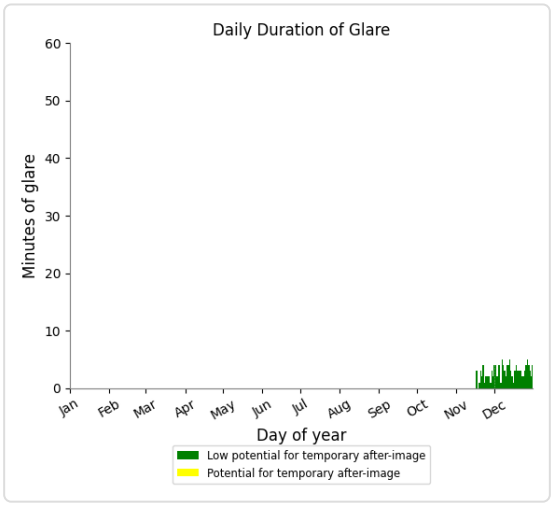


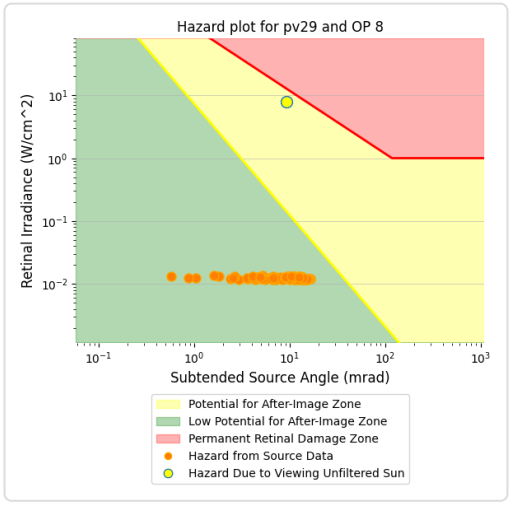
PV29 and OP 8

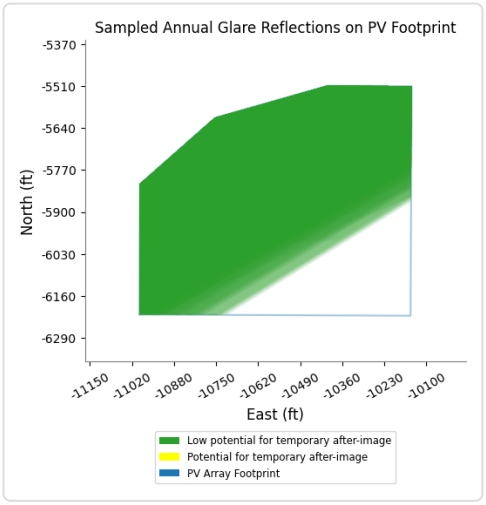
Yellow glare: none

Green glare: 128 min.





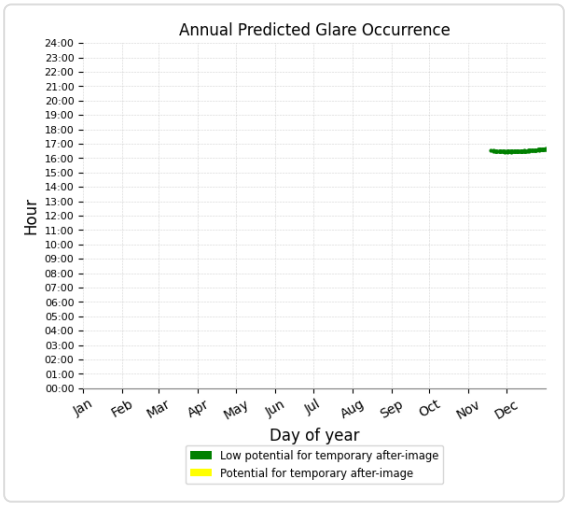


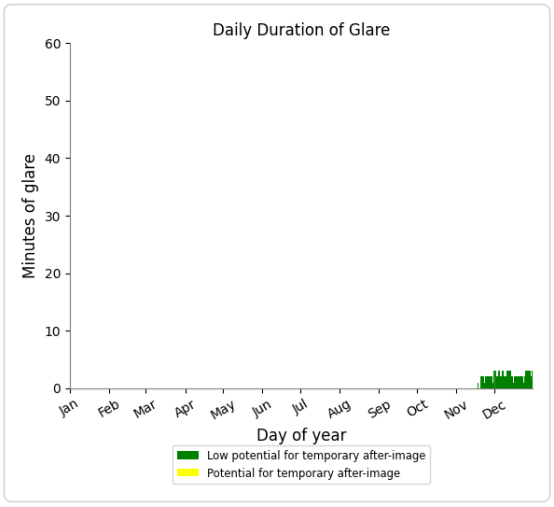


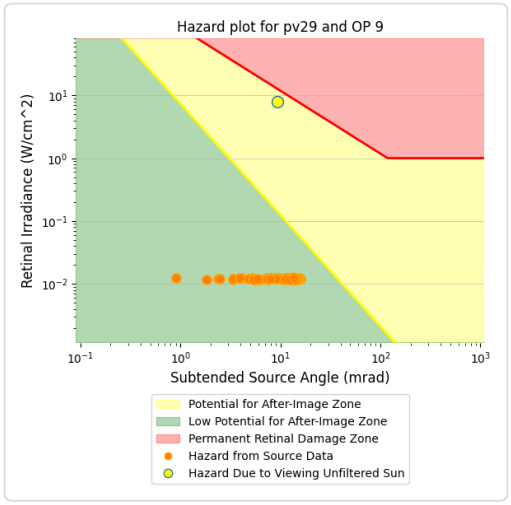
PV29 and OP 9

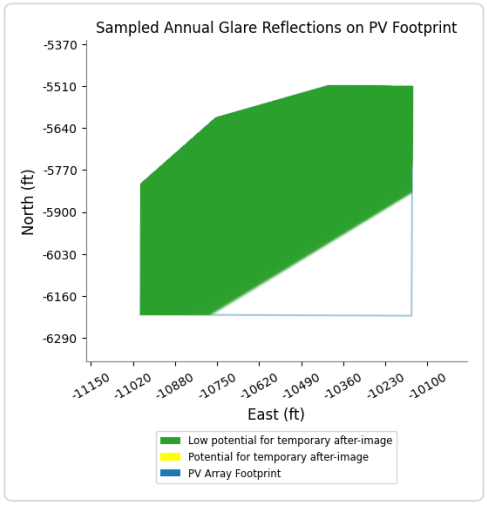
Yellow glare: none

Green glare: 96 min.



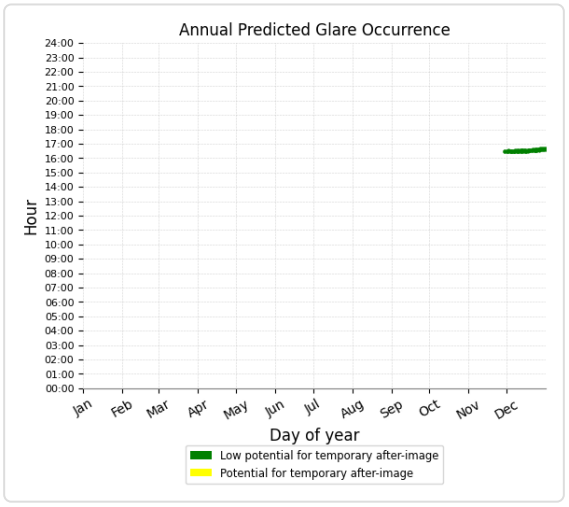


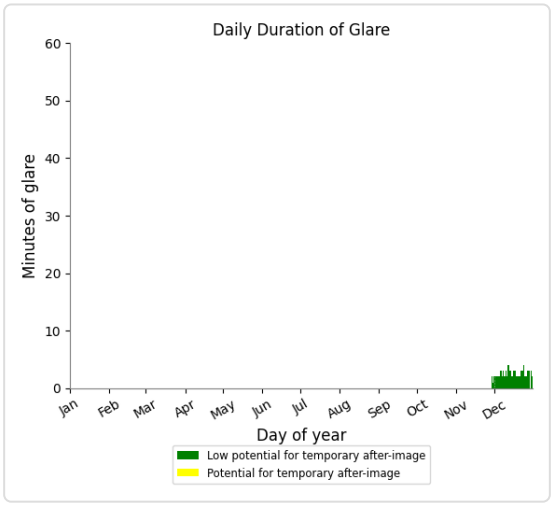


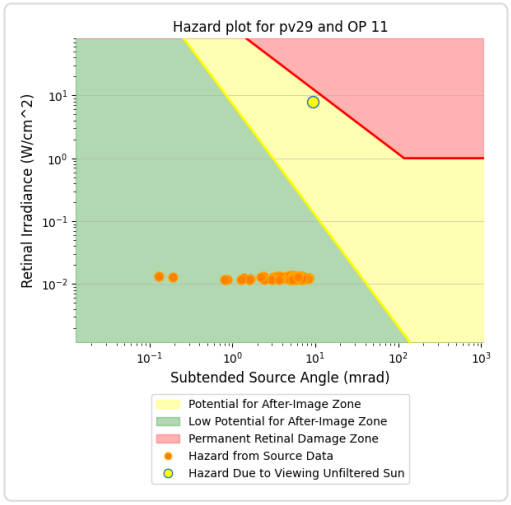


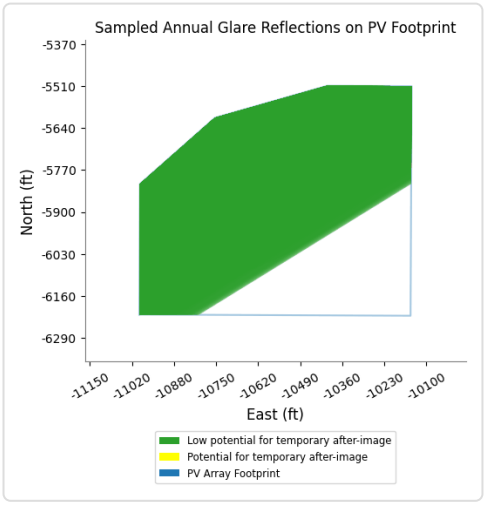
PV29 and OP 11

Yellow glare: none
Green glare: 79 min.









PV29 and OP 1

No glare found

PV29 and OP 2

No glare found

PV29 and OP 3

No glare found

PV29 and OP 4

No glare found

PV29 and OP 5

No glare found

PV29 and OP 6

No glare found

PV29 and OP 10

No glare found

PV29 and OP 12

No glare found

PV29 and OP 13

No glare found

PV29 and OP 14

No glare found

PV29 and OP 15

No glare found

PV29 and OP 16

No glare found

PV29 and OP 17

No glare found

PV29 and OP 18

No glare found

PV29 and OP 19

No glare found

PV29 and 20-ATCT

No glare found

PV: PV30 low potential for temporary after-image

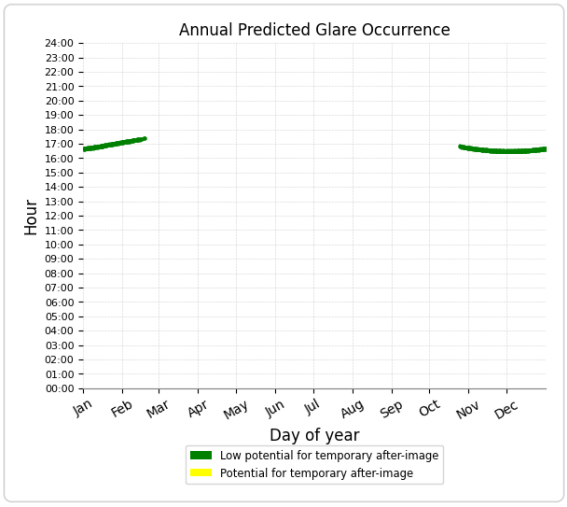
Receptor results ordered by category of glare

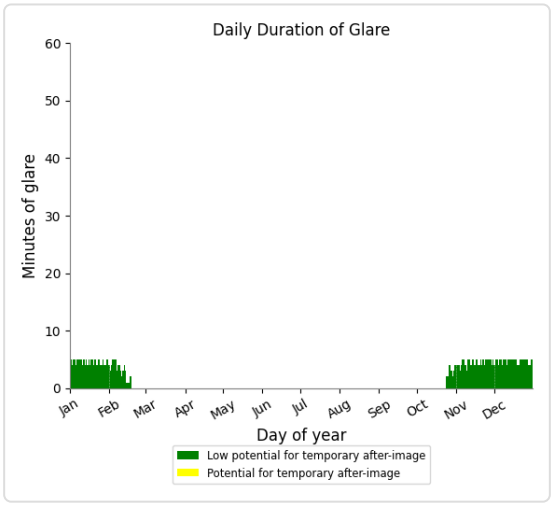
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	502	8.4	0	0.0
Route12	548	9.1	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 5	267	4.5	0	0.0
OP 8	31	0.5	0	0.0
OP 9	64	1.1	0	0.0
OP 11	21	0.3	0	0.0
OP 17	42	0.7	0	0.0
OP 18	55	0.9	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 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

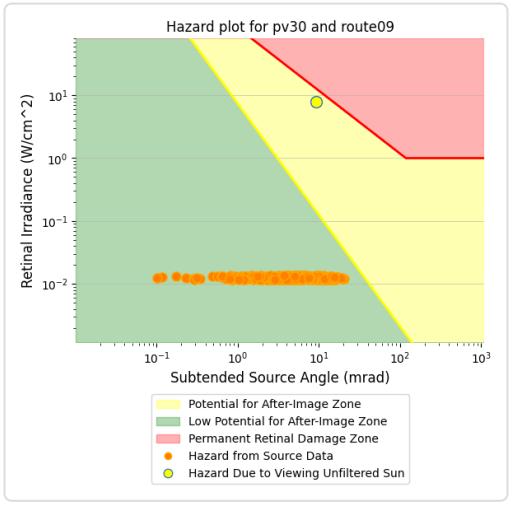
PV30 and Route: Route09

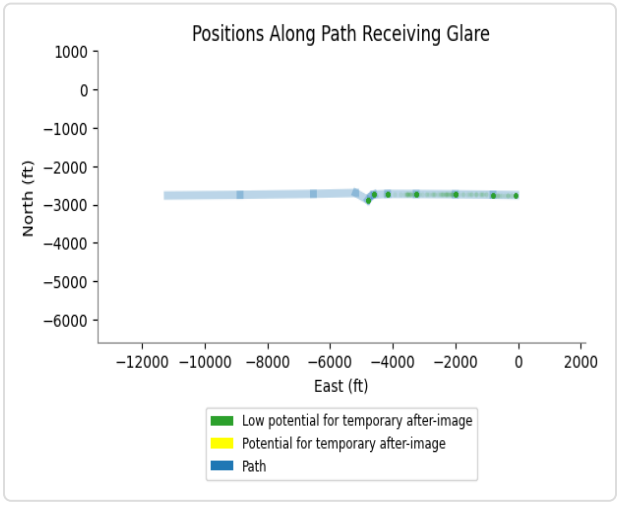
Yellow glare: none

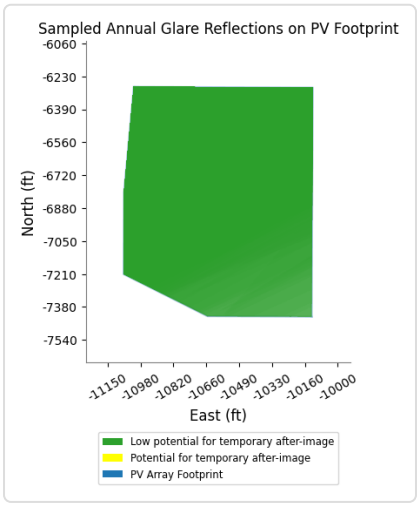
Green glare: 502 min.







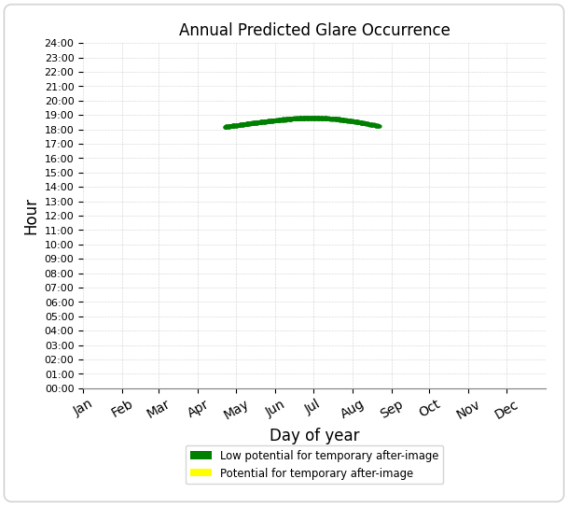


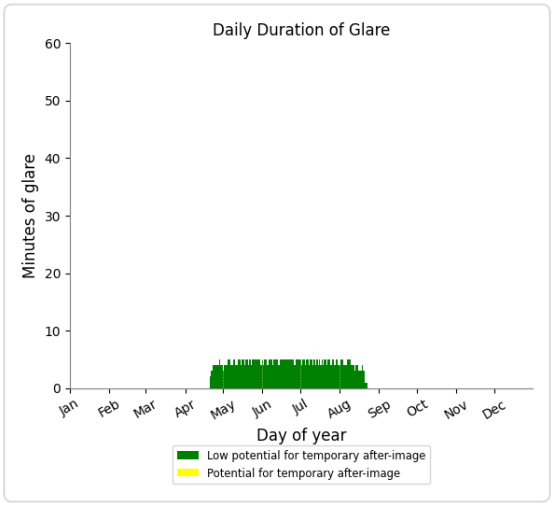


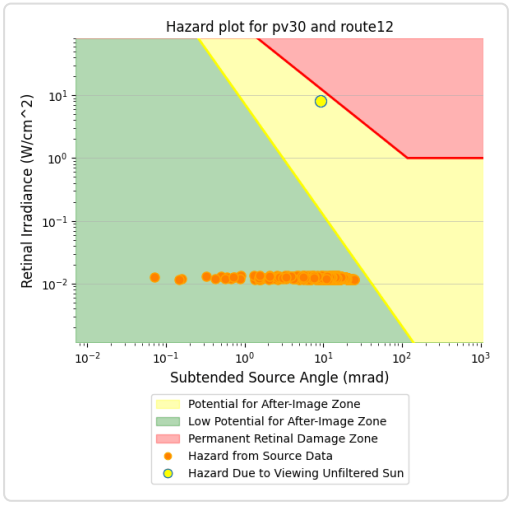
PV30 and Route: Route12

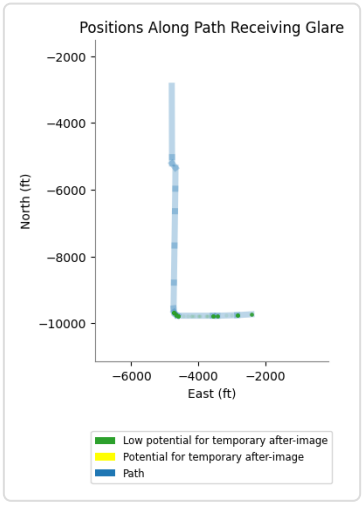
Yellow glare: none

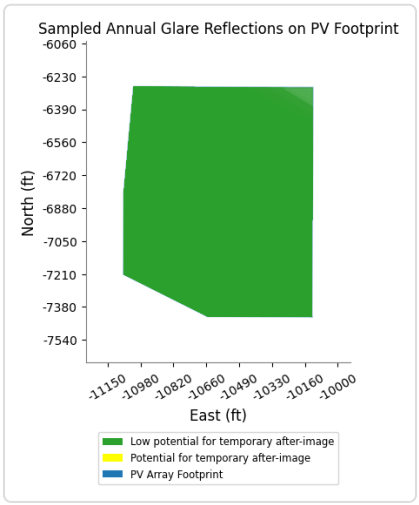
Green glare: 548 min.











PV30 and Route: Route01

No glare found

PV30 and Route: Route02

No glare found

PV30 and Route: Route04

No glare found

PV30 and Route: Route05

No glare found

PV30 and Route: Route06

No glare found

PV30 and Route: Route07

No glare found

PV30 and Route: Route08

No glare found

PV30 and Route: Route10

No glare found

PV30 and Route: Route11

No glare found

PV30 and FP: NJK08

No glare found

PV30 and FP: NJK12

No glare found

PV30 and FP: NJK26

No glare found

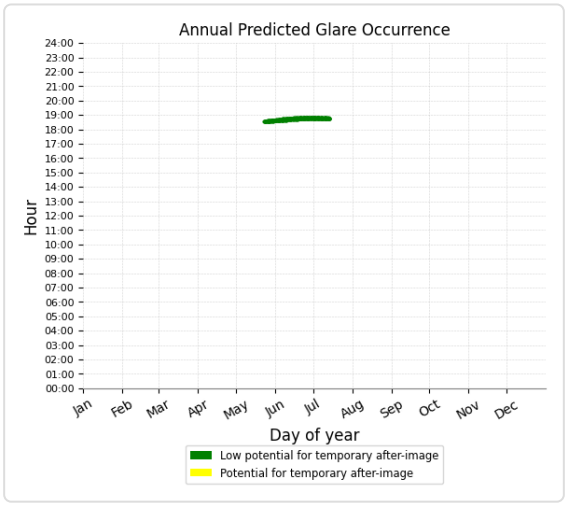
PV30 and FP: NJK30

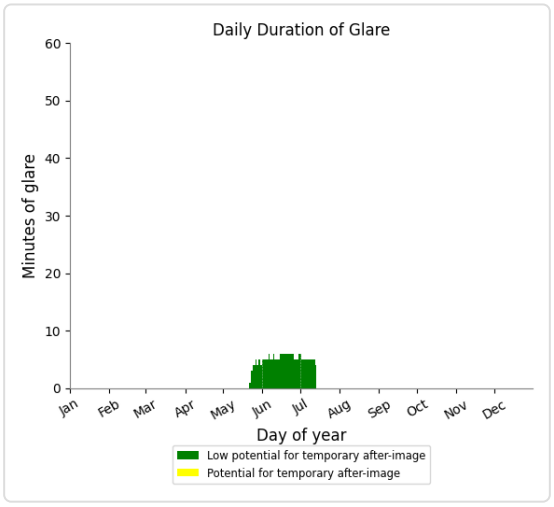
No glare found

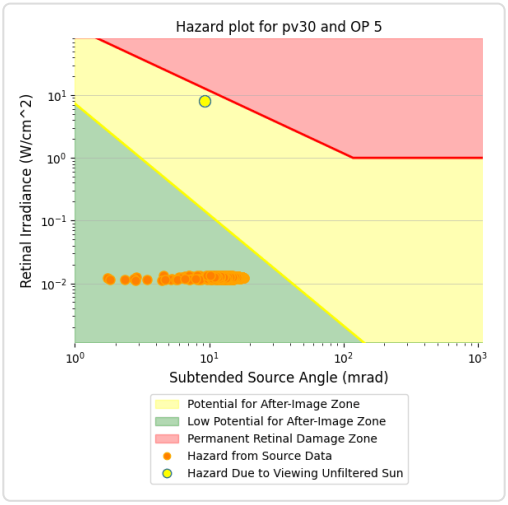
PV30 and OP 5

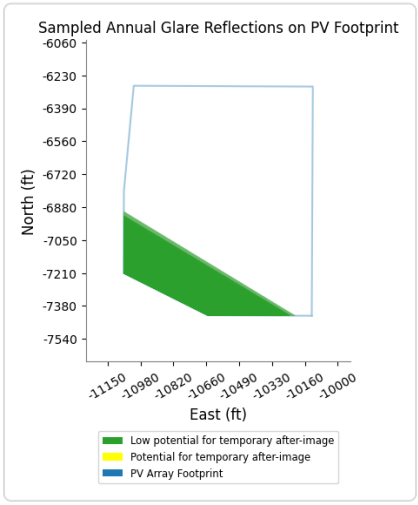
Yellow glare: none

Green glare: 267 min.





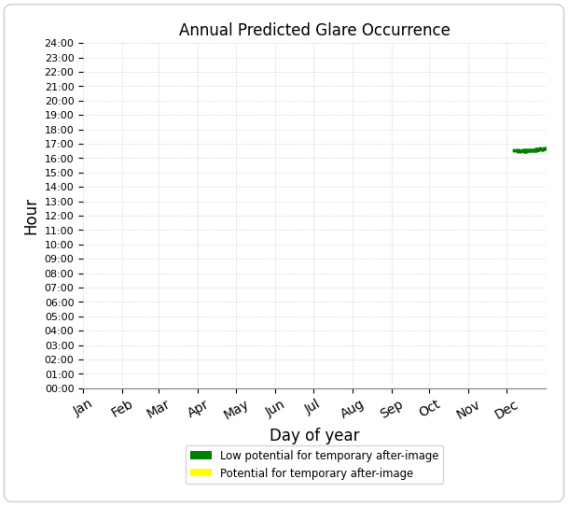


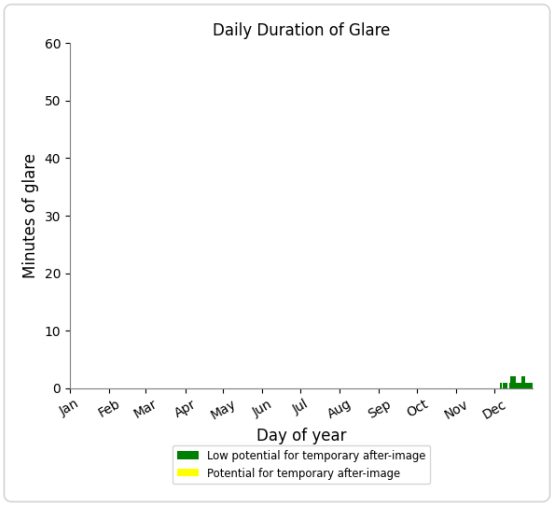


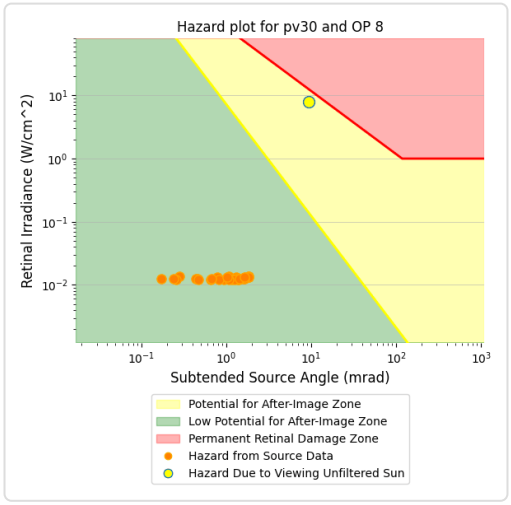
PV30 and OP 8

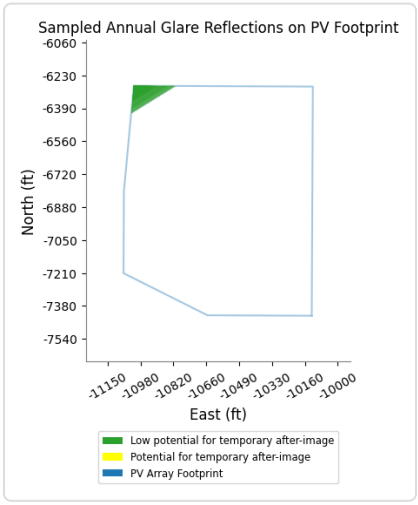
Yellow glare: none

Green glare: 31 min.





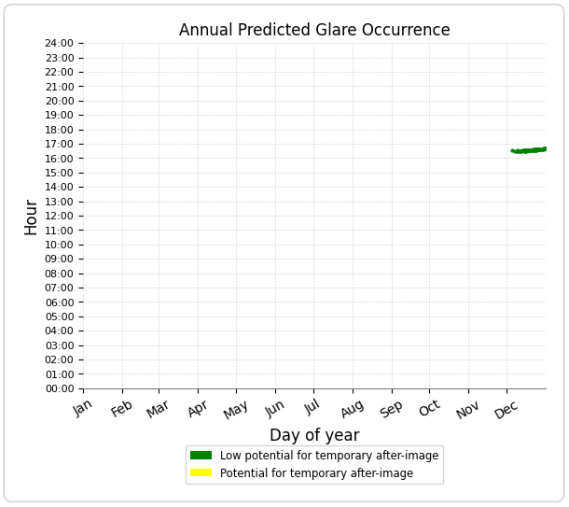


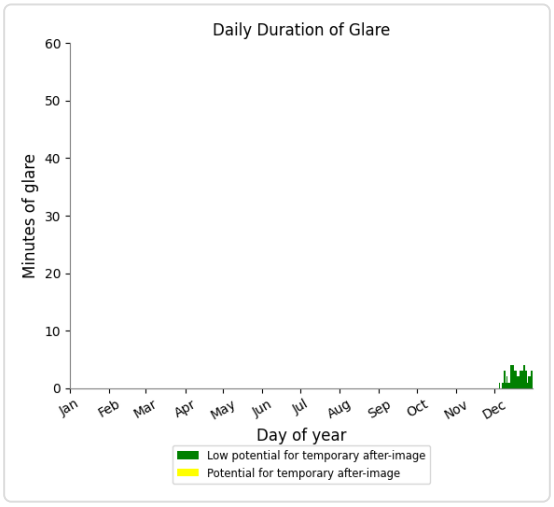


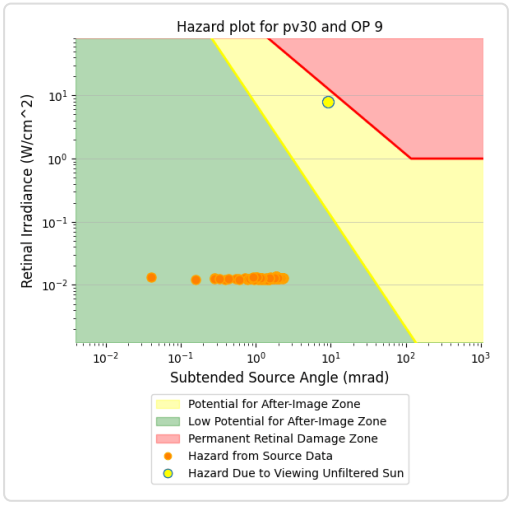
PV30 and OP 9

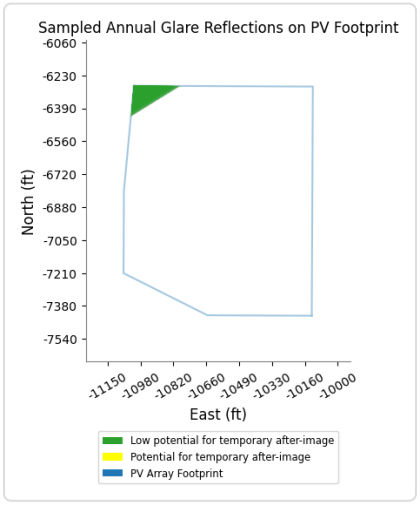
Yellow glare: none

Green glare: 64 min.





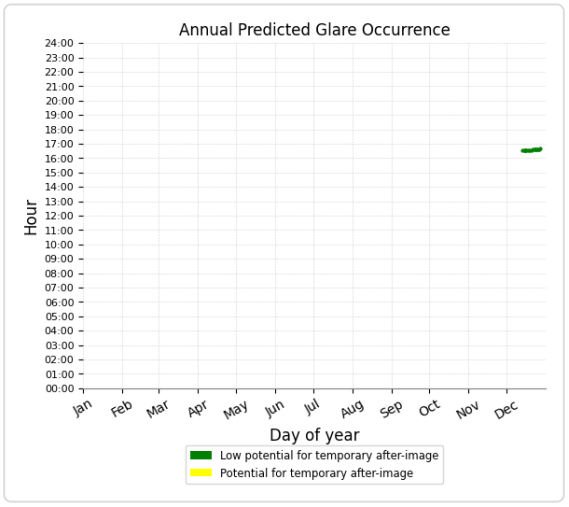


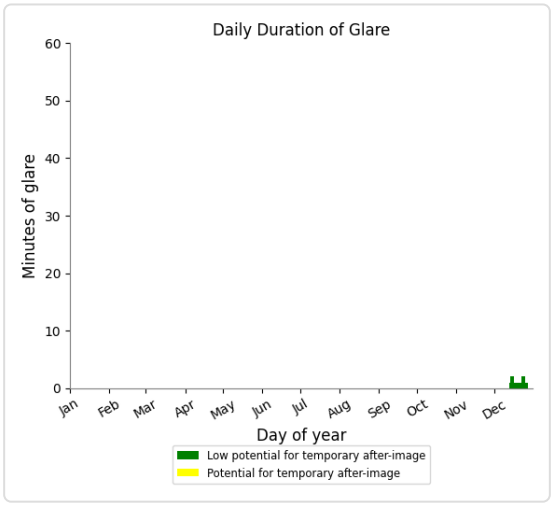


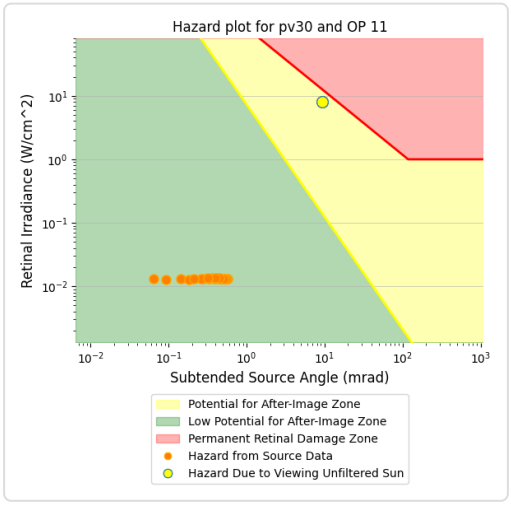
PV30 and OP 11

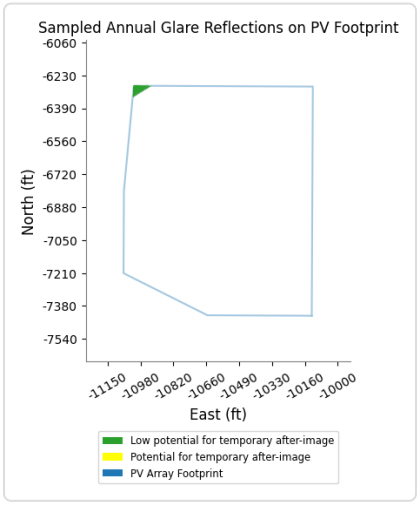
Yellow glare: none

Green glare: 21 min.





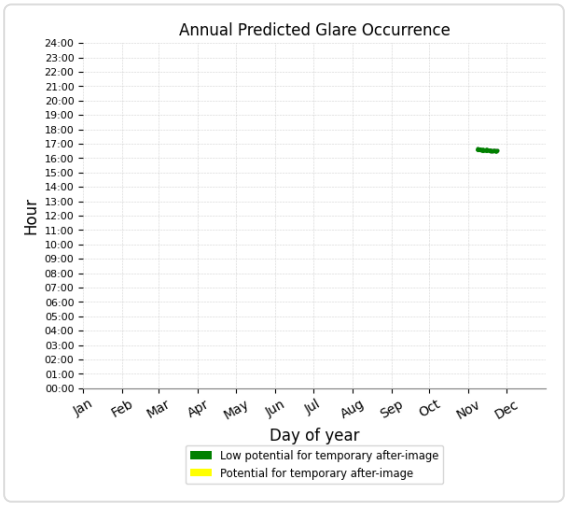


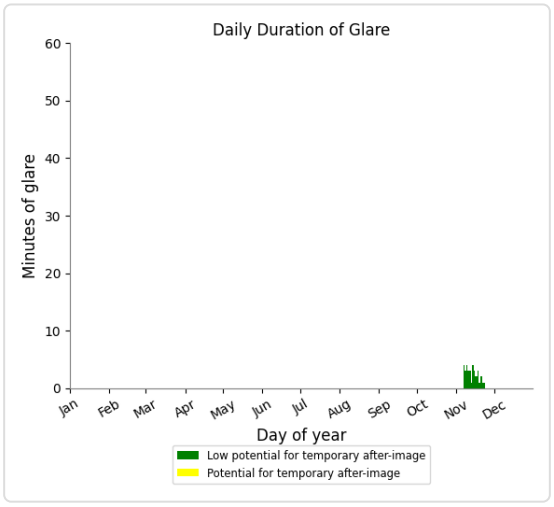


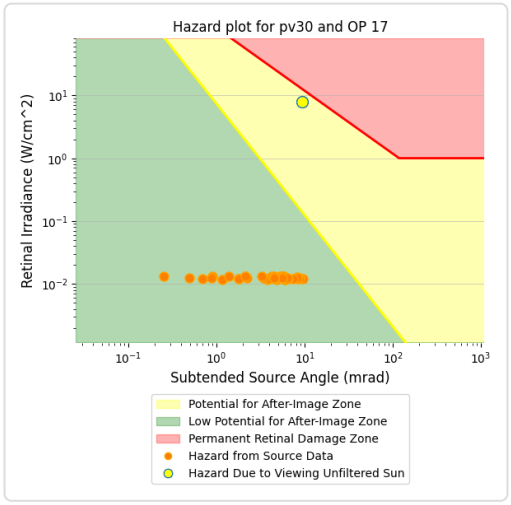
PV30 and OP 17

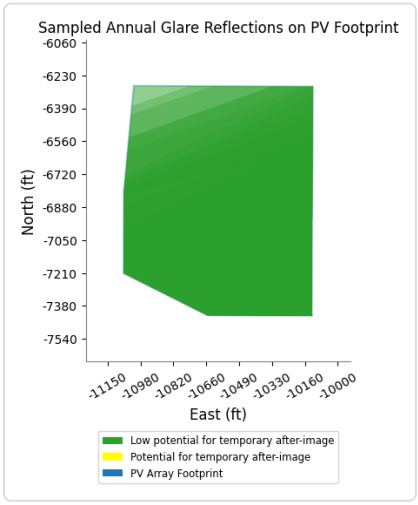
Yellow glare: none

Green glare: 42 min.





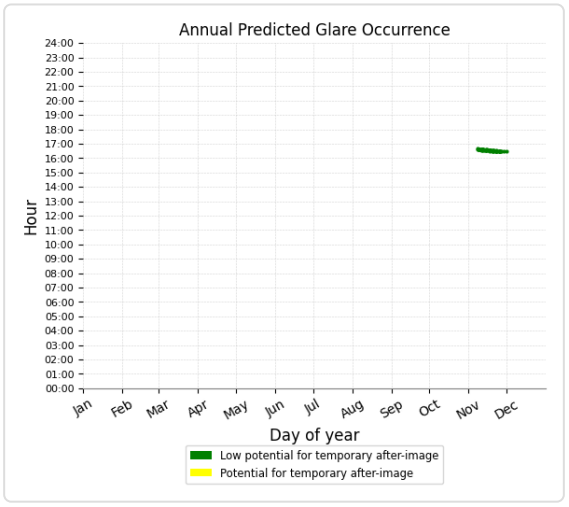


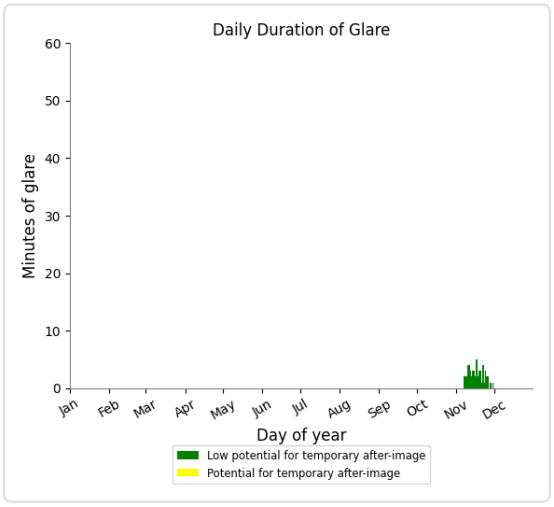


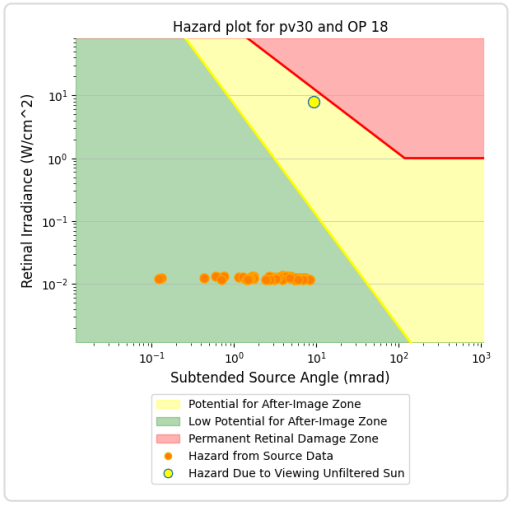
PV30 and OP 18

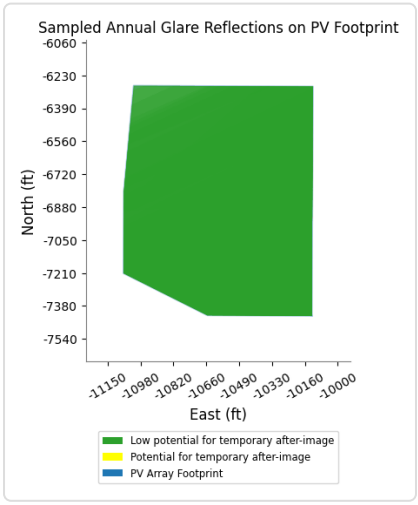
Yellow glare: none

Green glare: 55 min.









PV30 and OP 1

No glare found

PV30 and OP 2

No glare found

PV30 and OP 3

No glare found

PV30 and OP 4

No glare found

PV30 and OP 6

No glare found

PV30 and OP 7

No glare found

PV30 and OP 10

No glare found

PV30 and OP 12

No glare found

PV30 and OP 13

No glare found

PV30 and OP 14

No glare found

PV30 and OP 15

No glare found

PV30 and OP 16

No glare found

PV30 and OP 19

No glare found

PV30 and 20-ATCT

No glare found

PV: PV31 low potential for temporary after-image

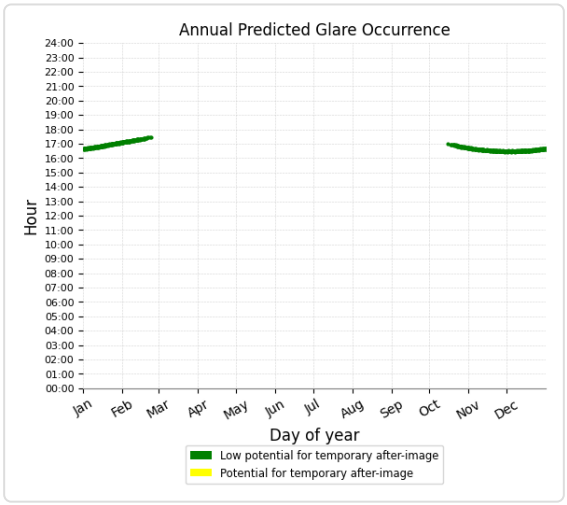
Receptor results ordered by category of glare

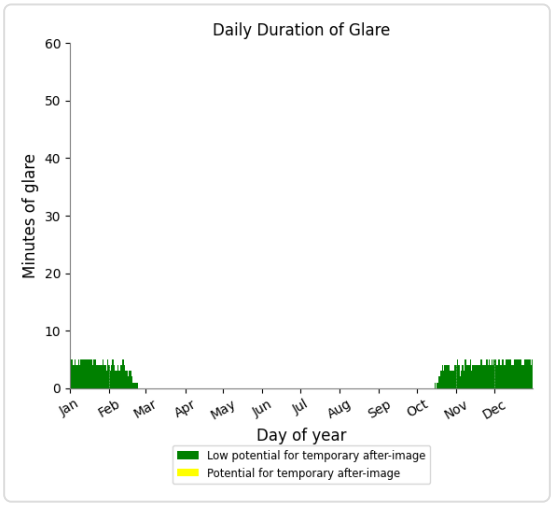
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	529	8.8	0	0.0
Route12	123	2.0	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 8	103	1.7	0	0.0
OP 9	79	1.3	0	0.0
OP 11	51	0.8	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 10	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

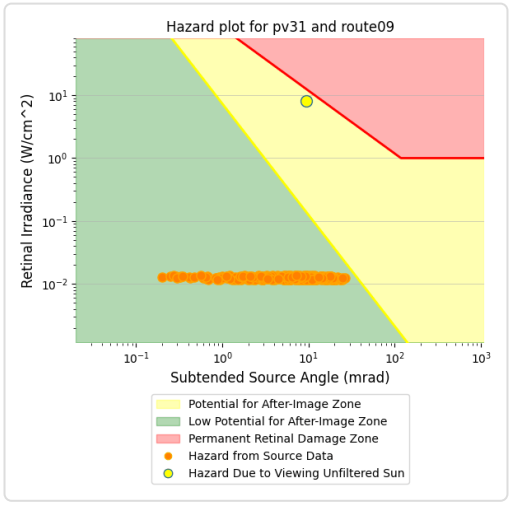
PV31 and Route: Route09

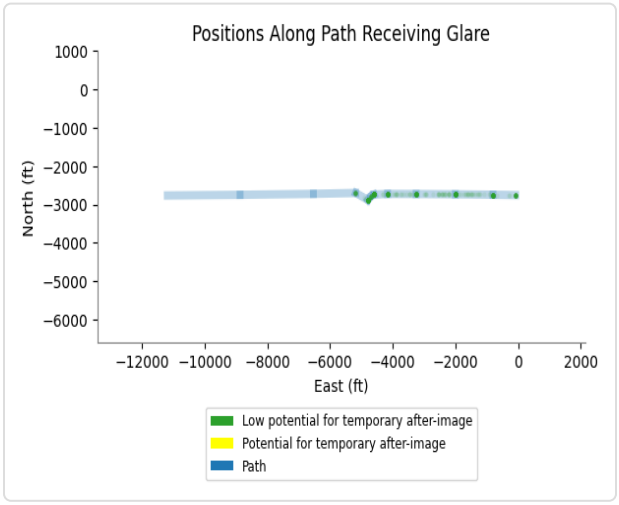
Yellow glare: none

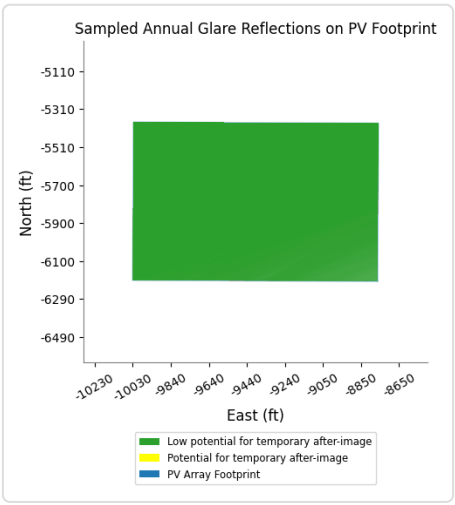
Green glare: 529 min.







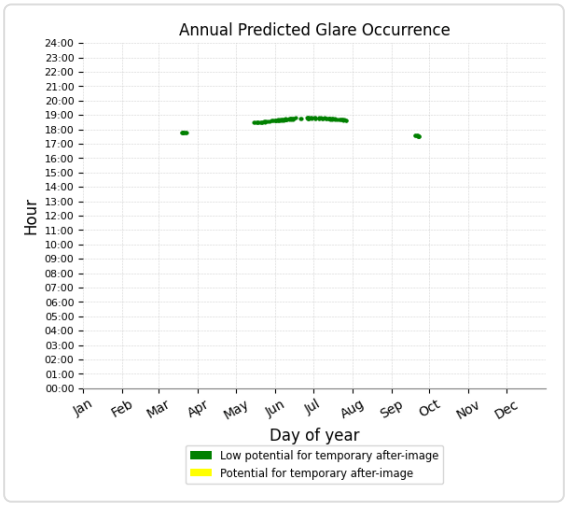


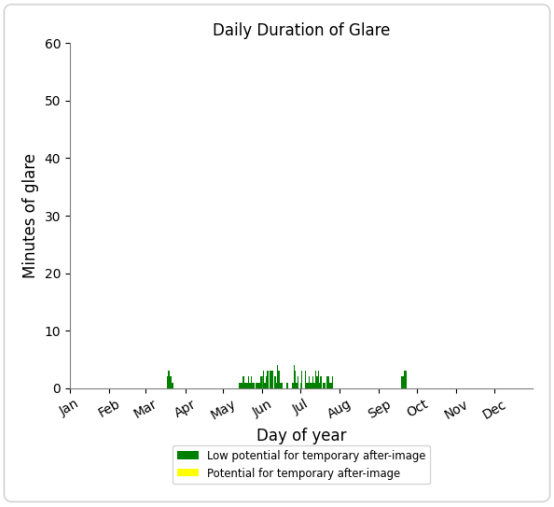


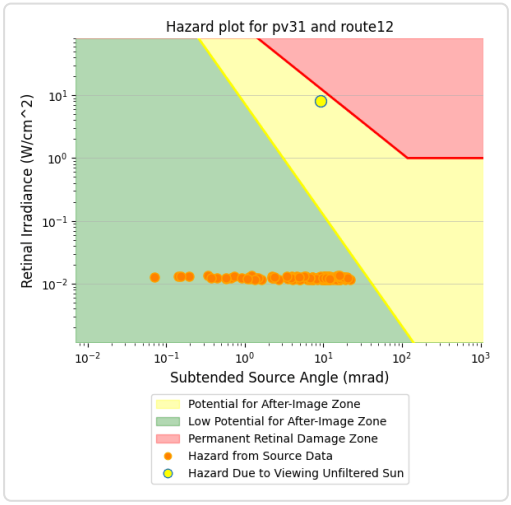
PV31 and Route: Route12

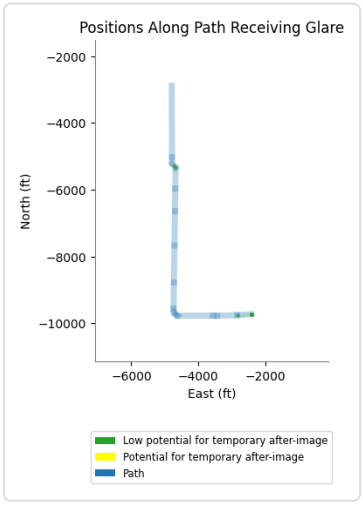
Yellow glare: none

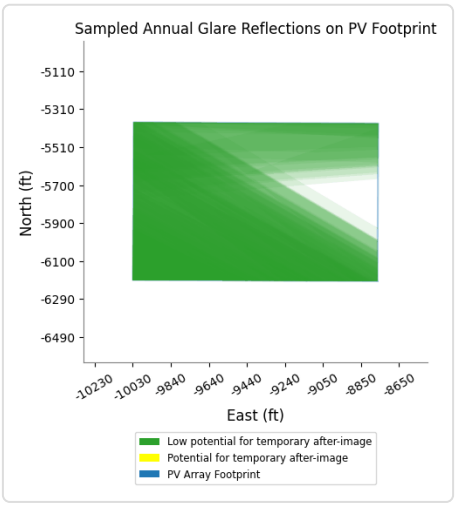
Green glare: 123 min.











PV31 and Route: Route01

No glare found

PV31 and Route: Route02

No glare found

PV31 and Route: Route04

No glare found

PV31 and Route: Route05

No glare found

PV31 and Route: Route06

No glare found

PV31 and Route: Route07

No glare found

PV31 and Route: Route08

No glare found

PV31 and Route: Route10

No glare found

PV31 and Route: Route11

No glare found

PV31 and FP: NJK08

No glare found

PV31 and FP: NJK12

No glare found

PV31 and FP: NJK26

No glare found

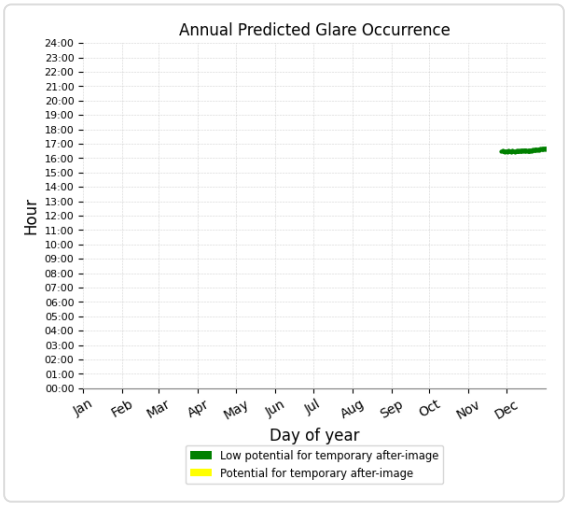
PV31 and FP: NJK30

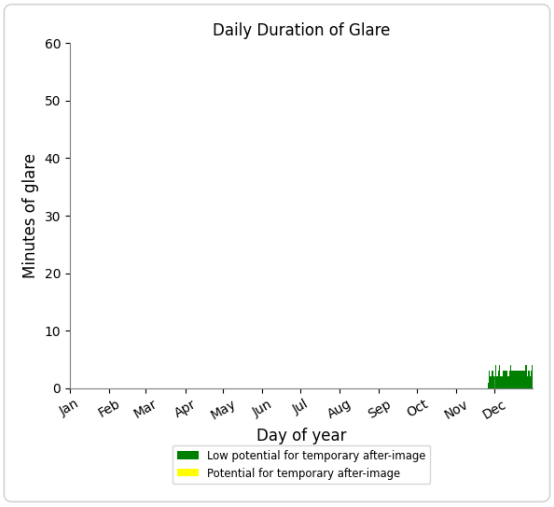
No glare found

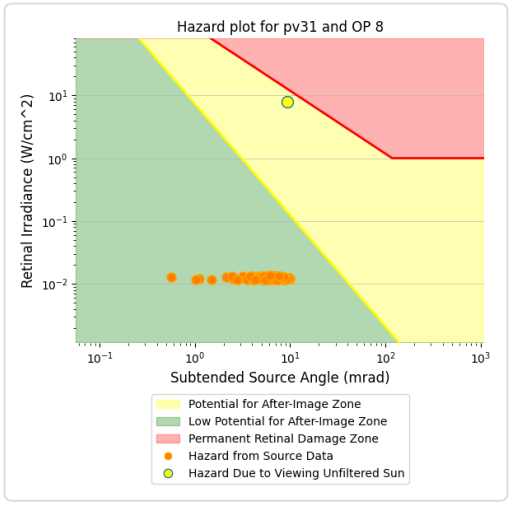
PV31 and OP 8

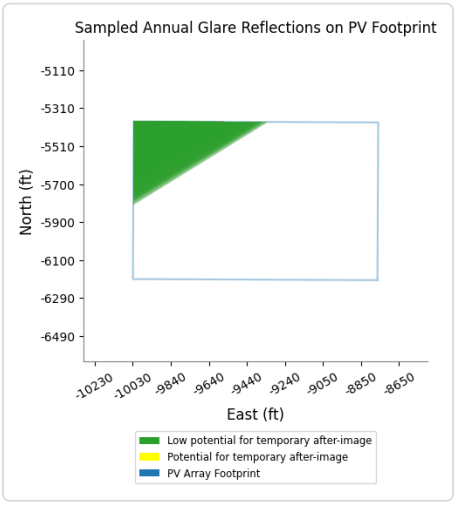
Yellow glare: none

Green glare: 103 min.





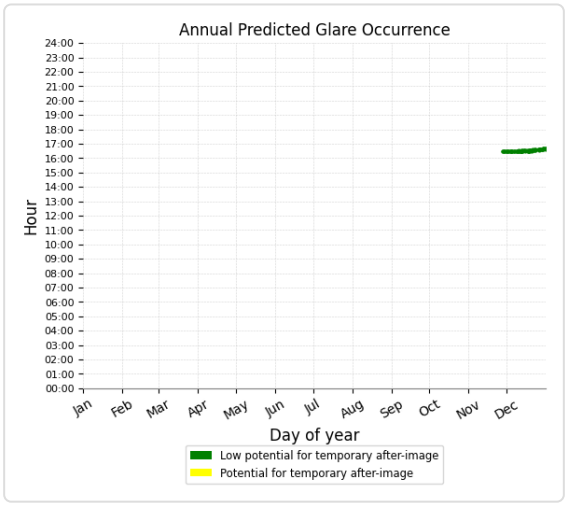


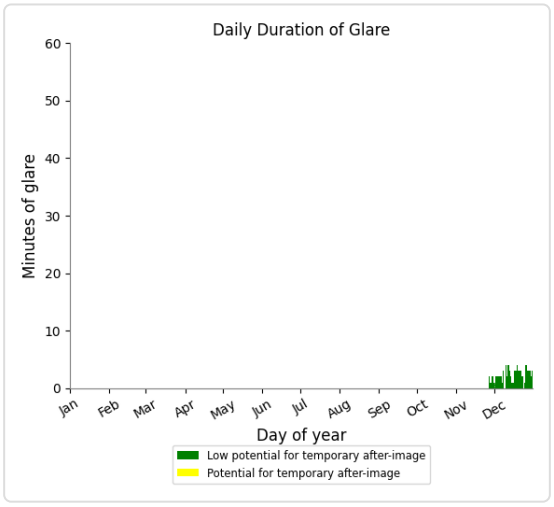


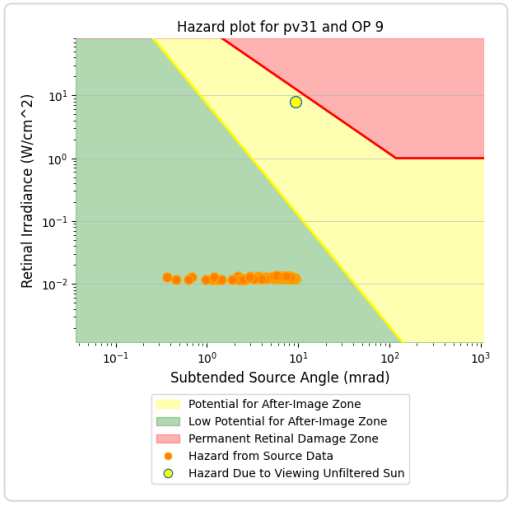
PV31 and OP 9

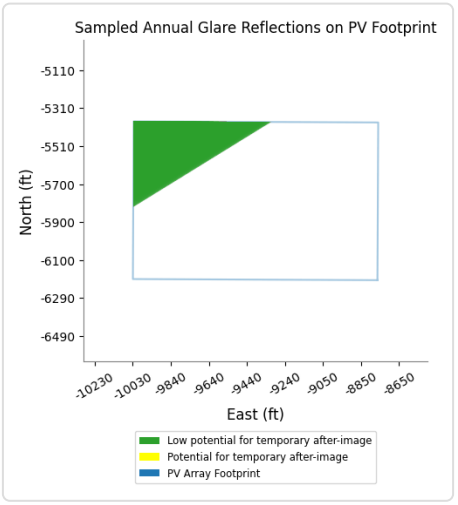
Yellow glare: none

Green glare: 79 min.



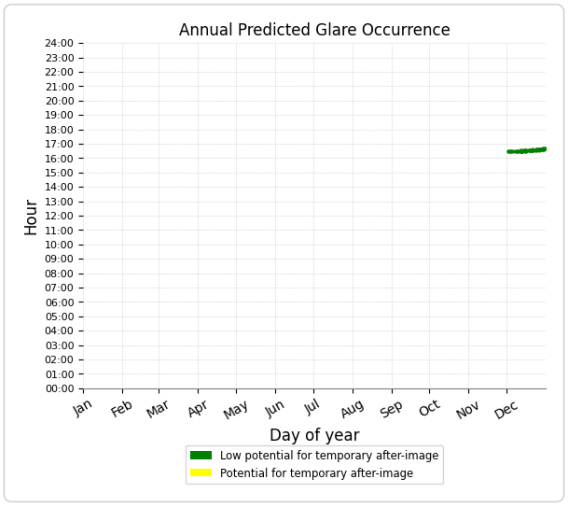


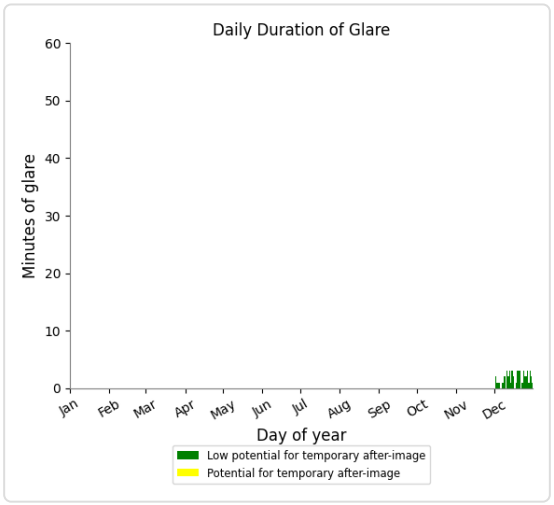


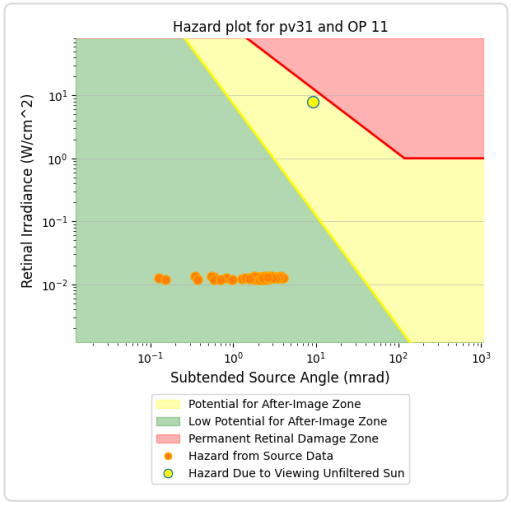


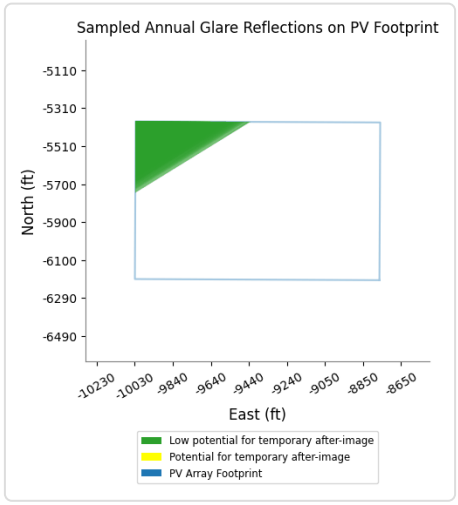
PV31 and OP 11

Yellow glare: none
Green glare: 51 min.









PV31 and OP 1

No glare found

PV31 and OP 2

No glare found

PV31 and OP 3

No glare found

PV31 and OP 4

No glare found

PV31 and OP 5

No glare found

PV31 and OP 6

No glare found

PV31 and OP 7

No glare found

PV31 and OP 10

No glare found

PV31 and OP 12

No glare found

PV31 and OP 13

No glare found

PV31 and OP 14

No glare found

PV31 and OP 15

No glare found

PV31 and OP 16

No glare found

PV31 and OP 17

No glare found

PV31 and OP 18

No glare found

PV31 and OP 19

No glare found

PV31 and 20-ATCT

No glare found

PV: PV32 low potential for temporary after-image

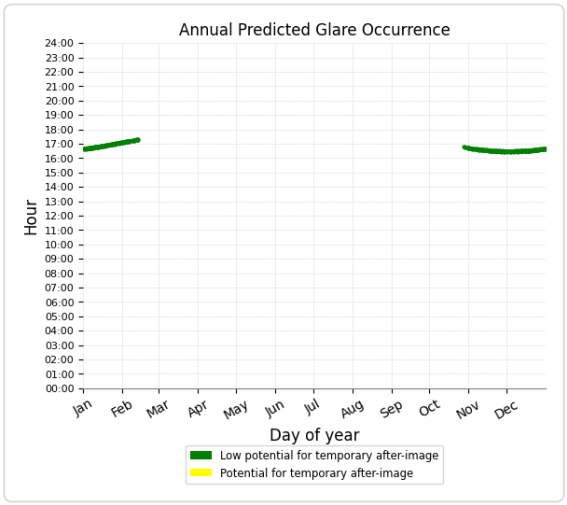
Receptor results ordered by category of glare

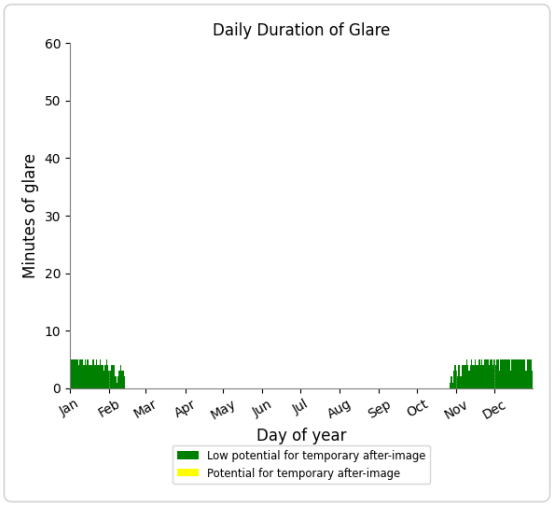
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	456	7.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 3	68	1.1	0	0.0
OP 17	15	0.2	0	0.0
OP 18	73	1.2	0	0.0
OP 1	0	0.0	0	0.0
OP 2	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

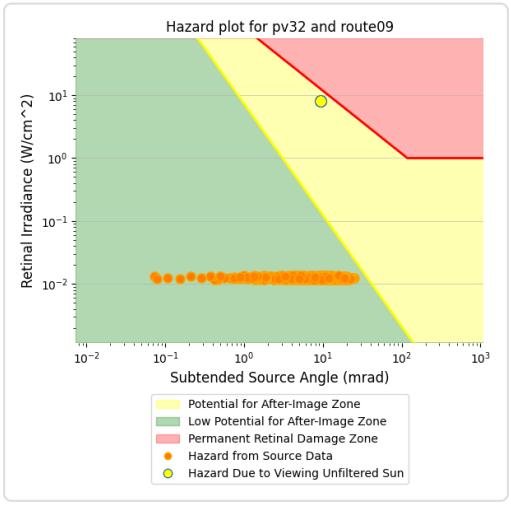
PV32 and Route: Route09

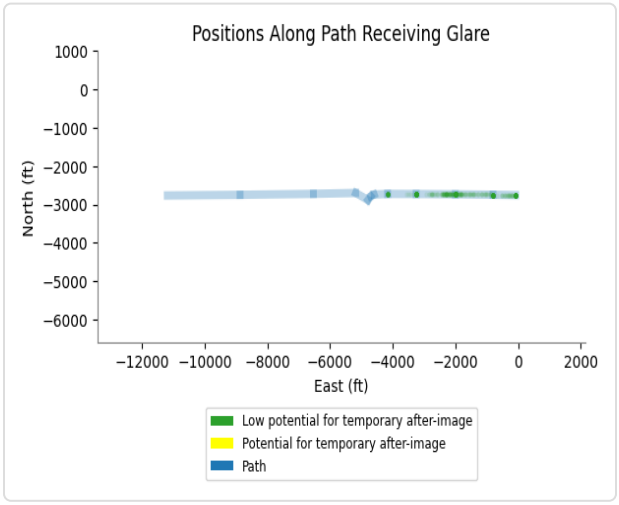
Yellow glare: none

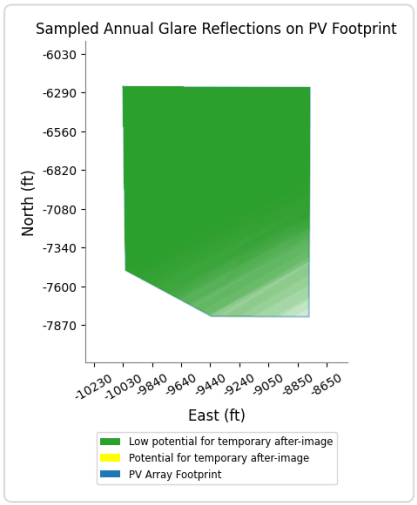
Green glare: 456 min.











PV32 and Route: Route01

No glare found

PV32 and Route: Route02

No glare found

PV32 and Route: Route04

No glare found

PV32 and Route: Route05

No glare found

PV32 and Route: Route06

No glare found

PV32 and Route: Route07

No glare found

PV32 and Route: Route08

No glare found

PV32 and Route: Route10

No glare found

PV32 and Route: Route11

No glare found

PV32 and Route: Route12

No glare found

PV32 and FP: NJK08

No glare found

PV32 and FP: NJK12

No glare found

PV32 and FP: NJK26

No glare found

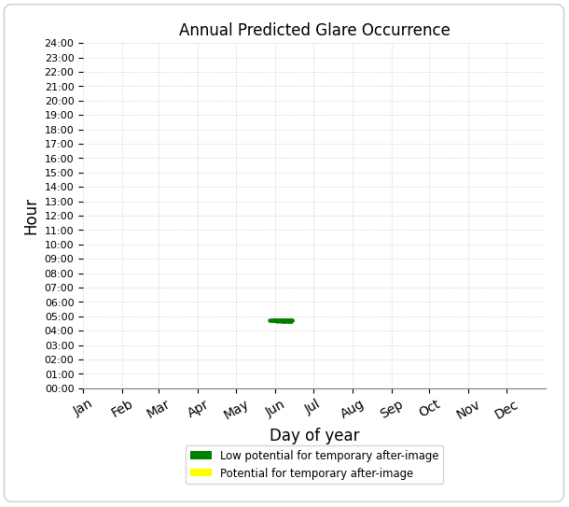
PV32 and FP: NJK30

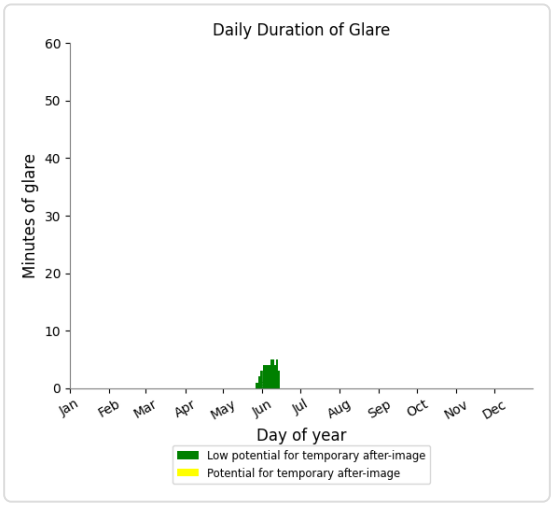
No glare found

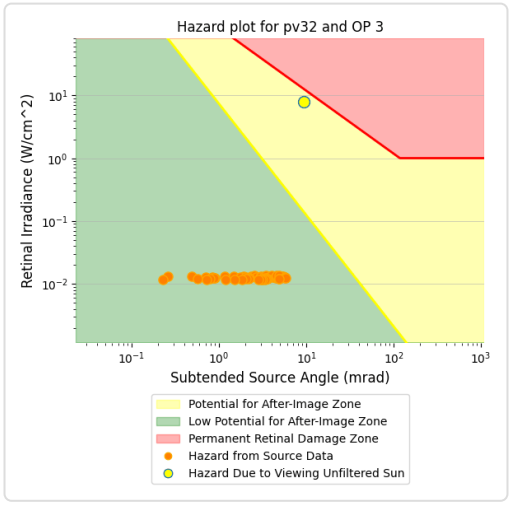
PV32 and OP 3

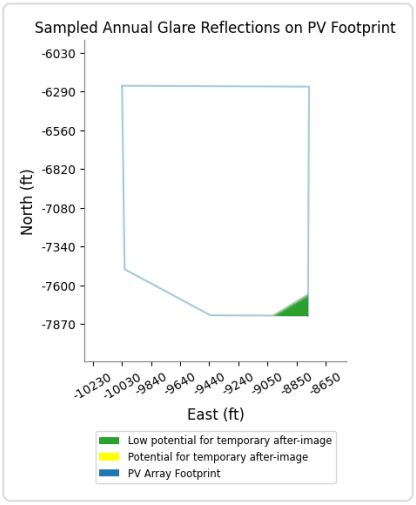
Yellow glare: none

Green glare: 68 min.





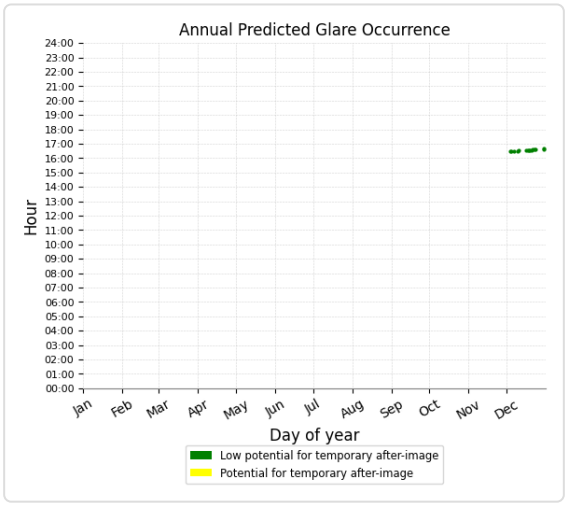


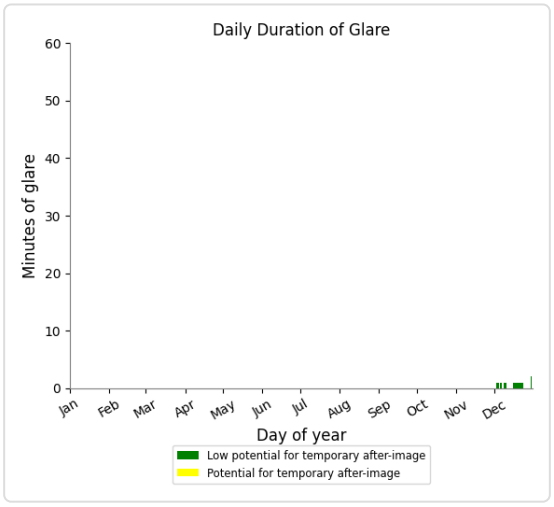


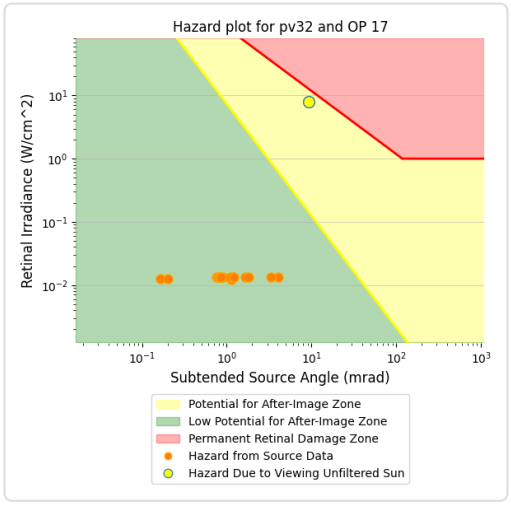
PV32 and OP 17

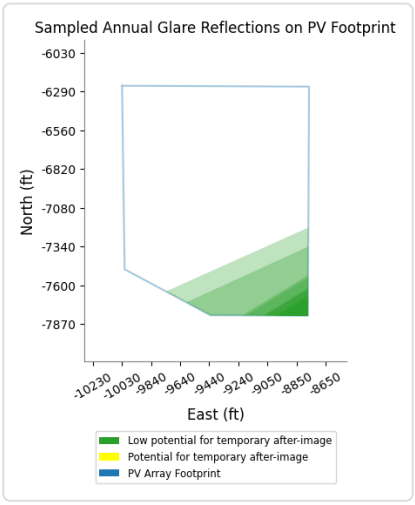
Yellow glare: none

Green glare: 15 min.



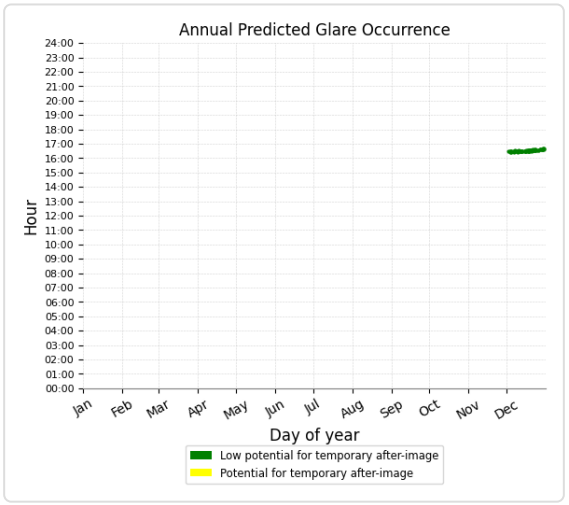


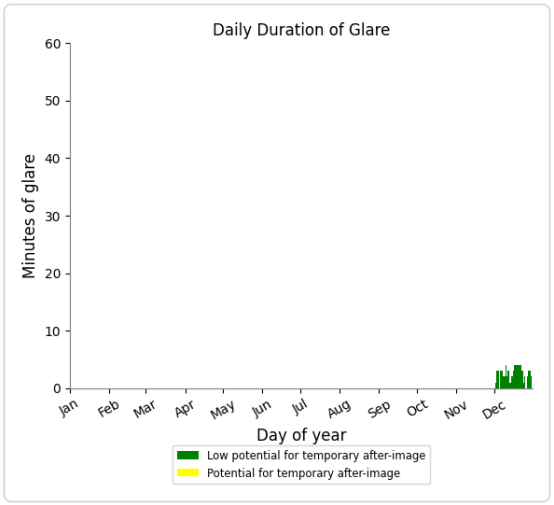


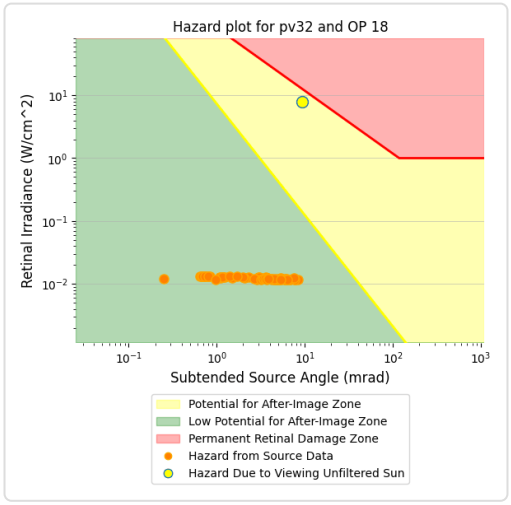


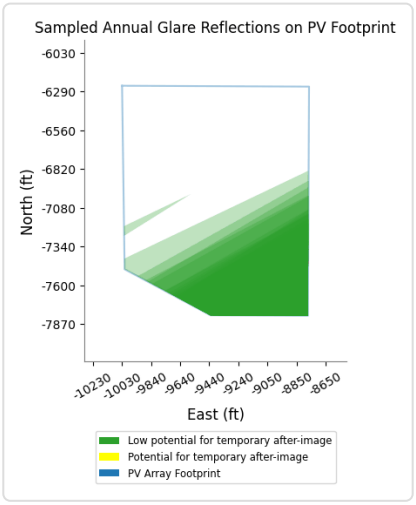
PV32 and OP 18

Yellow glare: none
Green glare: 73 min.









PV32 and OP 1

No glare found

PV32 and OP 2

No glare found

PV32 and OP 4

No glare found

PV32 and OP 5

No glare found

PV32 and OP 6

No glare found

PV32 and OP 7

No glare found

PV32 and OP 8

No glare found

PV32 and OP 9

No glare found

PV32 and OP 10

No glare found

PV32 and OP 11

No glare found

PV32 and OP 12

No glare found

PV32 and OP 13

No glare found

PV32 and OP 14

No glare found

PV32 and OP 15

No glare found

PV32 and OP 16

No glare found

PV32 and OP 19

No glare found

PV32 and 20-ATCT

No glare found

PV: PV33 low potential for temporary after-image

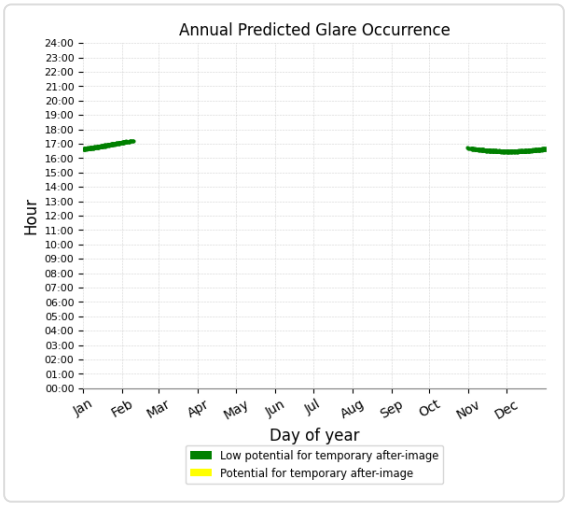
Receptor results ordered by category of glare

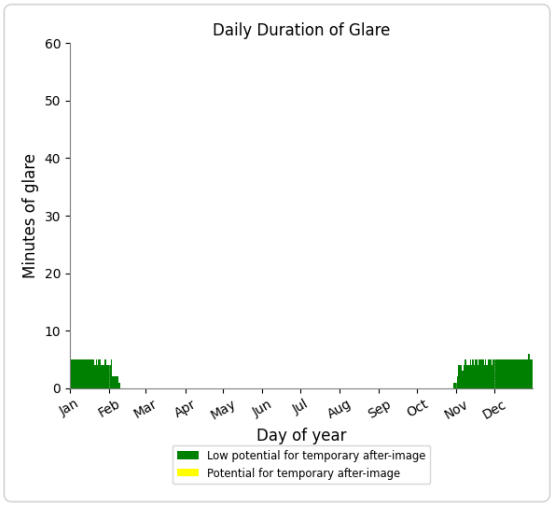
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route09	458	7.6	0	0.0
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 15	200	3.3	0	0.0
OP 17	149	2.5	0	0.0
OP 18	184	3.1	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 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

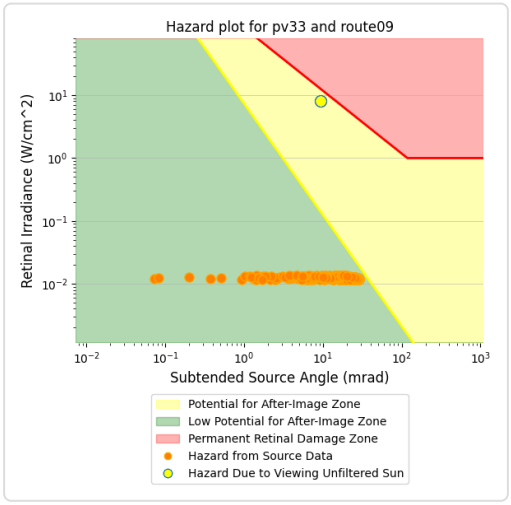
PV33 and Route: Route09

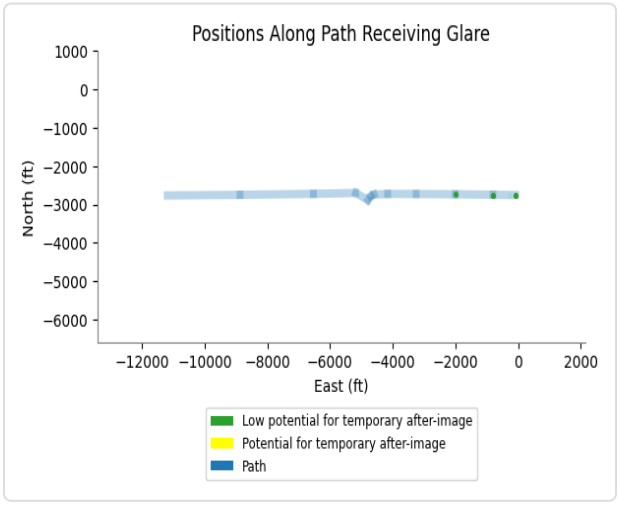
Yellow glare: none

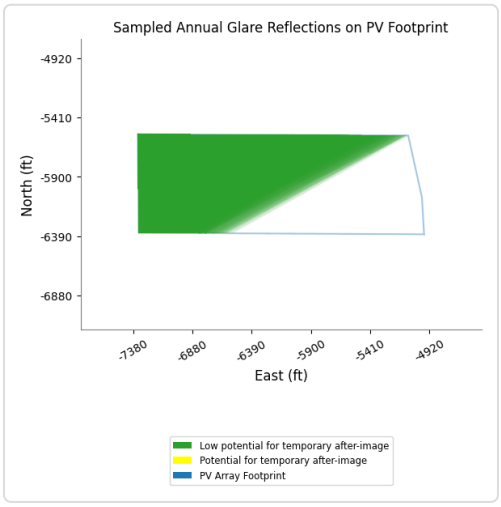
Green glare: 458 min.











PV33 and Route: Route01

No glare found

PV33 and Route: Route02

No glare found

PV33 and Route: Route04

No glare found

PV33 and Route: Route05

No glare found

PV33 and Route: Route06

No glare found

PV33 and Route: Route07

No glare found

PV33 and Route: Route08

No glare found

PV33 and Route: Route10

No glare found

PV33 and Route: Route11

No glare found

PV33 and Route: Route12

No glare found

PV33 and FP: NJK08

No glare found

PV33 and FP: NJK12

No glare found

PV33 and FP: NJK26

No glare found

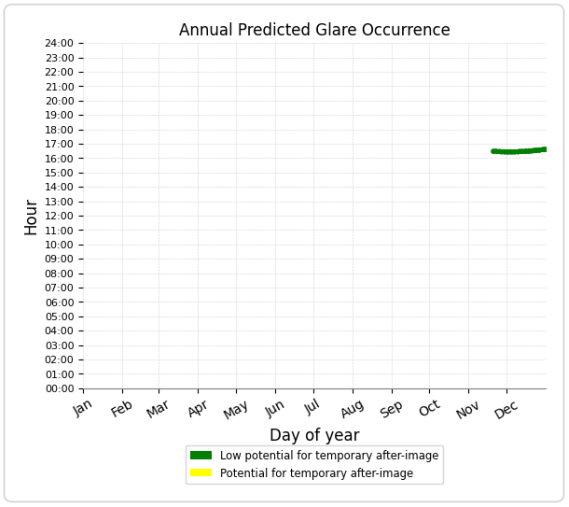
PV33 and FP: NJK30

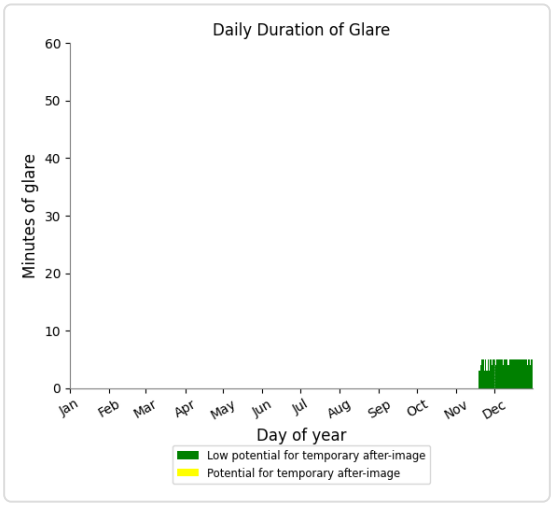
No glare found

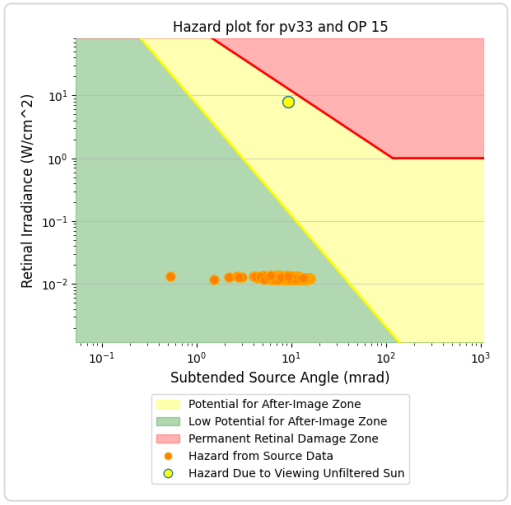
PV33 and OP 15

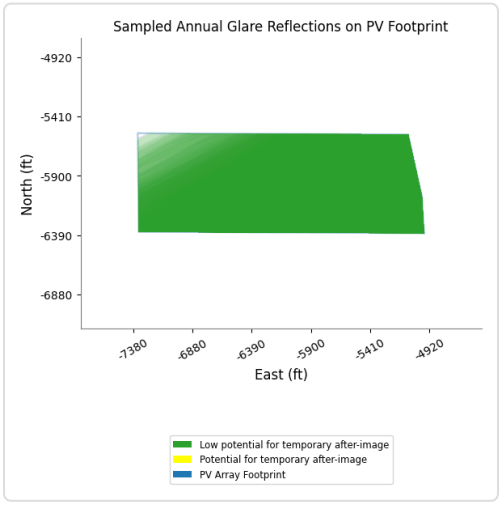
Yellow glare: none

Green glare: 200 min.





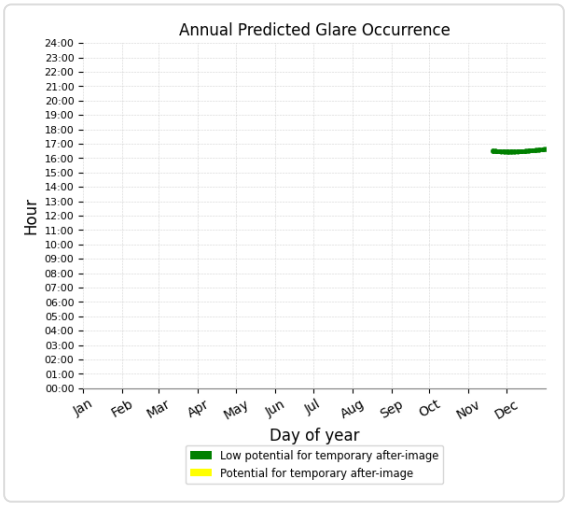


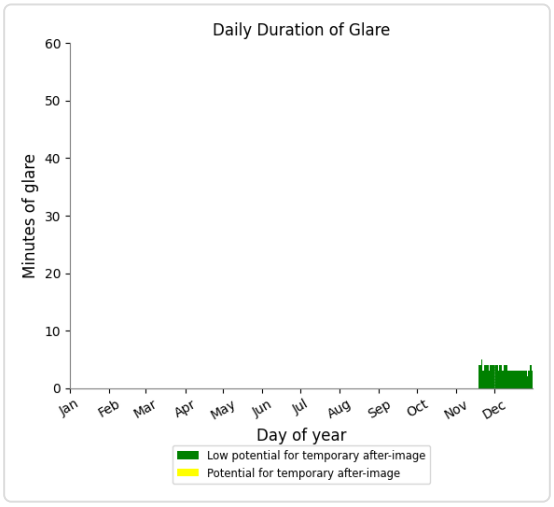


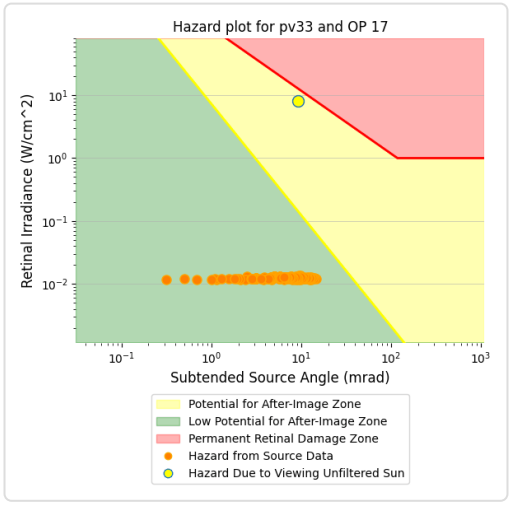
PV33 and OP 17

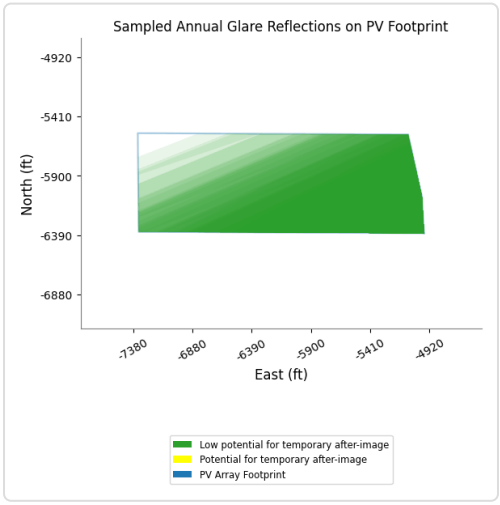
Yellow glare: none

Green glare: 149 min.





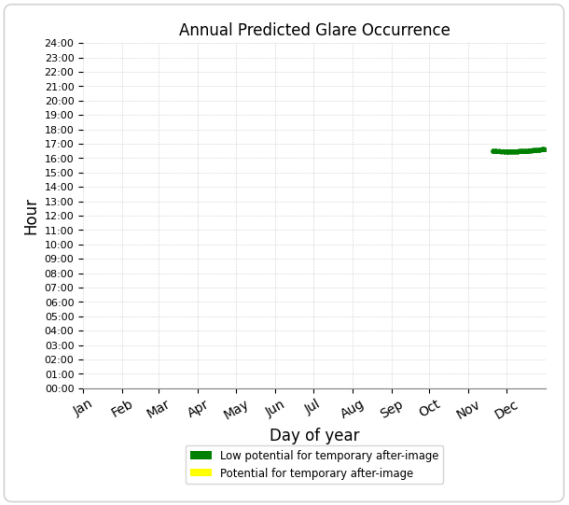


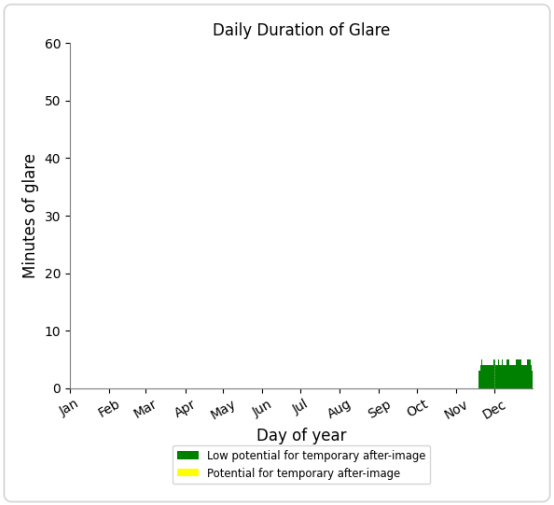


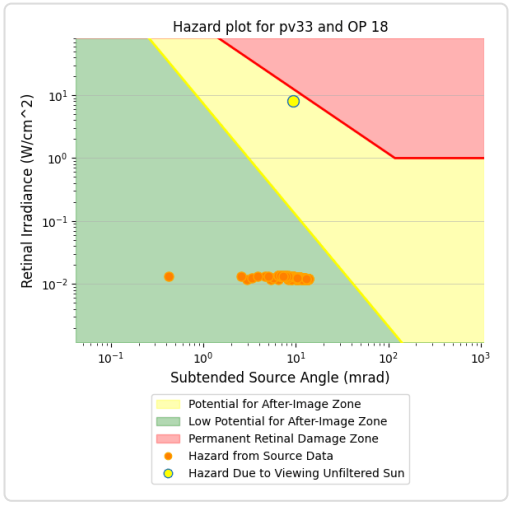
PV33 and OP 18

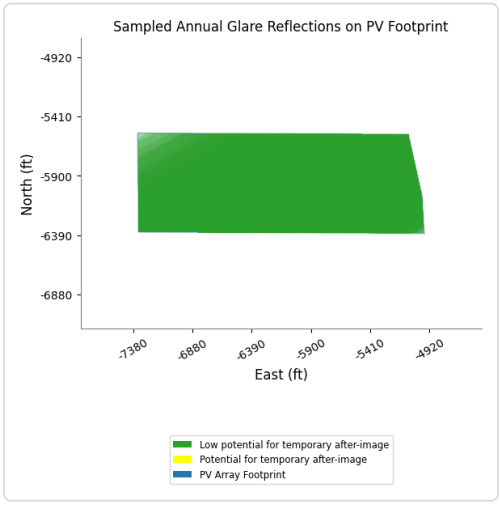
Yellow glare: none

Green glare: 184 min.









PV33 and OP 1

No glare found

PV33 and OP 2

No glare found

PV33 and OP 3

No glare found

PV33 and OP 4

No glare found

PV33 and OP 5

No glare found

PV33 and OP 6

No glare found

PV33 and OP 7

No glare found

PV33 and OP 8

No glare found

PV33 and OP 9

No glare found

PV33 and OP 10

No glare found

PV33 and OP 11

No glare found

PV33 and OP 12

No glare found

PV33 and OP 13

No glare found

PV33 and OP 14

No glare found

PV33 and OP 16

No glare found

PV33 and OP 19

No glare found

PV33 and 20-ATCT

No glare found

PV: PV34 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 3	114	1.9	0	0.0
OP 5	49	0.8	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 4	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV34 and Route: Route01

No glare found

PV34 and Route: Route02

No glare found

PV34 and Route: Route04

No glare found

PV34 and Route: Route05

No glare found

PV34 and Route: Route06

No glare found

PV34 and Route: Route07

No glare found

PV34 and Route: Route08

No glare found

PV34 and Route: Route09

No glare found

PV34 and Route: Route10

No glare found

PV34 and Route: Route11

No glare found

PV34 and Route: Route12

No glare found

PV34 and FP: NJK08

No glare found

PV34 and FP: NJK12

No glare found

PV34 and FP: NJK26

No glare found

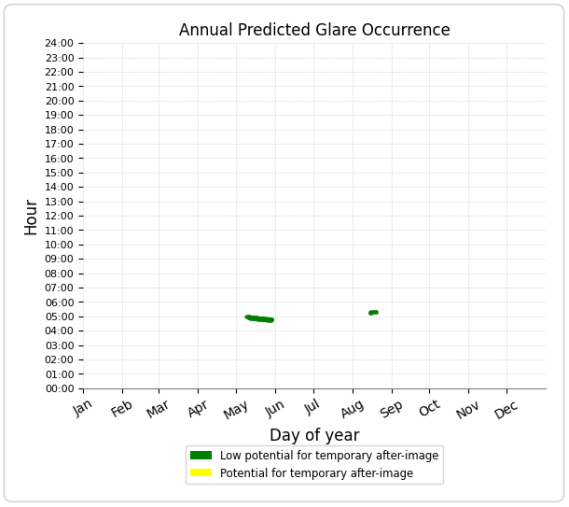
PV34 and FP: NJK30

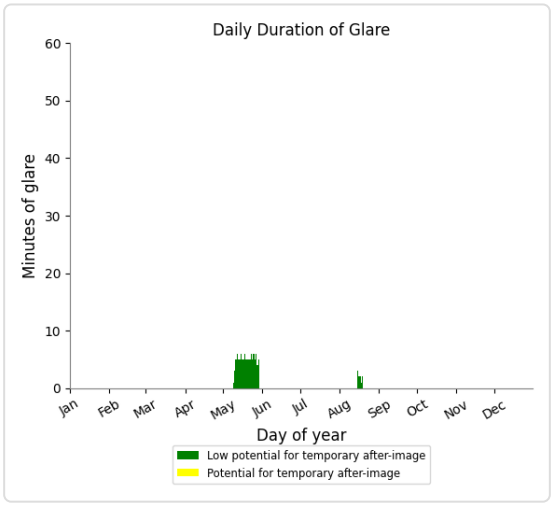
No glare found

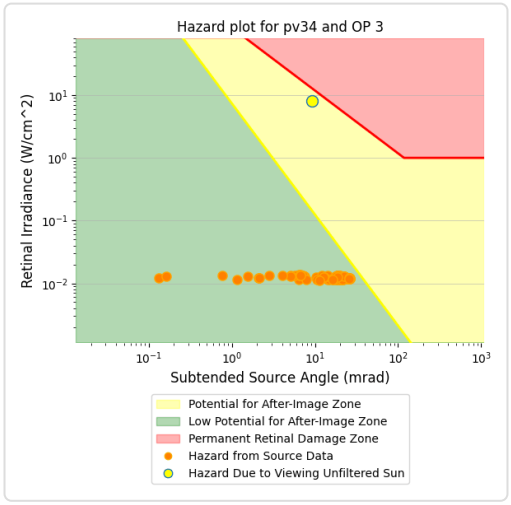
PV34 and OP 3

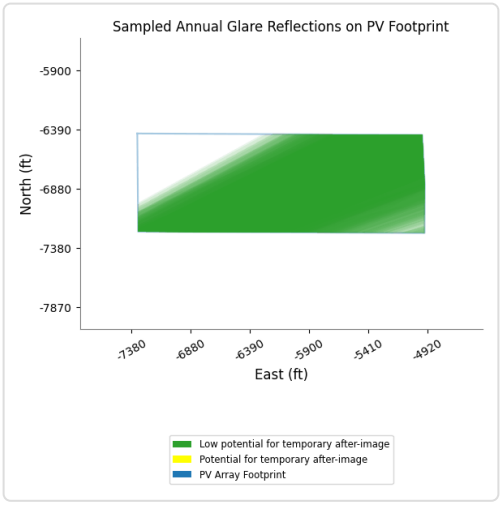
Yellow glare: none

Green glare: 114 min.



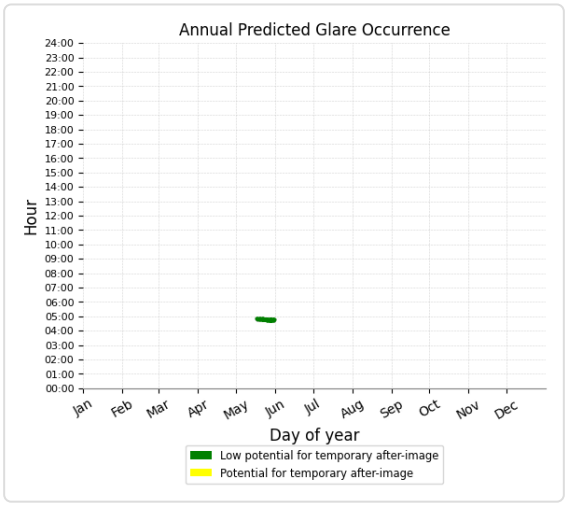


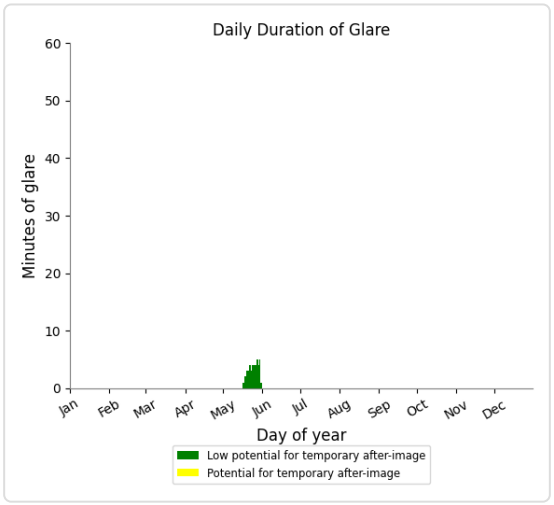


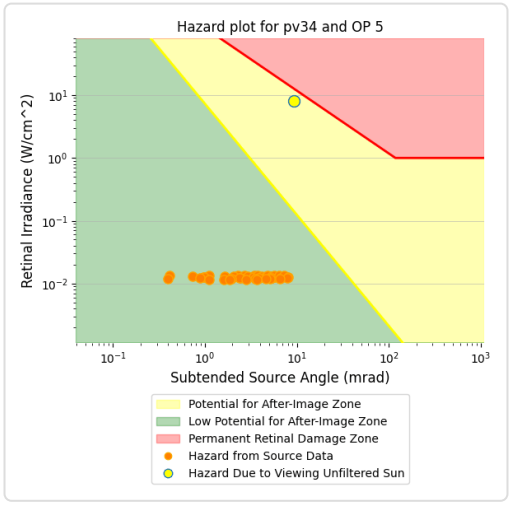


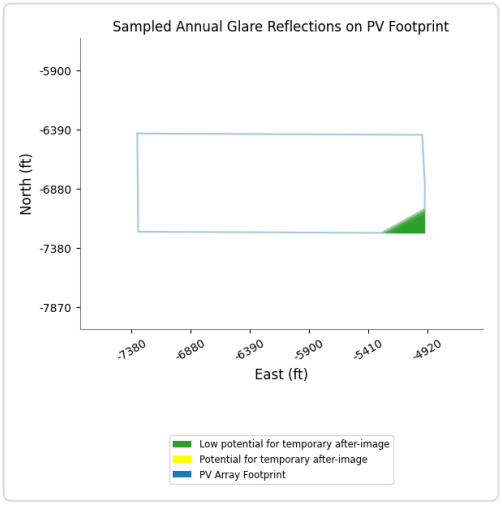
PV34 and OP 5

Yellow glare: none
Green glare: 49 min.









PV34 and OP 1

No glare found

PV34 and OP 2

No glare found

PV34 and OP 4

No glare found

PV34 and OP 6

No glare found

PV34 and OP 7

No glare found

PV34 and OP 8

No glare found

PV34 and OP 9

No glare found

PV34 and OP 10

No glare found

PV34 and OP 11

No glare found

PV34 and OP 12

No glare found

PV34 and OP 13

No glare found

PV34 and OP 14

No glare found

PV34 and OP 15

No glare found

PV34 and OP 16

No glare found

PV34 and OP 17

No glare found

PV34 and OP 18

No glare found

PV34 and OP 19

No glare found

PV34 and 20-ATCT

No glare found

PV: PV35 potential temporary after-image

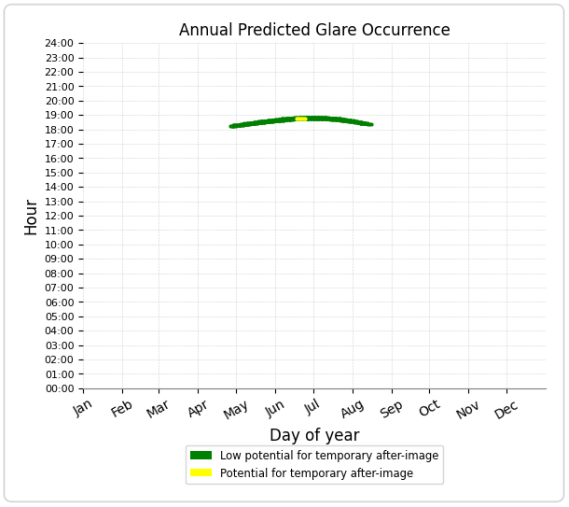
Receptor results ordered by category of glare

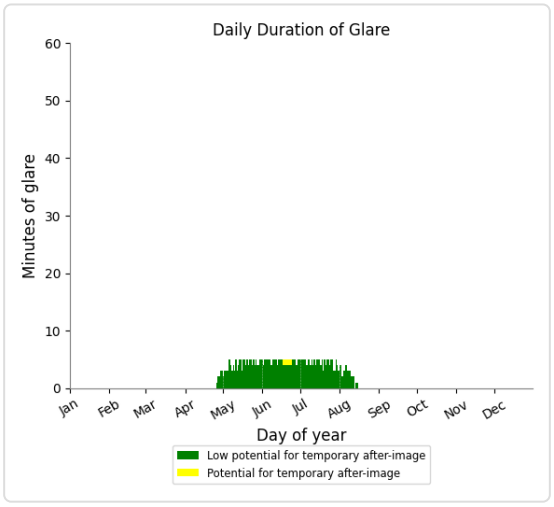
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route12	452	7.5	8	0.1
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 5	218	3.6	0	0.0
OP 15	93	1.6	0	0.0
OP 17	147	2.5	0	0.0
OP 18	111	1.9	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 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
OP 16	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

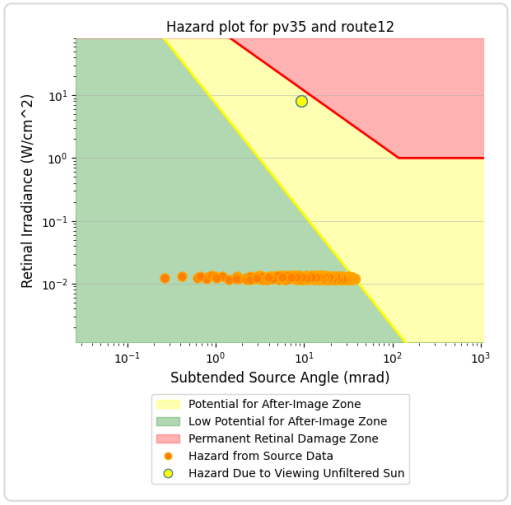
PV35 and Route: Route12

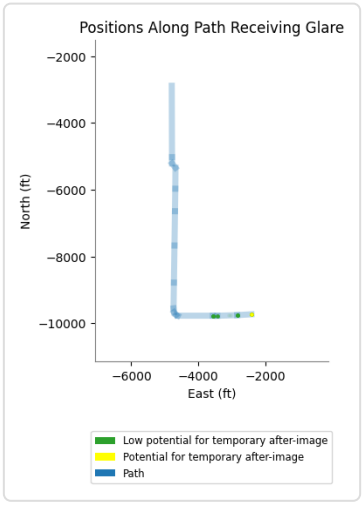
Yellow glare: 8 min.

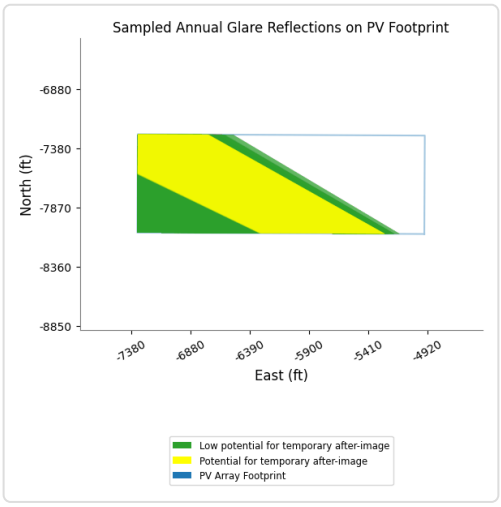
Green glare: 452 min.











PV35 and Route: Route01

No glare found

PV35 and Route: Route02

No glare found

PV35 and Route: Route04

No glare found

PV35 and Route: Route05

No glare found

PV35 and Route: Route06

No glare found

PV35 and Route: Route07

No glare found

PV35 and Route: Route08

No glare found

PV35 and Route: Route09

No glare found

PV35 and Route: Route10

No glare found

PV35 and Route: Route11

No glare found

PV35 and FP: NJK08

No glare found

PV35 and FP: NJK12

No glare found

PV35 and FP: NJK26

No glare found

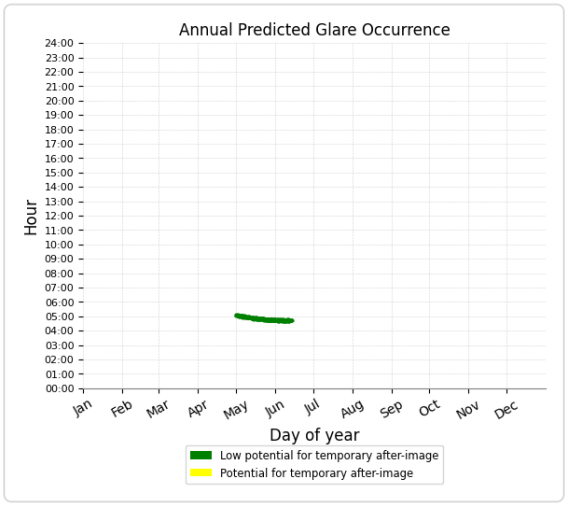
PV35 and FP: NJK30

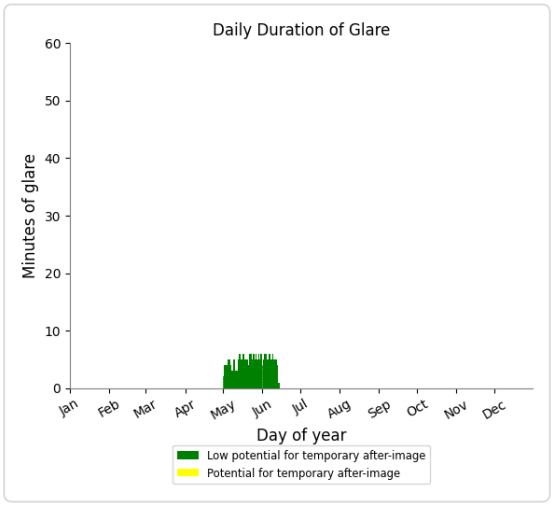
No glare found

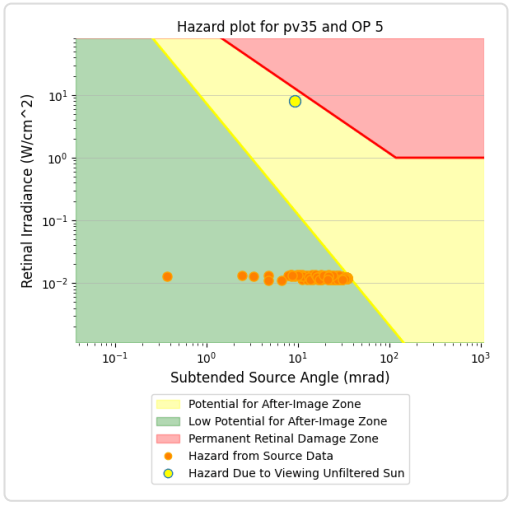
PV35 and OP 5

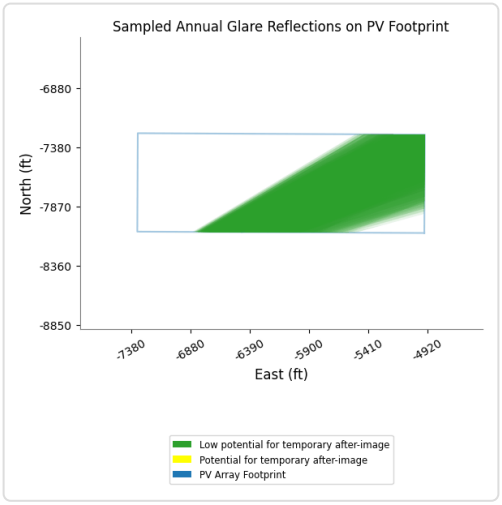
Yellow glare: none

Green glare: 218 min.





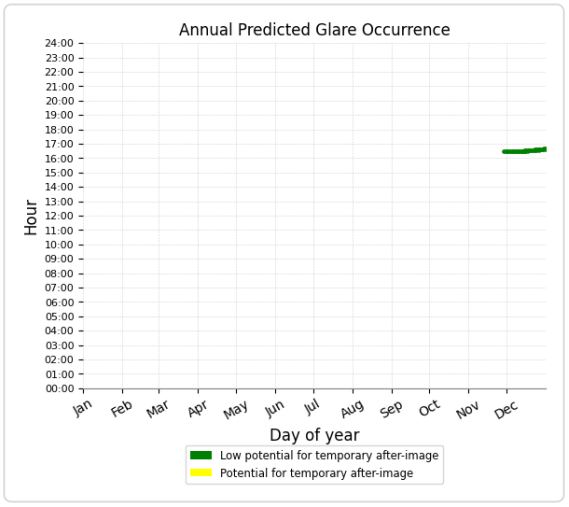


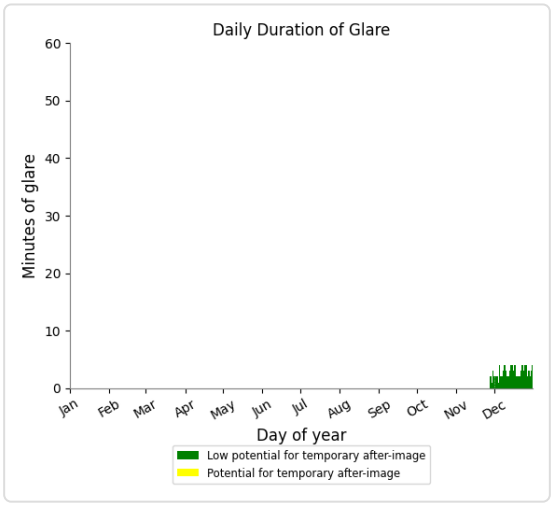


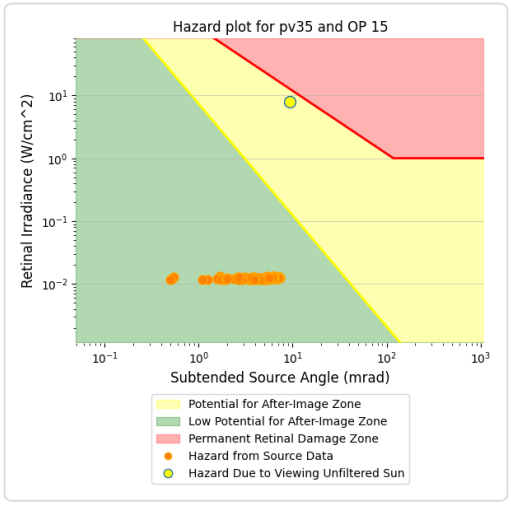
PV35 and OP 15

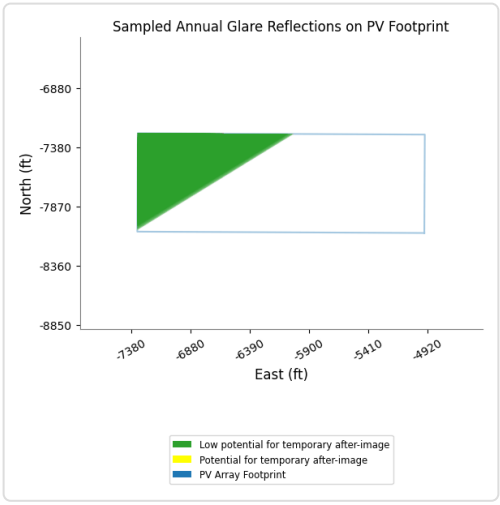
Yellow glare: none

Green glare: 93 min.





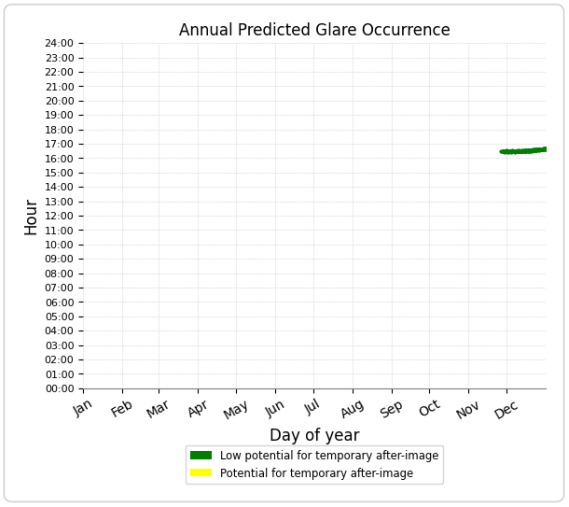


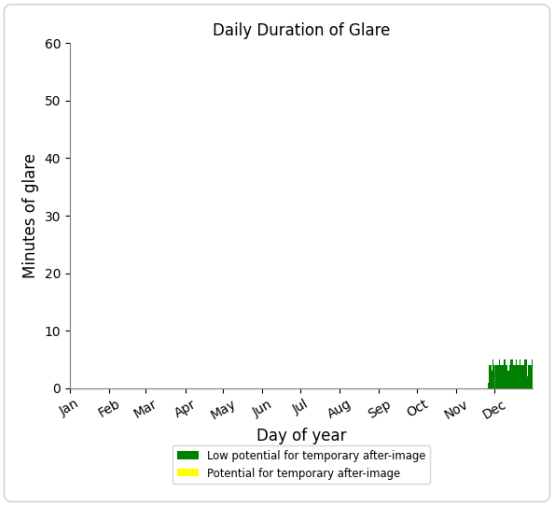


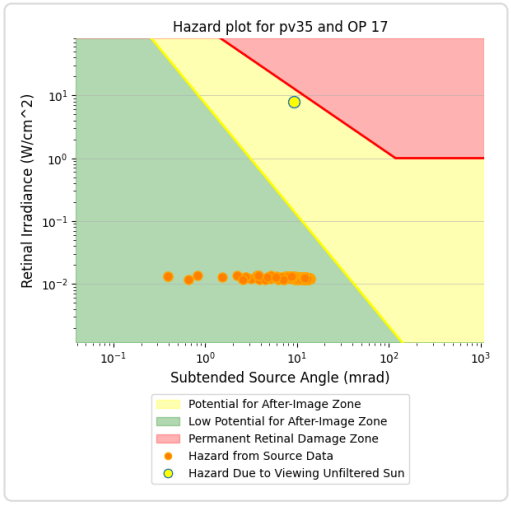
PV35 and OP 17

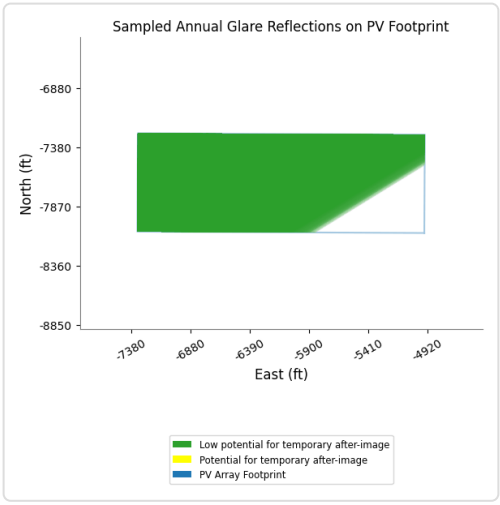
Yellow glare: none

Green glare: 147 min.





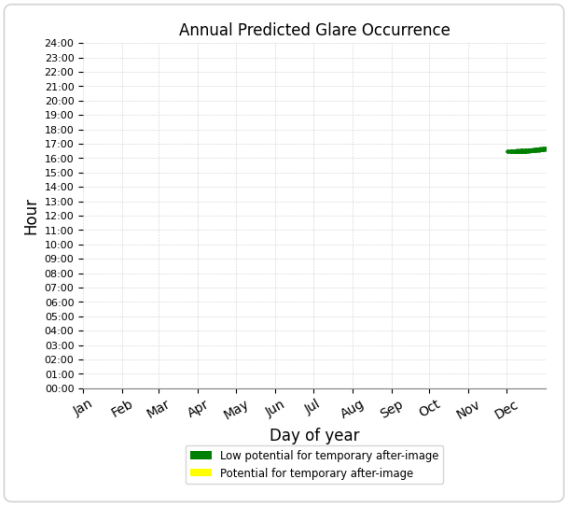


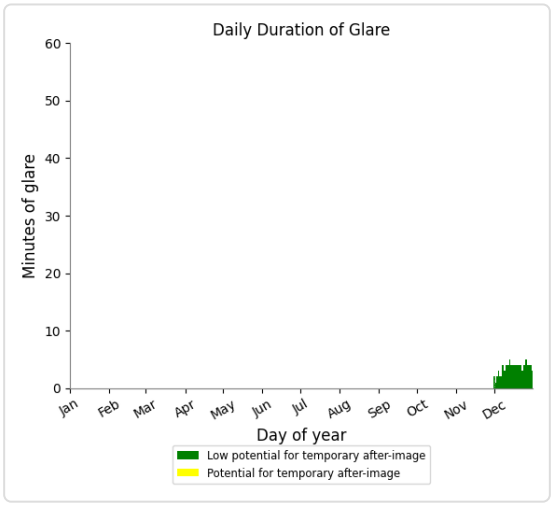


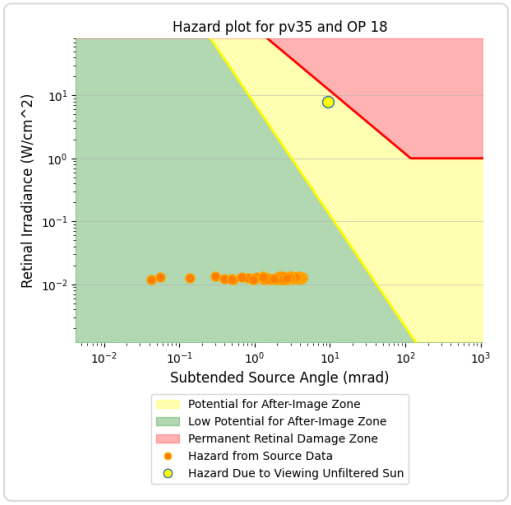
PV35 and OP 18

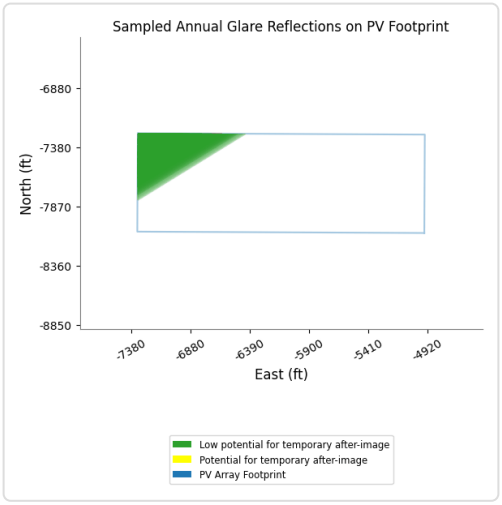
Yellow glare: none

Green glare: 111 min.









PV35 and OP 1

No glare found

PV35 and OP 2

No glare found

PV35 and OP 3

No glare found

PV35 and OP 4

No glare found

PV35 and OP 6

No glare found

PV35 and OP 7

No glare found

PV35 and OP 8

No glare found

PV35 and OP 9

No glare found

PV35 and OP 10

No glare found

PV35 and OP 11

No glare found

PV35 and OP 12

No glare found

PV35 and OP 13

No glare found

PV35 and OP 14

No glare found

PV35 and OP 16

No glare found

PV35 and OP 19

No glare found

PV35 and 20-ATCT

No glare found

PV: PV36 potential temporary after-image

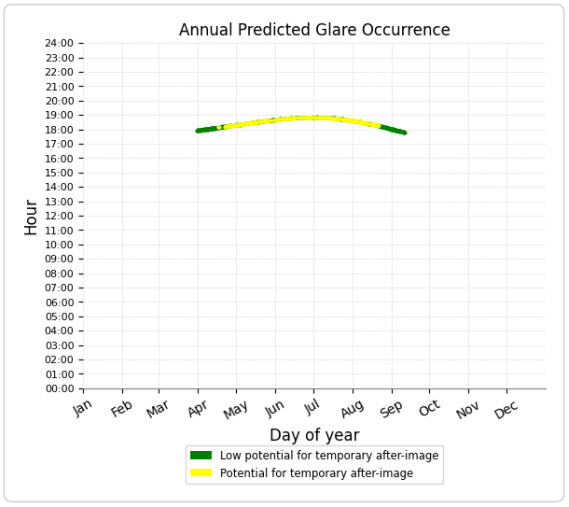
Receptor results ordered by category of glare

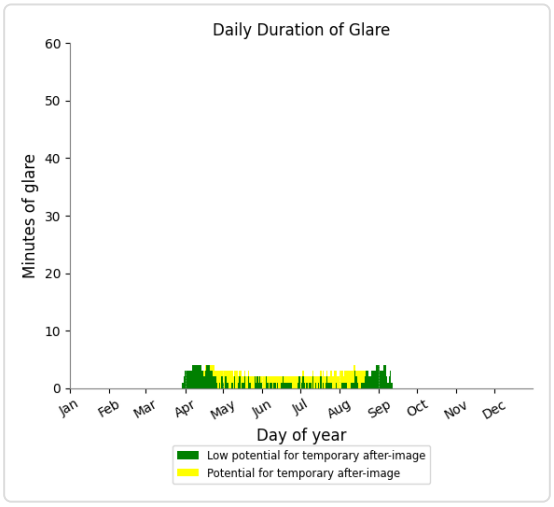
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route12	235	3.9	204	3.4
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 17	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 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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

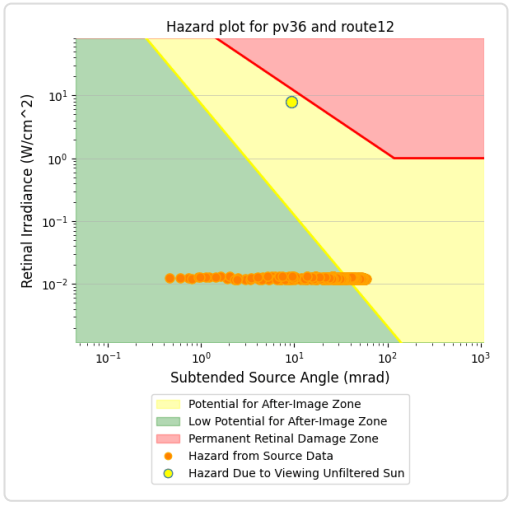
PV36 and Route: Route12

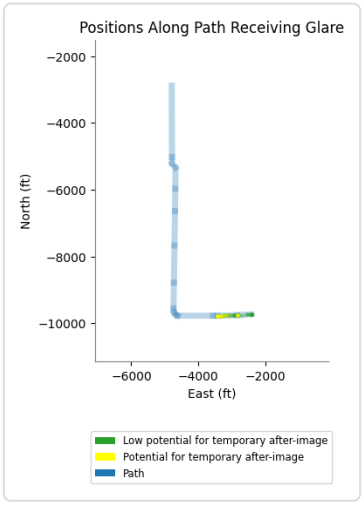
Yellow glare: 204 min.

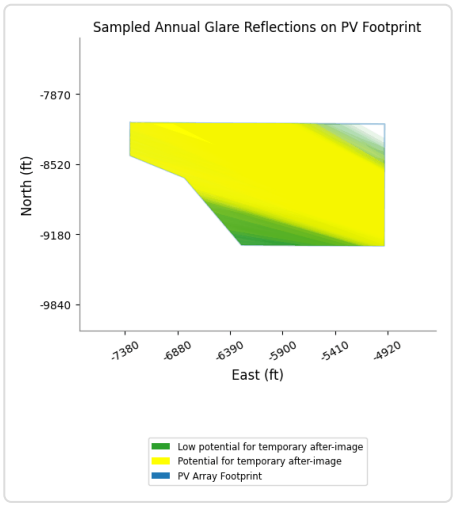
Green glare: 235 min.











PV36 and Route: Route01

No glare found

PV36 and Route: Route02

No glare found

PV36 and Route: Route04

No glare found

PV36 and Route: Route05

No glare found

PV36 and Route: Route06

No glare found

PV36 and Route: Route07

No glare found

PV36 and Route: Route08

No glare found

PV36 and Route: Route09

No glare found

PV36 and Route: Route10

No glare found

PV36 and Route: Route11

No glare found

PV36 and FP: NJK08

No glare found

PV36 and FP: NJK12

No glare found

PV36 and FP: NJK26

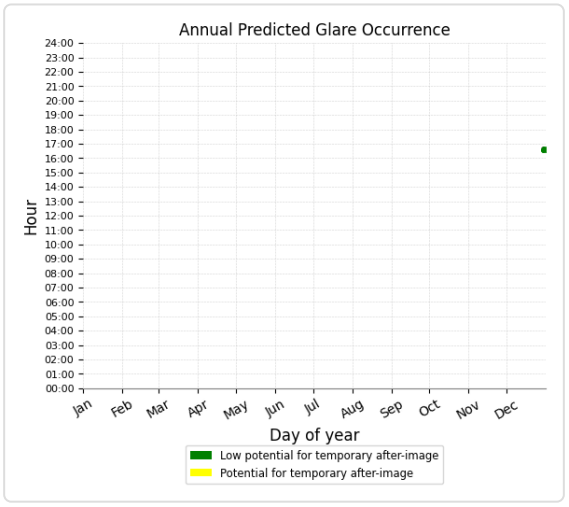
No glare found

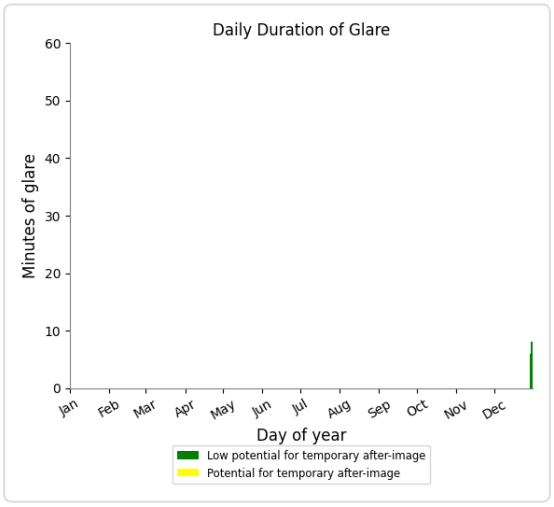
PV36 and FP: NJK30

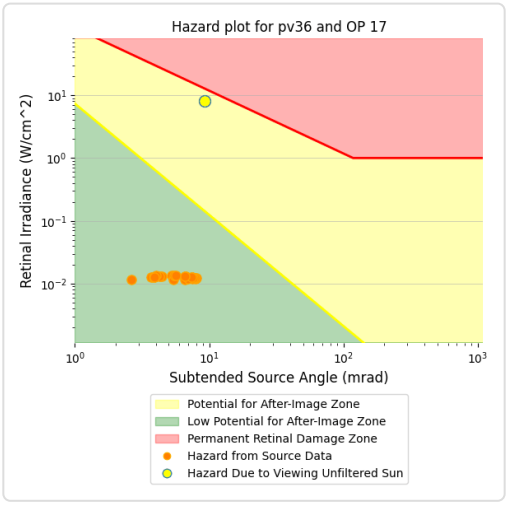
No glare found

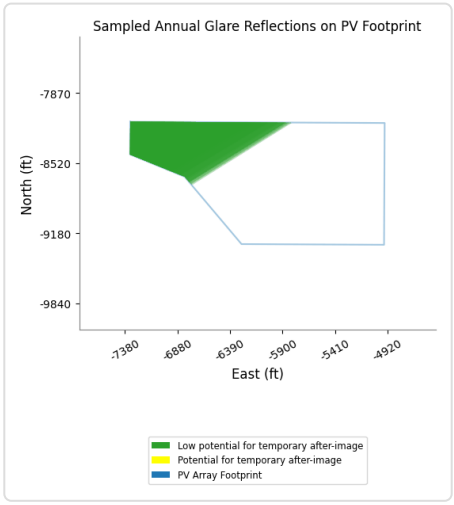
PV36 and OP 17

Yellow glare: none
Green glare: 22 min.









PV36 and OP 1

No glare found

PV36 and OP 2

No glare found

PV36 and OP 3

No glare found

PV36 and OP 4

No glare found

PV36 and OP 5

No glare found

PV36 and OP 6

No glare found

PV36 and OP 7

No glare found

PV36 and OP 8

No glare found

PV36 and OP 9

No glare found

PV36 and OP 10

No glare found

PV36 and OP 11

No glare found

PV36 and OP 12

No glare found

PV36 and OP 13

No glare found

PV36 and OP 14

No glare found

PV36 and OP 15

No glare found

PV36 and OP 16

No glare found

PV36 and OP 18

No glare found

PV36 and OP 19

No glare found

PV36 and 20-ATCT

No glare found

PV: PV37 potential temporary after-image

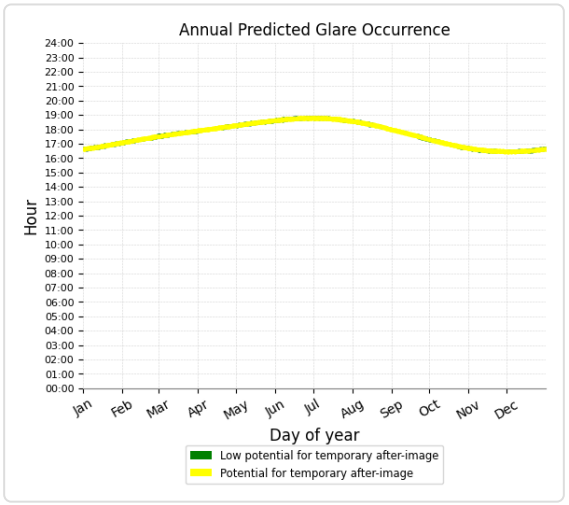
Receptor results ordered by category of glare

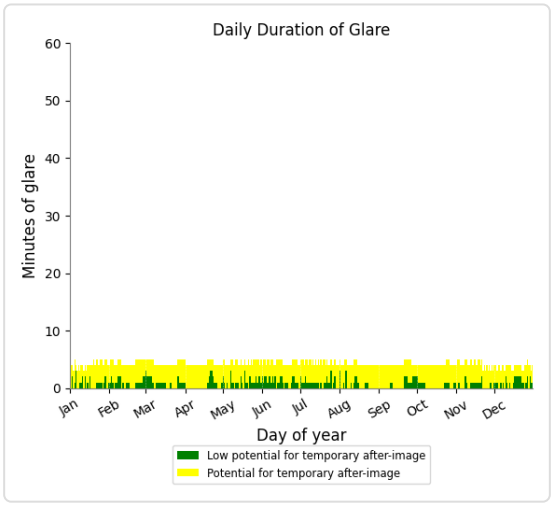
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route12	295	4.9	1,266	21.1
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

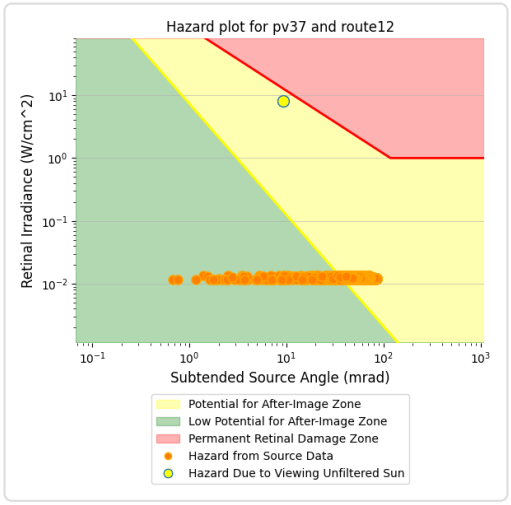
PV37 and Route: Route12

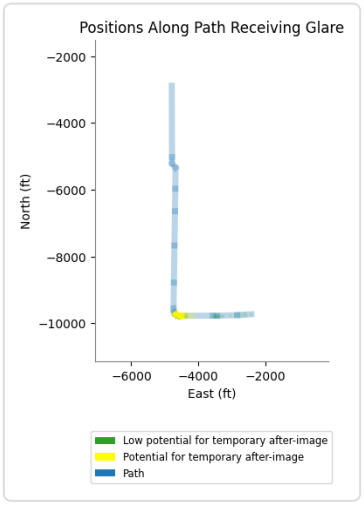
Yellow glare: 1,266 min.

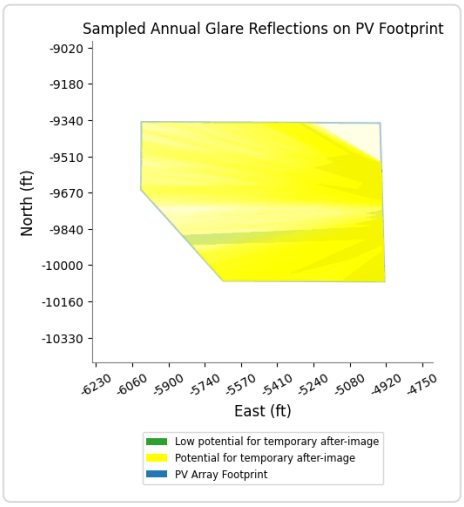
Green glare: 295 min.











PV37 and Route: Route01

No glare found

PV37 and Route: Route02

No glare found

PV37 and Route: Route04

No glare found

PV37 and Route: Route05

No glare found

PV37 and Route: Route06

No glare found

PV37 and Route: Route07

No glare found

PV37 and Route: Route08

No glare found

PV37 and Route: Route09

No glare found

PV37 and Route: Route10

No glare found

PV37 and Route: Route11

No glare found

PV37 and FP: NJK08

No glare found

PV37 and FP: NJK12

No glare found

PV37 and FP: NJK26

No glare found

PV37 and FP: NJK30

No glare found

PV37 and OP 1

No glare found

PV37 and OP 2

No glare found

PV37 and OP 3

No glare found

PV37 and OP 4

No glare found

PV37 and OP 5

No glare found

PV37 and OP 6

No glare found

PV37 and OP 7

No glare found

PV37 and OP 8

No glare found

PV37 and OP 9

No glare found

PV37 and OP 10

No glare found

PV37 and OP 11

No glare found

PV37 and OP 12

No glare found

PV37 and OP 13

No glare found

PV37 and OP 14

No glare found

PV37 and OP 15

No glare found

PV37 and OP 16

No glare found

PV37 and OP 17

No glare found

PV37 and OP 18

No glare found

PV37 and OP 19

No glare found

PV37 and 20-ATCT

No glare found

PV: PV38 potential temporary after-image

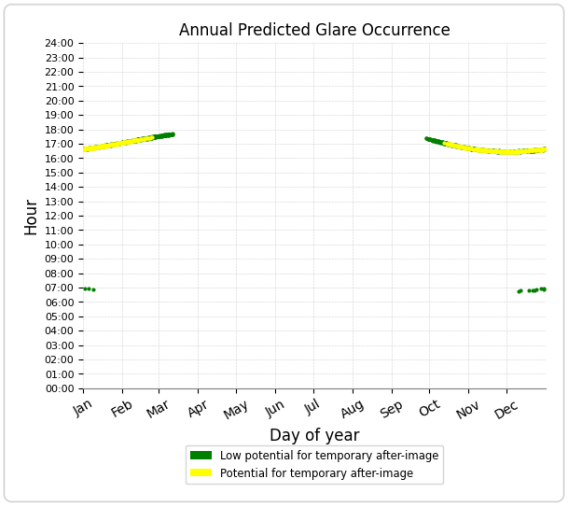
Receptor results ordered by category of glare

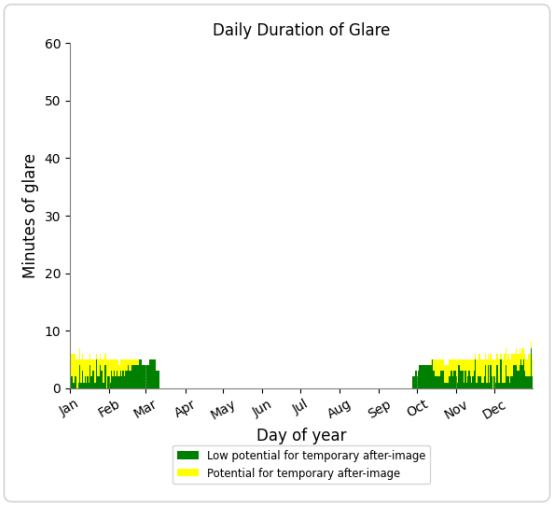
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route12	451	7.5	383	6.4
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 3	115	1.9	0	0.0
OP 1	0	0.0	0	0.0
OP 2	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

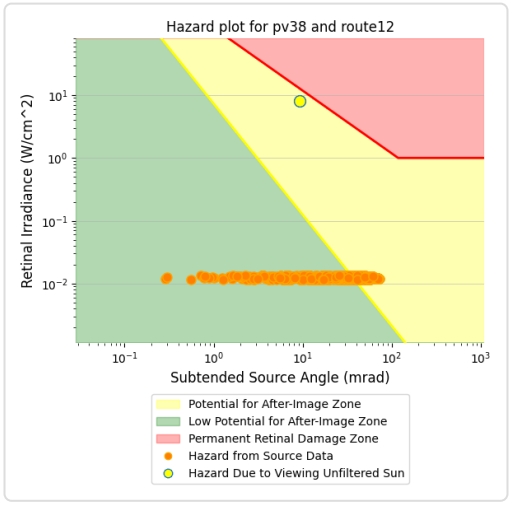
PV38 and Route: Route12

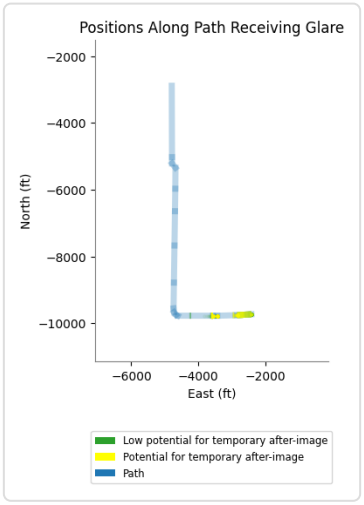
Yellow glare: 383 min.

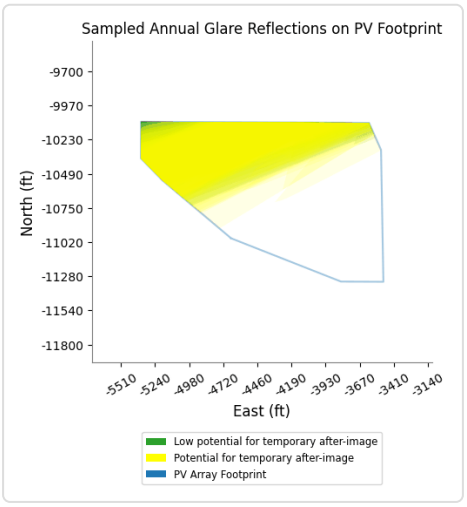
Green glare: 451 min.











PV38 and Route: Route01

No glare found

PV38 and Route: Route02

No glare found

PV38 and Route: Route04

No glare found

PV38 and Route: Route05

No glare found

PV38 and Route: Route06

No glare found

PV38 and Route: Route07

No glare found

PV38 and Route: Route08

No glare found

PV38 and Route: Route09

No glare found

PV38 and Route: Route10

No glare found

PV38 and Route: Route11

No glare found

PV38 and FP: NJK08

No glare found

PV38 and FP: NJK12

No glare found

PV38 and FP: NJK26

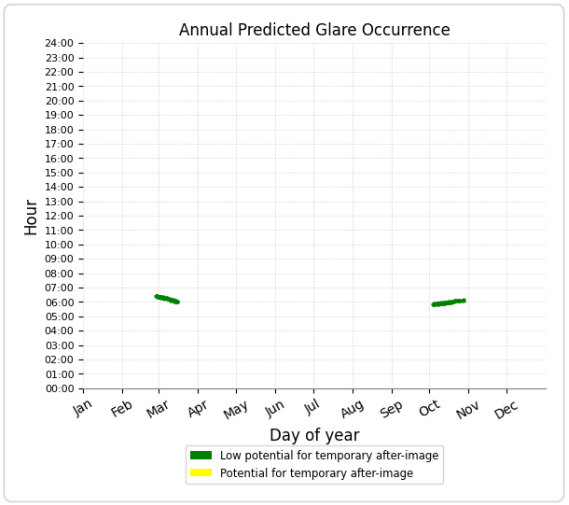
No glare found

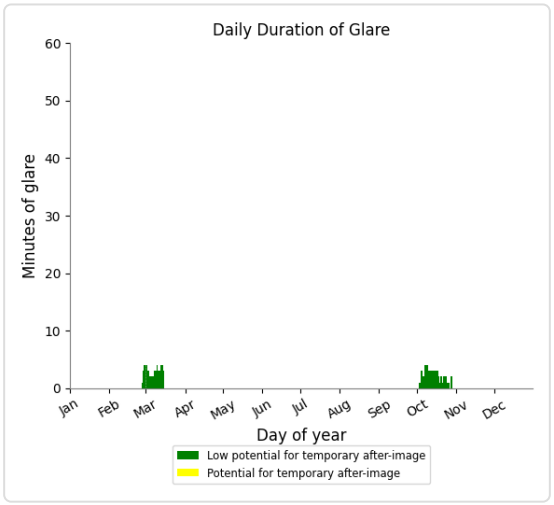
PV38 and FP: NJK30

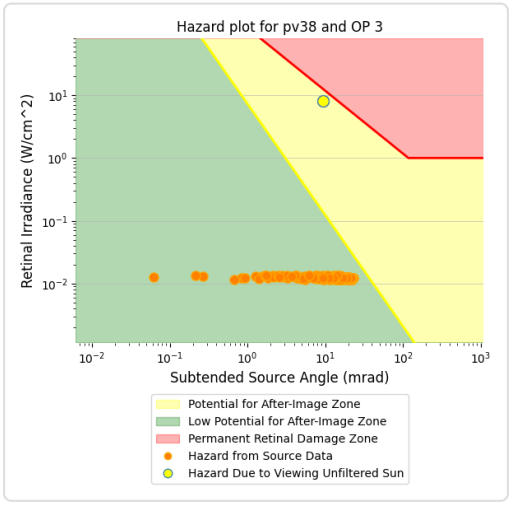
No glare found

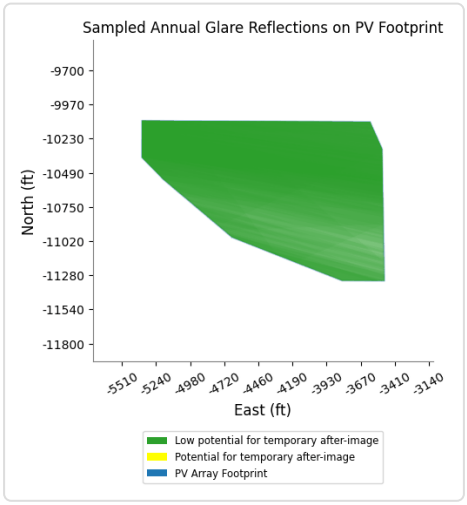
PV38 and OP 3

Yellow glare: none
Green glare: 115 min.









PV38 and OP 1

No glare found

PV38 and OP 2

No glare found

PV38 and OP 4

No glare found

PV38 and OP 5

No glare found

PV38 and OP 6

No glare found

PV38 and OP 7

No glare found

PV38 and OP 8

No glare found

PV38 and OP 9

No glare found

PV38 and OP 10

No glare found

PV38 and OP 11

No glare found

PV38 and OP 12

No glare found

PV38 and OP 13

No glare found

PV38 and OP 14

No glare found

PV38 and OP 15

No glare found

PV38 and OP 16

No glare found

PV38 and OP 17

No glare found

PV38 and OP 18

No glare found

PV38 and OP 19

No glare found

PV38 and 20-ATCT

No glare found

PV: PV39 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route01	0	0.0	0	0.0
Route02	0	0.0	0	0.0
Route04	0	0.0	0	0.0
Route05	0	0.0	0	0.0
Route06	0	0.0	0	0.0
Route07	0	0.0	0	0.0
Route08	0	0.0	0	0.0
Route09	0	0.0	0	0.0
Route10	0	0.0	0	0.0
Route11	0	0.0	0	0.0
Route12	0	0.0	0	0.0
NJK08	0	0.0	0	0.0
NJK12	0	0.0	0	0.0
NJK26	0	0.0	0	0.0
NJK30	0	0.0	0	0.0
OP 3	131	2.2	0	0.0
OP 5	44	0.7	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 4	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
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
20-ATCT	0	0.0	0	0.0

PV39 and Route: Route01

No glare found

PV39 and Route: Route02

No glare found

PV39 and Route: Route04

No glare found

PV39 and Route: Route05

No glare found

PV39 and Route: Route06

No glare found

PV39 and Route: Route07

No glare found

PV39 and Route: Route08

No glare found

PV39 and Route: Route09

No glare found

PV39 and Route: Route10

No glare found

PV39 and Route: Route11

No glare found

PV39 and Route: Route12

No glare found

PV39 and FP: NJK08

No glare found

PV39 and FP: NJK12

No glare found

PV39 and FP: NJK26

No glare found

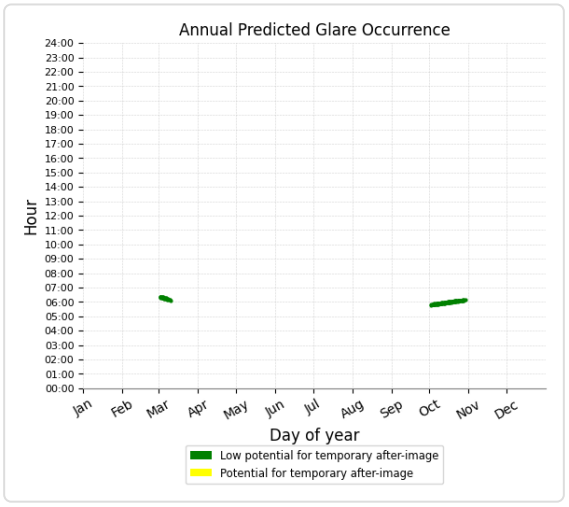
PV39 and FP: NJK30

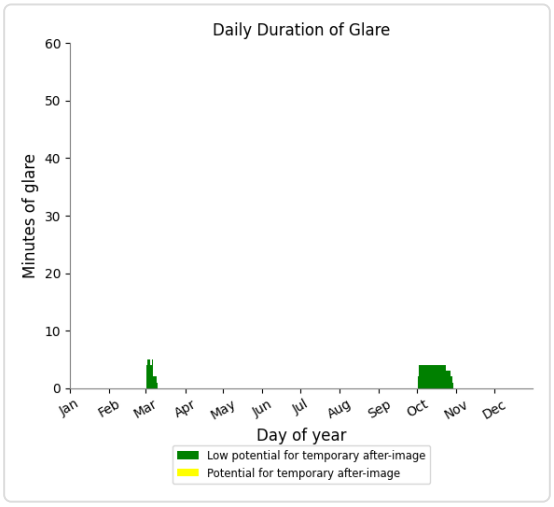
No glare found

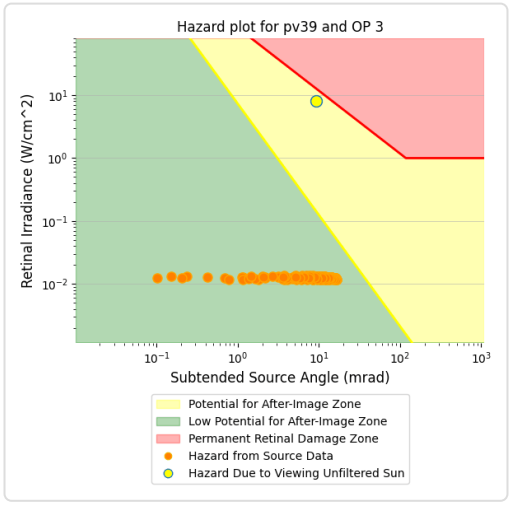
PV39 and OP 3

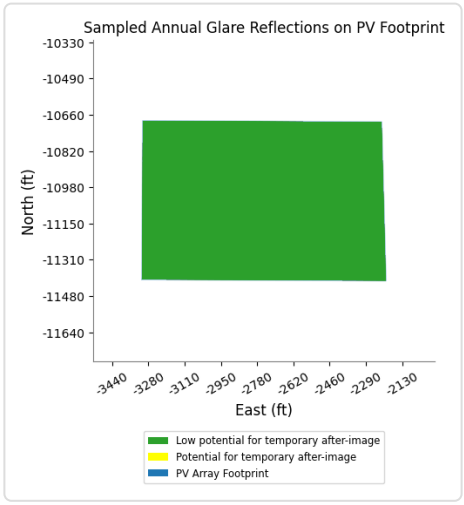
Yellow glare: none

Green glare: 131 min.



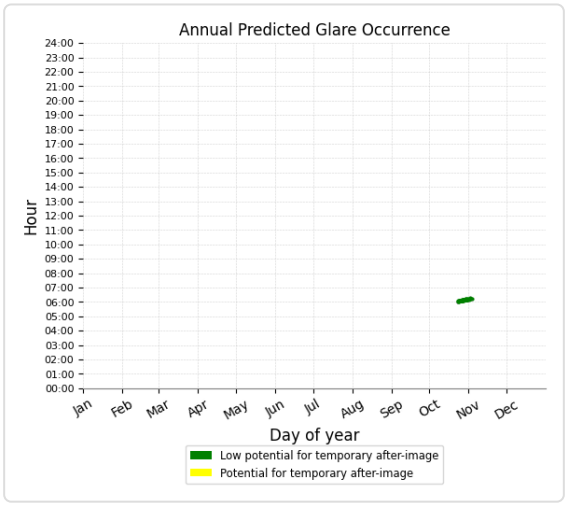


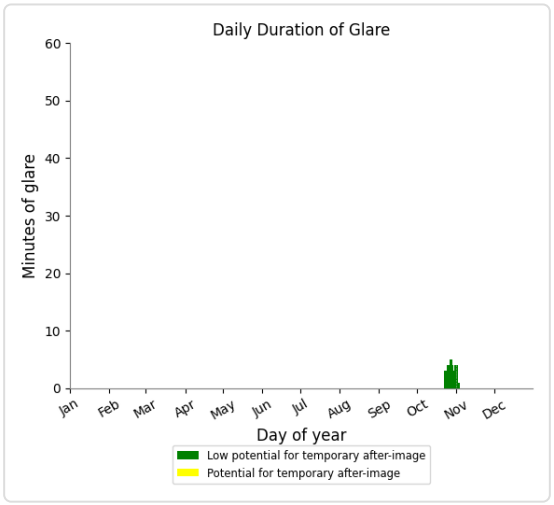


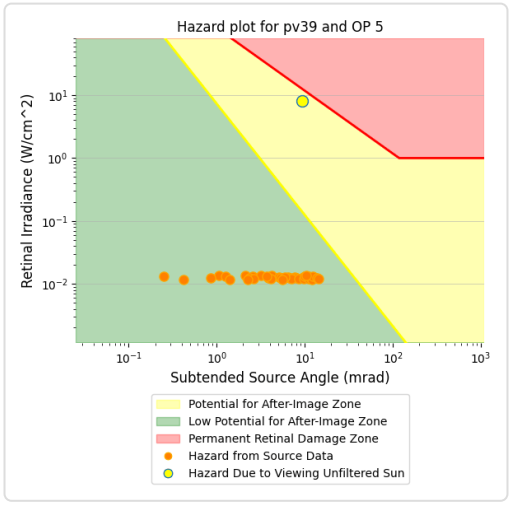


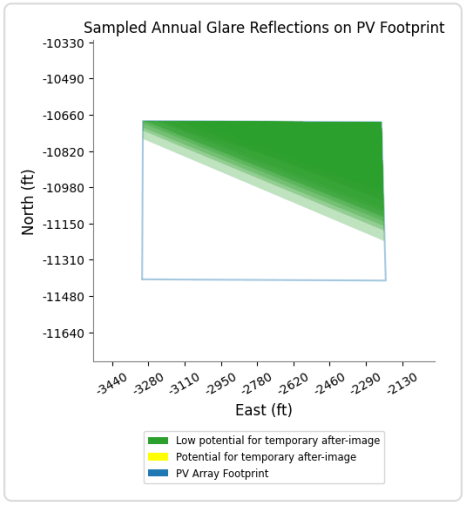
PV39 and OP 5

Yellow glare: none
Green glare: 44 min.









PV39 and OP 1

No glare found

PV39 and OP 2

No glare found

PV39 and OP 4

No glare found

PV39 and OP 6

No glare found

PV39 and OP 7

No glare found

PV39 and OP 8

No glare found

PV39 and OP 9

No glare found

PV39 and OP 10

No glare found

PV39 and OP 11

No glare found

PV39 and OP 12

No glare found

PV39 and OP 13

No glare found

PV39 and OP 14

No glare found

PV39 and OP 15

No glare found

PV39 and OP 16

No glare found

PV39 and OP 17

No glare found

PV39 and OP 18

No glare found

PV39 and OP 19

No glare found

PV39 and 20-ATCT

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

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