



**Initial Study  
Well and Sewer Plant Solar Project  
City of Bishop**

Lead Agency:

**City of Bishop**  
Department of Public Works  
377 West Line Street  
Bishop, California 93514  
760-873-8458

26 March 2015

## **SECTION 1 INTRODUCTION**

### **1.1 PURPOSE**

The primary purpose of the project is to provide economic and reliable renewable energy, using solar photovoltaic (PV) technology, for the water and sewer systems of the City of Bishop. In addition, the project is in support of state and local goals to increase use of renewable energy and to reduce emissions of greenhouse gases.

### **1.2 PROJECT LOCATION**

The project has three locations, one at each of the City of Bishop Well 2, Well 4, and Wastewater Treatment Plant sites.

The Well 2 solar site is on a city-owned parcel in the north part of the city and adjacent to the Well 2 parcel at 993 North Main Street. Well 2 is one of two domestic water supply wells for the city. Access to the well and solar site is typically north from Sierra Street. The site is adjacent to the Tri-county Fairgrounds.

The Well 4 solar site is on an isolated city-owned parcel annexed into the city but about 2 miles west of the main body of the city at 3800 West Line Street. Well 4 is the second and primary of two domestic water supply wells for the city. Access to the well and solar site is from West Line Street.

The Wastewater Treatment Plant solar site is on a city-owned parcel in the east-most part of the city at 980 Poleta Road. The city wastewater treatment plant treats most waste from within the city limits as well as some waste from the adjacent Eastern Sierra Community Services District. Access to the plant and solar site is from a driveway off of Poleta Road.

The Well 2 site is in the Southeast  $\frac{1}{4}$  of the Northeast  $\frac{1}{4}$  of the Northwest  $\frac{1}{4}$  of Section 8 Township 7 South Range 33 East Mount Diablo Baseline and Meridian. The Well 4 site is in the Northwest  $\frac{1}{4}$  of the Northeast  $\frac{1}{4}$  of Section 10 Township 7 South Range 32 East Mount Diablo Baseline and Meridian. The Wastewater Treatment Plant site is in

the Southeast  $\frac{1}{4}$  of the Northwest  $\frac{1}{4}$  of Section 8 Township 7 South Range 33 East Mount Diablo Baseline and Meridian.

See attached location and vicinity map for location of project.

### **1.3 PROJECT DESCRIPTION**

The proposed project will install four separate photovoltaic systems, one at each of the Well 2 and Well 4 sites, and two at the Wastewater Treatment Plant. One of the systems at the plant will power the plant and the other will power electrical equipment at the sewer ponds. The total capacity of the four systems would be about 285 kilowatts.

All of the systems would use ground-mounted solar panels installed in rows and tilted south. The high side of each row of panels would be about 5 feet above the ground. Foundations would probably be pounded posts or poured footings. The panels will use anti-reflective glass.

The Well 2 system would involve the construction of an array about 5,000 square feet in area with a capacity of about 50 kilowatts near the northeast part of the site. The Well 4 system would involve construction of an array about 11,000 square feet in area with a capacity of about 110 kilowatts on an east-west axis about the middle of the site. The plant system would involve the construction of an array about 2,500 square feet in area with a capacity of about 25 kilowatts along the north boundary of the sewer plant site. The sewage ponds system would involve the construction of an array about 10,000 square feet in area with a capacity of about 100 kilowatts adjacent to the plant system array along the north boundary of the sewer plant site. Each array would be sized to meet associated electrical demands.

The final size and layout of the systems will be refined as needed to best accomplish the project purpose and to address other project issues. The general layout of the arrays are shown on the attached layout maps.

In addition to construction of the solar panel arrays the project will include the construction of underground electrical conduit and power runs between the arrays and the associated electric meters, installation of related electrical equipment such as power inverters either adjacent to the arrays or adjacent to the electric meters, and the removal or trimming of trees as shown on the attached layout maps.

To improve consistency of the existing use of the Well 2 site for water supply and the proposed use for solar power generation, it is proposed to change the zoning of the Well 2 parcel and the array parcel to P, Public as part of the project.

#### **1.4 PROJECT PROPONENT**

##### **City of Bishop**

Department of Public Works  
377 West Line Street  
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760-873-8458

**Contact:** David Grah, Director of Public Works

#### **1.5 INTENDED USES OF THIS DOCUMENT**

The City of Bishop will use this Environmental Initial Study to identify any potential environmental impacts associated with the project and to solicit input regarding the project from agencies and the general public. This Environmental Initial Study will also be used in support of a Negative Declaration when considering the approval of the project.

#### **1.6 ENVIRONMENTAL SETTING**

The City of Bishop is located in Inyo County at the northern end of Owens Valley. The City covers an area of approximately 1.8 square miles and has a population of approximately 3,879 (United States Census 2010). The population is expected to remain relatively steady because it is largely prevented from growth because it is surrounded by a combination of public and Native American land.

The Owens River, which is located east of the City of Bishop, flows south through the Owens Valley. The valley is bounded by the Sierra Nevada mountain range to the west and the White Mountain and Inyo Mountain ranges to the east. Numerous creeks, canals, and ditches carry water from the Sierra Nevada Mountains toward the Owens River.

Bishop is located in the rain shadow of the Sierra Nevada. The warmest month of the year is July with an average maximum temperature of about 98 degrees Fahrenheit. The coldest month of the year is December with an average minimum temperature of 22 degrees Fahrenheit. Temperature variations between night and day are over 40

degrees during the summer and over 30 degrees during winter. The annual average precipitation at Bishop is 5 inches. The wettest month of the year is February with an average rainfall of 1 inch.

The project elevation ranges from about 4,115 feet at the plant to about 4,370 feet at Well 4. Well 2 is at an elevation of about 4,155 feet. All locations slope gently to the east toward the Owens River.

The Well 2 site is made up of two parcels with the well located on one and the array to be located on the other. The well parcel was acquired by the city in 1963 and Well 2 was constructed in 1968. The array parcel was acquired by the city in about 2007. The site prior to acquisition by the city was agriculture and, more recently in the case of the array parcel, storage and parking related to the fairgrounds.

The fairgrounds are north of the Well 2 site, a trailer park and condominium complex are located west of the site, a city parking lot is located south of the site, and a motel is located east of the site.

The Well 4 site was acquired by the city in 1940 and developed as the city reservoir and creek intake immediately after. In about 1969, the creek intake was replaced by Well 4 constructed on the site. In about 1990, a steel storage tank was constructed on a different site to replace the open water reservoir up until that time. The use of the site prior to the city's acquisition was probably agriculture.

Stock grazing use is located west, south, and east of the Well 4 site. North of the site is Highway 168 / West Line Street. North of West Line Street is residential area. West Line Street is the primary access from the Bishop area to the mountain recreation sites in the Bishop Creek canyon and the crest of the Sierra Nevada mountains is visible from the highway in the vicinity of the Well 4 site. The North Fork of Bishop Creek is near the west boundary of the site.

East and west of the plant site are grazing leases on City of Los Angeles Department of Water and Power land. North of the site is a Bishop Fire Department. East of the plant is used for stock.

## **1.7 GENERAL PLAN DESIGNATION**

The Well 4 site and the wastewater treatment site are zoned P, Public. At the Well 2 site the well parcel is zoned C-1, General Commercial and Retail, and the array parcel is zoned R-3, Multiple Residential. Part of the project is to rezone the Well 2 site parcels to P, Public.

See attached City of Bishop Zoning map.

## SECTION 2 ENVIRONMENTAL CHECKLIST

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
<b>1. Aesthetics</b>				
<i>Would the project:</i>				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>2. Agriculture Resources</b>				
<i>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</i>				
<i>Would the project:</i>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>3. Air Quality</b>				
<i>Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.</i>				
<i>Would the project:</i>				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>4. Biological Resources</b>				
<i>Would the project:</i>				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>5. Cultural Resources</b> <i>Would the project:</i>				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>6. Geology and Soils</b> <i>Would the project:</i>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>7. Hazards and Hazardous Materials</b> <i>Would the project:</i>				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located within one-quarter mile of a facility that might reasonably be anticipated to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Be located on a site of a current or former hazardous waste disposal site or solid waste disposal site unless wastes have been removed from the former disposal site; or 2) that could release a hazardous substance as identified by the State Department of Health Services in a current list adopted pursuant to Section 25356 for removal or remedial action pursuant to Chapter 6.8 of Division 20 of the Health and Safety Code?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located on land that is, or can be made, sufficiently free of hazardous materials so as to be suitable for development and use as a school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
h) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>8. Hydrology and Water Quality</b> <i>Would the project:</i>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>9. Land Use and Planning</b>				
<i>Would the project:</i>				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>10. Mineral Resources</b>				
<i>Would the project:</i>				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>11. Noise</b>				
<i>Would the project result in:</i>				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>12. Population and Housing</b>				
<i>Would the project:</i>				
a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>13. Public Services</b>				
<i>Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</i>				
a) Fire Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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<b>14. Recreation</b>				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>15. Transportation/Traffic</b> <i>Would the project:</i>				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>16. Utilities and Service Systems</b> <i>Would the project:</i>				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>17. Mandatory Findings of Significance</b>				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Issues	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Factors That Could Result in a Potentially Significant Impact		
The environmental factors listed below are not checked because the proposed project would not result in a "potentially significant impact" as indicated by the preceding checklist and supported by substantial evidence provided in this document.		
<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture Resources	<input type="checkbox"/> Air Quality
<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Geology/Soils
<input type="checkbox"/> Hazards & Hazardous Materials	<input type="checkbox"/> Hydrology/Water Quality	<input type="checkbox"/> Land Use/Planning
<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise	<input type="checkbox"/> Population/Housing
<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation	<input type="checkbox"/> Transportation/Traffic
<input type="checkbox"/> Utilities/Services Systems	<input type="checkbox"/> Mandatory Findings of Significance	

Environmental Determination
-----------------------------

On the basis of this initial evaluation:

- I find that the proposed project could not have a significant effect on the environment, and a **Negative Declaration** will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. **A Mitigated Negative Declaration** will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an **Environmental Impact Report** is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measure based on the earlier analysis as described on attached sheets. An **Environmental Impact Report** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **Negative Declaration** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **Negative Declaration**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signed \_\_\_\_\_  
 Gary Schley  
 Director of Planning

Date \_\_\_\_\_

## SECTION 3 DISCUSSION OF ENVIRONMENTAL EVALUATION

### 1. AESTHETICS

The project sites are not visible from designated scenic vistas or a designated state scenic highway; however, the project is located within an area of generally high scenic value, with panoramic views of the Sierra Nevada Mountains dominating the landscape, where they are visible. The project sites consist of parcels currently developed for public utilities.

The Well 2 site is located in a heavily developed area of the city with intensive land uses. Aesthetic issues at the Well 2 site are the removal of one tree and glare caused by sunlight reflecting off the array at certain times. The tree to be removed is an elm in poor health and with poor aesthetics. See the discussion about glare from the array at the Well 2 site below.

The Well 4 site is near the western boundary of development in the Bishop area. Existing aesthetic impacts within 2 miles west of the Well 4 site include a power plant, power lines, a community college, and commercial borrow pit and concrete plant. Near the Well 4 site, views open up to the mountains to the west providing users of West Line Street some of the first relatively unobstructed views of the mountains.

The view of the Well 4 solar array from the north, west, and south would be limited and filtered due to existing trees screening the site. Observers from the north include those on West Line Street and residences north of that street. From the east, the east end of the array will be visible to westbound traffic on West Line Street. From the north and east, the underside of the north-most row of solar panels could be at least partially visible. It is proposed to either paint the visible underside of the array a dark or blending color or to screen the visible portion of the array from view from the north and east. The array could attract some attention, but would not dominate the characteristic landscape.

The wastewater treatment plant site is located between the wastewater treatment plant and the fire training facility, near the sewage ponds, and a concrete mix plant. There are

no aesthetic issues at the wastewater treatment plant site with the exception of potential glare seen from aircraft.

An analysis was performed of glare from the Well 2 and plant solar arrays using the Solar Glare Hazard Analysis Tool (SGHAT). SGHAT analysis is recognized by the Federal Aviation Administration for analysis of glare from photovoltaic systems affecting aircraft. SGHAT is also a recognized tool for evaluating glare from photovoltaic systems as seen from key receptors. Of concern is glare that comes from within 50 degrees from the pilot's or observers line of sight. Impacts from glare within 50 degrees from line of site can include temporary after-image and permanent eye damage.

Five receptors were evaluated using SGHAT around the Well 2 solar array and are shown on the attached Solar Glare Hazard Analysis Reports. Receptors are called Observation Points in the reports. Receptor 1 was the northeast corner of the mobile home southwest of the array. Receptor 2 was the northwest corner of the bottom floor of the motel southeast of the site. Receptor 3 was the top floor above Receptor 2. Receptor 4 was the southwest corner of the top floor of the motel east of the array. Receptor 5 was the top floor of the condominiums west of the array.

The analysis shows there would be glare for all 5 receptors at the Well 2 array:

1. The analysis shows there would be glare at the mobile home for up to a 30 minute period around 8 am for about a month period centered on the summer solstice.
2. The analysis shows there would be glare at the bottom floor of the motel southeast of the site for up to a 30 minute period around 6 pm for about a 2 month period centered on the summer solstice.
3. The analysis shows there would be glare at the top floor of the motel southeast of the site for up to a hour between 5 and 6 pm for about a 3 month period centered on the summer solstice.
4. The analysis shows there would be glare at the top floor of the motel east of the site for up to an hour and a half between 5 and 7 pm except for a 3 month period centered on the winter solstice.
5. The analysis shows there would be glare at the top floor of the condominiums west of the site for up to a half hour between 5 and 8 am for about 2 month periods centered on the vernal and autumnal equinoxes.

Although there will be glare from the Well 2 solar array it is not expected to be disruptive and not out of character for a downtown location.

The analysis of the Wastewater Treatment Plant site indicates there will be glare at about 6 pm some times of the year for aircraft approaching Runway 30 at the Bishop Airport. This glare would be visible when between 1/2 mile and 1 mile from the runway threshold. The analysis indicates there will be a small amount of occasional glare for aircraft approaching Runway 34 when 1/2 mile or more from the runway threshold. The analysis also indicates that all the glare visible to aircraft approaching the airport will be more than 50 degrees from the pilot line of sight. Glare from the solar panels is not expected to be visible on approach to other runways at the Bishop Airport. All of the glare for aircraft had a low potential for temporary after-image according to the analysis.

Because there are no glare receptors south of the Well 4 array site, a glare analysis was not conducted for this array.

The project will use anti-reflective glass on the solar panels to minimize glare.

The proposed project will have a less than significant impact on aesthetics.

## **2. AGRICULTURAL RESOURCES**

The site does not contain Prime Farmland and is not under a Williamson Act Contract to be preserved as farmland.

The proposed project will have no negative impact on agricultural resources.

## **3. AIR QUALITY**

Air Quality within the City of Bishop and surrounding Inyo County is monitored and regulated by the Great Basin Unified Air Pollution Control District. Inyo County is listed as non-attainment for the state standard for PM-10 (particulate matter less than 10 microns in diameter) air emissions, which include chemical emissions and other inhalable particulate matter with an aerodynamic diameter of less than 10 microns.

The project is not expected to increase traffic-related emissions. Negative air quality impacts would be limited to the emissions from construction equipment involved in the construction of the proposed improvements. These impacts would last the approximately 1 month long construction period. The short duration of the proposed work combined with existing regulations regarding motor vehicle fuels and emissions would result in potential air quality impacts being well below any state or federal significance criteria.

The project does not propose any use or construction technique that would result in odors that would be objectionable to the general public.

PM-10 emissions during construction would be controlled through the implementation of best management practices to limit PM-10 emission such as regular use of a water truck to keep potential dust producing surfaces damp.

The trimming and removal of trees will tend to decrease the amount of carbon dioxide absorbed and the amount of oxygen released by trees in the project area.

Because the project will reduce the need for power generated from burning fuels, it is expected to result in the reduction in production of over 500,000 pounds of carbon dioxide each year.

The proposed project will have no negative impact on air quality.

#### **4. BIOLOGICAL RESOURCES**

No critical habitat or special status species, sensitive species or species of concern have been identified within the proposed project area. The entire project area is disturbed. The project area is predominantly populated with exotic and horticultural species of plants.

The trees in the project area are not native species and are not thought to be important habitat for raptors. No important or protected avian species are known to nest or forage on the project site.

The City of Bishop General Plan Area does not include habitat, natural community, or other conservation plans. No conflicts are expected to occur.

The proposed project will have no negative impact on biological resources.

## **5. CULTURAL RESOURCES**

The project sites are heavily disturbed with no significant cultural features. There are no known or visible historic or prehistoric cultural resources on the project sites. If cultural resources are discovered during construction, construction activity will be immediately stopped and a qualified cultural specialist will be contacted.

The proposed project will have no negative impact on cultural resources.

## **6. GEOLOGY AND SOILS**

At the Well 2 site and the Wastewater Treatment Plant site Natural Resources Conservation Service (NRCS) indicate the soils consist of Lucerne loamy fine sand, 0 to 2 percent slopes. These soils are well drained and are expected to be suitable for the foundation of solar arrays.

At the Well 4 site NRCS soil survey for soils within the project area indicate the soils consist of Muranch family, 0 to 2 percent slopes. This soil family is located on alluvial fan terraces with a parent material of alluvium derived from mixed sources. The typical soil profile is described as sandy loam (SC) to a depth approximately 10 inches, underlain by cobbly sandy loam to very cobbly loam (SC and GC) to a depth of 40 inches. Very cobbly coarse sand (SP to GP) is present from approximately 40 to 60 inches. The soil unit is further described as well drained. These soils are not expansive and are suitable for the foundation of solar arrays, though cobbles can make some types of construction difficult.

The Bishop Area is located in seismic Zone 4. The Well 2 and Well 4 sites are not in an Alquist-Priolo Special Studies Zone. About the western one third of the Wastewater Treatment Plant site is within an Alquist-Priolo Special Studies Zone. No special measures are required to address potential seismic activity in the area during construction or during use of the constructed product.

The proposed project will have no negative impact on geology and soils.

## **7. HAZARDS AND HAZARDOUS MATERIALS**

The construction of the project and use of the constructed features will not pose any significant hazard to the public or the environment. Construction of the project will involve the short-term use of hazardous materials such as diesel fuel and grease associated with the construction equipment but the hazards of these materials are not substantially different from the hazards presented by similar materials now in use as well as expected in the future at the Wastewater Treatment. Refueling and equipment maintenance would be done off-site or within a contained area so as to avoid soil contamination on the project site. No long-term use of hazardous materials is foreseeable as a result of the project.

The proposed project will have no negative impact on hazards and hazardous materials.

## **8. HYDROLOGY AND WATER QUALITY**

The project sites are nearly level and the potential for erosion is low.

Runoff from the solar panels will fall onto the ground below and infiltrate as it does prior to the project.

The proposed project will have no negative impact on hydrology and water quality.

## **9. LAND USE AND PLANNING**

The project sites are owned by the City of Bishop and intended for public uses including water supply wells and wastewater treatment.

The Well 4 site and the wastewater treatment site are zoned P, Public. At the Well 2 site the well parcel is zoned C-1, General Commercial and Retail, and the array parcel is zoned R-3, Multiple Residential. Part of the project is to rezone the Well 2 site parcels to P, Public.

The proposed project will have no negative impact on land use and planning.

## **10. MINERAL RESOURCES**

No mineral resources are known to exist on the project site.

The proposed project will have no negative impact on mineral resources.

## **11. NOISE**

The proposed project would result in temporary noise associated with construction activities. Construction would be limited to 7:00 a.m. – 7:00 p.m.

The proposed project will have no negative impact on noise.

## **12. POPULATION AND HOUSING**

There is no housing located on the project site and none is proposed. The project sites are public property intended for public uses other than housing. Although zoned residential, the solar array parcel at Well 2 is not suitable for residential development due to access constraints.

The proposed project would not require or encourage an increase in population or the construction of housing.

The proposed project will have no negative impact on population and housing.

## **13. PUBLIC SERVICES**

The proposed project would contribute to the efficiency of the City of Bishop water and sewer systems.

The proposed project will have no negative impact on public services.

## **14. RECREATION**

The project sites are fenced off from use for recreation.

The proposed project will no impact on recreation.

#### **15. TRANSPORTATION AND TRAFFIC**

Although the project will generate a very small amount of construction traffic, the proposed project will have no impact on Transportation and Traffic.

#### **16. UTILITIES AND SERVICE SYSTEMS**

The proposed project would contribute to the efficiency of the City of Bishop water and sewer systems.

The proposed project will have no adverse impact on utilities and service systems.

#### **17. MANDATORY FINDINGS OF SIGNIFICANCE**

Project impacts would be mostly short-term and minor. The proposed project would not cause any potential impacts to the environment that could result in a mandatory finding of significance.

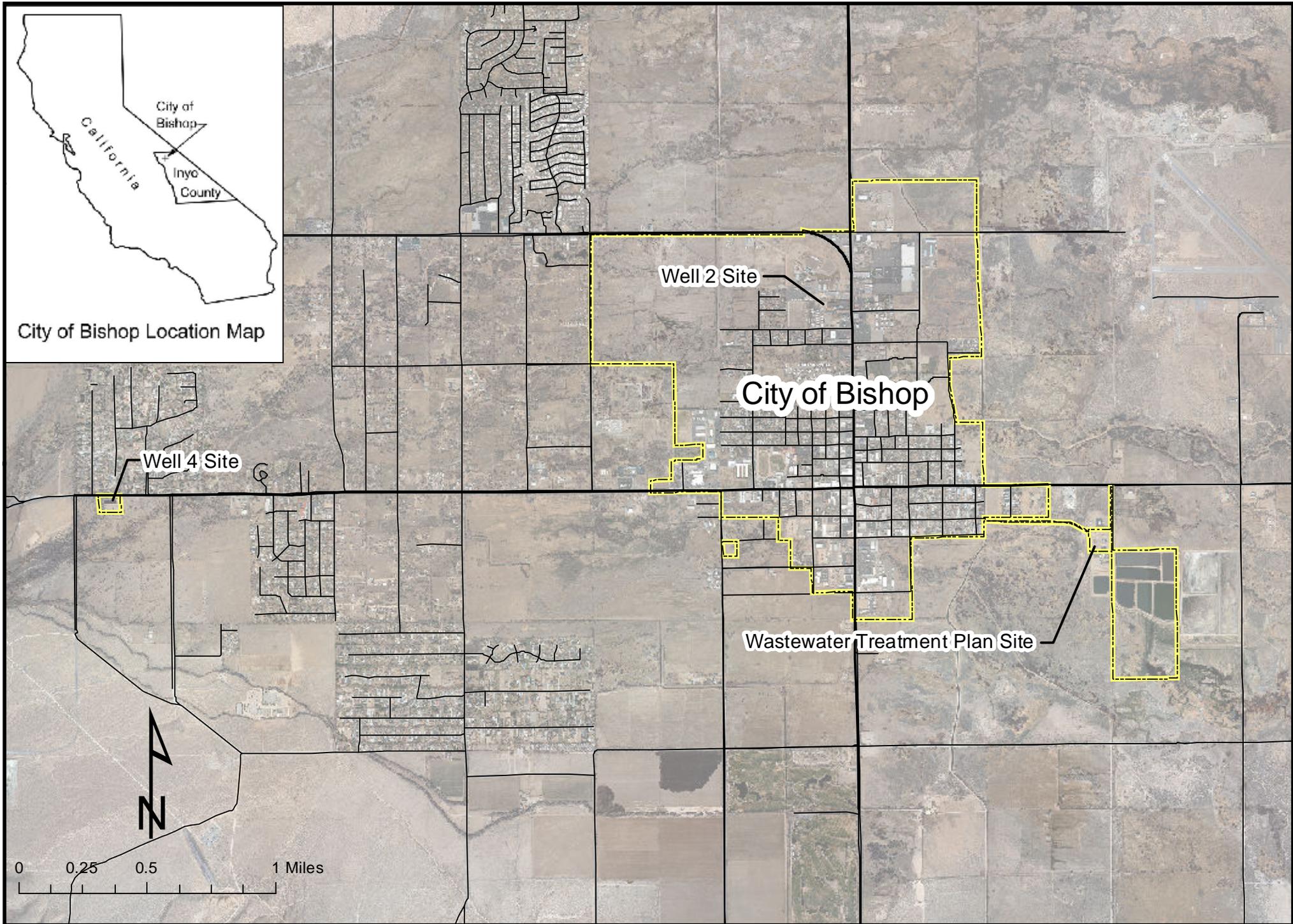
## **SECTION 4 ATTACHMENTS**

Location map

Layout maps

City of Bishop Zoning map

Solar Glare Hazard Analysis Reports



Bishop Well and Sewer Plant Solar Project Location Map

# City of Bishop Solar Project

## Proposed Array Layouts

Revision 1



### GENERAL NOTES

1. ARRAY SIZES ARE DEPICTED 100% - 125% LARGER THAN NECESSARY TO SHOW THAT THERE IS ENOUGH ROOM FOR REQUIRED SIZING.
2. FINAL PV MODULE LAYOUTS WILL DEPEND ON FINAL CONSTRUCTION DESIGN.
3. ALL GROUND MOUNTS SHALL BE INSTALLED AT A TILT OF 30 DEGREES UNLESS OTHERWISE NOTED.
4. DEPICTIONS OF U/G CONDUIT RUNS ARE FOR ILLUSTRATIVE PURPOSES ONLY, ACTUAL ROUTINGS WILL DEPEND ON FINAL DESIGNS AND CITY APPROVAL.

# City of Bishop Solar Project

Revision 1



## Meter Matrix

Meter Code	Service Account ID (SAID)	Meter Number	Meter Name	Meter Address	Meter Volts/Amps	Capacity Required (kW)	Target Production (kWh/year)
1	001-4702-63	259000-077129	Well Pump 2	993 N. Main St.	277/480V	41	60,541
2	001-3495-31	3412M-006631	Well Pump 4	3800 W. Line St.	277/480V	98	153,535
3	001-4702-76	256000-121751	Bishop WWTP	900 Poleta St.	240V	15	26,549
4	001-4702-75	255000-009952	Bishop WWTP Aeration Ponds	900 Poleta St.	240V	82	133,684
<b>Total</b>						<b>236</b>	<b>374,309</b>



METER CODE		1				
ARRAY NOTES						
Installation Type	Length (ft)	Width (ft)	Azimuth (degrees)	Tilt (degrees)	Shading (%)	Array Size (kW)
Ground Mount	90.0	54.0	180.0	30.0	TBD	42.0

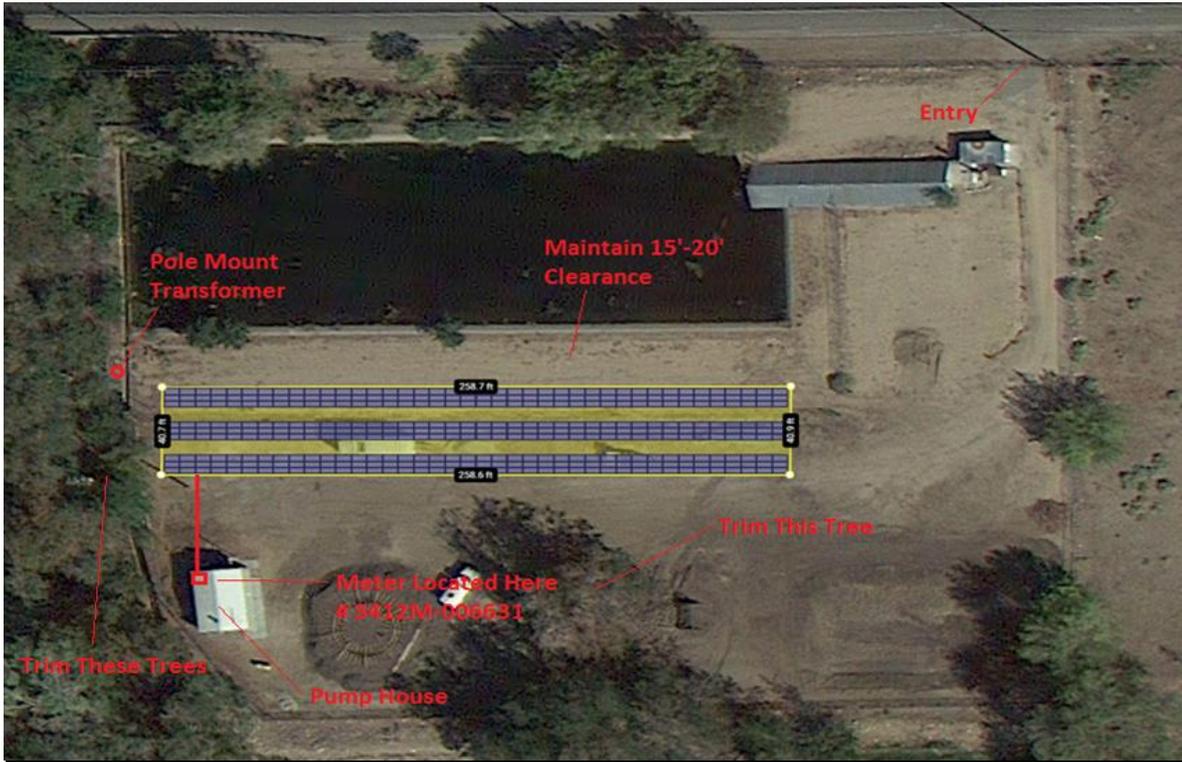
1) Trees to East of array have been removed. Plant screening on existing 6' fence to remain and be maintained.  
 2) 25' minimum clearance must be maintained between array and fence to West of array.  
 3) Unused power pole to be removed.

SITE CAPACITY	
CAPACITY REQUIRED (KW)	41
CAPACITY DEPICTED (KW)	42
CAPACITY SHORTAGE (KW)	0

**City of Bishop Solar Project**  
 Revision 1  
 Well Pump 2  
 993 N. Main St.



SITE INFORMATION	
SERVICE ACCOUNT ID	001-4702-63
METER NUMBER	259000-077129
ANNUAL PRODUCTION (KWH)	60,541
SWITCHBOARD	277/480V
UTILITY TRANSFORMER	TBD

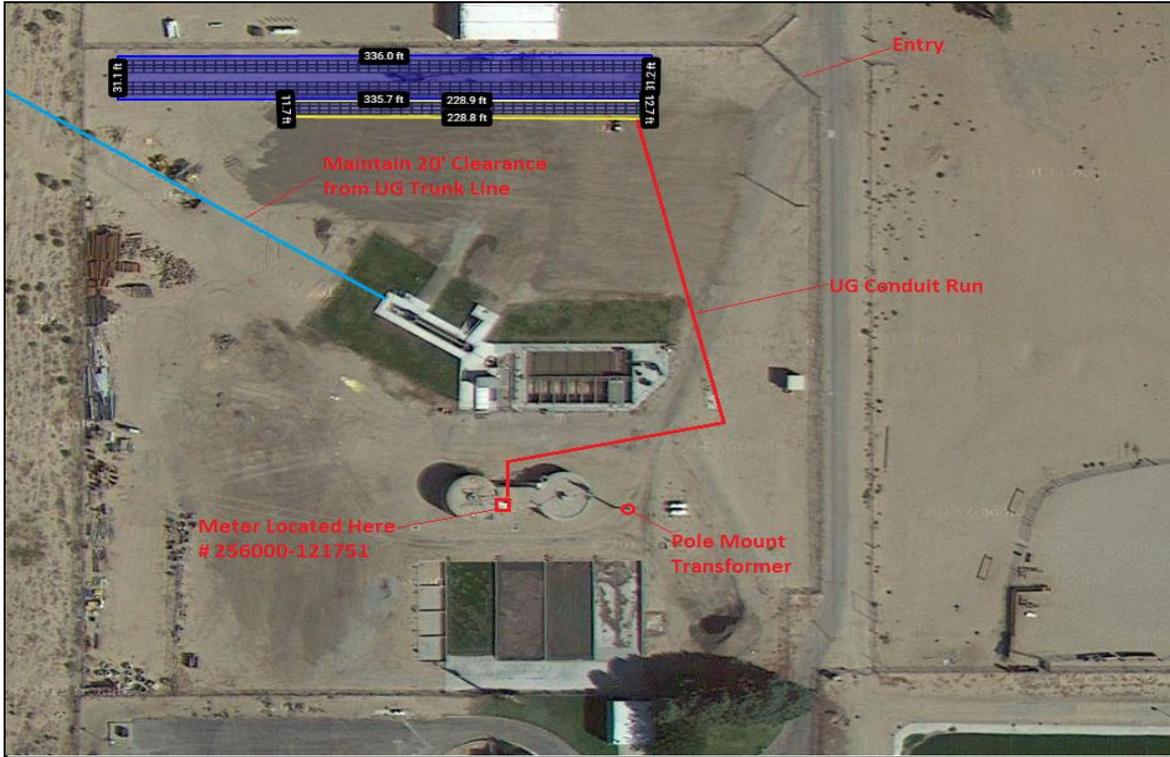


**City of Bishop Solar Project**  
Revision 1

Well Pump 4  
3800 W. Line St.



METER CODE		2				
ARRAY NOTES						
Installation Type	Length (ft)	Width (ft)	Azimuth (degrees)	Tilt (degrees)	Shading (%)	Array Size (kW)
Ground Mount	258.0	41.0	180.0	30.0	TBD	107.1
1) Maintain 15'-20' clearance between array and pond.						
SITE CAPACITY						
CAPACITY REQUIRED (KW)					98	
CAPACITY DEPICTED (KW)					107	
CAPACITY SHORTAGE (KW)					0	
SITE INFORMATION						
SERVICE ACCOUNT ID					001-3495-31	
METER NUMBER					3412M-006631	
ANNUAL PRODUCTION (KWH)					153,535	
SWITCHBOARD					277/480V	
UTILITY TRANSFORMER					TBD	

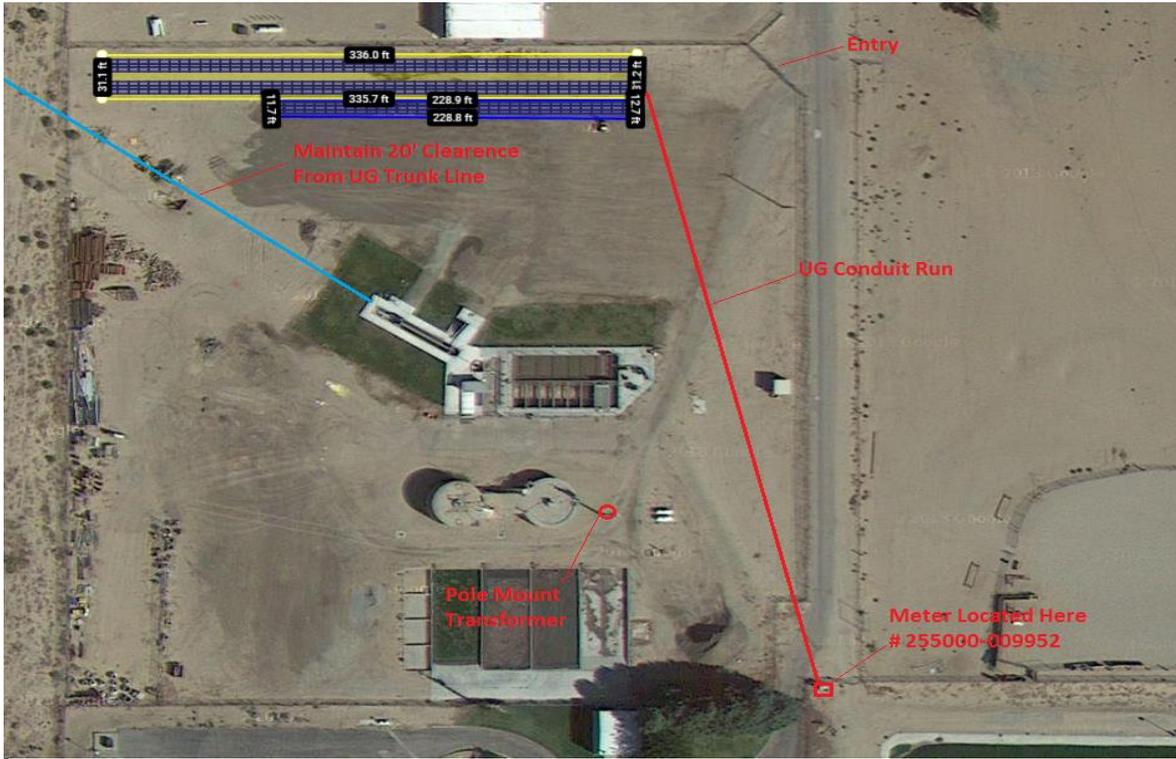


City of Bishop Solar Project  
Revision 1

Bishop WWTP  
900 Poleta St.



METER CODE		3				
ARRAY NOTES						
Installation Type	Length (ft)	Width (ft)	Azimuth (degrees)	Tilt (degrees)	Shading (%)	Array Size (kW)
Ground Mount	220.0	10.0	180.0	30.0	TBD	28.8
SITE CAPACITY						
CAPACITY REQUIRED (KW)					15	
CAPACITY DEPICTED (KW)					29	
CAPACITY SHORTAGE (KW)					0	
SITE INFORMATION						
SERVICE ACCOUNT ID					001-4702-76	
METER NUMBER					256000-121751	
ANNUAL PRODUCTION (KWH)					26,549	
SWITCHBOARD					240V	
UTILITY TRANSFORMER					TBD	



**City of Bishop Solar Project**  
 Revision 1  
 Bishop WWTP Aeration Ponds  
 900 Poleta St.



METER CODE		4				
ARRAY NOTES						
Installation Type	Length (ft)	Width (ft)	Azimuth (degrees)	Tilt (degrees)	Shading (%)	Array Size (kW)
Ground Mount	220.0	41.0	180.0	30.0	TBD	90.3
SITE CAPACITY						
CAPACITY REQUIRED (KW)					82	
CAPACITY DEPICTED (KW)					90	
CAPACITY SHORTAGE (KW)					0	
SITE INFORMATION						
SERVICE ACCOUNT ID					001-4702-75	
METER NUMBER					255000-009952	
ANNUAL PRODUCTION (KWH)					133,684	
SWITCHBOARD					240V	
UTILITY TRANSFORMER					TBD	



# Solar Glare Hazard Analysis Report

Generated March 19, 2015, 4:34 p.m.

## Glare found

 Print



## Inputs

Analysis name	COBWell220150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True

PV surface material

Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	37.3720031566	-118.397351503	4150.03	4.0	4154.03
2	37.3720031566	-118.397136927	4149.87	4.0	4153.87
3	37.3716684976	-118.397136927	4149.32	4.0	4153.32
4	37.3716684976	-118.397351503	4149.63	4.0	4153.63

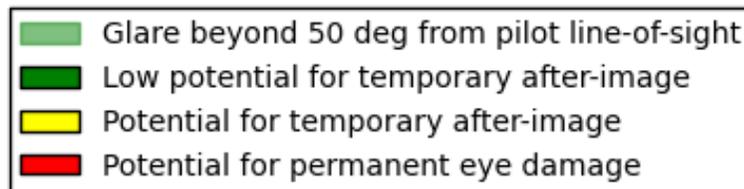
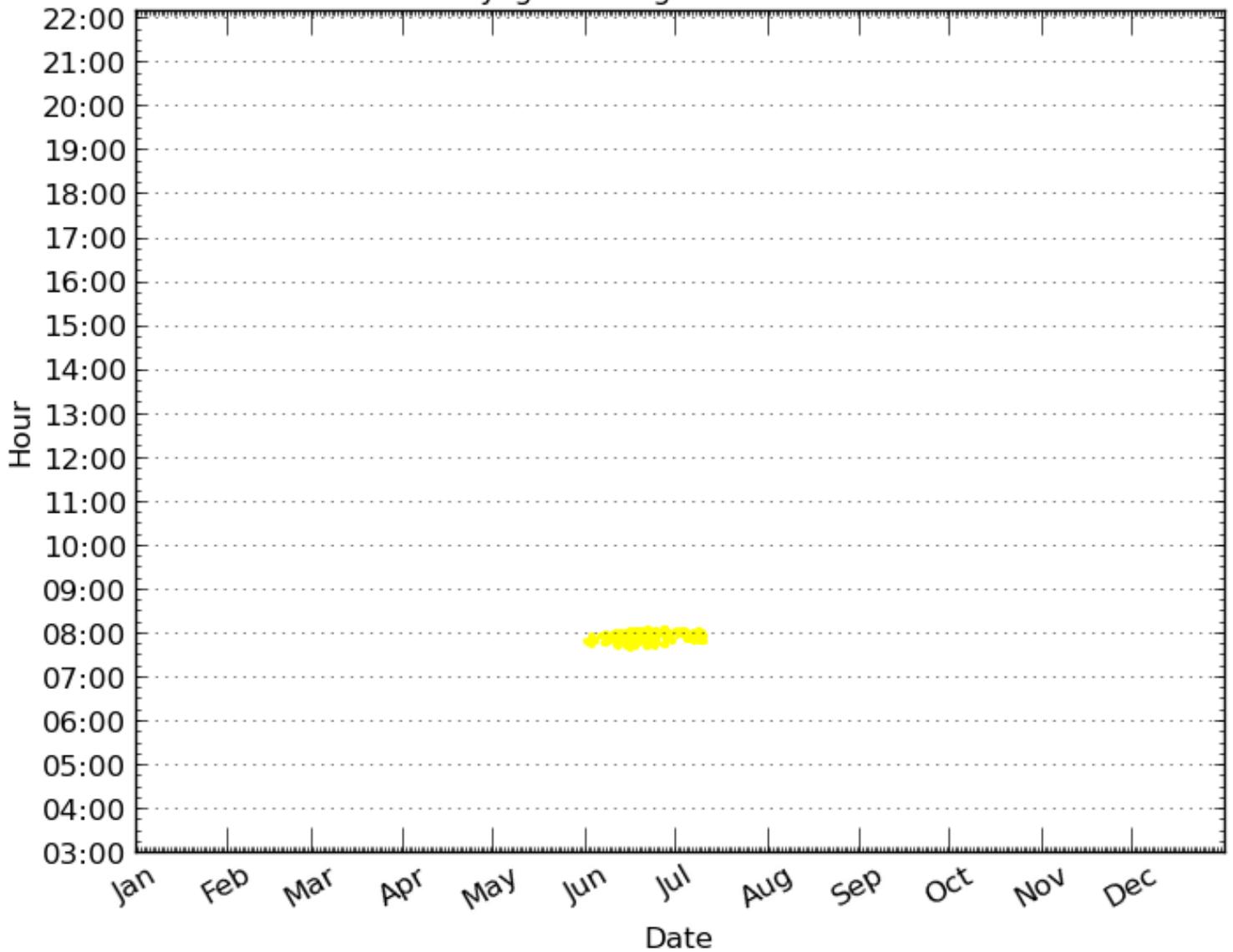
## Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
1	37.3715619179	-118.397381008	4149.63	7.0

# Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



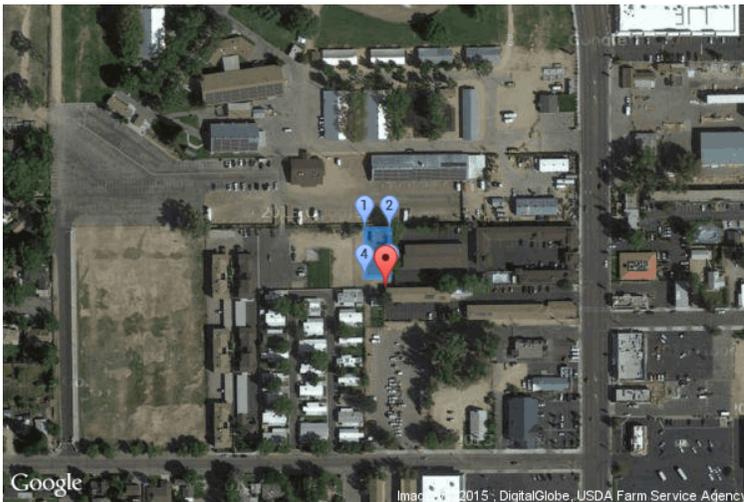


# Solar Glare Hazard Analysis Report

Generated March 19, 2015, 4:35 p.m.

## Glare found

 Print



## Inputs

Analysis name	COBWell220150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True

PV surface material

Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## PV array vertices

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2	37.3720031566	-118.397136927	4149.87	4.0	4153.87
3	37.3716684976	-118.397136927	4149.32	4.0	4153.32
4	37.3716684976	-118.397351503	4149.63	4.0	4153.63

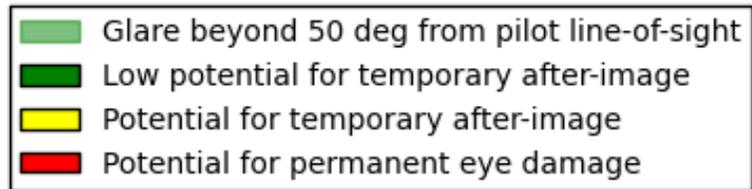
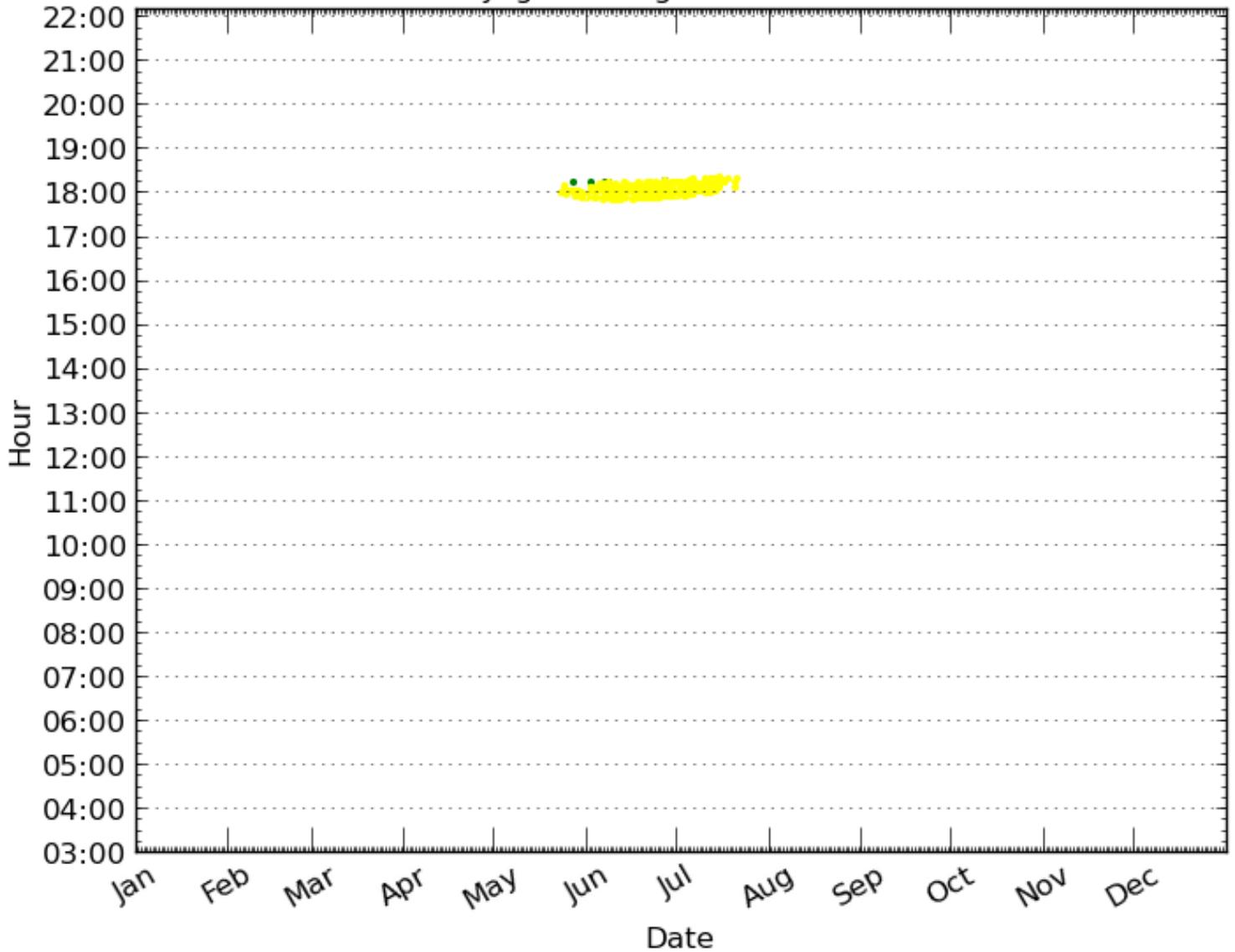
## Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
2	37.3715960234	-118.397163749	4149.26	5.0

# Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.





# Solar Glare Hazard Analysis Report

Generated March 19, 2015, 4:35 p.m.

## Glare found

 Print



## Inputs

Analysis name	COBWell220150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True

PV surface material

Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## PV array vertices

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2	37.3720031566	-118.397136927	4149.87	4.0	4153.87
3	37.3716684976	-118.397136927	4149.32	4.0	4153.32
4	37.3716684976	-118.397351503	4149.63	4.0	4153.63

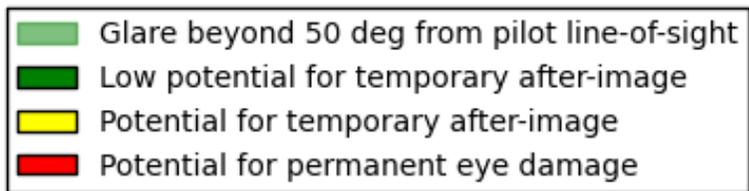
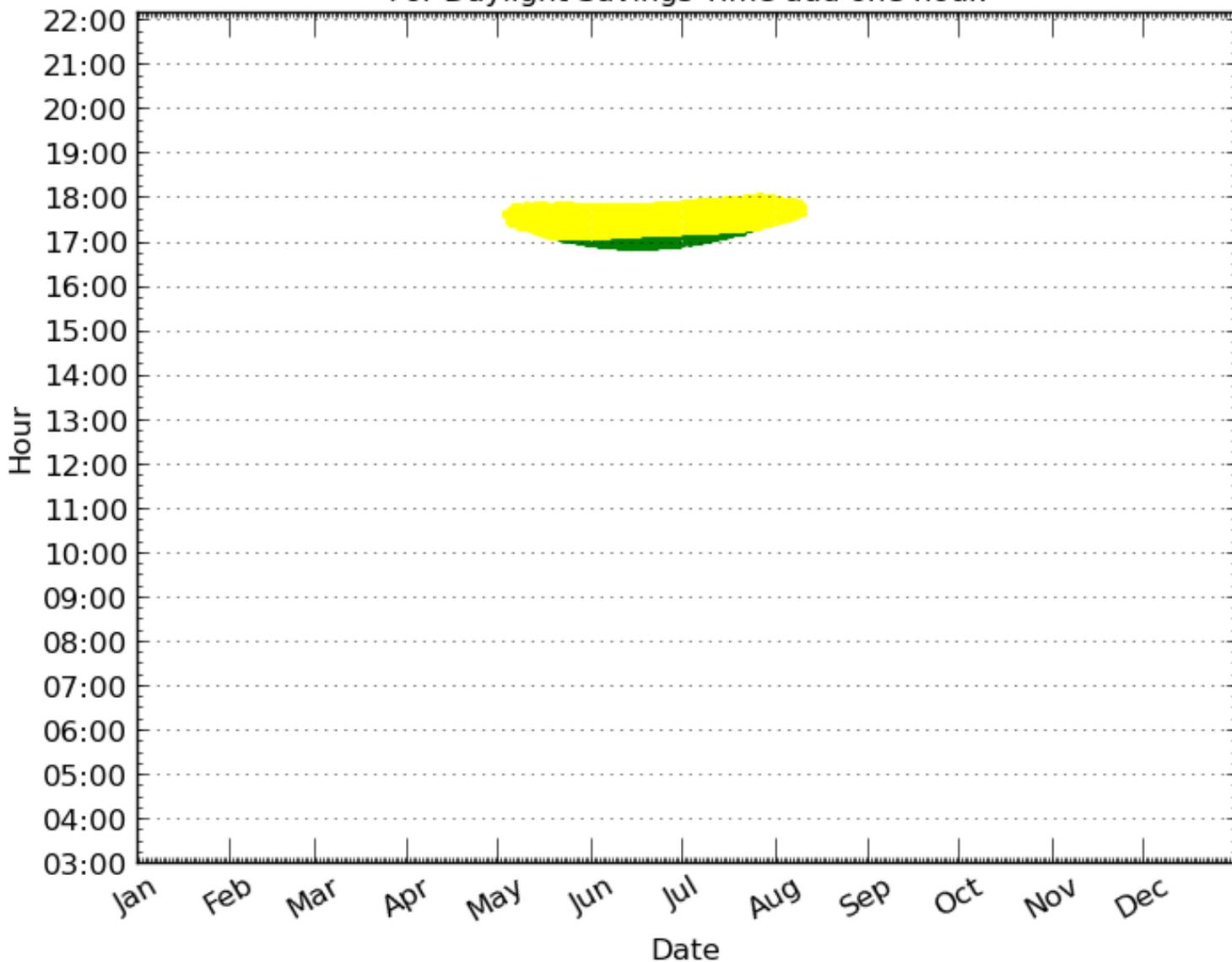
## Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
3	37.3715917602	-118.397142291	4149.21	15.0

# Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.





# Solar Glare Hazard Analysis Report

Generated March 19, 2015, 4:35 p.m.

## Glare found

 Print



## Inputs

Analysis name	COBWell220150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True

PV surface material

Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	37.3720031566	-118.397351503	4150.03	4.0	4154.03
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3	37.3716684976	-118.397136927	4149.32	4.0	4153.32
4	37.3716684976	-118.397351503	4149.63	4.0	4153.63

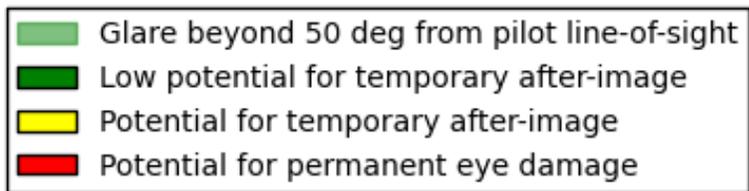
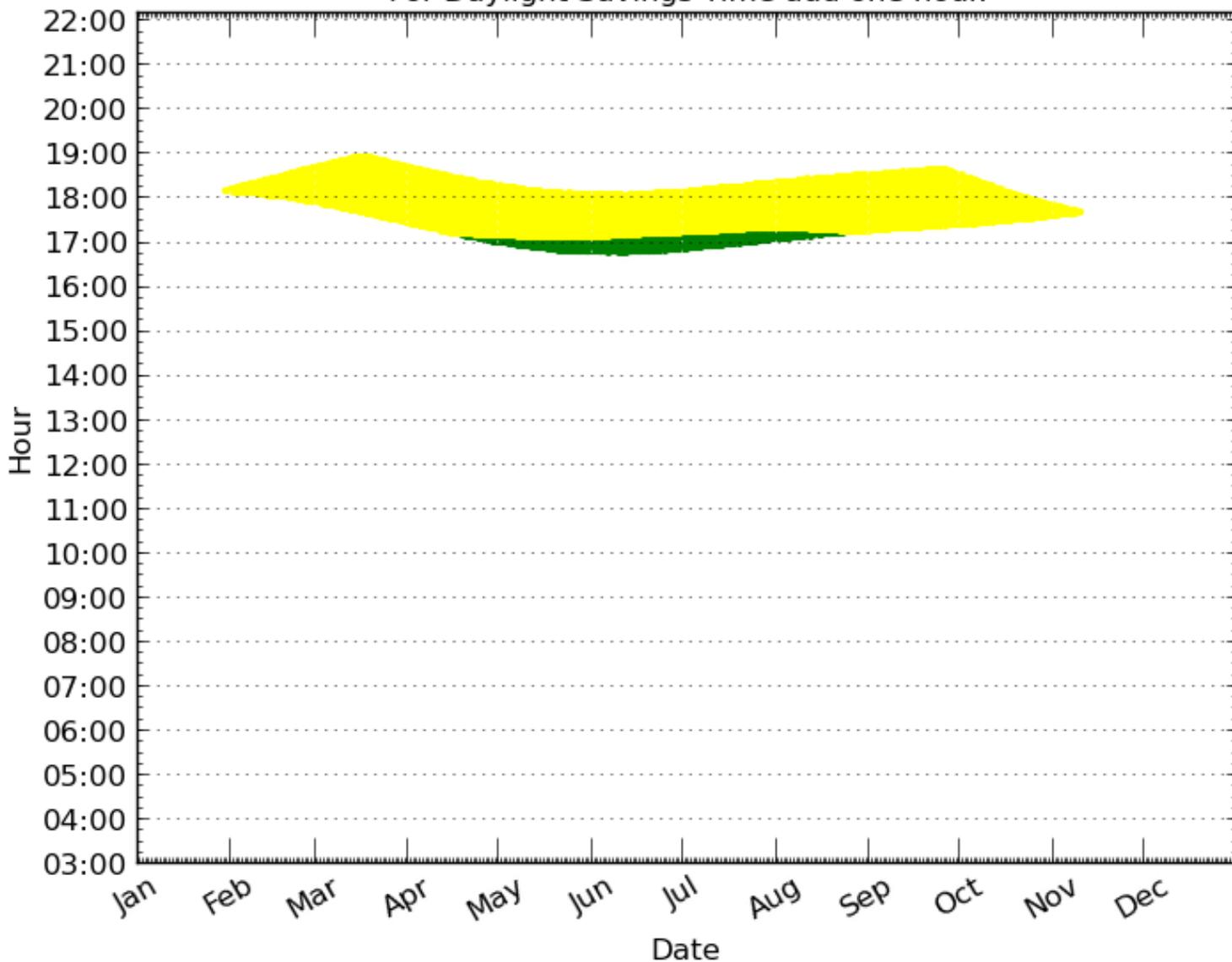
## Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
4	37.3717409716	-118.397010863	4149.22	15.0

# Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.





# Solar Glare Hazard Analysis Report

Generated March 19, 2015, 4:36 p.m.

## Glare found

 Print



## Inputs

Analysis name	COBWell220150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True

PV surface material

Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	37.3720031566	-118.397351503	4150.03	4.0	4154.03
2	37.3720031566	-118.397136927	4149.87	4.0	4153.87
3	37.3716684976	-118.397136927	4149.32	4.0	4153.32
4	37.3716684976	-118.397351503	4149.63	4.0	4153.63

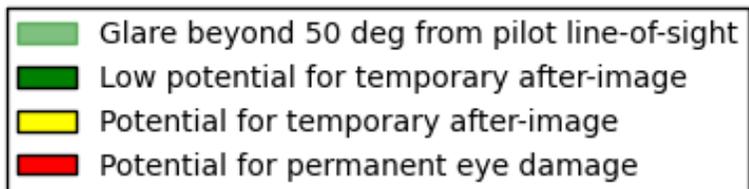
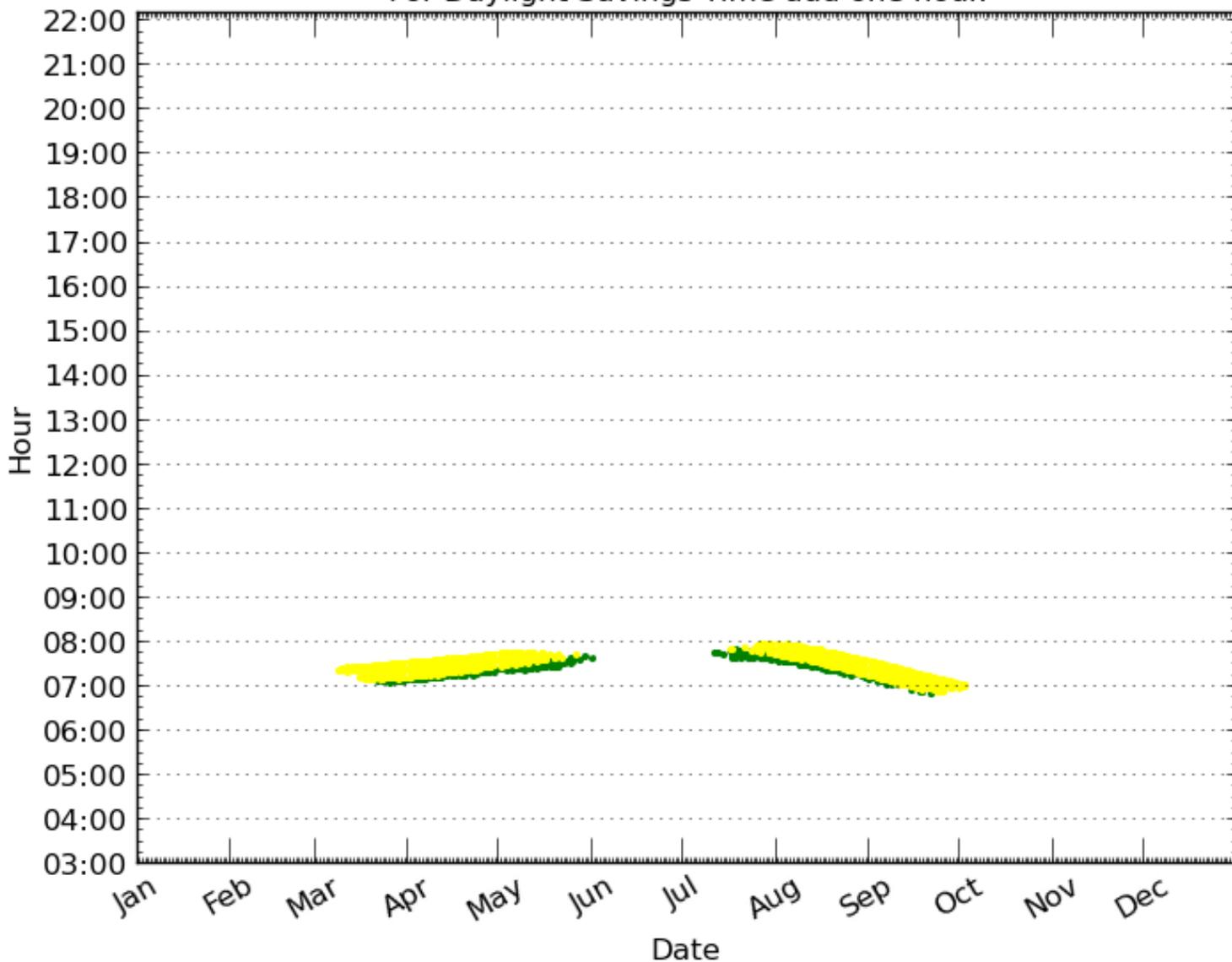
## Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
5	37.3717111294	-118.398295641	4149.47	15.0

# Glare Occurrence Plot

All times are in standard time. For Daylight Savings Time add one hour.

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.





# Solar Glare Hazard Analysis Flight Path Report

Generated March 19, 2015, 4:26 p.m.

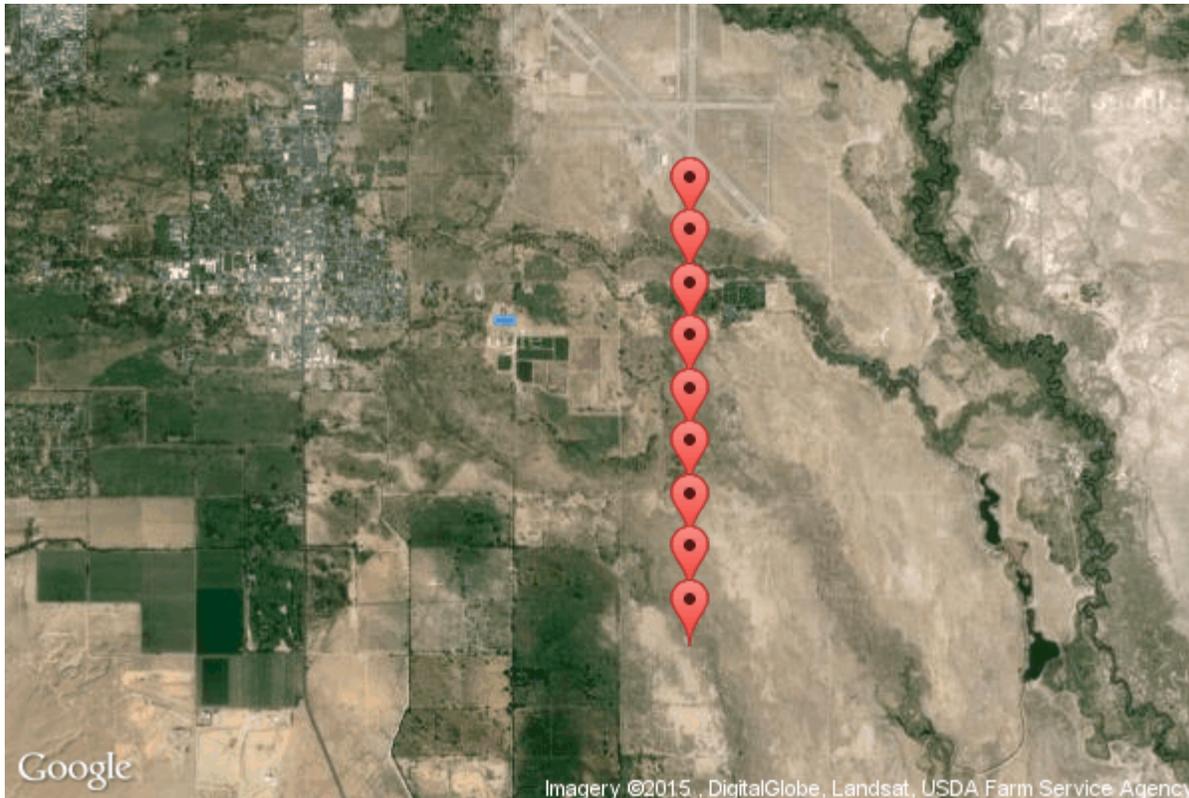
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Flight path: 1

Runway 34 Approach

Glare found

 Print



## Analysis & PV array parameters

Analysis name	Plant30150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## Flight path parameters

Direction (deg)	0.0
Glide slope (deg)	3.0
Consider pilot visibility from cockpit	False

## PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	37.3590377557	-118.378629684	4109.88	4.0	4113.88
2	37.3590377557	-118.37719202	4107.32	4.0	4111.32
3	37.3587563377	-118.37719202	4106.62	4.0	4110.62
4	37.3587563377	-118.378629684	4108.78	4.0	4112.78

## Flight Path Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)	Glare?
Threshold	37.3653821713	-118.3618927	4103.73	50.0	No
1/4 mi	37.3617684277	-118.3618927	4101.83	121.08	No
1/2 mi	37.3581546842	-118.3618927	4100.55	191.55	Yes
3/4 mi	37.3545409406	-118.3618927	4082.44	278.83	Yes
1 mi	37.3509271971	-118.3618927	4082.08	348.35	Yes
1 1/4 mi	37.3473134536	-118.3618927	4084.99	414.64	No
1 1/2 mi	37.34369971	-118.3618927	4083.68	485.12	No
1 3/4 mi	37.3400859665	-118.3618927	4083.94	554.05	No
2 mi	37.3364722229	-118.3618927	4083.56	623.6	No

## Glare occurrence plots

All times are in standard time. For Daylight Savings Time add one hour.



# Threshold

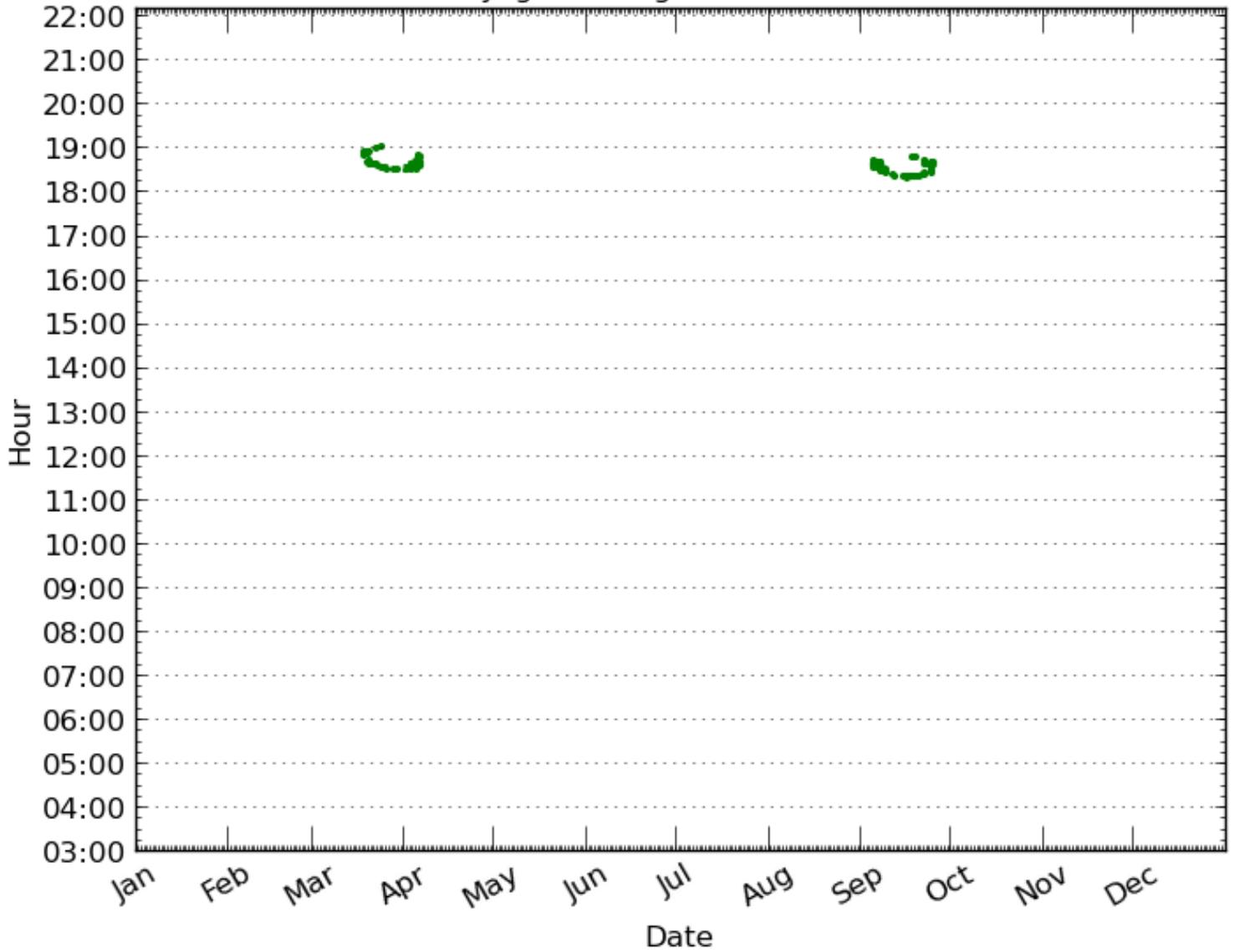
No glare

1/4 mi

No glare

1/2 mi

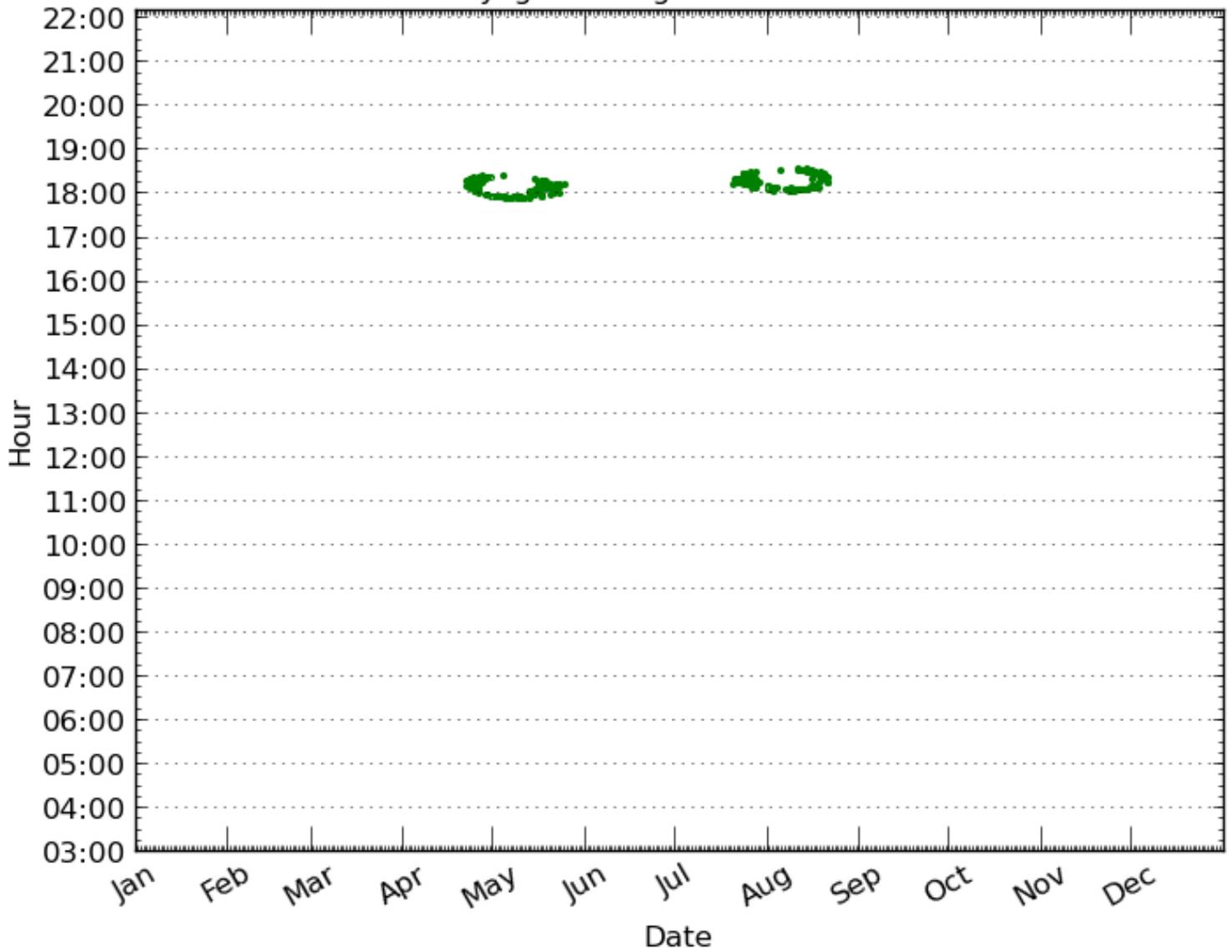
1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



- Glare beyond 50 deg from pilot line-of-sight
- Low potential for temporary after-image
- Potential for temporary after-image
- Potential for permanent eye damage

3/4 mi

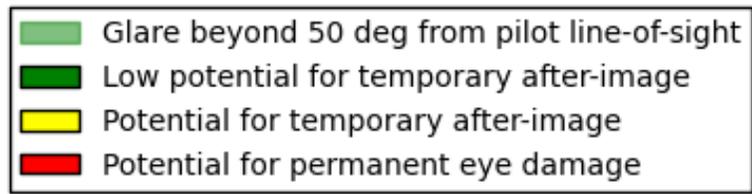
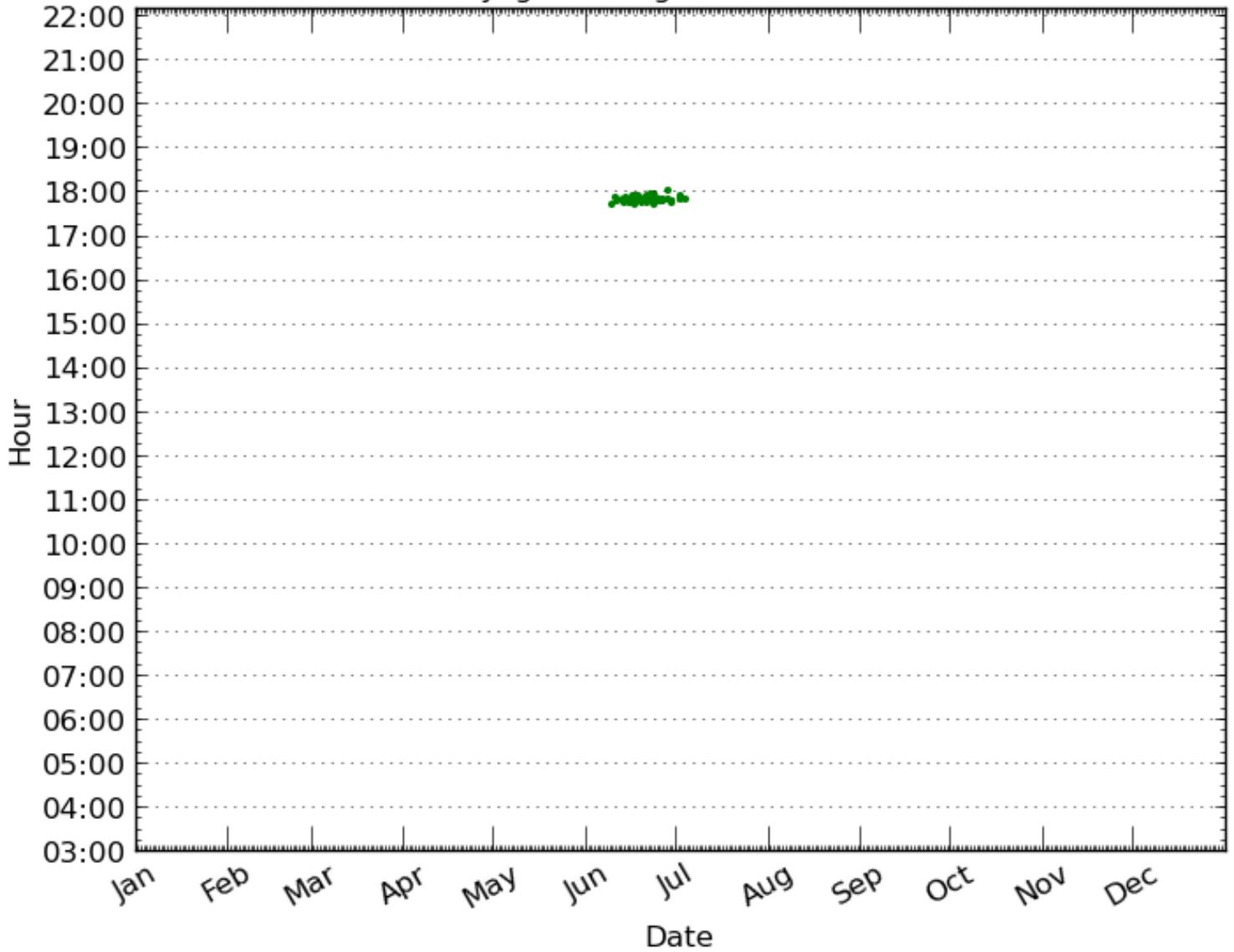
1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



- Glare beyond 50 deg from pilot line-of-sight
- Low potential for temporary after-image
- Potential for temporary after-image
- Potential for permanent eye damage

# 1 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



1 1/4 mi

No glare

1 1/2 mi

No glare

1 3/4 mi

No glare

2 mi

No glare

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# Solar Glare Hazard Analysis Flight Path Report

Generated March 19, 2015, 4:27 p.m.

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Flight path: 2

Runway 30 approach

Glare found

 Print



## Analysis & PV array parameters

Analysis name	Plant30150319
PV array axis tracking	none
Orientation of array (deg)	180.0
Tilt of solar panels (deg)	30.0
Rated power (kW)	0.0
Vary reflectivity	True
PV surface material	Smooth glass without ARC

Timezone offset	-7.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m <sup>2</sup> )	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1
Slope error (mrad)	10.0

## Flight path parameters

Direction (deg)	312.91
Glide slope (deg)	3.0
Consider pilot visibility from cockpit	False

## PV array vertices

id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of panels above ground (ft)	Total elevation (ft)
1	37.3590377557	-118.378629684	4109.88	4.0	4113.88
2	37.3590377557	-118.37719202	4107.32	4.0	4111.32
3	37.3587563377	-118.37719202	4106.62	4.0	4110.62
4	37.3587563377	-118.378629684	4108.78	4.0	4112.78

## Flight Path Observation Points

	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)	Glare?
Threshold	37.3647000018	-118.354511261	4093.92	50.0	No
1/4 mi	37.3622395892	-118.351177181	4089.14	123.95	No
1/2 mi	37.3597791765	-118.347843101	4086.99	195.29	Yes
3/4 mi	37.3573187639	-118.344509021	4075.13	276.32	Yes
1 mi	37.3548583512	-118.341174941	4072.43	348.2	Yes
1 1/4 mi	37.3523979386	-118.337840861	4041.93	447.88	Yes
1 1/2 mi	37.349937526	-118.334506782	4060.01	498.98	Yes
1 3/4 mi	37.3474771133	-118.331172702	4030.52	597.66	Yes
2 mi	37.3450167007	-118.327838622	4023.18	674.17	Yes

## Glare occurrence plots

All times are in standard time. For Daylight Savings Time add one hour.



# Threshold

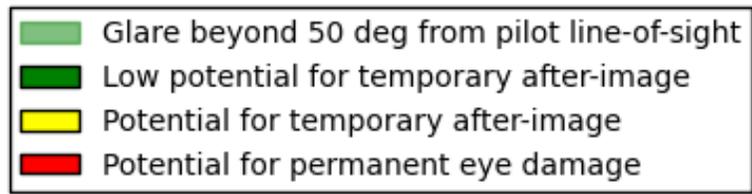
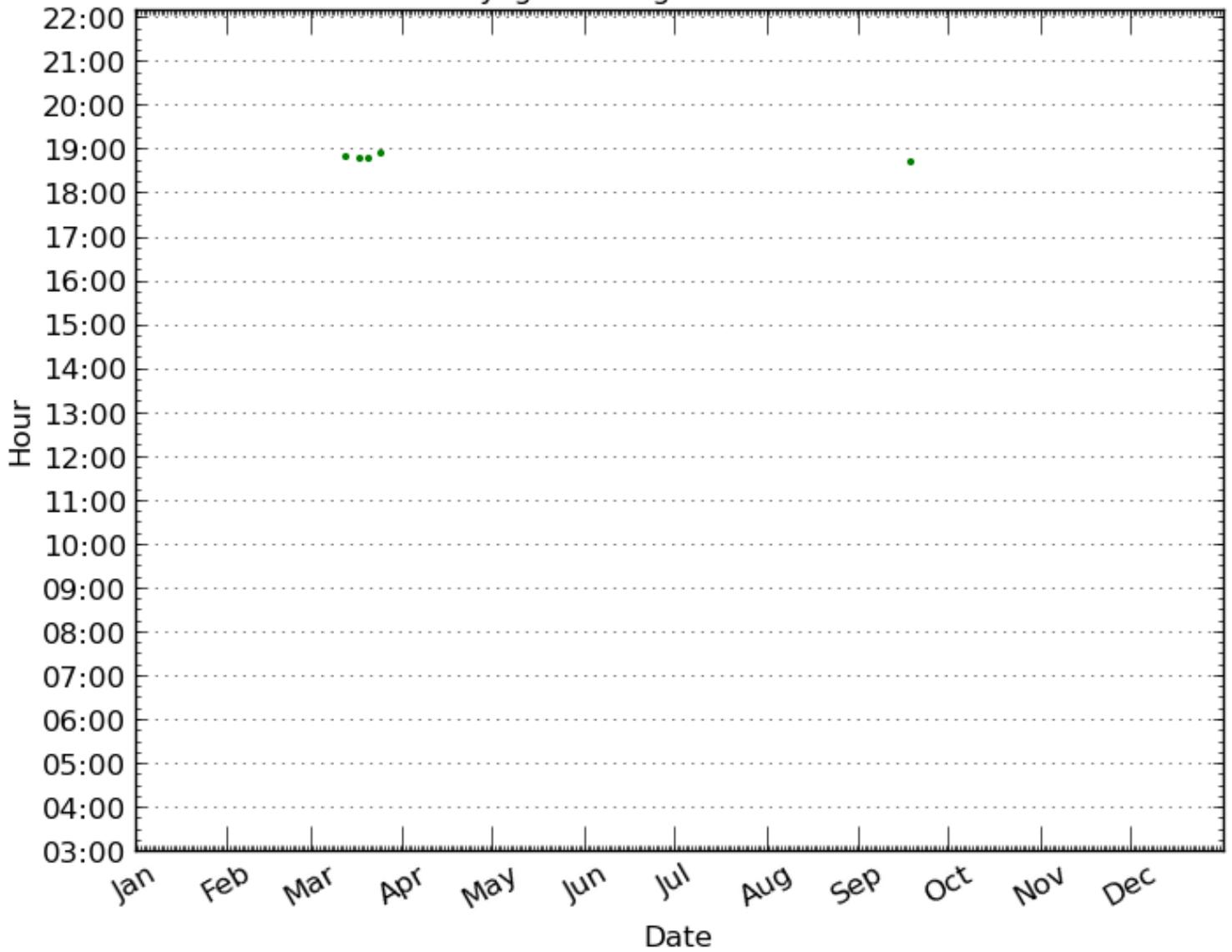
No glare

1/4 mi

No glare

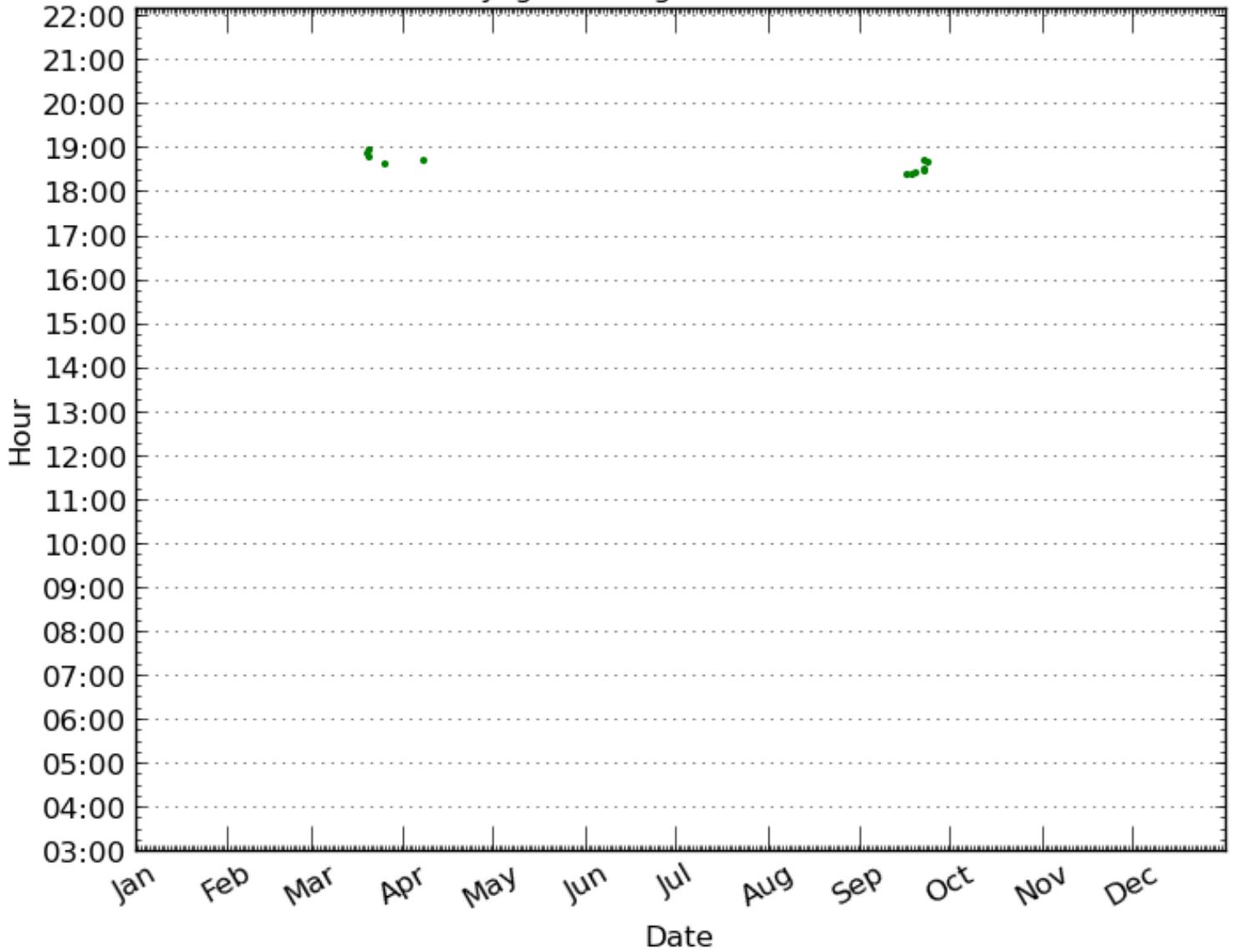
1/2 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



3/4 mi

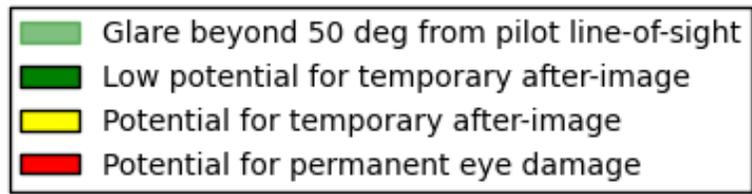
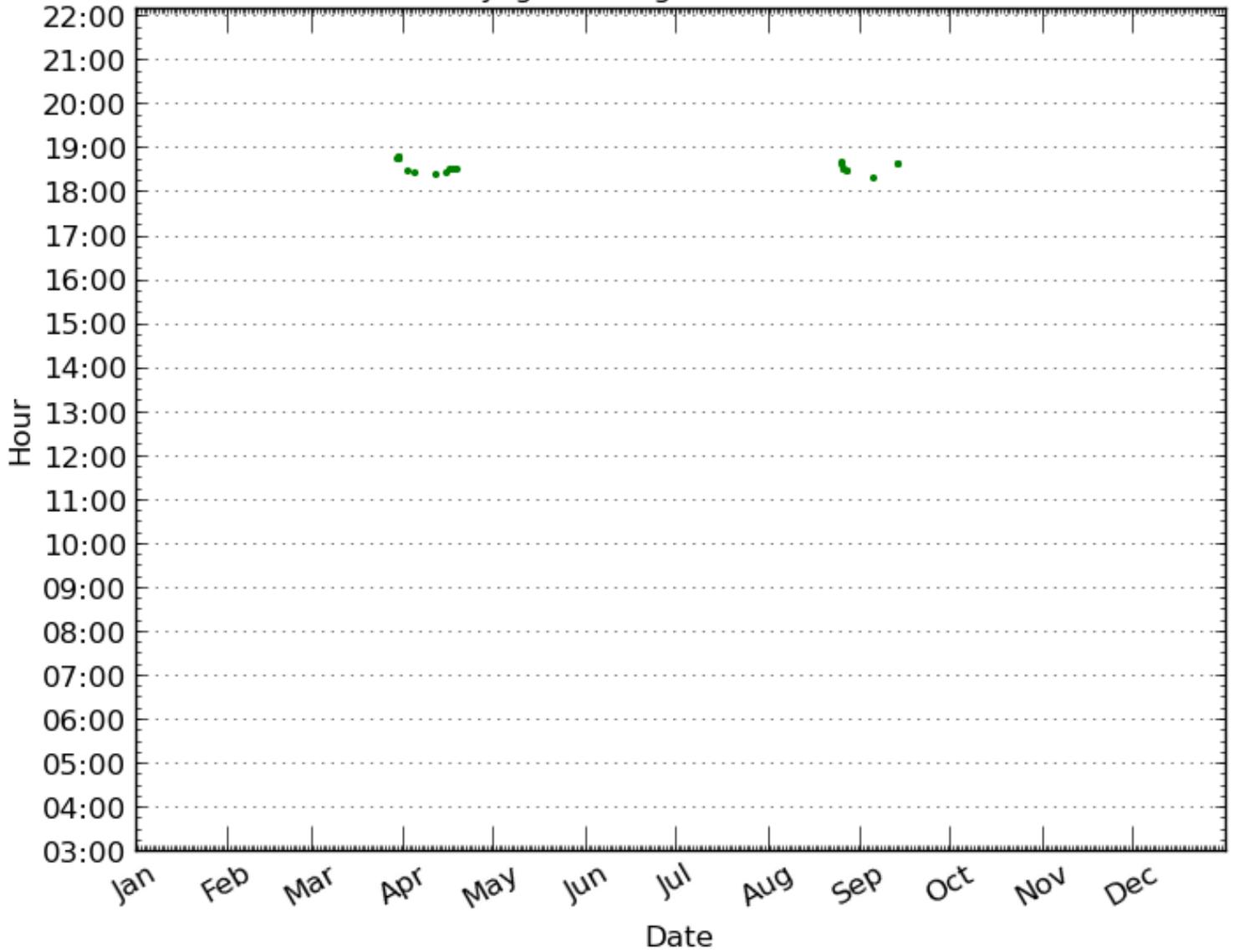
1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



- Glare beyond 50 deg from pilot line-of-sight
- Low potential for temporary after-image
- Potential for temporary after-image
- Potential for permanent eye damage

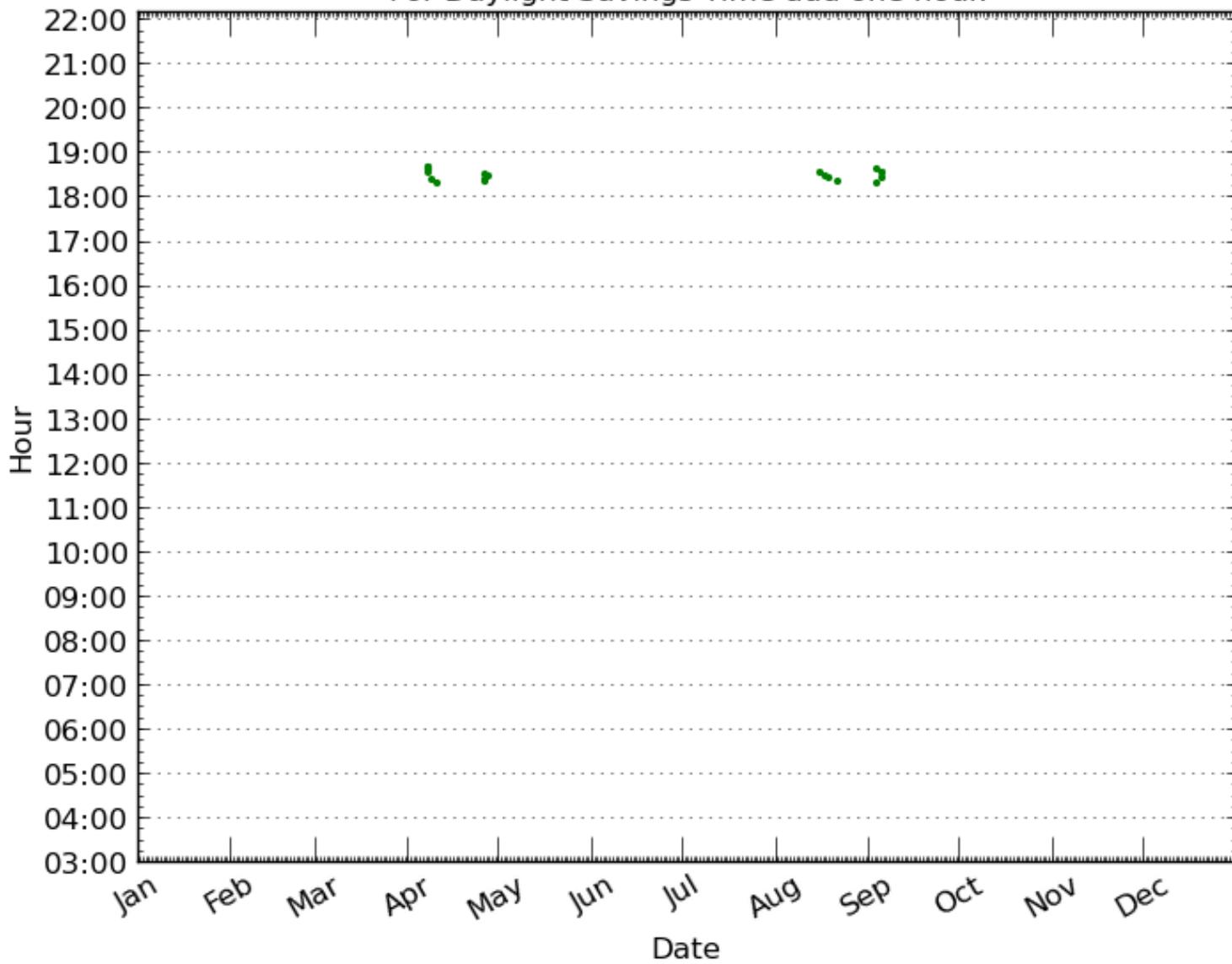
# 1 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



1 1/4 mi

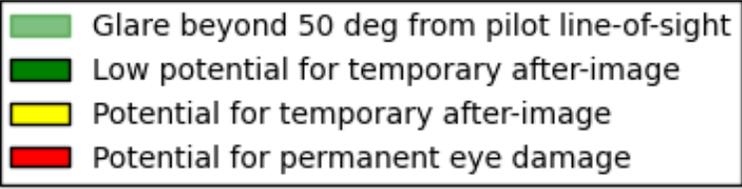
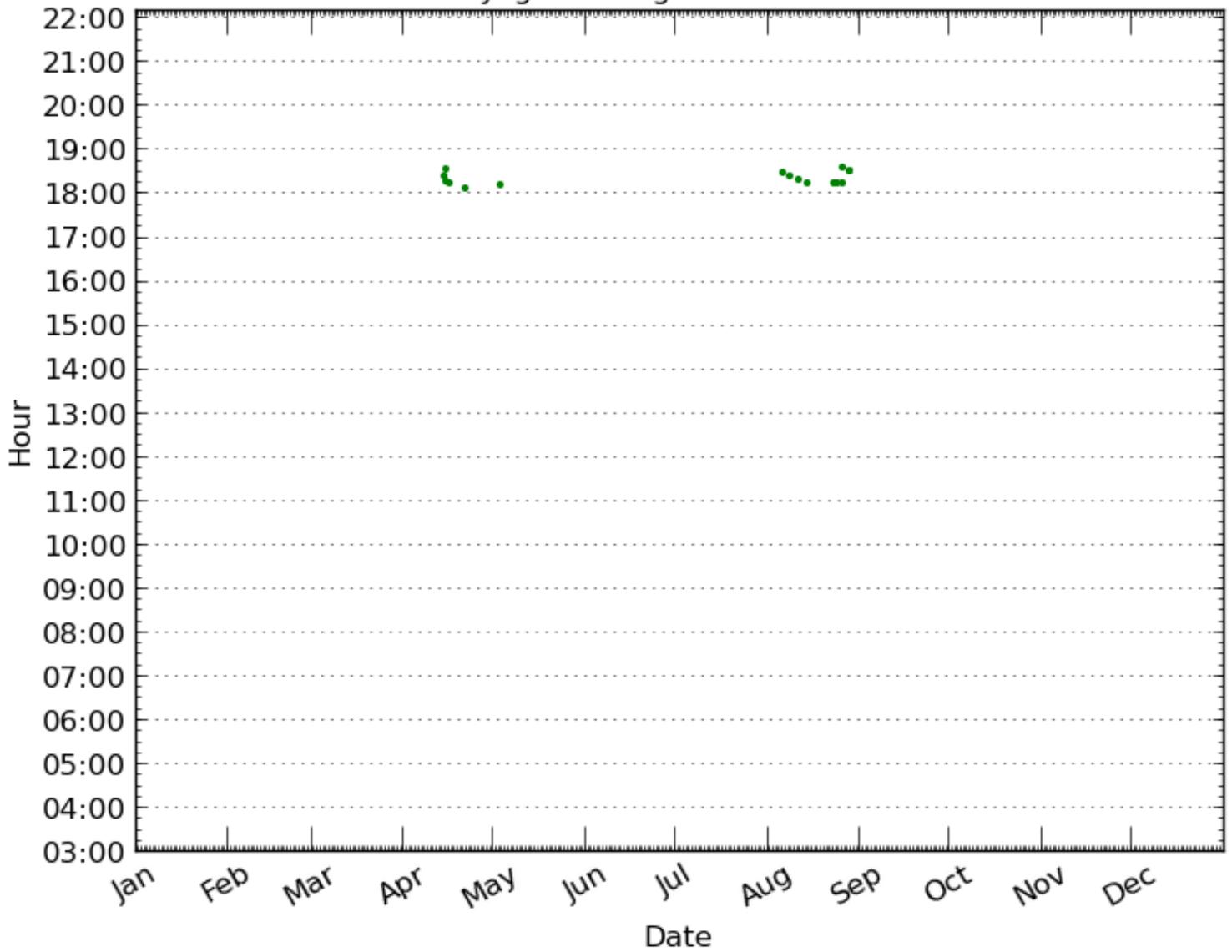
1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



- Glare beyond 50 deg from pilot line-of-sight
- Low potential for temporary after-image
- Potential for temporary after-image
- Potential for permanent eye damage

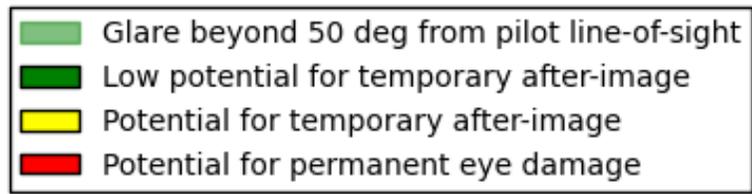
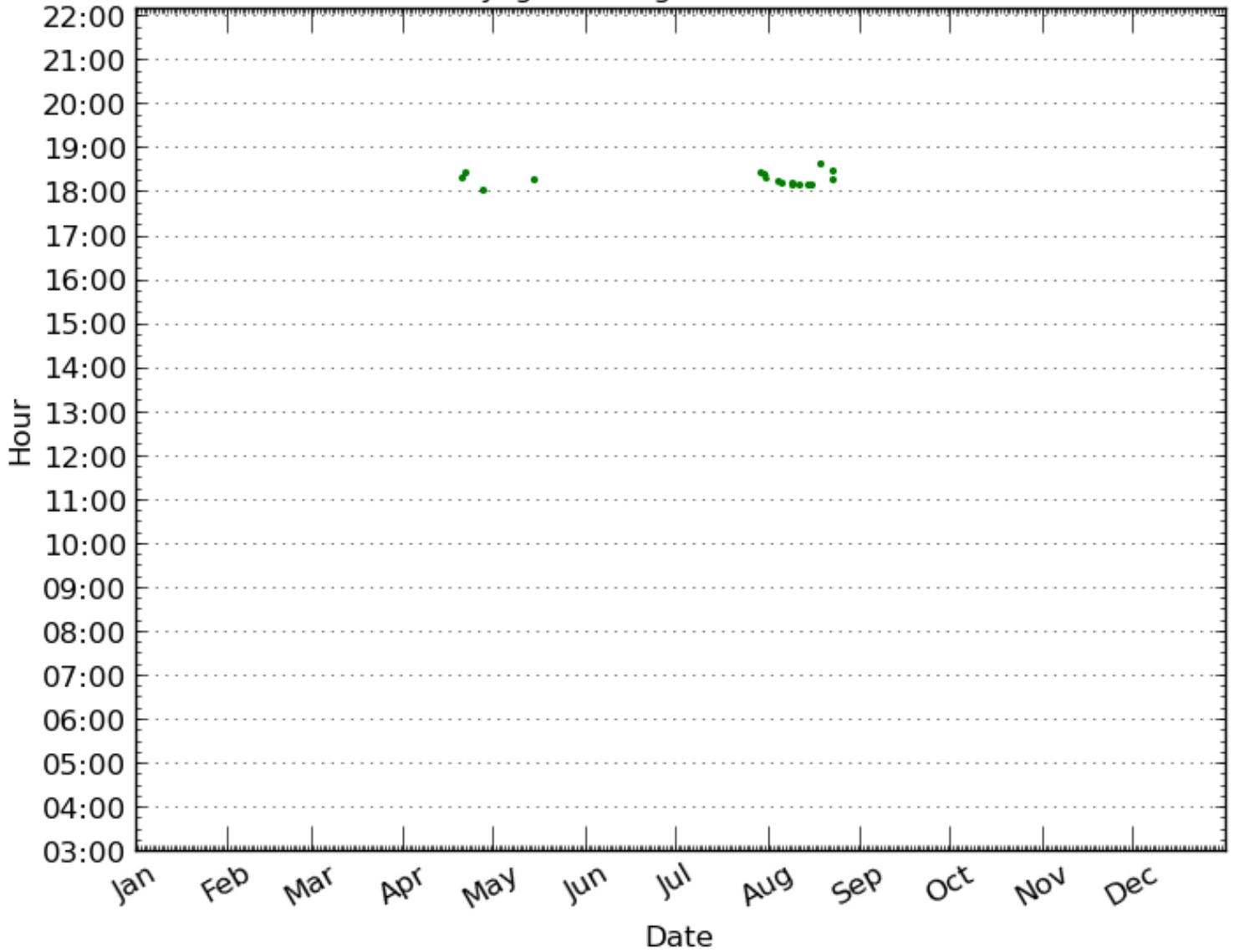
1 1/2 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



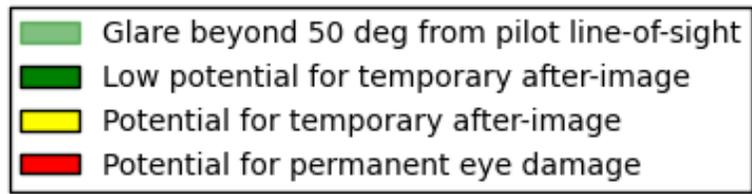
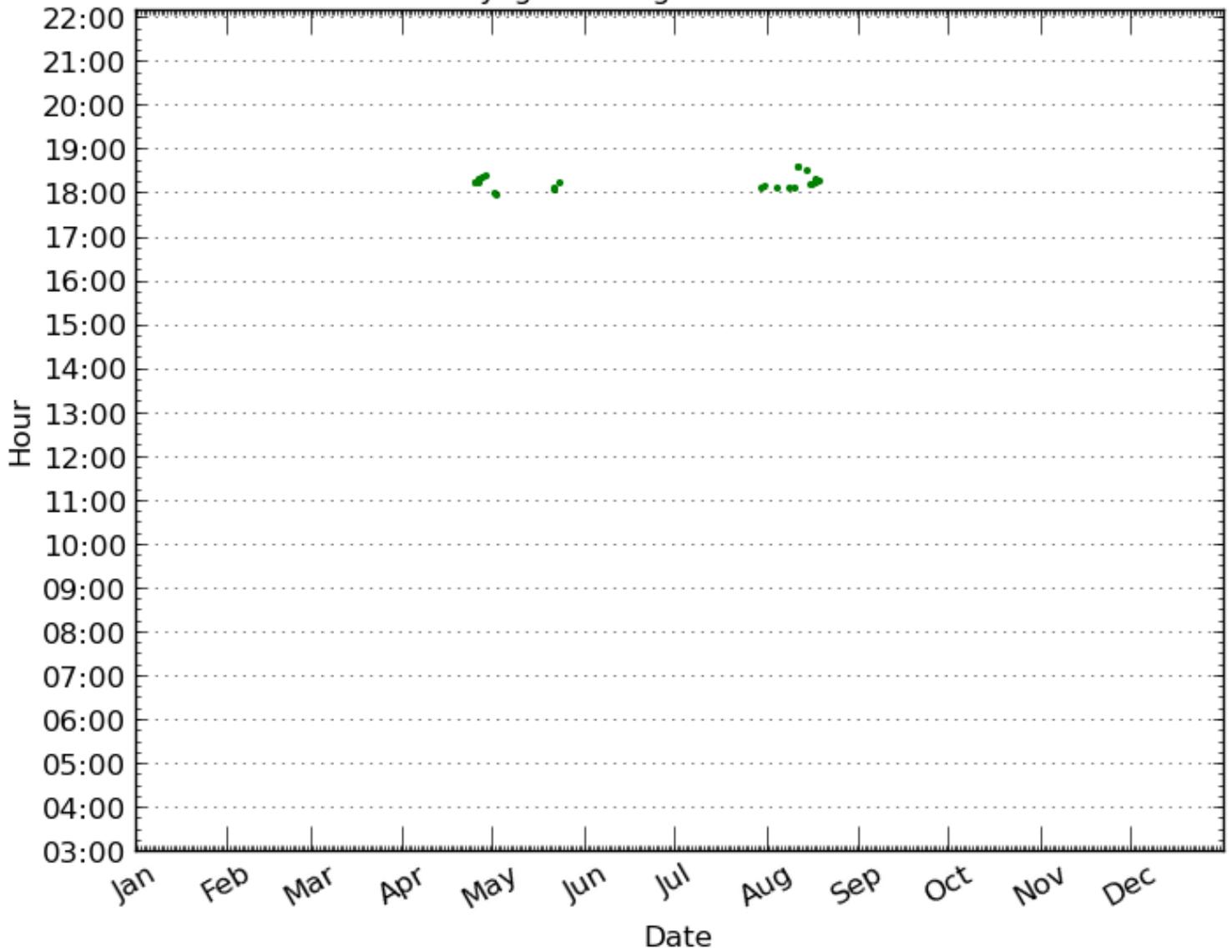
1 3/4 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



2 mi

1-minute time interval.  
All times are in standard time.  
For Daylight Savings Time add one hour.



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