7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to less than significance

Each of the issue areas specified in the CEQA Environment Checklist is discussed below.

3.4.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

The City of Seal Beach is a community located on the Pacific Ocean in northwest Orange County. The proposed Project would be located within the existing Hellman Ranch OGPF site. Pacific Coast Highway is the nearest state highway to the Project site, which is approximately 0.7 miles away. Due to the low high height of the panels (4.5 feet) and the surrounding area vegetation, the panels would not be visible from Pacific Coast Highway. Gum Grove Park is the nearest public park and borders the eastern edge of the Hellman Ranch OGPF property. Between Grove Gum Park and the Hellman OGPF is a wetland area that is owned by the Los Cerritos Wetland Authority, who are proposing a wetland restoration project for this area. The proposed solar facility would be visible from Gum Grove Park and the Los Cerritos Wetland property. The topography of Hellman Ranch OGPF site is primarily flat terrain.

a. Have a substantial adverse effect on a scenic vista? (Less Than Significant Impact)

The views from Gum Grove Park to the north look across the Hellman Ranch OGPF and in the distance are several large electrical generating stations. All the views are dominated by industrial type facilities. Figure 3-1 shows the current views from Gum Grove Park to the North. The brush area in the foreground of

picture in Figure 3-1 is the Los Cerritos Wetland Authority property. The oil tanks and oil well in the middle of the picture are part of the Hellman OGPF.

Figure 3-1 Current View from Gum Grove Park Looking North

Viewpoint from Gum Grove Park at 50mm focal length as a simulation of the eye view.

The proposed solar facility would be located beyond the oil tanks and behind and to the right of the oil well and would be about 0.16 miles from the closest point in Grove Gum Park. The front edge of the solar tables would be at a height of approximately 18-inches, with the back edge of the tables being at a height of about 50 inches. Given the low profile of the solar tables, portions of the facility would be blocked from view by existing vegetation and equipment at the Hellman OGPF facility.

Figure 3-2 provides a visual simulation of the proposed solar project as viewed from the closest point in Grove Gum Park. The proposed solar project would not significantly alter the views from Grove Gum Park or the Los Cerritos Wetland, which are dominated by existing large scale industrial facilities. The solar facility panels would not block views of any scenic vistas. The impact on scenic vistas would be less than significant.

b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? (No Impact)

See response to Item 1(a) above. The California Department of Transportation (Caltrans) California Scenic Highway Mapping System, there are no other Scenic Highways in Long Beach or Seal Beach. The closest eligible state scenic highway is Pacific Coast Highway (Highway 1), which is located approximately 0.7 miles to the west of the project site, however, this is not a designated state scenic highway. The Project would not impact any scenic resources such as trees, rock outcroppings, or historic buildings within a state

scenic highway. No trees, rock outcroppings, or any structures would be removed from the property because of the Project. The proposed Project would not alter any views in the area and would be visible from Pacific Coast Highway. Therefore, the project would have no impact on scenic resources.

Figure 3-2 View from Gum Grove Park with Simulation of Solar Facility

Viewpoint from Gum Grove Park at 50mm focal length as a simulation of the eye view.

c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? (No Impact)

The project site is in an urbanized area and would not conflict with applicable zoning and plan regulations as it relates to scenic quality. The City of Seal Beach General Plan zoning for the solar facility site is industrial-oil extraction. The proposed solar facility would not impede the enhancement, implementation, preservation of the existing saltwater marsh, freshwater wetlands, and Gum Grove Park. Therefore, the proposed solar facility would not conflict with the City of Seal Beach general plan regulations as it relates to scenic quality. As such there would be No Impact.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? (Less Than Significant Impact)

Existing sources of nighttime lighting in the surrounding area include lights associated with the Hellman OGPF, the industrial facilities to the north of the site, and the commercial building to the northeast.

Construction

Construction of the Project would primarily occur Monday through Friday from 7:00 am to 6:00 pm, and construction would last approximately 3 to 4 months. Lighting of construction work areas may be used during the morning or evening hours of construction for safety and security of personnel, particularly during the winter months when natural light is limited. Construction lighting would be temporary and all lights would be shielded and directed only toward the construction area so as not to impact surrounding areas. Project construction would not involve equipment or materials that would introduce a substantial source of glare. The impact from lighting and glare during construction would be less than significant.

Operation

There would be no permanent lighting installed as part of the proposed solar project. As such, there would be no lighting impacts associated with the operations of the PV solar facility.

Solar panels are designed to be highly absorptive of light that strikes the panel surfaces, generating electricity rather than reflecting light. Solar panels have a lower index of refraction/reflectivity than common sources of glare in residential environments. Solar PV panels are constructed of dark-colored (usually blue or black) materials and are covered with anti-reflective coatings. Modern PV panels reflect as little as two percent of incoming sunlight, about the same as water and less than soil or even wood shingles (Meister 2014).

The glare and reflectance levels of modules are further reduced with the application of antireflective coatings. PV suppliers typically use stippled glass for panels as the “texturing” of the glass to allow more light energy to be channeled/transmitted through the glass while weakening the reflected light. With application of anti-reflective coatings and the use of modern glass technology, Project solar panels would display overall low reflectivity.

Although panel would have low reflectivity, some low level of reflectivity would still exist. To address potential glare impacts associated with photovoltaic (PV) solar arrays, Sandia National Laboratories (Sandia) developed the Solar Glare Hazard Analysis Tool (SGHAT), a modeling/compliance analysis tool. This tool was originally developed for use in evaluating glare in the vicinity of airports. SGHAT is a web-based tool and methodology to evaluate potential glare associated with solar energy installations. The validated tool provides a quantified assessment of (1) when and where glare will occur throughout the year for a prescribed solar installation, (2) potential effects on the human eye at locations where glare occurs, and (3) the annual energy production from the array so that alternative designs can be compared to maximize energy production while mitigating the impacts of glare. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. The model allows for the inclusion of obstructions such as trees, bushes, buildings, etc.

The SGHAT tool categorizes glare into three levels of severity which are defined by three colors.

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

As a point of comparison, direct viewing of the sun without a filter is on the border between yellow glare and red glare, while typical camera flashes are considered to be lower tier yellow glare (approximately three orders of magnitude less than direct viewing of the sun).

For the purposes of this analysis, any glare that would impact residential properties was considered significant. On open space areas, glare that was greater than green was considered significant.

The SGHAT tool, which is licensed for use in ForgeSolar for commercial use, was used to assess the glare impacts of the proposed Solar PV Project on nearby residential properties and open space areas in the vicinity of the project site. The model works by setting up the solar array(s) and their orientation as well as designating the location of residential or other receptors/observation points. Figure 3-3 shows the location of 34 observation points that were evaluated for glare impacts, and included the following:

- The 18 residential homes that back up to the project area on Blue Herron (OP1-OP18);
- Three residential homes that back up to the area along Crestview Avenue (OP32-OP34);
- Three locations along the Hellman Ranch Trail (OP26, OP27, and OP31);
- Two locations on the western side of the Hellman Property (OP19 and OP20);
- Three locations in the South LCWA Site (OP28-OP30);
- Two locations in Zedler Marsh Site (OP24 and OP25); and
- Three locations in the Central LCWA Site (OP21-OP23).

Figure 3-3 Location of Glare Analysis Observation Points

Source: Google, Google Earth data © Google 2023.

In evaluating impacts on the residential properties, observation points were set in backyards, with an observation height of 6 feet above ground level. For open space areas that are accessible via trail, the observation height was set at 6 feet above ground level. All other open space observation heights were set at ground level.

The solar arrays would be tilted facing south at about a 10 degree angle. The greatest potential glare from the solar facility would occur during the sunrise/sunset periods when the sun is low on the horizon. Unabsorbed incoming light would reflect off the panels which could create glare effects.

Table 3-1 provides a summary of the glare analysis results. Appendix D provides the detailed results of the glare analysis.

Table 3-1 Summary of Analysis of Predicted Glare

Observation Point Numbers	Description	Green Glare (hrs/year)	Comments
OP1-OP8	Residential Properties at North End of Blue Heron	0	No Glare with Existing Vegetation Screening
OP9-OP18	Remaining Residential Properties on Blue Heron	0	No Glare with or without Existing Vegetation Screening
OP-19	Western Side of the Hellman Property	0	No Glare with or without Existing Vegetation Screening
OP20	Western Side of the Hellman Property	19.8	During Sunrise during March/April and August/September. Peak day glare is about 15 mins per day. Glare is associated with the western most solar array.
OP21-OP23	Central LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP24-OP25	Zedler Marsh Site	0	No Glare with or without Existing Vegetation Screening
OP26	Hellman Ranch Trail	0	No Glare with Existing Vegetation Screening
OP27	Hellman Ranch Trail	0	No Glare with or without Existing Vegetation Screening
OP28	South LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP29	South LCWA Site	26.6	During Sunrise from April through August. Peak day glare is about 15 mins per day. Glare is associated with the eastern most solar array.
OP30	South LCWA Site	0	No Glare with or without Existing Vegetation Screening
OP31	Hellman Ranch Trail		No Glare with or without Existing Vegetation Screening
OP32-OP34	Residential Properties Crestview Avenue	0	No Glare with or without Existing Vegetation Screening

None of the observation point generated yellow or red glare.
See Appendix D for detailed glare analysis results.
Analysis assumed no cloud cover or fog occurs on any day.

None of the residential properties were predicted to have any glare impacts. Two of the open space sites were projected to have “green” glare impacts during the sunrise period for up to about 15 minutes per day for a few months of the year. No glare impacts were found to occur during the sunset hours.

The glare analysis assumes there is no fog or cloud cover during any of the hours. Cloud cover and fog would reduce/eliminate the glare. While no significant glare effects were identified, the implementation of mitigation measure AES-2 would serve to minimize the potential for glare.

Avoidance, Minimization and/or Mitigation Measures

Mitigation Measure AES-1: Construction Lighting – Any construction lighting shall be shielded and directed only toward the construction area so as not to impact surrounding areas.

Mitigation Measure AES-2: Solar Panel Design– The solar panels shall be installed facing south with a fixed tilt angle of 10 degrees. The solar panels shall be constructed of dark-colored materials and shall be covered with an anti-reflective coating. These requirements shall be documented on the final project drawing submitted to the City for approval.

3.4.2 Agriculture and Forestry Resources

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 Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

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? (No Impact)

The proposed Project does not involve conversion of any farmland. The proposed Project does not call for rezoning of farmland, nor is it currently zoned for agriculture. Therefore, there would be no impact on agriculture and forest resources.