come from carbon-free resources by 2045. The Project would comply with the State's goal of increasing the use of renewable energy. Therefore, no impact would occur.

California Energy Efficiency Strategic Plan – On Sept. 18, 2008, the CPUC adopted California's first Long Term Energy Efficiency Strategic Plan, presenting a single roadmap to achieve maximum energy savings across all major groups and sectors in California. The Strategic Plan was subsequently updated in January 2011. The proposed solar PV project would be consistent with the goals established for industrial sector. Therefore, no impact would occur.

City of Seal Beach General Plan – The City of Seal Beach's General Plan includes energy conservation opportunities and techniques, aimed at reducing building energy use (City of Seal Beach, 2003). The project would install no buildings and therefore, energy conservation items in the General Plan would not apply to the Solar PV project.

3.4.7 Geology/Soils

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Directly or indirectly cause 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.				
	ii) Strong seismic ground shaking?	☐	☐	☒	☐
	iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv) Landslides?	☐	☐	☐	☒
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☐	☒	☐
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

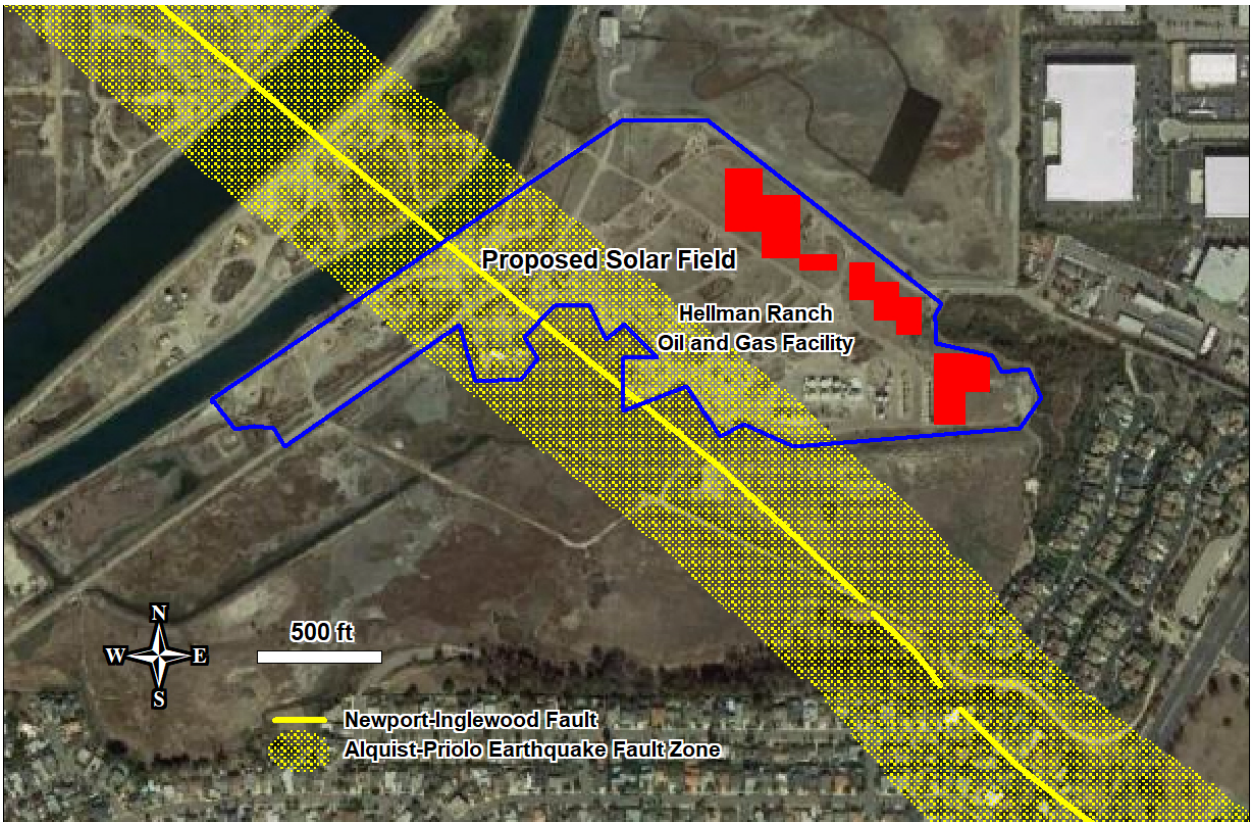
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

(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; (ii) Strong seismic ground shaking? (Less than Significant Impact)

All Southern California, including the proposed Project site, is subject to the effects of seismic activity. The project itself will not expose people or structures to potential adverse effects, including the risk of loss, injury or death involving the rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction or landslides. However, the proposed Project must adhere to the City's adopted Building Code regulations that pertain to mitigating the potential effects of fault ruptures and ground shaking, or failures caused by a seismic event.

The Alquist-Priolo and Newport-Inglewood Fault Zones cross the Hellman Ranch OGPF property just to the southwest of the proposed Solar PV facility. Figure 3-4 shows the fault zone and fault in relation to the proposed Project site. The Solar PV facility would be located outside of the Alquist-Priolo Fault Zone. The solar table support structures would be required to meet Seismic Zone 4 standards per the appropriate section of the California Building Code at the time of construction. However, in a severe earthquake it is possible that the solar tables could be damaged, but the damage would be limited to the project site.

Figure 3-4 Alquist-Priolo Fault Zone



California Department of Conservation Earthquake Zone Maps 2023.

The nearest habituated structure to the Project is 450 feet. The Project would not cause risk of loss, injury, or death associated with seismic-related hazards, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, because no people or structures would be located adjacent to the solar PV facility. The Project does not involve construction of habitable structures that could cause adverse effects involving earthquakes and strong seismic ground shaking. Neither construction nor operation of the solar PV facility are anticipated to cause any substantial adverse impacts to fault rupture. Therefore, the impact would be less than significant.

(iii) seismic-related ground failure, including liquefaction? (Less than Significant Impact)

A reviewed the seismic hazard zone report by the Department of Conservation Division of Mines and Geology (DCDMG, 1998 – Los Alamitos Quadrangle) and Earthquake Zones of Required Investigation Los Alamitos Quadrangle map by California Geological Survey (CGS, 1999). Based on CGS (1999), the planned location for the expansion is within an area/zone identified by the State of California as being potentially susceptible to liquefaction induced ground deformation and within an area encompassing active faults that constitute a potential hazard to structures from surface faulting.

The entire Hellman Ranch OGPF site is in an area susceptible to liquefaction. This is primarily since the soil in the area is artificial fill (see item (c) below). The Solar PV Project would not result in the exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards. In the event of damage to the Solar table from liquefaction, the damage would be limited to the project area site, and would not cause risk of loss, injury, or death since not people or structures are adjacent to the solar PV facility. Therefore, the impact would be less than significant.

(iv) landslides? (No Impact)

Per the California Department of Conservation Landslide Inventory, there are no mapped landslides within the project site. The subject property does not have potential for landslides in case of seismic activity or other triggering mechanism, such as rainfall or runoff, due to the flat topography of the site. Therefore, no such impact will occur because of landslides.

b. Result in substantial soil erosion or the loss of topsoil? (Less than Significant Impact)

Construction of the Solar PV Project would not involve any cut and fill operations. No topsoil would be removed from the project site. Permanent removal of topsoil would be limited to the 388 footing for the solar table supports and five pads for the electrical equipment. These areas represent a total of 0.04 acres of the 4.57 acre site. The topsoil from these areas would be spread out within the project area. Temporary removal of topsoil would occur for the installation of the underground powerlines (0.29 acres). This topsoil would be placed back over the trenches as part of the backfilling operations. The Regional Water Quality Control Board will require that the project implement a Stormwater Pollution Prevention Plan with Best Management Practices during construction to control any soil loss. Once construction is complete the area will be allowed to revegetate. Therefore, impacts associated with loss of topsoil would be considered less than significant.

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? (Less than Significant Impact)

Liquefaction is a phenomenon in which saturated granular soils transform from a solid to a liquefied state when subjected to large, rapid loadings such as strong ground shaking during an earthquake. The

transformation to a liquid state occurs due to the tendency of granular materials to compact, which consequently results in increased pore water pressure accompanied by a significant reduction in the effective stress. The change of state occurs most readily in recently deposited (i.e., geologically young) loose to moderately dense granular soils. The liquefaction susceptibility is highly dependent on the density of the soil, wherein looser soils are generally more susceptible. Area of artificial fill are more susceptible to liquefaction.

The Solar PV Project site is located on ground that is susceptible to liquefaction. Figure 3-5 shows a map of the surficial deposits within the project area, and the soil is mainly artificial fill.

Over the past 70 years that has been no surface displacement, or impacts to oil field facility equipment, or existing infrastructure (roads, river, and cooling channel levees). The solar table support structures would be required to meet seismic engineering standards to prevent damage or instability during a seismic event. Therefore, impacts would be less than significant.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? (Less than Significant Impact)

Expansive soils are characterized by the ability to undergo significant volume change (i.e., shrink and swell) as a result of variation in soil moisture content. Soil moisture content can change due to many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. Expansive soils are commonly very fine-grained with a high to very high percentage of clay.

The project site consists primarily of Bolsa Silt Loam and Bolsa Silt Clay Loam, which has a low to moderate expansion potential (GLA 2023). The Solar PV Project would not involve the construction of any buildings and the project site is not acceptable to the public so the risk to life or property would be minimal, and impacts would be considered less than significant.

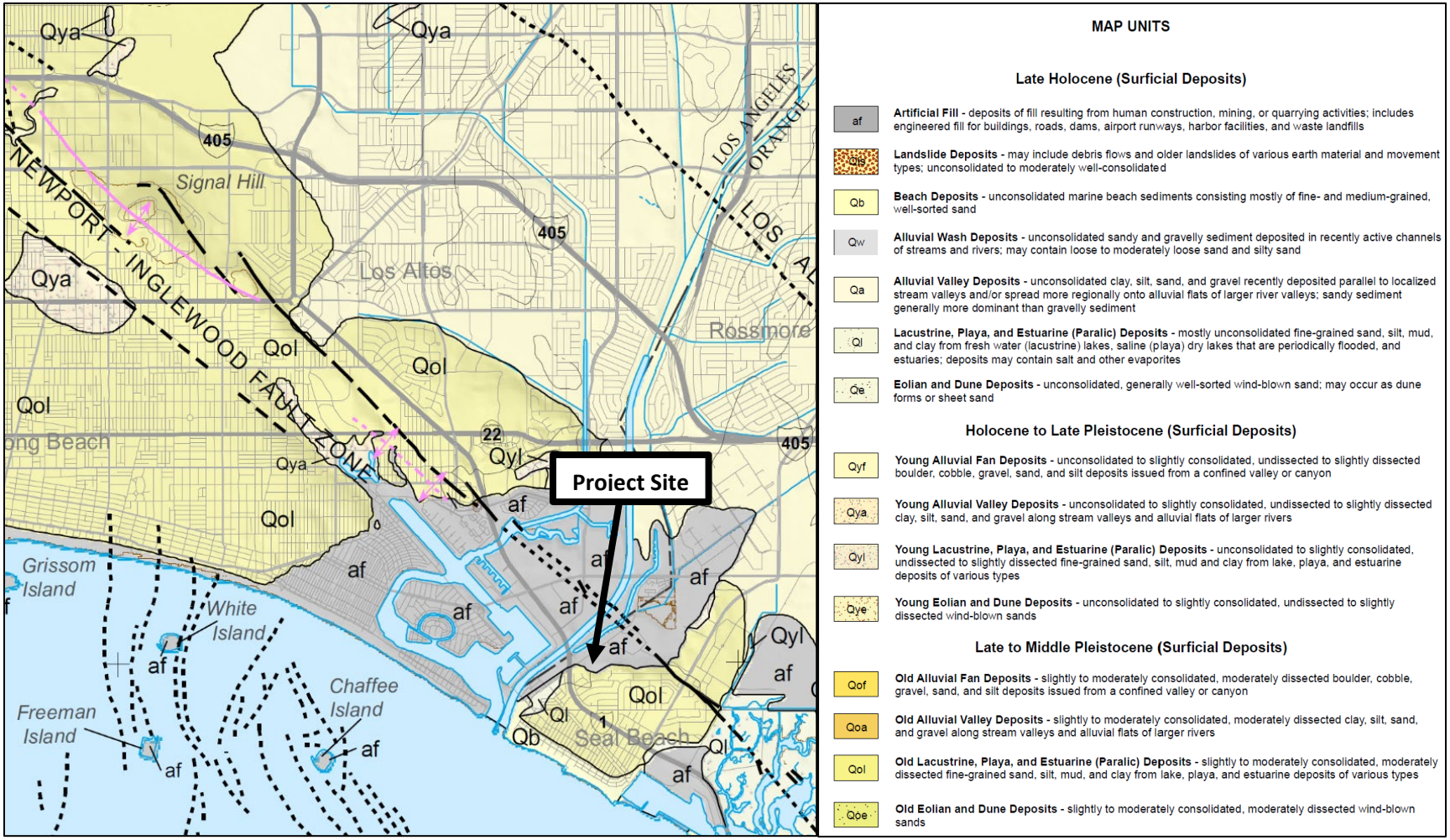
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (No Impact)

Due to the nature of the proposed Project, no septic tanks or alternative wastewater disposal systems are required or proposed for the implementation as part of the proposed project.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less Than Significant)

The project site is in an area of artificial fill (See Figure 3-5). It is likely that below the artificial fill are Estuarine deposits. Artificial fill areas have no paleontological potential. Estuarine deposits have low paleontological potential (ESA 2020). Based upon boring samples done for the gas plant the upper 7 to 10 feet of soil was found to be fine-grained typically classified as medium to high plasticity clays, which would be indicative of artificial fill material (Wood 2018).

Figure 3-5 Geologic Compilation of Quaternary Surficial Deposits in the Project Area



Source: Special Report 217: Geologic Compilation of Quaternary Surficial Deposits in Southern California (2012 Revision), California Department of Conservation.

The soil analysis done as part of the Los Cerritos Southern Wetland Restoration Project, which is in the same area as the proposed Project, assumed an artificial fill depth of 5 feet (LCWA 2023).

The concrete pilings for the solar table supports would have a depth of 6 feet and a diameter of 1.5 feet. The equipment pad depths are 0.33 feet, and the powerline trenches will be 3 feet deep. Therefore, the ground disturbance for the project would occur likely in artificial fill, which has no paleontological potential. As such the only project activity that might have the potentially impact paleontological resources would be the concrete pile footings.

The holes for the pilings would likely be drilled with a backhoe that is equipped with an augur attachment. Each support structure would have one pile, so a total of 388 pilings would need to be installed. Installation of the pilings is expected to disturb only the surficial soils and not underlying soil units. This limited ground disturbance would not be expected to destroy any paleontological resources or unique geologic feature. Therefore, impacts would be less than significant.

3.4.8 Greenhouse Gas Emissions

Would the project:

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

This section of the document analyzes the impact the proposed Project would have on emissions that affect climate change around the world. Greenhouse Gas (GHG) emissions were analyzed as part of the CalEEMod air emission calculations. The CalEEMod output files are provided in Appendix E.

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately one-half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less than Significant Impact)

The construction and operational GHG emissions for the proposed project are provided in Table 3-7. Construction of the Solar PV facility is expected to take less than one year.

As specified by the SCAQMD, the construction GHG emissions were amortized over 30 years and added to the annual operating GHG emissions. As shown in Table 3-7 the GHG emissions from the proposed Solar PV Project would be negative and as such below the CEQA Threshold established by the SCAQMD for industrial projects.