

FINAL

ENVIRONMENTAL ASSESSMENT
FOR CONSTRUCTION AND OPERATION OF A SOLAR
PHOTOVOLTAIC SYSTEM AT NAVAL AIR FACILITY
EL CENTRO, CALIFORNIA



MARCH 2015

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ACRONYMS AND ABBREVIATIONS

ARB	Air Resources Board
BASH	Bird Air Strike Hazard
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
DASR	Digital Airport Surveillance Radar
DRECP	Desert Renewable Energy Conservation Plan
EA	Environmental Assessment
EO	Executive Order
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GW	Gigawatt
HAP	Hazardous Air Pollutant
IID	Imperial Irrigation District
kV	Kilovolt
MOA	Military Operating Area
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NAF	Naval Air Facility
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
PPA	Power Purchase Agreement
PV	photovoltaic
RONA	Record of Non-Applicability
SECNAV	Secretary of the Navy
SGHAT	Solar Glare Hazard Analysis Tool
SWPPP	Storm Water Pollution Prevention Plan
U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service

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Executive Summary

ES.1 INTRODUCTION/BACKGROUND

The Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, its Council on Environmental Quality implementing regulations for procedural provisions of NEPA, and other applicable laws. It presents an analysis of the potential environmental impacts of a Proposed Action and No Action Alternative pertaining to the Construction and Operation of a Solar Photovoltaic (PV) System at Naval Air Facility (NAF) El Centro in El Centro, California.

The purpose of the Proposed Action is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations by the construction and operation of a solar PV system. The Proposed Action is required to help meet the renewable energy standards put forth by the 1 GW Initiative, Executive Order (EO) 13514, and the Secretary of the Navy (SECNAV) Energy Goals. The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that the Navy would have the option to use any energy produced on-base in the event of an area power outage or other circumstances.

A PV system would be developed to generate renewable energy at NAF El Centro under an acquisition strategy based on either Model 2, Model 3, or a combination of Models 2 and 3. Under a Model 2 acquisition strategy, the Navy and local electric utility provider (Provider) would enter into a lease agreement (or a real estate outgrant) to allow the Provider to use Navy land to construct, operate, and own the PV systems. The Navy would receive compensation for the lease, but would not directly receive the power generated by the PV system. The Provider would sell the generated power to customers outside the Navy. The approximate contract duration would be 37 years. This acquisition strategy maximizes the total capacity (size) of the system based on available land, and not the installation's electrical load. Under a Model 3 acquisition strategy, the Navy would enter into a lease agreement (or real estate outgrant) plus a Power Purchase Agreement (PPA), to allow a solar developer to construct, operate, and own a solar photovoltaic system on the installation. Once the systems are operational, the Navy would purchase and use all of the electricity generated from the systems. Standard PPA durations are approximately 20 years with a 5-year extension option. This acquisition strategy limits the total capacity (size) of the system based on the installation's electrical load, and not the total amount of land available. Under both the Models 2 and 3 acquisition strategies, the land impact, function of the facility, and conservation/construction measures would be nearly identical. The only notable difference would be the construction and routing of electrical distribution lines (i.e., point of connection from solar system to internal base grid) to either serve the public grid, or internal Navy grid. There is also a possibility that a combination of Models 2 and 3 would be implemented; where some power generated would be used by the Navy and some by outside customers.

NAF El Centro reviewed available base locations to identify sites potentially available for construction of a PV system. Requirements considered in site selection included locations where acreage available was sufficient to allow for a PV system that would produce utility-scale renewable energy sufficient to offset the cost of system installation and loss of acreage that could potentially be available to support mission requirements. Only one alternative (Proposed Action) was identified that met the reasonable alternative screening criteria described in Section 2.2. After eliminating other land parcels discussed in Section 2.5, the Navy identified three sites (see Figure ES-1) as potential locations to be analyzed for construction and operation of a PV system at NAF El Centro. These sites include existing agricultural lease land or vacant areas. All sites are topographically flat with minimal vegetation cover, and are described in detail in sections 2.1.1 through 2.1.3. The Proposed Action consists of the installation of a ground-mounted PV system at all three parcels. The total acreage of the combined three sites would be 71 acres (28.7 hectares). The Proposed Action includes the construction phase, operation of the PV system, maintenance, and decommissioning. Implementation of the Proposed Action would result in the generation of an estimated 13 MW of renewable energy.

Figure ES-1. Location of PV Development Sites



NAF El Centro Proposed PV Sites

Environmental resource areas analyzed in detail in this EA include the following:

- Air Quality and Climate Change
- Biological Resources
- Land Use and Airspace
- Socioeconomics and Environmental Justice
- Utilities
- Visual Quality
- Water Resources
- Human Health and Safety

No significant impacts were identified. Table ES-1 provides a summary of each resource and the impacts identified during the analyses presented in Chapter 3.

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Air Quality and Climate Change	No Significant Impacts	No Significant Impacts
	<p><u>Construction Emissions</u> Construction activities would generate minor, short-term emissions, such as fugitive dust from grading activities and exhaust from construction equipment and vehicles used during installation of the solar PV panel arrays and electrical lines. Conservation and construction measures would be followed to further minimize construction emissions.</p> <p><u>Operation Emissions</u> Minor amounts of fugitive dust and exhaust emissions would be generated by the operation of ground vehicles during periodic maintenance of the solar PV systems. Emission reductions realized by reduced consumption of grid-supplied electricity would more than offset the short-term construction emissions within the first year of operation. Long-term operation of the solar PV systems would also avoid potential emissions produced from conventional non-renewable energy generating sources in the project areas.</p> <p>Total construction and operation emissions would be below the <i>de minimis</i> thresholds and overall, would result in beneficial effects to air quality. Therefore, no significant impacts to air quality would result from construction or operation emissions associated with implementation of the Proposed Action.</p>	<p>With the No Action Alternative, the consumption of grid-supplied electricity would remain unchanged. Without construction or operation of the systems, there would be no emissions associated with those activities; however, emissions reductions due to reduced consumption of grid-supplied electricity would not be realized.</p> <p>Therefore, no significant impacts to air quality would result from the No Action Alternative.</p>
Biological Resources	No Significant Impacts	No Significant Impacts
	<p><u>Vegetation Communities</u> Long-term impacts from removal of vegetation for project construction would be minor and would occur in previously disturbed areas. Areas where temporary minor impacts from trenching for electrical conduits and transmission line installation would occur would be restored to their original condition following installation.</p>	<p>The No Action Alternative would result in no changes to existing conditions or impacts to vegetation, threatened and endangered species, wildlife, or wetlands and waters of the United States.</p> <p>Therefore, no significant impacts to biological resources would result from the No Action Alternative.</p>

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Biological Resources (Continued)</p>	<p><u>Federally Listed Species</u> The proposed action would have no effect on federally listed species because there is no suitable habitat within the project sites for these species.</p> <p><u>State Listed Species</u> The Proposed Action would have no effect on state listed species because there is no suitable habitat within the project sites for these species.</p> <p><u>Wildlife</u> The Proposed Action would result in the long-term loss of upland habitat, and less-mobile amphibian, reptile, and small mammal species as well as subterranean species could be impacted by site grubbing, grading, and compaction during project construction. Impacts would be minor due to the relatively small size of the project sites, the amount of previous disturbance on the sites, and the amount of habitat available in surrounding areas.</p> <p>Avian species could be impacted or displaced through loss of nesting and foraging habitat. Site preparation would be conducted during the non-breeding season, where practicable or nest surveys would be conducted and buffers created to protect nesting birds during the breeding season. Long-term removal of upland habitat would have minor impact to birds from habitat loss and displacement.</p> <p>Burrowing owls have been documented on each of the project sites. Measures to protect burrowing owls and their burrows during project construction will be implemented to minimize impacts to burrowing owls.</p> <p><u>Wetlands and Waters of the United States</u> The Proposed Action would have no impacts to wetlands or waters of the United States because these features do not occur within the project sites.</p>	

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Land Use and Air Space	<p>No Significant Impacts</p> <p>A land use change (lasting up to 37 years) from historic agricultural use to renewable energy development would be compatible with the adjacent uses on NAF El Centro and the planned land use for the sites as designated by the NAF El Centro Master Plan. Implementation of the Proposed Action would not change any land use patterns or land ownership in the project areas, and the sites would remain under Navy use. Implementation of the Proposed Action would not result in any changes to use or control of airspace near NAF El Centro. Therefore, no significant impacts to land use and airspace would result from implementation of the Proposed Action.</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, no land use changes or incompatible development at NAF El Centro would occur and no significant impacts to land use and airspace would occur.</p>
Socioeconomics and Environmental Justice	<p>No Significant Impacts</p> <p><u>Population</u> There would be no increase in military or civilian area populations in the NAF El Centro vicinity. Local contractors would travel to and from the project site for project construction, and local contractors would be used for project maintenance during project operation.</p> <p><u>Employment and Income</u> Approximately 56 acres (22.6 hectares) of agricultural outlease would be discontinued as part of the Proposed Action. Local agricultural workers do not solely depend on the project sites for employment and no job losses would occur. Approximately 60 full time equivalent local workers would be employed for the approximately 9to 10 month construction period.</p> <p><u>Housing</u> Because there would be no increase in area military or civilian populations in the NAF El Centro vicinity, there would be no increased housing demands as part of the Proposed Action.</p> <p><u>Environmental Justice</u> The Proposed Action would be built within the boundary of</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, there would be no changes to population, employment, housing, or environmental justice and no significant impacts to socioeconomics would occur.</p>

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Socioeconomics and Environmental Justice (Continued)	<p>NAF El Centro and would not be in proximity to minority or low-income housing areas. The Proposed Action would not result in significant adverse impacts to human health or the environment. The Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children.</p> <p>Therefore, no significant impacts to socioeconomics or environmental justice would occur with project implementation.</p>	
Utilities	<p>No Significant Impacts</p> <p><u>Natural Gas</u> Natural gas services would not be required for project construction or operation.</p> <p><u>Water</u> The temporary use of water for dust suppression during construction and for panel washing during operation would be supplied by the construction contractor via water trucks.</p> <p><u>Wastewater</u> Wastewater temporarily generated by the use of onsite portable toilets during construction would be removed from the site and disposed of at local treatment facilities with the capacity to receive the waste.</p> <p><u>Solid Waste</u> The small volumes of solid waste temporarily generated during construction and periodically generated during maintenance would be transported offsite to solid waste facilities with adequate capacity to accept the waste.</p> <p><u>Electricity Delivery</u> Under Models 2, 3, or a combination of 2 and 3, the electricity generated by the Proposed Action would help the Navy reach its renewable energy goals, and would result in long-term decreases in greenhouse gas emissions. Under</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, no additional natural gas, water, wastewater, or solid waste services would be required and the Navy would continue to purchase its power from local utility providers. No significant impacts to utilities would occur and the Navy would not realize any energy cost savings or progress closer toward the Navy's renewable energy goals.</p>

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Utilities (Continued)	Model 3, or a combination of 2 and 3, the Proposed Action would also lower NAF El Centro's demand on local utilities, reducing the amount of money NAF El Centro pays for electricity.	
Visual Quality	<p>No Significant Impacts</p> <p><u>Visual Impacts during Construction</u> Project construction at NAF El Centro would take place on vacant lots or vacant agricultural outlease areas. While on-installation military personnel could have views of project construction, the project would not be easily visible to off-installation sensitive viewers (residents, motorists, and pedestrians). On-installation personnel would experience views consistent with the industrial nature of the area and/or would experience only partial views of the PV systems from behind a retaining wall separating on-installation housing from the proposed project site.</p> <p><u>Visual Impacts during Operation</u> Permanent project features (ground-mounted PV panels) would not be visible to off-installation sensitive viewers. On-installation viewers would experience views during operations that would be essentially the same as views experienced during the temporary construction period. These views would be partial due to man-made and natural obstructions. Further, views of the PV systems would be consistent with the overall industrial nature of the area; thus, any impacts would be minor.</p> <p>Overall, there would be no significant impacts to visual resources as a result of implementing the Proposed Action. Application of the applicable conservation and construction measures would further minimize impacts of color contrast, glare, and lighting.</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, the existing visual resources would not change and no significant impacts to visual resources would result.</p>
Water Resources	<p>No Significant Impacts</p> <p><u>Hydrology</u> Construction activities associated with the Proposed Action would not degrade local water quality or adversely affect</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, the existing conditions for regional hydrology, surface water quality, and groundwater would not change and no significant impacts to water resources would occur.</p>

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Water Resources (Continued)</p>	<p>current uses of local surface water resources.</p> <p><u>Floodplains</u> The Proposed Action would not result in any temporary or permanent structures that would increase the potential for local flooding at the installations or in local surface water bodies.</p> <p><u>Groundwater</u> Water used for the cleaning of solar PV panels during project operation would be brought in by truck and would not require the use of groundwater resources. The Navy has not identified any sources of contamination that would affect groundwater during construction and operation of the Proposed Action.</p> <p>Therefore, no significant impacts would result from implementation of the Proposed Action.</p>	
<p>Human Health and Safety</p>	<p>No Significant Impacts</p> <p><u>Installation Restoration Program Sites</u> No Installation Restoration Program sites would be disturbed by the Proposed Action.</p> <p><u>Hazardous and Toxic Materials and Waste</u> All project-related work would comply with applicable requirements for working with hazardous materials and waste. Any accidental spills and leaks would be addressed under an Environmental Protection Plan prepared prior to any site work.</p> <p><u>Electromagnetic and Radio Frequency Interference and Hazards</u> Electric field and magnetic flux levels near solar PV systems would be well below recommended levels for human health. The Proposed Action would not interfere with communications systems through electrical interference or physical blocking.</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, there would be no additional hazards introduced, and no significant impacts to public health or safety would occur.</p>

Table ES-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Human Health and Safety (Continued)</p>	<p><u>Solar Glare Hazards</u> Based on SGHAT modeling, no glare effects were found for the Air Traffic Control Tower or any of the standard fixed-wing approach routes on the 08/26 and 12/30 runways. The only glare effects found were for a helicopter approach route passing between the solar PV arrays at Parcels 2 and 3, heading north from the main gate area. The analysis showed potential for minor glare, with a low potential for ocular after-image. This glare is not expected to result in hazards to pilots or interference with airfield operations. Additionally, final design of the solar PV panels could include adjustments to completely eliminate glare on this approach route.</p> <p><u>Bird-Aircraft Collision Hazards</u> While it possible that solar PV panels could attract birds, the panels would not be directly adjacent to runways. If an increase in BASH potential were to occur, it would be mitigated by continued adherence to procedures used at NAF El Centro to minimize incidences of bird/animal-aircraft strikes.</p> <p>There would be no significant adverse impacts to public health or safety under the Proposed Action.</p>	

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1.0 Purpose and Need for Project

1.1 INTRODUCTION/BACKGROUND

The Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969, its Council on Environmental Quality implementing regulations for procedural provisions of NEPA, and other applicable laws. It presents an analysis of the potential environmental impacts of a Proposed Action and No Action Alternative pertaining to the Construction and Operation of a Solar Photovoltaic (PV) System at Naval Air Facility (NAF) El Centro in El Centro, California.

1.1.1 HISTORY AND MISSION OF NAF EL CENTRO

NAF El Centro is the original site of the Imperial County Airport. The Navy leased the facility for use as a Marine Corps Air Station in 1942. The formal establishment of the installation took place on July 24, 1943. The installation operated as a Marine Corps Air Station until its disestablishment and subsequent transfer to the Navy on May 1, 1946.

Once assumed by the Navy, the facility was used primarily for aircraft storage, gunnery, and rocket training over the course of the next year. In 1947, the Navy acquired the leased land for the purpose of making NAF El Centro a permanent installation. For the first 35 years, the mission of NAF El Centro was devoted to aeronautical escape system testing, evaluation, and design. In 1964, the U.S. Naval Aerospace Recovery Facility was designated and in 1973, it was combined with NAF El Centro to form the National Parachute Test Range. In 1979, the parachute test mission was transferred to Naval Air Weapons Station China Lake.

Today, NAF El Centro provides realistic training to active and reserve military, other U.S. forces, and allied units. Squadrons visit the installation and its associated ranges to practice gunnery, bombing, carrier landings and air combat (NAF El Centro Economic Impact and Community Involvement, 2010). NAF El Centro has two operating runways, as well as support facilities and housing. Air operations include administration and station aircraft operations, air traffic control, aviation fuel support, ground electronics, airfield facilities support, and passenger terminal and cargo handling.

1.1.2 SECRETARY OF THE NAVY AND THE RENEWABLE ENERGY PROGRAM OFFICE

The Navy is pursuing renewable energy generation to improve the nation's energy security, operational capability, strategic flexibility, and resource availability. The SECNAV has directed the development of an accelerated plan to develop 1 gigawatt (GW) of renewable energy generating capacity for the Navy. The intended outcome is to have 500 megawatts (MW) of renewable energy generating capacity on contract by December 2014 and another 500 MW by December 2015, with the further goal of meeting 50 percent of the Navy's shore-based energy demand through renewable sources by 2020.

To achieve the 1 GW renewable energy generating capacity goal, the Navy recognized the need to develop opportunities for large-scale projects that would be attractive to local commercial utilities. The Assistant Secretary of the Navy (Energy, Installations & Environment)

has established a Renewable Energy Program Office to work with local commercial utilities to use private-sector funds to construct renewable energy facilities on Navy land. Three Regional Program Offices have been established to implement the projects at shore facilities across the country and abroad.

The Navy has developed acquisition strategies based on three separate models to procure or generate renewable energy to meet SECNAV goals. Figure 1-1 depicts the three renewable energy models. The anticipated model for NAF El Centro is Model 2, Model 3, or a combination of Models 2 and 3.

Figure 1-1. Renewable Energy Models

Model 1: Off-base generation for on-base consumption

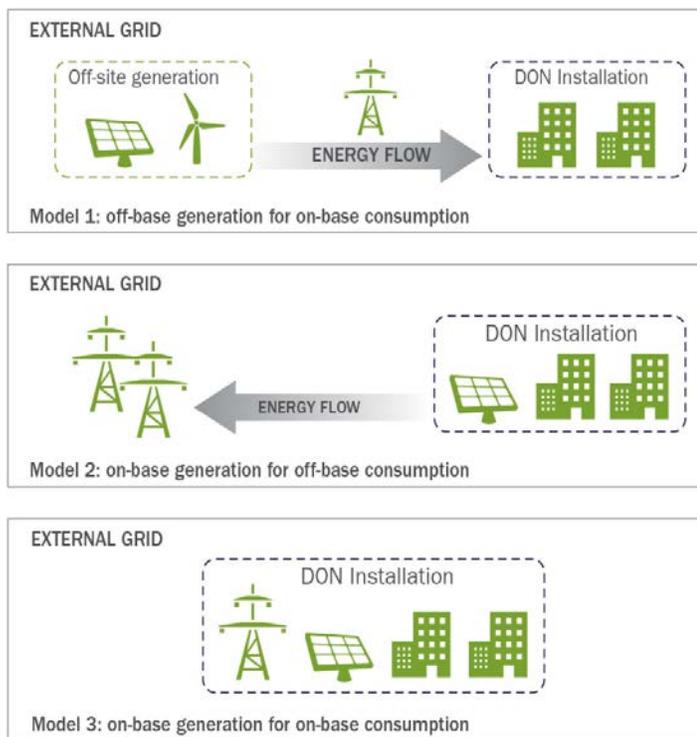
- Navy purchases new renewable energy generation for on-base load
- Renewable energy generation provides price stability and diversifies energy portfolio
- Acquisition: Power purchase agreement and utility service contract

Model 2: On-base generation for off-base consumption

- Third party produces on Navy property & exports energy to grid
- Navy has potential to receive energy security via lease terms
- Real estate outgrant

Model 3: On-base generation for on-base consumption

- Navy consumes all energy generated
- Potential opportunity to increase energy security through microgrid integration
- Acquisition: Power purchase agreement



1.2 PROJECT LOCATION DESCRIPTION

NAF El Centro is located just outside of the city of El Centro in southern California, approximately 8 miles north of the U.S. and Mexico border (Figure 1-2). El Centro is the largest city within the Imperial Valley and is bordered to the north by the city of Imperial. NAF El Centro is located in a predominately agricultural area south of the Salton Sea, and is approximately 117 miles (188 km) east of San Diego, California.

1.3 REQUIREMENTS AND POLICY GUIDANCE

The federal government has passed legislation and provided directives to federal agencies like the Navy that require these agencies to reduce energy use and reliance on traditional fossil fuel-based energy sources, and increase the use of renewable energy sources at their facilities. Renewable energy sources include wind, solar, geothermal, biomass, and other sustainable methods. The following provides a brief summary of these federal requirements.

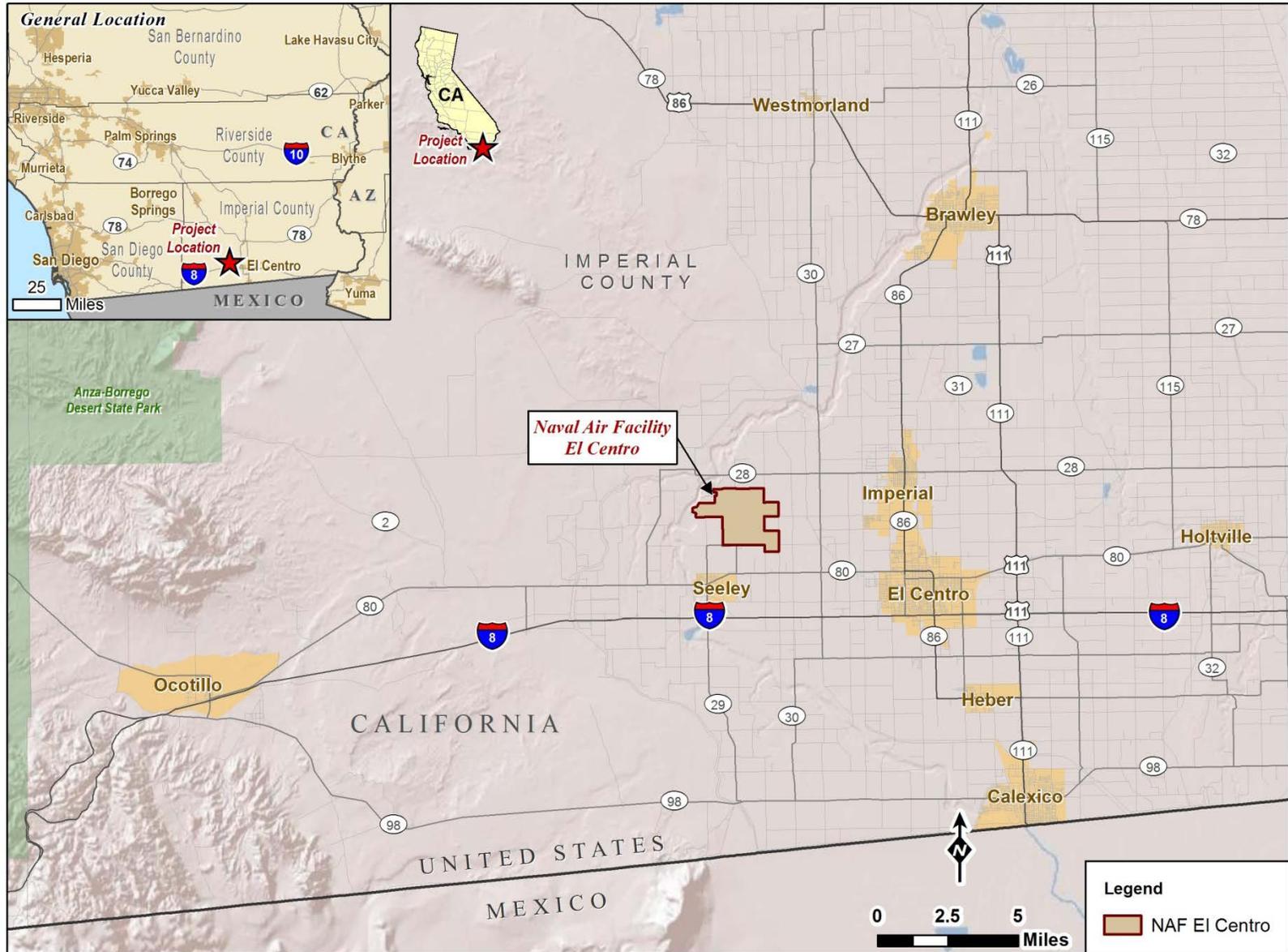


Figure 1-2. Regional Map of NAF El Centro

- EO 13514, October 5, 2009, Federal Leadership in Environmental, Energy, and Economic Performance sets federal energy requirements in several areas, including: Accountability and Transparency; Strategic Sustainability; Performance Planning; Greenhouse Gas Management; Sustainable Buildings and Communities; Water Efficiency; Electronic Products and Services; Fleet and Transportation Management; and Pollution Prevention and Waste Reduction. This EO states that all federal agencies are to increase the use of renewable energy and implement renewable energy generation projects on federal property.
- SECNAV Energy Goals, October 14 2009, the Secretary of Navy established five aggressive renewable energy goals for the Navy's shore-based installations to meet by 2020. The goals pertain to improving fuel use in aircrafts as well as energy reduction and production. The goal that pertains the most to this document is *the Navy will produce at least 50 percent of shore-based energy requirements from alternative sources.*
- 1GW Initiative, October 1 2012, in support of the SECNAV Energy goals, Secretary Mabus chartered the 1 GW Task Force to enable the Navy to procure one GW of renewable energy generation capacity by 2020. 1GW of renewable energy generation directly addresses several of the mandates and goals for which the Navy is accountable: EO 13514 greenhouse gas reduction, the 10 U.S.C. §2911 "25 by 25" mandate (25 percent by 2025), Energy Policy Act 2005 graduated renewable energy targets, and EO 13423 renewable energy consumption goals, in addition to the Secretary's departmental goals. To reach the 50 percent renewable energy generation goal (which the 1GW goal directly supports) in a cost-effective fashion, the Navy must purchase or facilitate the production of significant quantities of renewable energy while reducing power consumed through energy efficiencies. The overall Navy energy strategy therefore includes both lines of effort: deploy renewable energy in support of the 1GW goal and simultaneously bring the 50 percent renewable energy generation goal closer by reducing overall energy consumption.

1.4 PURPOSE AND NEED FOR THE PROJECT

The purpose of the Proposed Action is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations by the construction and operation of a solar PV system. The Proposed Action is required to meet the renewable energy standards put forth by the 1 GW Initiative, EO 13514, and the SECNAV Energy Goals. The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed, in part, by including a requirement that project infrastructure be 'micro-grid-ready' in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner. This means that the Navy would have the option to use any energy produced on-base in the event of an area power outage or other circumstances.

1.5 DECISION TO BE MADE

The decision to be made from the analysis in this EA is to decide if an Environmental Impact Statement needs to be prepared. An Environmental Impact Statement will need to be prepared if it is determined that the Proposed Action selected for implementation would have significant impacts to the human or natural environment. Should an Environmental Impact Statement be deemed unnecessary based on the analysis of environmental impacts for the Proposed Action, the selection would be documented in a Finding of No Significant Impact (FONSI).

1.6 SCOPE OF ANALYSIS

In July 2014, the Renewable Energy Program Office requested Navy installations to identify land areas within the installation that could support a renewable energy facility. The scale of the facility would be 10 MW or more, which is considered a utility-scale project. For a solar PV facility, a 10 MW facility would require approximately 50 acres (20 hectares) of land (i.e., approximately 5 acres per MW). NAF El Centro conducted a review of current base land uses to identify potentially feasible locations to construct and operate a PV system. Current land use, surrounding land uses, and available space were considered for each location.

Environmental resource areas analyzed in detail in this EA include the following:

- Air Quality and Climate Change
- Biological Resources
- Land Use and Airspace
- Socioeconomics and Environmental Justice
- Utilities
- Visual Quality
- Water Resources
- Human Health and Safety

The following five resource areas were considered, but were not carried forward for detailed analysis in this EA because potential impacts would be non-existent or would be at most negligible.

Coastal Zone Resources: NAF El Centro is more than 100 miles inland from the Pacific Ocean, and no aspect of the Proposed Action would directly affect any natural resource, land use, or water use in the coastal zone. In addition, no pathways for indirect effects to coastal resources have been identified.

Cultural Resources: All three of the sites considered for PV power development on NAF El Centro have been previously surveyed for archaeological resources, and none has been identified to date. These sites have been previously disturbed through activities including agriculture, underground utility placement, facility construction and demolition, and debris stockpiling. No historic properties or traditional cultural properties are located within or adjacent to the proposed development sites (Navy 2013b). The Navy has a current Programmatic Agreement in place with the California State Historic Preservation Officer, which details consultation and coordination requirements for ongoing activities at NAF El Centro.

Noise: While there are human noise receptors in the vicinity of the project sites, the noise that would be generated during construction of the Proposed Action would be short-term and would only take place during daylight hours. All applicable federal and Navy regulations would be followed during construction. The closest noise receptors at NAF El Centro, besides pedestrians, would be people within residences or other buildings close to construction activities; however, sound levels would be reduced by transmission loss through residence/building walls, and construction equipment noise would be reduced to levels that are considered permissible by the federal government. No long-term operations noise is expected from the solar photovoltaic systems.

Topography, Geology and Soils: All three of the sites considered for PV power development on NAF El Centro have been previously graded for historical uses including agriculture. Only minimal additional grading might be required during construction, and no large cuts, fills, or alterations to drainage pathways would occur. Erosion of surface soils from PV panel drip lines during precipitation would be controlled using soil additives. The Navy has not identified any sources of soil contaminants that would affect the project sites during construction or operation of the Proposed Action.

Traffic and Transportation: Construction and operation of a PV system on NAF El Centro would be located within the confines of the base's fence line. Construction-related truck traffic entering and leaving NAF El Centro would be routed through adjacent communities according to local haul routes and restrictions. The Proposed Action would not create additional traffic in the area that would affect local communities in the long-term. No road improvements, closures, or detours are would occur during this project.

1.7 PUBLIC PARTICIPATION AND INTERGOVERNMENTAL COORDINATION

The Navy invites public participation in decision-making on new proposals through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better federal decision-making. Agencies, organizations, and members of the public with a potential interest in the Proposed Action are encouraged to participate. Appendix A provides a record of public involvement and agency coordination and consultation conducted in support of preparation of this EA.

1.7.1 PUBLIC REVIEW

Prior to preparing the EA, the Navy published and distributed initial project announcements in the form of postcards mailed out, and a written notice printed in the Imperial Valley Press, a local daily newspaper for the public scoping period (see Appendix A). The Navy received scoping comment letters from the Imperial Irrigation District (IID) and the Imperial Chamber of Commerce. The IID letter noted that the Proposed Action had the potential to affect IID infrastructure, resources and rights-of-way; and that site access coordination, permitting and impact mitigation would be the responsibility of the entity who would construct and operate the system. The Imperial Chamber of Commerce noted in their letter that they preferred that the Navy allowed agriculture to continue on outleased sites, and that solar PV development occur on other unused land parcels.

The Navy published and distributed the EA for a 15-day public comment period, as announced by a Notice of Availability published in the 'Notices' section for 3 consecutive days (Friday – Sunday) in the Imperial Valley Press. The notice described the Proposed Action, announced that copies of the Draft EA were available for review, solicited public comments on the Draft EA, and provided dates of the public comment period. Copies were made available for public review at: El Centro Public Library, 1140 North Imperial Avenue, El Centro, CA 92243; and online at http://www.cnrc.navy.mil/regions/cnrsw/om/environmental_support/Public_Review_of_Navy_Projects/NAFEC_Solar_Photovoltaic_EA.html.

No comments were received during the Draft EA public comment period. The Final EA and FONSI will be made available at the library and the website listed above. The Notice of Availability for the Final EA and FONSI will also appear in the newspaper listed above.

1.7.2 AGENCY COORDINATION

NEPA requires that federal agencies responsible for preparing NEPA analyses and documentation do so "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise (42 U.S.C. 4331[a] and 4332[c]).

No formal consultation with agencies based on jurisdiction by law or special expertise was required during this EA. Agencies contacted during this EA's public scoping period are listed in Appendix A. None of these agencies submitted comments, and none requested any informal consultation with the Navy.

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2.0 Description of Proposed Action and No Action Alternative

2.1 PROJECT OVERVIEW

A photovoltaic (PV) system would be developed to generate renewable energy at NAF El Centro under an acquisition strategy based on either Model 2, Model 3, or a combination of Models 2 and 3. Under a Model 2 acquisition strategy, the Navy and local electric utility provider (Provider) would enter into a lease agreement (or a real estate outgrant) to allow the Provider to use Navy land to construct, operate, and own the PV systems. The Navy would receive compensation for the lease, but would not directly receive the power generated by the PV system. The Provider would sell the generated power to customers outside the Navy. The approximate contract duration would be 37 years. This acquisition strategy maximizes the total capacity (size) of the system based on available land, and not the installation's electrical load. Under a Model 3 acquisition strategy, the Navy would enter into a lease agreement (or real estate outgrant) plus a PPA, to allow a solar developer to construct, operate, and own a solar photovoltaic system on the installation. Once the systems are operational, the Navy would purchase and use all of the electricity generated from the systems. Standard PPA durations are approximately 20 years with a 5-year extension option. This acquisition strategy limits the total capacity (size) of the system based on the installation's electrical load, and not the total amount of land available. Under both the Models 2 and 3 acquisition strategies, the land impact, function of the facility, and conservation/construction measures would be nearly identical. The only notable difference would be the construction and routing of electrical distribution lines (i.e., point of connection from solar system to internal base grid) to either serve the public grid, or internal Navy grid. There is also a possibility that a combination of Models 2 and 3 would be implemented; and some power generated would be used by the Navy and some by outside customers.

An existing commercial Imperial Irrigation District (IID) 69 kV substation (which steps down to 13 kV for local distribution) is located near the southwest corner of NAF El Centro and is the most likely point of interconnection. The feed for this substation is a jointly owned 92 kV IID and San Diego Gas and Electric substation in Seeley, California. The addition of distributed energy from a solar installation of up to 25 MW AC would require system upgrade improvements to one or both substations. Improvements may entail measures such as replacing existing circuit breakers or adding new circuit breakers; isolation and disconnect switches; support foundations; and conductor replacement on existing transmission poles.

2.2 REASONABLE ALTERNATIVE SCREENING FACTORS

Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA establish policies for federal agencies, including “using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment” (40 Code of Federal Regulations [CFR] 1500.2 [e]). This EA only carries forward for detailed analysis those

alternatives that could meet the purpose of and need for the project as defined in Chapter 1.0 and the below-listed reasonable alternative screening factors.

The screening factors used to develop the reasonable range of alternatives are as follows:

1. Contribute to the SECNAV's goal of developing 1 GW of renewable energy generation capacity by the end of 2015 by providing sufficient land for utility-scale (i.e., 10 MW or larger) PV system placement.
2. Yield a location and/or design capable of providing electricity at or below the current cost of traditional power (e.g., orientation/location/slope relative to the sun for generating higher amounts of power, or a lower system cost relative to output).
3. Avoid adverse impacts upon NAF El Centro's mission and operations, and avoid creation of unsafe conditions for NAF El Centro employees, families, and visitors.

Figure 2-1. Location of PV Development Sites



NAF El Centro Proposed PV Sites

2.3 PROPOSED ACTION: CONSTRUCTION, OPERATION, AND MAINTENANCE OF A PHOTOVOLTAIC SYSTEM ON PARCELS 1 THROUGH 3

Only one alternative (Proposed Action) was identified that met the screening criteria described in Section 2.2. After initially considering but then eliminating certain other land parcels (see discussion at Section 2.5), the Navy identified three sites (see Figure 2-1) as potential locations to be analyzed for construction and operation of a PV system at NAF El Centro. These sites include existing agricultural lease land or vacant areas. All sites are topographically flat with minimal vegetation cover, and are described in more detail below. The Proposed Action consists of the installation of a ground-mounted PV system at all three parcels. The total acreage of the combined three sites would be 71 acres (28.7 hectares). The Proposed Action includes the construction phase, operation of the PV system, maintenance, and decommissioning. Implementation of the Proposed Action would result in the generation of an estimated 13 MW of renewable energy.

Parcel 1

Parcel 1 is a flat, 15-acre (6.1-hectare) site located on vacant land in the west-central portion of NAF El Centro. This site is occasionally used as an overflow parking lot when special events (e.g., Blue Angels performances) require additional visitor parking capacity. The parcel is bordered by D Street to the west and C Street to the east, and 4th street to the north and 3rd Street to the south. West Place and West Street intersect the parcel. The site lacks vegetation but supports burrowing owls. Some underground utilities remain on the site from previous uses. In addition, NAF El Centro plans to construct a Digital Airport Surveillance Radar (DASR) tower within Parcel 1 that would occupy approximately 1 acre (0.4 hectares), not including setbacks.

Parcel 2

Parcel 2 is a flat, 30-acre (12.1-hectare) site located on vacant land north of Havens Road and west of A Street in the southwest portion of NAF El Centro near the base entrance. Base housing is located directly north of the site, but separated by a masonry wall. The site has minimal vegetation cover but supports burrowing owls. It was previously leased as an agricultural plot but is currently in a maintenance status. This is the closest parcel to the existing IID substation. A planned project that would automate the NAF El Centro main gate with a card reader feature, would occur nearby and should be completed by the end of 2015. The planned project does not include any alterations to traffic patterns or circulation, and would be compatible with solar PV development at Parcel 2 (Center et al 2015, Rand, personal communication 2015; Valdez, Daniel, personal communication 2015; and Collins, Jimmie, personal communication 2015).

Parcel 3

Parcel 3 is a flat, 26-acre (10.5-hectare) site located south of 8th Street and east of A Street in the southern portion of NAF El Centro near the base entrance. The site is currently utilized for agricultural purposes. Some existing power lines intersect the site. The planned design project described for Parcel 2 above would be located to the west of Parcel 3.

2.3.1 GROUND-MOUNTED PHOTOVOLTAIC PANEL DESIGN

The proposed ground-mounted solar PV systems would be built on relatively flat, undeveloped land. In areas with surface vegetation, the systems may require the site to be cleared and grubbed. Access to the systems would be restricted by a fence. A ground-mounted system would occupy all of the space contained within its fence line, and the area may include the construction of all-weather gravel roads between the rows of solar panels and around the site perimeter for maintenance access. The systems require either an underground or an overhead electrical line to provide electrical feedback to the nearest point of connection. A typical configuration for this type of system is to install vertical members into the ground, with panel mounting hardware, frames, motors, and/or the solar panels themselves affixed atop the constructed mounting structure (see Figure 2-2 for an example of a single-axis tilt tracker-mounted system from another location). Foundations would be built on engineered fill or native soil at a minimum of 24 inches (61 centimeters) below adjacent grade or finished grade (typical for combined footings). If pole footings were used, each footing would consist of a 4-inch (10-centimeter) cross-sectional area and would require a depth of 4 feet to 6.5 feet (1.2 meters to 2 meters) below ground surface.

Figure 2-2. Typical Ground-Mounted Single-Axis Tilt Solar PV Array (example only)



Two types of ground-mounted systems may be constructed at the project sites, depending on the developer's site design: fixed-tilt panel systems or tracker-mounted panel systems. Fixed-tilt solar arrays would remain stationary, whereas tracker-mounted arrays would be mounted on an axis and would be free to move throughout the day to maintain the best sun angle and maximize

power output. It is estimated that the highest point of the solar array for a ground-mounted solar photovoltaic system would not exceed 8 feet (2.4 meters) above the ground surface and would depend on the solar photovoltaic system type (i.e., fixed-tilt or tracker-mounted) and tilt of the arrays. Fixed-tilt panels would maintain a fixed height, whereas the maximum height of tracker-mounted arrays would vary as the arrays move to track the sun. Ground-mounted panels would be approximately 5 feet (1.5 meters) wide and 3 feet (0.9 meter) long. The number of panels in each array, the type of ground-mounted system used, and the array configuration would depend on the developer's site design.

The developer would develop a conceptual design that allowed for the most efficient placement and configuration of PV panels on the property. Installation of the panels and associated infrastructure would be conducted by the developer or its designated contractors. Once the systems are operational, the developer would be responsible for maintenance and operation of the facilities. The developer would also be responsible for the deconstruction of the facilities and restoration of the sites to existing conditions at the end of the agreement period.

2.3.2 CONSTRUCTION

The facilities to be constructed include solar PV panels and associated foundations, steel tracking structure, inverters, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the PV system. In addition, unpaved access roads would potentially be constructed to allow vehicles to move construction components within the project site boundaries. The ground-mounted systems would be enclosed by 8-foot-high chain link panels with barbed-wire outriggers in accordance with force protection standards. The fencing would be installed by the developer to assume liability and secure protection for their system. Perimeter fencing is also provided as a safety precaution to ensure that individuals cannot enter the PV system fields.

Construction and installation of ground-mounted PV panels may involve the following site preparations:

- Grading to bare soil to remove vegetation
- Installation of underground electrical lines (3 feet deep as required by Unified Facilities Criteria codes)
- Trenching between panels to complete the electrical circuits

Equipment used to install the PV arrays may include bulldozers, scrapers, backhoes, pile drivers, water trucks, trenchers, and truck-mounted mobile cranes. Laydown areas would be within the identified potential PV panel sites.

Proposed construction and installation of PV infrastructure is estimated to require 9 to 10 months and would involve 170 full time equivalent employees. Construction would create a minimal amount of debris that would be removed by the developer upon completion of installation of the PV system. All materials would be disposed of in compliance with the Commanding Officer's Environmental Management Policy Statement (dated 25 July 2013 [NAF El Centro Commanding Officer 2013]) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition

waste). All construction activities would be conducted in accordance with the conservation and environmental protection measures described in Section 2.3.6.

2.3.3 OPERATION AND MAINTENANCE

The PV system would connect to the public electrical grid via existing distribution lines. Power would be delivered over an existing line to an existing 69 kV substation. Operations activities would include, but not be limited to, use of all aspects of the project site, including use of access roads; electrical and mechanical systems; and maintenance and repair.

Quarterly inspections of the PV system would be conducted to ensure infrastructure is in good operating condition. Any repairs or regular service would be conducted by the developer or a designated contractor with access to NAF El Centro using existing roads. All proposed sites are located inside a secure fence line and subject to constant surveillance. The developer or a designated contractor would comply with all Navy regulations applicable to conducting work activities on NAF El Centro and the conservation and environmental protection measures described in Section 2.3.6 of this EA.

Typical maintenance would include panel washing multiple times throughout the year due to high wind and dust in the Imperial Valley. Maintenance would be performed using a mobile water truck.

2.3.4 ACCESS

During construction, operations, and maintenance activities, NAF El Centro would be accessed from the main gate via Bennett Road. No access improvements would be required as part of the Proposed Action.

2.3.5 DECOMMISSIONING

At the end of the lease term, the developer would terminate the connection to the public transmission grid and remove aboveground PV system components from the developed sites. Additional underground elements (e.g., local transmission lines) and security fencing could be removed or left in place at the Navy's discretion. The developer would restore the sites to their pre-construction condition, and would comply with all Navy regulations applicable to conducting work activities on NAF El Centro and the conservation and environmental protection measures described in Section 2.3.6 of this EA.

2.3.6 CONSERVATION AND ENVIRONMENTAL PROTECTION MEASURES

This section presents proposed conservation and protection measures that would be applied during the design, construction, operations, and maintenance stages of the Proposed Action to avoid and/or minimize the potential for impacts to air quality, biological resources, cultural resources, visual resources, and health and safety. These measures also address storm water, erosion, solid waste, and hazardous waste. The conservation and protection measures presented here are included as part of the impact analysis in Chapter 3 of the EA.

2.3.6.1 Environmental Protection Plan

The construction contractor would submit an Environmental Protection Plan for approval by the Navy prior to commencement of construction. Prior to submittal of the plan, the construction contractor would meet with the Navy to discuss the implementation of the initial plan, and possible subsequent additions to the plan, including reporting requirements, and methods for administration of the plan. The plan would discuss measures the contractor would take to prevent or control releases of contaminants into the air, soil, and water during construction. Specifically, the plan would address:

- Weed control
- Management and removal of trash and rubbish
- Human waste management
- Air pollution controls on equipment and operations
- Dust control
- Application of paints and coatings
- Fire prevention precautions
- Recycling of project waste or demolition debris
- Contractor parking and laydown
- Temporary utility services
- Limits on construction activity due to wildlife or habitat
- Procedures if site contamination is discovered
- Procedures related to inadvertent discovery of historical, archaeological, and paleontological preservation
- Clearing and grubbing
- Equipment maintenance and fueling
- Hazardous materials use by the contractor
- Hazardous waste storage and disposal
- Smoking plan
- Grading plan

2.3.6.2 Air Quality

All construction equipment will be maintained in compliance with applicable Airborne Toxic Control Measures promulgated by the California Air Resources Board. Particulate matter emissions from construction and operations activities would be minimized through dust abatement measures, including:

- Applying soil stabilizers to disturbed, inactive portions of the project site to help bind soil together and make it less susceptible to erosion (construction and operations)
- Replacing ground cover in disturbed areas with soil additives and/or appropriate native plant species, as appropriate (post-construction)
- Watering exposed soil in disturbed areas with adequate frequency for continued moist soil (construction and operations)

- Suspending excavation and grading activities during periods of high wind activity (construction)
- Cleaning (washing) all vehicles before they leave the project site (construction)
- Locating staging areas as far away from sensitive receptors (long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities) as practicable (construction)
- Limiting idling time and scheduling construction truck trips during non-peak hours to the extent practicable to reduce peak-hour vehicle exhaust emissions (construction)

2.3.6.3 Biological Resources

All of the sites (1, 2, and 3) are inhabited by western burrowing owls (*Athene cunicularia*), a species protected by the Migratory Bird Treaty Act. The developer would provide a qualified biologist to survey each site before construction begins and locate all active burrows. If burrowing owls and their habitat can be protected in place on or adjacent to the project site, the use of buffer zones, visual screens or other measures while project activities are occurring would be utilized to minimize disturbance impacts

If any active burrows were located within the project footprint, owls would be passively relocated between September 1 and January 31 by a qualified biologist. Artificial burrows would be constructed as near as possible to the construction site, at a ratio of 2 to 1 for every burrow in which resident owls are passively relocated. Siting of artificial burrows would be coordinated with the NAF El Centro natural resource specialist.

During the burrowing owl breeding season (February 1 to August 31), no construction or other disturbance would occur within 150 feet of any active burrow. Any burrow within 150 feet of construction activities, at any time of year, would have noise/disturbance barriers placed near the burrows to minimize impacts to owls. Routine maintenance of the PV systems would be allowed within the burrowing owl breeding season.

In addition, the following conservation and construction measures, or Best Management Practices (BMPs) would be included as part of the Proposed Action to reduce the potential for significant impacts to sensitive biological resources.

General Biological Impact Minimization Measures

The contractor would be required to submit a Material Safety Data Sheet for all hazardous materials used during the project to the Base Environmental Office for review prior to commencement of work. The Safety Data Sheet would be kept at designated location at the project site and make available to all workers during normal business hours.

On-going vegetation maintenance would be conducted by the contractor to ensure uninterrupted energy production. Additionally, unapproved vegetation clearing or grading outside and within the vicinity of the approved project footprints would be reported to the Navy within 24 hours of discovery. The designated work area flagging and erosion control BMPs would be checked

regularly, including within 24 hours of any storm event, and maintained throughout the construction phase. Topsoil would be retained and reused in the revegetation of temporary disturbance areas.

All light posts and permanent nighttime lighting associated with the project would be selected to provide the lowest illumination possible while still allowing for safe operations. To prevent disturbance to potential sensitive natural resources, lighting would be designed to have the lowest profile possible and would be shielded to direct only toward areas needing illumination.

Light posts and tall structures would be designed to prevent or reduce perching by raptors and other birds and could be equipped with spike strips. To avoid attracting predators during construction, the project site would be kept clean of debris within and around the solar panel array, as feasible. All vehicle traffic would be restricted to construction areas and currently established dirt or paved roads and no off-road vehicle use would be permitted. Construction activities at NAF El Centro would only take place during daylight hours (sunrise to sunset).

2.3.6.4 Cultural Resources

While no archaeological resources have been identified through previous surveys of the development sites, all excavation would be monitored by a qualified archaeologist. In the unlikely event that subsurface archaeological deposits are detected during construction, the NAF El Centro Cultural Resources Manager (or the NAFAC Southwest Cultural Resource Program Archaeologist if a Cultural Resource Manager is not available) would be contacted immediately to initiate the steps outlined in Section 6.2 of the Final El Centro Integrated Cultural Resources Management Plan (SWCA 2014). Steps include stopping all ground disturbing activities and securing the site, followed by a site visit by the Cultural Resource Manager to determine which protocols should be followed.

2.3.6.5 Storm Water and Erosion

Storm Water Pollution Prevention Plans and Spill Prevention Plans

Since the project's construction phase would disturb more than 1.0 acre (0.4 hectare), coverage under the National Pollution Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity ("General Permit") would be required prior to project construction. The General Permit is issued by the California Environmental Protection Agency's (Cal/EPA's) State Water Resources Control Board for construction-related discharges pursuant to Department of Water Quality Order 2009-009-DWQ. As part of the permit, a Storm Water Pollution Prevention Plan (SWPPP) would be developed by the construction contractor. The SWPPP would incorporate BMPs and would be submitted to the Contracting Officer and made available to state and local agencies, as required.

The construction contractor would be required to prepare the Notice of Intent for the SWPPP and pay appropriate NPDES fees and surcharges to the Regional Water Quality Control Board to obtain a waste discharge number for the Proposed Action. At the completion of work, the construction contractor would prepare and file a Notice of Termination.

In addition to the SWPPP, the construction contractor would be required to prepare a spill response plan. The spill response plan would include NAF El Centro points of contact in the event of a large spill and an environmental department point of contact in the event of a small spill. The spill response plans would also address the requirements to incorporate BMPs (e.g., placing drip pans under any diesel tanks, conducting training and using appropriate personal protective equipment in accordance with safety data sheets).

Erosion Control

As a federal landowner, the Navy is required to control and prevent soil erosion from activities on its properties by implementing conservation measures (Soil Conservation Act, 16 U.S.C. § 5901). A Soil Erosion and Sedimentation Control Plan would be prepared by the contractor and approved by NAF El Centro's environmental department prior to commencement of land disturbance activities. During construction, erosion and sediment in storm water runoff would be controlled by the construction contractor's use of BMPs. Erosion control practices, as outlined in the SWPPP, would be inspected and reviewed frequently and revised as required to accommodate current construction phasing and conditions. The construction contractor(s) would submit Erosion and Sediment Control Inspection Reports (on a form provided at the preconstruction conference or included within the SWPPP) to the Contracting Officer once every 7 days and within 24 hours of a storm event producing 0.5 inch (1.3 centimeters) or more of rain.

Erosion control measures would be implemented to control runoff and minimize erosion in sloped areas of construction. Erosion control measures could include silt fencing, water breakers, fiber rolls, erosion control fabric, or seed-free certified straw bales. The contractor supervisor would be in charge of overseeing the installation and removal of erosion control measures, unless the device is designed to remain in place post-construction (e.g., erosion control fabric).

Any post-construction vegetation with native species would occur in coordination with and approval of the Base Natural Resources Specialist. Top soil would be retained and re-used in revegetation of temporary disturbance areas.

To minimize erosion potential during project construction, parking and driving would be restricted to designated areas, and no off-road vehicular traffic, including parking or driving in undisturbed areas, would be allowed.

2.3.6.6 Solid Waste and Hazardous Waste

Solid Waste Management Plan

The construction contractor would develop a Solid Waste Management Plan to ensure that the Navy's recycling and solid waste diversion goals are included during construction of the project. The construction contractor would be required to recycle construction materials to the maximum extent possible. Non-hazardous waste and debris would be disposed of at the local Class III landfill. Hazardous wastes would be recycled or managed and disposed of in accordance with a Hazardous Waste Management Plan.

Hazardous Waste Management Plan

The construction contractor would submit a Hazardous Waste Management Plan for approval prior to commencement of construction activities. This plan may be included as part of the overall Environmental Protection Plan. Management and disposal of hazardous waste would comply with applicable federal, state, and local regulations.

Prior to shipment of any material offsite, the construction contractor, in consultation with the Contracting Officer and the Base Environmental Hazardous Waste Program Manager, would evaluate whether the material is regulated as a hazardous waste. This evaluation would be conducted for the purpose of determining proper shipping descriptions, labeling requirements, and other relevant information for the contractor.

Hazardous wastes would be recycled or managed and properly disposed of in a licensed Class I or II waste disposal facility authorized to accept the waste. Some hazardous wastes could be recycled, including used oils from equipment maintenance and oil-contaminated materials (e.g., spent oil filters, rags, or other cleanup materials). Used oil would be recycled, and oil- or heavy metal-contaminated materials (e.g., filters) requiring disposal would be disposed of in a Class I waste disposal facility.

The construction contractor would minimize the generation of hazardous waste to the maximum extent practicable. The construction contractor would take all necessary precautions to avoid mixing clean and contaminated wastes. The construction contractor would identify and evaluate recycling and reclamation options as alternatives to land disposal.

The construction contractor would be required to coordinate shipments with the NAF El Centro Environmental Department and would properly manage and dispose of hazardous waste per applicable federal, state, and local environmental regulations. Storage of waste at any 90-day hazardous waste accumulation sites would occur in accordance with NAF El Centro hazardous waste management program guidelines.

2.3.6.7 Visual Resources

Conservation and construction measures would be implemented to avoid and/or minimize potential glare and color contrast, and to minimize and avoid potential glare that could result from implementation of the project. To minimize potential glare, surface finishes of the metal support poles, metal panel housing, and support structures would be treated to have a dull finish consisting of medium to dark earth-tone colors with very low light reflectivity. Selected colors would blend the metal elements with their surroundings by matching or complementing the predominant colors of nearby vegetation, material surfaces, or structures. Additionally, the surfaces of the color-treated solar collectors and support structures would be maintained, as necessary, by the developer.

2.3.6.8 Public Health and Safety

Prior to beginning ground disturbing activities, the developer would conduct analytical sampling for legacy pesticide contamination on the proposed sites, and ensure that work practices and personal protective equipment requirements are tailored to any legacy contamination. Because

none of the proposed sites is located within the runway clear zone, a safety waiver would not need to be obtained prior to construction.

Health and Safety Plan

The construction contractor would submit a Health and Safety Plan for approval prior to commencement of construction activities. The Health and Safety Plan for the project would address site-specific health and safety issues, including specific emergency response services, procedures, and evacuation measures. All project construction activities would be conducted in accordance with the approved Health and Safety Plan.

2.4 NO ACTION ALTERNATIVE

Under the No Action Alternative, a PV system would not be constructed, operated, or maintained at NAF El Centro, and NAF El Centro would not contribute toward the SECNAV goal of developing 1 GW of renewable energy generation capacity by the end of 2015. Land use for Parcels 1 through 3 would continue in the same manner and under the same conditions as at present. The No Action Alternative provides a measure of the baseline/existing conditions against which the impacts of the Proposed Action can be compared. In this EA, the No Action Alternative is described in Chapter 3.0 as the Affected Environment. The No Action Alternative is analyzed by resource area in Chapter 3.0 on the assumption that operations would be maintained at the status quo (i.e., no change in land use on the three parcels).

2.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

NAF El Centro reviewed available base locations to identify sites potentially available for construction of a PV system. Requirements considered in site selection included locations where acreage available was sufficient to allow for a PV system that would produce utility-scale renewable energy sufficient to offset the cost of system installation and loss of acreage that could potentially be available to support mission requirements.

The fenced operational area of NAF El Centro is small and not configured to offer large segments of vacant land suitable for construction and operation of a PV system other than those identified in the Proposed Action. Use of smaller vacant areas (less than 10 acres) would likely result in excessively high installation costs on a per-MW basis due to the limited amount of power that could be generated on each site, as well as the additional number of and length of transmission lines required. Therefore, the use of additional small PV system areas did not meet the purpose and need for the project and satisfy the reasonable alternative screening factors (Section 2.2, Reasonable Alternative Screening Factors). Three parcels considered within NAF El Centro included a flat, 12-acre (4.9-hectare) site located north of Parcel 3 adjacent to the flight line, taxiway, and a hangar; a flat, 28-acre (11.3-hectare) vacant lot located partially within the runway clear zone on the southeastern portion of NAF El Centro; and a flat 55-acre (22.3 hectare) agricultural site located east of the flight line that was dismissed due to conflicts with the Navy Flight Demonstration Squadron's aerobatic maneuver area. It was determined that locating solar PV systems on these sites would be incompatible with flight operations and restrictions in the runway clear zone.

Larger parcels of land on the El Centro Range Complex (to the north of the installation) were initially considered, but were eliminated from further consideration in this EA due to safety and operational concerns. These parcels either fall within active explosive safety exclusion areas, areas with unexploded ordnance safety hazards from historic operations, or active parachute drop zones. Construction and maintenance of PV power systems on these parcels would also be incompatible with NAF El Centro's Rangewide Management Plan.

The Navy also initially considered other renewable energy development technologies, but these were not found to be reasonable alternatives. Use of wind towers or concentrated solar power technologies could pose safety hazards to aviators, and are incompatible with active airfield operation. There has also been no evidence showing that geothermal resources are readily available near NAF El Centro, or that geothermal power would be cost-effective in comparison to PV-generated power.

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3.0 Affected Environment and Environmental Consequences

This chapter presents the affected environment in the area of potential effect and environmental consequences of implementing the Proposed Action, Construction and Operation of a Solar PV System at Naval Air Facility El Centro. Resources considered for this analysis include:

- Air Quality and Climate Change
- Biological Resources
- Land Use and Airspace
- Socioeconomics and Environmental Justice
- Utilities
- Visual Quality
- Water Resources
- Human Health and Safety

Table 3.0-1 summarizes the impacts identified for the resources listed above. Detailed subsections discuss individual resources following the table.

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Air Quality and Climate Change	No Significant Impacts	No Significant Impacts
	<p><u>Construction Emissions</u> Construction activities would generate minor, short-term emissions, such as fugitive dust from grading activities and exhaust from construction equipment and vehicles used during installation of the solar PV panel arrays and electrical lines. Conservation and construction measures would be followed to further minimize construction emissions.</p> <p><u>Operation Emissions</u> Minor amounts of fugitive dust and exhaust emissions would be generated by the operation of ground vehicles during periodic maintenance of the solar PV systems. Emission reductions realized by reduced consumption of grid-supplied electricity would more than offset the short-term construction emissions within the first year of operation. Long-term operation of the solar PV systems would also avoid potential emissions produced from conventional non-renewable energy generating sources in the project areas.</p> <p>Total construction and operation emissions would be below the <i>de minimis</i> thresholds and overall, would result in beneficial effects to air quality. Therefore, no significant impacts to air quality would result from construction or operation emissions associated with implementation of the Proposed Action.</p>	<p>With the No Action Alternative, the consumption of grid-supplied electricity would remain unchanged. Without construction or operation of the systems, there would be no emissions associated with those activities; however, emissions reductions due to reduced consumption of grid-supplied electricity would not be realized.</p> <p>Therefore, no significant impacts to air quality would result from the No Action Alternative.</p>
Biological Resources	No Significant Impacts	No Significant Impacts
	<p><u>Vegetation Communities</u> Long-term impacts from removal of vegetation for project construction would be minor and would occur in previously disturbed areas. Areas where temporary minor impacts from trenching for electrical conduits and transmission line installation would occur would be restored to their original condition following installation.</p>	<p>The No Action Alternative would result in no changes to existing conditions or impacts to vegetation, threatened and endangered species, wildlife, or wetlands and waters of the United States.</p> <p>Therefore, no significant impacts to biological resources would result from the No Action Alternative.</p>

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Biological Resources (Continued)</p>	<p><u>Federally Listed Species</u> The proposed action would have no effect on federally listed species because there is no suitable habitat within the project sites for these species.</p> <p><u>State Listed Species</u> The Proposed Action would have no effect on state listed species because there is no suitable habitat within the project sites for these species.</p> <p><u>Wildlife</u> The Proposed Action would result in the long-term loss of upland habitat, and less-mobile amphibian, reptile, and small mammal species as well as subterranean species could be impacted by site grubbing, grading, and compaction during project construction. Impacts would be minor due to the relatively small size of the project sites, the amount of previous disturbance on the sites, and the amount of habitat available in surrounding areas.</p> <p>Avian species could be impacted or displaced through loss of nesting and foraging habitat. Site preparation would be conducted during the non-breeding season, where practicable or nest surveys would be conducted and buffers created to protect nesting birds during the breeding season. Long-term removal of upland habitat would have minor impact to birds from habitat loss and displacement.</p> <p>Burrowing owls have been documented on each of the project sites. Measures to protect burrowing owls and their burrows during project construction will be implemented to minimize impacts to burrowing owls.</p> <p><u>Wetlands and Waters of the United States</u> The Proposed Action would have no impacts to wetlands or waters of the United States because these features do not occur within the project sites.</p>	

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
Land Use and Air Space	<p>No Significant Impacts</p> <p>A land use change (lasting up to 37 years) from historic agricultural use to renewable energy development would be compatible with the adjacent uses on NAF El Centro and the planned land use for the sites as designated by the NAF El Centro Master Plan. Implementation of the Proposed Action would not change any land use patterns or land ownership in the project areas, and the sites would remain under Navy use. Implementation of the Proposed Action would not result in any changes to use or control of airspace near NAF El Centro. Therefore, no significant impacts to land use and airspace would result from implementation of the Proposed Action.</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, no land use changes or incompatible development at NAF El Centro would occur and no significant impacts to land use and airspace would occur.</p>
Socioeconomics and Environmental Justice	<p>No Significant Impacts</p> <p><u>Population</u> There would be no increase in military or civilian area populations in the NAF El Centro vicinity. Local contractors would travel to and from the project site for project construction, and local contractors would be used for project maintenance during project operation.</p> <p><u>Employment and Income</u> Approximately 56 acres (22.6 hectares) of agricultural outlease would be discontinued as part of the Proposed Action. Local agricultural workers do not solely depend on the project sites for employment and no job losses would occur. Approximately 60 full time equivalent local workers would be employed for the approximately 9 to 10 month construction period.</p> <p><u>Housing</u> Because there would be no increase in area military or civilian populations in the NAF El Centro vicinity, there would be no increased housing demands as part of the Proposed Action.</p> <p><u>Environmental Justice</u> The Proposed Action would be built within the boundary of</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, there would be no changes to population, employment, housing, or environmental justice and no significant impacts to socioeconomics would occur.</p>

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Socioeconomics and Environmental Justice (Continued)</p>	<p>NAF El Centro and would not be in proximity to minority or low-income housing areas. The Proposed Action would not result in significant adverse impacts to human health or the environment. The Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children</p> <p>Therefore, no significant impacts to socioeconomics or environmental justice would occur with project implementation.</p>	
<p>Utilities</p>	<p>No Significant Impacts</p> <p><u>Natural Gas</u> Natural gas services would not be required for project construction or operation.</p> <p><u>Water</u> The temporary use of water for dust suppression during construction and for panel washing during operation would be supplied by the construction contractor via water trucks.</p> <p><u>Wastewater</u></p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, no additional natural gas, water, wastewater, or solid waste services would be required and the Navy would continue to purchase its power from local utility providers. No significant impacts to utilities would occur and the Navy would not realize any energy cost savings or progress closer toward the Navy’s renewable energy goals.</p>

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
	<p>Wastewater temporarily generated by the use of onsite portable toilets during construction would be removed from the site and disposed of at local treatment facilities with the capacity to receive the waste.</p> <p><u>Solid Waste</u> The small volumes of solid waste temporarily generated during construction and periodically generated during maintenance would be transported offsite to solid waste facilities with adequate capacity to accept the waste.</p> <p><u>Electricity Delivery</u> Under Models 2, 3, or a combination of 2 and 3, the electricity generated by the Proposed Action would help the Navy reach its renewable energy goals, and would result in long-term decreases in greenhouse gas emissions. Under Model 3, or a combination of 2 and 3, the Proposed Action would also lower NAF El Centro’s demand on local utilities, reducing the amount of money NAF El Centro pays for electricity.</p>	
Visual Quality	<p>No Significant Impacts</p> <p><u>Visual Impacts during Construction</u> Project construction at NAF El Centro would take place on vacant lots or vacant agricultural outlease areas. While on-installation military personnel could have views of project construction, the project would not be easily visible to off-installation sensitive viewers (residents, motorists, and pedestrians). On-installation personnel would experience views consistent with the industrial nature of the area and/or would experience only partial views of the PV systems from behind a retaining wall separating on-installation housing from the proposed project site.</p> <p><u>Visual Impacts during Operation</u> Permanent project features (ground-mounted PV panels) would not be visible to off-installation sensitive viewers. On-installation viewers would experience views during operations that would be essentially the same as views experienced during the temporary construction period.</p>	<p>No Significant Impacts</p> <p>Under the No Action Alternative, the existing visual resources would not change and no significant impacts to visual resources would result.</p>

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
<p>Human Health and Safety (Continued)</p>	<p>No Installation Restoration Program sites would be disturbed by the Proposed Action.</p> <p><u>Hazardous and Toxic Materials and Waste</u> All project-related work would comply with applicable requirements for working with hazardous materials and waste. Any accidental spills and leaks would be addressed under an Environmental Protection Plan prepared prior to any site work.</p> <p><u>Electromagnetic and Radio Frequency Interference and Hazards</u> Electric field and magnetic flux levels near solar PV systems would be well below recommended levels for human health. The Proposed Action would not interfere with communications systems through electrical interference or physical blocking.</p> <p><u>Solar Glare Hazards</u> Based on SGHAT modeling, no glare effects were found for the Air Traffic Control Tower or any of the standard fixed-wing approach routes on the 08/26 and 12/30 runways. The only glare effects found were for a helicopter approach route passing between the solar PV arrays at Parcels 2 and 3, heading north from the main gate area. The analysis showed potential for minor glare, with a low potential for ocular after-image. This glare is not expected to result in hazards to pilots or interference with airfield operations. Additionally, final design of the solar PV panels could include adjustments to completely eliminate glare on this approach route.</p> <p><u>Bird-Aircraft Collision Hazards</u> While it possible that solar PV panels could attract birds, the panels would not be directly adjacent to runways. If an increase in BASH potential were to occur, it would be mitigated by continued adherence to procedures used at</p>	<p>hazards introduced, and no significant impacts to public health or safety would occur.</p>

Table 3.0-1. Summary of Each Resource and Impacts Identified During the Analyses

Resource Area	Proposed Action	No Action Alternative
	<p>NAF El Centro to minimize incidences of bird/animal-aircraft strikes.</p> <p>There would be no significant adverse impacts to public health or safety under the Proposed Action.</p>	

3.1 AIR QUALITY

Definition of Resource

Air quality is defined by ambient air concentrations of specific pollutants determined by the EPA to be of concern related to the health and welfare of the general public and the environment and are widespread across the United States. A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The primary pollutants of concern, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter (PM) less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead. Under the Clean Air Act (CAA), the EPA has established National Ambient Air Quality Standards (NAAQS) (40 CFR 50) for these pollutants.

Areas that are and have historically been in compliance with the NAAQS are designated as "attainment" areas. Areas that violate a federal air quality standard are designated as "nonattainment" areas. Areas that have transitioned from nonattainment to attainment are designated as "maintenance" areas and are required to adhere to maintenance plans to ensure continued attainment. The NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. Short-term standards (i.e., 1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to chronic health effects.

The CAA requires states to develop a general plan to attain and maintain NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans, are developed by state and local air quality management agencies and submitted to U.S. EPA for approval.

Ambient Air Quality

Ambient air quality is determined by the atmospheric concentrations of regulated air pollutants at specific locations deemed by air quality management agencies to be generally representative of local or regional conditions. The air pollutant concentrations measured at a specific location are determined by local and regional air pollutant emissions rates, local meteorology, and atmospheric chemistry. Emissions source considerations include the types, rates, and locations of air pollutant emissions into the atmosphere. Wind speed and direction, vertical temperature and pressure gradients, and precipitation patterns affect the dispersal, dilution, and removal from the atmosphere of air pollutants. Lower ambient concentrations of these air pollutants generally indicate higher air quality. Regulatory agencies monitor ambient air quality to document compliance with state and federal air quality standards, and these monitoring data are reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume).

The State of California has identified four additional pollutants for ambient air quality standards: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The California Air Resources Board has also established the more stringent California Ambient Air Quality Standards (CAAQS). Areas within California in which ambient air concentrations of a pollutant are higher than the state and/or federal standard are considered to be nonattainment for that pollutant. Table 3.1-1 provides a list of NAAQS and CAAQS.

Table 3.1-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS ¹		CAAQS ²
		Primary ³	Secondary ⁴	Concentration ⁵
Ozone (O ₃) ⁶	1-Hour	---	---	0.09 ppm (180 µg/m ³)
	8-Hour	0.075 ppm (147 µg/m ³)	Same as Primary	0.070 ppm (137 µg/m ³) ⁹
Carbon Monoxide (CO)	1-Hour	35 ppm (40 mg/m ³)	---	20 ppm (23 mg/m ³)
	8-Hour	9.0 ppm (10 mg/m ³)	---	9.0 ppm (10 mg/m ³)
Nitrogen Dioxide (NO ₂)	1-Hour	0.1 ppm (188 µg/m ³)	---	0.18 ppm (338 µg/m ³)
	Annual Average	0.053 ppm (100 µg/m ³)	Same as Primary	0.03 ppm (56 µg/m ³)
Sulfur Dioxide (SO ₂) ⁷	1-Hour	0.075 ppm (196 µg/m ³)	---	0.25 ppm (715 µg/m ³)
	3-Hour	---	0.5 ppm (1,300 µg/m ³)	---
	24-Hour	---	---	0.04 ppm (114 µg/m ³)
Suspended Particulate Matter (PM ₁₀)	24-Hour	150 µg/m ³	Same as Primary	50 µg/m ³
	Annual Arithmetic Mean	---	---	20 µg/m ³ (8)
Fine Particulate Matter (PM _{2.5})	24-Hour	35 µg/m ³	Same as Primary	---
	Annual Arithmetic Mean	15 µg/m ³	Same as Primary	12 µg/m ³ (8)
Lead ⁹	Rolling 3-Month Average	0.15 µg/m ³	Same as Primary	1.5 µg/m ³
Hydrogen Sulfide (H ₂ S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m ³)
Sulfates (SO ₄)	24-Hour			25 µg/m ³
Visibility Reducing Particles	8-Hour (10am-6pm, PST)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer (km) due to particles when the relative humidity is less than 70 percent.
Vinyl chloride ⁹	24-Hour			0.01 ppm (26 µg/m ³)

Sources: EPA 2012a; Cal/EPA Air Resources Board (ARB) 2013a

Notes:

1. NAAQS (other than O₃, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is not to be exceeded more than once per year on average over 3 years. The 24-hour standard is attained when the 3-year average of the weighted annual mean at each monitor within an area does not exceed 150 µg/m³. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged

- over 3 years, do not exceed $35 \mu\text{g}/\text{m}^3$. The annual standard is attained when the 3-year average of the weighted annual mean at single or multiple community-oriented monitors does not exceed $15 \mu\text{g}/\text{m}^3$.
2. CAAQS for O_3 , CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2 , PM_{10} and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
 3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
 4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse impacts of a pollutant.
 5. Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.
 6. The federal 1-hour O_3 standard was revoked for most areas of the U.S., including California on June 15, 2005.
 7. Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking.
 8. On June 5, 2003, the Office of Administrative Law approved the amendments to the regulations for the state ambient air quality standards for particulate matter and sulfates. Those amendments established a new annual average standard for $\text{PM}_{2.5}$ of $12 \mu\text{g}/\text{m}^3$ and reduced the level of the annual average standard for PM_{10} to $20 \mu\text{g}/\text{m}^3$. The approved amendments were filed with the Secretary of State on June 5, 2003. The regulations became effective on July 5, 2003.
 9. The Cal/EPA ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health impacts determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants in sufficient amount to produce an extinction coefficient of 0.23 per km due to particles when the relative humidity is less than 70%.

Key:

CAAQS	= California Ambient Air Quality Standards
$\mu\text{g}/\text{m}^3$	= micrograms per cubic meter
mg/m^3	= milligrams per cubic meter
NAAQS	= National Ambient Air Quality Standards
Ppm	= parts per million
PST	= Pacific Standard Time

In addition to the NAAQS for criteria pollutants, national standards exist for hazardous air pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards for Hazardous Air Pollutants regulate HAP emissions from stationary sources (40 CFR Part 61). HAPs emitted from mobile sources are called Mobile Source Air Toxics. Mobile Source Air Toxics are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. Unlike the criteria pollutants, there are no NAAQS for benzene and other HAPs. The primary control methodologies for these pollutants for mobile sources involves reducing their content in fuel and altering engine operating characteristics to reduce the volume of pollutants generated during combustion.

Permitting

New Source Review (Preconstruction Permit)

New major stationary sources and major modifications at existing major stationary sources are required by the CAA to obtain an air pollution permit before commencing construction. This permitting process for major stationary sources is called New Source Review and is required whether the major source or major modification is planned for nonattainment areas or attainment and unclassifiable areas. In general, permits for sources in attainment areas and for other pollutants regulated under the major source program are referred to as Prevention of Significant Deterioration permits, while permits for major sources emitting nonattainment pollutants and located in nonattainment areas are referred to as nonattainment New Source Review permits. Additional Prevention of Significant Deterioration permitting thresholds apply to increases in stationary source greenhouse gas (GHG) emissions.

Title V (Operating Permit)

The Title V Operating Permit Program consolidates all CAA requirements applicable to the operation of a source, including requirements from the State Implementation Plan, preconstruction permits, and the air toxics program. It applies to stationary sources of air pollution that exceed the major stationary source emission thresholds, as well as other non-major sources specified in a particular regulation.

Climate Change and Greenhouse Gases

The EPA defines climate change as any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period of time (EPA 2012b). Climate change may result from natural factors (e.g., changes in the sun's intensity or slow changes in the Earth's orbit around the sun), natural processes within the climate system (e.g., changes in ocean circulation), and human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification, etc.).

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere, causing a greenhouse effect. According to the Intergovernmental Panel on Climate Change, increased atmospheric levels of CO₂ are correlated with rising temperatures, and concentrations of CO₂ have increased by 31 percent above pre-industrial levels since 1750. Climate models show that temperatures will probably increase by 1.4 to 5.8 degrees Celsius (°C) by the year 2100 (Intergovernmental Panel on Climate Change 2007).

The global warming potential of a GHG indicates the global warming potency of a greenhouse gas relative to CO₂. The global warming potential enables comparison of the warming effects of different GHGs. Global warming potential uses a relative scale that compares the warming effect of the gas in question with that of the same mass of CO₂. The CO₂ equivalent (CO₂e) is a measure used to sum the effect of emissions of various GHGs based on their global warming potential when projected over a specified time period (generally 100 years). The CO₂e for a gas is obtained by multiplying the mass of the gas (in tons) by its global warming potential.

The EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule on September 22, 2009. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions as CO₂e are required to submit annual reports to the U.S. EPA. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and EOs. Most recently, EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management, and EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, were enacted to address GHGs, including GHG emissions inventory, reduction, and reporting.

Climate change, by its nature, is a cumulative impact resulting from multiple greenhouse gas sources. Therefore, the cumulative impacts of climate change are discussed in Section 4.3.1. The direct emissions of carbon dioxide from the Proposed Action are presented in Section 3.1.2.

Local Air Quality Designations

California is divided into 15 air basins defined by generally similar meteorological and geographic conditions. Air basins in which ambient concentrations of a criteria air pollutant exceed the NAAQS are considered to be nonattainment areas for that air pollutant under the federal Clean Air Act. Nonattainment areas for some criteria air pollutants are further classified, depending upon the severity of their air quality problem, to facilitate their management:

- Ozone: marginal, moderate, serious, severe, and extreme
- CO: moderate and serious and,
- PM: moderate and serious

Areas that have attained the NAAQS may be designated as attainment areas or as maintenance areas, subject to maintenance plans showing how the area will continue to meet the NAAQS.

Primary and Secondary Air Pollutants

Air pollutants are classified as either primary or secondary pollutants. Primary air pollutants, such as CO, SO₂, lead, particulates, and hydrogen sulfide, are emitted directly into the atmosphere. Secondary air pollutants, such as ozone, are formed through atmospheric chemical reactions. Such reactions usually involve primary air pollutants and normal constituents of the atmosphere. Sunlight and meteorological conditions, such as temperature and humidity, also can affect atmospheric chemistry. Air pollutants, such as organic gases and particulates, are a combination of primary and secondary pollutants. PM₁₀ and PM_{2.5} are generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. PM₁₀ also may result from agricultural operations, travel on unpaved roads, and wind erosion of bare soils.

Compounds that react to form secondary air pollutants are referred to as precursors. Ozone precursors fall into two broad groups of chemicals: nitrogen oxides (NO_x) and organic compounds. NO_x includes both nitric oxide (NO) and NO₂. Organic compound precursors of ozone are routinely described by a number of different terms, including volatile organic compounds (VOCs), reactive organic compounds, and reactive organic gases. PM_{2.5} also can be formed through chemical reactions or by the condensation of gaseous pollutants into fine aerosols. NO_x and SO₂ are precursors of PM_{2.5}. Precursors generally are monitored and regulated to control atmospheric concentrations of the associated criteria pollutants.

General Conformity

The EPA General Conformity Rule applies to federal actions occurring in federal nonattainment or maintenance areas when the total emissions of non-attainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year) vary from pollutant to pollutant and depend on the severity of the nonattainment status.

A conformity applicability analysis is the first step of a conformity evaluation and assesses if a federal action must be supported by a conformity determination. This is typically accomplished by quantifying applicable emissions that are projected to result due to implementation of the federal action. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed.

3.1.1 AFFECTED ENVIRONMENT

NAF El Centro is located in Imperial County, which is within the Salton Sea Air Basin. The Salton Sea Air Basin is comprised of two air districts: the Imperial County Air Pollution Control District and the South Coast Air Quality Management District. Imperial County has been characterized by the EPA as marginal nonattainment for ozone, serious nonattainment for PM₁₀, and moderate nonattainment for PM_{2.5} (EPA 2013a). The Cal/EPA ARB has designated Imperial County as nonattainment for ozone and PM₁₀, and unclassified/attainment for all other criteria pollutants (Cal/EPA ARB 2013b). The most recent emissions inventory for the Salton Sea Air Basin is shown in Table 3.1-2, while the applicable General Conformity *de minimis* thresholds for the Salton Sea Air Basin are shown in Table 3.1-3.

Table 3.1-2. Salton Sea Air Basin 2012 Estimated Average Emissions (tons per day)

TOG	ROG	CO	NO _x	SO _x	PM	PM ₁₀	PM _{2.5}
104.3	33.6	134.6	49.3	0.4	517.0	301.3	43.4

Source: Cal/EPA ARB 2013b

Key:

CO = carbon monoxide

NO_x = oxides of nitrogen

PM = total particulate matter

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

ROG = reactive organic gases

SO_x = oxides of sulfur

TOG = total organic gases

Table 3.1-3. General Conformity *de minimis* Thresholds for the Salton Sea Air Basin

	Emissions (tons per year)						
	NO _x	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
General Conformity <i>de minimis</i> Threshold	100	N/A	50	100 ¹	70	100	N/A

Notes:

1: Threshold is 100 tons per year when SO₂ is considered as a precursor to the atmospheric formation of PM_{2.5}

Key:

CO = carbon monoxide

CO₂ = carbon dioxide

N/A = not applicable, *de minimis* thresholds need not be considered when the project area is in attainment for the criteria pollutant(s) in question

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

SO₂ = sulfur dioxide

VOCs = volatile organic compounds

Sensitive Air Quality Receptors Near NAF El Centro

Sensitive receptors are those populations that are more susceptible to the effects of air pollution than the population at large. Sensitive receptors are defined as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. For this air quality analysis, sensitive receptors within 0.25 mile (0.4 kilometer) of the project sites have been identified.

Sensitive receptors within 0.25 mile (0.4 kilometer) of the project sites at NAF El Centro would include Navy family housing and a park located south of 1st Street (see Figure 2-1).

3.1.2 ENVIRONMENTAL CONSEQUENCES

This section discusses the effects on existing ambient air quality that may occur from the implementation of the alternatives using the criteria specified under NEPA Section 1502.16. To compare effects, this analysis defines the temporal scale (time), extent (area), and intensity of effects for each alternative.

Methodology

Potential impacts to air quality were assessed by developing emission estimates associated with proposed construction and operation of solar PV sites at NAF El Centro under each alternative. Temporary air emissions from construction were calculated based on estimates in terms of:

- Number and types of equipment that would be used during construction of the solar PV systems
- Acreage of the disturbed sites during construction
- Duration of the construction work
- Total electrical output in megawatt-hours per year

These data were used as input for air emissions calculations from construction. For construction equipment vehicle exhaust, two sets of emission factors were used to determine construction emissions: (1) non-road equipment emission factors for equipment that is not licensed for on-road travel; and (2) on-road emission factors for vehicles used during the construction phase of the project. For the non-road emission factors, the EPA NONROAD Model was used (EPA 2005); for on-road emission factors, the California Emissions Factor Model v2011 emission factor database was used (Cal/EPA ARB 2011).

Fugitive dust emissions from site preparation work, which may include scraping, grading, loading, digging, compacting, light duty vehicle travel, and other operations, were estimated using emission factors from Cal/EPA ARB Section 7.7, Building Construction Dust (Cal/EPA ARB 2002). Per the emissions estimation methodology of Section 7.7, the construction emission factors used are assumed to include the effects of typical control measures, such as routine watering for dust suppression.

Construction emissions would be assumed to occur between 2015 and 2017. The duration of project-related construction activities would be 10 months or less; therefore, all construction emissions were considered to occur in one year for the General Conformity analysis.

Under the Proposed Action, electrical energy production from the solar PV facilities would reduce emissions associated with existing non-renewable sources. This reduction would occur whether the electrical energy production from the solar PV facilities is consumed off base (Model 2), on base (Model 3), or a combination of the two scenarios. Annual emissions reductions are assumed to begin between 2016 and 2018, and would be realized for each year the solar PV systems would be in operation. Year 2010 eGRID non-baseload output emission rates for the Western Electricity Coordinating Council California subregion (EPA 2014) were used to estimate emission reductions.

3.1.2.1 Proposed Action

Emissions would occur during construction as the result of combustion of fuel in off-road construction equipment and on-road vehicles. Construction-related traffic generation would include equipment delivery, onsite and offsite vehicle and construction equipment, and automobile trips for construction workers in personal vehicles. Conservation and construction measures for dust abatement, as presented in Section 2.3.6, would be followed to minimize emissions, to the extent practicable.

Table 3.1-4 shows the estimated construction emissions generated under the Proposed Action and the applicable General Conformity *de minimis* thresholds. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values. Detailed construction equipment assumptions and emissions calculations are provided in Appendix B.

Table 3.1-4. Estimated Construction Emissions under the Proposed Action

	Emissions (tons per year)							
	NOx	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CO ₂ e
Proposed Action Construction Emissions	1.44	0.63	0.11	0.06	19.65	2.07	359.83	363.40
General Conformity <i>de minimis</i> Threshold	100	N/A	50	100 ¹	70	100	N/A	N/A

Notes:

1: Threshold is 100 tons per year when SO₂ is considered as a precursor to the atmospheric formation of PM_{2.5}

Key:

CO = carbon monoxide

CO₂ = carbon dioxide

CO₂e = carbon dioxide equivalents; considers CO₂ plus CH₄ and N₂O adjusted for their global warming potentials

N/A = not applicable, *de minimis* thresholds need not be considered when the project area is in attainment for the criteria pollutant(s) in question

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

SO₂ = sulfur dioxide

VOCs = volatile organic compounds

Table 3.1-5 shows the estimated emissions of greenhouse gases (expressed as carbon dioxide equivalents or CO₂e; a way of expressing the global warming potential of different gases), oxides of nitrogen and sulfur dioxide avoided through use of solar PV systems and

reduced consumption of existing non-renewable supplied electricity. Implementation of the Proposed Action would also avoid emissions of other pollutants including carbon monoxide, volatile organic compounds and particulate matter. Detailed construction equipment assumptions and emissions calculations are provided in Appendix B.

Table 3.1-5. Estimated Annual Emissions Avoided under the Proposed Action

Pollutant	Emissions (tons per year)
CO ₂ e	18,700
NO _x	8.09
SO ₂	3.42

Key:

CO₂e = carbon dioxide equivalents; considers CO₂ plus CH₄ and N₂O adjusted for their global warming potentials

NO_x = oxides of nitrogen

SO₂ = sulfur dioxide

Construction of the Proposed Action would result in localized, short-term effects on air quality at NAF El Centro. During operation, emissions of NO_x, SO₂, and CO₂e would be avoided by reduced consumption of grid-supplied electricity, and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also avoid emissions produced from conventional non-renewable generating sources. The decommissioning of the solar PV system would require the use of fuel-burning equipment and vehicles similar to those used during the construction phase, although in smaller numbers and for shorter time periods, resulting in lower levels of emissions than those resulting from construction. Emissions from decommissioning would not be additive with those from construction, as they would occur in different years. In the event of changed conditions in any project area at the time of decommissioning, the potential for additional impacts analysis would be considered. As total construction emissions would be below the *de minimis* thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur under the Proposed Action. A Record of Non-Applicability (RONA) has been completed for project development at NAF El Centro in accordance with the Clean Air Act (refer to Appendix C).

3.1.2.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. No solar PV sites would be constructed, and consumption of grid-supplied electricity would remain unchanged. Because the project would not be constructed, there would be no short-term air emissions associated with this alternative. Emissions reductions, due to reduced consumption of grid-supplied electricity, would not be realized. Under the No Action Alternative, air emissions would not change from current conditions; therefore, the No Action Alternative would not have significant impacts to air quality.

3.2 BIOLOGICAL RESOURCES

Information about biological resources is based on a review of available literature, existing natural resources background data, and the results of recent biological surveys. Biological resources include living, native, or naturalized plant and animal species and the habitats

within which they occur. Plant associations are referred to generally as vegetation, and animal species are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into four major categories: (1) vegetation, (2) threatened and endangered species, (3) wildlife, and (4) wetlands and waters of the United States. The following discussion was based on information from these documents, among others:

- Integrated Natural Resources Management Plan, Naval Air Facility El Centro (Navy 2014a)

3.2.1 AFFECTED ENVIRONMENT

This section describes the existing biological resources that occur within and adjacent to the proposed project site on NAF El Centro. For the purposes of this EA, the project site is defined as the parcels selected for the project where permanent and temporary impacts could occur from implementation of the Proposed Action.

3.2.1.1 Vegetation

NAF El Centro is located in the Imperial Valley Basin within the Colorado Desert in southeastern California. Most areas within the NAF El Centro boundary have been actively altered through development and contain little native vegetation. The primary vegetation types on NAF El Centro include landscaped areas, agricultural areas, and dispersed shrubs. The majority of undeveloped lands within NAF El Centro are managed for agricultural purposes to help control soil erosion and aid in dust abatement. Agricultural crops cultivated on NAF El Centro include alfalfa (*Medicago ruthenica*), Bermuda grass (*Cynodon dactylon*), and Sudan grass (*Sorghum bicolor*) (California Department of Fish and Wildlife (CDFW) 2014c).

Vegetation types currently on each of the project sites include:

- **Parcel 1** - 15-acre (6.1-hectare) site located on vacant land in the west-central portion of NAF El Centro. This site is occasionally used as an overflow parking lot. The parcel is bordered by D Street to the west and C Street to the east, and 4th street to the north and 3rd Street to the south. West Place and West Street intersect the parcel. The site is disturbed and lacks vegetation.
- **Parcel 2** - 30-acre (12.1-hectare) site located on vacant land north of Havens Road and east of A Street in the southwest portion of NAF El Centro near the base entrance. Base housing is located directly north of the site, but separated by a masonry wall. The site is disturbed and has minimal vegetation cover. It was previously leased as an agricultural plot but is currently in a maintenance status.
- **Parcel 3** - 26-acre (10.5-hectare) site located south of 8th Street and west of A Street in the southern portion of NAF El Centro near the base entrance. The site is currently utilized for agricultural purposes.

3.2.1.2 Threatened and Endangered Species

The Endangered Species Act of 1973 and its amendments provide for the conservation of threatened and endangered species and the habitats in which they are found. As required under Section 7 of the Endangered Species Act, the Navy conducts consultations for any action that may affect a federally listed threatened or endangered species. Although protection of state-listed species is not legally mandated for federal agencies, the Navy encourages cooperation with states to protect such species, to the extent consistent with an installation's mission.

The following sections describe federally and state-listed threatened and endangered species that have potential to occur within the proposed project sites on NAF El Centro (CDFW 2014b).

Federally Listed Species

Potential occurrences of federally listed species at NAF El Centro were determined through a quadrangle search of the California Natural Diversity Database and a review of references cited in this section. One federally listed endangered species, the Yuma clapper rail (*Rallus longirostris yumanensis*), has been documented within the Seeley U.S. Geological Survey quadrangle that encompasses NAF El Centro. No U.S. Fish and Wildlife Service (USFWS)-designated critical habitat has been designated on NAF El Centro.

The Yuma clapper rail is also listed by the State of California as threatened. Habitat for this species includes freshwater marsh dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* sp.) with a mix of riparian and shrub species along the edges (USFWS 2009). Potential habitat for the Yuma clapper rail exists within a wetland in the northwestern portion of NAF El Centro, but this species has not been documented on NAF El Centro and the nearest documented location for this species is approximately 1 mile west of NAF El Centro along the New River (CDFW 2014a). There is no suitable habitat for the Yuma clapper rail within the proposed project sites.

State Listed Species

No California listed threatened or endangered species have been documented on NAF El Centro. In addition to the Yuma clapper rail, one state-listed threatened species, the California black rail (*Laterallus jamaicensis coturniculus*), has been documented within the Seeley U.S. Geological Survey quadrangle, which encompasses NAF El Centro. The California black rail inhabits saltwater, brackish, and freshwater marshes. Wetland habitats in the northwestern portion of NAF El Centro have the potential to provide habitat for the California black rail, which has been known to breed within the Imperial Valley (CDFW 2014b). There is no suitable habitat for the California black rail within the proposed project sites.

3.2.1.3 Wildlife

The following sections describe wildlife occurring at NAF El Centro with the potential to occur within the project sites.

Previous biological surveys on NAF El Centro have documented two amphibian, three reptile, 75 bird, and 12 mammal species. Amphibian and reptile species observed on NAF El Centro include Woodhouse's toad (*Bufo woodhousei*), desert spiny lizard (*Sceloporus magister*), long-tailed brush lizard (*Urosaurus graciosus*), and tiger whiptail (*Aspidocelis tigris*). Common birds include American kestrel (*Falco sparverius*), black-tailed gnatcatcher (*Polioptila melanura*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), northern mockingbird (*Mimus polyglottos*), red-tailed hawk (*Buteo jamaicensis*), western burrowing owl (*Athene cunicularia*), and western meadowlark (*Sturnella neglecta*). Common mammals occurring at NAF El Centro include black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), deer mouse (*Peromyscus maniculatus*), desert cottontail (*Sylvilagus audubonii*), and round-tailed ground squirrel (*Spermophilus tereticaudus*). Because the proposed project sites are located within disturbed and former agricultural areas, wildlife diversity within the project sites is likely limited. The reptile and mammal species listed above have potential to occur on the sites, however, amphibians are not expected to occur due to lack of wetlands (Navy 2001).

NAF El Centro is located along the Pacific Flyway, one of four main migration routes that many species of birds make their seasonal migrations (Navy 2001). Of the 75 bird species documented on NAF El Centro, all are protected by the Migratory Bird Treaty Act with the exception of non-native species including European starling, house sparrow, rock dove (*Columba livia*), and common ground-dove (*Columbina passerina*). Bird species likely to occur on the project sites are those that are adapted to grassland, open, and shrubby habitats (Navy 2001). Raptors could potentially use the project sites for foraging (CDFW 2008).

The western burrowing owl, which is covered by the Migratory Bird Treaty Act (and is also a California species of special concern), is a small ground-dwelling owl found in open, dry grasslands, agricultural and rangelands, and desert habitats with sparse or low-growing vegetation. This species typically inhabits burrows abandoned by mammals, but have also been known to occur along irrigation canals and ditches. Burrowing owls are at risk throughout their range due to habitat loss, predation, vehicle impacts, and ground squirrel control programs. The Imperial Valley has the largest concentration of burrowing owls within California due to the amount of suitable habitat created by agricultural practices. Burrowing owls were documented nesting within the vicinity of the proposed project sites during 2011, 2012, 2013, and 2014 surveys. During 2014 burrowing owl surveys on NAF El Centro, active burrows were located on the northwest portion of Parcel 1, along the southern boundary of Parcel 2, and along the southern boundary of Parcel 3 (NAF El Centro Public Works Department 2014). Burrowing owls are year-round residents at NAF El Centro and tend to vacate old burrows and establish new ones throughout the year.

3.2.1.4 Wetlands and Waters of the United States

Executive Order 11990 of 1977 (Protection of Wetlands) directs the preservation and enhancement of wetlands. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in

saturated soil conditions. Wetlands generally include swamps, bogs, marshes, and similar areas” (40 CFR 232.2).

Three criteria must be fulfilled in order to consider an area a jurisdictional wetland:

1. The presence of hydrophytic vegetation
2. The presence of wetland hydrology
3. The presence of hydric soils

Delineations to identify wetlands and non-wetland jurisdictional waters of the United States, as defined by the U.S. Army Corps of Engineers, if present, were conducted at NAF El Centro in 1996 (Navy 2014a). No wetlands occur within the proposed project sites. Drainage canals are located just beyond the installation boundary, approximately 300 feet (90 meters) west of Parcel 1, 80 feet (24 meters) south of Parcel 2, and 60 feet (18 meters) south of Parcel 3.

3.2.2 ENVIRONMENTAL CONSEQUENCES

The following section describes the potential impacts to biological resources that could result from the implementation of the Proposed Action. Factors relevant to determining whether impacts would be significant include the severity of any impacts to individual species or habitats of threatened or endangered species.

Impacts to biological resources were evaluated based upon the proposed construction equipment and methods that would be used to build the solar photovoltaic systems, and how the PV systems would be operated, maintained, and decommissioned. Conservation and construction measures (Section 2.3.6.3) are identified for each location, as appropriate.

3.2.2.1 Proposed Action

The Proposed Action study area for the analysis of effects to biological resources includes Parcel 1 (15 acres), Parcel 2 (30 acres), and Parcel 3 (26 acres) for a combined area of approximately 71 acres (28.7 hectares). The Proposed Action includes the construction phase, operation of the PV system, maintenance, and ultimate decommissioning.

Vegetation

Under the Proposed Action, a ground-mounted solar PV system would be installed on approximately 71 acres (29 hectares) of previously disturbed land. Site preparation and installation of the PV system would result in long-term impacts to vegetation at the sites. Because the sites have been previously disturbed for agricultural or other uses, the impacts would be minimal. Temporary impacts would also occur because of trenching for electrical conduit installation between the solar arrays and point of connection to existing electrical grid. The trenched areas would be restored to their original condition following installation of the conduits. Restoration activities would be coordinated and subject to approval by applicable installation personnel as described in Section 2.3.6.3. Temporary impacts during construction and maintenance could also occur to plant communities adjacent to the project sites, but these impacts are expected to be minimal. Impacts to vegetation at NAF El Centro would not be significant due to the lack of sensitive vegetation in the project area. Construction of the PV systems would affect approximately 71 acres, but would primarily occur on bare ground,

agricultural outleashes, or areas that are currently developed. When the project is decommissioned, the site would be revegetated to pre-construction conditions. Work crews, vehicles and equipment would require access to the sites for removal of all solar PV material. Decommissioning of solar PV sites would have similar impacts to construction activities. In the event of changed conditions in any project area at the time of decommissioning, the potential for additional impacts analysis would be considered. Therefore, there would be no significant impacts to vegetation at NAF El Centro under the Proposed Action.

Threatened and Endangered Species

No federal- or state-listed threatened or endangered species are likely to occur within the study area of the Proposed Action and no suitable habitat exists within the Proposed Action study area. The disturbed habitat and agricultural lands are not suitable areas to support threatened and endangered species on NAF El Centro.

The Navy has determined that the Proposed Action would have no effect on the federally-listed endangered Yuma clapper rail because there is no suitable habitat for the species within, or near, the proposed project sites. Therefore, no significant impacts to federally listed species would occur with the implementation of Proposed Action.

The Navy has determined that the Proposed Action would have no effect on the state-listed threatened California black rail because there is no suitable habitat for the species within, or near, the proposed project sites. Therefore, no significant impacts to state-listed species would occur with the implementation of the Proposed Action.

Wildlife

Under the Proposed Action, the entirety of each proposed project site would be grubbed and graded. This would result in the long-term loss of approximately 71 acres (29 hectares) of disturbed habitat and agricultural land. Less-mobile amphibian, reptile, and small mammal species could potentially be impacted by site preparation and trenching. In addition, burrowing and subterranean species could potentially be impacted during construction. Potential impacts to these species are expected to be minimal due to the relatively small size of the areas being impacted, the disturbed nature of the sites, the amount of habitat available in the surrounding areas, and the expectation that most wildlife species potentially on the sites would likely flee during construction activities. When the project is decommissioned, the site would be revegetated to pre-construction conditions. Work crews, vehicles and equipment would require access to the sites for removal of all solar PV material. Decommissioning of solar PV sites would have similar impacts to construction activities. In the event of changed conditions in any project area at the time of decommissioning, the potential for additional impacts analysis would be considered.

Avian species would potentially be affected through loss of nests, nesting and foraging habitat, and disturbance. If construction activities occur during the breeding season, breeding birds, nests, eggs, and/or young could be impacted. Site preparation will be conducted during the non-breeding season, where practicable, or a nest survey would be conducted by a qualified biologist and buffers would be established to protect any nesting birds (Section 2.3.6.3).

The Navy has previously received comments on the potential for the phenomenon known as “lake effect” (where birds may mistake PV panels for a body of water) associated with the Navy’s proposed construction and operation of solar PV systems at several other installations in California. Although PV panels are inherently absorptive (i.e., non-reflective), they do reflect horizontally polarized light similar to the way a lake’s smooth, dark surface horizontally polarizes reflected sunlight and skylight. This feature may confuse birds that use polarized light for orientation or behavioral cues (Desert Renewable Energy Conservation Plan (DRECP) Independent Science Advisors 2010). The USFWS Forensics Lab concluded in 2014 that birds that are attracted to water may mistake the sky reflected in PV panels or horizontal polarized light source as a body of water. The presence of water on or near a PV project may also influence the likelihood that birds will confuse the arrays for water (USFWS 2014a). This scenario may be the reason why waterfowl are often over-represented among avian mortalities at solar PV projects in the Southwest.

Scientific studies on avian mortality on solar projects are currently lacking. The USFWS Forensics Laboratory study emphasizes their incomplete knowledge on the scope of avian mortalities at the three solar projects they studied. Accurately estimating avian mortality at solar PV facilities is challenging because the cause of death of birds found within arrays often cannot be determined without a comprehensive necropsy. The USFWS study does not differentiate between lake-effect-related and non-lake-effect-related mortalities resulting from impact trauma. In fact, it may be difficult to tell based on the carcass alone, making it impossible to obtain a true estimate of lake-effect-caused mortalities without additional information on the causes of lake effect. . It is not practicable for the Navy to obtain the data needed to draw accurate conclusions about lake effect at this time, in light of the multiple scientifically-rigorous studies that would be required, and the many years and very considerable funding that would be needed for such studies. However, while such data would clearly be relevant in assessing potential impacts associated with the proposed action, it is not necessary for the Navy to have or obtain such information in order to make a reasoned choice among potential alternatives in this instance. While it is clear that utility-scale solar power projects have the potential to adversely impacts birds, at the same time it seems reasonable to conclude that any lake effect-related bird strikes subsequent to implementation of the Proposed Action would not constitute a significant impact under NEPA (see discussion below), and would in fact be relatively insignificant.

NAF El Centro is surrounded by agricultural land and is located within 1 mile of the New River, and therefore ground-mounted solar PV arrays could attract birds due to the “lake effect” phenomenon, potentially resulting in avian mortality. While some direct mortality of individual birds could occur from a “lake effect” aspect of the Proposed Action, it is unlikely to be statistically significant compared to other common causes of avian mortality. Existing studies have evaluated bird fatality counts of less than 100 per site (with an unknown percentage attributable to lake effect), while bird fatalities associated with impacts with plate-glass windows are estimated to number in the hundreds of millions nationwide.

In addition, increased use of solar energy would reduce the negative environmental effects of traditional carbon-based energy sources, including effects associated with air and wastewater

emissions, soil contamination, and global climate change. Reduction of impacts from carbon-based energy sources would have beneficial effects on numerous bird species on a regional level. Additionally, to minimize potential “lake effect” impacts to birds from implementing the Proposed Action, best available science and appropriate design specifications will be used and implemented during construction of the solar photovoltaic project. Therefore, impacts to birds due to “lake effect” would not be significant for the Proposed Action.

Burrowing owls have been documented on each of the project sites. Measures to protect burrowing owls and their burrows during project construction (listed in Section 2.3.6.3) would include:

- Surveys by a qualified biologist prior to ground disturbance
- Use of buffer zones, visual screens, or other measures to minimize disturbance if the owls can be protected in place
- Placement of noise/disturbance barriers around burrows within 150 feet (46 meters) of construction activities to minimize impacts to owls outside of the breeding season
- During breeding season, no construction or other disturbance would occur within 150 feet (46 meters) of any active burrow
- If active burrows are found within the project area outside of breeding season, a qualified biologist would passively relocate burrowing owls (not permitted during breeding season)

The long-term removal of approximately 71 acres of previously disturbed and agricultural habitat would have a minor impact on birds from habitat loss and displacement.

Decommissioning of solar PV sites would have similar impacts to construction activities, and be subject to the same conservation requirements as the construction effort. In the event of changed conditions in any project area at the time of decommissioning, the potential for additional impacts analysis would be considered. No significant impacts to wildlife would occur from implementation of the Proposed Action at NAF El Centro.

Wetlands and Waters of the United States

No wetlands occur with the proposed project sites. Therefore, implementation of the Proposed Action would have no impact on wetlands or waters of the United States. As described in Section 2.3.6.5, erosion control measures such as silt fencing, water breakers, erosion control fabric, or straw bales would be utilized to prevent sedimentation of any drainage canals near the project sites. Implementation of the Proposed Action would not affect the drainage canals.

3.2.2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and there would be no change to existing conditions. Therefore, no significant impacts to biological resources would occur with implementation of the No Action Alternative.

3.3 LAND USE AND AIRSPACE

3.3.1 AFFECTED ENVIRONMENT

3.3.1.1 Land Use

Land use describes the natural conditions or human-modified conditions that exist at a particular location. This section describes land uses that occur within and adjacent to the project sites at NAF El Centro. The following discussion is based on a review of available literature and existing background data, including, but not limited to, the following resources:

- Naval Air Facility El Centro Activity Overview Plan (Navy 2005)
- Naval Air Facility El Centro Master Plan (Navy 2014b)

NAF El Centro is located within the southern portion of Imperial County, California, approximately 20 miles (193 kilometers) east of San Diego and 7 miles (11 kilometers) northwest of the City of El Centro. The installation has no permanently based tactical aircraft, but serves as a support air facility for fleet air squadrons and provides ranges and facilities for tactical air training (Navy 2005). Land uses at NAF El Centro are predominantly for military purposes and include operations, mission support, and housing directly related to the Navy; however, approximately 1,105 acres (447.2 hectares) are outleased for agricultural purposes on 5-year terms. Crops produced on these lands include alfalfa and Bermuda grass. Crops are irrigated through a system of canals that crisscross the region. The majority of land surrounding NAF El Centro is currently in agricultural use, and this creates a buffer between the installation and outside communities. The cities of Imperial and El Centro are located approximately 7 miles to the east of NAF El Centro, and the community of Seeley is located less than 1.5 miles to the south.

Development within NAF El Centro is guided and controlled by the following Navy policies and plans:

- Activity Overview Plan, NAF El Centro (Navy 2005)
- Air Installation Compatible Use Zone Study Update, NAF El Centro (Navy 2010)
- Integrated Natural Resources Management Plan, NAF El Centro (Navy 2014a)

With respect to use of and/or development on property adjacent to NAF El Centro, the Navy will provide recommendations as appropriate (e.g., based on its Air Installation Compatible Use Zone Study Update). On-installation land uses also include housing barracks to the north of the site along First Street, the NAF El Centro waste water treatment plant to the northwest at the end of Valley Forge Avenue, and an existing IID substation located west of the site and north of Havens Road (Figure 2-1). Private lands to the south are primarily agricultural.

The Proposed Project Site consists of three parcels designated Parcel 1, Parcel 2, and Parcel 3. The total acreage for the three sites is 71 acres (28.7 hectares).

As described in Chapter 2, Parcel 1 is a flat, 15-acre (6.1-hectare) site located on vacant land in the west-central portion of NAF El Centro. This site is occasionally used as an overflow

parking lot when special events (e.g., Blue Angels performances) require additional parking capacity. The parcel is bordered by D Street to the west, C Street to the east, 4th street to the north, and 3rd Street to the south. West Place and West Street intersect the parcel. The site lacks vegetation but supports burrowing owls. Some underground utilities remain on the site from previous uses. In addition, NAF El Centro plans to construct a DASR tower within this parcel and would occupy approximately 1 acre (0.4 hectares), not including setbacks. Setbacks will be derived during the PV system design phase to mitigate any adverse effect on the radar system.

Parcel 2 is a flat, 30-acre (12.1-hectare) site located on vacant land north of Havens Road and west of A Street in the southwest portion of NAF El Centro near the base entrance. Base housing is located directly north of the site, but separated by a masonry wall. The site has minimal vegetation cover but supports burrowing owls. It was previously leased as an agricultural plot but is currently in a maintenance status. Sudan grass was grown most recently on the site, and historical use includes the cultivation of alfalfa and Bermuda grass. This is the closest parcel to the existing IID substation.

Parcel 3 is a flat, 26-acre (10.5-hectare) site located south of 8th Street and east of A Street in the southern portion of NAF El Centro near the base entrance. The site is currently used for agricultural purposes. Some existing power lines intersect the site.

3.3.1.2 Airspace

The NAF El Centro airspace footprint is a vast area encompassing a majority of the airspace above Imperial County, California. The airspace in this portion of the state is an asset to the Navy and the Department of Defense since the ground surface beneath the airspace is mostly unobstructed by development and the airspace itself is uncongested by civilian aviation operations. The airspace provides the Navy with the capability to perform a variety of aviation operations, bombing practices, and tactical maneuvering. The different airspaces that allow for the mission-critical aviation training are the military operating areas, restricted airspaces, and the military training routes.

Military Operating Area

The Military Operating Area (MOA) spans across two states and four counties in the southwestern US:

- Imperial County, CA
- Riverside County, CA
- San Diego County, CA
- Yuma County, AZ

A MOA is the special use airspace in which military or defense-related aviation occurs for training and/or special operations. This designation of airspace is joint use in that Visual Flight Rules civilian aircraft are not denied access, and Instrument Flight Rules civilian aircraft may be routed through the airspace when approved separation is provided from military operations. MOAs are further defined by usage. For example, special operations or training

where target bombing exercises for NAF El Centro occur is limited to a very small portion of the overall MOA.

Restricted Airspace

Special operations are typically performed under restricted airspace that allows for ordnance and weapon firing. The restricted airspace designation is intended to protect the public from unnecessary impacts associated with live fire exercises.

Military Training Routes

Military training routes for NAF El Centro extend beyond the MOA. The operations associated with these military training routes include low-level flight operations and high-speed flyover. These types of operations can generate noise and vibration that can potentially impact proximate land uses. The degree of impact is dependent on variables such as weather, vertical obstructions, and types of aircraft.

For planning purposes, a military training route corridor – an area 2.5 to 5 nautical miles on either side of the centerline 5 to 10 nautical miles wide - provides pilots that train within this area the optimal space to perform operations. This is important to consider as adjacent or proximate land uses may be impacted due to expansive footprint of the military training route corridors. The degree of impacts is dependent on variables such as weather and types of aircraft.

Airfield Operations

The NAF El Centro airfield operational footprint depicted in Figure 3.3-1 is composed of the mission elements associated with airfield operations, including safety zones, noise contours, the Bird Air Strike Hazard (BASH) area (see Section 3.8), and imaginary surfaces. These operational elements overlap and interact with considerations of land use planning by and within local jurisdictions. In interacting with these jurisdictions, the Navy provides planning recommendations in an effort to help create and sustain compatibility between the military mission and the various activities that occur within/beneath the Navy's operational footprints. Examples of potential recommendations by the Navy could include restrictions on development within the airfield's clear zone and/or imposing limits on the heights of buildings in order to prevent unnecessary vertical obstructions and promote navigable airspace.

Safety Zones

Safety zones encompass three main components: the clear zone and Accident Potential Zones I and II. These zones extend beyond the ends of runways and are delineated based upon historical data of aircraft accidents. The Department of Defense recommends land uses for these areas to encourage and promote compatibility with military operations and to protect the general welfare. The Accident Potential Zone I and II extend outward from the clear zone, and present fewer concerns with respect to development compatibility because the risk of aircraft accidents are reduced when an aircraft is further away from the runway. Parcels 1, 2, and 3, which comprise the proposed project site, are located outside the clear zone, all Accident Potential Zones, and the safety minimum crossing altitude subzone.

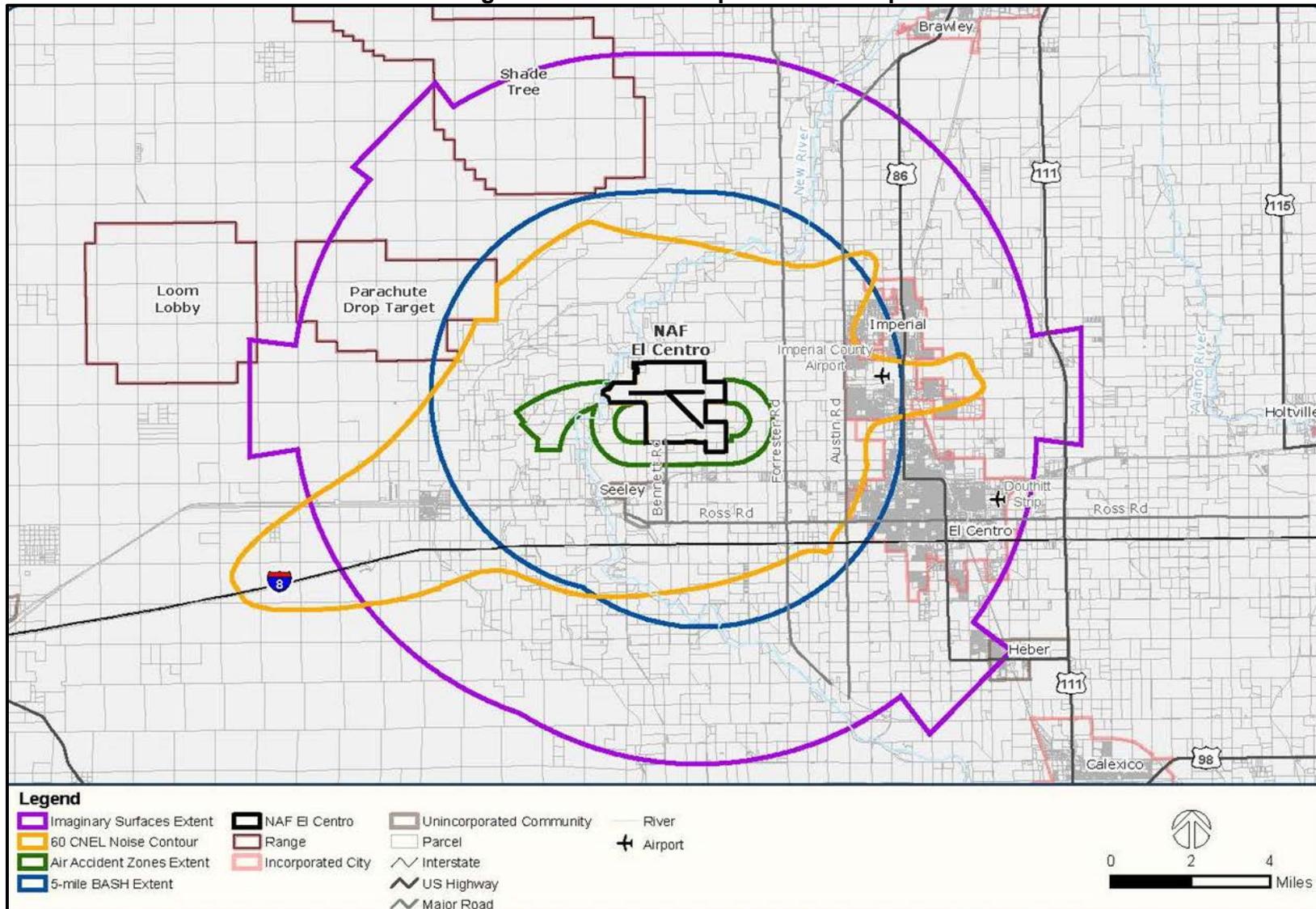
Noise Contours

Parcels 1, 2, and 3 are located within the 60 CNEL noise contour for aircraft operations-related noise. Operation of a PV system on land classified as industrial is a compatible use.

Imaginary Surfaces

An imaginary surface is established using specific parameters of a runway and the type of instrument approach for that runway. Imaginary surfaces exist to prevent existing or proposed man-made objects, objects of natural growth, or terrain from extending upwards at a greater height than an imaginary surface thus obstructing navigable airspace. Although the PV systems at Parcels 1, 2, and 3 would occupy ground surface beneath imaginary surfaces, infrastructure would be well below the most conservative height for imaginary surfaces and would not encroach upon navigable airspace.

Figure 3.3-1. Airfield Operational Footprint



Source: Imperial County, California and Office of Economic Adjustment, Department of Defense. 2014.

Note: CNEL – Community Noise Equivalent Level

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Land Use

Proposed Action

The solar PV panel arrays and associated facilities would be located on three parcels that have been previously disturbed or historically used for agricultural production. Parcel 1 is vacant land occasionally used for overflow parking. Current land use plans for approximately 1 acre (0.4 hectare) of Parcel 1 involve the construction of a DASR tower. Parcels 2 and 3 are part of a larger agricultural outlease area. The NAF El Centro Master Plan (Navy 2014b) designates the existing land use for Parcels 2 and 3 as outlease, and the planned land use is designated as Utilities. A land use change (lasting up to 37 years) would occur for these parcels from historic agricultural use to renewable energy development with a secondary land use for a small portion of Parcel 1.

Considering the small percentage of acreage that would be discontinued for agricultural use when compared to all outleased property on the installation (5.1 percent of the total 1,105 acres [447 hectares]), no significant negative impacts would be expected to occur to agricultural uses at NAF El Centro as a result of implementing the Proposed Action. No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would be converted to non-agricultural use by construction or operation of the solar PV system (California Department of Conservation 2010). Further, the land would remain under Navy use, and development of the site for electrical energy generation would be compatible with the adjacent uses on the installation (e.g., utility, housing, and aircraft operations) and the planned land use for the site (Utilities), as designated by the NAF El Centro Master Plan (Navy 2014b). The proposed location of the solar PV power plan would allow for easy maintenance accessibility and preserve other outlying undeveloped areas for future mission-essential uses (Navy 2014b). The decommissioning of the solar PV system would return project areas to their pre-project condition. Land use at Parcel 1 would revert to a vacant status (with the exception of the DASR tower area), while Parcels 2 and 3 could return to agricultural production at the Navy's discretion. There would be no significant impacts to land use from implementing the Proposed Action at NAF El Centro.

No Action Alternative

Under the No Action Alternative, a PV system would not be constructed, operated, or maintained at NAF El Centro, and NAF El Centro would not contribute toward the SECNAV goal of developing 1 GW of renewable energy generation capacity by the end of 2015. Land use for Parcels 1 through 3 would continue under current operations. There would be no significant impacts to land use from implementing the No Action Alternative.

3.3.2.1 Airspace

Proposed Action

The solar PV panel arrays and associated facilities would be located outside of the clear zone, safety minimum crossing altitude subzone, and Accident Potential Zones I and II. Although the PV systems would be located at ground surface beneath established imaginary surfaces, PV system infrastructure would not extend upwards to break even the most conservative imaginary surface plane (150 feet) and would not encroach upon navigable airspace. The PV

systems would be located within the 60 community noise equivalent level contour for aircraft operations-related noise. However, construction and operation of a PV system on land classified as industrial is a compatible use. Any operations and maintenance activities would be conducted outside of restricted areas. The proposed location of the solar PV power plan would allow for easy maintenance accessibility and preserve other outlying undeveloped areas for future mission-essential uses. Decommissioning of solar PV sites would not encroach upon navigable airspace. There would be no significant impacts to airspace from implementing the Proposed Action at NAF El Centro.

No Action Alternative

Under the No Action Alternative, a PV system would not be constructed, operated, or maintained at NAF El Centro, and NAF El Centro would not contribute toward the SECNAV goal of developing 1 GW of renewable energy generation capacity by the end of 2015. Land use for Parcels 1 through 3 and utilization of airspace would continue in the same manner and under the same conditions as at present. There would be no significant impacts to airspace from implementing the No Action Alternative.

3.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes existing socioeconomic conditions, including population, housing, employment, income, and demographic characteristics, in the City of El Centro, the City of Imperial, and Imperial County, California. This section also analyzes potential impacts to socioeconomics in these areas that may occur with implementation of the Proposed Action. The discussion is based on a review of available literature and existing background data, including the following resources, among others:

- United States Census Bureau (U.S. Census Bureau 2015)
- Personal Income Summary (U.S. Department of Commerce 2013a-d)
- Naval Air Facility El Centro Economic Impact and Community Involvement (Navy 2011).

3.4.1 AFFECTED ENVIRONMENT

The project site is located in south-central Imperial County in southern California, 7 miles (11.3 kilometers) northwest of the City of El Centro, 14 miles (22.6 kilometers) west of the City of Imperial, and 20 miles (32.2 kilometers) north of the U.S./Mexico border. The affected environment for the analysis of socioeconomics includes the City of El Centro and Imperial County, the areas with the strongest economic ties to activities at NAF El Centro. Statistics for the State of California are presented for comparison.

3.4.1.1 Population

Table 3.4-1 presents population statistics for the study area, including populations in 2000 and 2010, population projections for 2020, and past and predicted population growth rates. As shown in Table 3.4-1, the 2010 population in Imperial County was 174,528 people. Imperial County's population increased 22.6 percent from 2000 to 2010. Imperial County's population is projected to increase another 37.0 percent by 2020, making the county's growth rate twice the estimated population growth rate for the State of California (18.5 percent) between 2010 and

2020 (U.S. Census Bureau 2015). This rapid growth rate in Imperial County is due, in part, to the area's relatively low land and labor costs and its proximity to Mexico. The City of El Centro grew by 12.6 percent from 2000 to 2010, while the City of Imperial almost doubled in population during the same decade.

Table 3.4-1. Study Area Population Trends

Jurisdiction	2000	2010	% Growth Rate 2000-2010	2020 Projection*	% Growth Rate 2010-2020
City of El Centro	37,835	42,598	12.6	---	---
City of Imperial	7,560	14,758	95.2	---	---
Imperial County	142,361	174,528	22.6	239,149	37.0
State of California	33,871,648	37,253,956	10.0	44,135,923	18.5

Source: U.S. Census Bureau 2015a

Note: *2020 projections only available for county and state.

The fiscal year 2010 population associated with NAF El Centro included 662 federal government personnel (307 military personnel and 355 contractor/civilian employees) and 614 military dependents. In addition, 1,273 transient personnel participate in training programs at NAF El Centro each year (U.S. Census Bureau 2015).

3.4.1.2 Employment and Income

Imperial County's employment (by industry) for 2011 is shown in Table 3.4-2. The Industries that employ the greatest number of people in Imperial County include government (34.5 percent); trade, transportation, and utilities (19.2 percent); agriculture (17.2 percent); educational and health services (7.0 percent); and leisure and hospitality (6.5 percent) (U.S. Census Bureau 2015).

Table 3.4-2. 2011 Employment Statistics for Imperial County

Industry	Number Employed*
Government	18,700
Trade, Transportation, and Utilities	10,400
Agriculture	9,300
Educational and Health Services	3,800
Leisure and Hospitality	3,500
Manufacturing	2,400
Professional and Business Services	2,400
Construction, Mining, Logging	1,300
Financial Activities	1,300
Other Services	700
Information	400
Total	54,200

Source: California Employment Development Department 2015a

Note: *Not seasonally adjusted.

From 2005 to 2012, total personal income and per capita income grew faster in Imperial County than for the state as a whole, with personal income increasing 43.5 percent and per capita income increasing 26.6 percent. While per capita income in dollars within the study area was less than that for the state, per capita income grew more when compared to the state average (Table 3.4-3).

Table 3.4-3. Study Area Personal and Per Capita Incomes

Jurisdiction	Personal Income ^{1,2}			Per Capita Income ^{1,3}		
	\$ 2005	\$ 2012	% Increase 2005-2012	\$ 2005	\$ 2012	% Increase 2005-2012
Imperial County ⁴	\$3,810,025,000	\$5,466,646,000	43.5	\$24,406	\$30,894	26.6
State of California	\$1,396,173,422,000	\$1,768,039,281,000	26.6	\$38,969	\$46,477	19.3

Source: U.S. Department of Commerce 2013a-d

Notes: ¹ Not adjusted for inflation.

² Personal income is the income that is received by all persons from all sources.

³ Per capita income is the income per person in an area.

⁴ Personal income and per capita income are the same for El Centro Metropolitan Statistical Area.

Table 3.4-4 shows a dramatic increase in unemployment rates in the study since 2007, with an average of 57 percent from 2007 to 2011. The unadjusted unemployment rate in Imperial County was 27.9 percent. The comparable 2011 unadjusted unemployment rates for California and the United States were 11.7 percent and 8.7 percent, respectively (U.S. Census Bureau 2015).

Table 3.4-4. Study Area Unemployment Rates

Jurisdiction	2007 ¹	2008 ¹	2009 ¹	2010 ¹	2011 ^{1,2}	% Increase 2007-2011
City of El Centro	17.0	21.1	26.5	28.2	26.4	55.3
City of Imperial	12.1	15.3	19.5	20.9	19.5	61.2
Imperial County	18.0	22.3	27.9	29.7	27.9	55.0
State of California	5.3	7.2	11.3	12.4	11.7	120.8

Source: California Employment Development Department 2015b

Notes:

¹ Not seasonally adjusted.

² April 2011, preliminary.

NAF El Centro's strong presence in the study area plays an important role in the Imperial NAF El Centro County Economy. For fiscal year 2010, there were 662 federal government personnel (307 military personnel and 355 civilians) employed at NAF El Centro (U.S. Census Bureau 2015). Total payroll to support this workforce was approximately \$24 million. In addition, 13,406 guest-nights at local hotels were associated with air show visitors and transient military and civilian personnel training at NAF El Centro during fiscal year 2010. An economic impact assessment for fiscal year 2010 determined that NAF El Centro's total economic impact in Imperial County was 800 jobs and \$105 million (including \$4 million in state and local tax revenues) (NAF El Centro 2011).

3.4.1.3 Housing

In 2010, there were approximately 56,000 housing units in Imperial County, with a vacancy rate of 12.4 percent (Table 3.4-5). The vacancy rates in the City of El Centro and the City of Imperial were lower than the county, at 9.5 percent and 7.3 percent, respectively. While both cities' vacancy rates were less than Imperial County's rate, only the City of Imperial had a lower vacancy rate than the state (8.1 percent) (U.S. Census Bureau 2015).

In 2009, NAF El Centro prepared an update of the 2006 Housing Requirement Market Analysis. The analysis assessed the housing market within a 60-minute commute.

Table 3.4-5. Study Area Housing Units, 2010

Jurisdiction	Housing Units	%Vacant	Occupied Housing Units		
			Total	% Owner	% Renter
City of El Centro	14,476	9.5	13,108	49.5	50.5
City of Imperial	4,751	7.3	4,405	71.1	28.9
Imperial County	56,067	12.4	49,126	55.9	44.1
State of California	13,608,081	8.1	12,557,498	55.9	44.1

Source: U.S. Census Bureau 2015b

At the time of the 2009 analysis, there were 19,515 rental housing units, of which 8,128 units (42 percent) were considered suitable for military families in terms of physical conditions, health and safety concerns, and availability. A manpower update to the 2009 Housing Requirement Market Analysis was completed in 2011. The 2011 update predicted a shortfall of 564 military family community housing units and a shortfall of 216 community housing units for unaccompanied personnel by 2014 (U.S. Census Bureau 2015).

NAF El Centro has 101 military family housing units (31 officer units and 70 enlisted units) (U.S. Census Bureau 2015). On average, less than 10 percent of units are vacant. NAF El Centro has 600 unaccompanied personnel rooms, with capacity for approximately 900 personnel (Navy 2005).

3.4.1.4 Environmental Justice

On February 11, 1994, President Clinton signed Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations. The intent of Executive Order 12898 is to prevent low-income and minority populations from being subjected to disproportionately adverse environmental effects. More specifically, the Executive Order directs federal agencies "...to make achieving environmental justice part of its mission by identifying and addressing...disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority population and low-income population in the U.S."

The following provides information on minority and low-income populations in the study area. Imperial County serves as the community of comparison since it is the largest geographic area that encompasses the study area.

Minority and Low-Income Population Trends

Total minority population is calculated as the percent of the population categorized in one of six racial categories and those of Hispanic or Latino origin (without double counting those who report two or more races/origins). Low-income population is calculated using data from the 2010 American Community Survey for individuals whose income has been below the poverty level during the previous 12-month reporting period. Table 3.4-6 presents data for total minority and low-income populations within the study area. All three jurisdictions within the study area have higher percentages of minority populations compared to the state, and both the City of El Centro and Imperial County have greater percentages of low-income populations than the state.

Table 3.4-6. Minority and Low-Income Populations within the Study Area

Jurisdiction	Total Population	Minority Population	% Minority	% Low-Income*
City of El Centro	42,598	36,840	86.5	20.9
City of Imperial	14,758	11,776	79.8	12.6
Imperial County	174,528	150,601	86.3	21.4
State of California	37,253,956	22,297,703	59.9	13.7

Source: U.S. Census Bureau 2015c

Note: *Includes all individuals for whom poverty status is determined.

Environmental Health and Safety Risks to Children

In April 1997, President Clinton signed Executive Order 13045, Environmental Health and Safety Risks to Children (62 Fed. Reg. 1988 [1997]). The intent of Executive Order 13045 is to prevent children from being subjected to disproportionately adverse environmental health and safety risks from federal actions. The Executive Order states each federal agency:

- a) Shall make it a high priority to identify and assess environmental health risk and safety risks that may disproportionately affect children
- b) Ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

To comply with the Executive Order, this EA addresses child-specific environmental health risk and safety risk issues associated with the project. Table 3.4-7 presents 2010 census data on the percentage of the study area’s population that is less than 18 years of age.

Table 3.4-7. Percent of Population under the Age of 18 within the Study Area, 2010

Jurisdiction	% < Age 18
City of El Centro	29.7
City of Imperial	33.4
Imperial County	29.3
State of California	25.0

Source: U.S. Census Bureau 2015c

An on-installation family housing development is located adjacent to and northeast of the project site, and a child development center and youth center is located along B Street within 0.2 mile (0.32 kilometer) of the project site.

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 Proposed Action

Population

The Proposed Action would not cause an increase in the number of permanent military and civilian personnel moving to areas in the NAF El Centro vicinity. Local contractors already living in the area would travel to NAF El Centro to work at the project site. During project operations, private contractors hired by the PPA site developer and living in the region would maintain the solar PV system, as needed. Decommissioning of solar PV sites would make use of local contractors similarly to the construction phase. There would be no long-term or short-term impacts to area populations from implementing the Proposed Action because military and civilian personnel and their families and project contractors would not move to the City of El Centro or surrounding areas.

Employment and Income

Land uses within the installation are predominantly for military purposes and include operations, mission support, and housing directly related to the Navy; however, 1,105 acres (447 hectares) of the installation are outleased for agricultural purposes on 5-year terms. Under the Proposed Action, the solar PV system would be located on 56 acres (22.6 hectares) on two parcels that have been historically used for agricultural production. While a portion of the 1,105 acres (447 hectares) would be discontinued for agricultural use as part of the Proposed Action, local agricultural workers farm a number of fields in the area on a regular basis and do not solely depend on the 56 acre (22.6 hectare) site for employment; therefore, no long-term or short-term impacts related to job loss would occur as a result of discontinuing agricultural use at the project site. Given the small percentage of acreage discontinued for agricultural use when compared to all outleased property on the installation (5.1 percent of the total 1,105 acres [477 hectares]), no job losses would occur and no significant adverse socioeconomic impacts would occur in the local economy as a result of implementing the Proposed Action. Decommissioning of the solar PV sites would return 56 acres to agricultural production, subject to subject to the agricultural market and environmental conditions at that time.

During construction of the Proposed Action, 60 full-time equivalent workers would access the project site for the installation of the solar PV system at NAF El Centro in various crews depending on the construction phase and task. During construction of the system, 60 full-time equivalent workers would be present at NAF El Centro each day, for an estimated 9- to 10-month construction period. Operation of the solar PV system would make use of the Provider's existing employees for periodic activities and would not result in additional hiring. Decommissioning of the solar PV system would require a temporary work force similar to that needed for construction, although smaller in size and shorter in duration. Considering the relatively small amount of agricultural land impacted by the Proposed Action, and the short-term, beneficial effects due to use of area facilities and the purchase of local goods and

services, no significant adverse socioeconomic impacts would occur in the local economy from implementing the Proposed Action.

Housing

The Proposed Action would not increase the number of military and civilian personnel and their families or project contractors requiring housing near NAF El Centro. Therefore, there would be no long-term or short-term impacts to area housing from implementing the Proposed Action.

Environmental Justice

As evaluated in accordance with Executive Order 12898, a project would have disproportionately high and adverse human health or environmental effects on low-income or minority populations if the project would result in any environmental impacts (e.g., air quality, water, socioeconomics) that would disproportionately affect minority or low-income populations in the project study area.

Implementation of the Proposed Action would be conducted within the NAF El Centro boundary, which is designated for military use, and would not be in proximity to minority or low-income housing areas. In addition, based on the analysis of impacts presented in Sections 3.1 through 3.8, the Proposed Action would not result in significant adverse impacts to human health or the environment. Therefore, the Navy has determined that the Proposed Action would not cause disproportionately high and adverse health or environmental effects on any minority or low-income populations

In accordance with Executive Order 13045, significant environmental health and safety risks to children would result if the project generates effects that would disproportionately affect populations of children (i.e., local residences or schools) within the study area. An on-installation family housing development and Child Development Center and Youth Center are within 0.2 mile (0.32 kilometer) from the Proposed Action; however, based on the analysis of impacts presented in Sections 3.1 through 3.8, there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children. Therefore, no significant impacts to environmental health or safety risks to children would result from implementation of the Proposed Action.

3.4.2.2 No Action Alternative

Under the No Action Alternative, the solar PV systems would not be constructed or operated, and the Navy would continue to purchase conventional power from utility providers; therefore, there would be no significant impacts to population, employment, housing, environmental justice, and risks to children from implementing the No Action Alternative.

3.5 UTILITIES

This section discusses utilities used at NAF El Centro including natural gas, water, wastewater, solid waste, and electrical services. This section also analyzes potential impacts to these services with implementation of the Proposed Action. The following discussion was primarily based on information from these resources:

- Final Naval Air Facility El Centro Activity Overview Plan (Navy 2005)
- Final Integrated Natural Resources Management Plan, Naval Air Facility El Centro and

Target Areas (Navy 2014a)

- Final Naval Air Facility El Centro Master Plan (Navy 2014b)

3.5.1 AFFECTED ENVIRONMENT

Natural Gas Delivery

Southern California Gas Company supplies natural gas to NAF El Centro via a 3-inch-diameter gas main that runs along Bennett Road and enters the installation at the Main Gate. The main line forks into feeder lines to serve the east and west portions of the installation (Navy 2005).

Water

NAF El Centro receives all of its water from the IID; there is no use of wells or other water sources. Potable water arrives by way of the Elder Canal, and has a primary and secondary treatment facility that includes a settling basin with flocculation and sedimentation chambers. Effluent from the treatment facility is released into the New River since it is not suitable for irrigation. Water is chlorinated, and basic testing is conducted under 40 CFR Part 22 (Navy 2014a).

The NAF El Centro water distribution system consists of a network of closed-loop pipelines that service lateral lines within the network. The network pipelines range in size from 6 to 12 inches (15.2 to 30.5 centimeters) in diameter. Service laterals lines are 3 to 8 inches (7.6 to 20.3 centimeters) in diameter. The polyvinyl chloride main distribution lines were upgraded in 1996 and 1997 (Navy 2005).

Wastewater

The sanitary sewer system at NAF El Centro is located at the far northwestern portion of the installation. Wastewater is treated by a “Modified Activated Sludge” system in which microorganisms are grown to organically break down organic materials in the wastewater. The wastewater is then pumped to a clarifier where the heavy solids settle. The sludge formed from clarification is then stored in one of three sludge drying ponds near the facility. This process is able to treat approximately 5 million gallons (18,927 cubic meters) of sewage per month. Effluent from the NAF El Centro’s wastewater treatment plant is released into the New River because it is not suitable for irrigation. In 2004, a project for the sewer conveyance system replaced old, deteriorated, vitrified clay pipe throughout NAF El Centro, and upgraded the wastewater treatment plant (Navy 2005).

Solid Waste

Installation Operating and Service contractors provide solid waste removal for NAF El Centro (Navy 2005). Solid waste is conveyed to the Allied Imperial Landfill in Imperial, California for disposal. This landfill accepts municipal solid waste, construction, demolition and inert waste, and green (i.e., lawn and yard) waste. This landfill has an active 42-acre disposal cell and an 89-acre future expansion cell projected to provide another 30 years of capacity (CRWCB 2014).

Electricity Delivery

The IID provides electricity to NAF El Centro and maintains the substation that is proposed for interconnection with the proposed project (See Section 2.1). Underground power lines are used near the airfield, but overhead power lines are used in much of the housing and administrative

areas. During power outages, which may result from high winds and storms, back-up generators are used at some facilities, such as the sewage plant, water treatment plant, control tower, medical/dental clinic, and fire department (Navy 2005). Currently, NAF El Centro receives approximately 300 kilowatts of electricity from renewable resources (e.g., carport solar). Installation activities conducted at NAF El Centro consumed 16,023 MW hours of electricity in fiscal year 2013.

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Proposed Action

Natural Gas

The Proposed Action would not involve any use of, or changes to, natural gas infrastructure at NAF El Centro. Therefore, no significant impacts to natural gas delivery systems would occur.

Water

The Proposed Action would involve the temporary use of water during project construction and regular but infrequent use during operation. Water used during construction for dust suppression would be transported to each project site via water trucks by the developer. During operation, panel washing would occur two to three times per year, requiring approximately 500 gallons of water annually. The water/vinegar-based solution used for panel washing would be transported to the sites via water trucks and would be supplied by the developer. Decommissioning of solar PV sites would also require water for dust suppression, but at lower volumes than that needed for construction. Therefore, no significant impacts to potable or non-potable water systems would occur with implementation of the Proposed Action.

Wastewater

The Proposed Action would generate small volumes of wastewater during project construction due to workers' use of onsite portable toilets; this waste would be removed from each site and disposed of at local wastewater treatment facilities that are available and have the capacity to receive such waste. During operation, the majority of the water/vinegar-based solution used for panel washing would evaporate off the solar panel surfaces into the air and small amounts may drip into the soil. The operation phase of the Proposed Action would not involve increased use of wastewater systems. Decommissioning of solar PV sites would generate wastewater similarly to the construction phase, but at lower volumes. Therefore, no significant impacts to wastewater infrastructure would occur with implementation of the Proposed Action.

Solid Waste

The Proposed Action would generate small volumes of non-hazardous solid waste on a temporary basis during construction of the solar PV systems. As discussed in Section 2.3.6.6, the developer would store this waste onsite in approved containers that would be removed and replaced at regular intervals. During operation and maintenance, equipment may fail and need to be replaced, at which time contractors would transport the resulting waste materials to an approved recycling or disposal facility. Decommissioning of solar PV sites would generate small amounts of non-hazardous solid waste, although most system components could be recovered and reused. Overall, the increased amount of solid waste conveyed to local facilities would be negligible and the local facilities would have availability and adequate capacity to accept project

waste; therefore, no significant impacts related to solid waste disposal would occur with implementation of the Proposed Action.

Electricity Delivery

Installation of solar PV systems under the Proposed Action signifies the Navy's shift towards renewable energy and less reliance upon more conventional energy sources. During construction, all equipment requiring sources of electricity would be operated using gas- or diesel-powered generators provided by construction contractors, and no temporary adverse impacts related to disruption of the existing electrical services would occur.

The Proposed Action would produce approximately 12 MW of electrical generation capacity from the ground-mounted solar PV systems, yielding a maximum of 39,000 MW-hours of power per year. Under a Model 2 acquisition strategy, NAF El Centro would not directly receive the power generated by the PV system, and would continue to purchase power from the Imperial Irrigation District under its current agreements. Under a Model 3 acquisition strategy, NAF El Centro would purchase and use all of the electricity generated. There is also a possibility that a combination of Models 2 and 3 would be implemented where some power generated would be used by NAF El Centro and some by outside customers. In all cases, the power generated from the solar PV system would reduce the demand for power from non-renewable sources by NAF El Centro or other customers of the IID.

Under Models 2, 3, or a combination of 2 and 3, the electricity generated by the Proposed Action would help the Navy reach its renewable energy goals, and would result in long-term decreases in greenhouse gas emissions (see Section 3.1). Under Model 3, or a combination of 2 and 3, the Proposed Action would also lower NAF El Centro's demand on local utilities, reducing the amount of money NAF El Centro pays for electricity

Decommissioning of solar PV systems would involve the use of portable equipment similar to that used during construction. Removal of PV panel arrays and local transmission lines could result in disruption of power in the area, although this would be localized and temporary. Therefore, no significant impacts to electrical delivery would occur with implementation of the Proposed Action.

3.5.2.2 No Action Alternative

Under the No Action Alternative, no new solar PV system and associated infrastructure would be constructed. NAF El Centro would continue to purchase conventional power from the IID and would not realize any energy cost savings through a power purchase agreement. Additionally, this alternative does not provide progression towards the nation's or the Navy's energy goals and would not meet the purpose and need of the Proposed Action. Therefore, no impacts to utilities would occur with the No Action Alternative.

3.6 VISUAL QUALITY

For the purposes of the analysis in this section, the project area is defined as the solar panel array sites and surrounding areas. The project sites refer to the location where disturbance would occur on each parcel.

3.6.1 AFFECTED ENVIRONMENT

3.6.1.1 Visual Character and Quality

Visual resources are generally defined as the natural and built features of a landscape that may be viewed by the public and contribute to the visual quality and character of an area. Visual resources form the overall impression that an observer has of an area or its landscape character. Distinctive landforms, water bodies, vegetation, and man-made features that contribute to an area's aesthetic qualities are elements that contribute to an area's visual character. Visual quality is generally defined as the visual significance or appeal of a landscape based on cultural values and the landscape's intrinsic physical elements (U.S. Army Corps of Engineers 1988).

The visual character and quality of the project sites are described using terminology and criteria commonly applied as part of established processes for visual resource management and assessment by federal agencies (Bureau of Land Management [BLM] 1984, U.S. Forest Service 1995, Federal Highway Administration 1981, U.S. Army Corps of Engineers 1988). The appearance of the landscape is described using the dominance elements of form, line, color, and texture, as appropriate. These dominance elements are the basic components used to describe visual character and quality for most visual assessments.

3.6.1.2 Visual Sensitivity, Viewer Sensitivity, and Exposure

Visual sensitivity is a measure of viewer interest and concern for the visual quality of the landscape and potential changes to it. Visual sensitivity is determined based on a combination of viewer sensitivity and viewer exposure. Viewer sensitivity is determined based on the types of viewers, activities they may be engaged in, and the expressed or anticipated level of public interest and concern for visual resources and quality.

Viewer sensitivity varies for individuals and groups depending on the activities viewers are engaged in, their values and expectations related to the appearance and character of the landscape, and their potential level of concern for changes to the landscape. High viewer sensitivity is typically assigned to viewer groups engaged in recreational or leisure activities; traveling on scenic routes for pleasure or to or from recreational or scenic areas; experiencing or traveling to or from protected, natural, cultural, or historical areas; or experiencing views from resort areas or their residences. Low viewer sensitivity is typically assigned to viewer groups engaged in work activities or commuting to or from work.

Viewer exposure varies for any view location or travel route depending on the number or volume of viewers, the frequency of views (i.e., how often the view is experienced), and the duration of the view (i.e., the length of time the view is experienced). Viewer exposure would typically be highest for views experienced by high numbers of people, frequently, and for long periods. Other factors, such as viewing angle and viewer position relative to a feature or area, can also be contributing factors to viewer exposure. The sections below summarize the affected environment and surrounding areas at each of the three proposed project sites.

Parcel 1 – is a flat, 15-acre parcel located on vacant land in the west-central portion of NAF El Centro (Figure 2-1). This site is occasionally used as an overflow parking lot during special events. The parcel is bordered by 4th Street to the north, C Street to the east, 3rd street to the south, and D Street to the west. The site is intersected by West Place and West Street. The Navy plans to construct a DASR tower within this parcel that would occupy approximately 1 acre (0.4 hectare), not including setbacks. Land uses surrounding Parcel 1 include vacant lots to the north, south, and west, and a military gas station to the east. Off-installation land uses include agricultural uses to the west. The site and its surroundings are generally characterized by flat vacant or agricultural land, tall structures associated with electricity distribution (i.e., power poles), and military facilities. Access to Parcel 1 is from paved roads along the western and southern boundaries of the site.



Parcel 1 - View looking west from the eastern boundary. Visible in this view are several overhead electrical lines in the distance and some military buildings west of the parcel boundary.

Parcel 2 - is a flat, 30-acre site located on vacant land north of Havens Road and east of A Street in the southwest corner of NAF El Centro near the base entrance (Figure 2-1). Land uses surrounding Parcel 2 are primarily military residential to the north and northeast and public works/utility uses to the west and northwest. Off-installation land uses include agricultural uses to the south. The site and its surroundings are generally characterized by flat agricultural land, tall structures associated with electricity distribution (i.e., power poles, substations), and military/residential facilities. Access to the project area is from unimproved dirt roads along the western and southern boundaries of the site. The most visually prominent landmark in the area is a large red and white water tank, located northwest of the site at the end of Valley Forge Avenue. Portions of the water tank are visible for many miles outside of the project area due to its height and strong contrast in color, form, and texture relative to the surrounding landscape and blue sky. Other land development features within the project area include an Imperial Irrigation District electrical substation to the west, a chain link fence to the south, and a 6-foot (1.8-meter) -high concrete wall to the north that separates the residences from the project site.



Parcel 2 - View looking north/northwest from the dirt access road, near the parcel's southern boundary. Visible in this view are several overhead electrical lines in the distance.

Parcel 3 - is a flat, 26-acre (10.5 hectare) site located south of 8th Street and west of A Street in the southern portion of NAF El Centro near the base entrance (Figure 2-1). The site is currently used for agricultural purposes. Some existing power lines intersect the site. Land uses surrounding Parcel 3 are a vacant lot to the north, military buildings to the east, agricultural land to the south and southwest and military residences to the northwest. Off-installation land uses include agricultural uses to the south. Access to Parcel 3 is from an unimproved dirt road along the southern boundary of the site.



Parcel 3 - View looking north/northwest from the dirt access road, near the installation's southern boundary. Visible in this view are several overhead electrical lines in the distance.

3.6.2 ENVIRONMENTAL CONSEQUENCES

The existing visual character and quality and viewer sensitivity in the project areas provide the baseline for determining impacts to visual resources from implementation of the Proposed Action. Visual impacts are assessed based on the level of contrast of these actions with existing conditions (i.e., landscape character and quality) and their visibility and proximity to sensitive viewers. For the purposes of impact analysis, visual contrast is assessed based on a project's contrast in form, line, color, and texture with landscape features of topography, water, vegetation, and structures.

The degree of contrast that would be introduced by the project is assessed using the following ratings:

- Strong: the element contrast demands attention, will not be overlooked, and is dominant in the landscape
- Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape
- Weak: the element contrast can be seen but does not attract attention
- None: the element contrast is not visible or perceived (BLM 1986)

Impacts resulting from introducing new sources of substantial light or glare into the landscape are also assessed. Glare is reflective light that can be visually unpleasant or possibly unsafe due to the potential for temporary "blindness." Glare may be caused by light from artificial sources or the sun reflecting off light colored or smooth surfaces such as metal, glass, water, or polished stone. Glare intensity varies depending on the source and intensity of the light, time of day, time of year, angle of reflectance, weather, atmospheric conditions, color and texture of material surface finish, length of exposure, nature and sensitivity of receptors, and other factors. According to the BLM's "Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands," the potential for solar PV panel glare varies "...depending on panel orientation, sun angle, viewing angle, viewer distance, and other visibility factors (BLM 2013A)." Because of the high number of variables, glare is not measured quantitatively, but rather is assessed qualitatively in this visual assessment.

3.6.2.1 Proposed Action

Reflectivity of Solar Photovoltaic Panels and Other Project Structures

Under the Proposed Action, the solar panel surfaces would be dark bluish in color and have very low reflectivity due to the use of an anti-reflective coating, dimpling of the panel glass surface, and the overall light absorption character of the low-iron glass that is proposed for use in the solar PV systems. As described in Section 3.3, Land Use, modern solar PV panels are designed to reflect as little as two percent of the incoming sunlight, depending on the angle of the sun (Federal Aviation Administration 2010). A recent study completed by Caltrans, Division of Aeronautics, concluded that a solar PV panel's minimal potential for glare is similar to the glare potential produced by water and less than the glare produced by weathered white concrete and snow. This glare potential is so low that under a worst case scenario pilots are

typically able to mitigate effects by using glare shields and sunglasses, which reduce the radiation by approximately 80 percent and would make any reflected sunlight from solar panels insignificant (U.S. Air Force 2011). Additional discussion of potential glare hazards associated with solar panel systems is presented in Section 3.8 of this EA.

In addition to the potential for glare from the panel surfaces, other metal components that are part of solar PV facilities, such as the support poles, panel housing, and inverter boxes that house the electrical equipment, may reflect sunlight in the form of glare. Depending on color, they may contrast with the array or result in a striking pattern of color contrasts (BLM 2013A); however, as described in Section 2.3.6.7, the project design would include standard best management practices, including the use and maintenance of color-treated solar collectors and support structures to minimize glare from metal components to the maximum extent feasible.

Visual Attributes Common to all Ground-Mounted Solar Photovoltaic Systems

Under the Proposed Action, the ground-mounted solar PV systems would include single-axis ground-mounted panels that would be 6 to 8 feet (1.8 to 2.4 meters) tall, including the panels. The visible form of the ground-mounted solar panel array structures would consist of rows of tilted rectilinear solar PV panels mounted on vertical, thin, metal support poles. Lines would be mostly horizontal, with repeated angular elements due to the tilt of the panels. Under the Proposed Action, all associated electrical lines and point of connection equipment would be installed underground or aboveground among existing compatible equipment to blend in with the surrounding environment.

Potential Impacts

Under the Proposed Action, ground-mounted solar PV systems would be constructed and operated on three separate parcels equaling approximately 71 acres (28.7 hectares) at NAF El Centro (Figure 2-1). The solar PV panel arrays and ancillary facilities would be located on vacant, disturbed land that has been historically used for overflow parking (Parcel 1), or agricultural production (Parcel 2 and 3).

The project would not be easily visible to sensitive viewers outside or on the installation during project construction or operation. Viewers at residences northeast of the Parcel 2 live on the installation and would be considered to have a moderate concern for changes to the landscape on the installation. However, a 6-foot (1.8-meter) -high concrete wall separates the residences from the project and would effectively block direct views of the project from the single-story residences. During operation, the ground-mounted systems' height, form, lines, and color would result in weak contrast (i.e., the element contrast can be seen but does not attract attention) with the existing landscape.

During operation, the solar panel surfaces would be oriented to the south, away from nearby residences, and would not be expected to produce substantial glare that would be a nuisance to the nearest residents. Decommissioning of the solar PV system would return all parcels to pre-project conditions, including the removal of any local electrical transmission lines. Impacts from decommissioning would be similar to those from construction, although lower in intensity and shorter in duration.

Overall, no significant impacts to visual resources would result from implementation of the Proposed Action at NAF El Centro.

3.6.2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to the visual quality of the local area or region. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

3.7 WATER RESOURCES

This Section describes the existing hydrology and water quality conditions that occur within and adjacent to NAF El Centro. For the purposes of evaluating hydrology and water quality, the project sites are described as the areas proposed to be used for construction and operation under the Proposed Action. Literature and existing background data reviewed included:

- Best Available Floodplain Maps (BAM) web viewer (California Department of Water Resources 2015);
- California's Groundwater Bulletin 118 (California Department of Water Resources 2004);
- Federal Emergency Management Agency Flood Map Service Center web viewer (FEMA 2013);
- Final Integrated Natural Resources Management Plan, Naval Air Facility El Centro (Navy 2014a).

3.7.1 AFFECTED ENVIRONMENT

The following discussions provide a description of the existing conditions for water quality resources at NAF El Centro. This section addresses surface water, groundwater, water quality, wetlands, and floodplains that would potentially be disturbed by construction activities on NAF El Centro, as well as the immediate downstream areas of the New River.

3.7.1.1 Regional Hydrology

Regional hydrology, surface water drainage, and floodplains encompassing the project sites and surrounding areas is described below.

NAF El Centro is located with the Upper New River and Middle New River hydrologic sub-units of the Colorado River Hydrologic Region. The closest river to NAF El Centro is the New River, located approximately 1.5 miles west of the base. The New River is considered unsuitable for any public use due to the high concentrations of bacteria, dissolved oxygen, pesticides, sediments, and trash caused by urban, industrial, and agricultural runoff. The closest canal to NAF El Centro is the Elder Canal, located less than 0.1 mile (0.16 kilometer) south of the base. NAF El Centro draws its water from the Elder Canal, which is part of the larger All American Canal system that connects to the Colorado River (Navy 2014c).

Floodplains

Potential flooding is limited to areas adjacent to the New River along the westernmost boundary of NAF El Centro, extending approximately 1,200 feet (366 meters) onto the base. This area does not include the proposed project areas. Flash flooding during storms is generally restricted to washes that are at least 200 feet in width, which do not occur within the project areas. The Federal Emergency Management Agency flood zone for the project areas is classified as Zone D, which is defined as areas in which flood hazards are undetermined, but possible. The areas surrounding NAF El Centro on all sides are classified as Zone X, which is defined as outside the 0.2 percent annual chance floodplain (FEMA 2013). The project sites are not within the 500-year floodplain (California Department of Water Resources 2014)

3.7.1.2 Groundwater

The Imperial Valley Groundwater Basin is the major source of groundwater for the project sites and surrounding areas. This basin can hold an estimated 14 million acre-feet of water and is primarily recharged by irrigation with some input from surface waters, shallow groundwater underflow, and seepage from unlined canals (California Department of Water Resources 2004). Natural recharge from precipitation is approximately 2,600 acre-feet per year (Navy 2013c). Recharge from the New River is approximately 7,000 acre-feet per year (California Department of Water Resources 2004). Regional groundwater flows toward the channel of the Alamo River, then northwest toward the Salton Sea.

3.7.2 ENVIRONMENTAL CONSEQUENCES

Impacts to water resources have been evaluated based on an understanding of the project components, construction equipment and building methods, and how the sites would be used and maintained after the project are developed. All impacts from the Proposed Action are described as they would occur with implementation of the conservation and construction measures presented in Section 2.3.6.5.

3.7.2.1 Proposed Action

Potential Impacts

Hydrology

Surface disturbance (e.g., grading, localized excavation) would occur during construction of the solar PV panels and trenching for underground electrical conduits. During construction, storm water runoff from the project sites could result in a slight increase in turbidity. Potential impacts from an increase in turbidity would be avoided or minimized with implementation of best management practices (e.g., watering soils, silt fencing), development of grading plans, and adherence to erosion and storm water management practices, as described in Section 2.3.6.5, to contain soil and runoff on the project sites. Construction associated with the Proposed Action would not degrade the local water quality or adversely affect current uses of local surface waters.

As discussed in Section 2.3.6.5, the developer would be required to obtain a Construction General Permit from the California State Water Resources Control Board for discharges from construction activities at NAF El Centro prior to construction of the Proposed Action. The

developer would install and maintain effective erosion- and sediment-control measures as necessary to comply with the Construction General Permit. The developer would also develop SWPPPs for the proposed construction prior to implementation of the Proposed Action. The SWPPPs would describe and ensure implementation of practices that would minimize pollutants in storm water discharges associated with construction at the project sites and ensure compliance with the terms of the Construction General Permit. The SWPPPs would prevent sedimentation and the introduction of pollutants to local water bodies within the vicinity of NAF El Centro and would prevent violations of applicable regulations and standards. The Navy will make the SWPPP available at the construction site during working hours while construction is occurring and will make it available upon request by a State or Municipal inspector.

The developer would be subject to Construction General Permit post-construction requirements. Upon completion of the Proposed Action, hydrologic conditions of areas not developed with impermeable surfaces would be restored (e.g., revegetated) to reflect pre-project conditions.

The construction contractor would implement best management practices to prevent, control, and mitigate potential spills of oils, fuels, or lubricants from construction equipment (e.g., bulldozers, dump trucks, backhoes) that may be temporarily stored onsite during construction of the project. If a spill or leak were to occur onsite, procedures identified in best management practices described in the applicable installation's spill prevention plan and SWPPP would be implemented (refer to Section 2.3.6.5) to contain the spill and minimize the potential for, and extent of, any associated contamination.

Operation of the solar PV system would not require any ground-disturbing activities or on-site storage of hazardous materials, and would not affect local hydrology or water quality. Decommissioning of the solar PV system would involve activities similar to those used during the construction phase (although smaller in scale and duration), and would be subject to the same permitting and best management practices applicable to construction.

With implementation of the conservation and construction measures described in Section 2.3.6.5 including obtaining the necessary permits, complying with permit conditions, and following procedures in the SWPPP and spill prevention plan, implementation of the Proposed Action would have no significant impacts to local water quality, surface water bodies, or hydrology at the NAF El Centro project sites.

Floodplains

Construction of solar PV systems would occur outside the 500-year floodplain and there is little chance of flooding causing damage to the project. Therefore, no significant impacts to floodplains would occur with implementation of the Proposed Action.

Groundwater

Under the Proposed Action, water required for dust suppression during construction and decommissioning would be supplied by the site developer(s) to the sites via water trucks, and would not require the use of NAF El Centro-supplied groundwater.

During project operation, water required for panel washing would be supplied by the site developer, and the Proposed Action would not require the use of installation-supplied groundwater. The ground-mounted solar PV panels would be cleaned several times per year by a water truck using a non-hazardous, water/vinegar-based solution with a maximum application rate of 7 ounces/square-foot/day/site. The majority of the spent solution would evaporate on the surface of the solar PV panels, due to the high evaporation rate at each project site. Small amounts of the solution may drip off the panels and would be absorbed into the soil.

Overall, the Navy would continue to manage groundwater resources in a manner consistent with federal and state laws and regulations. Therefore, with implementation of the recommended conservation and construction measures described in Section 2.3.6.5, including obtaining the necessary permits, complying with permit conditions, and following procedures in the SWPPP, spill prevention plan, and erosion control plan, the Proposed Action would not result in significant impacts to groundwater at NAF El Centro.

3.7.2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur and there would be no change to baseline water resources. Therefore, no significant impacts to water resources would occur with implementation of the No Action Alternative.

3.8 PUBLIC HEALTH AND SAFETY

Definition of Resource

Navy policy is to prevent personal injury or property damage during construction projects, training exercises, and routine daily operations by observing safety regulations in planning and execution. This section assesses elements of the Proposed Action that could affect the health and safety of employees, families, temporary workers at NAF El Centro, and the public in surrounding communities and evaluates potential impacts of the following hazards:

- Exposure to contaminants from Installation Restoration program sites
- Exposure to hazardous and toxic materials and waste generated by the Proposed Action
- Direct hazards and equipment interference effects associated with electromagnetic fields and radio frequencies
- Glint and glare hazard effects from solar PV systems on aviators
- Bird-Aircraft collision hazards

Hazard categories that have no connection to the Proposed Action (e.g., explosive safety, flight safety on the El Centro Ranges) are not analyzed in detail in this EA. As all solar PV development sites will be securely fenced once complete, and subject to surveillance by NAF security personnel, potential safety hazards associated with unauthorized access to these locations are not analyzed in detail in this EA.

Installation Restoration Program Sites

The Navy's Installation Restoration Program is responsible for identifying contaminant releases, evaluating risk to human health and the environment, and developing and selecting response actions, as needed. Installation Restoration Program Operable Units or "sites" are areas on Navy property that are associated with past releases of hazardous substances.

Hazardous and Toxic Materials and Waste

The Hazardous Waste/Hazardous Materials/Hazardous Minimization Division is responsible for procurement, storage, disbursement, and effective use of hazardous materials at NAF El Centro. Hazardous materials are managed in accordance with *Commander, Fleet and Industrial Supply Centers Inst. 5090.1, Hazardous Material Standard Operating Procedures*.

All Naval facilities that generate hazardous waste are required to have a Hazardous Waste Management Plan. The NAF El Centro Hazardous Waste Management Plan is consistent with all applicable Federal, State (California), and local (Imperial County) regulations/policies (Navy 2014c). All Hazardous Waste Generator Sites are managed by the Hazardous Waste/Hazardous Materials/Hazardous Minimization Division, including inspections and maintenance.

Electromagnetic and Radio Frequency Interference and Hazards

Electromagnetic fields are invisible fields of electric and magnetic force associated with the movement of charged particles. The United States government has not established regulations governing exposure to electromagnetic fields. However, the International Commission on Non-Ionizing Radiation Protection published rigorous guidelines in 2010, *International Commission on Non-Ionizing Radiation Protection Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz to 100 kHz)* (ICNIRP 2010). These guidelines were used for this analysis. Also, it is possible for solar power facilities to interfere with airport communications systems by either electrical interference or by acting as a physical obstacle between the communicator and receiver.

Solar Glare Hazards

With growing numbers of solar energy installations throughout the United States, glare from PV arrays has received increased attention as a potential hazard for pilots, air-traffic control personnel, motorists, and others. The Federal Aviation Administration (FAA) has an interest in ensuring that solar projects near airports are sited properly and do not create glint or glare conditions. Glint is a momentary flash of bright light, and glare is a continuous source of bright light.

The FAA has determined that glint and glare from solar energy systems could result in a hazard to pilots and/or air traffic control facilities and compromise the safety of the air transportation system. In 2013, the FAA issued an interim policy in partnership with the Department of Energy to establish a standard for measuring glint and glare, and clear thresholds for when glint and glare would affect aviation safety (FAA 2013).

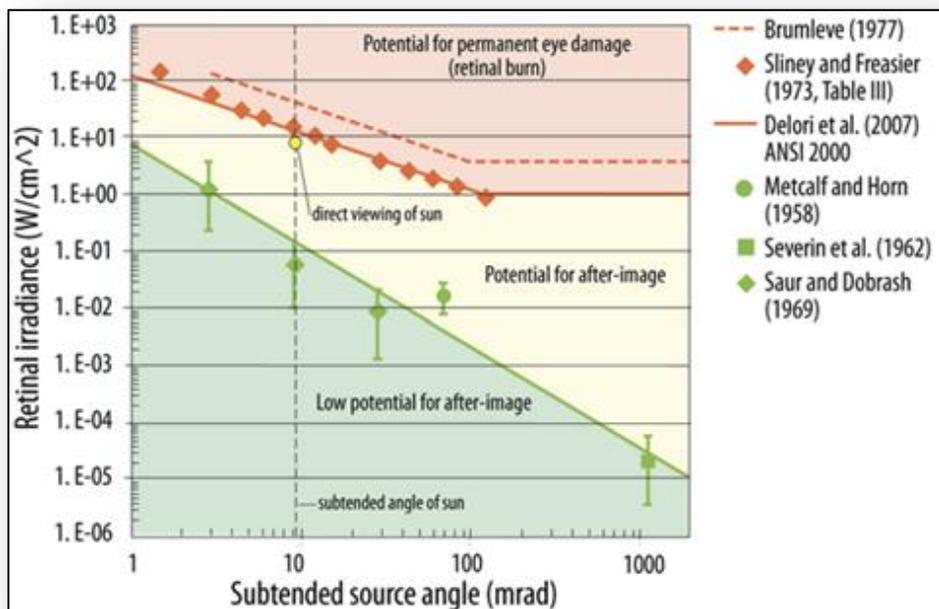
The Department of Defense has encouraged all services to adopt the FAA policy and review all solar renewable energy projects that are within 2 miles of military airfield control towers, active runways, and helicopter landing zones with respect to potential glint and glare impacts (Department of Defense 2014). In the interest of protecting the safety of military and civilian aviators, as well as all employees and family members aboard NAF El Centro, the Navy is evaluating the potential for glint and glare hazards within this EA.

The FAA policy requires the project sponsor to demonstrate that the proposed solar energy system meets the following standards:

1. No potential for glint or glare in the existing or planned airport traffic control tower, and
2. No potential for glare or “low potential for after-image” (shown in green in Figure 3.8.1) along the final approach path for any existing landing threshold or future landing thresholds. The final approach path is defined as two miles from 50 feet above the landing threshold using a standard three-degree glidepath.

The FAA has prescribed the Solar Glare Hazard Analysis Plot as the standard means for measuring ocular impact, and the use of the associated Solar Glare Hazard Analysis Tool (SGHAT) to demonstrate the potential for glare and glint resulting from a proposed solar project. SGHAT has been developed by the FAA and Sandia National Laboratory to provide a quantified assessment of (1) when and where glare will occur throughout the year for a prescribed solar installation, and (2) potential effects on the human eye at locations where glare occurs. Ocular impact must be analyzed using SGHAT over the entire calendar year in 1-minute intervals from when the sun rises above the horizon until the sun sets below the horizon. The SGHAT model was used to evaluate glint and glare hazards in this EA.

Figure 3.8-1 Ocular Impact Based on Source Brightness and Angle



Source: FAA 2013

Bird-Aircraft Collision Hazards

Another major concern with regard to flight safety is BASH. While aircraft may encounter birds at altitudes up to 30,000 feet, most birds fly close to the ground. Approximately 90 percent of reported aircraft wildlife strikes occur on or near airports, when aircraft are below altitudes of 2,000 feet above ground level. The Navy BASH program was established to minimize the risk for collisions of birds and aircraft and the subsequent loss of life and property. For airspace used by NAF El Centro aircrews, the risk of bird-aircraft strikes varies throughout the year. As a result, pilots and safety officers continually evaluate BASH potential.

The NAF El Centro BASH plan identifies potential areas of concern and establishes procedures for minimizing the threat of aircraft striking birds and other animals. The management strategies covered in this plan include bird avoidance and control through harassment, grounds maintenance, habitat modification, and depredation. This plan is reviewed and updated annually by the NAF El Centro Safety Officer. The NAF El Centro BASH Plan provides a color coded warning system to indicate the relative level of bird/animal hazard condition that can be expected at the airfield. The forecast is intended for use by aircrews, schedulers, natural resource managers, air traffic controllers, airfield managers, and others in charge of flight safety and natural resource management (Navy 2014c).

3.8.1 AFFECTED ENVIRONMENT

Installation Restoration Program Sites

No Installation Restoration Program sites are located directly within any of the proposed solar PV system development parcels on NAF El Centro. The closest sites are Sites 4 and 17 (both former fire training areas; closed with no further action), which are approximately 500 feet (150 meters) and 100 feet (30 meters) north of Parcel 1, respectively (Navy 2014c).

Hazardous and Toxic Materials and Waste

No hazardous and toxic materials and waste would be stored or used at any of the development parcels prior to implementation of the Proposed Action.

Electromagnetic and Radio Frequency Interference and Hazards

No electromagnetic fields or radio frequency emissions associated with solar PV panels would be present at any of the development parcels prior to implementation of the Proposed Action.

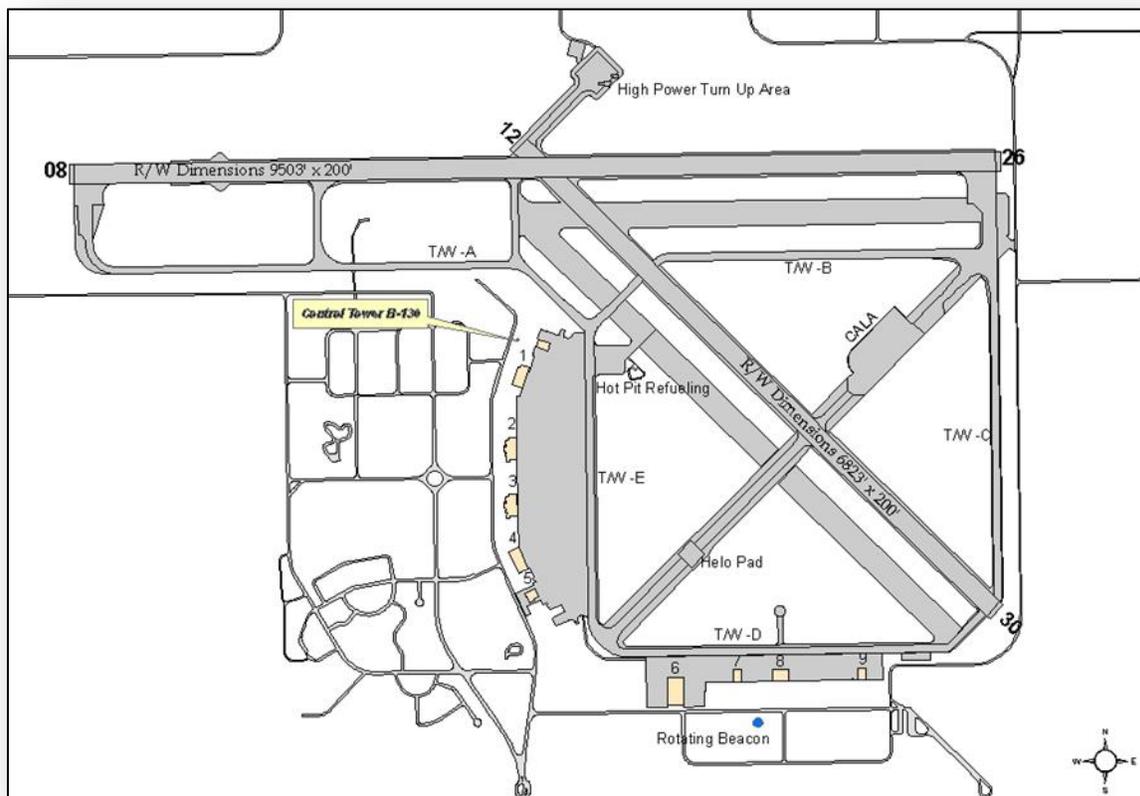
Solar Glare Hazards

The two runways at the NAF El Centro airfield are designated 08/26 and 12/30 (see Figure 3.8-2). Runway 08/26 is the primary runway at 9,503 feet long by 200 feet wide in an east-west orientation. Runway 12/30 crosses the primary runway at approximately a 40-degree angle and is 6,824 feet long by 200 feet wide in a southeast to northwest orientation. A helicopter landing/takeoff area is located southwest from midfield from Runway 12/30 (NAF El Centro 2014). NAF El Centro conducts 90 percent of its air operations utilizing runway 08/26, which is also the primary runway for touch-and-go operations. The Naval Flight Demonstration Squadron (the "Blue Angels") utilize runway 12/30 as their primary runway while they are deployed to NAF El Centro during January through March annually (Willis 2015). Currently, no utility-scale solar arrays or other large reflective surfaces are located near the NAF El Centro airfield and no glint or glare hazards have been identified.

Bird-Aircraft Collision Hazards

During the period from 1981 to 1998, aircraft from NAF El Centro have been involved in 53 recorded bird strikes, or an average of 3 bird strikes per year. Most of the BASH incidents involved E-2, FA-18, and F-16 aircraft. From May 2011 through July 2012, there were 16 reported bird strikes at NAF El Centro; the majority of the incidents involved FA-18 (7 incidents) and T-45 aircraft (5 incidents) (Navy 2014c).

Figure 3.8-2. NAF El Centro Runway Layout



3.8.2 ENVIRONMENTAL CONSEQUENCES

3.8.2.1 Proposed Action

Installation Restoration Program Sites

No Installation Restoration Program sites would be disturbed by the Proposed Action. The only sites near construction areas are closed with no further action required. Therefore, there would be no adverse impacts to public health or safety associated with Installation Restoration Program sites.

Hazardous and Toxic Materials and Waste

Solar PV panels are not considered hazardous or toxic. Associated electrical substations, inverters, or other associated hardware at connection points also do not contain hazardous or toxic materials. All project-related equipment installation, repair, and materials disposal would comply with applicable requirements for working with hazardous materials and waste.

Any accidental spills and leaks from equipment used during construction, maintenance, and decommissioning would be addressed under an Environmental Protection Plan (see Section 2.3.6) prepared prior to any site work and would indicate corrective procedures. As a result, there would be no adverse impacts to public health or safety associated with human exposure to hazardous materials or waste as a result of the Proposed Action.

Electromagnetic and Radio Frequency Interference and Hazards

Direct electrical current flowing through solar panels and cables creates a very low frequency electric field. The International Commission on Non-Ionizing Radiation Protection guidelines recommend the public be exposed to not more than 5,000 volts per meter in the 1 to 8 hertz frequency range. Studies show that electric field levels within 10 feet of solar PV systems are not above background levels (less than 5 volts per meter) (Transportation Research Board 2011).

Cables and equipment used in electrical energy distribution can be magnetic field sources. The Proposed Action would generate magnetic fields at the same frequencies and levels as existing transmission systems on NAF El Centro. Solar PV panels also generate a magnetic field, which is measured as a magnetic flux density. International Commission on Non-Ionizing Radiation Protection guidelines recommend the public not be exposed to magnetic flux levels exceeding 4×10^{-2} tesla at 1-hertz frequency. Studies show that magnetic flux density measured within 10 feet of solar PV systems is significantly below this threshold at 2×10^{-5} to 1.4×10^{-4} tesla.

Solar PV systems can generate electromagnetic fields that can theoretically interfere with airport communication systems. These fields can result from electrical current moving through power transmission lines, or from wireless communication components associated with solar PV tracking systems (motors used to point panels towards the sun during its daily movement). The level of interference from transmission lines varies depending on its voltage, but normally concern about electromagnetic release is confined to higher voltage (345 kV or greater) lines than those associated with the Proposed Action (Transportation Research Board 2011). If wireless communication components are incorporated into the solar PV systems, their frequencies would be de-conflicted with all airport communication systems.

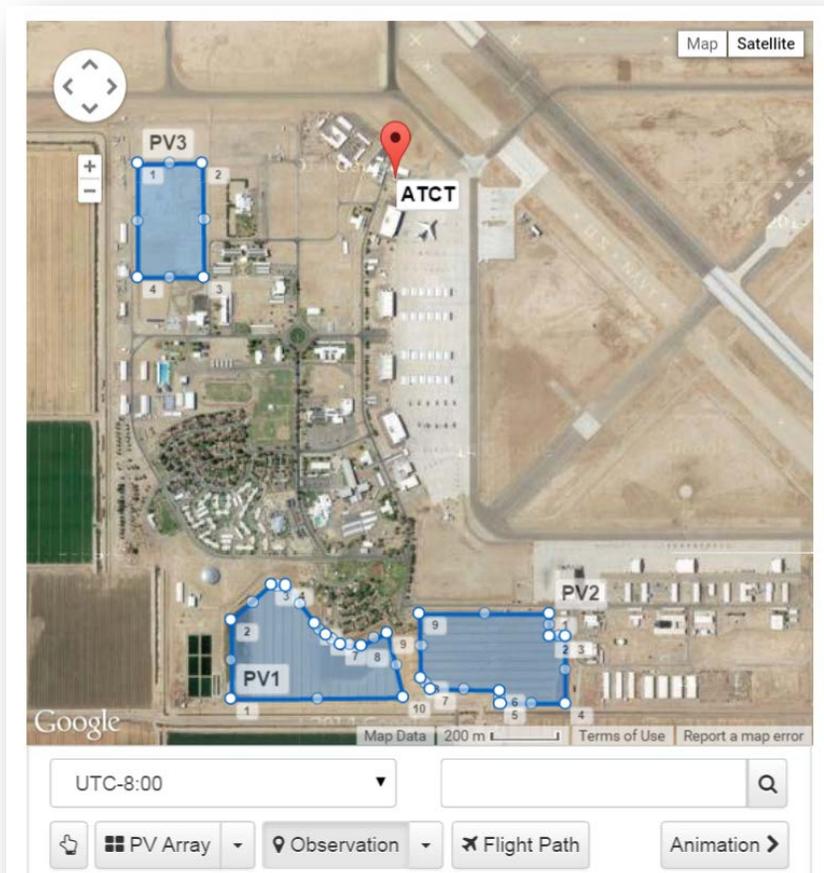
In 2010, the FAA published guidance for siting solar PV systems near airports, and noted that impacts on infrared communications could occur because solar panels can retain heat past sunset, and the subsequent heat release can be picked up by infrared communications in aircraft, causing an unexpected signal. However, the FAA also noted the rarity of this phenomenon, and that more commonly interference to communication systems is caused by a physical structure between the transmitter and the receiver.

Large structures can result in electromagnetic interference by reflecting radar signals, causing loss of radar coverage along tracking routes or producing false radar signals referred to as "clutter." While the low profile (six to eight feet above ground level) of ground-mounted solar PV systems would pose little risk of interfering with radar transmissions, some solar PV projects at other regional airports have been required to be set back from radar equipment as a protective buffer. The solar fields at Oakland International Airport and Meadows Field Airport were required to meet setbacks from transmitters of 500 feet and 250 feet, respectively (Transportation Resource Board 2011). The Navy would ensure that appropriate setback distances from any future (see Section 4.1) communications systems are incorporated into those systems' final design. No adverse impacts to public health or safety would be associated with electromagnetic fields and radio frequencies resulting from the Proposed Action.

Solar Glare Hazards

In order to determine whether the Proposed Action would result in glint or glare hazards to aviators or air traffic control personnel, the Navy conducted several modeling iterations using the SGHAT model prescribed by the FAA. This model allows users to map out planned PV arrays graphically using a mapping tool (see Figure 3.8-3), assign various attributes to the PV arrays, and evaluate year-long effects (at one minute intervals) from a variety of flight approach routes or single observation points.

Figure 3.8-3. Solar PV Array and Air Traffic Control Tower Placement in SGHAT Analysis



For this analysis, the Navy assumed that all the solar PV panel arrays were single-axis tracking systems (allowed to track up to 45 degrees in each direction), with panels oriented towards the south (180 degrees), and tilted at a 33-degree angle from the horizontal position. This is a common arrangement used to maximize the generation efficiency of PV systems at this latitude, and also provides a conservative estimate of the potential for glare effects (due to the continual movement of panels to face the sun). The Navy also assumed that solar PV panels would be constructed of lightly textured glass with anti-reflective coating added.

The Navy evaluated glare effects for fixed-wing aircraft landings on the 08/26 and 12/30 runways from standard approach routes (see Figure 3.8.-2), for personnel located in the Air

Traffic Control Tower (fixed point), and an approach route for helicopters from the NAF El Centro main gate area towards the landing pad in the southwest corner of the airfield. Results are summarized in Table 3.8-1. No glare effects were found for the Air Traffic Control Tower or standard fixed-wing approach routes on the 08/26 and 12/30 runways.

Table 3.8-1. SGHAT Modeling Results for the Proposed Action

Approach or Viewing Point	Results	Notes
Air Traffic Control Tower	No Glare	Single viewpoint. Varying viewing height between 50 and 200 feet produced no glare effects.
Runway 8, 90 degree approach	No Glare	
Runway 26, 259 degree approach	No Glare	
Runway 12, 134 degree approach	No Glare	
Runway 30, 304 degree approach	No Glare	
Helipad, 0 degree approach	Glare found at certain approach altitudes; but low potential for after-image. Avoidable through PV panel array design modifications.	Assumes an approach route at 0 degrees (due north) from the main gate area, crossing between the proposed locations of the solar PV arrays at Parcels 2 and 3, then turning east towards helipad.

The only glare effects found were for a helicopter approach route passing between the solar PV arrays at Parcels 2 and 3, heading north from the main gate area. The analysis showed potential for minor glare, depending upon the aircraft's approach altitude. Approaches with altitudes below 140 feet (42 meters) above ground level (at the southern boundary of Parcels 2 and 3) showed no potential for glare during any times of the year. When approach altitudes were modeled at greater than 140 feet (42 meters) above ground level, then glare was predicted during summer months, with the time of day observed varying with approach altitude. However, glare levels on the helicopter approach route were found to be minor, with a low potential for ocular after-image. In addition, glare was only predicted to be visible during a very short portion (0.25 mile or less) of the approach route; limited to the area at the southern boundary of Parcels 2 and 3. No glare is predicted to occur after helicopters pass this point and make their final approach to the helipad. Given the limited seasonal occurrence, limited times of day, limited points of visibility, and low intensity of the glare, glare from solar PV panels are not expected to result in hazards to pilots or interference with airfield operations. Additionally, final design of the solar PV panels at Parcels 2 and 3 could include adjustments to further reduce the risk of glare effects to helicopter pilots on this approach route. For example, if the solar PV panels were oriented slightly away from the typical 180 degree (due south) direction (e.g., Parcel 2 at 195 degrees and Parcel 3 at 165 degrees) then no glare effects were predicted at any altitudes using SGHAT, with only marginal reductions in PV generation efficiency. As a result, there would be no adverse impacts to public health or safety associated with glint or glare effects as a result of the Proposed Action.

Bird-Aircraft Collision Hazards

Implementation of the Proposed Action would not result in changes to the frequency, routing, or altitude of aircraft operations. No changes to BASH potential would be expected. However, there has been general public concern at other solar sites that installation of large solar power generating facilities (both PV and other technologies) can result in increased attraction of birds and other wildlife, potentially resulting in increased BASH risks. These concerns are based on direct observations of birds perching upon solar equipment arrays or seeking shade beneath them, as well as the possibility that birds may mistake solar arrays for surface water bodies while in flight (“lake effect”).

A study by the U.S. Department of Agriculture National Wildlife Research Center (USDA 2013) evaluated the hazard level posed by PV facilities to aircraft; compared bird and mammal use of the two land cover types (PV or open land); and provided findings and guidance to the FAA. The study compared open land with PV-covered land at airports in five locations across the country. The results indicated that most observations at PV arrays were of perched birds and noted that perched birds (either on or under panels) do not present risk to aircraft. However, the study noted that it is unclear if the PV arrays were drawing birds from outside the airport, or whether the observations were simply local birds that would be present regardless of the presence or absence of the PV arrays.

The Navy has previously received general comments on the potential for the phenomenon known as “lake effect” (where birds may mistake PV panels for a body of water) associated with the Navy’s proposed construction and operation of solar PV systems at several other installations in California. Although PV panels are inherently absorptive (i.e., non-reflective), they do reflect horizontally polarized light similar to the way a lake’s smooth, dark surface horizontally polarizes reflected sunlight and skylight. This feature may confuse birds that use polarized light for orientation or behavioral cues (Desert Renewable Energy Conservation Plan Independent Science Advisors 2010). The USFWS Forensics Lab concluded in 2014 that birds attracted to water may mistake the sky reflected in PV panels or horizontal polarized light source as a body of water (USFWS 2014b). This scenario may be the reason why waterfowl are often over-represented among avian mortalities at solar PV projects in the Southwest. Additional discussions of direct avian mortality due to lake effect are presented in section 3.2 of this EA.

While the lake effect phenomenon continues to be studied, data is lacking. Conclusions based entirely on observational (non-experimental) data cannot be proven statistically; it is therefore impossible to verify data accuracy and precision, and lack of bias. For example, the USFWS study did not differentiate between lake-effect-related and non-lake-effect-related avian mortalities resulting from impact trauma. Therefore, while the lake effect phenomenon could result in increased BASH, this potential increase cannot be proven nor quantified with the data available. To minimize potential lake-effect impacts to birds from implementation of the proposed action, best available science and appropriate design specifications would be used and implemented during construction of the solar PV project.

If there were an increase in BASH potential, it would be mitigated by continued adherence to BASH procedures used at NAF El Centro to minimize incidences. For example, BASH risk increases during seasonal migration patterns so special briefings are provided to Navy pilots and low altitude flights and some training types are limited (e.g., multiple approaches, closed pattern work) at the airfield during periods of increased BASH potential. As a result, there would be no adverse impacts to public health or safety from BASH from the Proposed Action.

3.8.2.3 No Action Alternative

Under the No Action Alternative, no new solar PV system would be constructed, and the associated hazardous and toxic materials and waste would not be stored or used at any of the development parcels. As a result, there would be no adverse impacts to public health or safety associated with human exposure to hazardous materials or waste.

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4.0 Cumulative Impacts

4.1 INTRODUCTION

4.1.1 DEFINITION OF CUMULATIVE IMPACTS

The approach taken for this cumulative impacts analysis follows the objectives of NEPA and the Council on Environmental Quality regulations for implementing NEPA. The regulations require that the analysis of cumulative impacts in an EA consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7).

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar geographic area or during a similar time period. Actions overlapping, or in proximity to, a proposed action can have more potential for cumulative impacts on “shared resources” than actions that are geographically separated. Similarly, actions that coincide temporally would tend to offer a higher potential for cumulative impacts. To the extent that sufficient information regarding such actions exist and the actions have a potential to interact with the Proposed Action outlined in this EA, these actions are included in the cumulative analysis.

4.1.2 GEOGRAPHIC BOUNDARIES FOR CUMULATIVE IMPACTS ANALYSIS

Geographic boundaries for analysis of cumulative impacts in this EA vary for different environmental resources. For example, the Salton Sea Air Basin may be the appropriate geographic extent for cumulative impacts to air quality, whereas the 71 acres of direct development may be the appropriate boundary for other resources. This cumulative impacts analysis focuses on projects that directly overlap with the Proposed Action (i.e., occur in similar locations and potentially affect similar resources).

4.2 PROJECTS WITH POTENTIAL FOR CUMULATIVE IMPACTS

The Navy identified past, present, and reasonably foreseeable actions near the Proposed Action analyzed in this EA. Projects within or near the project vicinity that could interact with the Proposed Action are described in the subsections below. The Navy considered projects and analyses sponsored by federal, State of California, and local government entities, as well as private parties. These actions are neither part of the Proposed Action described in this EA, nor are they dependent on them. Where applicable, environmental analyses of the other actions addressed in this section have been, or will be, conducted separately, with the results of the analyses incorporated into documents prepared specifically for those actions.

4.2.1 OCOTILLO SOLAR PHOTOVOLTAIC ENERGY PROJECT (PROJECT 1)

San Diego Gas & Electric has filed an application with the BLM for a right-of-way grant to construct, operate, maintain, and decommission a 100-acre (40-hectare) solar PV facility on BLM-managed lands located 9 miles (14.5 kilometers) southwest of the City of El Centro. The solar PV facility would interconnect with the existing Imperial Valley Substation via a buried

12.47-kV transmission line and is expected to generate between 15 to 18 MW of electricity. An Environmental Impact Statement was prepared to analyze environmental impacts related to the project, and an amendment to the California Desert Conservation Area Plan was proposed. A Record of Decision was signed in April 2014 to approve the project, selecting the preferred alternative analyzed as Alternative 3, and amending the California Desert Conservation Area Plan to identify the 102 acres (41.3 hectares) of public land within the solar facility footprint and laydown area as suitable for solar energy development (BLM 2014a). Currently, the project is on hold while BLM considers the economic feasibility of constructing the solar energy facility. If BLM moves forward with the proposed project, construction would not begin before Fall of 2015. (Ludwig 2015). The project would be located 7 miles (11 kilometers) south of NAF El Centro.

4.2.2 IMPERIAL SOLAR ENERGY CENTER WEST (PROJECT 2)

CSOLAR Development, LLC filed an application with the BLM for a right-of-way grant to construct, operate, maintain, and decommission an electrical transmission line and associated access on public lands. The project consists of three primary components: (1) the construction and operation of a 250-megawatt solar energy facility; (2) the construction and operation of an approximately 5-mile (8-kilometer) electrical transmission line that would connect from the solar facility to the existing Imperial Valley substation; and (3) proposed construction of an access road that traverses the proposed transmission line right-of-way on BLM lands. The solar energy facility would be located on approximately 1,130 acres (457 hectares) of fallow agricultural land in the unincorporated area of Imperial County. The proposed transmission line and access road would be located within the Yuha Desert and within BLM's Utility Corridor "N" of the California Desert Conservation Area Plan. A Final Environmental Impact Report/EA for project compliance with the California Environmental Quality Act (CEQA) and NEPA was prepared in July 2011. The project was approved in August 2011, and the BLM issued a right-of-way grant for the project in September 2011. Construction began in 2014, with commercial operation expected to begin in 2016 (Tenaska, Inc. 2014). The project would be located approximately 5.5 miles (9 kilometers) southwest of NAF El Centro.

4.2.3 U.S. NAVY CONSTRUCTION AND OPERATION OF SOLAR PHOTOVOLTAIC SYSTEMS AT MULTIPLE INSTALLATIONS IN CALIFORNIA (PROJECT 3)

The Navy has prepared an EA evaluating the potential environmental impacts from the Navy allowing solar power developers to construct, operate, and own solar PV systems on five Navy Region Southwest installations: NAF El Centro; Naval Support Activity Monterey's Main Site and Navy Annex; Naval Weapons Station Seal Beach; Naval Weapons Station Seal Beach Detachment Norco; and Naval Base Ventura County Port Hueneme. This would include the installation of ground-mounted, carport-mounted, and rooftop-mounted PV systems. Specific installation details would vary slightly based on the project site and the solar power developer's site design. This proposal includes a smaller (10 acre/4 hectare) solar PV system within the same land space considered for Parcel 2 in this EA. However, if a decision is ultimately made to develop PV solar power on Parcel 2 pursuant to either project, consideration of Parcel 2

would then be deleted from the other EA remaining in development, and development of Parcel 2 would then effectively amount to a cumulative project for purposes of such EA remaining in development.

4.2.4 CONSTRUCTION OF A DASR TOWER ON NAF EL CENTRO (PROJECT 4)

The Navy plans to construct a DASR tower within the land space considered for Parcel 1 in this EA. DASR is a new terminal air traffic control radar system that replaces current analog systems with digital technology. The DASR system detects aircraft position and weather conditions in the vicinity of airfields using primary and secondary radar systems. The primary radar uses a continually rotating antenna mounted on a tower to transmit electromagnetic waves that reflect from the surface of aircraft up to 60 miles away. The primary radar also provides data on rainfall intensity. The secondary radar uses a second antenna attached to the top of the primary antenna to transmit and receive area aircraft data for barometric altitude, identification code, and emergency conditions. The DASR tower would occupy approximately 1 acre (0.4 hectares), not including any additional safety and security setbacks.

4.2.5 IRIS CLUSTER SOLAR FARM PROJECT (PROJECT 5)

This project consists of the proposed Ferrell Solar Farm, Rockwood Solar Farm, Iris Solar Farm and Lyons Solar Farm, collectively known as the “Iris Cluster Solar Farm Project” (Imperial County 2015) The proposed solar farms project would consist of two primary components: (1) the combined construction and operation of an expansive PV and/or concentrated PV solar energy facility and supporting uses; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnections. The ombined acreage of the four proposed solar farm sites encompasses 1,400 acres of land located in the southern portion of Imperial County. The interconnection for the proposed projects will occur at the 230 kV side of the San Diego Gas & Electric Imperial Valley Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. The project would be located approximately 8 miles (13 kilometers) southwest of NAF El Centro.

4.2.6 RANCHO LOS LAGOS COMMUNITY DEVELOPMENT (PROJECT 6)

The project includes construction of residential, commercial, and light industrial components in an unincorporated area of Imperial County (Imperial County 2012). The Rancho Los Lagos Specific Plan encompasses 1,076 acres of unincorporated land adjacent to the City of Brawley in Imperial County. The project is designed as a pedestrian oriented residential community where parks, schools and other facilities are within a short walk of residences. The project establishes that a maximum number of 3,830 dwelling units would be developed under the Specific Plan. The project has four main components: a family residential area; an active adult, age restricted residential area; a golf course; and a business park. Within these major areas are other proposed uses, including warehouse industrial, commercial, retail, mixed use, parks, and schools. Each of the four components would be developed independently, and each may be multi-phased. As phases are developed, infrastructure and public facilities would be developed concurrently and would be appropriate based on the percentage of residential development within the respective phase. The project would be located approximately 14 miles (23 kilometers) northeast of NAF El Centro.

4.2.7 NAF EL CENTRO MAIN GATE ACCESS IMPROVEMENT (PROJECT 7)

NAF El Centro plans to automate access at the front gate by installing card readers for frequent and approved users (Center, et al 2015). Neither the security building nor the guard house will be relocated, and the circulation of traffic would not change. The only changes that would occur with installation of the automated card reader(s) are the location and configuration of the barricades and other 'obstacle' (cones, speed inhibitors) security measures. Surrounding land uses would remain the same including agricultural use a few hundred yards to the east of the gate. This project would occur near the proposed solar PV development at Parcels 2 and 3 on NAF El Centro.

4.2.8 IMPERIAL COUNTY CENTER II PROJECT (PROJECT 8)

The proposed County Center II Expansion project site consists of 240 acres of land located in an unincorporated area of the Imperial County, immediately south of the City of El Centro (Imperial County 2010). The project site includes the existing County Center II site (80 acres) and 160 acres of land immediately surrounding the site (currently agricultural lands). The primary component of the proposed project is a zone change to the portions of the site that are currently zoned A-2 (general agricultural), in order to allow the development of a variety of institutional and civic related uses in the future. With the exception of an Imperial County Office of Education related component, no specific development plan is proposed. Of the 80-acre portion of the Imperial County Office of Education component, 30 acres is proposed for: the Imperial County Office of Education – Center for Exceptional Children; administrative and support facilities; commercial uses; judicial center (family courts), a new jail; public works facilities; a County administrative complex, and a County park. The project would be located approximately 9 miles (14 kilometers) southeast of NAF El Centro.

4.2.9 WISTARIA RANCH SOLAR ENERGY CENTER PROJECT (PROJECT 9)

This Project is a renewable energy project employing PV or concentrated PV technology at multiple locations (Imperial County 2014a). The applicant has filed 16 applications to develop up to 16 individual solar projects or clusters of multiple solar projects on 29 parcels totaling approximately 2,661 acres. Alternatively, the Project could be built out in its entirety (i.e., all 16 applications) at one time. Each application is approximately 20 MW while the entire Project (if built-out at once) would generate 250 MW. The solar field site parcels are approximately six miles southwest of the City of El Centro, California and 5.5 miles directly west of Calexico, California. The solar field site parcels are located in three clusters (northern, central, and southern) of agricultural land that are currently owned by 12 separate landowner groups. In addition to the structures associated with the solar field, the Project design would include an Operations and Maintenance building or buildings, and a type of energy storage facility that could accommodate a variety of evolving energy storage technologies. The project sites would be located between 6 miles (10 kilometers) and 10 miles (16 kilometers) south of NAF El Centro.

4.2.10 WEST CHOCOLATE MOUNTAINS RENEWABLE ENERGY EVALUATION AREA (PROJECT 10)

The BLM has completed a Final Environmental Impact Statement, Record of Decision, and a Conservation Area Plan Amendment to facilitate testing and development of geothermal, solar, and wind energy in the West Chocolate Mountains Renewable Energy Evaluation Area within the California Desert Conservation Area. The BLM selected Alternative 6 (the preferred alternative) in its Final Environmental Impact Statement. Under this plan amendment alternative, a maximum of 29,758 acres (9,066 acres on BLM land) could be developed for solar energy (including an estimated 3,306 MW of power production), and up to 1,026 acres of land could be disturbed for geothermal energy development (up to three geothermal power plants estimated at 50 MW each could be constructed, for a total of 150 MW). No wind energy would be developed under this decision.

Site-specific considerations for geothermal leases will be analyzed in subsequent NEPA documents when applications are submitted, and may result in additional conditions of approval. This Record of Decision established a 10,759-acre Solar Energy Zone west of the Coachella Canal, which would allow solar energy development applications to qualify for priority processing. The evaluation area is located along the eastern edge of the Salton Sea, adjacent to the Chocolate Mountains Aerial Bombing Gunnery Range, and 30 to 50 miles (48 to 80 kilometers) north of NAF El Centro.

4.2.11 CALIFORNIA ETHANOL & POWER IMPERIAL VALLEY 1 PROJECT (PROJECT 11)

California Ethanol and Power Imperial Valley 1, LLC is proposing to build, operate, and maintain the ethanol, electricity, and bio-methane facility on approximately 158 acres located approximately 4 miles south-southeast of the City of Brawley and approximately 5 miles north-northeast of the City of Imperial (Imperial County 2013). The proposed project consists of two primary components: 1) a sugarcane and sweet sorghum-to-ethanol, electricity and bio-methane facility; and, 2) 41,000 acres of sugarcane supplemented by 33,000 acres of sweet sorghum. Both crops will be grown in the Imperial Valley. The Sugarcane and Sweet Sorghum-to-Ethanol, Electricity and Bio-Methane Facility was developed to meet demand for new forms of renewable energy and provide a means for California fuel blender/retailers to meet Low-Carbon Fuel Standard obligations. The facility would produce up to 66 million gallons per year of ethanol; generate 50 MW of renewable energy (33.6 MW of which would be available for sale into the electrical grid on an annual basis); and produce 93 million cubic feet of bio-methane and 28,000 tons of inorganic fertilizer annually. The project would be located approximately 11 miles (18 kilometers) northeast of NAF El Centro.

4.2.12 SEVILLE SOLAR FARM COMPLEX (PROJECT 12)

Regenerate Power LLC is proposing to build, operate, and maintain a solar generation facility capable of producing approximately 135 MW on approximately 1,238 acres of private land in west-central Imperial County (Imperial County 2014). The proposed project would consist of five solar PV or concentrating PV energy projects on five individual lots. The project could also include construction of operations buildings with supporting infrastructure; extending an existing

12.5 kV distribution system; constructing a new access road from State Route 78; and approximately three miles of new 92 kV transmission line. The project would be located approximately 25 miles (40 kilometers) northwest of NAF El Centro.

4.3 CUMULATIVE IMPACTS ANALYSIS

4.3.1 AIR QUALITY AND CLIMATE CHANGE

The geographic extent for cumulative effects on air quality is defined as areas within the Salton Sea Air Basin. As described in Section 3.1, construction of the Proposed Action would result in negligible localized, short-term effects on air quality during construction. Implementation of standard conservation and construction measures described in Section 2.3.6 would be used to minimize fugitive dust and air emissions generated during construction. Emissions from other projects that may be constructed concurrently within the same air basin would contribute to regional air quality impacts during proposed construction. However, emissions associated with the Proposed Action would be temporary—only during construction—and relatively minor. Moreover, once construction would be completed, operation of the proposed solar PV systems would immediately and substantially reduce and avoid long-term emissions associated with conventional non-renewable generating sources, thereby resulting in beneficial effects to air quality throughout the air basins. Therefore, proposed construction and operation, in combination with air emissions from cumulative projects, would not contribute to a significant, cumulative impact on air quality in the region.

Impacts related to greenhouse gas emissions are, by nature, global and cumulative, since individual sources of greenhouse gas emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact to global climate change would only occur if greenhouse gas emissions associated with the Proposed Action were to combine with such emissions from other man-made activities in such a way as to appreciably increase climate change impacts on a global scale.

Implementation of all the projects identified in Section 4.1 would result in emissions of greenhouse gases during their construction phases. However, due to the temporary nature of construction emissions, regional construction emissions would not result in a significant cumulative impact related to climate change. In addition, operation of the Proposed Action and several of the regional projects (Projects 1-3, 5, and 9-12) would result in long-term reductions of emissions of greenhouse gases (expressed as carbon dioxide equivalent, or CO₂e) and criteria pollutants (refer to Section 3.1, Tables 3.1-2 and 3.1-3) by reduced consumption of electricity from non-renewable sources. The emissions avoided through operation of these renewable energy projects would more than offset the short-term construction emissions within their first year of operation.

The implementation of the Proposed Action, when added to the impacts from the past and reasonably foreseeable future projects in the region, would result in positive (beneficial) long-term cumulative impacts related to global climate change and regional air quality.

4.3.2 BIOLOGICAL RESOURCES

The geographic extent for cumulative effects on biological resources is defined as the Imperial Valley and Colorado Desert region. Projects that could contribute to a cumulative effect on biological resources when added to the similar effects of other past, present, and reasonably foreseeable future projects, include those that would result in the permanent loss of vegetation or wildlife communities, permanent loss of sensitive plant or wildlife populations, habitat fragmentation, or the permanent loss of wetlands or wildlife migration corridors.

Vegetation Communities

At NAF El Centro, up to 71 acres (28.7 hectares) of vegetation would be permanently removed under the Proposed Action. Two additional solar energy projects have been identified in the surrounding area, which would remove approximately 1,250 acres (506 hectares) of vegetation, combined. Collectively, these projects could have a cumulative impact on vegetation communities. However, given the relatively small area impacted at NAF El Centro, and the large amounts of undeveloped land surrounding the installation, particularly to the west, the potential cumulative impacts would be minor.

Wildlife

The Proposed Action at NAF El Centro could affect individuals of less-mobile small mammal, reptile, and amphibian species, and could disturb and displace more mobile mammal species. Impacts from the two proposed solar projects in the vicinity of NAF El Centro would likely be similar. However, given the distances of these two projects from NAF El Centro (at least 5.5 miles [9 kilometers]), cumulative impacts to mammals, reptiles, and amphibians would be unlikely. The Proposed Action and the two solar projects in the vicinity of El Centro could have a cumulative impact on birds through habitat loss, particularly for migratory species and those species with large territories. However, because the amount of habitat to be removed is relatively small given the larger regional context, cumulative impacts to birds would be minor.

Threatened and Endangered Species

The Proposed Action analyzed in this EA would have no effect on federally listed threatened and endangered species and no impact on state listed threatened and endangered species because there is no habitat on the project sites to support federal- or state- listed species. Therefore, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts to threatened and endangered species.

Wetlands and Waters of the United States

The Proposed Action analyzed in this EA would have no impacts to wetlands or waters of the United States because these features are not present on the project sites. Therefore, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts to wetlands or waters of the United States.

4.3.3 LAND USE AND AIRSPACE

The geographic extent for cumulative effects on land use is defined as the installation boundaries at NAF El Centro. Under The Proposed Action, ground-mounted solar PV systems would be constructed and operated in agricultural outlease areas and a vacant lot currently only sporadically used for overflow parking at NAF El Centro; consequently, permanent land use

changes would occur at the site from historic agricultural use and vacant land used sporadically to renewable energy development. No other projects that would convert agricultural use to another land use are proposed at the installation at this time. Considering the small percentage of acreage discontinued from agricultural use (56 acres [22.6 hectares]) when compared to all outleased property on the installation (5.1 percent of the total [1,105 acres (447.2 hectares)]), no significant cumulative impacts to land use would be expected to occur to agricultural uses at NAF El Centro. (It should also be noted that any acreage removed from agricultural production at NAF El Centro would represent only a minimal percentage of agricultural land in the region generally.).

Adequate parking space currently exists aboard NAF El Centro to meet the occasional, temporary parking needs. The construction of a DASR on approximately 1 acre (not including setback areas) on Parcel 1 would not conflict with the renewable energy land use; construction of the DASR would slightly reduce the acreage being considered for renewable energy land use by approximately 1 acre.

None of the three parcels is located within the airfield operations-established clear zone, safety minimum subzone, or Accident Potential Zones I and II. The proposed renewable energy land use for the three parcels is consistent with surrounding land uses and would not affect airspace or airfield operations.

Therefore, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts to land use and airspace.

4.3.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The geographic extent for cumulative effects on socioeconomics and Environmental Justice at NAF El Centro is defined as Imperial County, California. Area population and housing would not be affected by implementation of the Proposed Action because no new military or civilian personnel requiring housing in the NAF El Centro vicinity would be needed during construction or operation of the Proposed Action. No job losses would occur as a result of discontinuing sporadic temporary parking at Parcel 1 and agricultural use at Parcels 2 and 3, since local agricultural workers farm a number of fields in the area on a regular basis, and do not depend solely on the 56 acres (22.6 hectares) spread across Parcels 2 and 3 for employment. Additionally, construction would likely boost the purchase of local goods and services, resulting in short-term, beneficial socioeconomic effects for the regional economy.

Based on the analysis of impacts presented in Sections 3.1 through 3.8, the Proposed Action would not result in disproportionately high or adverse human health or environmental effects on children, or disproportionately high or adverse effects on minority or low-income populations.

Projects 1 and 2, listed in Section 4.1, are estimated to occur within the geographic extent of cumulative effects for socioeconomics and environmental justice. These projects have recently undergone separate environmental review under NEPA and CEQA, which concluded that the projects could result in short-term, beneficial, cumulative effects to the local economy due to job creation during construction, and minimal, if any, changes in socioeconomics in Imperial County during operations, given the minimal staffing levels required for solar plant operations.

Additionally, these projects would not result in disproportionately high or adverse human health or environmental effects on children, or disproportionately high or adverse effects on minority or low-income populations. Projects 1 and 2 along with the Proposed Action could result in beneficial effects to environmental justice communities and children due to the net reduction in air emissions associated with power generation.

Projects 3 and 4, listed in Section 4.1, would geographically overlap with the Proposed Action, and in the case of Project 4, could be reduced in scope by the implementation of the Proposed Action. These projects could result in short-term, beneficial, cumulative effects to the local economy due to job creation during construction, and minimal, if any, changes in socioeconomics in Imperial County. Additionally, these projects would not result in disproportionately high or adverse human health or environmental effects on children, or disproportionately high or adverse effects on minority or low-income populations.

Overall, the Proposed Action, in combination with other cumulative projects, would not contribute to significant cumulative impacts related to socioeconomics within Imperial County or near the project site at NAF El Centro.

4.3.5 UTILITIES

The geographic region of analysis for potential cumulative impacts to utilities is defined as all of the utility generation and distribution systems serving NAF El Centro.

As discussed in Sections 3.6.2.1 and 3.6.2.2, availability and delivery of electricity would be improved at NAF El Centro and/or other areas in Imperial County (depending upon whether a Model 2, 3 or 2/3 hybrid was selected) under the Proposed Action, and would lessen the affected consumers' overall electricity usage dependent on non-renewable electrical energy sources. The ongoing trend of utility-scale renewable energy development in Imperial County (see projects 1-3, 5, 9-12), combined with the Proposed Action, would continue to provide local electrical utilities with greater percentages of renewable energy in their portfolios, and reduce consumers' use of electricity from fossil fuel sources. This would result in a positive cumulative effect on the availability of electrical energy within Imperial County and elsewhere in southern California.

Sufficient capacity exists within the regional landfills to accommodate the solid waste generation from construction of the solar PV systems, and there would be an inconsequential change in the level of operational activities associated with the Proposed Action. Further, the Proposed Action would not involve any impacts to natural gas delivery or wastewater system during construction and operation, and the minimal quantities of water required by the project and supplied by the contractor during construction and operation, when compared against the current baseline conditions, would not be significant.

Therefore, the Proposed Action, combined with other regional projects, would not result in significant cumulative impacts to utilities.

4.3.6 VISUAL RESOURCES

The geographic extent for cumulative impacts to visual resources is defined as the project sites at NAF El Centro and the surrounding areas within 0.25 mile (0.40 kilometer).

During operation of the PV systems, only minor long-term individual impacts to the viewsheds of Parcels 1 through 3 at NAF El Centro would result from the presence of permanent project features (e.g., ground-mounted panels, electrical lines) since these locations would be viewed on a very limited basis by viewers from outside the installation. On-installation viewers' experiences during construction would be essentially the same as during operation with only partial views of the PV systems being visible because of natural and man-made obstructions. Those limited views would be consistent with the overall industrial land use of the area. Thus, as with operation of the PV systems at the three parcels, any impacts from construction would be at most minor also. The overall visual contrast from project features would be weak. Although no significant impacts to visual resources would occur, implementation of the applicable conservation and construction measures described in Section 2.3.6 (e.g., reducing contrast in color between the metal project components and nearby structures and reducing potential glare and shielding and directing lights downward) would further minimize impacts of color contrast, glare and lighting at these locations..

The majority of the reasonably foreseeable future actions as identified in Section 4.2 would be located well outside the viewsheds of the Proposed Action. While the DASR Radar Tower (Project 4) could be constructed on the same land space as Parcel 1, it would be sited on the edge of an active airfield, would be consistent with infrastructure seen in the area, and would not be viewable from Navy family housing or offsite locations. Therefore, the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts to visual resources.

4.3.7 WATER RESOURCES

The geographic extent for cumulative effects on water resources is defined as the project sites at NAF El Centro and the water bodies that may receive surface water flows from the project sites (e.g., New River, Elder Canal). Potential impacts to water resources may include increases in sedimentation into local water bodies, the increase in impermeable surfaces that would alter volumes or patterns of surface flows or increase flooding potential, and the discharge of construction-related waste materials that could affect downstream water quality.

The Proposed Action would require surface disturbance (e.g., grading, localized excavation) during the construction of the solar PV systems, which could result in storm water runoff. Best management practices (e.g., silt fencing) would be followed, including development of grading plans, development of spill prevention plans, and adherence to erosion and storm water management practices outlined in the SWPPP for the project, as described in Sections 2.3.6, to contain soil, construction-related contaminants (e.g., oils) and runoff on the project sites. The majority of the projects identified in Section 4.2 are geographically and hydrologically separated from the Proposed Action, and would not affect the same water bodies or drainage pathways. While the DASR Radar Tower (Project 4) would occur at the same location as Parcel 1, it would be subject to the same conservation measures and oversight applicable to the Proposed Action,

and would not result in any additional adverse impacts. Therefore, implementation of the Proposed Action, combined with other cumulative projects, would not result in significant cumulative impacts to water resources.

4.3.8 PUBLIC HEALTH AND SAFETY

The geographic extent for cumulative impacts on public health and safety is defined as the land areas of NAF El Centro, and the airspace above NAF El Centro and extending two horizontal miles from its runways. The Proposed Action would not result in any significant individual impacts to the health and safety of military and civilian aviators, NAF El Centro's employees, families, or temporary workers, or the local public. Potential impacts resulting from other Projects 1 and 2 in Section 4.1 (e.g., potential for glare effects on aviators) would be discrete events if they were to occur, and would not overlap spatially or temporally with the Proposed Action, resulting in no significant cumulative impacts. As Projects 3 and 4 would occur on the same land space as the Proposed Action, the Navy would ensure that these projects (and/or the Proposed Action) were modified during their design phases to ensure they were compatible with each other, and did not introduce any new safety hazards.

4.4 CONCLUSION

The Navy reviewed the potential cumulative impacts resulting from implementation of the Proposed Action and other past, present, and reasonably foreseeable future projects. The Navy has determined that the projects identified for this analysis and the Proposed Action would not result in significant cumulative impacts to the environment.

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5.0 NEPA and Other Considerations

This chapter addresses additional considerations required by NEPA, including:

- Possible conflicts between the Proposed Action and the objectives of federal, regional, state, and local plans, policies, and controls;
- Energy requirements and the conservation potential of the Proposed Action and No Action Alternative;
- Irreversible and irretrievable commitment of natural or depletable resources;
- Short-term versus long-term productivity; and,
- Any probable significant environmental impacts that cannot be avoided and are not amenable to mitigation.

5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

Implementation of the Proposed Action would comply with existing federal regulations and state, regional, and local policies and programs, while maintaining the Navy's mission. The project would be completed in accordance with the Migratory Bird Treaty Act, the Endangered Species Act, the Clean Air Act, and the National Historic Preservation Act. The RONA has been completed for project development in accordance with the Clean Air Act (refer to Appendix C).

5.2 ENERGY REQUIREMENTS, CONSERVATION POTENTIAL OF PROPOSED ACTION AND NO ACTION ALTERNATIVE

Energy required to implement the project would include fuel and electricity to power vehicles and equipment during construction and periodic maintenance activities. Fuel for construction and maintenance vehicles and equipment is currently available in adequate supply from Navy-owned and other local sources. Required electricity demands during project construction would be supplied by existing electrical services at NAF El Centro. If selected, the No Action Alternative would not result in a post-completion increase of energy usage over existing usage.

Direct energy requirements under the Proposed Action would be limited to those necessary to operate vehicles and equipment. No superfluous use of energy has been identified, and proposed energy uses would be minimized to the greatest extent possible without compromising the integrity of the proposed facilities to be constructed. Proposed new construction would comply with applicable local, state, and federal codes designed to promote energy efficiency and the use of renewable energy resources. Further, operation of the Proposed Action would produce a renewable energy source that could supply electricity to customers in the vicinity of NAF El Centro and/or to the installation itself, thereby conserving fossil fuels and reducing the Navy's dependence on non-renewable energy sources.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. These include non-renewable resources, such as metal and fuel, and other natural or cultural resources. These resources are irretrievable in that they would be used for a project when they could have been used for other purposes or conserved. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the Proposed Action would involve an irreversible or irretrievable commitment of materials and environmental resources. Non-renewable resources, such as fuel, oil, and lubricants, would be consumed by construction and maintenance vehicles and equipment and would be irreversibly lost. A small amount of building materials, such as concrete, steel and wood, would be irretrievably committed to construct the Proposed Action. Human labor would be required for project construction and engineering purposes. When considered at the regional level, the quantities of these resources expended for construction and operation of the Proposed Action would be relatively inconsequential. Additionally operation of the Proposed Action would produce a renewable energy source that would counterbalance the minimal demands on non-renewable energy resources (i.e., fossil fuels) required to construct the solar PV systems. Therefore, implementation of the Proposed Action would not result in a significant commitment of irreversible or irretrievable resources.

5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY

NEPA requires an EA to address the relationship between short-term uses of the environment and the impact that such uses may have on the maintenance and enhancement of the long-term productivity of the environment. Impacts that would narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option would lessen future flexibility in pursuing other options or that committing a parcel of land or other resource to a certain use would eliminate the possibility of other uses being implemented at that site.

The Proposed Action would include construction and operation of solar PV systems within areas at NAF El Centro already dedicated to exclusive use by the Navy. As part of the Proposed Action, land at NAF El Centro would be removed from agricultural production (for up to 37 years) for development of the proposed ground-mounted solar PV system. The short-term effects of the proposed improvements at the installations would include minor impacts to common vegetation. While the Proposed Action would permanently narrow the range of potential beneficial uses of the environment within the project area, this narrowing of potential uses would occur only within a relatively small area—the portion of the 71-acres actively devoted to agricultural use—and would not represent a meaningful loss of beneficial use on a regional or even local scale (notwithstanding the project's beneficial effect on non-renewable energy consumption and local air quality). Further, the Proposed Action would not affect the long-term productivity of these resources at a regional level.

5.5 PROBABLE SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

This EA has determined that the Proposed Action would not result in any significant impacts; therefore, there are no probable significant environmental effects that cannot be avoided or reduced by mitigation.

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6.0 Agencies and Persons Consulted

[Federal, State of California and local agencies were contacted during the public scoping period (see Appendix A). No comments were received from these agencies, and no formal consultations took place.]

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7.0 List of Names, Expertise, and Experience of EA Preparers

7.1 LEAD AGENCY – UNITED STATES DEPARTMENT OF THE NAVY

Center, Rand, NAF El Centro Planning

Clemente, Hiphil, NAVFAC Southwest BLTL Desert IPT

Collins, Jimmie, NAF El Centro Environmental (Ag/Cul/NEPA)

Dinelli, Dante, NAF El Centro RPAO

Erro, Ruth, NAF El Centro Installation Energy Manager

Fischer, Robert, NAF El Centro Environmental (Air)

Kagele, William, NAF El Centro Environmental

Kelley, Amy, NAVFAC Southwest

Moen, Connie, NAVFAC Southwest NEPA Coordinator

Powell, Robert, NAF El Centro Environmental (Nat Resources)

Remington, Michel, NAF El Centro Environmental

Willis, Marc, NAF El Centro Airfield Manager

7.2 PRIME CONTRACTOR RESPONSIBLE FOR PREPARATION OF EA

Michael West, Senior Environmental Engineer

Expertise: Program Management, NEPA Compliance, Health and Safety, Utilities, Air Quality

Years of Experience: 22

Cheryl Jenkins, Biologist

Expertise: Biological Resources, Water Resources, Visual Resources, NEPA Compliance

Years of Experience: 14

Becky Oldham, Senior Environmental Planner

Expertise: Land Use, Airspace, Socioeconomics, Environmental Justice, NEPA Compliance

Years of Experience: 24

Rob Naumann, Senior Environmental Scientist

Expertise: Quality Assurance/Quality Control, Technical Review

Years of Experience: 16

Paul DiPaulo, Environmental Scientist

Expertise: Public Participation, Description of the Proposed Action and Alternatives

Years of Experience: 4

Deborah Shinkle, Geographical Information Systems Analyst

Expertise: GIS, Graphics, Visual Resources, Land Use, Description of the Proposed Action and Alternatives

Years of Experience: 12

Pamela Lawson, Technical Editor

Expertise: Technical editing, Document Production, Public Participation

Years of Experience: 25

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Appendix A – Public Participation

Newspaper Advertisement

**Imperial Valley Press
December 19-21, 2014**

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A PHOTOVOLTAIC SYSTEM AT NAVAL AIR FACILITY EL CENTRO, CALIFORNIA

The Department of the Navy is preparing an Environmental Assessment (EA) for the Proposed Construction and Operation of a Photovoltaic (PV) System at Naval Air Facility El Centro (NAFEC), California. PV power generation is a clean energy technology that converts sunlight to electricity without environmental emissions during operation. The Secretary of the Navy has directed the Navy to produce 1 gigawatt of renewable energy by the end of 2015. The proposed system at NAFEC would contribute to this overall goal, producing up to 25 megawatts of power on up to 150 acres of land.

The Navy proposes to issue a real estate outgrant to a third-party developer to use Navy land to construct, operate, and maintain a PV system at NAFEC. Although the Navy would receive compensation for the outgrant (e.g., a lease), the developer would sell the generated power to customers outside of the Navy. The PV system would interconnect to an existing electrical substation near NAFEC. The PV system would use ground-mounted solar panels, and would require site preparation, installation of underground and/or aboveground electrical lines, installation of solar panels and associated infrastructure, and installation of security fencing.

Six sites have been identified as potential locations for a PV system. Parcel 1 is a 15-acre site on vacant land in the west-central portion of NAFEC. Parcel 2 is a 30-acre site on vacant (former agricultural) land in the southwest portion of NAFEC near the main entrance. Parcel 3 is a 26-acre site (currently leased for agriculture) located in the southern portion of NAFEC. Parcel 4 is a 12-acre site located north of Parcel 3 and adjacent to the flight line, taxiway, and a hangar. Parcel 5 is a 15-acre vacant lot located near the runway on the southeastern portion of NAFEC. Parcel 6 is a 55-acre site (currently leased for agriculture) located west of Silsbee Road and outside of the NAFEC fence line.

The EA will analyze the potential environmental consequences of development at the six parcels, as well as the No Action Alternative where no development would occur and the current land uses would remain the same.

If you have any suggestions, comments, or concerns about this project, please mail them to the address below. All mailings must be postmarked by January 2, 2015.

NAVFAC SW
ATTN: NAFEC PV EA Project Manager (Code EV21.AK)
1220 Pacific Highway
San Diego, CA 92132

Public Scoping Notification Postcard

The Department of the Navy invites you to participate in the Environmental Assessment (EA) for the Proposed Construction and Operation of a Photovoltaic (PV) System at Naval Air Facility El Centro (NAFEC), California

Photovoltaic (PV) power generation is a clean energy technology that converts sunlight to electricity without environmental emissions during operation. The Secretary of the Navy has directed the Navy to produce 1 gigawatt of renewable energy by the end of 2015. The proposed system at NAFEC would contribute to this overall goal, producing up to 25 megawatts (MW) of power on up to 150 acres of land.

The Navy proposes to issue a real estate outgrant to a third-party developer to use Navy land to construct, operate, and maintain a PV system. Although the Navy would receive compensation for the agreement, the developer would sell the generated power to customers outside the Navy.

Six sites have been identified as potential locations for a PV system. Parcel 1 is a 15-acre site on vacant land in the west-central portion of NAFEC. Parcel 2 is a 30-acre site on vacant (formerly agricultural) land in the southwest portion of NAFEC near the main entrance. Parcel 3 is a 26-acre site (currently leased for agriculture) located in the southern portion of NAFEC. Parcel 4 is a 12-acre site located north of Parcel 3 and adjacent to the flight line, taxiway, and a hangar. Parcel 5 is a 15-acre vacant lot located near the runway on the southeastern portion of NAFEC. Parcel 6 is a 55-acre site (currently leased for agriculture) located west of Silsbee Road and outside of the NAFEC fence line.

The EA will analyze potential environmental consequences of development at the six parcels as well as a No Action Alternative where no development would occur and the current land uses would remain the same. If you have any suggestions or concerns about the proposed project, please send us your comments.

Comments must be postmarked by January 2, 2015

Submit written comments to:

NAVFAC SW
ATTN: NAFEC PV EA
Project Manager (Code EV21.AK)
1220 Pacific Highway
San Diego, CA 92132



Proposed PV Development Sites

NAVFAC SW
ATTN: NAFEC PV EA
Project Manager
(Code EV21.AK)
1220 Pacific Highway
San Diego, CA 92132

First Class Mail
Postage

Naval Facilities Engineering Command Southwest
(NAVFAC SW)
ATTN: NAFEC PV EA
Project Manager (Code EV21.AK)
1220 Pacific Highway
San Diego, CA. 92132



Public Scoping Distribution List

Native American Tribes

The Cocopah Indian Tribe

The Quechan Indian Tribe

Federal Agencies

U.S. Department of Transportation, Federal Aviation Administration, Western Pacific Regional Office, Los Angeles Airports District

California Department of Conservation

California Department of Fish & Game

U.S. Department of the Interior, Bureau of Reclamation, Lower Colorado Region, South California Area Office

U.S. Department of the Interior, U.S. Fish & Wildlife Service, Pacific Southwest Region, Carlsbad Office

U.S. Department of the Interior, U.S. Fish & Wildlife Service, Salton Sea National Wildlife Refuge

U.S. Department of the Interior, Bureau of Land Management, El Centro Field Office

U.S. Department of Homeland Security, U.S. Customs & Border Protection, El Centro Station

State Agencies

California Department of Fish and Game, Inland Deserts Region

Imperial County Air Pollution Control District

California Fish and Game Commission

California Native American Heritage Commission

California Natural Resources Agency

California Office of Historic Preservation

Local Government Offices

California State University Cooperative Extension - Imperial County

Imperial County Public Works

Imperial County Farm Bureau

Imperial Irrigation District

Imperial County Counsel

Imperial Chamber of Commerce

Imperial County Airport

Imperial County Agricultural Commissioner

Imperial County Planning & Development

City of El Centro

El Centro Chamber of Commerce

Imperial Valley Economic Development Corporation

Nongovernmental Parties

Navy League of the Imperial Valley Council

Sierra Club California

Sierra Club, San Diego Chapter

Desert Wildlife Unlimited, Inc.

Environmental Health Coalition

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Appendix B – Air Emissions Calculations

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Construction Assumptions for Proposed Action								
Equipment	Purpose	Usage			Miles per day	Total miles	Total Hrs	Additional Assumptions
		Quantity	Hr/day	Days				
								Construction duration is 10 months. Days based on 20 work days per month.
F-150 pickup	general use (personnel transport)	2	3	120	80	19200	na	Assumed 80 miles per day (3 hrs @ 45 mph). Pickups are used only to transport personnel to and from site.
forklift - piers	pier moving	2	4	60	na	na	480	
forklift - motors	move pier motors & rebar	1	4	60	na	na	240	
forklift - metal	move frames & panels	3	4	80	na	na	960	
Bobcat or small dozer	grading, stone/soil fill	2	8	80	na	na	1280	
trenching machine	4 ft x 3 ft deep trench	1	8	21	na	na	168	3 km of trenching for electrical lines
blade scraper	grading at site	1	8	80	na	na	640	Scraper hp assumed to be between 600 hp and 750 hp
pile driver	driving posts into ground	4	8	60	na	na	1920	Pile driver hp assumed to be between 100 hp and 175 hp
Delivery truck	delivers panels/parts	3	3	100	80	24000	na	Assumed 135 miles per day (3hrs @ 45 mph). Assume 100 total days over project duration.
welding machine	small, for installing support fixtures	2	4	100	na	na	800	
backhoe	dig excavate foundation for new sites	1	8	60	na	na	480	
Tacifier Truck	Spray soil adhesive	1	8	5	32	160	na	Assume 8 hrs per day, 4 mph speed while spraying
Water Truck	dust suppression	5	4	120	16	9600	na	Assume 4 hrs per day, 4 mph speed while spraying
Nonroad Equipment	Forklift	Backhoe	Welder	Trencher	Bobcat	Scraper	Pile Driver	
Total Hrs Used	1680	480	800	168	1280	640	1920	
Onroad Equipment	Light Pickups	Delivery/Water/Tacifier Trucks						
Total Miles	19200	33760						

Construction Emissions for Proposed Action

Nonroad Equipment	Hours Of Operation	Fuel Type	Nonroad Emission Factor (gm/hour)									Emissions (tons per year)								
			NOx	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	N ₂ O	CH ₄	NOx	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	N ₂ O	CH ₄
Forklift	1680	Diesel	83.72	7.09	3.87	2.55	4.35	4.22	16526.74	0.75	1.65	0.155	0.013	0.007	0.005	0.008	0.008	30.606	0.001	0.003
Backhoe	480	Diesel	72.13	89.60	14.63	2.47	14.03	13.61	12696.45	1.90	4.16	0.038	0.047	0.008	0.001	0.007	0.007	6.718	0.001	0.002
Welding machine	800	Diesel	23.81	23.02	5.29	0.67	3.24	3.14	3095.71	0.16	0.34	0.021	0.020	0.005	0.001	0.003	0.003	2.730	0.000	0.000
Trenching machine	168	Diesel	73.38	16.73	4.03	2.11	4.35	4.22	11981.90	1.11	2.42	0.014	0.003	0.001	0.000	0.001	0.001	2.219	0.000	0.000
Bobcat or small dozer	1280	Diesel	69.07	12.03	3.57	2.03	3.82	3.70	12081.78	0.78	1.71	0.097	0.017	0.005	0.003	0.005	0.005	17.047	0.001	0.002
Scraper	640	Diesel	806.51	476.54	65.79	39.66	78.33	75.98	217584.42	3.04	6.67	0.569	0.336	0.046	0.028	0.055	0.054	153.501	0.002	0.005
Pile Driver	1920	Diesel	178.51	72.30	17.89	8.14	21.29	20.65	43559.58	1.04	2.28	0.378	0.153	0.038	0.017	0.045	0.044	92.191	0.002	0.005

Onroad Equipment	Miles Driven	Fuel Type	Onroad Emission Factor (gm/mile)									Emissions (tons per year)								
Pickup and Delivery Trucks	19200	Gasoline	0.151	1.209	0.027	0.005	0.002	0.002	483.8	0.0871	0.0452	0.003	0.026	0.001	0.000	0.000	0.000	10.239	0.002	0.001
Dump, Delivery, Water Trucks	33760	Diesel	4.3	0.288	0.085	0.011	0.034	0.031	1198	0.0048	0.0051	0.160	0.011	0.003	0.000	0.001	0.001	44.582	0.000	0.000

Construction Fugitives	Total Acres Disturbed	Average Months of Active Disturbance per Acre ¹	Emission Factors (tons/acre*month)									Emissions (tons per year)								
	71	2.5					0.11	0.011								19.525	1.9525			

¹ Assumes each acre of land would be subject to active disturbance (e.g., grading, drilling, equipment installation) over approximately 25% of the 10-month construction period.

Totals for Proposed Action:											NOx	CO	VOC	SO₂	PM₁₀	PM_{2.5}	CO₂	N₂O	CH₄	CO₂e²
											1.44	0.63	0.11	0.06	19.65	2.07	359.83	0.01	0.02	363.40

² CO₂e considers CO₂ plus N₂O and CH₄ adjusted for global warming potential.

Air Emissions Avoided under Proposed Action						
Greenhouse Gases, Expressed as CO2e						
	Emission Factors			Emissions Avoided		
Power Supplied (MWh)	CO2 (lb/MWh)	CH4 (lb/GWh)	N2O (lb/GWh)	CO2 (tons)	CH4 (tons)	N2O (tons)
40000	932.82	35.91	4.55	18656	0.72	0.09
CO2 Equivalent:				18656	15	28
				Total (tons CO2e): 18700		
Criteria Pollutants						
	Emission Factors		Emissions Avoided			
Power Supplied (MWh)	NOx (lb/MWh)	SO2 (lb/MWh)	NOx (tons)	SO2 (tons)		
40000	0.4047	0.1708	8.09	3.42		

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Appendix C – Record of Non-Applicability

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**CLEAN AIR ACT - GENERAL CONFORMITY RULE RECORD OF NON-
APPLICABILITY (RONA)**

**FOR
CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC
SYSTEM AT NAF EL CENTRO**

**NAF EL CENTRO
EL CENTRO, CALIFORNIA**

FEBRUARY 2015

PREPARED FOR

U.S. Department of the Navy
Navy Region Southwest
San Diego County, California

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PROPOSED ACTION

The proposed action falls under the RONA category and is documented with this RONA.

Action Proponent: Commanding Officer, NAF El Centro, El Centro, California

Location: South-Central Imperial County, California

Proposed Action Name: Construction and operation of a solar photovoltaic system at NAF El Centro, Imperial County, California

PROPOSED ACTION AND EMISSIONS SUMMARY

PROPOSED ACTION

Under the Proposed Action, the Navy would install a ground-mounted solar photovoltaic (PV) system at NAF El Centro. The project is needed to contribute towards the Navy's overall compliance with the Secretary of the Navy's renewable energy goals.

The solar PV system would have a generation capacity of 13 MW of alternating current, with a total power output of approximately 40,000 MW hours per year. The generation facilities would be located on three parcels totaling 71 acres (28.7 hectares) at the installation, with ground disturbance occurring throughout the 71 acres. Construction of the ground-mounted solar photovoltaic system is expected to occur between 2015 and 2017. Due to external factors, the exact construction dates cannot be determined at this time.

EMISSIONS SUMMARY

Air quality impacts associated with the Proposed Action are related to emissions that would occur during construction of the ground-mounted solar photovoltaic system at NAF El Centro. The principal sources of pollutants during construction would be the construction equipment, construction crew commuting vehicles, and earth-moving activities.

Construction

Construction for the installation of ground-mounted solar PV systems associated with the Proposed Action is estimated to take place over a 10- month period; therefore, all construction emissions will be considered to occur in one year for the General Conformity analysis. While construction emissions are assumed to occur between 2015 and 2017, due to external factors, the exact construction dates cannot be determined at this time.

Table 1 compares the maximum estimated emissions for the Proposed Action at NAF El Centro with the *de minimis* annual emissions thresholds set forth for the Salton Sea Air Basin (per EPA General Conformity Rule and OPNAVINST M-5090.1 Change-3, Appendix F, Clean Air Act General Conformity Guidance). Based on the air quality analysis, the maximum estimated emissions for the Proposed Action at NAF El Centro would be below general conformity

de minimis levels for all criteria pollutants for the Salton Sea Air Basin. Therefore, implementation of the Proposed Action at NAF El Centro would result in minor, localized, short-term effects on air quality during construction, and impacts during construction would not be significant.

Table 1. Estimated Construction Emissions at NAF El Centro Compared to *de minimis* Emissions for Nonattainment and Attainment/Maintenance Criteria Pollutants in the Salton Sea Air Basin¹

Site	County	Emissions (tons per year)						
		NOx	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
NAF El Centro	Imperial	1.44	0.63	0.11	0.06	19.65	2.07	359.83
General Conformity <i>de minimis</i> Threshold		100	N/A	50	N/A	70	100	N/A

Key:

- CO = carbon monoxide
- CO₂ = carbon dioxide N/A = not applicable
- NO_x = oxides of nitrogen
- PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter
- PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter
- SO₂ = sulfur dioxide
- VOCs = volatile organic compounds

Note:

¹ 40 CFR 93. The Salton Sea Air Basin is classified as marginal nonattainment for O₃, serious nonattainment for PM₁₀ and nonattainment for PM_{2.5}.

Detailed construction equipment assumptions, fugitive dust emission calculations, and emissions calculations for NAF El Centro are provided in Appendix B of the EA.

Operations

Long-term operation of the Proposed Action at NAF El Centro would result in avoided emissions of CO₂e, NO_x, and SO₂ by reducing the consumption of grid-supplied electricity. Subsequent years of operation would also avoid emissions produced from conventional non-renewable generating sources. Table 2 shows the estimated emissions avoided from the ground-mounted solar PV system at NAF El Centro that would be realized by reduced consumption of grid-supplied electricity. Detailed emissions calculations are provided in Appendix B of the EA.

Table 2. Estimated Annual Emissions Avoided at NAF El Centro with Implementation of Proposed Action

Site	County	Emissions Avoided (tons per year)		
		CO ₂ e	NO _x	SO ₂
NAF El Centro	Imperial	18,700	8.09	3.42

Key:

- CO₂e = carbon dioxide equivalents
- NO_x = oxides of nitrogen
- SO₂ = sulfur dioxide

Affected Air Basin: Salton Sea Air Basin, California

Date RONA Prepared: February 2015

Proposed Action Exemptions: The Proposed Action is exempt because the calculated total emissions are below the *de minimis* levels set forth in the Clean Air Act General Conformity Rule.

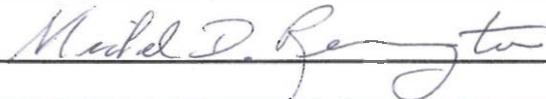
ATTAINMENT AREA STATUS AND EMISSIONS EVALUATION CONCLUSION

The project area at NAF El Centro is located within the Salton Sea Air Basin, which is a federal nonattainment area for 8-hour ozone, PM₁₀, and for PM_{2.5} (based on the EPA Green Book as of January 20, 2014). Based on the data in Table 1, it is concluded that the Clean Air Act General Conformity Rule *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action at NAF El Centro. Therefore, further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA APPROVAL:

Date: 13 February 2015

Signature: _____



Installation Environmental Program Director