



U.S. DEPARTMENT OF THE NAVY

REPO
RENEWABLE ENERGY PROGRAM OFFICE

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Common Concerns Associated with Placement of Solar Photovoltaic Assets on Navy/Marine Corps Installations: Environmental and Planning



Like many construction projects, potential impacts of installing a solar photovoltaic (PV) array on the environment and surrounding activities must be assessed as part of the project development process and accounted for in the overall project execution timeline.

Background

The U.S. Department of the Navy (DoN) set a goal of procuring 1,000 megawatt (MW) of renewable energy (RE) by the end of 2016. To accomplish this goal the DoN stood up the Renewable Energy Program Office (REPO). REPO developed a number of approaches to procure RE including allowing the placement of solar PV arrays within the boundaries of DoN installations through land outgrants. As of December 2016, REPO had approximately 1,140 MW of RE in procurement with outgrants accounting for about 585 MW.

In total, the DoN will be outgranting approximately 3,200 acres of land to various utilities and developers for the installation of solar PV arrays. An important part of determining whether or not certain land parcels were suitable for outgrant was the assessment of potential impacts a PV system could have on the environment and on- and off-installation activities. In general, the installation of a PV system is quite similar to other construction projects on DoN installations, however, there are certain characteristics of PV arrays that do require more in-depth analysis.

Glint and Glare—Solar PV panels, while designed to absorb as much sunlight as possible, can present a glare hazard to both pilots and air traffic controllers in nearby air operations. The Office of the Secretary of Defense, based on Federal Aviation Administration guidance, has determined that glare analysis is required for all proposed PV systems installed within at least two nautical miles of a military airfield's Air Traffic Control Tower or center point. Fact Sheet FS-6A10-67250 "Analyzing Glare Potential of Solar Photovoltaic Arrays" describes glare potential from PV arrays, how it is analyzed, and how to minimize/eliminate its impact at or near military airfields.

Electro-Magnetic Interference (EMI) and Radar

Interference—While the risk of EMI and radar interference from PV systems is very low, when considering sites for a PV array in close proximity to airfield navigational instruments



Photo by Dennis Schroeder, NREL 26961

or communications, the tolerance of the equipment to EMI and susceptibility to radar signal blocking/attenuation should be considered. Fact Sheet FS-5J00-67440 "Electro-Magnetic Interference from Solar Photovoltaic Arrays" provides a description of possible sources of EMI and radar interference and details guidelines for siting PV arrays to minimize/eliminate impact.

Bird/Animal Aircraft Strike Hazard (BASH)—Solar PV arrays and their ancillary infrastructure have the potential to attract birds or other animals, but there is little evidence to support that installing PV arrays on airport grasslands would result in an increase in BASH incidents. Fact Sheet FS-6A20-68313 "Solar Photovoltaic Arrays and Bird/Animal Aircraft Strike Hazard" summarizes concerns regarding placement of solar PV arrays on naval air stations and provides siting recommendations to minimize the likelihood of increased BASH incidents.

Visual Resources—In many cases, the installation of a PV array could result in impacts to view shed and/or historic property aesthetics. Visual resources must be considered in two ways: 1) aesthetics and 2) effects to historic properties. If the proposed PV array is on or near a historic structure or district, the DoN must consider its effect on the historic resource and submit a determination of effect to the respective State Historic Preservation Office (SHPO). Visual simulations may be required to support consultations with SHPOs or where the proposed array is adjacent to off-base residential areas.

Other Useful References

1. Department of the Navy. 2001. SECNAV Instruction 400.35A: Department of the Navy Cultural Resources Program. U.S. Department of the Navy.
2. Department of the Navy. 2006. Department of the Navy Environmental Restoration Program Manual. U.S. Department of the Navy.
3. Department of Defense. 2011. Instruction 4165.57: Air Installations Compatible Use Zones. Office of the Secretary of Defense.

Environmental assessment involves establishing existing environmental conditions (i.e., baseline) from which impacts of the proposed technology are analyzed against to determine potential environmental consequences and/or impacts.

Installation Restoration (IR) and Landfill Sites—Potential sites for PV arrays such as IR and landfill sites may have active remediation and/or long term sampling and testing requirements. These sites may also have remedial actions that are closed but have restrictive land use controls. Potential plans for installation of PV arrays (or any other construction) on these sites requires close coordination with DoN environmental staff as well as the Environmental Protection Agency (EPA) and state regulatory agencies in order to ensure environmental requirements are still met.

Air Installation Compatible Use Zone (AICUZ)—PV array compatibility with noise, accident potential, and obstruction clearance (i.e., height) criteria at military airfields must be considered. The DoN has an active AICUZ program that informs the public and recommends specific actions to local jurisdictions, with planning and zoning authority, in order to enhance the health, safety, and welfare of those living near naval air stations. Proposed PV projects within or near runways would require review of the relevant AICUZ document to determine any potential restrictions within the Clear Zone or Accident Potential Zones.

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