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NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA) Photovoltaic (PV) Installation

Continuing to expand their cutting edge energy program, the National Archives Record Administration (NARA) contracted with Ameresco in the summer of 2008 to install the agency's first solar photovoltaic (PV) system on the roof of their Archives II facility in College Park, MD to generate electricity as a renewable resource to offset power requirements in the building.



About NARA

NARA is solely responsible for safeguarding records for all three branches of the United States government . The records are preserved at Archives I in Washington, DC, Archives II, College Park, MD, and 13 Presidential Libraries across the country and in Regional Record Service Facilities. NARA was a recipient of the prestigious Presidential Energy Award for 2008.

Project Details

The PV installation was completed in three phases with a total installed capacity of 103.94 kW. The installation features BP Solar solar panels manufactured in Frederick, MD, a ballasted RapidRack mounting structure by Unirac, Inc, and SunnyBoy Inverters, in compliance with the Buy American Act. The panels are mounted at a tilt angle of 10 degrees. The ballasted frame attachment method means that there are no roof penetrations required to secure the panels. Considering NARA's mission, a key design parameter was no roof penetrations.

The solar panels are wired in strings not to exceed the maximum allowable voltage. The strings are joined together in combiner boxes placed on the end of the array closest to the location of the inverter. Wiring from the combiner boxes is enclosed in conduit and runs along the roof over to the penthouse structure where the conduit penetrates through the wall through a sleeve that is flashed and filled with waterproofing caulk into the utility room with the inverters. Wires in conduit run from the inverters to the motor control center. The AC power from each inverter is fed to the service panel using circuit breakers to each of the three legs of the 480, three phase service.

As part of the Quality Control Program, the system design was verified by NABCEP Certified Solar PV Installers on the Ameresco team according to the design principles of NABCEP, the National Electrical Code, and other certification organizations and standards.

Project Benefits

The 103.94 kW of Solar PV installed is providing energy savings of 131,170 kWh annually and environmental benefits as shown in the chart. The PV system is integrated into the facility's energy management system, allowing instantaneous power readings as well as daily, weekly, monthly, and annual reporting of PV power produced.

Continuing their proactive approach to securing energy savings, NARA is analyzing PV for other Archive facilities, solar car decks, and BIPV for their facility roofs that are at or near replacement.







Air Pollutants Offset with a Solar PV System

	Fossil Fuel Lbs/MWH	PV Power MWH/Yr	Pollutant Offset - Tons	System Life Offset - Tons
CO_2	1975.21	130.57	129	3,223.91
SO_2	14.05	130.57	0.92	22.93
NO_x	4.79	130.57	0.31	7.82

CO_2 Reduction by Planting Trees 58.76 Acres

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