Solar Array Project
Fact Sheet

ACUA

The Solar Electric or Photovoltaic (PV) project is a 500 kilowatt (DC) system with 2,700 electric modules or panels installed at five locations at the Atlantic County Utilities Authority (ACUA) Wastewater Treatment Facility. The five locations, each known as a solar array, include two groundmounted and two roofmounted arrays, and a canopy array. The PV system does not produce enough electricity to allow grid supply or net metering, so each array will provide solar generated electricity directly to the plant's electrical system.

The design and build contract was awarded in April 2005 to WorldWater & Power Corporation and Conti Corp and project was constructed in two phases. The first phase included the installation of the two roof-mounted arrays, canopy array over the employee parking lot, and a small ground-mount array for a total output of 280 kW (DC). The second phase of the project began in late 2005 and included a 220 kW (DC) ground-mount array. The project was completed and fully operational by June 2006.

The $3.25 million project was funded by a 57 percent Customer Onsite Renewable Energy (CORE) rebate from the New Jersey Board of Public Utilities Clean Energy Program and a low interest loan from the New Jersey Environmental Infrastructure Trust Program. Unlike other ACUA renewable energy projects, the ACUA owns, operates and maintains the solar electric project. The modules have a 25-year warranty. The output of the PV arrays can be viewed in real time on the internet at www.acua.com. As of the end of 2022, more than 9.8 million kWh of power have been produced since coming online in 2006.

166
Metric tons of CO_2 saved in 2022

$47,977
Total net benefit in 2022

The canopy array is located approximately 10 feet above the employee parking lot. The lot was both repaved and graded in a way to eliminate water ponding prior to the installation of the solar array. The roof mount arrays are on non-roof penetrating brackets, ballasted to withstand hurricane force winds.

The project is estimated to produce more than 600,000 kilowatt hours of electricity annually. The ACUA saved more than $47,000 in 2022 as a result of avoided electricity costs and proceeds from the Solar Renewal Energy Credits or SRECs. SRECs are marketable environmental attributes that can be used to satisfy Renewable Portfolio Standards implemented by some states.

ACUA has saved more than $3.9 million in energy costs and has prevented more than 4,100 metric tons of CO2 from entering the atmosphere using solar panels.

The PV system produces enough electricity to power approximately 60 homes. This amount of power displaces the energy equivalent of over 350 barrels of crude oil per year.

How It Works

Solar cells convert sunlight directly into electricity. Cells are made of semiconductor-type materials similar to that used in computer chips. When these materials absorb sunlight, the solar energy knocks electrons loose from the atoms producing electricity. This process of converting light (photons) to electricity (voltage) is called the photo-voltaic (PV) effect.

Individual solar cells are combined into modules or panels that are mounted into larger arrays. The modules or arrays can be fixed or mounted onto tracking devices to capture the most sunlight by maintaining an optimal angle to the sun. In the ACUA application, DC power produced by the solar arrays is fed to the inverters. The inverters convert the DC power to AC power that is then fed into the building's electrical system.

The performance of a solar cell is measured in terms of its efficiency at converting sunlight into electricity. A typical solar cell has an efficiency of 15 percent, meaning about one-sixth of the sunlight striking the cell generates electricity. The first solar cells built in the 1950's had efficiencies of less than 4 percent.

For more information please visit the National Renewable Energy Laboratory at http://www.nrel.gov/solar/ or the New Jersey Board of Public Utilities Clean Energy Program at http://www.njcep.com/.