

Solar Panel Installation

Solar panels installed on-site help offset the need for purchased electricity for wastewater treatment operations.



The Department commenced with the installation of its first solar panel array in August 2010. This system consists of 1,014 photovoltaic solar panels and is located at the Southeast Water Pollution Control Plant.

PWD's First Solar Panel Array

In August of 2010, PWD commenced with the installation of its first solar panel array. This photovoltaic system consists of 1,014 solar panels and is located at the Southeast Water Pollution Control Plant. The renewable energy generated by the system substitutes a fraction of the electricity that would otherwise have to be purchased by the Department to power plant operations. On August 25, 2011, Mayor Michael A. Nutter appeared at the ribbon-cutting ceremony for the installation to acknowledge PWD's accomplishment and how it contributes to helping the City meet its energy goals.



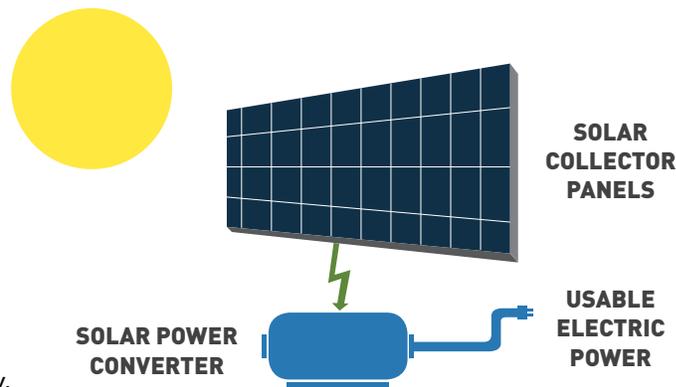
The ribbon cutting ceremony celebrating the solar panel installation.

In alignment with the City's Municipal Energy Master Plan, the Philadelphia Water Department developed a Utility-Wide Strategic Energy Plan, establishing energy conservation and greenhouse gas reduction objectives for the Department.

How Solar Panels Work

The solar power output is a function of solar input which depends on the following characteristics:

- ▶ Weather - The sunnier the weather, the greater the power generation.
- ▶ Panel Orientation - Ideally the panels should be perpendicular to the beams of sunlight in order to maximize the collection of energy.
- ▶ Panel Efficiency - Efficiency declines as the panels age, but continuing technological improvements deliver greater efficiency.
- ▶ Panel Location - Minimize the shaded areas to maximize panel surface exposure.



Important Facts

1. Expected annual energy generation over 300,000 kWh

This is equal to the electrical energy needed to power approximately 32 average Pennsylvania homes annually. (2010 basis, US Energy Information Administration data)

2. Project cost of \$1.6 million:

- \$0.75 million from PWD, and;
- \$0.85 million from the Energy Efficiency and Conservation Block Grant Program

3. Photovoltaic system with a DC peak power rating of 248 kWp.



Operators working at the Southeast solar panel array.

Co-Benefits of Solar Panel Installation

- ▶ **Fosters local business development** by using local contractors and installers
- ▶ **Raises public awareness** about alternative energy sources and sustainability
- ▶ **Aids the City** in meeting its Municipal Energy Master Plan goals
- ▶ **Reduces the City's** use of non-renewable energy sources
- ▶ **Moves the facility closer** to its greenhouse gas reduction goals
- ▶ **Reduces the amount of energy** the City purchases from commercial providers
- ▶ **Diversifies the City's** available bank of energy sources
- ▶ **Reduces the City's** exposure to volatile energy prices