

Solar Panel Installation

PWD’s Energy Plan Progress

In alignment with the City’s Greenworks Philadelphia Initiative, the Philadelphia Water Department (PWD) developed a Utility-Wide Strategic Energy Plan, establishing energy conservation and generation objectives for the Department. This is one of a series of reports on PWD’s progress in achieving its strategic energy objectives.



The Department commenced with the installation of its first solar panel system 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 system

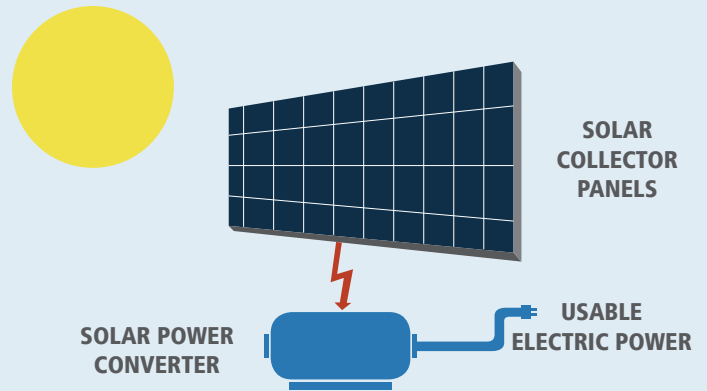
In August of 2010, PWD commenced with the installation of its first solar panel system. This photovoltaic system consists of 1,014 solar panels and is located at the Southeast Water Pollution Control Plant. The renewable energy generated by the system substitutes a fraction of the electricity that would 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.



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. Projected equipment life cycle of 25 years

The project payback is estimated to be 12 years.

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

Triple Bottom Line - Plus Analysis of the Solar Panel Installation

Our **Triple Bottom Line - Plus Analysis** measures our impact on the community using the following five categories:

Social Equality

Environmental Benefits

Economic Gains

Technological Innovation

Leadership

Fosters the development of local businesses

Raises public awareness about alternative energy sources and sustainability

Aids the City in meeting its Greenworks Philadelphia goals

Reduces the City's use of non-renewable energy sources

Moves the facility closer to its ultimate goal of "Net Neutrality" in energy use

Diversifies the City's bank of available energy sources

Reduces the amount of energy the City purchases from commercial providers

Reduces the City's exposure to volatile energy prices