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Petra Solar SunWave AC Systems

City of San Diego NR&C Committee
March 23, 2011

Overview

- R&D pilot project to install 8 solar generation units in the Metro service area.
- System includes: Photovoltaic panel with mounting system, AC module & communications.
- Complete system is mounted on pole. Power is delivered directly to grid via low voltage secondary.



Petra Solar Utility Experience



- Utility Grade Solar Smart Grid Solution Designed for deployment on utility distribution and street light poles
- Over 40 Utilities Engaged with Petra Solar
- Over 85,000 Petra Solar SunWave systems installed
- Over 200,000 Petra Solar SunWave systems under contract
- Utility Revenue Grade Metering (for production only)

Project Benefits



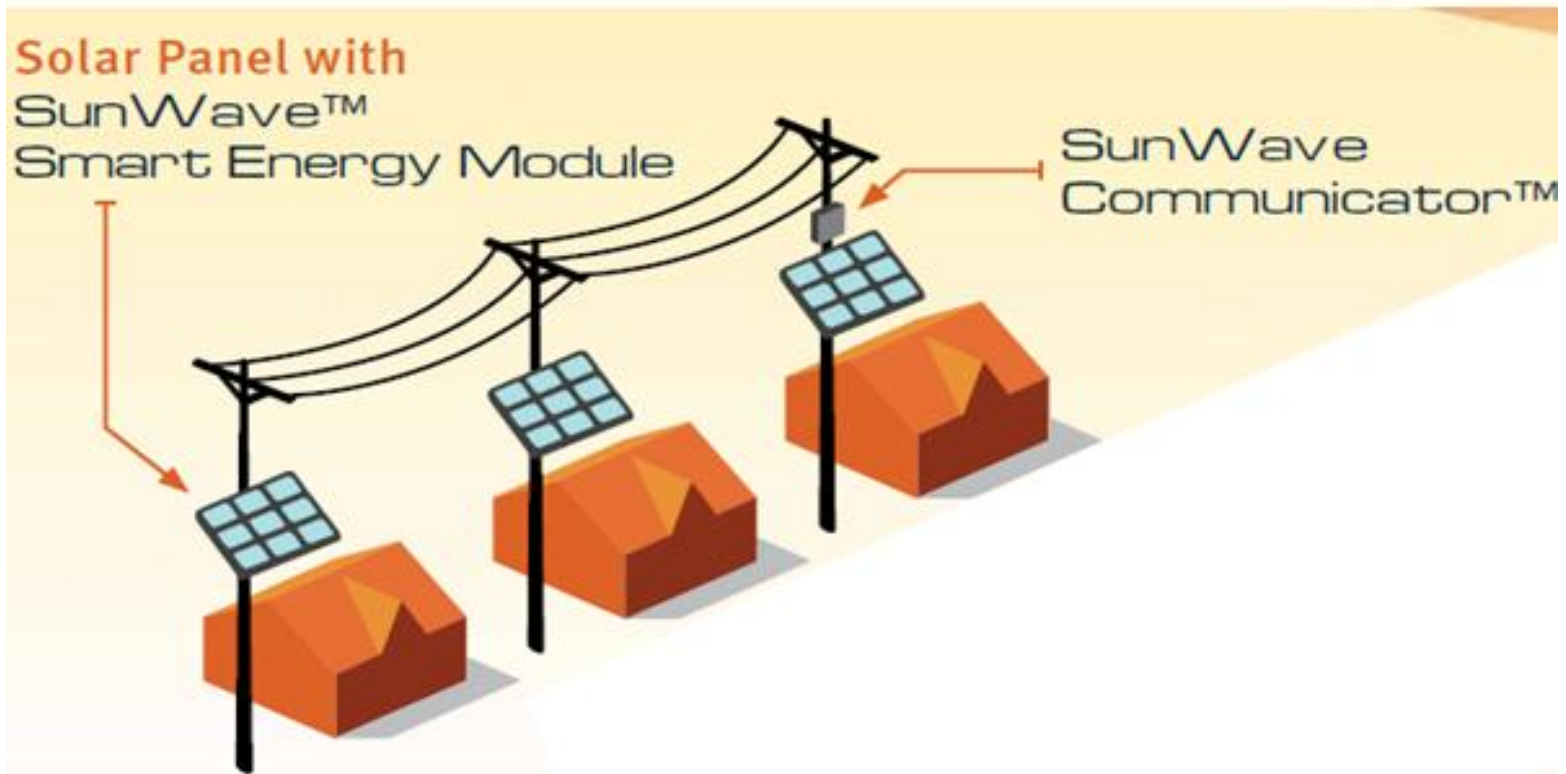
- Provides renewable solar PV power directly to the power grid and helps meet SDG&E's Renewable Energy Goal for the region.
- Produces power during peak times of the day – when demand is greatest.
- Uses existing utility infrastructure for ease of installation. SDG&E would own the system and energy is delivered to our customers.
- Ties into Smart Grid technology, providing safe and reliable power more efficiently.

Petra Solar Cost Analysis

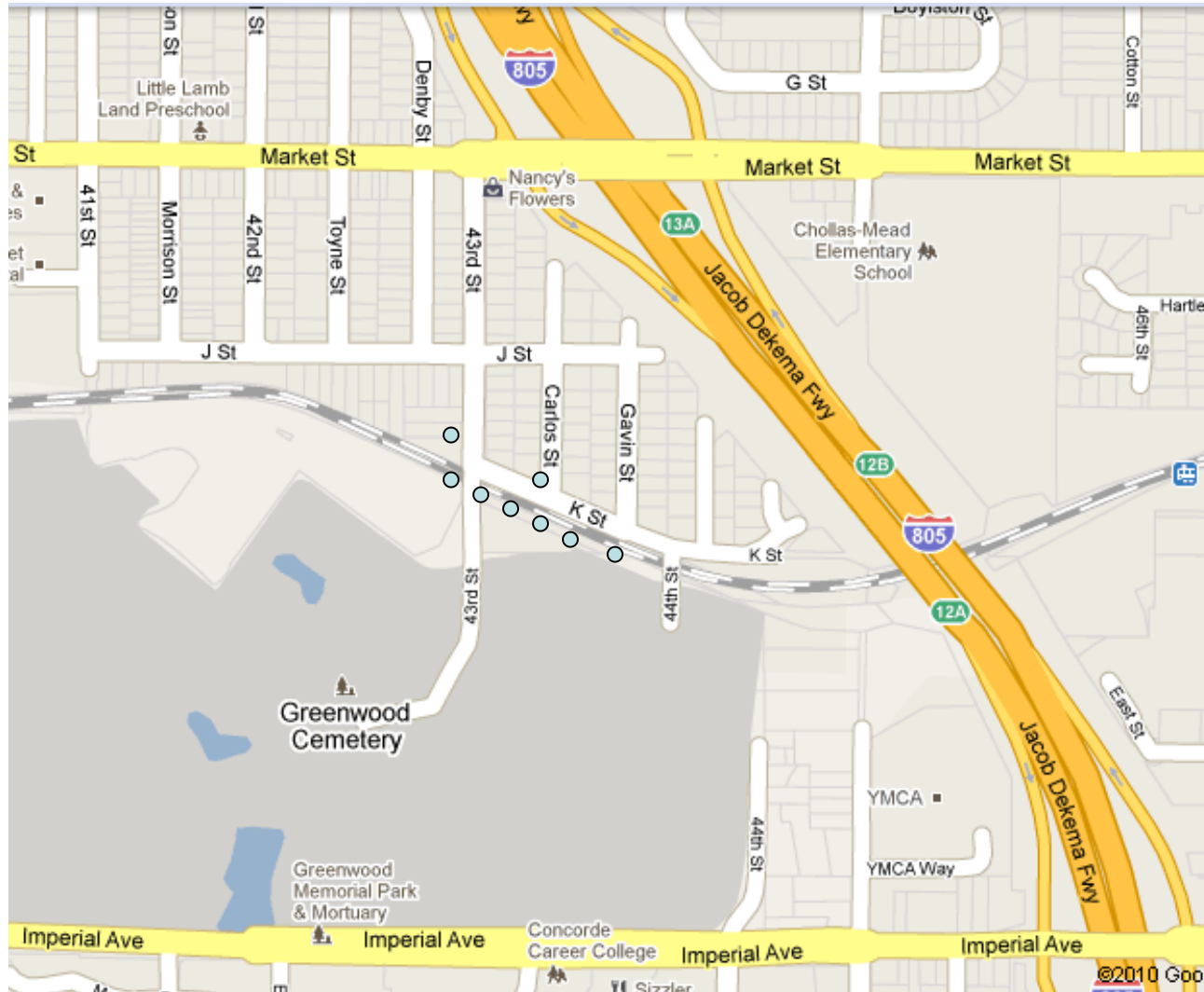


- Levelized Cost of Energy (LCOE) is \$0.09-\$0.11/kWh which is less than a traditional rooftop or ground mount PV system which are greater than \$0.16/kWh
- Pilot Project cost was \$15,000 which included 10 SunWave systems, 3 communicator units, engineering design, support, testing and commissioning.
- Actual Pilot Test Period includes:
 - Energy Harvest to determine how much energy is actually produced
 - Smart Grid Functionality
 - Communications Functionality

How it Works



Location



SDGE

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Picture of The Proposed Location



Trolley Tracks

Install Solar Panels On These Poles

Unpaved Road Adjacent to K Street and the Trolley Tracks



200 Watt Panel



Panel Installation



- This is part of SDG&E Utility Owned Generation (UOG) program approved by the CPUC.
- System installation meets or exceeds SDG&E design standards and pole loading requirements for safety
- Installation takes 2 workers about 30 minutes to install, commission and generate electricity.
- Pole Selection is important, we would first select poles with low voltage conductors (secondary) in commercial areas.
- Petra Solar communicators can communicate up to a mile but we keep it to around 1500 feet



200 Watt Petra Solar Panel



**Solar Output Is
Tied Into
Secondary Line**

200 Watt Panel

SDGE

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Proposed Schedule



- Two Petra Solar units were installed on SDGE property at our Skills Training Center in late August 2010. We have operated them since then with no trouble.
- We would like to install eight more units along the trolley tracks near 43rd and K Streets in San Diego
 - Pending approval from the City of San Diego in March of 2011
 - We would then begin construction in early May 31 of 2011



Questions