

RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites WCWD, Richmond, California Success Story

Innovative Solar Technology Turns Unusable Land into Power Generating Property



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EPA is encouraging the development of renewable energy facilities on potentially contaminated land and mine sites. This series of stories highlights successful projects and the benefits of siting renewable energy facilities on potentially contaminated land and mine sites.

Site Description

The 10-acre site incorporates a storm water detention basin, and is part of a wastewater treatment facility located outside Richmond, California, near San Pablo Bay and San Francisco Bay. The West County Wastewater District (WCWD) treatment facility, covering 16 square miles, provides wastewater collection and treatment for a population of over 120,000 in neighboring communities and local government facilities. In addition to treatment facilities, the WCWD site houses offices, classrooms and laboratories.

Property History

WCWD is responsible for wastewater treatment, sludge handling and disposal, and water outfall to San Francisco Bay. The storm water detention basin—spanning a little over three acres—was previously used as a sludge-drying pond. While the basin's former use and unstable soil limits its redevelopment options, it has been modified to collect and hold storm water, which is cycled back to the plant for treatment and release. Wastewater undergoes primary and secondary treatment at the plant, including activated sludge, clarification and chlorination before discharge into the bay.

Renewable Energy Development

WCWD collaborated with Premier Power and Solar Power Partners, Inc. (SPP Inc.) to develop a photovoltaic (PV) electrical production system for its energy-intensive wastewater treatment plant. SPP Inc. served as the project lead, managing the design and construction of the PV system. Premier Power, a solar power systems provider, built the 1 megawatt (MW) PV system under the direction of SPP Inc.

The system includes over 11,000 solar panels on state-of-the-art single axis tracker technology spanning 10 acres. While placing part of the PV system on the basin was challenging to construct, it was vital to the goal of preventing the development of green space in other parts of the facility. Using innovative engineering solutions, Premier Power designed the 45-foot by 45-foot arrays using concrete platforms specifically designed to distribute their weight, minimizing disturbance of unstable, marshy soil in the storm water basin.

Through a power purchase agreement between WCWD and SPP Inc., WCWD will purchase energy annually at a fixed price over the next 20 years, providing a cost-saving hedge against rising energy costs. To mitigate the project cost, WCWD utilized the Self Generation Incentive Program offered by Pacific Gas & Electric Company (PG&E). PG&E created the initiative to encourage customers to install certain types of distributed generation facilities to meet all or a portion of their energy needs. The PV system is estimated to produce 30% of the wastewater facility's electricity needs, which includes powering the plant's boilers and equipment. By siting the solar project on the basin, WCWD achieves two environmental goals—saving three acres of green space and reducing the facility's greenhouse gas emissions by 1,341 tons each year.



QUICK FACTS:

Location:	EPA Region 9, Contra Costa County, Richmond, CA
Property Size:	10 acres
Site Ownership:	West County Wastewater District
Site Use:	Storm water collection pond
Cleanup Type:	Not EPA-tracked
Contaminants:	Wastewater sludge
Type of RE:	Solar PV
RE Capacity:	1 MW
Project Cost:	\$8.3 Million (estimated)
Key Partners:	Premier Power; Solar Power Partners, Inc.; Pacific Gas & Electric
Current Status:	Complete and operational

PROJECT HIGHLIGHTS:

- 1 MW solar PV system incorporating 3-acre storm water collection pond preserves green space and puts land to dual purpose: Storm water treatment and renewable energy production.
- Utility's distributed generation program mitigated project cost.
- System will generate 30% of urban wastewater treatment facility's electricity needs.
- Innovative concrete platforms stabilize solar arrays, minimize disturbance of unstable soil in former sludge beds.

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