RE-Powering America's Land:
Siting Renewable Energy on Potentially Contaminated Land and Mine Sites
Fort Carson, Colorado Success Story

2 MW Solar Array Helps to Achieve Fort Carson's Renewable Energy Goals

United States Environmental Protection Agency

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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

Fort Carson is a U.S. Army installation located immediately south of Colorado Springs in El Paso County, Colorado. In addition to training facilities comprising 137,000 acres, the Fort is home to 11,000 people.

Property History

The site, a 15-acre former landfill, operational from 1965 to 1973, contains mostly construction debris and is regulated as a solid waste management unit as part of Fort Carson's permit with the Colorado Department of Public Health and Environment. Without costly excavation, capping or extensive cleanup, reuse options for the site were limited.

Renewable Energy Development

This project reflects Fort Carson's initiative to power all its facilities with renewable energy by 2027. Because of its restricted use, the former landfill site was an ideal candidate for the solar array. In 2007, the site was prepared for the solar facility by covering the inert landfill debris with two feet of soil, grading it for drainage and planting a native seed mix. The former landfill does not have an engineered cover because it only contains inert construction debris.

The 2 megawatt (MW), ground-mounted photovoltaic (PV) solar facility covers 12 acres and, at the time of construction, was the largest solar array built at a U.S. Army facility. The PV array consists of flat-plate, thin-film solar technology provided by First Solar, an Arizona company. The solar modules will produce electricity efficiently for 40 years. The array will generate 3,200 megawatt-hours (MWh) of power annually, enough to supply 2.3% of Fort Carson's energy consumption, the equivalent of 540 homes.

Seven public and private entities worked together to bring the idea to life. Fort Carson leased the land for the system to developers. The Western Area Power Administration (Department of Energy (DOE)) wrote two contracts under its power marketing authority to allow Fort Carson to purchase power from the array as supplemental energy at a low fixed cost for 20 years. Project partners 3 Phases Energy Services, MS Greenrock and SunTechnics developed, financed and installed the PV array.

Colorado Springs Utilities, the local area power provider, monitors and maintains the solar PV system. Project developer 3 Phases Energy will sell Renewable Energy Credits (RECs) for the solar energy produced at the site to Denver's utility company, Xcel Energy, under the investor-owned utility's Solar Rewards program. Xcel will then apply the RECs in compliance with Colorado's renewable energy portfolio standard (RPS). The Colorado RPS requires utilities to obtain 10% of their electricity from renewable sources by 2015, and 20% by 2020.

QUICK FACTS:

Location:	EPA Region 8, El Paso County, CO
Property Size:	15 Acres
Site Ownership:	U.S. Army
Former Use:	Decommissioned landfill
Cleanup Type:	State Solid Waste Management Unit (RCRA)
Contaminants:	Construction debris
Type of RE:	Solar PV (utility scale)
RE Capacity:	2 MW
Project Cost:	$13 million
Key Partners:	U.S. Army; Western Area Power Authority (DOE); 3 Phases Energy Services, LLC; Sun Technics, Inc.; MS Greenrock, LLC; Xcel Energy, Colorado Springs Utilities
Current Status:	Complete and operational as of 2008

PROJECT HIGHLIGHTS:

- 2 MW, 12-acre facility on former landfill, the largest solar array built at a U.S. Army facility at the time of construction.
- Through a power purchase agreement with Fort Carson, Colorado Springs Utilities builds and maintains the solar PV facility and provides the Fort with lower-cost electricity in return for leasing the site.
- Solar array will generate enough electricity annually to power 540 homes, or 2.3% of the Fort's energy consumption.
- Project expected to save Fort Carson $500,000 in energy costs over the life of its 20-year contract with the utility.

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