RE-Powering America's Land:
Siting Renewable Energy on Potentially Contaminated Land and Mine Sites
Belmar Mixed Use Development, Lakewood, Colorado Success Story

Mixed Use Development with Rooftop Solar Array Replaces Contaminated Site

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

Belmar is a planned mixed-use development located 10 minutes from downtown Denver in Lakewood, Colorado. The development covers 22 city blocks on what was once an abandoned shopping mall surrounded by asphalt parking lots. Today, the area is a thriving city center that uses its facilities to produce renewable energy.

Property History

The project site was the former Villa Italia Mall, a vacant indoor shopping center located in a blighted neighborhood. Villa Italia opened to great fanfare in 1966, but its popularity declined over time and by the mid 1990s, most of the stores were empty. Before redevelopment could take place, the mall site required cleanup of soil contaminated over the years with perchloroethylene (PCE) from two dry cleaning businesses located in the mall.

The Colorado Coalition, a collaborative redevelopment effort between the state and seven local governments, received $5.1 million in a Revolving Loan Fund (RLF) grant from EPA's Brownfields Program. The Coalition uses this RLF funding to make low-interest loans for local Brownfields cleanup activities. In 2002, the Coalition issued a $1.95 million loan to Continuum Partners, a private developer, for the cleanup and redevelopment of the mall site. The developer demolished the mall, removed soil and treated ground water contaminated with PCE before developing the site. Completed in 2005, redevelopment of the property gave Lakewood its first walkable downtown area, concentrated around Lakewood's municipal buildings. The Belmar mixed-use development includes commercial development, shops, restaurants, entertainment and homes. The development also incorporates renewable energy through solar photovoltaic (PV) arrays atop three parking structures.

Renewable Energy Development

California-based Sun Power, Inc., designed and installed 8,300 PV solar panels on the parking structure roofs, covering 190,000 square feet. The 1.7 megawatt (MW) array was completed in October 2008. The array generates approximately 2.3 million kilowatt-hours (kWh) of electricity annually, and supplies all the electricity for the parking garages, equivalent to 5% of Belmar's energy use. In addition, the Belmar development employs solar-powered parking meters and street lighting powered by wind turbines on light poles.

In 2008, Belmar collaborated with MMA Renewable Ventures, leveraging tax credits and incentives to finance the solar PV system through Colorado's New Energy Economic Development program and other state and local sources. The solar parking structure was deployed under a long-term power-purchase agreement, in which electricity sold to Belmar is competitively priced against retail rates, providing the development with a long-term hedge against rising peak power prices. The Belmar solar project received a rebate from Xcel Energy to offset upfront construction costs, as part of the company's Solar Rewards Program. Xcel will purchase the renewable energy credits produced at Belmar in support of Colorado's renewable portfolio standard, which requires large utilities to generate 20% of their power from renewable sources by 2020.

QUICK FACTS:

Location:	EPA Region 8, Lakewood, CO
Property Size:	47.5 acres
Site Ownership:	Mixed private/public
Former Use:	Indoor shopping center
Cleanup Type:	EPA Brownfields
Contaminants:	Perchloroethylene (PCE)
Type of RE:	Solar PV
RE Capacity:	1.7 MW
Key Partners:	The Colorado Coalition; Continuum Partners, LLC; City of Lakewood; EPA Region 8
Current Status:	Complete and operational

PROJECT HIGHLIGHTS:

- 1.7 MW solar PV panels mounted on three parking structures cover 190,000 ft^2, the largest rooftop solar array in the western United States at the time of construction.
- Long-term power-purchase agreement with utility exchanges renewable energy credits for below-retail electricity rates.
- System generates enough energy to power 350 homes, equivalent to 5% of the commercial center's electricity need.
- Urban Brownfields site restored as walkable mixed-use development integrates renewable energy with LEED-certified green buildings.

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For more information, visit: www.epa.gov/renewableenergyland or contact cleanenergy@epa.gov