RE-Powering America's Land

Evaluating the Feasibility of Siting Renewable Energy Production on Potentially Contaminated Land

Bourne, Falmouth, Sandwich and Mashpee, Massachusetts

RE-Powering: EPA/NREL Feasibility Studies

The U.S. Environmental Protection Agency's (EPA) *RE-Powering America's Land* Initiative encourages renewable energy development on current and formerly contaminated land, landfills and mine sites when it is aligned with the community's vision for the site. EPA and the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) are collaborating on a project to evaluate the feasibility of siting renewable energy production on potentially contaminated sites. This effort pairs EPA's expertise on contaminated sites with NREL's expertise in renewable energy. The feasibility studies provide site owners and communities with a technical and economic assessment of installing renewable energy on a given site.

Site Description

The Massachusetts Military Reservation (MMR) is a 22,000-acre military base located in the Towns of Bourne, Falmouth, Sandwich and Mashpee. As part of an ongoing site remediation, eight ground water pump and treatment systems are operating at a total production rate of 15 million gallons per day. The electricity to power these systems costs over $2 million per year.

The property includes the main base landfill, which is managed by the U.S. Air Force as a Superfund site under the Installation Restoration Program.

Community Goals

To off-set the high energy costs and to help meet the federal mandate under Executive Order 13423 to achieve greater energy efficiency and use renewable energy at federal facilities, the Air Force Civil Engineering Center (AFCEC)—formerly known as the Air Force Center for Engineering and the Environment (AFCEE)—installed three 1.5 megawatt wind turbines. These turbines generate approximately 30% of the energy needed to operate the ground water pump and treatment system.

In addition to the wind turbines, AFCEC is also investigating other opportunities for generating onsite renewable energy. This includes installing solar panels at an existing 100-acre landfill, of which 60 acres consists of a Resource Conservation and Recovery Act (RCRA) Subtitle C capped landfill. An added benefit would be the use of a large parcel of land with otherwise limited reuse potential.

Massachusetts Military Reservation
Bourne, Falmouth, Sandwich & Mashpee, Massachusetts

Site Facts:

Site type: RCRA Landfill
Renewable technology: Solar
Generation Potential: Energy for remediation

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The information presented in this fact sheet is from the site's initial proposal, site visit(s), discussions with community stakeholders, and other information collected in preparation of the feasibility study. This fact sheet is for informational purposes only and may not reflect the site's current regulatory or remediation status.

Feasibility Study: Solar

EPA and NREL conducted a study on the potential for solar power generation at the 100-acre landfill site. The completed study addressed:

- Provides a preliminary analysis of the viability of the site;
- Assesses solar resource availability;
- Identifies possible system size, design and location; and
- Reviews the economics of the proposed system.

The MMR site has existing transmission lines and road access, making it an ideal candidate for a photovoltaic (PV) system. Four sites at MMR were considered: three landfill caps and a borrow pit. Based on this study, up to 8 MW of ground-mounted PV systems can be installed at the four sites. While the Massachusetts Solar Renewable Energy Credits (SRECs) program has a cap of 6 MW per system, MMR may be able to have multiple systems with different owners. Given current market and available incentives, this site presents near-term development opportunities.

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

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