DOE/EA-1631

FINDING OF NO SIGNIFICANT IMPACT
DEPARTMENT OF ENERGY LOAN GUARANTEE FOR BEACON POWER CORPORATION FREQUENCY REGULATION FACILITY IN STEPHENTOWN, N.Y.

AGENCY: U.S. Department of Energy, Loan Guarantee Program Office

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) has conducted an environmental assessment (EA) that analyzed the potential environmental impacts associated with the construction and operation of a proposed 20 megawatt flywheel-based frequency regulation facility at an undeveloped seven acre site on Grange Hall Road in Stephentown, New York. DOE, through its Loan Guarantee Program Office (LGPO), proposes to provide a Federal loan guarantee pursuant to Title XVII of the Energy Policy Act of 2005 (EPAct 05) to Beacon Power Corporation to support the construction and operation of the proposed facility[1]. The purpose of DOE's proposed action is to expedite the deployment of a new energy technology into commercial use in the U.S. and to reduce emissions of greenhouse gases and other air pollutants.

The rates of electricity demand and generation are both constantly fluctuating. As a consequence, frequency regulation is necessary to help maintain balance in the electricity grid. Across the United States, a small percentage of generators provide this balance by increasing or decreasing their power output around a predetermined set point, as required. Currently, these generators may be fueled by natural gas, coal, or pumped storage hydro systems. It is estimated that across the U.S., regulating electricity grid frequency using traditional sources (natural gas, coal, or pumped storage hydro systems) results in increased fuel consumption on the order of 0.5 to 1.5% because of the inefficiency of starting up and shutting down these sources. By providing frequency regulation more efficiently, flywheel-based technology reduces the need to burn additional fossil fuels, resulting in less greenhouse gas (CO_2) emissions.

The proposed Beacon facility would provide frequency regulation by absorbing energy when it is abundant, storing it in a flywheel energy storage system, and discharging it as necessary to maintain the electricity grid frequency within a desired range. The proposed Beacon facility would provide frequency regulation without direct emissions of greenhouse gasses or other anthropogenic air pollutants. The proposed facility is expected to demonstrate that flywheel-based frequency regulation can provide an effective and reliable means of regulating electricity grid frequency without the direct emissions of carbon dioxide that are produced by traditional methods of frequency regulation using fossil fuel powered generators.

[1] The amount requested for the loan guarantee is not being disclosed at this time because it is business sensitive. Moreover, should DOE approve a loan guarantee, the amount may differ from the original request.

All discussion and analysis related to the potential impacts of construction and operation of the proposed frequency regulation facility are contained in the Final EA (DOE/EA-1631), which is incorporated by reference. DOE examined potential impacts on the following resources and found none to be significant: floodplains; wetlands; water resources and water quality; fish and wildlife; threatened, endangered, or candidate species and critical habitats; prime or unique farmlands; geology and soils; visual, recreational, and aesthetic resources; property of historic, archaeological, or architectural significance; Native American concerns; environmental justice; public health and safety; air quality; global climate change; waste management; transportation; socioeconomic conditions; noise; and terrorism-related impacts.

The Town of Stephentown Planning Board assumed the role of lead agency for the New York State Environmental Quality Review Act process, which incorporates the consideration of environmental factors in the planning, review, and decision-making processes of state, regional, and local government agencies. A Negative Declaration and Determination of Non-Significance for the Beacon project was unanimously approved by the Stephentown Planning Board and issued on July 7, 2008.

In accordance with applicable regulations and policies, DOE sent a notification letter regarding the Department's determination to prepare an EA to the New York Department of Environmental Conservation and the Town of Stephentown on July 29, 2008. The letter described the proposed action and stated that a draft EA would be sent to the state for review. On November 7, 2008, DOE sent the draft EA to the New York Department of Environmental Conservation and the Town of Stephentown and invited their comments on the draft. The draft EA was also posted on the Loan Guarantee Program Office website. DOE received no comments on the draft EA.

DETERMINATION: On the basis of the Final EA, DOE has determined that providing a Federal loan guarantee to Beacon Power Corporation for construction and operation of a flywheel-based frequency regulation facility in Stephentown, New York, will not have a significant affect on the human environment. The preparation of an environmental impact statement is therefore not required, and DOE is issuing this Finding of No Significant Impact.

Copies of the Final EA are available at the DOE Loan Guarantee Program Office website at www.lgprogram.energy.gov/keydocs.html or from

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Additional information on the DOE NEPA process is available from

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