

Technical Assistance Category:

Technology

Technical Assistance Request:

Community: Missouri Department of Natural Resources' Division of Energy

Request: Examine options for replacement of five heating, ventilating, and air conditioning (HVAC) systems and a building automation system (BAS) in one of Missouri's state laboratory buildings.

Technical Assistance Provided: NREL's technical assistance focused on the assumptions regarding energy use and energy savings provided through the state's draft analysis. NREL energy experts, with experience in energy efficient laboratory development, provided data-supported revisions to the energy-savings assumptions specifically for laboratory buildings, and provided insights on the dominant uses of energy.



HVAC system under maintenance
(Source: hvachub.net)

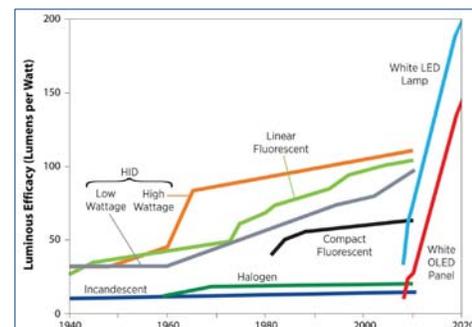
Outcome: The Division of Energy team revised their analysis of the HVAC systems to more accurately account for proposed energy savings and were able to recommend additional energy conservation measures for the lab building. Overall, the Missouri Energy Division team gained a deeper understanding of HVAC systems and increased their confidence for suggesting future HVAC solutions and other energy efficiency improvements in buildings throughout the state.

Technical Assistance Request:

Community: The State of Hawaii's Department of Business, Economic Development & Tourism (DBEDT)

Request: Comparative information on solid-state light-emitting diode (LED) lighting for county and state officials, in addition to a specialist to participate on a lighting panel at the Hawaii Asia Pacific Clean Energy Summit and a solid-state lighting presentation for county and state officials.

Technical Assistance Provided: A Pacific Northwest National Laboratory (PNNL) lighting specialist participated in the Hawaii Asia Pacific Clean Energy Summit and provided a more in-depth workshop to county and state officials on technology options and implementation strategies. Additionally, PNNL prepared an outdoor lighting guidance document providing basic guidance on common outdoor lighting applications such as wall-mounted area lighting, parking garage lighting, canopy lighting, and pole-mounted street and area lighting. PNNL's solid-state lighting presentation is available at <http://www.ct-si.org/events/APCE2011/sld/pdf/21.pdf>. More information, including solid-state lighting progress, events, roadmaps, reports and factsheets, is available on the [U.S. Department of Energy's Solid-State Lighting website](#).



Energy Savings Potential of Solid State Lighting
(Source: PNNL presentation at Hawaii Asia Pacific Clean Energy Summit & Expo 2011)

Outcome: Hawaii has completed numerous lighting projects throughout the islands, resulting in 56,498,363 kilowatt hours (kWh) of verified energy savings in 2010.¹ The Hawaii DBEDT State Energy Office is currently incorporating the outdoor lighting performance recommendations and technology specifications suggested by PNNL into new and existing lighting projects.

Technical Assistance Request:

Community: Puerto Rico Environmental Quality Board

Request: Assist in the development of feasibility studies for 4-6 landfills in Puerto Rico, assessing their potential for solar power generation.

Technical Assistance Provided: The feasibility studies prepared by NREL describe the landfills, their potential for solar power renewable energy generation and the economics associated with

solar generation at each landfill. The economics of the potential systems were analyzed using an electric rate of \$0.119/kWh and the incentives offered by Puerto Rico and the serving utility company, Puerto Rico Electric Power Authority. The report also highlighted the most appropriate technology, as well as the financing options that could assist in the implementation of such a system.

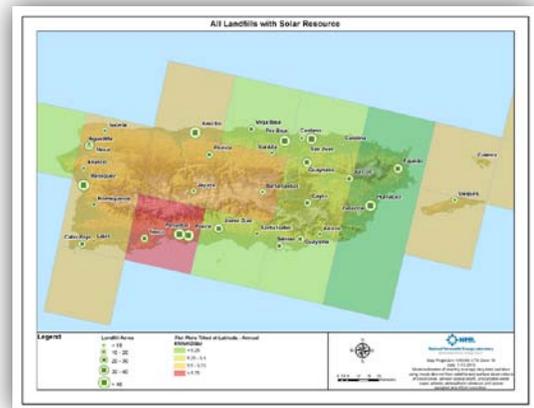
Outcome: According to the site-production calculations, the most cost-effective system in terms of return on investment was the thin-film fixed-tilt technology. Puerto Rico combined the feasibility study prepared by NREL into a larger assessment of solar potential within potentially contaminated lands and mine sites. The [final report](#) is available on the [RE-Powering America's Land Initiative](#) webpage. The Commonwealth of Puerto Rico is currently using the NREL assessment and recommendations in discussions with potential developers and financiers.

Technical Assistance Request:

Community: Cook County, Illinois

Request: Robbins municipality in Cook County expressed interest in retrofitting an incinerator to produce biomass-based electricity. Cook County was assisting in this project and requested information on the feasibility and applicability of this type of technology at this site.

Technical Assistance Provided: An NREL biomass energy expert worked with Cook County to discuss detailed specifications on the



Map of all landfills with solar resource potential in Puerto Rico prepared by NREL in a feasibility assessment conducted in 2011 (Source: NREL)



The Molecular Beam Mass Spectrometer, which analyzes vapors during the gasification and pyrolysis processes, is one example of NREL's on-going biomass projects. (Source: NREL)

¹ Energy savings based on the [Hawaii Energy Program's Energy Savings Verification Report](#) (2010)



Technical Assistance Highlights from the DOE National Laboratories

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existing equipment that was being considered for retrofit in order to better understand the county's needs and narrow the scope of technical assistance requested. NREL prepared a memo containing considerations and guidance on converting the existing incinerator to begin using biomass for electric generation.

Outcome: Cook County and Robbins municipality worked together to use NREL's recommendations and suggested considerations to develop a plan and budget for converting the existing incinerator to biomass with the overall goal of reducing the facility's greenhouse gas emissions.