Technology Innovation Project

Project Brief

TIP 287: *Reducing Technology Evaluation Costs through a Technology Performance Exchange*

Context

An electric utility often requires extensive assessment of performance, to evaluate energy-using devices against goals for load management and other demand-side initiatives. Today, the high cost of meeting these business objectives may limit the pace and impact of innovation of least-cost investments in grid reliability. Gaps in knowledge of load characteristics may also expose a utility's core business to risk associated with the changing nature of electricity demand.

Assessment and evaluation of devices impacting electric load is a critical process for managing electricity demand. These activities address barriers to investment in improving efficiency of electricity use in the Pacific Northwest:

- Confidence: a need for certainty in predicting technology performance at a regional scale.
- Applicability: results of testing in simulated or relevant environments may not be reliable indicators of performance across the full range of applications. Thus, extensive and costly field studies are required.
- Demonstration: a quality business case for full-scale deployment often requires testing for extrinsic characteristics, such as adoption and market readiness.

Description

With a goal of reducing the cost of technology assessment and evaluation by 90 percent, the National Renewable Energy Laboratory received funding from the U.S. Department of Energy in 2012 to develop a web-based tool – the Technology Performance Exchange – to aid in distributing information related to characteristics of energy use by a wide range of components of the built environment. Through standardized data entry forms, intuitive user interface, and a centralized database, the Technology Performance Exchange facilitates creating, collecting, and exchanging the data needed by a wide range of organizations to predict and compare performance of new equipment.

Project sponsors envision the Technology Performance Exchange as a "hub" for unbiased information. Data entry forms, developed through this project, will identify the minimum set of parameters needed to evaluate energy-related performance. Users, such as utilities, building owners, and manufacturers, will use data entry forms to submit data in a standard format and quickly identify products that meet their unique requirements. Data will be seamlessly integrated with high-quality software for simulation of building energy use, such as EnergyPlus, further reducing the cost of technology assessment and evaluation.

The envisioned tool will cover a broad range of building technologies, such as the absorption chillers and pasteurization equipment covered in BPA's Food Processing Technology Roadmap.

Why it Matters

Technology and product assessment efforts across the U.S. are often uncoordinated. Supplementing redundant testing with verification and exchange of results, for example, is envisioned to decrease the time and cost to identify and evaluate new, energy-efficient products. By focusing on energy use, and using standard verification methods, we believe we can achieve this goal and increase adoption of the best energy-saving products.

The involvement of BPA as a partner is seen as an opportunity to appreciate the unique needs of users in the Pacific Northwest, providing an even more focused and direct benefit to BPA customers. Additionally, BPA brings knowledge and expertise to help the project team ensure value for other electric utilities across the nation, as a distinct set of users.

Goals and Objectives

- The work will produce web-based tools and processes that will reduce the cost of BPA's technology evaluation workloads.
- The data entry forms will be designed to aid in evaluating a broad range of products.
- All tasks directly support BPA's goal of reducing the total cost and time of assessment activities by an order of magnitude, including research design, contracting, metering, data acquisition, analysis and decision making.

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Project Start Date: February 14, 2013

Project End Date: January 31, 2014

Links

Technology Performance Exchange @
https://performance.nrel.gov/

NREL Project Overview @
http://www.nrel.gov/docs/fy13osti/56457.pdf

Funding

BPA Share:	$521,042
External Share:	$197,138
Combined Budget:	$323,904
BPA FY2014 Budget:	$100,889

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Participating Organizations

U.S. DOE – Bonneville Power Administration (BPA)
U.S. DOE – National Renewable Energy Laboratory (NREL)
U.S. DOE – EERE Building Technologies Office (BTO)
U.S. DOE – EERE Federal Energy Management Program (FEMP)