Laboratory Value Analysis Team

CHALLENGE

One critical function of a modern electric power grid is its resilience, or its ability to predict, react to, and recover from extreme events such as cyberattacks or severe weather. As the nation seeks to update its increasingly complex grid to handle these threats, six pilot resiliency-enhanced projects are underway in various regions as part of the Grid Modernization Laboratory Consortium's Resilient Distribution Systems project portfolio. These projects, in collaboration with industry partners, are testing and validating different technologies in the field.

To make decisions based on these field results, stakeholders need consistent ways to understand the value of the technologies. Yet, one inherent challenge in such field projects is estimating the value of new technologies using a consistent set of criteria and metrics.

The valuation team will tackle three key activities to build a consistent review of six different technologies aimed at improving grid resilience.

APPROACH

A project team from five national laboratories is addressing this challenge. Their primary objective is to ensure maximum consistency when assessing and valuing the outcomes of the six designated field projects. To do so, the group will use the DOE Grid Modernization Initiative's metrics and evaluation framework, developed and vetted for grid-related technologies, to value each approach's impacts. The team's effort includes three key related activities.

1. Provide technical support to the field projects. By engaging with the leaders of each field project early on—in the negotiation and initial launch stages—to create an analysis strategy, the team will provide input on the experimental design, including how to measure the pertinent parameters before and after the technology's deployment. The valuation framework will be tailored to the unique specifics of each approach, test site, and region, as needed.

At-A-Glance

PROJECT LEAD

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LAB COLLABORATORS

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BUDGET

DOE: $1.5M

DURATION

October 2017 – September 2020

TECHNICAL AREA

Institutional Support

Lead: Chuck Goldman

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2. Perform value analysis for each field project. Working directly with the field project leaders, the team will collect data on the costs and benefits of each technology as deployed for specific use cases. The data will cover as many values as possible, including both the utility and customer perspectives.

3. Report valuation results and provide outreach. The team will summarize the value findings from each individual field project and compile the lessons learned across the entire suite of resilience projects. It will also assemble consistent and complete information for sharing with stakeholders.

EXPECTED OUTCOMES

Ultimately, this effort will provide a credible review of the impact of six field-tested approaches aimed at improving grid resilience. Understanding the return on investment and lessons learned will help technical groups and industry advance grid modernization. The summary of impacts will help DOE communicate to Congress, policymakers, and other federal agencies how this investment is making the nation's electric grid more resilient and reliable, while supporting the growing need to manage distributed energy resources effectively.

LAB TEAM

Argonne NATIONAL LABORATORY

BERKELEY LAB

NREL NATIONAL RENEWABLE ENERGY LABORATORY

Pacific Northwest NATIONAL LABORATORY

Sandia National Laboratories

As part of the U.S. Department of Energy's Grid Modernization Initiative, the GMLC is a strategic partnership between DOE Headquarters and the national laboratories, bringing together leading experts and resources to collaborate on national grid modernization goals. The GMLC's work is focused in **six technical areas** viewed as essential to modernization efforts:

Devices and Testing | Sensing and Measurements | Systems Operations and Control
Design and Planning | Security and Resilience | Institutional Support