

Technical Support to the New York State Reforming the Energy Vision (REV) Initiative

CHALLENGE

In an effort to improve efficiency, reliability, and resilience, many states are taking action to modernize their electric grid; particularly the distribution systems that are vital to communities, towns, and cities. New York State (NYS) is one of the pioneers in this effort with its “Reforming the Energy Vision (REV)” initiative.

The NYS electricity system is experiencing slowing of overall demand, coupled with a growing gap between peak load and base load, which diminishes the overall efficiency of the system. In addition, recent severe weather events, such as Hurricane Sandy, have illustrated the resilience and reliability challenges a modern electric grid must be able to overcome. NYS also wants to promote dramatic increases in customer investment in distributed energy resources (DERs), including renewable generation, demand response, and energy storage.

By creating electricity markets at the distribution layer, the NYS REV initiative seeks to enable broader adoption of DERs to help manage peak load, drive greater system efficiency, and increase the reliability and resilience of the grid. This will require addressing some key questions about grid modernization, including which business models work; which grid-side utility investments should be pursued to enable visibility and improved operation of the distribution grid; and which customer-side technologies provide the most benefit and how should they be implemented.

APPROACH

The REV initiative offers an important and unique opportunity for DOE to participate in a ground-breaking effort to develop future utility business models and obtain lessons learned for grid modernization that can be applied throughout the nation. As NYS proceeds with REV implementation, this GMLC project will provide objective technical assistance (TA) by a



The New York State REV initiative will develop energy markets at the distribution level to enable higher penetrations of DERs and increased customer interaction with the electric grid.

At-A-Glance

PROJECT LEADS

- **J. Patrick Looney**
Brookhaven National Laboratory
jlooney@bnl.gov
- **Peter Cappers**
Lawrence Berkeley National Laboratory
pacappers@lbl.gov

PARTNERS

- Regulatory Assistance Project

TECHNOLOGY

- Grid design, operations, planning
- Demand Response
- Renewable energy integration
- Grid Architecture
- Cybersecurity

BUDGET

\$1 million

DURATION

May 2016 – September 2017

TECHNICAL AREA

Institutional Support

Lead: Chuck Goldman

Lawrence Berkeley National Laboratory

cagoldman@lbl.gov

team of experts from the national laboratories to NYS agencies and policy makers to enable the REV vision, and, as a result, gain knowledge that can be leveraged for DOE's Grid Modernization Initiative. During the coming years, significant policy issues related to electricity markets at the distribution utility level will need to be addressed—including retail market design, rate design, customer engagement, grid architecture, utility planning and operations, DER integration, and cyber security—all of which require sophisticated technical assistance and analysis from objective sources. Insights and feedback from this project will be provided to DOE program areas, including projects in EERE, OE, and EPSA on System Operations, Power Flow and Control, and Grid Architecture, as well as Design and Planning Tools, with information that will help develop the utility

business, planning, and operations model of the future.

A team of experts from the national labs with the following expertise has been selected to provide TA to New York stakeholders:

- grid design, operations and planning;
- utility resource planning, energy efficiency, demand response and rate design;
- renewable energy policy and programs;
- transmission and distribution policies and capabilities;
- grid architecture; and
- cybersecurity.

EXPECTED OUTCOMES

The primary customers in New York State are expected to be the Public Service Commission, the Department of Public Service, and the New York State Energy Research and Development Authority. The following outcomes are expected to result from this project:

- technical guidance provided to New York State regulators, policy makers, and stakeholders to

address challenges associated with establishing a Distributed System Platform envisioned by REV;

- insights obtained into what business models work and why, as well as customer adoption of the REV model; and
- lessons learned from REV on deploying DERs at the distribution level that can be applied to grid modernization efforts in other states.

LAB TEAM



Launched in November 2014 under 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