GRID MODERNIZATION INITIATIVE
PEER REVIEW

GMLC 1.3.22 – Technical Support to the New York REV Initiative

J. PATRICK LOONEY, BNL
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Sheraton Pentagon City – Arlington, VA
Technical Support to the New York State REV Initiative

High Level Summary

**Project Description**
Provide objective technical assistance by a team of experts from the national laboratories to New York State agencies and policy makers to enable the Reforming the Energy Vision (REV), and, as a result, gain knowledge that can be leveraged for DOE’s Grid Modernization Initiative.

**Value Proposition**
- The REV vision is for New York State to be an early adopter of advanced grid technologies at scale, resulting in significant penetration of DER.
- Key questions with regard to grid modernization will be addressed, including what business models work and why, as well as which technologies provide the most benefit and how they should be implemented.
- REV offers an important and unique opportunity to participate in a ground-breaking effort to develop future utility business models.

**Project Objectives**
- Provide technical guidance to regulators, policy makers and stakeholders to address challenges associated with establishing a Distributed System Platform envisioned by REV
- Obtain insights on what business models work and why, as well as customer adoption of the REV model
- Extract lessons learned from REV on deploying DER at the distribution level that can be applied to grid modernization efforts in other states

### PROJECT FUNDING

<table>
<thead>
<tr>
<th>Lab</th>
<th>FY16 ($)</th>
<th>FY17 ($)</th>
<th>FY18 ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNL</td>
<td>$225,000</td>
<td>$200,000</td>
<td>-</td>
</tr>
<tr>
<td>LBNL</td>
<td>$200,000</td>
<td>$200,000</td>
<td>-</td>
</tr>
<tr>
<td>PNNL</td>
<td>$75,000</td>
<td>$50,000</td>
<td>-</td>
</tr>
<tr>
<td>INL</td>
<td>$50,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>$550,000</td>
<td>$450,000</td>
<td>-</td>
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MYPP vision for the Institutional Support

- Leverage existing technical expertise, analytical tools, models, and data
- Directly address high priority grid modernization challenges and needs for NY stakeholders
- Convene key grid stakeholders as an honest-broker for collaborative dialogues
- Create an over-arching ongoing suite of grid-related “institutional” analysis, workshops, and dialogues
Technical Support to the New York State REV Initiative
Project Team & Approach

New York State Department of Public Service (NYDPS) → Reforming the Energy Vision (REV) → New York State Energy Research and Development Authority (NYSERDA)

Distribution System Planning and Operations
- Building DSP Platform: Grid Architecture
- Load/DER Forecasting
- Non-Wires Alternatives
- DER Sourcing
- Cybersecurity

Demonstration Projects
- Time-Based Pricing
- DER Integration
- Marketplace
- New York PRIZE Microgrid Demos

NYDPS/NYISO Coordination
- Distribution System Planning
- Load/DER Forecasting

Electric Utility Regulation
- Rate Design
- Earnings Adjustment Mechanisms
- Platform Service Revenues
- Scorecards

BNL | LBNL | PNNL | INL

Institutional Support

3/30/2017
## Key Project Milestones

<table>
<thead>
<tr>
<th>Milestone (FY16-FY18)</th>
<th>Status</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify high priority TA tasks by NYS agencies.</td>
<td>Completed</td>
<td>7/15/16</td>
</tr>
<tr>
<td>Annual progress report and lessons learned from REV.</td>
<td>Completed</td>
<td>12/31/16</td>
</tr>
<tr>
<td>Midterm progress report and lessons learned from REV.</td>
<td>On schedule</td>
<td>5/1/17</td>
</tr>
<tr>
<td>Final Annual progress report</td>
<td>On schedule</td>
<td>10/1/17</td>
</tr>
<tr>
<td>Summary report with insights and lessons learned from REV</td>
<td>On schedule</td>
<td>10/1/17</td>
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## Technical Support to the New York State REV Initiative

### Highlights of Accomplishments to Date

<table>
<thead>
<tr>
<th>TA Provided</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Supported NYPSC and NYDPS review of Joint Utilities Supplemental DSIP filings</td>
<td>Directly impacted PSC Order concerning next wave of filings on DSIPs</td>
</tr>
<tr>
<td>Provided input to Avangrid and National Grid on their respective residential time-based rate pilots</td>
<td>Improved pilot design to reduce complexity and improve likelihood that results will be actionable</td>
</tr>
<tr>
<td>Developed a use case on addressing two-way power flow on the grid for NYSERDA</td>
<td>Improved utility understanding on how to address this issue</td>
</tr>
<tr>
<td>Supported NYDPS on grid architecture issues and DSIP implementation planning; developed analysis of selected communication network issues and relationship to data services models</td>
<td>Provided insights on legacy and forward looking architecture issues in preliminary DSIP filings to be addressed during implementation of REV</td>
</tr>
<tr>
<td>Worked on a draft NY REV Security framework with security leads from NY utilities</td>
<td>Improved security framework includes wide range of capabilities from joint utilities</td>
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### Technical Support to the New York State REV Initiative
#### Response to December 2016 Program Review

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Response</th>
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<tbody>
<tr>
<td>1. Coordinate and contribute more directly to valuation project (1.2.4).</td>
<td>Will more directly engage with GMLC 1.2.4 project PI to identify specific areas where synergies exist and results can be shared and integrated.</td>
</tr>
<tr>
<td>2. Provide detail of accomplishments</td>
<td>TA for REV frequently takes the form of technical memos, presentations, and/or conversations. Provided list of expected upcoming accomplishments.</td>
</tr>
<tr>
<td>3. Clarify coordination with Projects 1.2.1 and 1.4.25</td>
<td>Project 1.2.1 “Grid Architecture” led by Jeff Taft, who also participates on the REV project. REV Team will inform Project 1.4.25 (Distribution System Decision Support Tool) of work ongoing in NY REV. REV Team will also coordinate with the DSPx project.</td>
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<tr>
<td>4. Highlight and document specific accomplishments</td>
<td>Will develop a summary report of lessons learned from the project’s TA efforts that will be applicable to other state’s considering similar issues.</td>
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Technical Support to the New York State REV Initiative
Project Integration and Collaboration

► 1.1: Foundational Analysis for GMLC Establishment – Validate and demonstrate grid performance metrics
► 1.4.29: Future Electricity Utility Regulation – Contribute design and implementation options, issues and concerns associated with NYDPS regulatory reforms
► 1.4.25: Distribution System Decision Support Tools – Provide lessons learned from participation in DSIP review process
► 1.2.1: Grid Architecture – Apply compatible process with the architecture defined in this project when reviewing and commenting on NY utilities’ distribution system investment plans (DSIPs)
► 1.2.4: Grid Services and Technology Valuation Framework – Identify insights on the challenges and best practices for siting DER at the distribution level
► 1.3.5 DER Siting and Optimization Tool for CA – NY and CA regulators are coordinating on tool development and demonstration
► Next Generation Distribution System Platform (DSPx)
Technical Support to the New York State REV Initiative
Next Steps and Future Plans

Continue Support to NYDPS
- Work with Staff to review and improve utility’s proposed changes to business models and metrics that support REV goals
- Host a workshop for NY utilities on Grid architecture
- Report on selected communication network issues
- Individual meetings with PSC & utilities to review & discuss their approaches to adhering to the REV Cybersecurity Framework

Continue Support to NYSERDA
- Study on NY PRIZE microgrid designs-insights and lessons learned
- TA to address issues with design, development and operation of the Distributed System Platform
- TA on a study of the Value of DER

Prepare Summary Report with Insights and Lessons-Learned from REV
Technical Support to the New York State REV Initiative
Technical Details

▶ Backup Slides
• This project has been very successful and customer response to the TA provided has been very positive

• The current project will expire this year (FY 2017); however, REV implementation is expected to continue for the next 5 or more years

• There is still much work to be done and many more challenges to be overcome, so there is a continuing need for TA
Use Case on Two-way Power Flow

- REV will involve significant use of DER at the distribution level
- Deploying DER can improve grid performance, but can also result in two-way power flow
- The GMLC REV Team developed a use case to assist in understanding the challenges of two-way power flow and how to address it
Review of Joint Utilities Supplemental DSIP

- The Joint Utilities filed a Supplemental Distributed System Implementation Plan (S-DSIP) in November 2016
- NYDPS asked the GMLC REV Team to review the S-DSIP and provide comments
- The REV Team comments directly impacted the PSC Order for the next wave of filings on DSIPs