Standards and Test Procedures for Interconnection and Interoperability

Project Description

• **Accelerate** the development and validation of interconnection and interoperability standards
• Ensure **cross-technology compatibility** & harmonization of requirements for key grid services
• **Eliminate conflicting** requirements across technology domains
• **Streamline** conformance test procedures to the fullest extent possible

Expected Outcomes

• **Improve coordination** of advanced generation and storage assets
• **Enable expansion** of markets for key devices
• **Eliminate barriers** that may be addressed by improved standards

<table>
<thead>
<tr>
<th>Significant Milestones</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary gap analysis</td>
<td>9/30/16</td>
</tr>
<tr>
<td>Gap prioritization framework</td>
<td>2/28/17</td>
</tr>
<tr>
<td>Gap analysis recommendations</td>
<td>3/31/17</td>
</tr>
<tr>
<td>Develop test procedures</td>
<td>Q2 2017</td>
</tr>
<tr>
<td>Validate test procedures</td>
<td>Q3 2017</td>
</tr>
<tr>
<td>Standards coordination</td>
<td>throughout</td>
</tr>
</tbody>
</table>

Gap Analysis and Prioritization:
Key Findings and Recommendations

• **Maintain focus on key grid services related to:**
  Energy | Regulation | Local voltage management | Artificial inertia

• **Focus on key grid-edge assets**
  Inverter-based (generation/storage) | Electric vehicles | Responsive loads | Microgrids (special case)

• **Inverter-based assets**
  • Affirm updates in revision of IEEE 1547, support updates for DNP3, IEEE 2030.5, IEC 61850, and SunSpec/MESA Modbus protocol maps

• **Responsive loads**
  • Support updates to OpenADR and ASHRAE standards to enable grid services, determine capability and requirements of IEEE 2030.5 (SEP2), explore the requirements for standardizing the energy services interface

• **Electric vehicles**
  • Support updates to SAEJ3072 to include volt/VAR functionality and new IEEE 1457.1 updates

• **Microgrids**
  • Support IEEE 2030, explore capabilities for grid-connected mode

Partnering DOE Labs:
NREL, LBNL, PNNL, SNL, ORNL, INL, ANL