

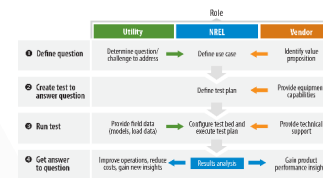
OE ADMS Program: Advanced Distribution Management System Test Bed Development



Partnering Organizations: National Renewable Energy Laboratory (NREL), Pacific Northwest National Laboratory, Argonne National Laboratory, Electric Power Research Institute, Holy Cross Energy, Xcel Energy, Opal-RT Technologies, Schneider Electric, GE Grid Solutions, Survalent

Project Description

- Model large-scale distribution systems to support utilities and vendors in evaluating advanced distribution management system (ADMS) applications on realistic systems.
- Integrate distribution system hardware in NREL's Energy Systems Integration Facility for power- and controller-hardware-in-the-loop experimentation of key components.
- Develop advanced visualization capability to analyze the results for a mock utility distribution system operator's control room.



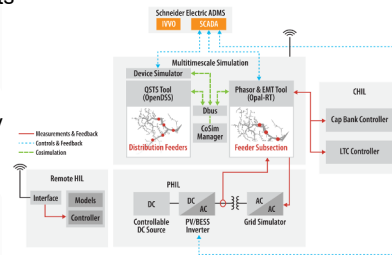
Model for utilities and vendors to use the ADMS test bed



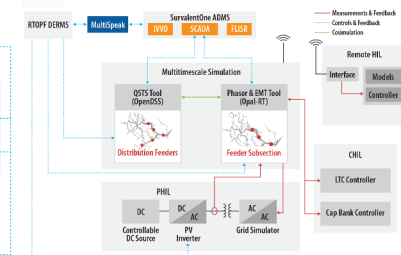
Power and controller hardware and visualization components

Expected Outcomes

- A vendor-neutral, pre-pilot testing ground for ADMS functionality that can be used by utilities and vendors to evaluate the benefits of an ADMS prior to investing in field deployments
- Reduced risk for utilities and acceleration of ADMS deployments leading to more reliable and efficient distribution system operations
- A test bed that will enable utilities and vendors to evaluate integration challenges of ADMS with legacy systems
- A test bed that vendors can use as part of their development and evaluation of new ADMS applications
- A facility for operator training of utility engineers.



ADMS test bed setup for Use Case #1: Data Remediation



ADMS test bed setup for Use Case #2: Integrated Peak Load Management

Progress to Date

- Several industry advisory board (IAB) meetings held jointly with the GridAPPS-D project
- ADMS test bed setup for Use Case #1:
 - Communication interface enabling cosimulation with OpenDSS and ePHASORSim by Opal-RT
 - Power and controller hardware-in-the-loop
 - ADMS with feeder models at different levels of data remediation
- Software tools to convert data files to OpenDSS and ePHASORSIM formats
- Executed Use Case #0 (Integrated Volt-Var Control) using distribution management system internal power flow
- Published four conference papers and journal articles on Use Case #0 results in process
- Use Case #2 defined and partners identified.

Significant Milestones	Date
Develop a test bed for ADMS using internal DMS power flow.	04/15/2017
Develop a test plan specifying tests to be conducted in Year 3.	10/15/2018
Execute the Year 2 test plan for Use Case #1 to show the impact of data remediation on the effectiveness of Volt-Var Optimization.	10/15/2018
Host a workshop to disseminate the lessons learned in ADMS Use Case #1.	09/26/2018
Execute the Year 3 test plan for Use Case #2.	07/15/2019
Host a workshop to disseminate the lessons learned in ADMS Use Case #2.	07/15/2019

- Coordinating with other ADMS projects on a monthly basis to develop ADMS test bed capabilities to test the products on other projects
- Established a combined IAB team for the platform and test bed projects.

