



Ameren Illinois

1st Quarter 2014 Smart Grid

Test Bed Report

May 14, 2014

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Executive Summary

Ameren Illinois Company (Ameren Illinois) submits the following Smart Grid Test Bed Quarterly Report in accordance with the Energy Infrastructure Modernization Act, (EIMA) 220 ILCS 5/16-108.5 et seq. (“the Act”). This report provides updates on the steps Ameren Illinois has taken to implement its test bed plan during the first quarter of 2014. The report includes information on activities Ameren Illinois has undertaken to further develop its “primary” test bed location, discussions with potential test bed customers, and on the testing application process.

Current Test Bed Projects

- Ameren Illinois continues work on its alliance with Schweitzer Engineering Laboratories, Inc. (SEL), University of Illinois, (UIUC), and Pacific Northwest National Laboratories (PNNL) under the award Funding Opportunity Announcement (FOA) No. DE-FOA-0000797 under the U.S. Department of Energy (DOE). Efforts this quarter were focused on the development of a whitepaper that further defines the “Software Defined Networking Project” (SDN).
- Ameren Illinois continues to support the Electric Power Research Institute (EPRI), UIUC and SEL under the same FOA grant per Topic Area 4 to assist in Secure Remote Access for the energy sector, titled: “Secure Policy-Based Configuration Framework (PBCONF). This project aims to correct the diversity gap through flexible configuration framework that securely configures the devices and provides the homogeneous view needed for global security.
- An internal Ameren Illinois project associated with Smart Grid Technologies has been undertaken by installing new Voltage Regulator controls and radios on TAC circuit 372 distribution regulators. This technology allows Ameren Illinois to remotely collect data via a secure Wi-Fi network to analyze power flow without the installation of costly current and power transformers (CTs & PTs) along with communication conductors. This testing is ongoing and it is anticipated that the TAC will further test Satellite Technology for the same purposes.
- Ameren Illinois is supporting a University of Illinois – Urbana/Champaign (UIUC) & Trustworthy Cyber Infrastructure for the Power Grid (TCIPG) Research Scientist for a project entitled: Adapting Bro into SCADA: Building Specification-based IDS for DNP3 by providing real SCADA data in larger volumes to the researchers. This project involves the development of software to further enhance SCADA network systems for Utilities by an intrusion detection system (IDS) that supports proprietary network protocols, such as DNP3, used in industry control environments.

Test Bed Applications

- A vendor who provides utility scale street lighting solutions submitted an application requesting that Ameren Illinois perform testing of their LED lighting applications. Ameren Services engineering standards department has requested that the Technology Applications Center test additional manufacturers' LED lighting technologies and thus the TAC staff are in the process of coordinating this testing project.

Test Bed Tours

- On February 6, 2014 five University of Illinois professors and/or students participated in a tour of the Technology Applications Center (TAC). These individuals are affiliated with UIUC's Trustworthy Cyber Infrastructure for the Power Grid (TCIPG) effort and desired to learn more about Ameren Illinois' testing capabilities at the TAC.
- On February 19, 2014, two employees of Utilidata, Inc. toured the TAC to learn more about the TAC's testing capabilities. The Utilidata employees then presented information on Utilidata's solution for managing Conservation Voltage Reduction and Volt-Var Optimization systems.
- On March 19, 2014, approximately 20 students and faculty from the University of Illinois Laboratory High School participated in a tour of the TAC. The students and faculty were interested in learning more about Ameren Illinois' electric distribution systems with emphasis on Smart Grid equipment.

Additional Activities

- Ameren Illinois supported the Energy Foundry in its effort to obtain a DOE funding award for establishment of a National Incubator for Clean Energy. A funding decision from the DOE is expected by the end of May, 2014.
- TAC staff participated in a National Institute of Science & Technology (NIST) workshop with the purpose of discussing the major technological and measurement science challenges that impede smart grid testbed development.
- TAC staff are working with several manufacturers and an external research lab to identify a self-contained 69KV switching device to support AIC's continued automation of its 69KV systems.

Smart Grid Test Bed Plan Success

Ameren Illinois' commitment to the successful implementation of its Smart Grid Test Bed plan is strong. However, as set forth above, Ameren Illinois reserves the right to modify, amend or alter this plan, as necessary and consistent with the law, to meet the requirements and objectives of the EIMA and other related provisions. Additionally, Ameren Illinois reserves its right to terminate this plan.