



# **Ameren Illinois 4th Quarter 2013 Smart Grid Test Bed Report**

February 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 fourth quarter of 2013. The report includes information on activities Ameren Illinois has undertaken to design and construct its “primary” test bed location, discussions with potential test bed customers, and on the testing application process.

## Test Bed Construction Status

### **Status**

The completion status for the “primary” Technology Applications Center (TAC) location is as follows:

Engineering Design = 100%  
Site Survey = 100%

Site Construction = 100%  
Equipment Purchases = 100%

During testing and commissioning of TAC circuit 371, it was discovered that the control wiring originally installed for the Viper recloser did not allow full six pole voltage sensing capability. This situation is being corrected and Ameren Illinois anticipates this work to be completed by March 1, 2014. When this work is completed, TAC circuit 371 will be fully operational with live load.

### ***Current Test Bed Projects:***

#### External

- Ameren Illinois continues work on an 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) beginning the first week of December 2013. The project scope is entitled “Software Defined Networking Project” (SDN) The goal of the SDN Project is to develop a Flow Controller that monitors, configures, and maintains the safe, reliable network flows of all the local area networks (LANs) on a control system in the Energy sector. Ameren Illinois participation in the project is to help steer the commercialized technology so that it addresses industry requirements.

- Ameren Illinois also 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.
- Ameren Illinois received two new applications that are currently being reviewed for possible implementation within the TAC. Both technologies appear to be good candidates for future testing opportunities, however further review is necessary at this time. The technologies are as follows:
  - Cyber Security System ("CCS") that provides real-time situational awareness that protects against threats to the communication network.
  - Asset Risk Management System that monitors assets across the enterprise and provides the needed information to maintain and optimize assets.
- Ameren Illinois conducted several tours of the TAC during the 4<sup>th</sup> Quarter of 2013 as follows:
  - Southern Illinois University Professor, 1 attendee
  - Ameren Illinois Energy Efficiency & University of Illinois Research Professors, 5 attendees
  - Trustworthy Cyber Infrastructure for the Power Grid conference participants, 35 attendees
  - Novatech representatives, 1 attendee
- Ameren Illinois met with representatives from the Department of Energy – Energy Efficiency department as well as a member of the Energy Foundry to discuss the capabilities of the Technology Application Center.

#### Internal

- An Ameren Illinois project associated with Smart Grid Technologies has been undertaken by installing new Voltage Regulator Controls and wireless communications on the distribution regulators feeding TAC circuit 372. This technology allows Ameren Illinois to remotely collect data via a secure WiFi network to analyze power flow without the installation of costly current and power transformers (CTs & PTs) along with communication conductors. Initial prototype is operational and undergoing testing with the Remote Terminal Unit (RTU) for reliability and accuracy. Ameren Illinois goal for this

technology is to improve its ability to cost effectively measure distribution system load flows and power quality data.

- Ameren Illinois conducted several tours of the TAC during the 4<sup>th</sup> Quarter of 2013 as follows:
  - Ameren Illinois reliability department, 4 attendees
  - Ameren Senior Leadership, 6 attendees
  - Ameren Corporate Planning Department, 3 attendees

### 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.