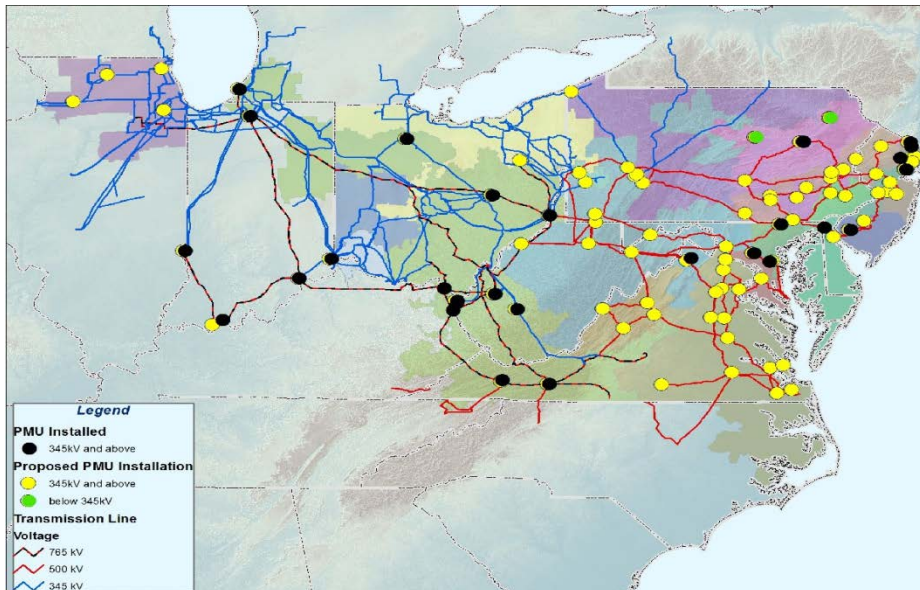


Incorporating PMU Requirements into Tariff

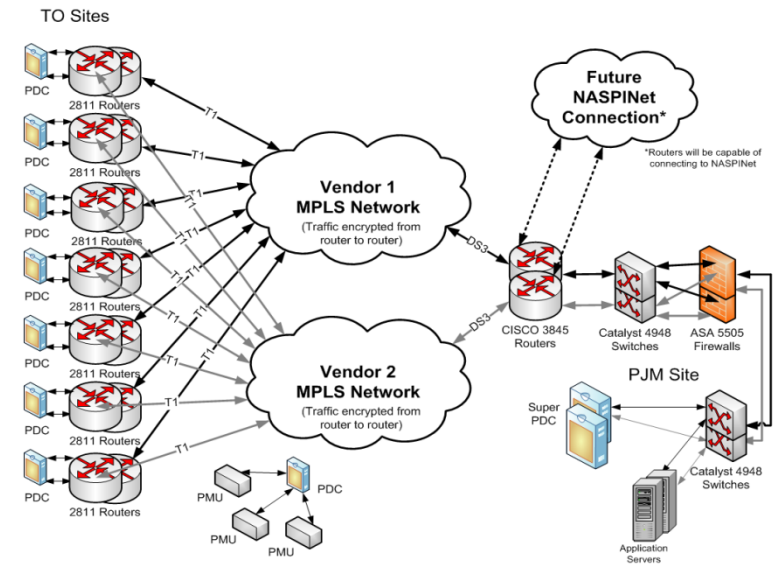
NASPI Meeting
March 12, 2014
Knoxville, TN

Nancy Huang, Jing Liu
PJM Interconnection

The DOE Grant project will provide a highly reliable data collection network.



SynchroPhasor Measurement Devices at 82 Substations



Production Grade Data System to Support 150+ Monitored Substations

Challenges & Benefits:

- **No Generator Buses with PMUs**
- **For generator model development and verifications, we need high resolution data (SynchroPhasor data) at generator buses**
 - **Potential On-line model testing instead of traditional off-line testing**
 - **Improve the accuracy of the generator model**
 - **Forthcoming NERC standards**
- **Generation Primary Frequency (Governing) and AGC Response Performance Monitoring**
- **Oscillation Monitoring and Detection**

9/13/2012

- Problem/Opportunity Statement presented and approved
- Seeking to make a policy change to the ISA and manuals to add explicit requirement of installing SynchroPhasor Measurement Units (“PMU”) at new Generation Interconnections.

1/22/2013

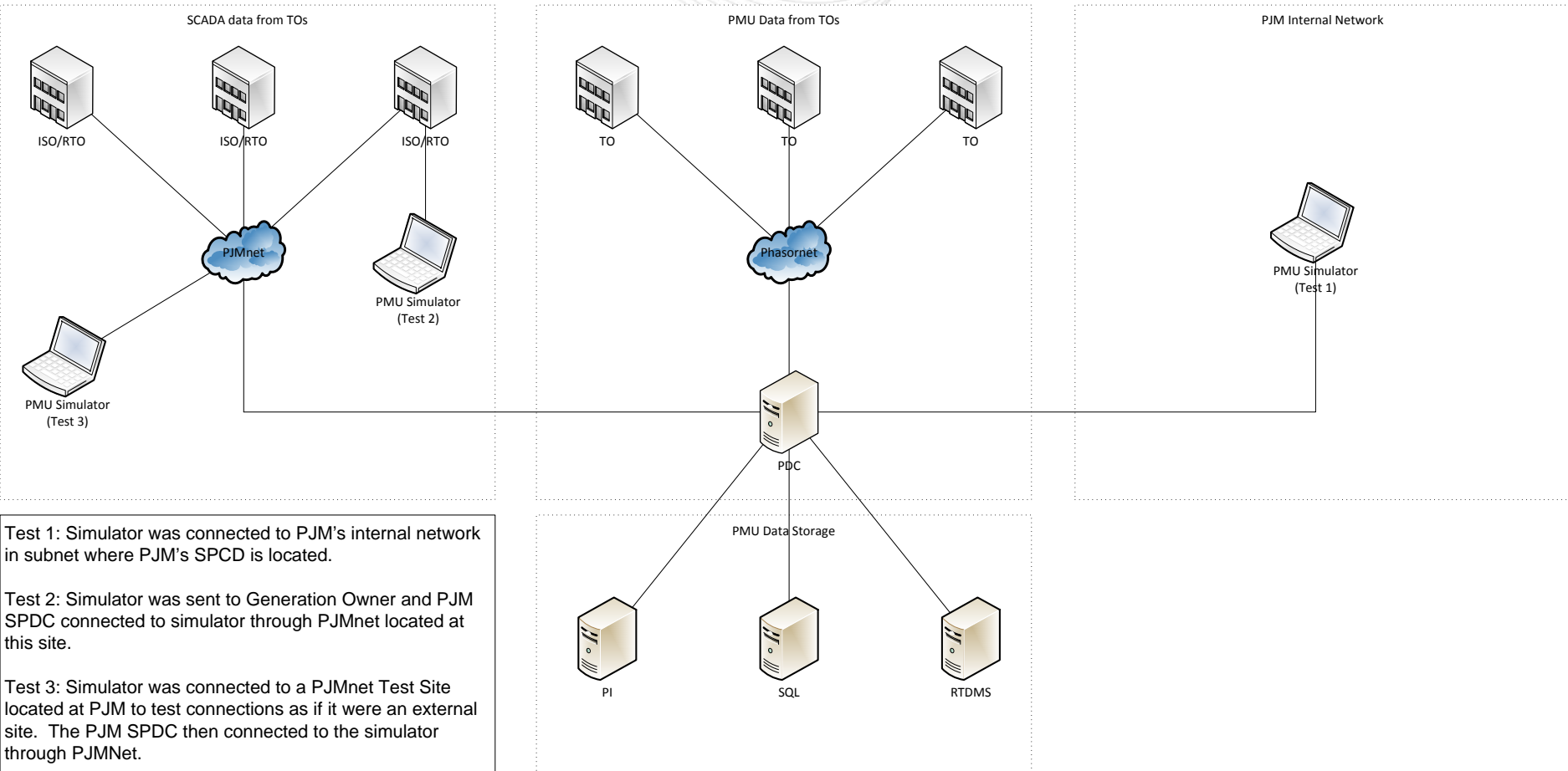
- Final report reviewed
 - Seven meetings
 - Education on PMU-related issues covering eleven topics
 - Two packages proposed

6/27/2013-
2/27/2014

- PJM MC endorsed the proposed Tariff language on 6/27/2013
- PJM submitted the filing to FERC on 10/28/2013
- FERC accepted PJM’s compliance filing on 2/27/2014

- **Process is long;**
- **Teamwork and support from throughout the organization;**
- **Education is necessary.**

- **Working on manual languages for the details to support the new requirement in tariff;**
- **Phased approach for SynchroPhasor Deployment.**



Test 1: Simulator was connected to PJM's internal network in subnet where PJM's SPCD is located.

Test 2: Simulator was sent to Generation Owner and PJM SPDC connected to simulator through PJMnet located at this site.

Test 3: Simulator was connected to a PJMnet Test Site located at PJM to test connections as if it were an external site. The PJM SPDC then connected to the simulator through PJMNet.

