

## The Boeing Company

### Boeing Smart Grid Solution

#### Project Description

Boeing and its partners will demonstrate the benefits of advanced Smart Grid technologies and concepts for optimizing regional transmission system planning and operation by enabling wide-area situational awareness, coordination, and collaboration in a secure manner. Using historical playback data from Regional Transmission Organizations and utilities, Boeing will run a baseline scenario and multiple off-baseline scenarios to demonstrate improvements in transmission operators' ability to address current challenges like load congestion and artificial seams between control areas, as well as emerging stressors, including increased generation of intermittent renewable energy. Test cases will be derived based upon challenges experienced during typical operations, day-ahead planning, peak load conditions, intermittent energy operations / large swings in supply and demand, significant unforeseen failure events, and cyber attack. The project team includes leading regional transmission organizations and utilities that serve all or part of 21 states and more than 90 million people. This project is differentiated by its ability to leverage network architecture and military-grade cyber security experience and capabilities that are scalable and enable interoperability with both legacy systems and new Smart Grid technologies. Team members will also develop public outreach and education programs to raise awareness of Smart Grid benefits.

#### Goals/Objectives

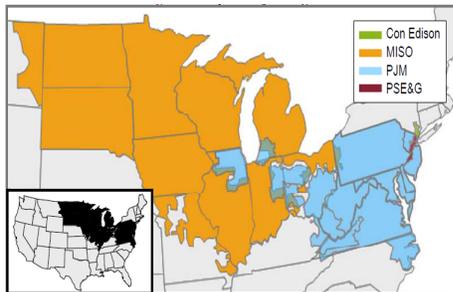
- Increase the ability to predict day-ahead regional supply and reduce load congestion
- Increase the ability to cooperate and coordinate across control areas in a cyber secure manner
- Verify the value of the interoperability and cyber security capabilities at the regional transmission level across multiple regional transmission organizations

#### Key Milestones

- Phase 1 Review (Aug 2011)
- Phase 2 Review (Jul 2012)
- Phase 3 Review (Jul 2013)
- Operational Demo (Aug 2013)

#### Benefits

- Reduced system demands and costs
- Increased energy efficiency
- Enhanced protection and detection of cyber security threats
- Public awareness and acceptance of Smart Grid technology



#### CONTACTS

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#### PARTNERS

PJM Interconnection  
Midwest ISO  
PSE&G  
Con Edison

#### PROJECT DURATION

1/1/10-12/31/13

#### BUDGET

##### Total Project Value

\$17,172,844

##### DOE/Non-DOE Share

\$8,561,396/\$8,611,448

#### EQUIPMENT

Dell Precision R5400  
Dell PowerEdge R900  
Dell AX4-5F  
APC Smart UPS 2200VA USB & Serial RM  
2U 120V  
Hardware emulation devices

#### DEMONSTRATION STATES

California  
Missouri  
CID: OE0000191

Managed by the National Energy Technology  
Laboratory for the Office of Electricity Delivery and  
Energy Reliability

