



Western Electricity Coordinating Council

***WECC Response to DOE Funding  
Opportunity – Smart Grid Investment Grant  
The Western Interconnection  
Synchrophasor Program (WISP)***

---

Status Briefing for WIRAB/CREPC

November 5, 2009

Tom Schneider  
Managing Director of Planning and Standards

# *Funding Opportunity Announcement*

## **Smart Grid Investment Grant Program**

---

- Purpose is to accelerate the modernization of the nation's electric transmission and distribution systems
- To promote investments in smart grid technologies, tools and techniques
- Increase grid reliability, flexibility, functionality, interoperability, cyber-security, situational awareness and operational efficiency

# *Funding Opportunity Announcement*

## **Smart Grid Investment Grant Program**

---

### **WISP– (4.B.v.- Electric Transmission Systems)**

- Project will add smart grid functions, including:
  - **Infrastructure** – Phasor Measurement Units (PMUs), Phasor Data Concentrators (PDCs), the communication system to network the PMUs and PDCs throughout the west including RCs
  - **Off-Line Applications**
    - Power system performance and disturbance evaluation
    - System-wide model validation
  - **Real-Time Applications**
    - Situational awareness tools for operators
    - Wide-area controls for automatic safety nets

# *WISP Value Proposition*

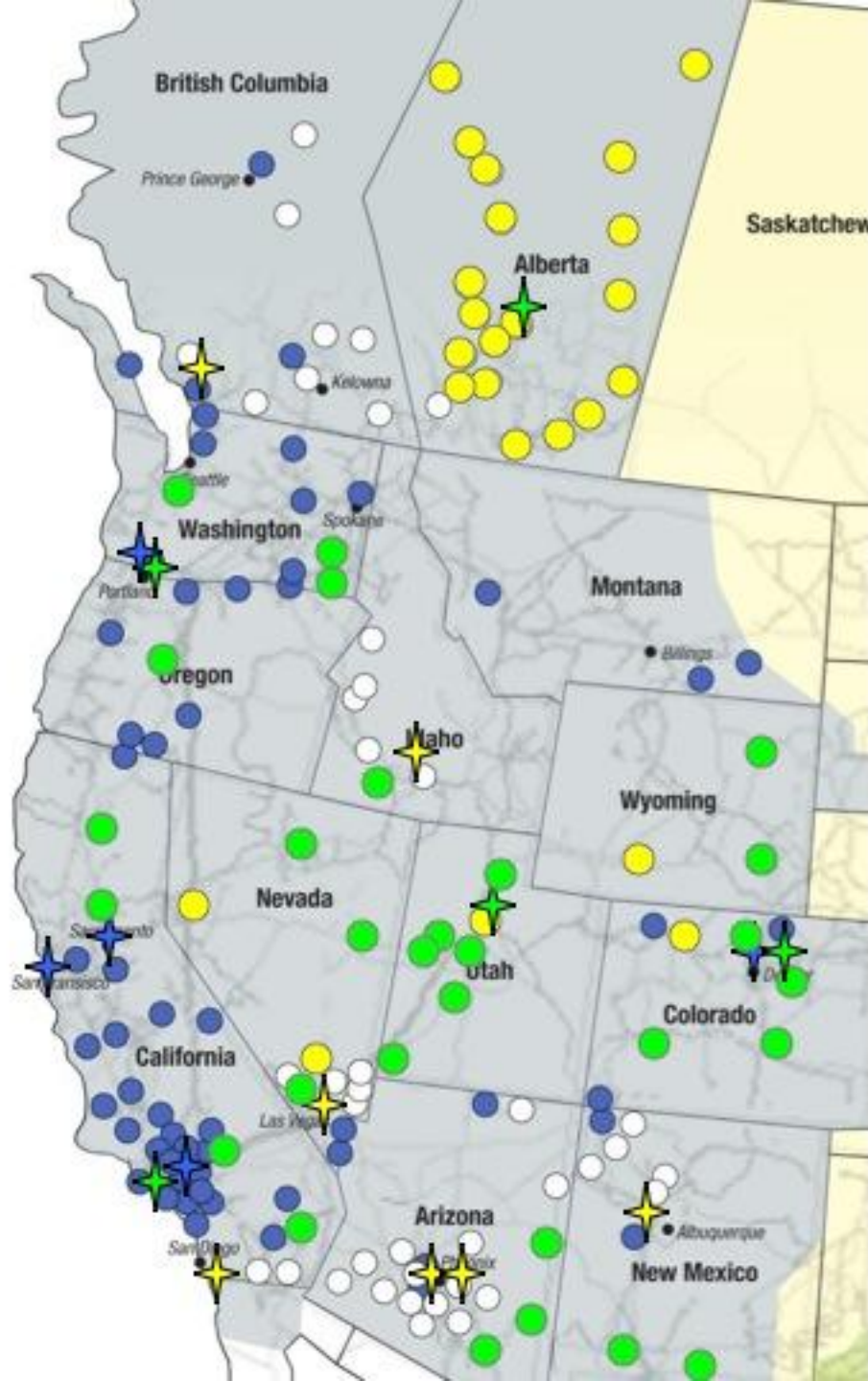
---

- Better visualization tools, alarming and decision support for operators and Reliability Coordination Offices (RCO)
- Common tools for operators across the West – seeing the same thing, talking the same language
- Better understanding and ability to predict power system behavior
- Ability to detect and mitigate western system oscillations – a reliability concern in the 3<sup>rd</sup> quarter of every year

# *WISP Value Proposition*








---

- Ability to predict voltage stability problems – a load center reliability concern
- Ability to facilitate wind fleet integration
- Ability to unlock latent transmission capacity in existing system
- Compliance with NERC cyber security standards
- Improved inter-operability and phasor data sharing across the West
- Meeting the RCO goal of observing and mitigating transient instability problems



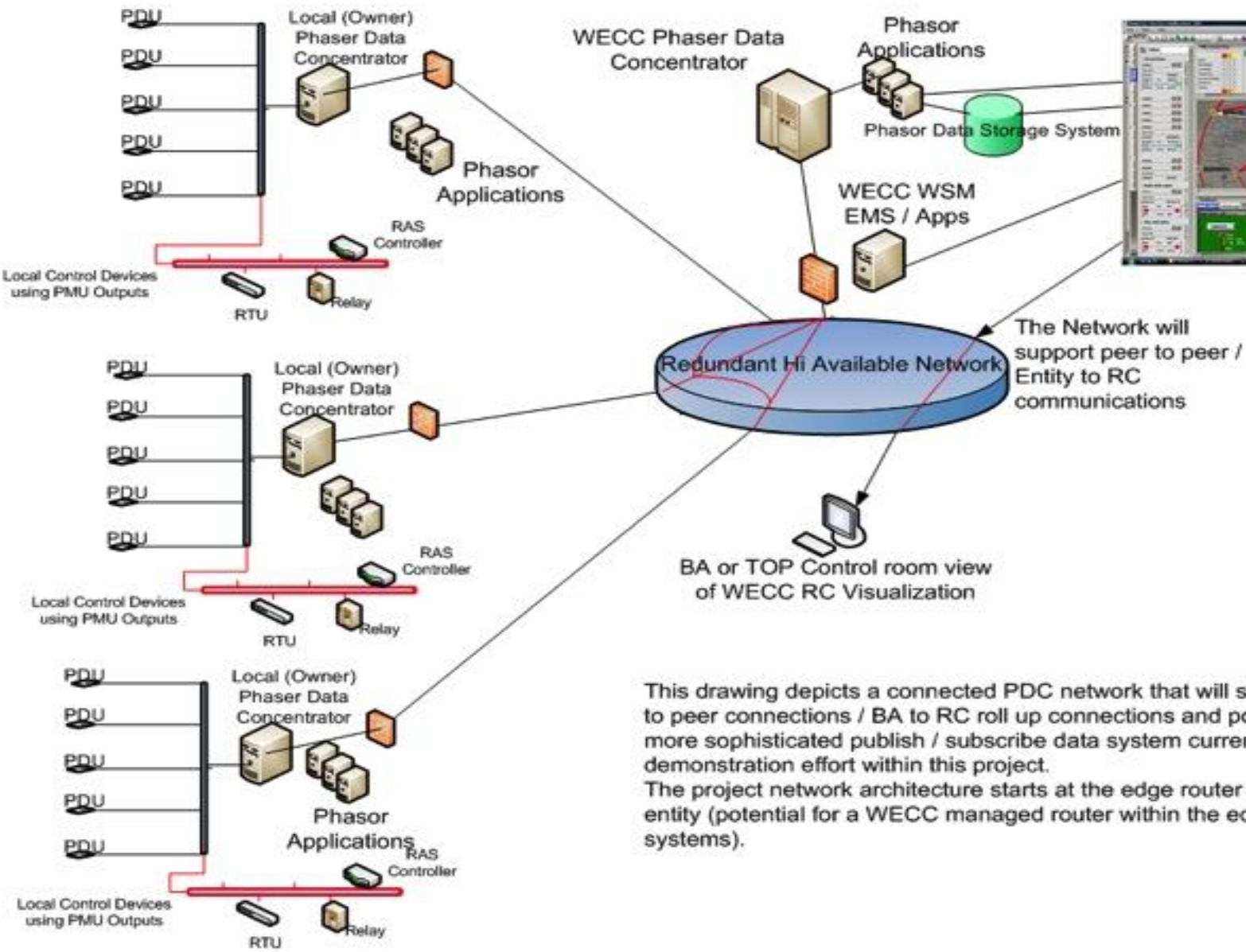
## Phasor Measurement Units (PMU) in the Western Interconnection

### Legend

-  Phasor Data Concentrator (PDC)
-  Networked PMU – Multiple PDC
-  Networked PMU – Single PDC
-  PMU Not Networked
-  Desirable future PMU
-  Desirable future PDC
-  Networked PDC

# Phasor Network Architecture

WECC RC Visualization System



This drawing depicts a connected PDC network that will support peer to peer connections / BA to RC roll up connections and potentially a more sophisticated publish / subscribe data system currently under a demonstration effort within this project. The project network architecture starts at the edge router of each entity (potential for a WECC managed router within the edge systems).

# *Funding Opportunity Announcement*

## **Smart Grid Investment Grant Program**

---

- WECC application submitted August 6, 2009 for total program cost of \$108M – requesting \$54M in matching funds
- Notification of full award from DOE on October 27, 2009
  - Subject to final contract negotiations with DOE
- Three-year period of performance
- WECC program proposal includes nine partner entities (including WECC) to deploy synchrophasor infrastructure and applications West-wide

# *Partner Entity Commitments*

---

- Partner entities in WECC proposal have committed \$54M in deployment efforts
  - SCE
  - BPA
  - PG&E
  - CAISO/CEC/EPG
  - SRP
  - PAC
  - IPC
  - NV Energy
  - WECC

# WISP Governance

- Governance of Program includes 3 Groups:
  - An **Executive Steering Committee** chaired by Program Director (Mark Maher), including 2 non-affiliated WECC Directors (Jack King and Tim Newton), and executives from the other 8 entity partners. Inaugural meeting held October 20.
  - A **Technical Advisory Committee** chaired by Program Manager (Vickie VanZandt), including entity partner project and technical leads and other synchrophasor technology expertise. Inaugural meeting held November 3.
  - **Joint Synchrophasor Work Group** which is expected to replace the Disturbance Monitoring Work Group and the Wide Area Measurement Task Force – with longer term focus than 3 year WISP Program. First meeting November 12.

# Next Steps

---

- Continue to work through initiation phase planning activities:
  - Finalize the program governance model and organizational structure
  - Continue definition of detailed program scope, deliverables, assumptions and key decisions
  - Continue to work with partner entities on detailed schedule development
  - Continue cost analysis and detailed budget development

# WISP

