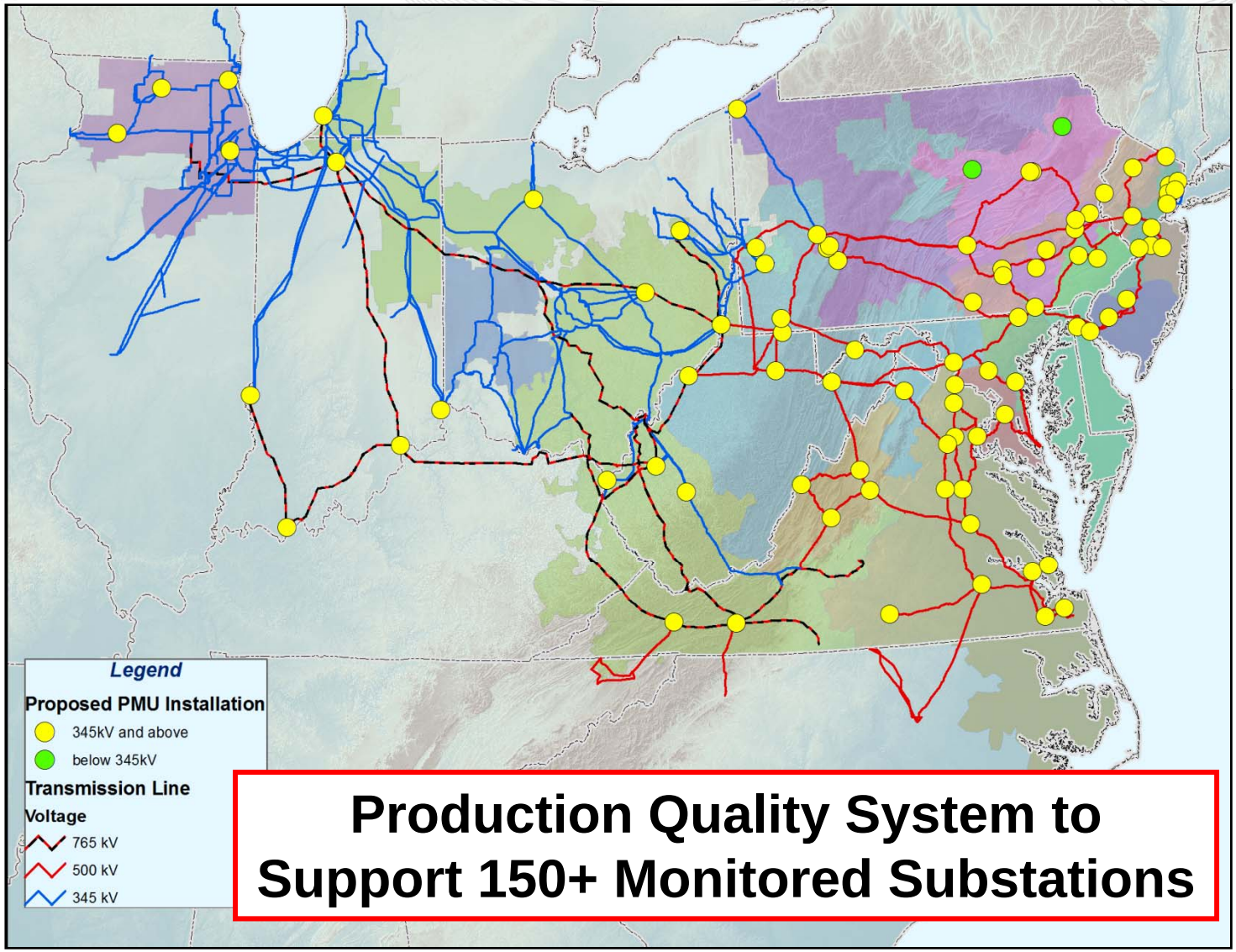
# PJM SynchroPhasor Technology Deployment Project

David Ulmer
ulmerd@pjm.com
NASPI Work Group Meeting
February 24-25, 2010


PJM©2010

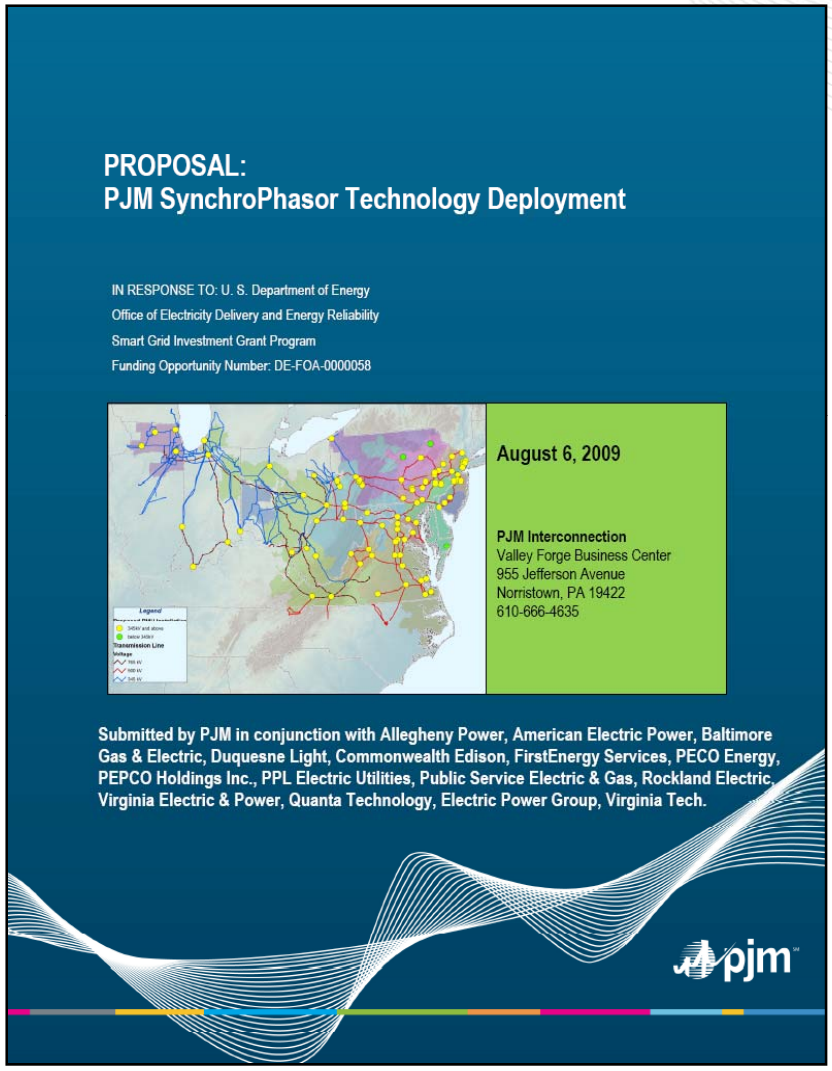
# PJM SynchroPhasor Deployment Project




**Production Quality System to Support 150+ Monitored Substations**


PJM©2010

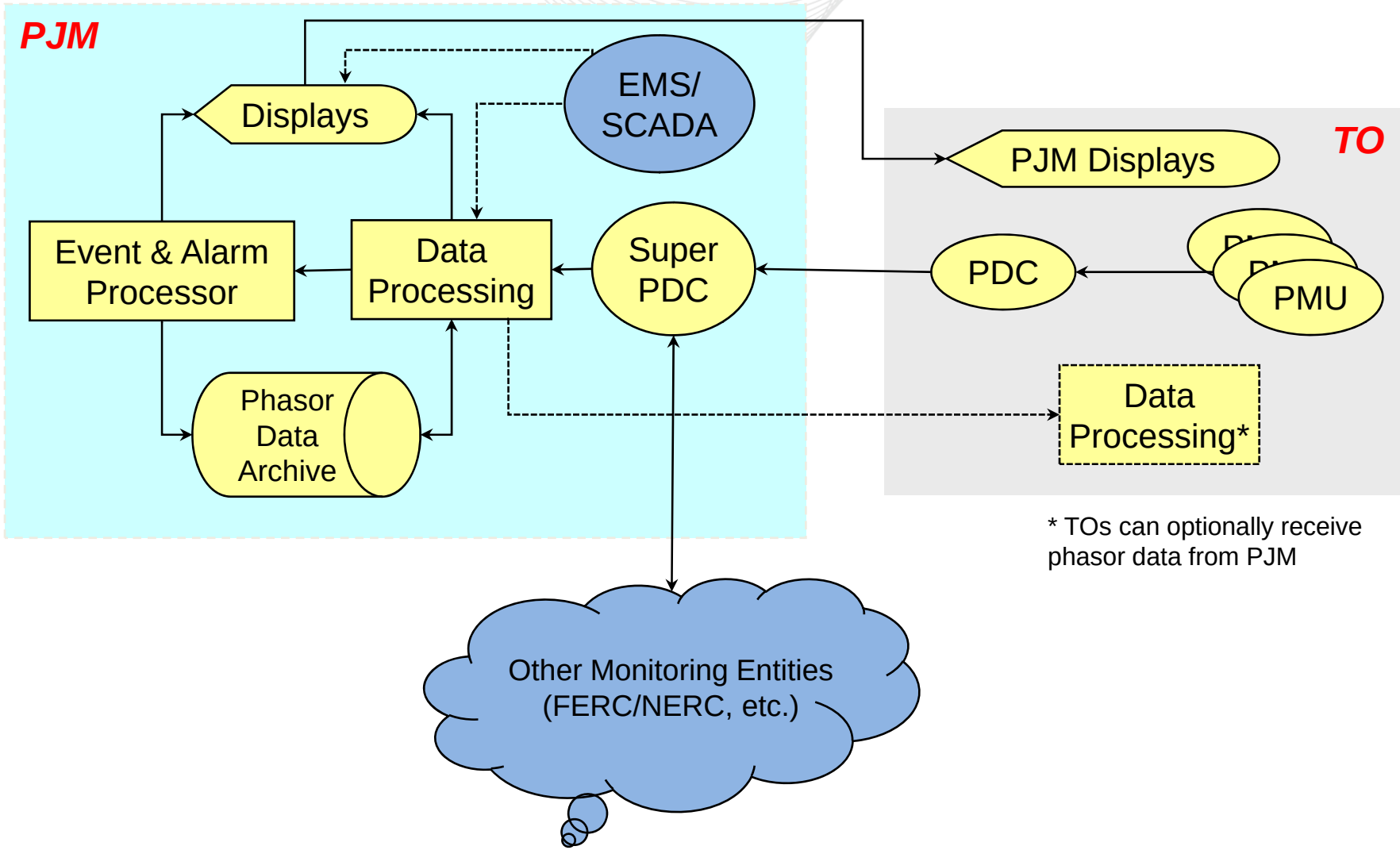
# PJM SynchroPhasor Deployment: Project Summary




- Installations at 90 substations
- 12 PJM Transmission Owners
- Cost share partners:
  - Quanta Technology
  - Virginia Tech
  - Electric Power Group (EPG)


PJM©2010

# PJM SynchroPhasor Deployment: System Overview

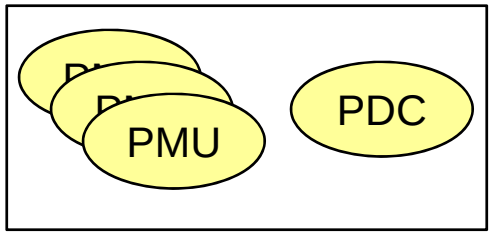



* TOs can optionally receive phasor data from PJM

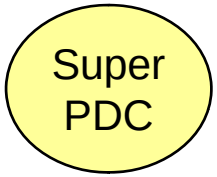


PJM©2010

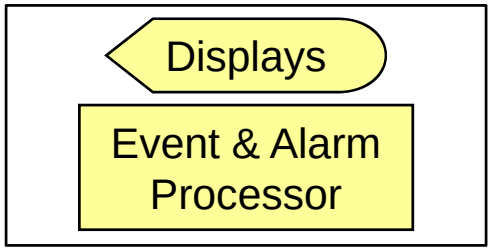
# PJM SynchroPhasor Deployment: Planned Technologies



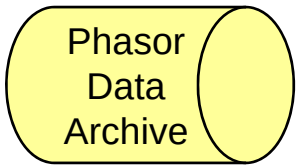

**PMU/PDC Devices:**
Selected by Transmission Owners (collaborative project requirements)




**PJM PDC:**
Currently using TVA's openPDC



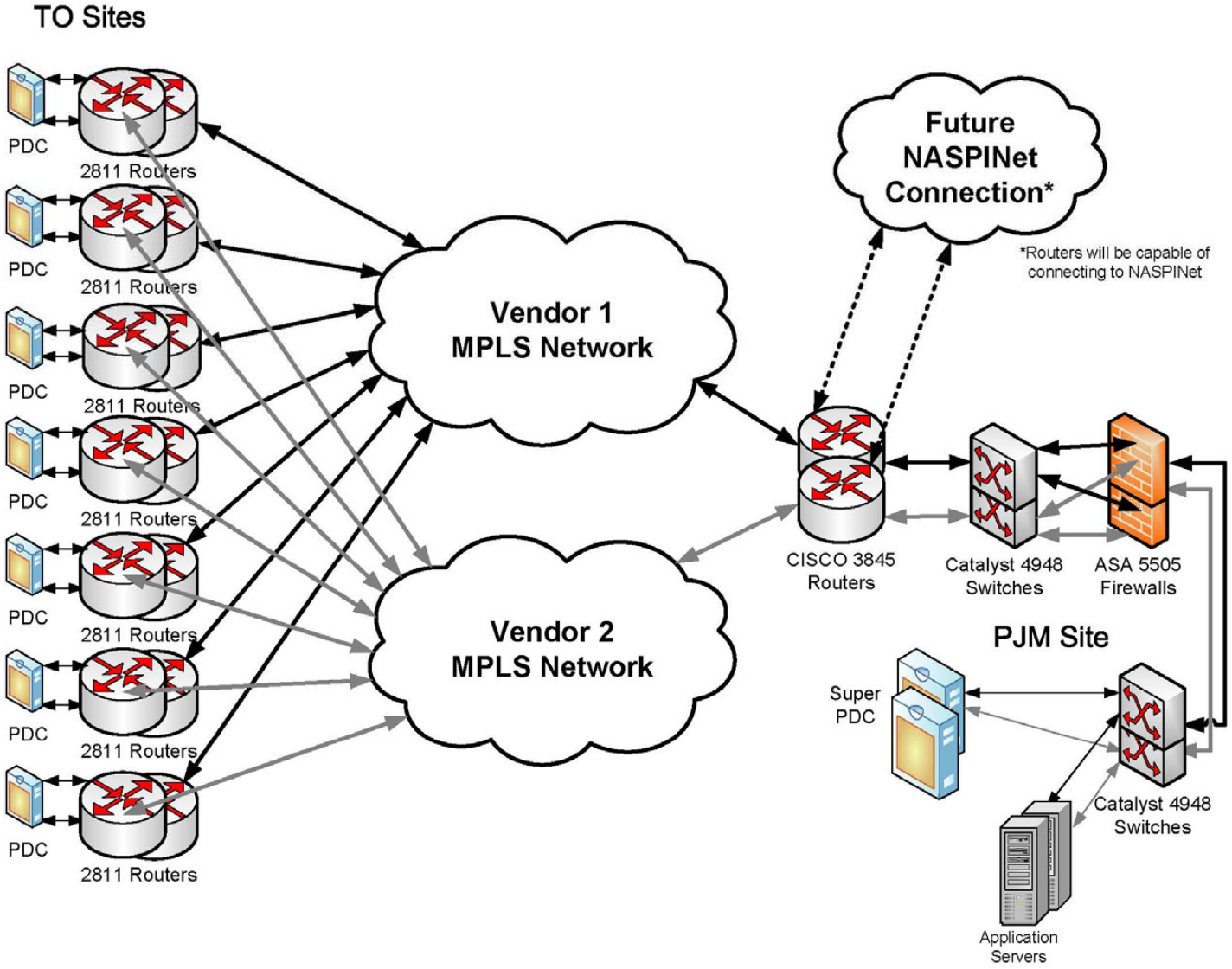

**Wide Area Situational Awareness/Data Analysis:**
EPG's Real Time Dynamics Monitoring System (RTDMS) and PGDA offline analysis tool




**Data Archive:**
Short-term – combination of PJM PDC and RTDMS storage
Long-term – OSIsoft PI System


PJM©2010

# Production Quality Communications Network






PJM©2010

# Projected Project Milestones

| System Component | Phase 1 - 2010 | | | | Phase 2 - 2011 | | | | Phase 3 – 2012 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Number of PMUs at TO Sites | 2 | 4 | 10 | 20 | 9 | 11 | 5 | 8 | 5 | 9 | 8 | 0 |
| Number of PDCs at TO Sites | 0 | 0 | 3 | 4 | 2 | 1 | 2 | 0 | 0 | 3 | 2 | 0 |
| TO PDC – PMU Telecom Links | 1 | 0 | 8 | 16 | 11 | 15 | 8 | 7 | 5 | 12 | 8 | 0 |
| TO PDC – PJM SPDC Telecom | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 0 |
| Super Phasor Data Concentrator at PJM | PJM SPDC implemented | | | | Enhancements / adjustments needed to reflect lessons learned and new industry development | | | | Enhancements / adjustments needed to reflect lessons learned and new industry development | | | |
| SynchroPhasor Data Mgmt & Visualization Software | Design based on requirements and architecture | | | | | | | | | | | |


PJM©2010

# Project Contacts

**Chantal Hendrzak** – Project Sponsor
hendrc@pjm.com

**Mahendra Patel** – Subject Matter Expert
patelm3@pjm.com

**David Ulmer** – Project Manager
ulmerd@pjm.com


PJM©2010