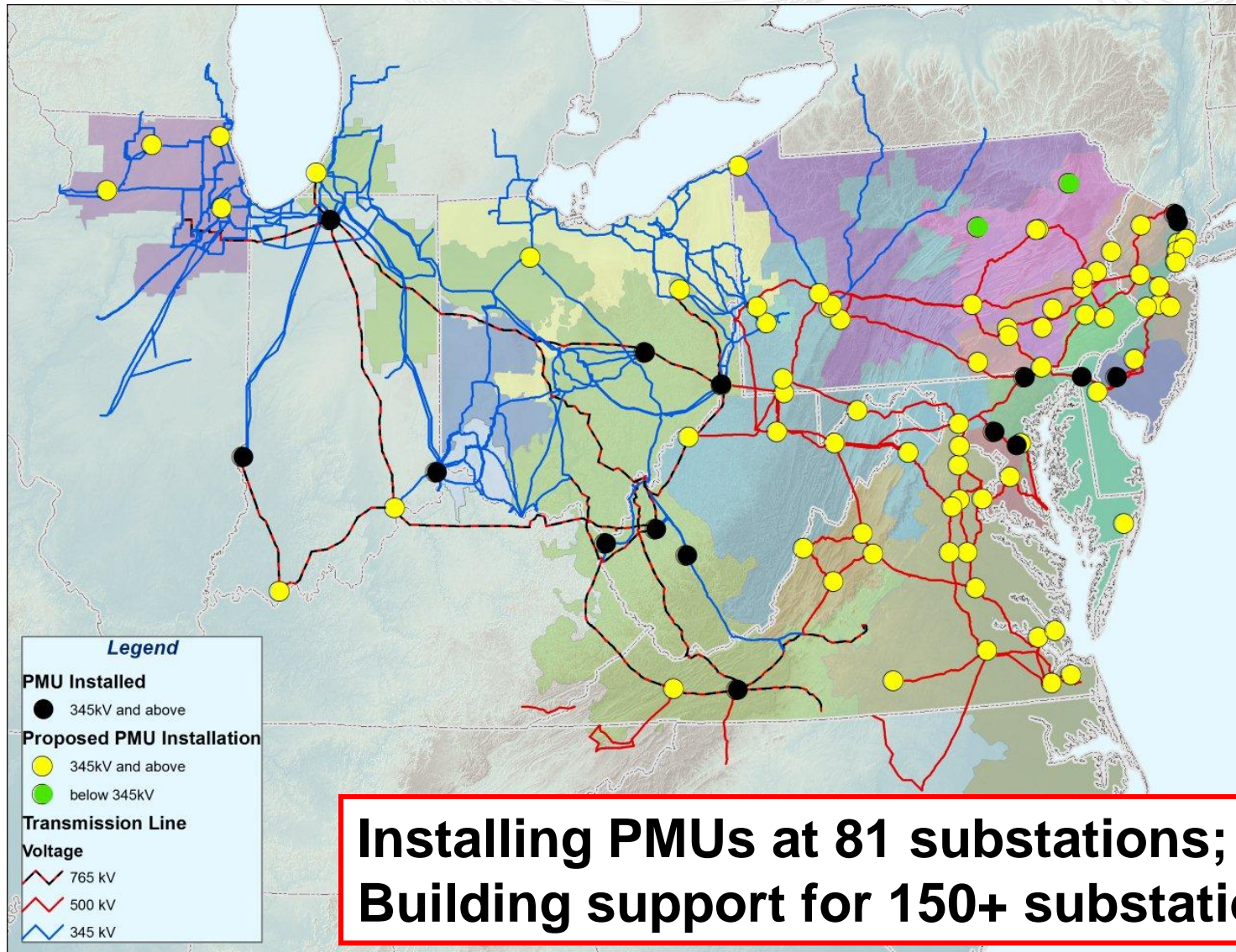


# Presentation name: Training Technical Session

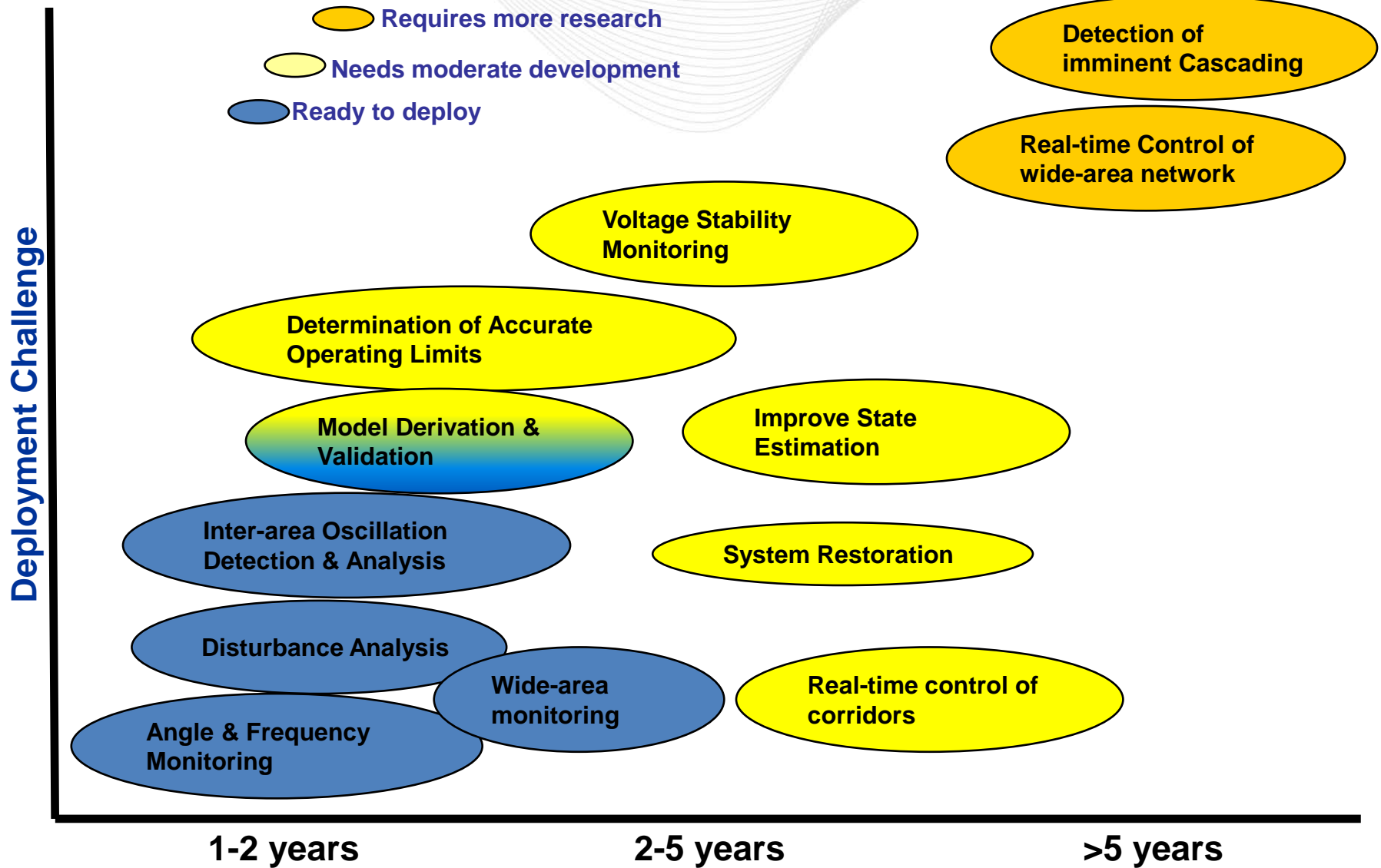
Bill Walker – PJM Interconnection, LLC  
[walkew@pjm.com](mailto:walkew@pjm.com)

NASPI Work Group Meeting  
February 29 – March 1, 2012

- **PJM Leads:**
  - Project Manager: Bill Walker ([walkew@pjm.com](mailto:walkew@pjm.com))
  - Technical Lead: Mahendra Patel ([patelm3@pjm.com](mailto:patelm3@pjm.com))
- **Vendor Partners:**
  - Electric Power Group (PDC and visualization software)
  - Quanta Technology (engineering/project management)
  - Virginia Tech University (PMU/PDC device testing)
- **Transmission Owners**
  - 12 TO's streaming phasor data for 81 substations



**Installing PMUs at 81 substations;  
Building support for 150+ substations**





- Range
  - Awareness through event & role specific
- Focus
  - Built into existing training programs
- Delivery
  - Vendor & PJM Trainers
  - “Lunch & Learn”; lecture; simulation; event analysis



<i>Applications Being Implemented</i>							
<i>Company</i>	<i>Company Type</i>	<i>Wide Area Frequency Monitoring</i>	<i>Wide Area Angle Monitoring</i>	<i>Oscillation Monitoring</i>	<i>State Estimation Enhancements</i>	<i>Model Validation</i>	<i>Other?</i>
<i>PJM</i>	<i>RTO</i>	<i>RTDMS</i>	<i>RTDMS</i>	<i>RTDMS</i>	<i>TBD</i>	<i>PGDA</i>	<i>IEP</i>

- Timing
  - Begin mid 2012 and build into Training cycle
  - Application specific training prior to deployment
- Approach
  - Build into Operational training w/ customization
- Feedback
  - PJM standard feedback and review process

Groups Needing Training										
Comp.	Comp Type	System Ops	Ops Engs	System Planning	Gen Ops	EMS Support	R&D Groups	Perform Comp	Security	IT
PJM	RTO	X	X	X	X	X	X	X	X	X

- Target Groups

- Operations
- Planning
- Performance Compliance
- EMS Support
- IT

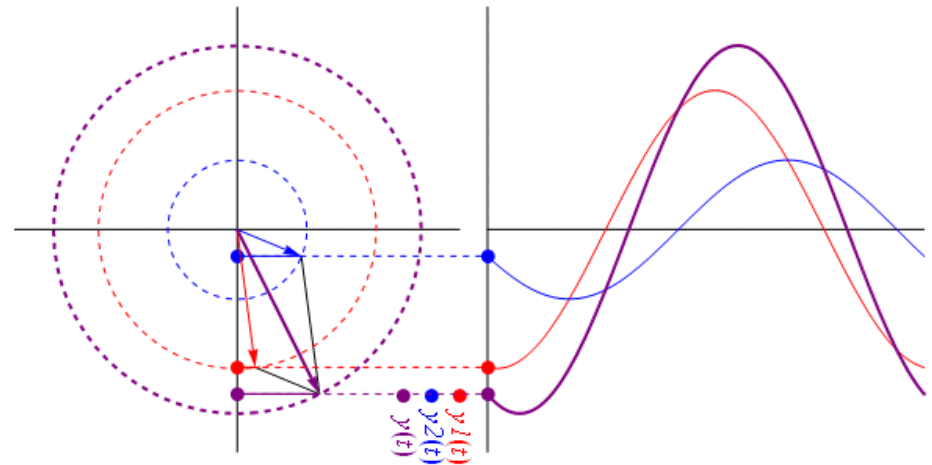
- Target Roles

- Administrators
- Power Users
- Users

- Target Hours

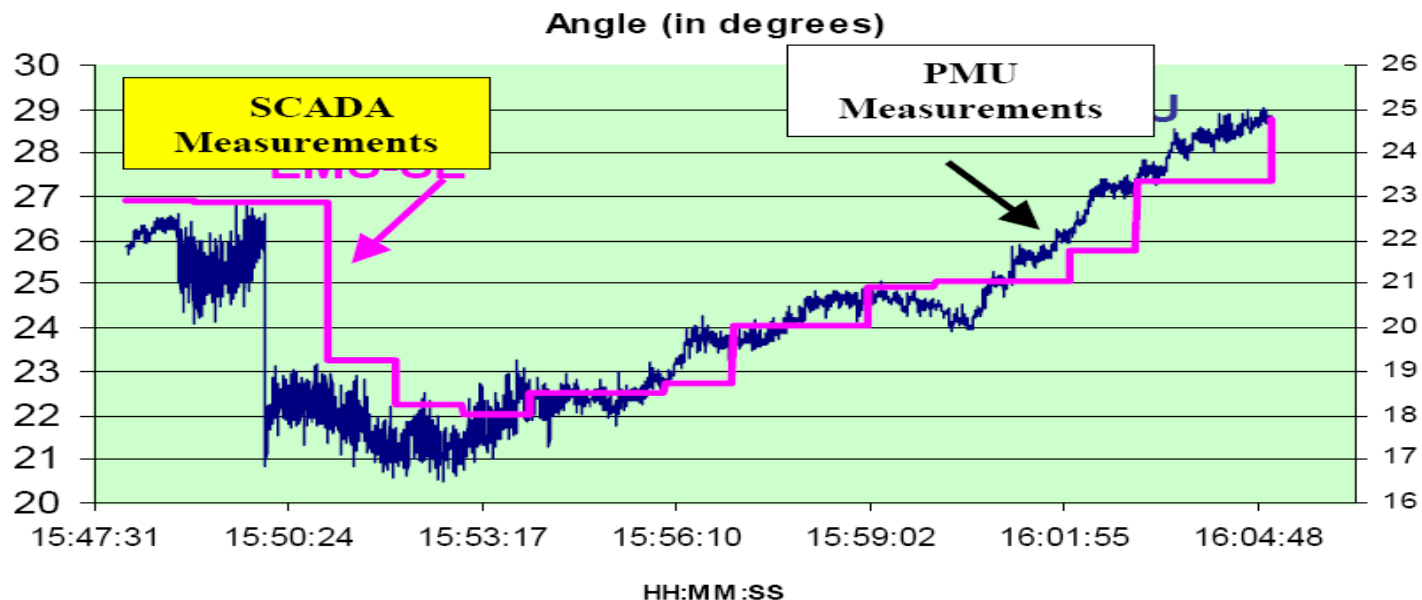
- Based on Group
- Based on Roles & App

- Introduction to Phasors
  - Synchrophasor technologies
  - PMU's and PDC's
  - PJM's PhasorNet
  - PJM deployment
  - PJM Strategy
- Delivery Formats
  - PJM Power Talks
  - Operator Training sessions
- Future Training Options

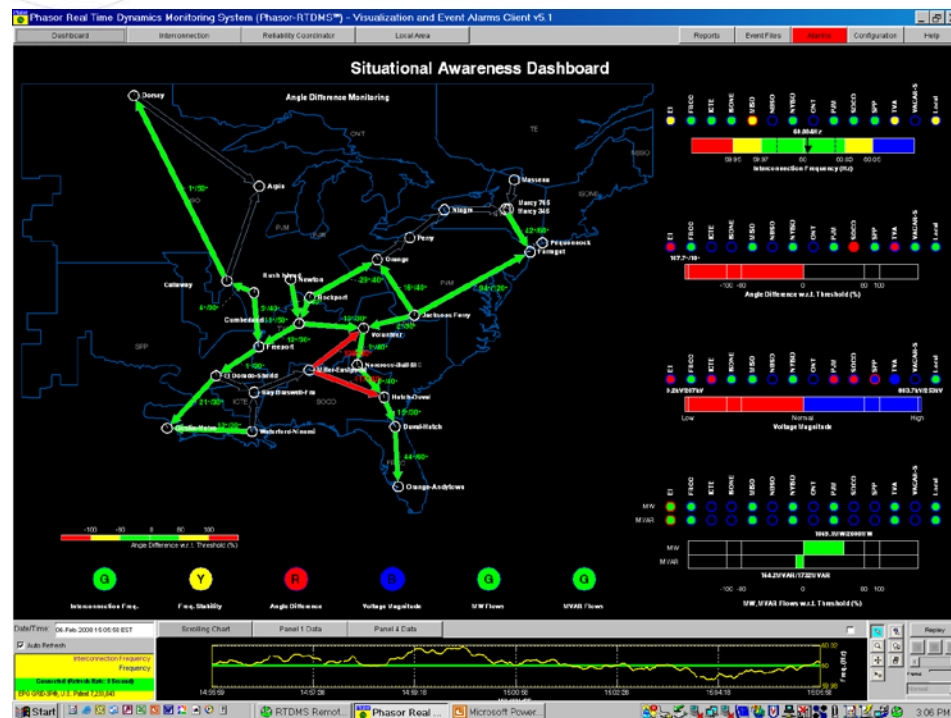




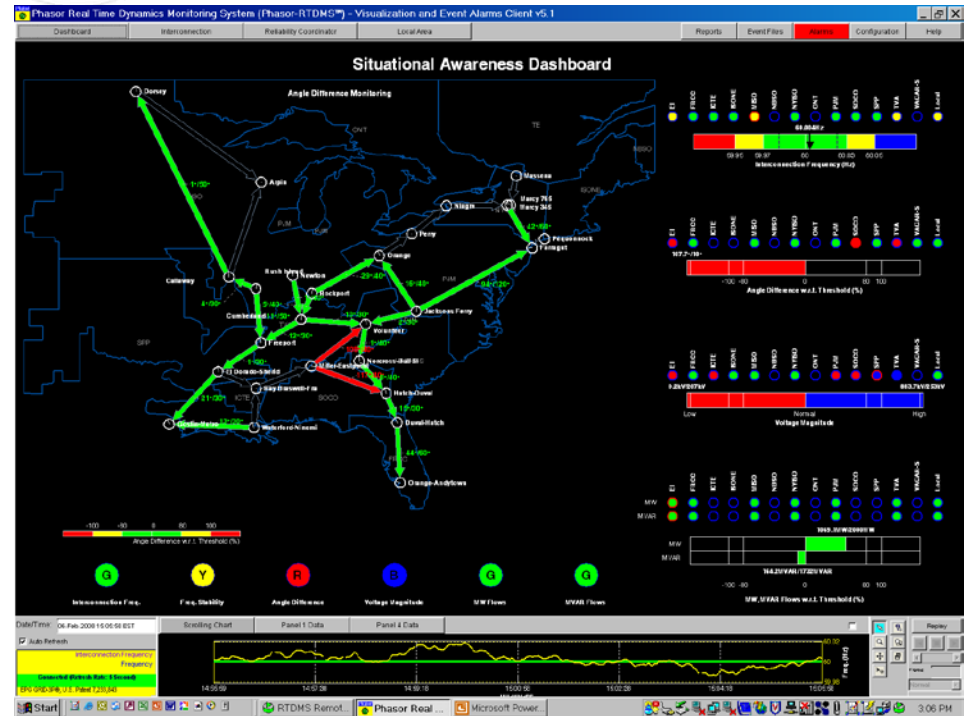
- Understanding Phasor Data
- What data can it replace/enhance/confirm
- What existing applications can use data
- What new tools are available



- Detailed Training for each application
- Utilize existing vendor training
- Develop PJM custom training
- Focus on PJM applicability
- Use simulated data



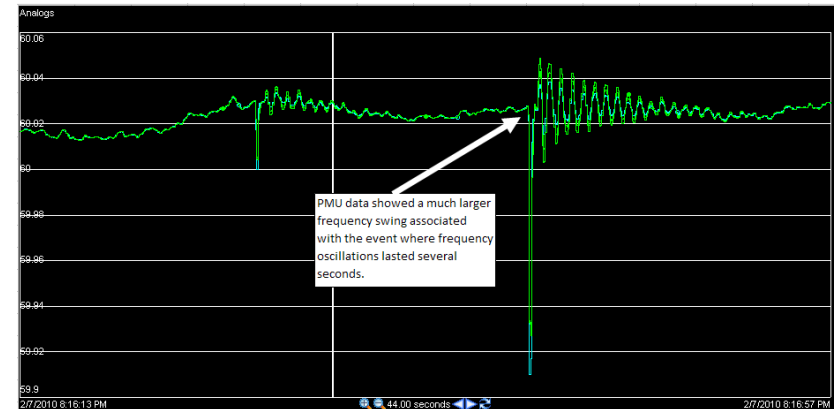
- Initial Views
  - Eastern interconnection
  - PJM Footprint
  - Local Regions
- Other RTO Views
  - Review tools and views
  - Major load areas and interconnections



- PJM Power Talks
- Lunch & Learn Sessions
- Recorded Info Sessions
- Hands-On App Training
- Event Simulation Training



- Recommend
  - Standard use of acronyms
  - Standard use of terminology
  - Standard colors and visual symbols



# Relationship Between Existing Tools vs. New Phasor Based Tools

- Use existing Training methods, facilities and schedules
  - Merge Phasor training into current classes
- Minimize the number of “new” applications
- Reduce the number of screens presented to the operators
- Use data to drive/enhance existing tools
- Use Alerts and Alarms to drive attention and action where needed



# Thank You