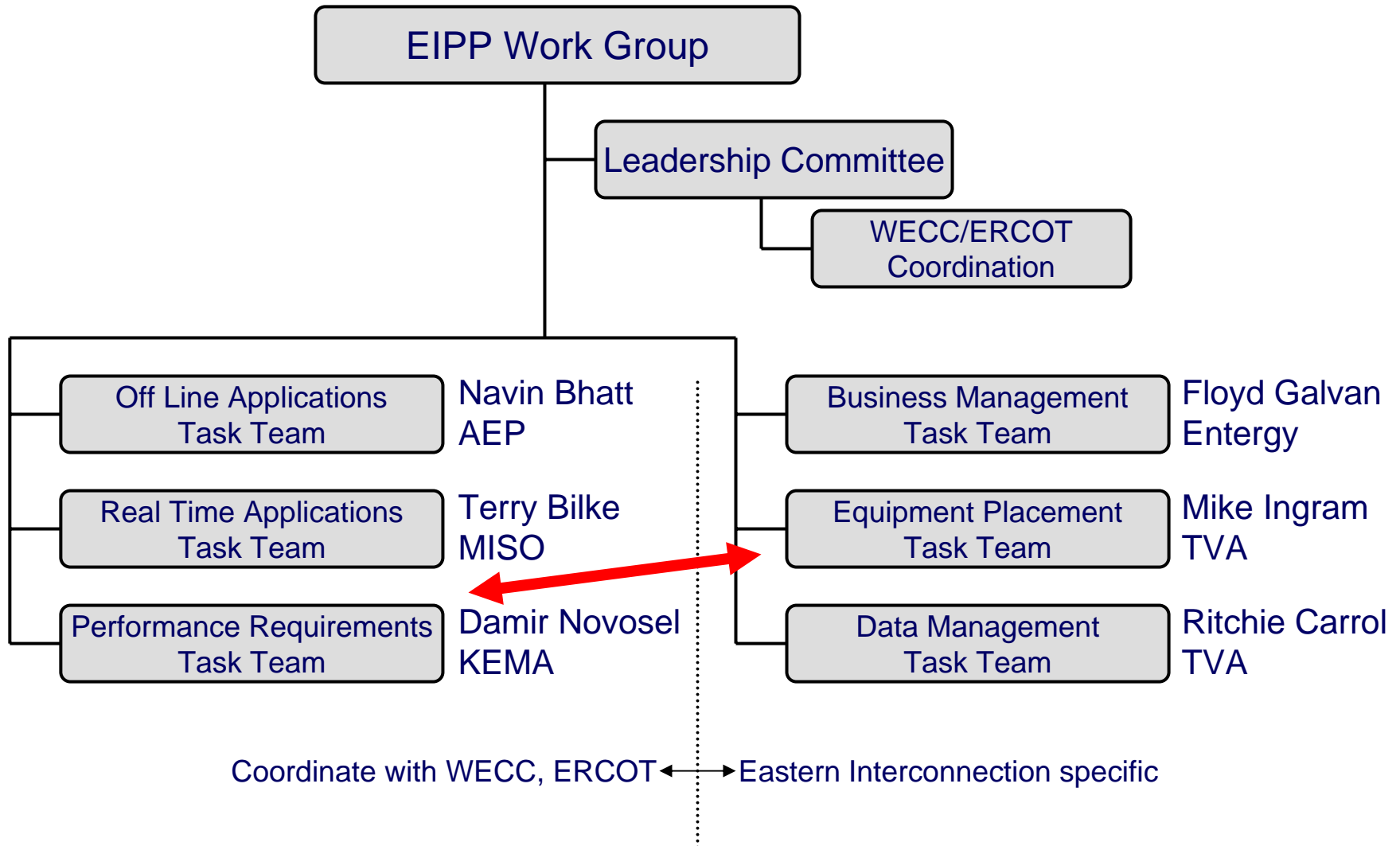


# ***EIPP – Placement***

*July 12, 2005*

Michael R. Ingram, P.E.,  
SM Transmission Technologies

# EIPP Organizational Structure



# Project Status

- 33+ time synchronized instruments installed
- 7 data concentrators installed
- 1 comprehensive database operational
- 2 visualization applications operational

# Meter Installations

- Existing installations
  - AEP, Ameren, Entergy, NYPA, TVA, Hydro One, FE
  - Others identified
- Networked for Real-Time
  - Ameren
  - AEP
  - Entergy
  - FE
  - NYPA/NYISO
  - TVA

# Applications

- Visualization (real time)
  - OSISoft, Powerworld & CERTS tools operational
  - EMS vendors engaged
  - PMU vendors engaged
- State estimation
  - Areva & Siemens available for deployment
- Analysis and Display (off line)
  - Cyberpower, SCE & CERTS tools available for deployment
- Alarming and Control
  - Several applications in trial and/or demo phase

# Example Hardware Listing

- Macrodyne
  - Model 1690
- ABB
  - Model RES521
- Arbiter Systems
  - Model 1133A
- Schweitzer Engineering Laboratories
  - Model SEL421
  - Model SEL734
- General Electric
  - TBD
- Siemens
  - TBD

# Long-Term Project Objectives

- Expand Grid Coverage to Include All Critical Locations
  - *Critical locations* to be defined by application through process to be determined
- Establish and Execute Network Plan and Data Management Plan
  - Network plan to include migration to NERCnet for inter- control area communication. Data management plan to include real time and off line applications

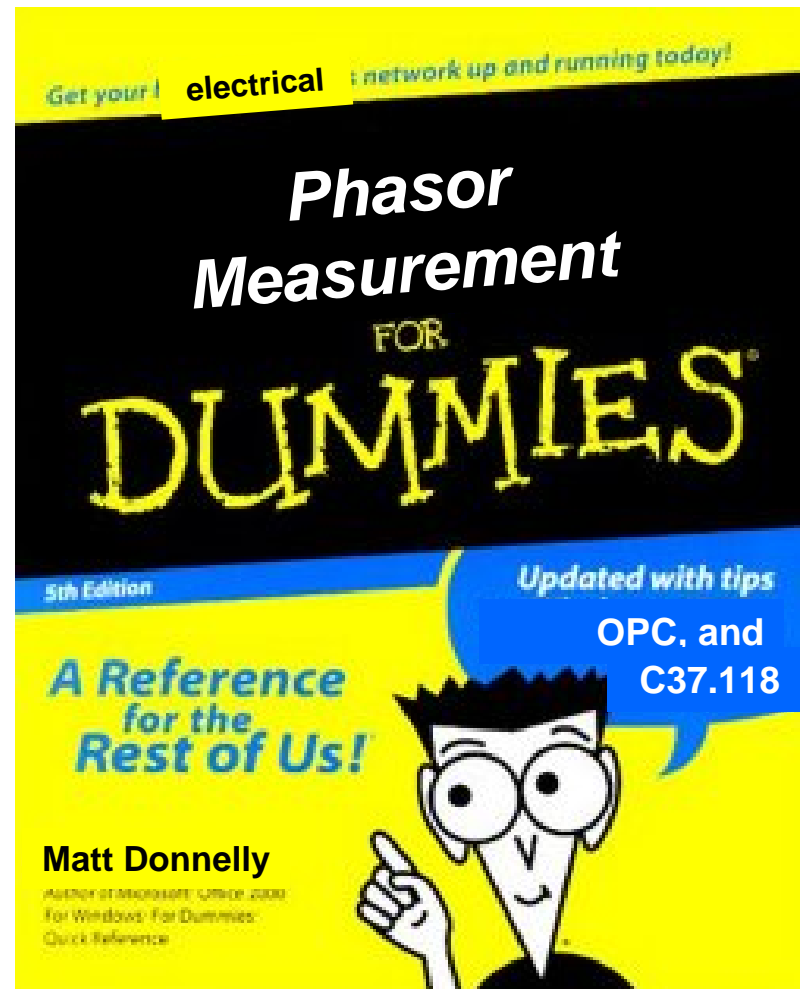
# Barriers to Growth?

- Lack of Information ?
  - 1-pager (EIPP 101)
  - “Applications Guide”
- Reference Bus Issue
- Voids and Gaps
  - South
  - West
  - Atlantic
  - New England
- New PMUs coming
  - TVA additions

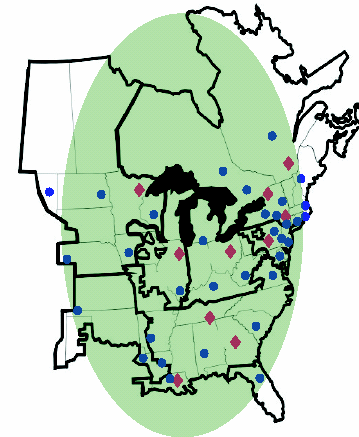


# EIPP 101

- What is required?
- What is involved?
- Who has access?



# What visualization tools are required?

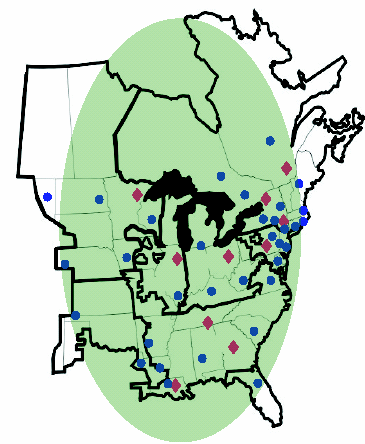


No visualization tools are required in order to participate in the project. It was felt from the first days of the project that visualization may provide the most \*immediate\* benefit to operators.

The August 14 blackout report points this out. The US DOE sponsored the development of one visualization application. The "client" version (EPG RTDMS) of this software is available at no charge to all participants.

Vendors have also done a terrific job of picking up the ball in visualization. PowerWorld and OSIsoft have commercial products and Areva and others are working on it.

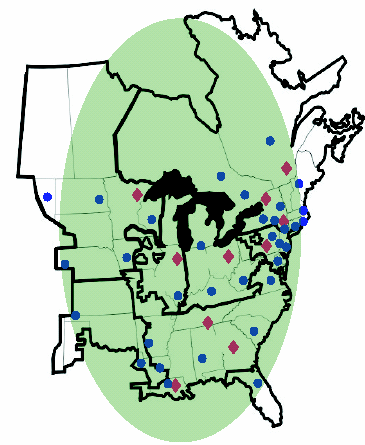
What information is required for the EIPP?  
Is IEEE37.118 sufficient?  
Do we have to have PDC ?



No PDC is required. At present, TVA is hosting a database application that will allow direct data feeds in IEEE37.118 format from PMUs.

The preferred connection is a secure VPN over the public internet. TVA then sends comprehensive data about the eastern interconnection back for use in your visualization, analysis, or state estimator applications. The project team is working to move the data to NERCnet in the future in place of the public internet. At this time the secure VPN connection meets the participating utility's standards for security.

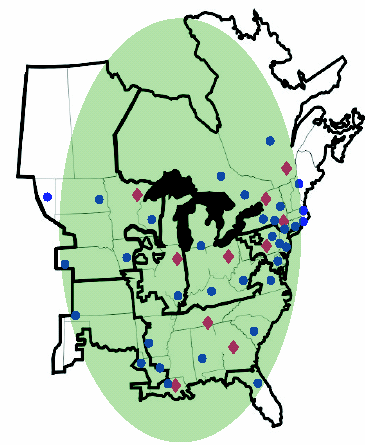
# What are the functional and performance requirements for the OPC link to the EIPP Master?



The US DOE provides a copy of Matrikon's OPC tunneler software to project participants. TVA and Entergy have spent a good amount of time making this solution work.

If you need more information for this question, contact:  
Ken Newberry at TVA or  
Leonard Chamberlain at Entergy.

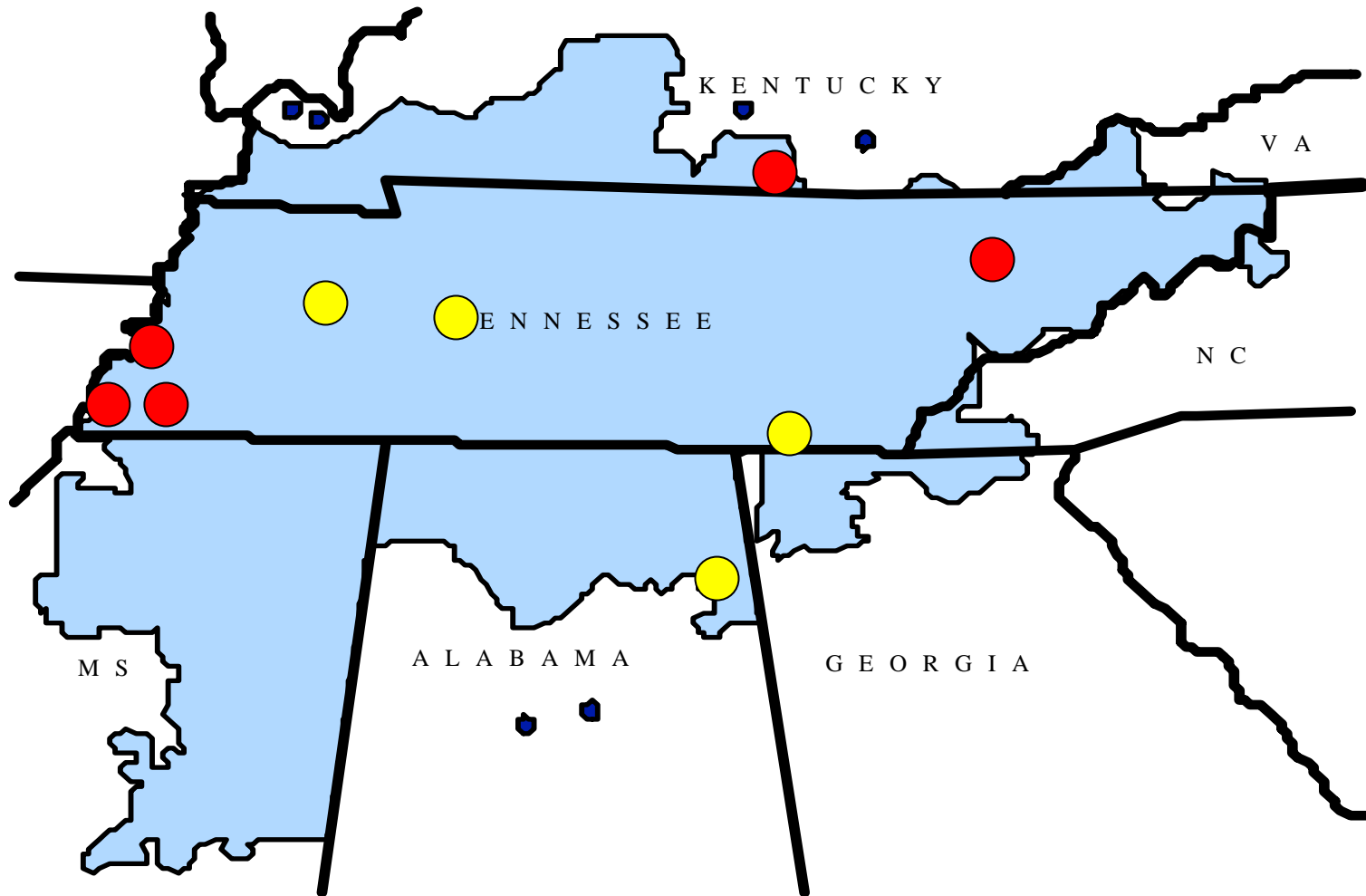
# What access privileges are required for the EIPP link?



Organizations wishing to receive real-time data from the link need to be "operating" entities and must be parties to a confidentiality agreement. An operating entity is one with an actual control room. The EIPP project participants are working with NERC to develop an umbrella confidentiality agreement that covers operational data. In the interim, the EIPP group developed an agreement we call the "Phase 1" agreement.

After 8 days the data is not "real-time" anymore. In order to get access to "old" data, the requestor needs to have an NDA in place with the company whose data they are requesting. For example, in my case I would need an NDA signed with Hydro One to get "old" Hydro One data. I cannot in any case get "real-time" data because I am not an operating entity.

# TVA New



# Voids and Gaps

“Last photo I ever took...”

