PJM Activities on R&D Projects for System Restoration Strategy

Feb. 22, 2012
• PJM has participated in R&D projects for system restoration automation:
  – PSERC Research Project
    “Development and Evaluation of System Restoration Strategies from a Blackout” (done)
  – EPRI R&D Project
    “System Restoration Initiative” (done)
    “Prototyping a Decision Support Tool for Evaluation of System Restoration Strategy Options” (undergoing)
  – VLPGO Task Force
    “Survey Paper on Electric Power System Restoration”
“Development and Evaluation of System Restoration Strategies from a Blackout”

- **Generation Capability Optimization**
  to utilize the available black start units to provide cranking power to non black start units in such a way that the overall generation capability will be maximized.

- **Transmission System Restoration with Constraints Checking**
  Optimal Transmission Path Search To recover a skeletal network and provide sufficient transmission capacity for next stage's load recovery.

- **Automated Restoration of Power Distribution Systems**
• Understanding and documentation of the best practices in industry
• Development of a computational method for development and evaluation of system restoration strategy options
• Development of analytical techniques to estimate the time to restore service
• Simulation of the proposed restoration strategy with realistic system models
EPRI Decision Support Tool for Restoration Strategy Option

- Year 2012 Project
- Develop a prototype decision-support tool for evaluating system restoration strategy options
- Use PSERC Research Results
• Review
  – Black Start and Restoration Procedures and Practice

• Recommendations to Improve Power System Restoration
  – Improvements in Off Line Studies
  – Elaboration of More Detailed and Precise Operation Instructions
  – Identification of New Resources for the Energization Procedure
  – Operators Training
  – Feedback From Disturbances Analysis
  – Installation of power sources
  – Deploy advanced computer based tools for decisions support
• Develop PJM Decision Support Tool for Black Start and System Restoration Strategy
  
  – Prototype Optimization Based Software
  – EPRI 2012 Project