PJM Regional Transmission Planning Process

Steven R. Herling
PJM Interconnection, L.L.C.
herling@pjm.com

Harvard Energy Policy Group
Mobile, Alabama
December 11-12, 2003
Original Regional Planning Process Objectives

- Allow for Open Process with Input from All Interested Parties
- Coordinate Expansion Plans Across Multiple Transmission Owner Systems
- Coordinate Expansion Plans Based on All Needs Identified Through Regional Planning Process
- Identify Most Effective and Efficient Expansion Plan for the Region
Evolution of the Planning Process

July 1993
PJM independent entity status

April 1997
Real-Time Energy Market (cost-based)

April 1998
Locational Marginal Pricing (LMP)-based Real-Time Competitive Energy Market

Jan. 1999
Monthly Capacity Markets
Daily Capacity Markets

June 1999
FTR Auction Market

June 2000
Regulation Market,
Day-Ahead Energy Market

2001 - Operation of Allegheny Power -
7-state transmission system

Dec. 2002
Regional Transmission Organization status

Dec. 2002
Spinning Reserve Market

May 2003
Annual FTR and FTR Options Auction

October 2003
Economic planning process approved

March 2003
Merchant transmission interconnection
planning procedures approved by FERC

April 2002
PJM West integrated in RTEPP

August 2000
First regional transmission
plan approved by board

June 1999
Generation interconnection procedures,
approved by FERC

June 1997
Regional transmission expansion
planning process approved by FERC

1995-1996
Planning protocols developed
Current Objectives

- Market Needs vs. Customer Exposure to Congestion
- Demand Response Programs
- Distributed Resource Technologies
- Incentives for Investment in Transmission Infrastructure
- Incentives for Investment in Generation Infrastructure
- Limit Exercise of Market Power
• Centrally Planned Solutions
  • Baseline Transmission Upgrades (Reliability)
  • Economically-Based Transmission Upgrades

• Market Solutions
  • Strategically Sited Generation Projects
  • Merchant Transmission
  • Active Load Management/Demand Response Resources
  • Distributed Resources
Coordination of Initiatives

- Local Scarcity / Market Power Auction
- Economic Performance (Congestion)
- Distributed Generation
- Demand Response
- Resource Adequacy Model (RAM)

- Economic Planning
- Revenue Stream to Generation
- Revenue Stream to Transmission
- Long Term Resource Adequacy

Connections between initiatives and their impacts.
• Transmission Investment
  • Merchant Transmission Developers
    • Financial Rights – FTRs, ATC, Deliverability
  • Generation Developers
    • Capacity Rights – Deliverability
    • Economic Delivery
• Load Customers
  • Limit Exposure to Congestion – FTRs
Regulated Transmission Investments

• Reliability
  • Must Build for Reliability
    • Socialization of Costs
    • Question of Allocation – Secondary Benefits

• Economics
  • Limit Exposure to Congestion
    • Critical Issue for Customers, States
    • Allocation of Costs – Who Benefits? Free Riders?
  • Undercuts Market Decisions
    • Impact to Revenue Streams to Merchant Transmission and Generation Developers
A Delicate Balance

- Long-Term Adequacy Requires Generation and Transmission
- Market-Based Solution Providers Can Benefit From Volatility That Drives Need for Regulated Solutions
- Cost Allocation for Regulated Solutions Will Drive Market Behaviors
- Impact of Regulated Solutions May Result in Gaming to Prevent Regulated Solutions
• Regulated Solutions for Reliability, Alone, Does not Appear to be Enough
  • i.e., Letting Markets Handle Everything Else Doesn’t Look Like it’s Going to Work
• Planning Process Must be Fully Integrated With Markets and Operations
• Must Get Demand-Side and Distributed Resources Integrated into Planning, Markets, and Operations
• All Revenue Streams Have to Work Together as a Package
• No Escaping Need for Market Monitoring