Introduction

• Public Stakeholder Meeting
  – Order 890 Objective to improve transparency and stakeholder involvement.
  – Attachment K updates recently posted

• March Meeting Reviewed
  – Planning Process
  – Coordination with WECC (PCC & TEPPC), WestConnect
  – PNM 10-Year Plan Study Scope

• November Meeting
  – Review 10-Year Plan Results
  – Input to Next Planning Cycle
  – Certain Other Business
Agenda

• Introduction
• Agenda Changes
• 2010 PNM 10-Year Plan Outcome
  – Review of Study Scope
  – Review of Findings
• Generator Interconnection Queue Update

2011 Study Plan Input
  – 10-Year Plan
  – Customer Study Requests
  – TEPPC Economic Studies

• Regional Activities
• Next Meeting
10-Year Transmission Plan
10-Year Transmission Plan

Objectives of Study Effort

• Support Data Base Development for PNM and Regional Studies
  – 2011 (Operations), 2015 (5-yr), 2020 (10-yr)

• Maintain Reliability

• Define Transmission for Native, Network and Point-Point Customers

• Incorporate Plans Developed Through FERC Processes, NM IRP and Regional Planning Analysis
Study Scope

- Review transmission adequacy with network customer updates to designated network resources and load.
- Determine if system mitigations are needed to serve expected obligations (load forecasts and expected firm transfers) during the 10 year planning horizon without violating WECC/NERC reliability standards.
- Develop operational mitigations or system improvements to maintain system reliability and associated cost estimates and schedule.
- Incorporate assessments of economic congestion to the extent a need is identified by PNM’s or other’s involvement in the WECC/TEPPC process for providing this type of assessment.
Project Drivers

• Compliance with Reliability Standards
• Provide Service to New Load Locations
• Interconnection Projects
• Recommendations for projects requiring joint study or solutions.
Reliability Projects
Completed Reliability Projects

• Blackwater Station Life Extension
  – Extend the station’s life for up to 20 years, to address reliability issues and lease obligation.
Reliability Projects In Progress
Alamogordo Third Source
(Alamogordo – Holloman 115 kV Line)
Alamogordo Third Source
(Alamogordo – Holloman 115 kV Line)

- In Service Date – Spring 2011
- Purpose - Provides a third 115 kV transmission source into Alamogordo station by interconnecting a 115 kV transmission line to EPE’s Holloman station. Provides additional transmission capability to maintain adequate service to existing and new loads.
Alamogordo Third Source
(Alamogordo – Holloman 115 kV Line)
Belen Series Reactor
Belen Series Reactor

- **In Service Date** – March 2011
- **Purpose**: Mitigate overloads on Tri-State owned Belen-Socorro-Elephant Butte 115 kV line and Elephant Butte-Pichaco 115 kV line.
- **Project is being coordinated with network upgrades for High Lonesome Mesa**
- **Project Includes**
  - Installation of a series reactor with bypass breaker
Belen Series Reactor

To West Mesa

To Socorro/Elephant Butte

To Tome

To Willard
Mimbres Shunt Capacitor Addition
Mimbres Shunt Capacitor Addition

- **In Service Date** – December 2010
- **Purpose** – Maintain acceptable voltage in the Deming area
- **Project Includes**
  - Installation of two 15 Mvar capacitors
Mimbres Shunt Capacitor Addition

To Luna
12862
MW Line

13962
To Caballo TSGT

14062

To Deming TSGT

Existing 28.8 Mvar Bank (24.5 Mvar at 115 kV)

1066

2

1516

2

To Picacho

Breaker with pre-insertion resistor

New 15 Mvar Capacitor at 115 kV
Rio Puerco Project – Phase 1
Rio Puerco Project – Phase 1

• In Service Date – 2010
• Purpose – Provides additional transmission facilities to meet electrical service requirements of the fast growing Rio Rancho area (i.e. southwest Sandoval County).
Rio Puerco Project – Phase 1

*Rio Puerco Switching Station Upgrades (345KV & 115KV)

*115kV line Rio Puerco to Veranda (16 miles)

*Upgrade existing Veranda to Corrales Bluff 115KV "RR" line
Yah-Ta-Hey Additional Capacitors
Yah-Ta-Hey Additional Capacitors

- Purpose – Provide additional voltage support to reliably serve new load in the Gallup area

- Phase 1:
  - In Service Date – December 2010
  - Install one 25 Mvar capacitor at Yah-Ta-Hey 115 kV station

- Phase 2:
  - In Service Date – Pending notification from network customer
  - Install a second 25 Mvar capacitor at Yah-Ta-Hey 115 kV station
Planned Reliability Projects
Alamogordo Dynamic Voltage Support

• In Service Date – 2012
• Purpose – Provide adequate voltage support and operational flexibility by increasing the transmission load serving capability.
Alamogordo Dynamic Voltage Support

- Project Includes
  - Expansion of Alamogordo 115 kV station
  - Installation of dynamic var support
Moriarty Capacitor
Moriarty Capacitor

• In Service Date – 2012
• Purpose – Provide additional voltage support for the central New Mexico transmission system.
• Project Includes
  – 115 kV switching station
  – Installation of shunt capacitor
Rio Puerco Project – Phase 2
Rio Puerco Project - Phase 2

- In Service Date – 2013
- Purpose – Mitigate overloads for the loss of the BA-Rio Puerco 345 kV.
Rio Puerco Project - Phase 2

Project includes
- Looping in the San Juan-BA (WW) 345 kV Line into Rio Puerco
- Installation of a shunt reactor
- West Mesa Series Reactor

No 1 Xfmr 345/115kV

WW (To San Juan)

WN (To BA Station)

WW' (To BA Station)

WN' (To West Mesa)

65 Mvar
Sandia Capacitor Upgrade
Sandia Capacitor Upgrade

• In Service Date – 2011
• Purpose – Improve voltage support in the Albuquerque area
• Project Includes
  – Add 48 Mvar of capacitors at Sandia 115.
Sandia-North 115 kV Line

• In Service Date – 2012
• Purpose – Provide additional voltage support for the Sandia station.
• Project Includes
  – Build 2.3 miles of new 115kV line from North Station (Jefferson and I-25) to Montano Substation located near 4th St. and Montano.
  – Use existing North Station bay position when the North 115-46 kV transformer is removed.
  – Close normally open switch between North and Sandia.
Sandia-North 115 kV Line

Montano — N.O. — Girard — Sandia

Prager — Claremont

North
Yah-Ta-Hey Transformer
Yah-Ta-Hey Transformer

- In Service Date – 2014
- Purpose – Mitigate overloads and improve Yah-Ta-Hey contingency voltage performance.
- Project Includes
  - Expanding the Yah-Ta-Hey 115 kV station
  - Installation of a second transformer
Rio Puerco-Progress 115 kV Line

- In Service Date – Beyond 2020
- Purpose – Provide additional load serving capability to northern Rio Rancho area.
- Project Includes
  - Build a new 115kV line from Rio Puerco to Progress Substation
Rio Puerco-Progress
Northeast NM Improvements
Northeast NM Improvements

- **Replace Ojo 345/115 kV Transformer**
  - In Service Date – 2013
  - Purpose – Mitigate transformer gassing issues
- **Ojo Voltage Support**
  - In Service Date – 2015 or later depending on Tri-State load development
  - Purpose – Provide dynamic voltage support for Northeast Area
- **Taos Voltage Support**
  - In Service Date – 2015 or later depending on Tri-State load development
  - Purpose – Provide dynamic voltage support for the Northeast Area
Other Projects
High Lonesome Mesa, LLC (HLM)
Wind Generation Project

- 100 MW wind generating facility interconnect at Willard 115 kV Switching Station.
- Eligible customer under PNM’s open access transmission tariff (OATT).
- Commercial Operation May 2009
High Lonesome Mesa System Reinforcements & Network Upgrades Required To Facilities Interconnection

1. Expansion/upgrade of the Tri-State owned Willard Station - Completed
2. Upgrade of the PNM owned Willard to Algodones ("AW") 115 kV Line - Completed
3. Rebuild of the PNM owned Willard to Belen ("WL") 115 kV Line - Completed
4. Installation of a flow control device at the PNM owned Belen 115 kV Switching Station to mitigate flows on the Tri-State owned Belen-Socorro 115 kV Line - In progress
Red Mesa
Wind Generation Project

- 102 MW wind generating facility interconnected on the West Mesa-Ambrosia 115 kV line
- Eligible customer under PNM’s open access transmission tariff (OATT).
- Commercial Operation November 2010
- No Network Upgrades beyond the interconnection facilities were required for this project.
Red Mesa

System Reinforcements Required for Interconnection

To Ambrosia

To West Mesa
Solutions Requiring Joint Input

• Northeast New Mexico improvements will require input from Tri-State Generation and Transmission

• Follow-up includes discussing overlap issues with other transmission owners.
Operator or RAS Solutions

• Only Local Area Impacts
• N-1 or N-2 High Voltage Corrected by operator adjustments.
  – Capacitor switching
  – Transformer tap adjustments
• Certain N-2 overloads address be RAS
  – Generation Redispatch
  – Load Shedding
10-Year Plan

Questions?

Ten-Year Plan Report Available for Stakeholders completing CEII Request
Interconnection Request Updates

- Number of requests has slowed.
- Significantly more activity in the transmission service request queue.
2011 Study Plan Input

• 10-Year Plan
• Customer Study Requests
• TEPPC Economic Studies

• Discussion
Regional Activities

• High-Plains Express
  – Phase II (Technical, Commercial Feasibility, Routing/Permitting, Communications)

• SunZia
  – Phase II of WECC Rating Process

• Tres Amigas

• Centennial Project

• Option of AC closure with eastern interconnected grid
Map of Transmission

HPX
SunZia
SunZia/HPX
PNM Collector
Tres Amigas
Centennial West
Next Meeting

March 3, 2011
Questions or Comments

10-Year Plan
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