



Public Service Company of New Mexico

Public Transmission Planning Meeting

March 2, 2017

Albuquerque, NM

ECLIPSE

TAIRBANK
HORSE & C

Agenda

- **Introduction**
- **Agenda Additions**
- **Stakeholder Process**
- **PNM 10-Year Plan Development**
- **Regional Activities**
- **Summary of Current Interconnection Study Activity**
- **Order 1000 Stakeholder Process Status**
- **Other Items**
- **Next Meeting**

Introduction

- **Public Stakeholder Meetings**
 - Order 890 Objective to improve transparency
 - Involvement of all affected stakeholders
- **Coordinated with WECC processes**
 - Reliability – System performance evaluations, reliability standards and coordination.
 - TEPPC – Planning Policy and Economic Evaluations
- **Formalized Stakeholder Input through WestConnect STP Agreement**
- **OATT Appendix K defines each utility's planning process.**

PNM Bi-Annual Meetings

- **March Meeting**
 - Study Plan
 - Solicit Stakeholder Input to Plan
- **November**
 - 10-Year Plan Review
 - Solicit Stakeholder input on plan and follow-up to be included in next planning cycle
- **Others as needed**

PNM Study Plan Objectives

- **Support Data Base Development for PNM and Regional Studies**
 - 2019 (2-yr), 2022 (5-yr), 2027 (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 new system improvements or adjustments to existing improvements are needed to serve expected obligations.
- Develop operational mitigations or system improvements to maintain system reliability and associated cost estimates and schedule.
- Incorporate assessments of economic congestion if applicable.

Methodology

- **Powerflow Assessments**
 - All lines in service
 - Single circuit or transformer contingencies
 - Double circuit contingencies
 - Breaker failure contingencies
- **Short Circuit Analysis**
- **Stability Analysis**
 - Dynamic Stability
 - Voltage Stability

Key Assumptions

- **Load forecast**
 - Slow growth
 - Effects of energy efficiency, demand response and load side distributed renewables
- **Generation modeled**
 - In-Service
 - Under Construction with expected ISD
- **Wind resources**
 - Capacity for summer peak based on historical – low contribution
 - Sensitivity cases for high wind periods
- **Committed projects will be included as part of base case assumptions**

Modeling Criteria for PNM Planning Area

- **NERC/WECC Reliability Criteria (included with Study Plan)**
 - Line loading criteria
 - Base Case and Post-contingency voltage criteria
 - Minimum voltage stability margin
 - Minimum/Maximum transient voltage and frequency
- **Violations of performance criteria is basis for most system improvements.**

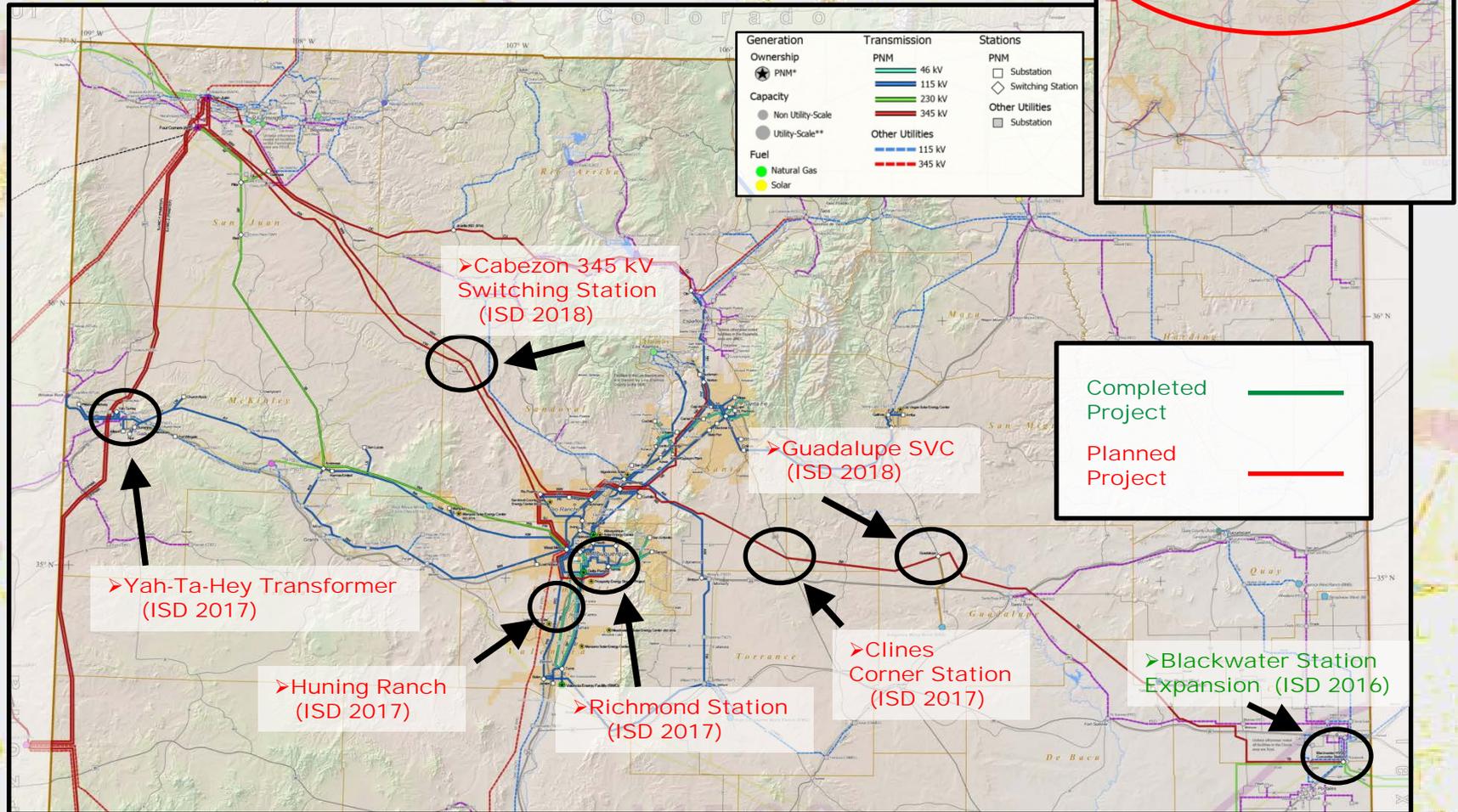
Final 10 Year Plan Facilities

- **Facilities defined in this planning cycle for Native and Network Customer Load Growth and Point to Point Transmission Service**
- **Committed projects from other studies:**
 - **Previous Planning Cycle**
 - **Transmission associated with an approved IRP**
 - **Studies performed pursuant to NM IRP rule.**
 - **Transmission for Generator Interconnections with notice to proceed**
 - **Studies per FERC requirements**
 - **New Point-Point Requests with notice to proceed**
 - **Studies per FERC requirements**

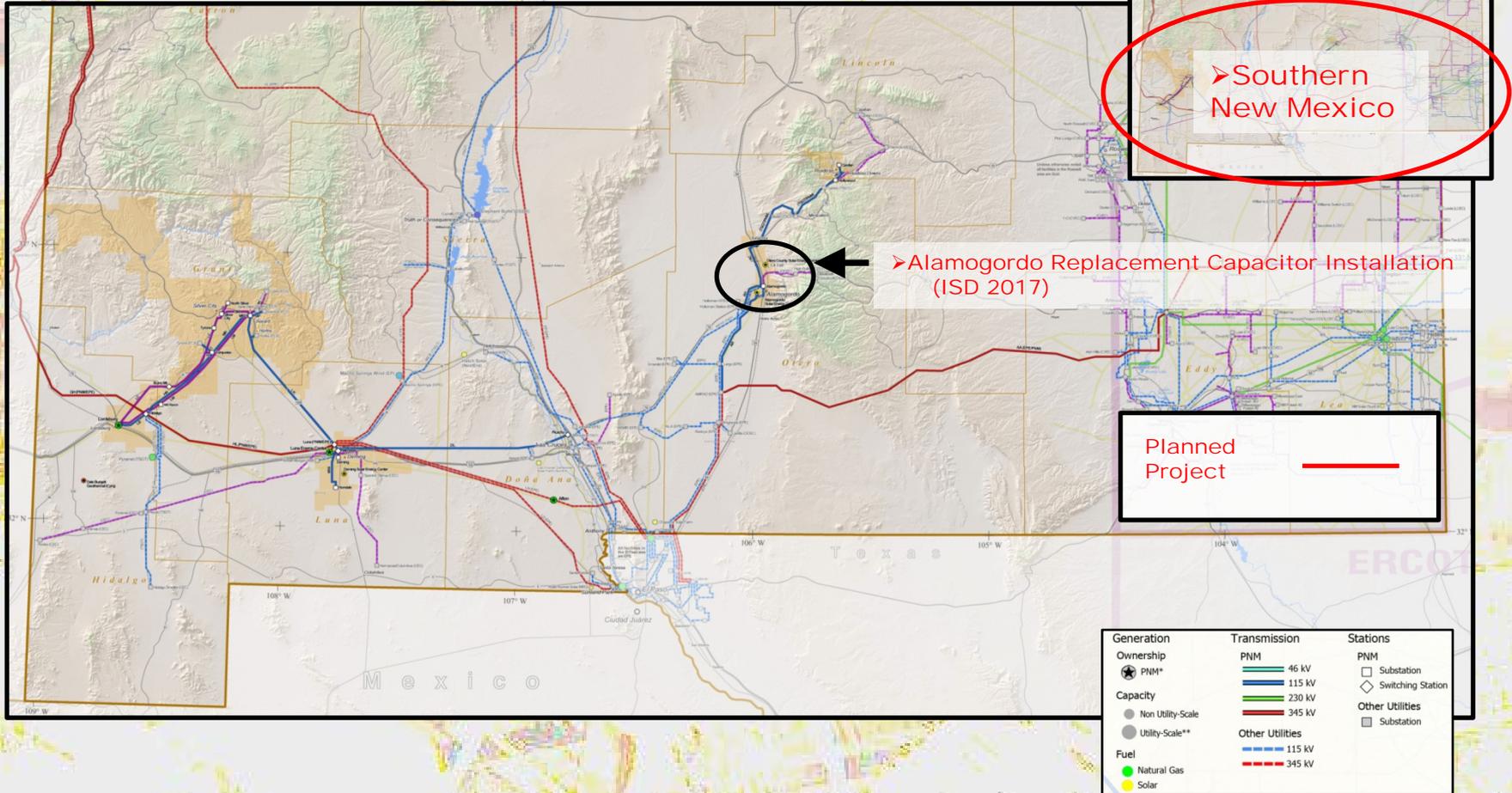
Project Additions for 2019

- **Completed**
 - Blackwater Expansion (2016)
- **Under Construction**
 - Richmond Switching Station (2017)
 - Yah-Ta-Hey 345/115 kV Transformer Addition (2017)
 - Alamogordo Replacement Capacitor (2017)
 - Clines Corners Switching Station (2017)
- **Planned**
 - Huning Ranch 115 kV Station (2017)
 - Cabezon 345 kV Switching Station (2018)
 - Guadalupe SVC (2018)

2019 Base Case Northern New Mexico



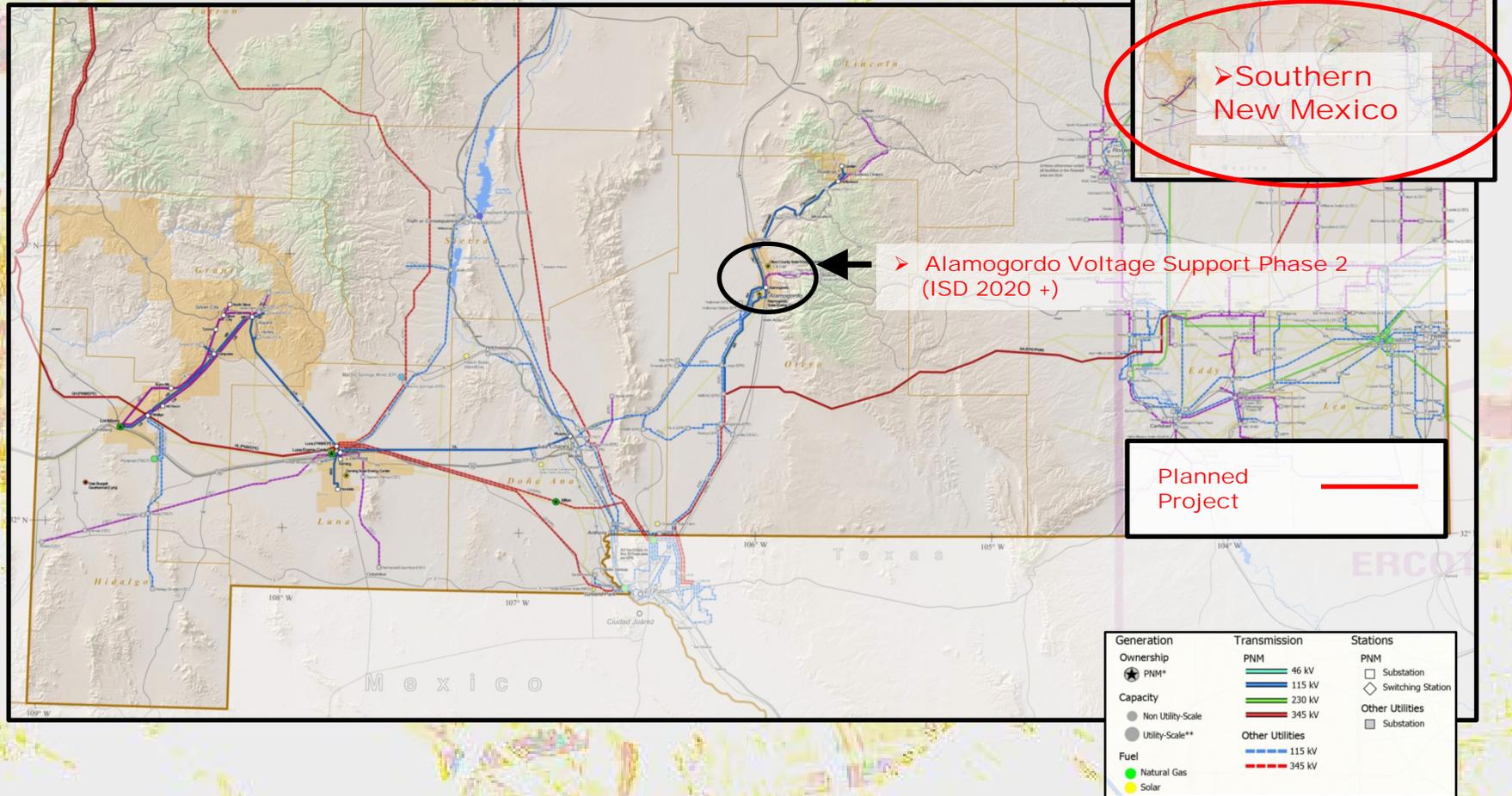
2019 Base Case Southern New Mexico



Planned Project Modeled for 2022

- **2019 Projects plus:**
 - **Alamogordo Voltage Support Phase 2**

2022 Base Case Additions



Planned Projects Modeled for 2027

- **2027 Projects**

Additional Information

- See November, 2016 meeting presentation for additional project details.
 - [November 3 2016 Open Meeting Presentation posted 10-24-16](#)

Timeline

- **February 16** - Draft Study Plan distributed to stakeholders
- **March 1** - Network Customer ten-year projected network load and network resources are due to PNM
- **March 2** - Stakeholder Meeting to discuss study plan.
- **March 30** - Finalize detailed Study Plan and Base Cases
- **April thru July** – Complete analysis, develop improvements including descriptions, one-line and cost estimates
- **November 9, 2017** - Stakeholder meeting to review transmission plan and follow-up for next study cycle

Stakeholder Discussion

- **Loads and Resources required from Stakeholders.**
- **Study Plan Discussion**
- **Comments/suggestions by March 17, 2016**

Interconnection Related Projects

- **Generator Interconnection**
 - Clines Corners Switching Station for El Cabo Wind Farm Interconnection
- **Wire-Wire Interconnections**
 - Cabezon Switching Station
- **Transmission Service Projects**
 - Guadalupe SVC

Large Generator Interconnection Cluster Activity

- **Six Definitive Cluster closed August 10, 2015**
 - Three requests of 158 MW are in study mode.
- **Seventh Definitive Cluster closed May 6, 2016**
 - One request of 400 MW are in study mode.
- **Eight Definitive Cluster – Closed January 31, 2017**
 - 12 requests of 1250 MW are in study mode.

Next Cluster Window

- **Preliminary Interconnection Cluster Window opens March 5, 2017 and closes June 6, 2017**
- **Definitive Interconnection Cluster Window opens July 31, 2017 and closes October 30, 2017**

Regional Activities

- SunZia
 - Completed permitting in Arizona, working on NM permitting and ROW acquisition
 - Focused on completing development so that construction could start by early 2018
 - Pattern Energy was selected as the anchor tenant in August 2016
- Tres Amigas
 - Tres Amigas LLC and Pattern Energy Group LP formed Western Interconnect LLC to develop, finance, construct, own and operate line that will interconnect Broadview and Grady.
 - Interconnection at Blackwater December 2016
- Lucky Corridor
 - 345 kV line from Gladstone area to Ojo switching station
- Mora Line Project
 - Lucky Corridor's Mora Line project is designed to carry 180 MW at 115 kV.
 - 102 miles
 - System Impact Study is wrapping up and will shared with developer and posted soon.

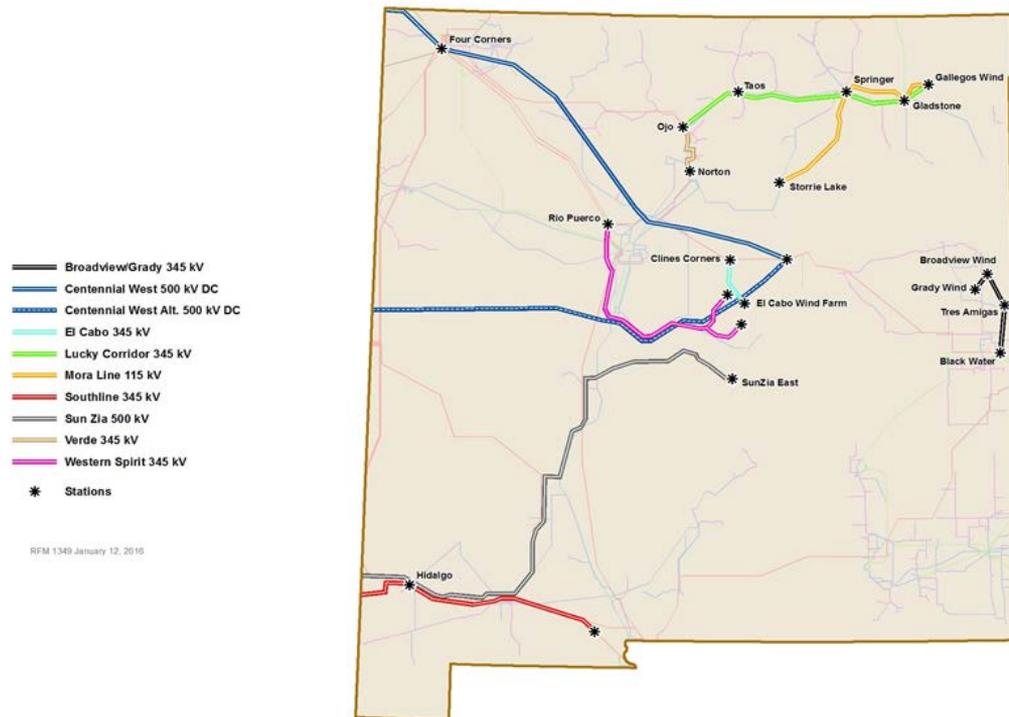
Regional Activities

- **Southline Project**
 - Final EIS Issued
 - AZ regulators approved AZ portion earlier this month.
 - Construction expected to begin in 2017
 - In Service Date: In phase between 2018 and 2020
- **Centennial West Clean Line Project**
 - See project website for latest developments.
- **Western Spirit Clean Line Project**
 - Approximately 1500 MW 345 kV Project to increase access from Central New Mexico to the Four Corners hub.
 - System Impact Study for interconnection to PNM's system at the Rio Puerco Switching Station expected to be completed this month.

Regional Activities

- Verde Project
 - Interconnects to PNM's Ojo and Norton 345 kV stations
 - System Impact Study expected to be completed this month
 - Current activities include work on an Environmental Impact Statement with several recent public meetings.

Map of Regional Transmission Projects



PNM Public Transmission Planning Meeting
March 2, 2017 Albuquerque, NM

Order 1000

- **Adds planning process for identifying regional projects that are more cost effective and efficient than projects in local plans.**
- **Establishes cost allocation methodology for regional projects.**
- **Full Biennial Cycle 2016-2017**
 - **Work completed in 2016 did not identify a regional need.**
- **Current Activities:**
 - **Working on analysis of scenarios – mostly renewable expansion**
 - **Initiating efforts to perform a back-cast of the production cost model**
 - **Planning Subcommittee and Cost Allocation Subcommittee meeting bi-weekly**
 - **Planning Management Subcommittee meeting monthly.**

Questions or Comments

Tom Duane

thomas.duane@pnm.com

505-241-4569

PNM Public Transmission Planning Meeting
March 5, 2015
Albuquerque, NM

ECLIPSE
FAIRBANKS
HORSE & C