

Public Service Company of New Mexico

Public Transmission Planning Meeting

March 5, 2009

Albuquerque, NM



Agenda

- Introduction
- Agenda Changes
- Stakeholder Process
- **PNM 10-Year Plan Development**
 - Study Plan
 - Assumptions and Methodology
 - Timeline
 - Other Information
 - Customer Input
 - Load and Resources
 - Discussion of study plan
- **Generator Interconnection Queue Update**
- **Regional Activities**
 - SWAT NM Subgroup Studies
 - High-Plains Express
 - TEPPC
- **Next Meeting**



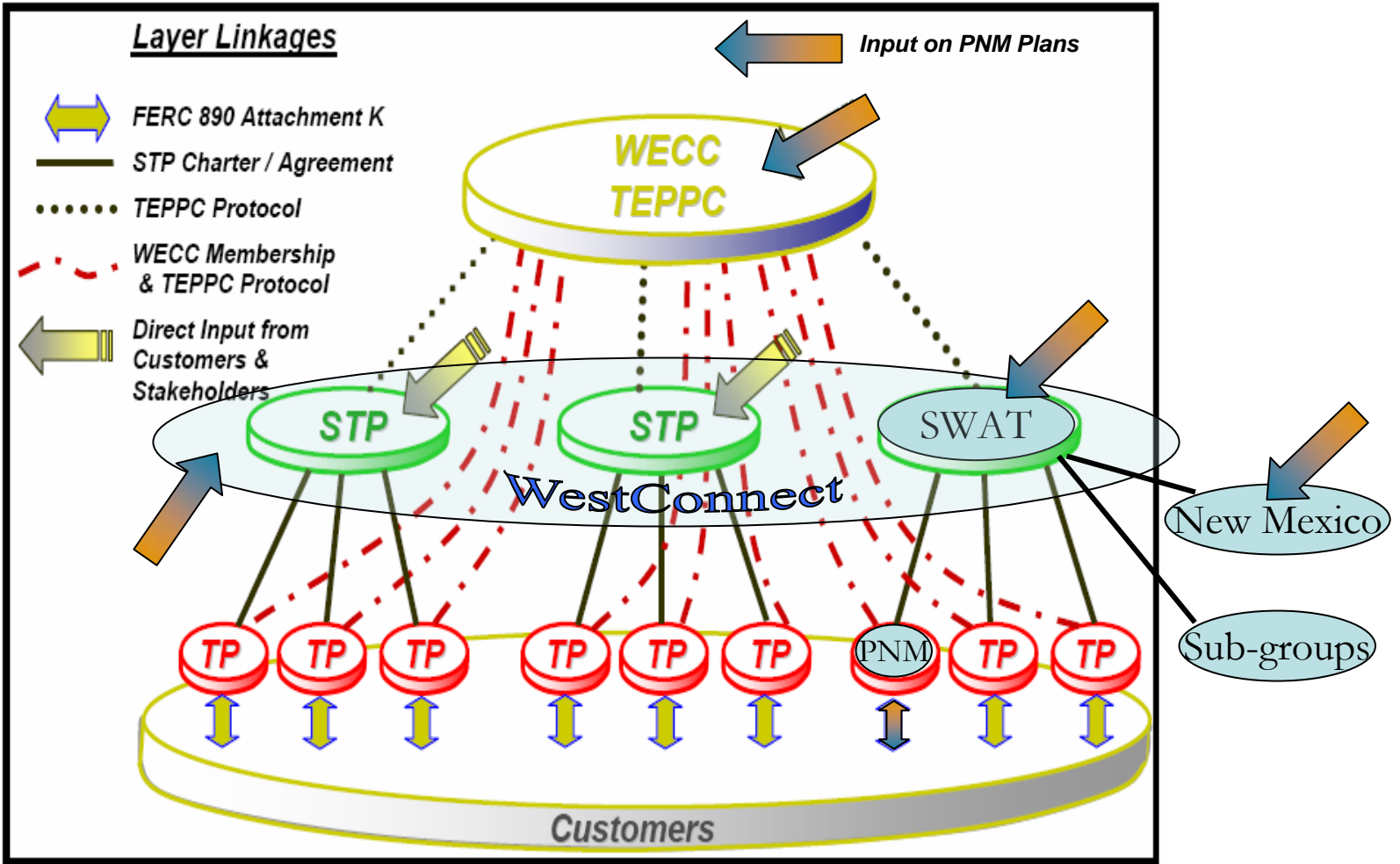
Introduction

- **Third Public Stakeholder Meeting**
 - 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

<http://www.wecc.biz/modules.php?op=modload&name=Downloads&file=index&req=getit&lid=2869>
- **Formalized Stakeholder Input through WestConnect STP Agreement**
- **OATT Appendix K defines each utility's planning process.**



Stakeholder Input



Coordinated Planning Study Cycles

Database and Study Coordination

- **TEPPC**
- **WECC Reliability**
 - Progress Reports and Significant Additions
 - NERC TPL Draft Standards
- **WestConnect**
 - STP: SWAT and SWAT Subgroups
- **PNM**
 - Input to WestConnect Plan
 - Input to PNM Budget



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**
 - 2010 (Operations), 2014 (5-yr) , 2019 (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 (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.



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 will use expected value (1 in 2)**
 - Lower forecast from prior study
- **Generation modeled**
 - In-Service
 - Under Construction with expected ISD.
- **Wind resources**
 - Capacity for peak based on historical – low contribution
 - Sensitivity runs for high wind output needed
- **Committed projects will be included as part of base case assumptions.**



Modeling Criteria for PNM Control Area

- Posted to OASIS and included with Study Plan
- Specifies:
 - Simulation constraints appropriate for pre-outage and post-transient time-frame.
 - Performance Criteria (NERC/WECC)
 - Line loading criteria
 - Base Case and Post-contingency voltage criteria
 - Minimum voltage stability margin
 - Maximum transient voltage and frequency
- Violations of performance criteria is basis for 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
 - Studied 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

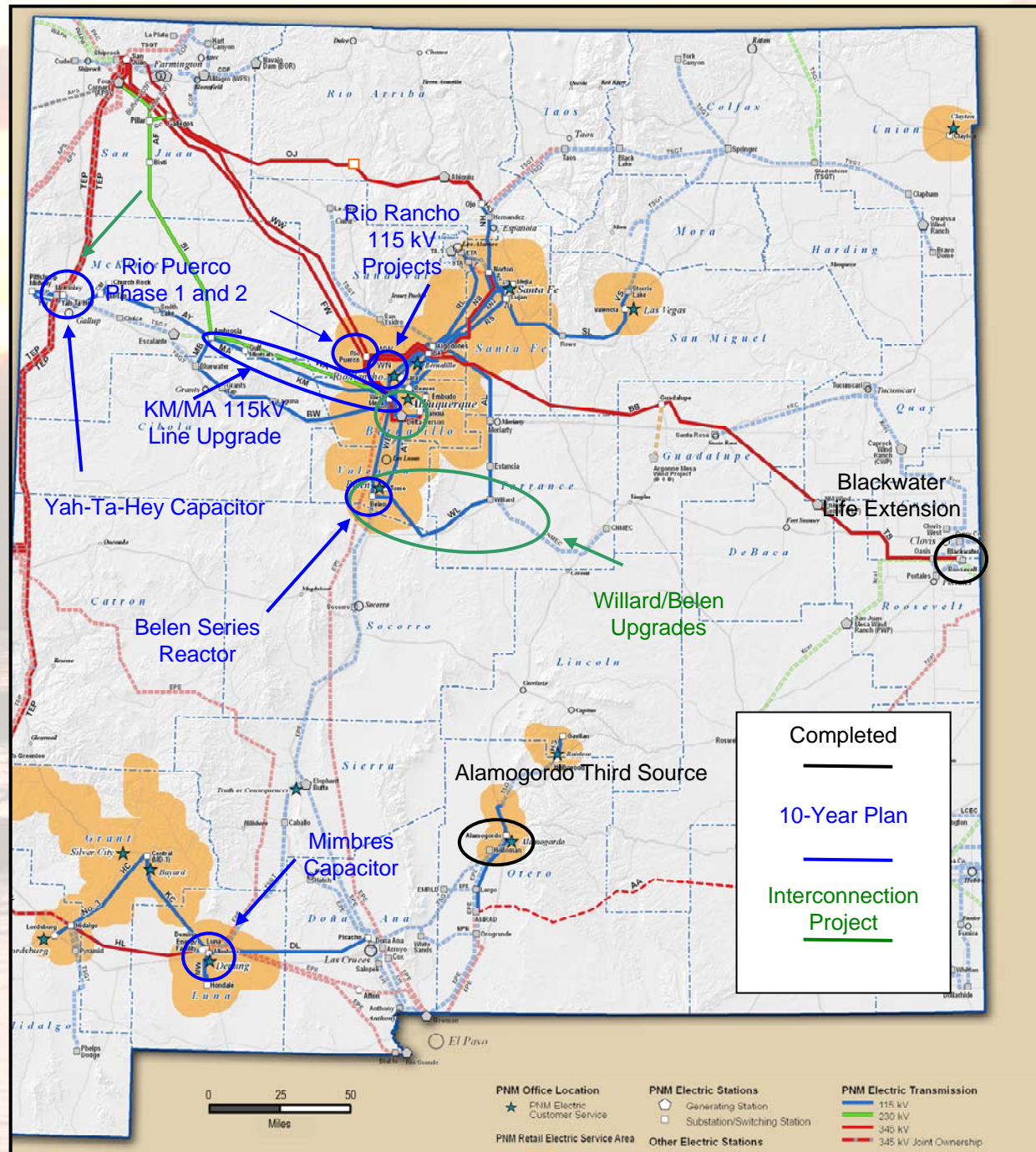


Project Additions for 2010

- Alamagordo SVC (late 2010)
- Rio Puerco 345 kV Station Phase 1
- Rio Puerco 115 kV Station
- Rio Puerco-Veranda 115 kV Line
- Corrales Bluffs-Southern Blvd. 115 kV Line
- RR Line Uprate
- Belen-Willard 115 kV Line Upgrade
- Mimbres Shunt Capacitor Addition
- Yah-Ta-Hey Shunt Capacitor Addition Phase 1



2010 Basecase



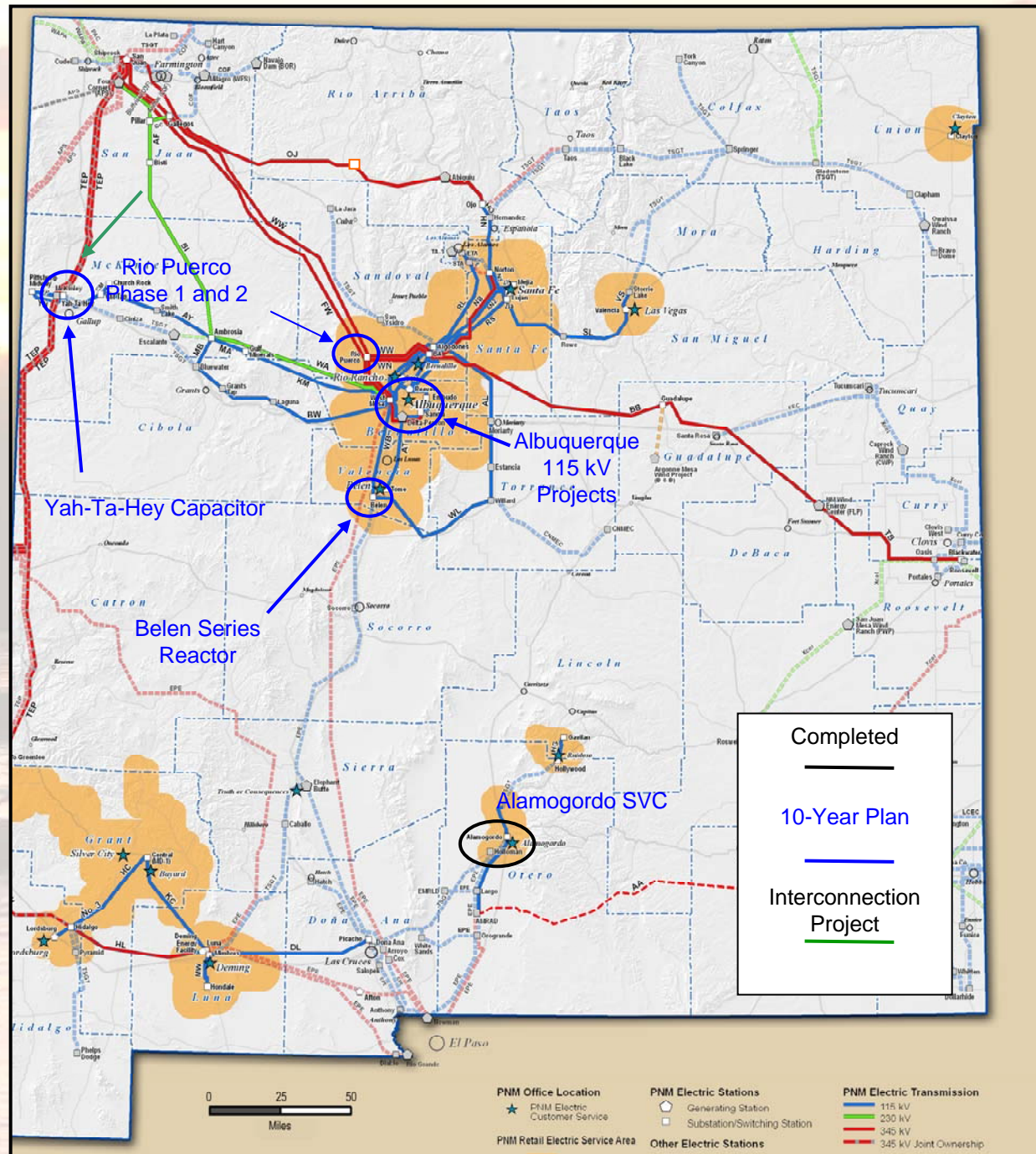
Project Additions for 2014

- **2010 Projects plus:**
 - Alamagordo SVC (late 2010)
 - Belen Series Reactor Phase 1 & Phase 2
 - Rio Puerco 345 kV Station Phase 2
 - Yah-Ta-Hey Shunt Capacitor Addition Phase 2
 - Person-Sandia (PS & KS) Line Upgrade

At the request of the developer, PNM will included assessment of the Verde line project (Ojo-Norton 345 kV addition with 115 kV modifications) if it represents a reasonable alternative to address criteria violations in 2014 and beyond.



2014 Basecase



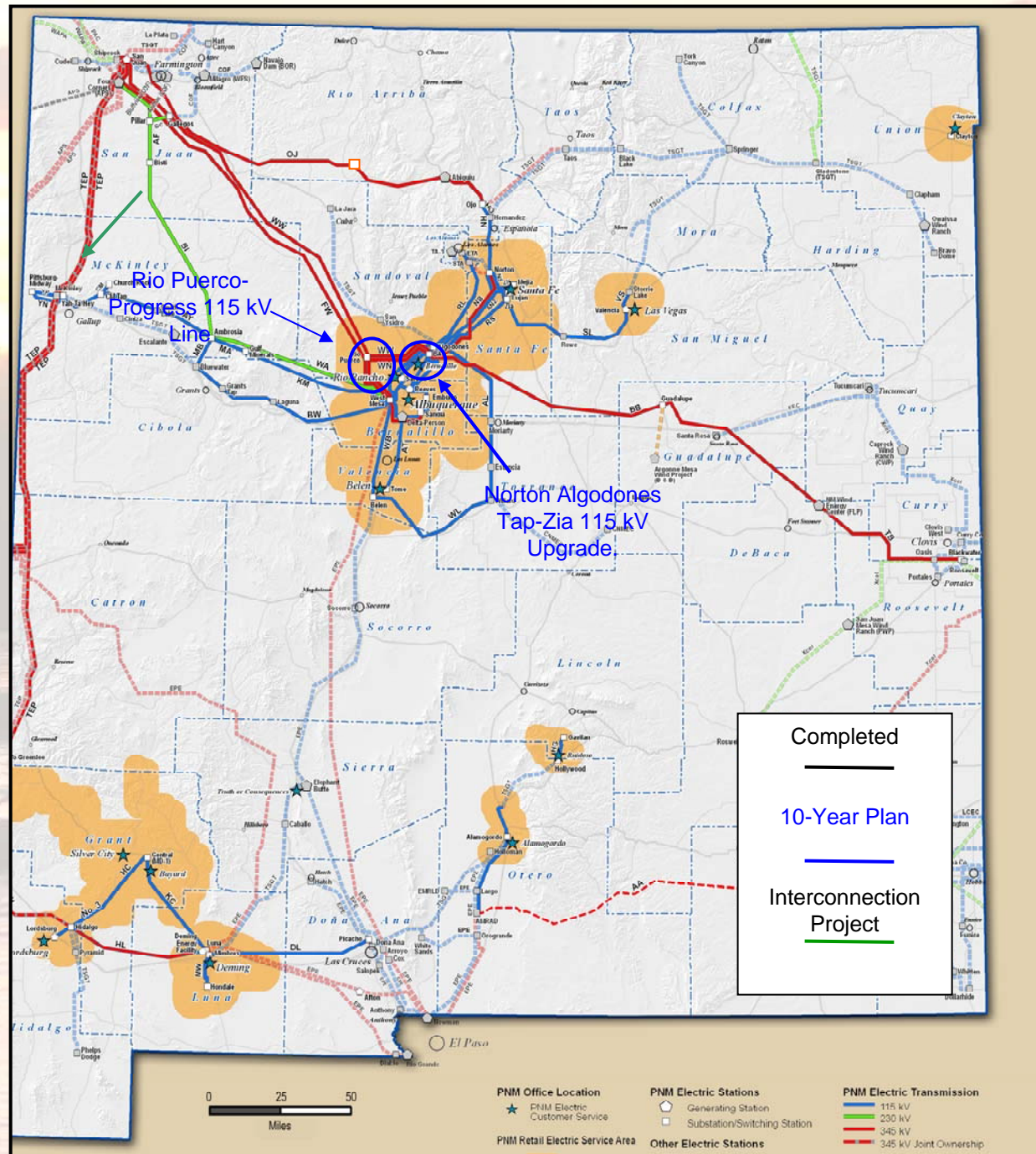
System Additions for 2019

- **2014 Projects plus:**
 - Rio Puerco-Progress 115 kV Line
 - Upgrade Norton-Algodones Tap-Zia 115 kV Line

At the request of the developer, PNM will included assessment of the Verde line project (Ojo-Norton 345 kV addition with 115 kV modifications) if it represents a reasonable alternative to address criteria violations in 2014 and beyond.



2019 Basecase



Timeline

- February 19 - Draft Study Plan distributed to stakeholders
- March 1 - Network Customer ten-year projected network load and network resources are due to PNM
- March 5 - Stakeholder Meeting to discuss study plan.
- March 20 - Finalize detailed Study Plan and Base Cases
- March thru July – Complete analysis, develop improvements including descriptions, one-line and cost estimates
- August 2009 - SWAT meeting with preliminary discussion of draft utility plans to be included in 2008 SWAT Planning Report.
- October 2009 - Incorporate with Annual SWAT/WestConnect Report
- Nov 5, 2009 - Stakeholder meeting to review transmission plan and follow-up for next study cycle



Other Information

- **PNM OASIS Main Page:**

- <http://www.oatioasis.com/pnm/index.html>

- **OASIS Links:**

- [http://www.oatioasis.com/PNM/PNMdocs/PNM Attachment K Hyperlinks 10-17-08.pdf](http://www.oatioasis.com/PNM/PNMdocs/PNM_Attachment_K_Hyperlinks_10-17-08.pdf)



Stakeholder Discussion

- Loads and Resources required from Stakeholders.
- Study Plan Discussion
(http://www.oatioasis.com/PNM/PNMdocs/PNM_2009_10-Year_Plan_Study_Scope.pdf)
- Comments/suggestions by March 19, 2009



PNM Generator Interconnection Study Activity

(as of 2/29/2009)



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Proposed Projects in Study Phase

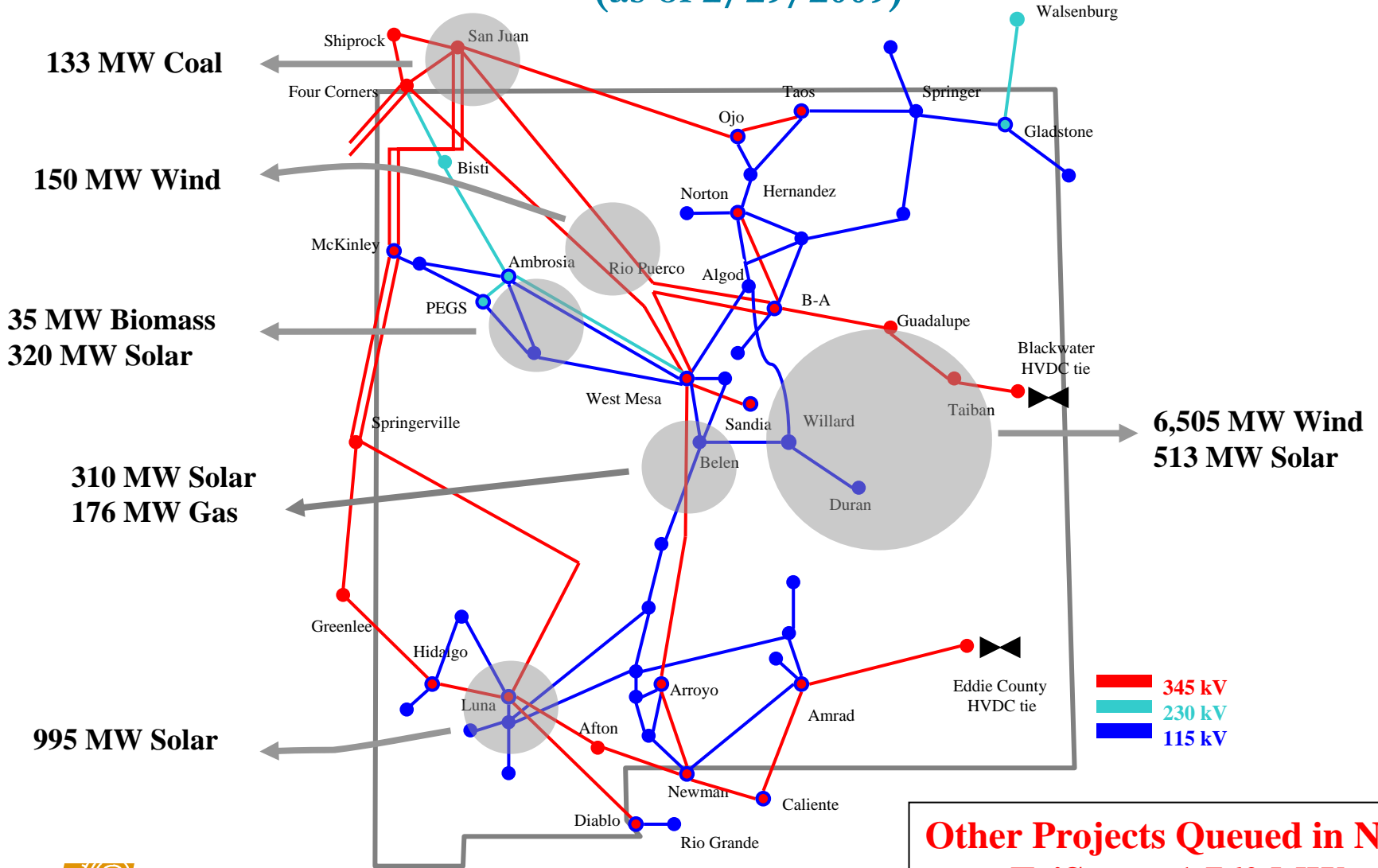
(as of 2/29/2009)

- **32 requests in the study phase**
 - 25 in Feasibility Study stage
 - 5 in System Impact Study stage
 - 2 in Facilities Study stage
 - **9,170 MW total capacity**
 - 6,655 MW Wind (73%)
 - 309 MW Gas/Coal (3%)
 - 2,171 MW Solar* (24%)
 - 35 MW Biomass
- * 33 MW Solar Small Generation



Proposed Projects in Study Phase

(as of 2/29/2009)



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Other Projects Queued in NM:
TriState ~1,760 MW
EPE ~3,672 MW



*PNM Does not include Small Generator Interconnections

Projects Beyond Study Stage

- **1 Project in IA negotiations**
 - 300 MW
- **6 Projects with executed IAs**
 - 220 MW Renewables
 - 270 MW Gas
- **2 Projects under construction or partially built**
 - 210 MW
- **2 Projects Operational**
 - 294 MW



Queue Reform (Clustering)

- The main goals for reform that are most needed include:
 - Remove the backlog (Currently studies through 2011)
 - Provide more certainty in costs and timing for Interconnectors.
 - Provide a mechanism for projects that are viable and ready to be developed to move forward
 - Need to have stakeholder input



Queue Reform Elements

- Some of the elements to accomplish this include:
 - move toward increasing commitment to remain in the queue over time as the studies progress and construction dates are approached.
 - commitment to pay allocated share of studies and project construction that stems from the cluster studies.
 - start all new applicants with the reformed process.
 - develop fair transition mechanism to move from today's serial queue to the new process.
 - permit a fast track process when transmission congestion does not exist so that these projects that are ready do not wait on lengthy studies of projects facing significant studies.
 - collect requests to be studied in geographically meaningful groups or clusters within a specified time-frame.



Regional Activities

- **SWAT NM Subgroup Studies**
 - No current scope for 2009.
 - Renewable efforts better addressed under RTTF.
- **High Plains Express**
 - Phase II Study Scope Under Development.
 - Phase I report available at:
(http://www.rmao.com/wtpp/HPX_Studies.html)
- **TEPPC – Next Meeting March 19.**



TEPPC Draft 2008 Study Conclusions

- *Simulation Studies*

- Congestion was identified in all of the simulation studies (2017 and 2012), reinforcing the known need for transmission expansion in coming years.
- The 2017 studies show that as more renewable resources are added to the West's generation portfolio, addition transmission capacity will be required to deliver the high quality resources that are not located near load centers.
- The most heavily constrained paths in the 2017 cases include Path C (Utah-Idaho), TOT2A (Colorado-New Mexico), TOT2C (Utah-Nevada), the Four Corners 345/500 kV transformers and Montana-Northwest.
- The 2017 studies showed the value of the transmission network to enable economical energy transactions that lower energy costs across the entire interconnection.
 - **Seasonal diversity between wind and solar energy production can be exploited through trade across the transmission system.**
- An energy efficiency increase in interior areas has the effect of releasing lower cost energy that can be transmitted to displace higher cost generation in coastal areas.
- The 2012 gas sensitivity cases demonstrate that fuel transportation costs and system losses should both be considered when siting new gas generation.



TEPPC Draft 2008 Study Conclusions (cont)

- *Historical Analysis*

- The historical analysis of actual flow and schedule data for 2007 concluded that the most heavily loaded paths were Southwest of Four Corners, Montana to Northwest, Pacific AC Intertie (California Oregon Intertie or COI), Four Corners 345/500 kV Transformer, Pacific DC Intertie, TOT 2C and Bridger West.
- This historical analysis list of heavily constrained paths is very similar to the most constrained paths identified in simulation studies. The simulation studies show increasing future pressure in the Four Corners area, across TOT2, for Montana to Northwest and for Pacific Interties paths.



Questions or Comments

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