

PNM 2017-2036 Integrated Resource Plan

APRIL 18, 2017 RELIABILITY & RISK ANALYSIS



DISCLOSURE REGARDING FORWARD LOOKING STATEMENTS

Statements made in this document that relate to future events or Public Service Company of New Mexico's ("PNM"), expectations, projections, estimates, intentions, goals, targets, and strategies are made pursuant to the Private Securities Litigation Reform Act of 1995. Readers are cautioned that all forward-looking statements are based upon current expectations and estimates. Because actual results may differ materially from those expressed or implied by these forward-looking statements, PNM cautions readers not to place undue reliance on these statements. PNM's business is influenced by many factors, which are often beyond their control that can cause actual results to differ from those expressed or implied by the forward-looking statements. For a discussion of risk factors and other important factors affecting forward-looking statements, please see the PNM's Form 10-K and Form 10-Q filings with the Securities and Exchange Commission, which factors are specifically incorporated by reference herein.

PNM assumes no obligation to update this information, except to the extent the events or circumstances constitute material changes in the Integrated Resource Plan that are required to be reported to the New Mexico Public Regulation Commission pursuant to Rule 17.7.3.10 of the New Mexico Administrative Code.

AGENDA

PROCESS UPDATE

- Intro
- Reliability Analysis – Astrape Consulting
- Status Update
- Analysis Updates
- Schedule

SAFETY AND LOGISTICS

MEETING PRELIMINARIES

- Fire escape routes via stairways at east and west ends of hallway; please let us know if you require special handicap egress or special assistance
- We must obey any fire or emergency alarm; even drills/test alarms
- Restrooms – Women's room at west end; Men's room at east end
- PNM's WiFi – username: guest, password: Ph0sW4geh!

SAFETY AND LOGISTICS CONTINUED

MEETING PRELIMINARIES

- Please be aware that there are outlets/network connections on the floor
- Must sign-in with security desk each time you enter the building
- Must be escorted in and out of the building by a PNM employee
- Recycling is easy and encouraged

MEETING GROUND RULES

MEETING PRELIMINARIES

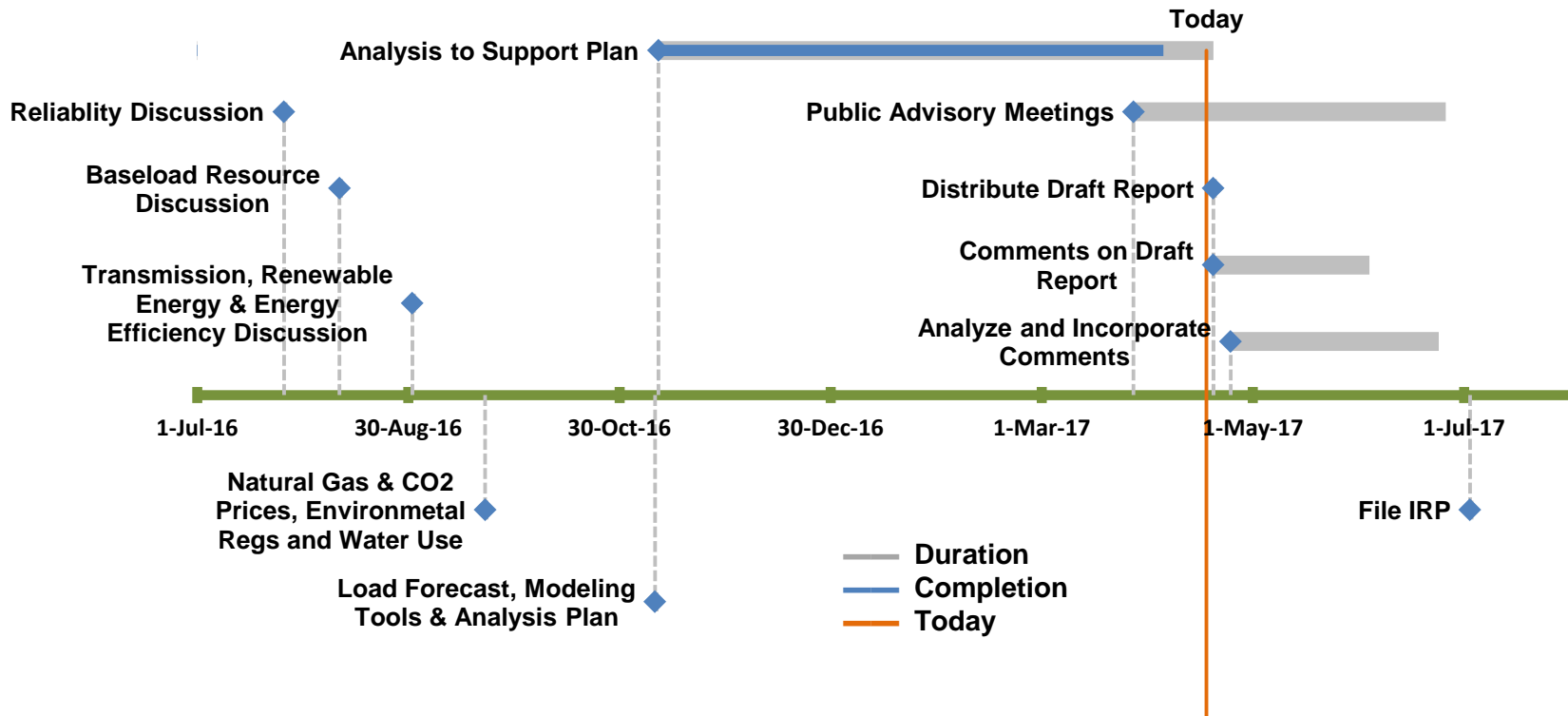
- The purpose of the IRP Public Advisory process is to solicit and receive public input
- Questions and comments are welcome
- Comments should be respectful of all participants
- Use name tents to indicate you have a comment or question
- Please silence your cell phone
- Reminder: today's presentation is not PNM's plan or a financial forecast, it is a discussion of PNM's planning process

Nick Wintermantel

Astrape Consulting

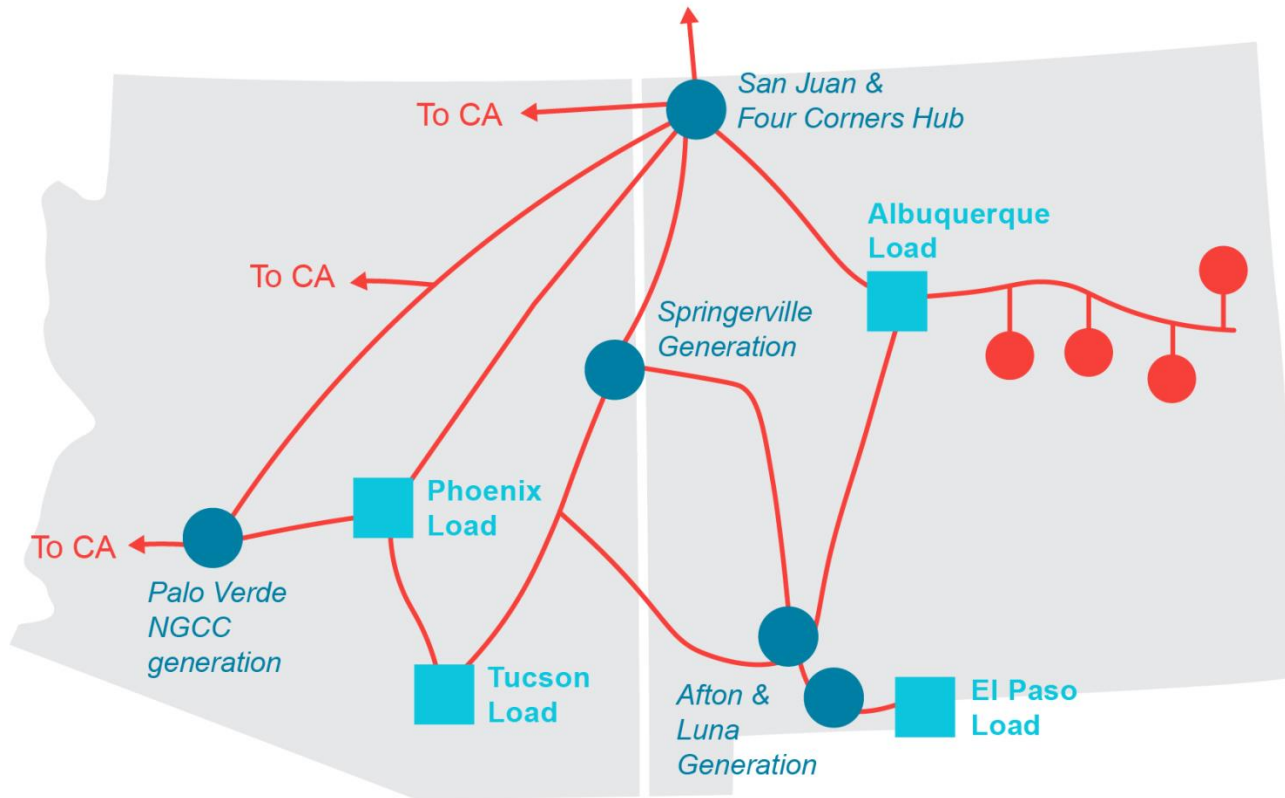
STATUS UPDATE

IRP PROCESS



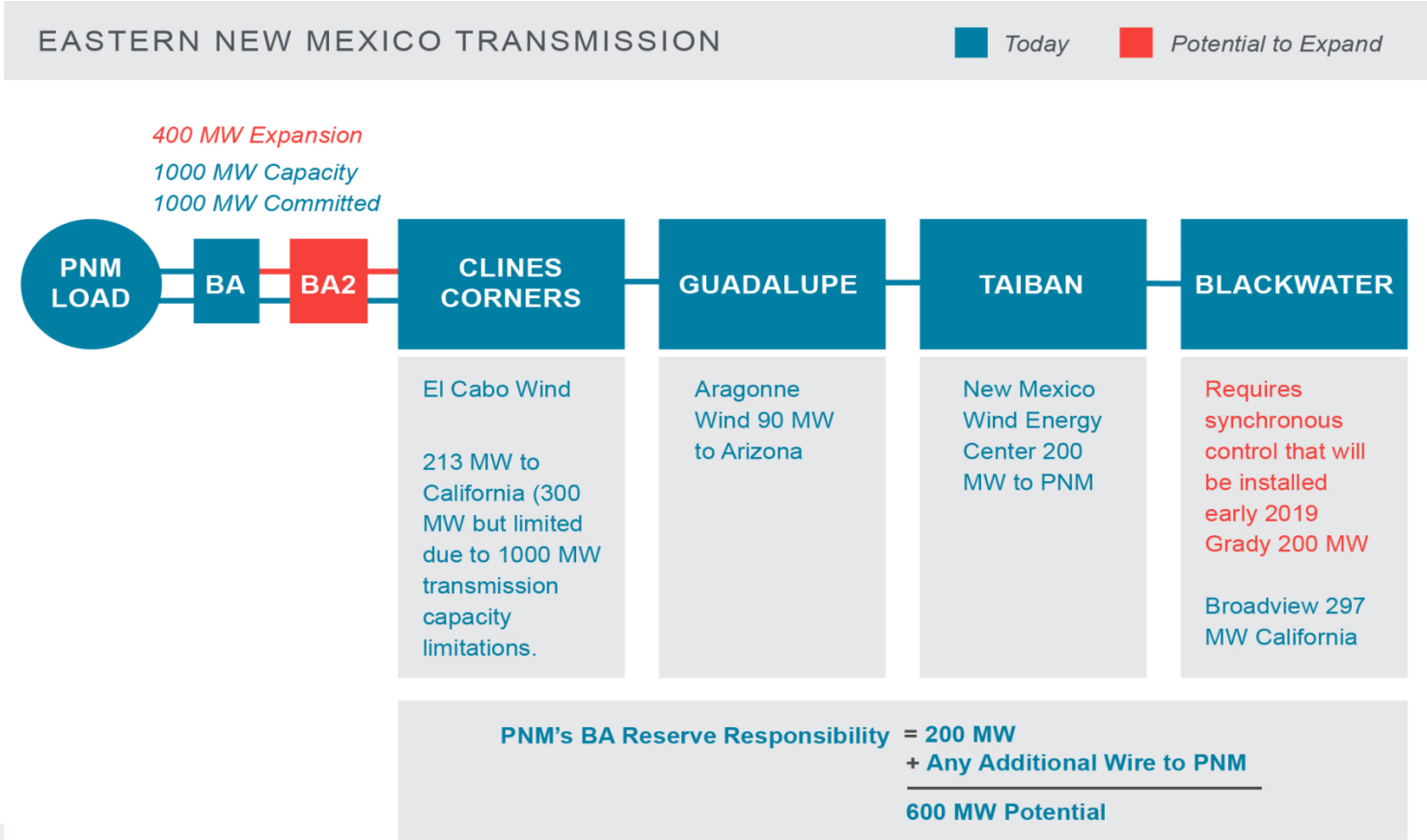
ANALYSIS UPDATES

ARIZONA-NEW MEXICO TRANSMISSION



ANALYSIS UPDATES

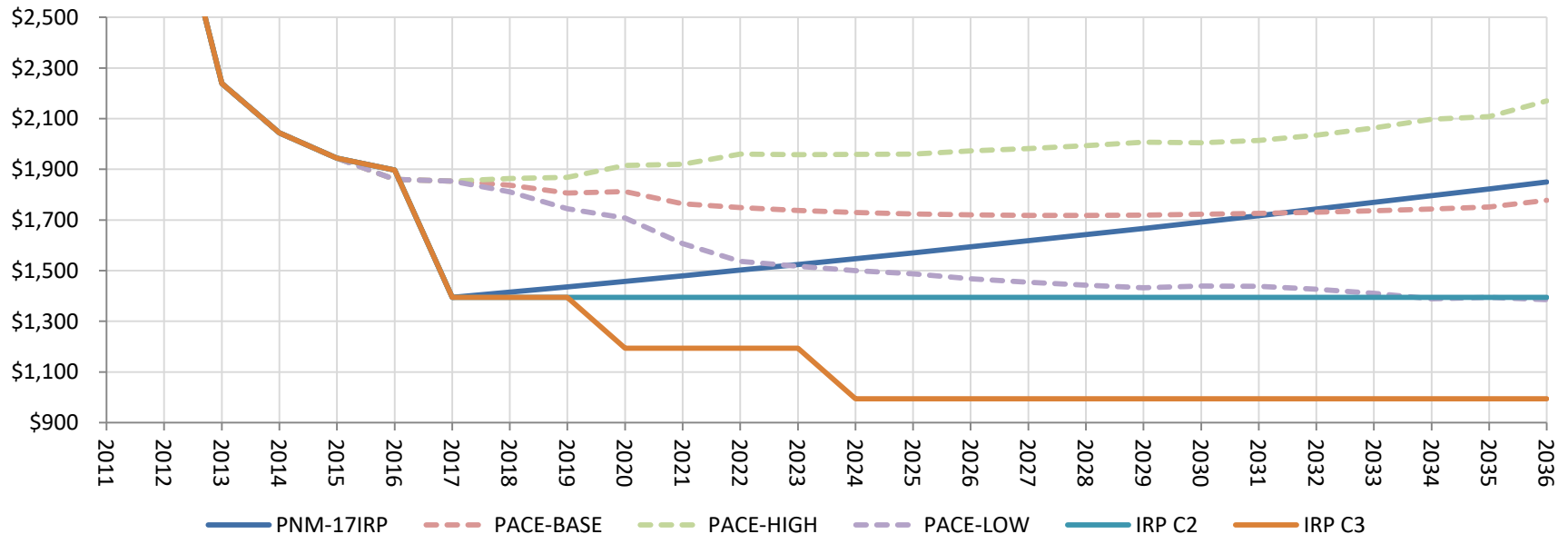
EASTERN NM-PNM TRANSMISSION SYSTEM



ANALYSIS UPDATES

SOLAR RESOURCE PRICING – USED FOR SENSITIVITY ANALYSIS

Installed Solar Cost - Distribution Interconnected - Projected



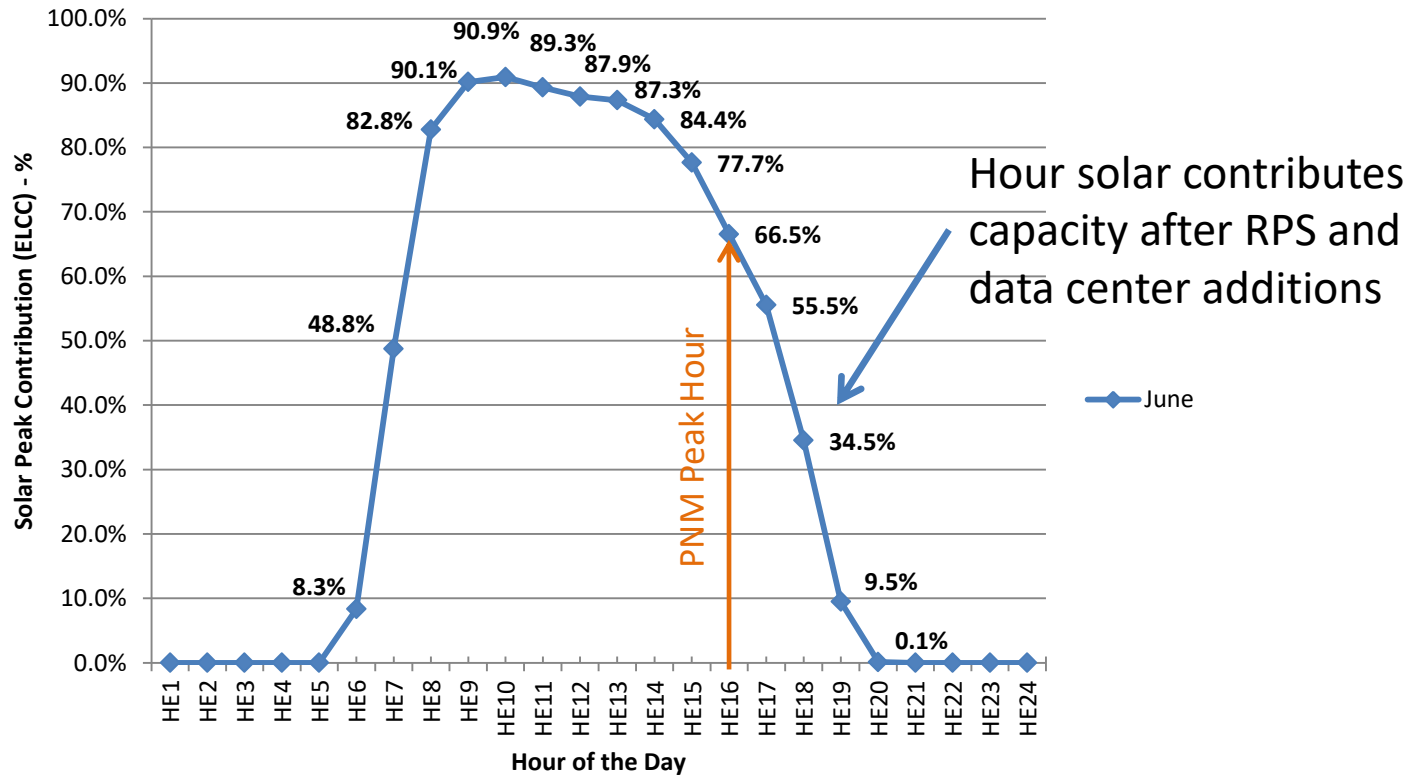
SOLAR PENETRATION LEVELS & CAPACITY CONTRIBUTION

CAPACITY NEEDS FOR SUMMER PEAK AND FOR DARK HOUR PEAK

- Summer peak load plus behind the meter load is expected to be about 2,000 MW (Cat 525 + DG + Facebook)
- Peak load in a dark hour is expected to be about 1,750 MW
- Committed solar resources:
 - Utility scale 107 MW
 - Private solar 65 MW
 - Data center solar 180 MW
 - Total 352 MW
- Once solar covers (2000-1750) PNM will need a system to cover 1,750 MW, not including solar resources

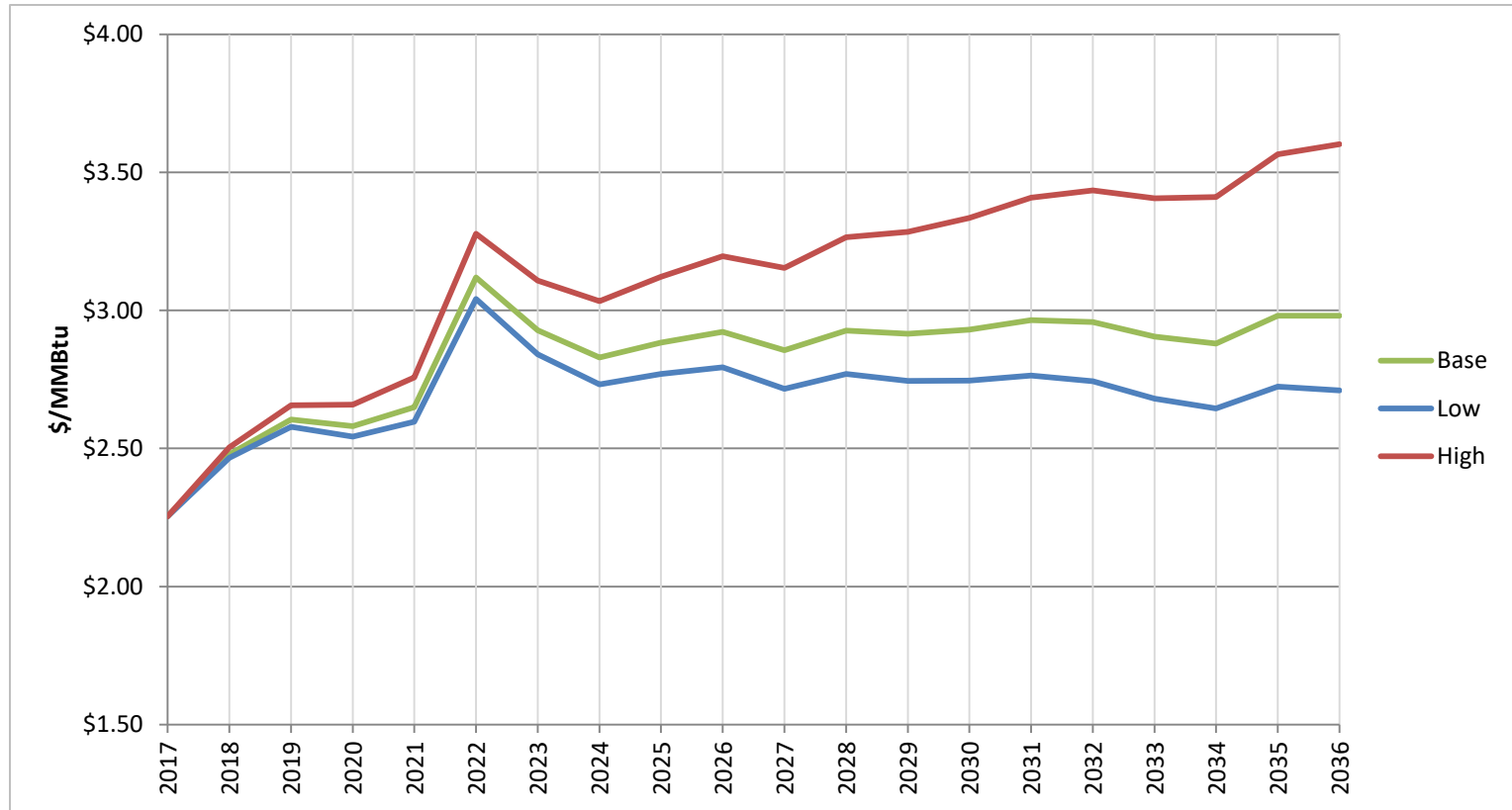
ANALYSIS UPDATES

SOLAR RESOURCE CAPACITY VALUE AFTER RPS AND DATA CENTER ADDITIONS



ANALYSIS UPDATES

COAL COST SENSITIVITY



RELIABILITY REQUIREMENTS

THE REGIONAL GRID WILL BE FACING NEW CONDITIONS

- Short, steep ramping of load
 - Requires flexible generation resources
- Oversupply risk
 - Periods when more energy is supplied than is needed
- Decreased frequency response capacity
 - Conventional generators automatically adjust output within seconds to correct out-of-balance conditions

RELIABILITY REQUIREMENTS

RESERVE MARGIN ALONE IS NO LONGER AN ADEQUATE METRIC FOR RELIABILITY

- Building for a more flexible system
 - More flexible gas generators (aero-derivatives & reciprocating engines) may cost more in \$/kw terms than heavy frame combustion turbines
 - Modeling not showing value for combined cycle capacity
 - What is flexibility potential of regional market initiatives?

NEAR TERM SCHEDULE

IRP EVENTS SCHEDULED THROUGH JULY

The following meetings are scheduled to discuss comments

- April 20: Post draft report for comment on pnm.com
- April 25 Meeting: Discuss draft report
- May 11 Meeting: IRP public comments in Farmington, New Mexico
- May 23 Meeting: Last opportunity for analysis requests
- July 3: File IRP at the NMPRC
- July 5 Meeting: Distribute copies of filed report

www.pnm.com/irp for documents

irp@pnm.com for e-mails

Thank you

