SUMMARY OF MAY 25, 2022, MEETING

On May 25, 2022, PNM held the first in a planned series of presentations devoted to discussing different technical methodologies within the 2023 IRP modeling framework. The session, which was virtual and in-person, focused on the presentation and discussion of the findings of a study by E3 (Energy + Environmental Economics), "Resource Adequacy in the Desert Southwest," and a collaboration by E3, Astrapé Consulting, and PNM, "Supply Resilience in Planning for PNM."

E3 modeled several scenarios designed to inform future resource planning, using data provided by PNM and utilities in Arizona. Key findings were:

- Load growth and resource retirements are creating an urgent need for new resources in the Southwest.
- Utilities' current resource plans have identified sufficient capacity additions to maintain reliability.
- A large share of the region's long-term needs will be met with solar, storage, and other "non-firm" resources.
- Even as solar and storage grow, the region's remaining firm resources will be needed for reliability.
- Substantial reliability risks remain as the region's electricity resource portfolio transitions.

PNM commissioned the second, resiliency, study to address the following:

- Questions from stakeholders participating in the 2020 IRP process surrounding extreme weather analysis and durations of energy storage included in 2020 IRP portfolios.
- The increased frequency of extreme weather events—the 2021 Texas event occurred two weeks after PNM filed the 2020 IRP.
- PNM's desire to gain a better understanding of risks associated with decarbonization and the move from firm, dispatchable resources to variable and energy limited resources.

Key takeaways from the study included:

- Portfolios planned with a reliability standard in mind vary in performance during extreme events.
- Stress testing candidate portfolios for resilience is important to understand differences in their performance.

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- Winterization helps reduce outages and firm up generation, reducing the severity of extreme event impacts.
- During ice storms, broader southwest dynamics will have significant impact on PNM's ability to avoid outages under extreme events. PNM can weather localized ice storms by relying on external markets, but region-wide events almost certainly lead to outages. Market support is limited in summer; PNM's system can avoid outages during a heat wave unless load reaches 1-in-20 levels, or a significant level of generation is forced out.
- PNM should continue to monitor the risk profile in the winter season. Resource accreditation should continue to match the risk profile PNM is presented with.
- As PNM increases its storage portfolio, its operational limits and utilization should be understood and considered in resource adequacy modeling.

MEETING ATTENDEES

A total of 40 stakeholders, not including PNM staff, attended the meeting, including members of the public and representatives from the following organizations: CSolPower, InterWest Energy Alliance, Office of the New Mexico Attorney General, Pine Gate Renewables, and the New Mexico Renewable Energy Transmission Authority (RETA).

Meeting slides can be found here.

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STAKEHOLDER QUESTIONS/COMMENTS

Stakeholder	Question/Comment	Categories
Member of the Public:	Are the presentation slides available?	**General**
Member of the Public:	It's entirely possible that you could add up the best practices and they would not meet the adequacy that we might see as we try to electrify so many things. How did the study deal with that?	**IRP Report**
Member of the Public:	Is demand response, for lack of better words, curtailment of the load on the demand level?	**Load & Energy Efficiency Forecasting**
Pine Gate Renewables:	How are you thinking about the participation of storage in the market, given it might not be a wholesale electricity market by then? And what are all the different services that the storage is providing? And does that change with the type of market structures?	**Reliability, Resilience & Resource Adequacy**
Pine Gate Renewables:	You talk about LOLP (Loss of Load Probability) being the gold standard, like moving to ELCC (Expected Load Carrying Capability) and different types of ELCC methodology. How are you looking at the net energy peak for this scenario? Or are you just looking at one hour in the peak summer evening after solar has ramped down?	**Reliability, Resilience & Resource Adequacy**

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CSolPower:	Looking at the different utilities' [plans] for what is coming on online, there is still way too much natural gas, and not enough wind. So, [is this study] based on what has been in previous plans, and not the reality of addressing climate change?	**General**
Member of the Public:	[Is there any excess generation available for use, like that sold in the market, for example?] (Slide 31)	**General**
Member of the Public:	We're a water shortage region. How has that come into the planning?	General
Office of New Mexico Attorney General:	The study took the load forecasts at face value rather than evaluating them. Then you mentioned 2% load growth, I believe. How much of the future need is driven by this expectation around high load growth? I certainly understand electrification and EV load. But some of the load growth, generally, was for population growth and industrial load. And there have been patterns of historically over-projecting load growth that doesn't materialize.	**Load & Energy Efficiency Forecasting**
Office of the New Mexico Attorney General:	[Regarding] the expected availability of existing legacy resources--the existing coal and gas plants--there's a lot of attention around the declining ELCC's for renewables and how they fall off as penetration increases. Was there consideration about how the availability of existing resources decreases as they	**IRP Report**

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	age or was that outside the scope [of the study]?	
Member of the Public:	What kind of changes could be made in the storage of water? There are many cultures that store water underground, pipe water underground, or have open systems where evaporation is a major issue. Is that something that tangentially we need to address or get put into the conversation?	**IRP Report**
Member of the Public:	How do we anticipate moving to off grid? Are people putting their own batteries onto their own solar systems, and how will they interact with the grid? How does that in the long term, or even the near term, impact what we're doing here?	**Grid Mod**
CSolPower:	[The IRP process should discuss the electrification of vehicles and how residential battery storage might work beyond individual household use.]	**Load & Energy Efficiency Forecasting** **Grid Mod**
RETA:	In the last few PNM IRPs there have been a number of energy storage projects that have been projected to happen--some estimated to be completed by this time. How many of those are hung up by supply chain problems that have been getting in the way of solar [projects]? Do you know about the progress of those various solar storage projects?	**Modeling**

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InterWest Energy Alliance:	Your regional scope includes New Mexico and Arizona, but it does not include California or any other part of the Southwest. How do you think your conclusions would change if you add in California?	**Reliability, Resilience & Resource Adequacy**
InterWest Energy Alliance:	[How do you think] joining an RTO (Regional Transmission Organization), or forming an RTO, [would affect] some of the conclusions that you've made?	**Reliability, Resilience & Resource Adequacy**
InterWest Energy Alliance:	I know an RTO is not a short-term fix, but shouldn't your longer-term look include looking at RTO development and doing the transmission upgrades and new builds needed, first identifying those, and then including them in your planning? Doesn't this all support that direction for your IRP?	**Reliability, Resilience & Resource Adequacy**
CSolPower:	Hydrogen gas turbines are not the solution for electricity generation, which needs to be done only by wind, water, sun, and some geothermal. We've waited so long for climate action, that we now need to actually move into World War II style deployment of wind and solar. And yet, we are not utilizing the wind that we have in eastern New Mexico. We need to make sure we're looking in the right direction and going as fast as we need to go because [the generations after us] deserve a sustainable planet.	**General**

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Member of the Public:	When you say scenarios or extreme weather scenarios, are you talking about a specific duration?	**Reliability, Resilience & Resource Adequacy**
Member of the Public:	Did you assume [in the scenarios] any changes to the hardening of any of the facilities for either extreme heat or extreme cold?	**Reliability, Resilience & Resource Adequacy**
Member of the Public:	Have you thought about what kind of market structure would make the conservative use of the battery versus the sort of straightforward arbitrage use more likely or profitable?	**Reliability, Resilience & Resource Adequacy**
InterWest Energy Alliance:	Was your assumption in this study of a 4-hour battery? And if not, why? And if it was lower than that, why?	**Reliability, Resilience & Resource Adequacy**
InterWest Energy Alliance:	What are you seeing on the horizon in terms of the likelihood of reasonable technology for a longer-term battery in the future?	**Reliability, Resilience & Resource Adequacy**
Member of the Public:	It seems to me that [your resource planning] approach could also be for, say, planning on the contingency reserve requirement, or instead of maybe a severe event, it could be a severe curtailment of some generation resource or market resource. Could something like this be applied to [your modelling], assuming that the current standard doesn't change?	**Reliability, Resilience & Resource Adequacy**

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CSolPower:	Is the availability for 2033 64,000 megawatts? (Slide 18)	**General**

All IRP questions and answers can be found here.

The latest future meeting schedule can be found here.

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