Color key:

Action plan item (to be addressed in IRP Action Plan)

Yellow shaded rows indicate completed scenarios that require follow-up

Rows without shading are considered final/complete requests

Acronyms:

CO2: Carbon Dioxide
CTP: Current Trends and Policy (a future used in modeling)
CT: Combustion Turbine
DR: Demand Response
EMNRD: New Mexico Department of Energy, Minerals, and Natural Resources
EV: Electric Vehicle
FCPP: Four Corners Power Plant
FOM: Fixed Operating and Maintenance (costs)
H2: Hydrogen
LOLE: Loss of Load Expectation
NM AREA: New Mexico Affordable Reliable Energy Alliance
NM RETA: New Mexico Renewable Energy Transmission Authority
PRM: Planning Reserve Margin
RFI: Request for Information
RTE: Round-trip Efficiency
SERVM: Strategic Energy & Risk Valuation Model

PNM Phase 1 scenarios listed following Stakeholder request table

PNM 2023 IRP: Stakeholder modeling run requests

Latest revision as of 6/14/2023

Modeling run request	Complexity/time to develop	Requestor	Run description as of June 14	Notes
Future CTP with high EV & High Building Electrification	Low	EMNRD	• Combine the current high EV and high building electrification load forecasts • Include base technologies, long-duration storage (no new gas)	• PNM has still not received a confirmation or alternative set of assumptions regarding the use of the existing High EV and High Building Electrification load forecast. PNM will use its existing forecast. • PNM has examined and determined that it will not be able to incorporate changes to the EV forecast related to heavy duty vehicles in this IRP but will seek to improve the EV forecast in future work

Modeling run request	Complexity/time to develop	Requestor	Run description as of June 14	Notes
				• Action plan item: explore availability of landfill gas as supplementary/replacement fuel
Future S3 (CT) CTP with increased DR	Low	Various; Aaron Gould, Michael Kenny, Cynthia Mitchell	• 50 MW (firm total, incremental to existing) in 2026 • 100 MW (firm total, incremental to existing) in 2028 • 200 MW (firm total, incremental to existing) in 2030 • Demand response modeled as resource • New program • Existing programs are extended (not expanded) • Callable once per day • Callable months: all • Callable hours total: 100 • Call window: any hour • Cost: none • Model as sensitivity to scenario 3 CT	
FCPP through Dec 2027 + extension for Valencia through 2039	Low	NM AREA	Candidate resources: generic solar, wind, 4-hr storage; no gas post 2039 (no H2)	
FCPP through Dec 2027 + extension for Valencia & Reeves through 2039	Low	NM AREA	Candidate resources: solar, wind, 4-hr storage; no gas post 2039 (no H2)	
No combustion scenario post 2039 - Include: Solar, Wind, Li-ion storage, long-duration storage	Medium	Form	Combine scenarios 1 & 2s; available resources: generic solar, wind and 4-hr storage, non-thermal RFI technologies	
No New Combustion with Thermal Storage	Medium	Athena	• PNM scenario sufficient	Athena to provide feedback/update on FOM costs

Modeling run request	Complexity/time to develop	Requestor	Run description as of June 14	Notes
Accelerated Carbon Free (2035)	Medium	Athena	• National Carbon Policy future (legacy asset recovery through 2040), but with no new H2, no CO2-capture, no new nuclear, add long-duration storage technologies, add wind expansion (combination of S1, S2s, S4 with CO2-free by 2035 under National Carbon Policy future)	
Accelerated Carbon Free (2030)	Medium	Athena	• 2030 scenario same as above, but with accelerated CO2-free date (requires new load forecast with accelerated EV loads)	• PNM may be able to modify the load forecast to accelerate EV but needs specific adoption rates and/or MW/MWh targets to be provided. PNM reserves the right to determine if the result is congruent with the model's overarching goal of simplicity and accuracy before agreeing to release the output with the requestor.
Complex Scenario – Transmission Expansion + many alternative resources	Medium	NM RETA	Combine: S1 + S2s + S3s + S4; available resources: generic solar, wind and 4-hr storage, thermal resources, RFI technologies, eastern transmission expansion	
Gas Price (High/Very High)	Low/Medium	Various; Aaron Gould	Find breakeven gas price for no new gas resources; run capacity expansion scenarios (scenario 3 CT) with increasing gas prices to determine gas price that makes new gas resources uneconomic	
Extreme weather and other variable sensitivities	High	Various; Cliff Ho	1) Potential SERVM adjustments for initial LOLE analysis: • Battery performance uncertainty (RTE downward adjustment) • Weight years with poor renewable performance more	• PNM will discuss plan for SERVM adjustments with Astrape and provide update • PNM will analyze SERVM hourly load patterns for each of the weather years

Modeling run request	Complexity/time to develop	Requestor	Run description as of June 14	Notes
			heavily or use P10 performance • Weight extreme weather years more heavily for initial LOLE analysis 2) Identify factors that have largest impact on LOLE analysis	• Action plan item: include extreme weather considerations for next IRP
WRAP modeling	High	Various; NM AREA, Aaron Gould	SERVM modeling to find range in/varying levels of PNM PRM (keeping LOLE at 0.1) that incorporate: • PNM peak load coincidence factor reduction in PRM, and • ability to purchase capacity from market (varying levels of purchases across reasonable range, incorporate purchase levels in more extreme weather years)	• Action plan item(s): explore benefits from participation in organized regional market, and from participation under extreme weather scenarios
Correlated Gas Outages	High	Interwest	SERVM LOLE, ELCC, and risk hour change analysis comparison between thermal portfolios with and without correlated gas outages driven by winter weather event (2025, 2032, 2040)	PNM will discuss correlated summer gas derate analysis with Astrape and provide update • Action plan item: incorporate consideration of correlated gas outages in 2026 IRP

PNM scenarios for Phase 1 modeling:

(Base technologies include wind, solar, 4-hr li-ion storage, energy efficiency, demand response; EnCompass capacity expansion modeling optimizes installed capacity of base technologies in each scenario; additions of RFI/scenario specific technologies occur 2028-2033; all run under CTP future)

1. Base technologies only

2. a) Base + Pumped hydro storage 70-hr (NW NM)
   b) Base + Pumped hydro storage 8-hr (NW NM)
   c) Base + Iron-air storage
   d) Base + Compressed Air Energy Storage
   e) Base + Liquified Air Energy Storage
   f) Base + flow battery

g) Base + thermal storage (with steam turbine)

3. a) Base + Combustion Turbines
   b) Base + linear generators

4. Base + wind expansion (transmission + 800 MW wind)

5. a) Base + carbon capture retrofit (Afton)
   b) Base + NET power plant

6. a) Base + 250 MW hydrogen project
   b) Base + 500 MW hydrogen project