



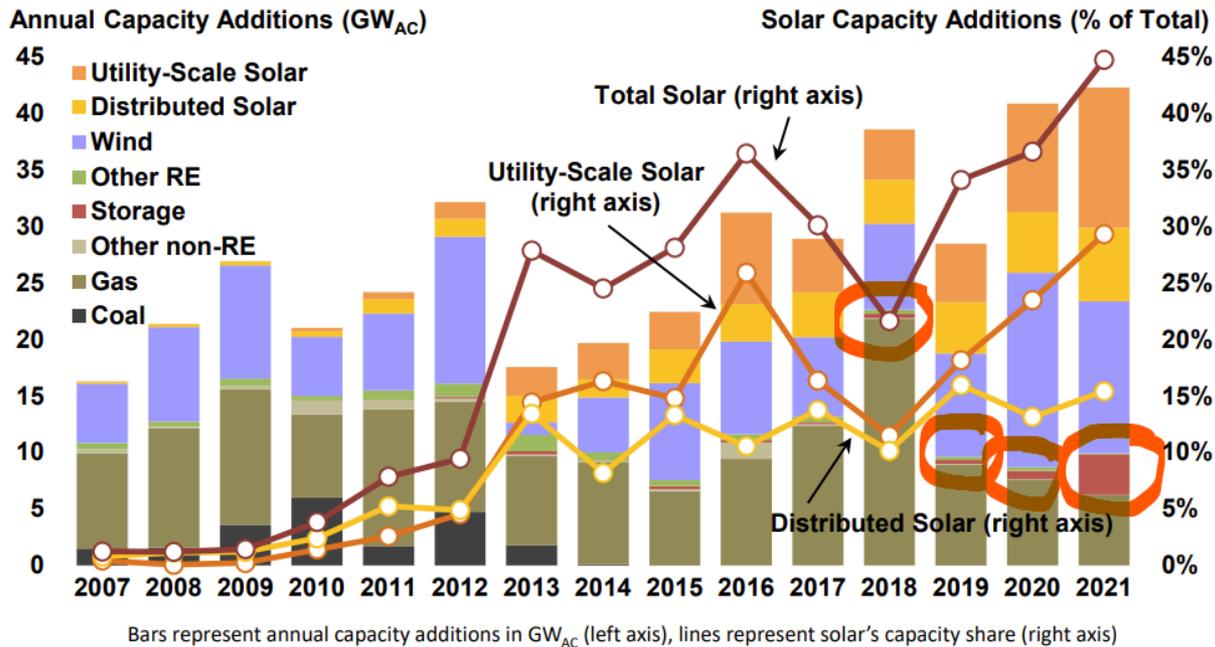
The PRC's Role in New Mexico Storage Development

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Introduction - Energy Storage in the U.S



Sources: ABB, ACP/AWEA, Wood Mackenzie/SEIA Solar Market Insight Reports, Berkeley Lab

Early Energy Storage in NM

- ▶ Units 2 and 3 (221 MW) at the San Juan Generating Station were retired in 2017
- ▶ The same year, the NM PRC voted to include energy storage in Integrated Resource Planning
- ▶ PNM issued an RFP renewable energy and storage projects
- ▶ Assumed Units 1 and 4 (562 MW) would be retired in 2022

Key New Mexico Legislation

▶ Energy Transition Act, 2019

- Applies to investor-owned utilities and rural electric cooperatives (coop goals are slightly lower)
- Transition from fossil fuel generation to renewables to 100% carbon free energy
- Further integrates battery storage into utility planning decisions
- Amends the Renewable Energy Act (REA)
 - Sets Renewable Portfolio Standards (RPS)
 - 20% by 2020
 - 40% by 2025
 - 50% by 2030
 - 80% by 2040
 - 100% by 2045

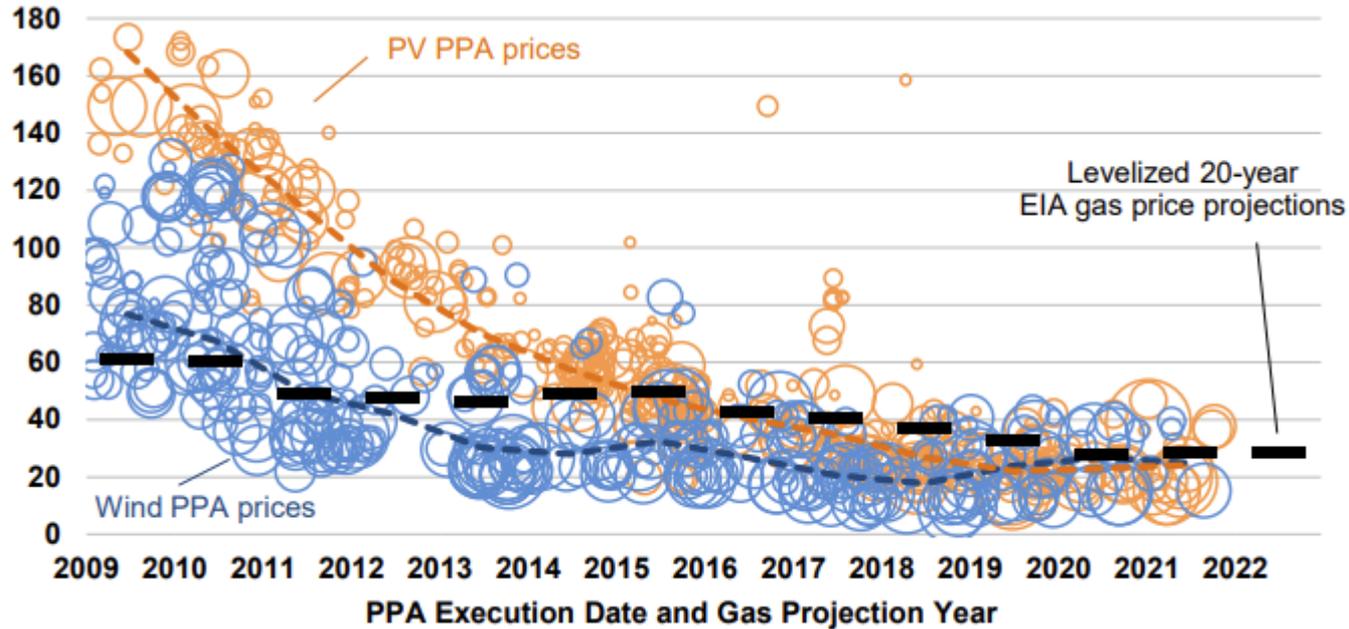
Amended Renewable Energy Act

- ▶ Provided streamlined proceedings for utility renewable energy procurement plans
- ▶ Sets a Reasonable Cost Threshold for the procurement of renewables
- ▶ Expanded the PRC's role
 - Previously PRC could only reject or accept a utility's replacement resource selection
 - PRC can now evaluate different, competitive resource portfolios

Impacts of ETA/Amended REA

- ▶ Solar and battery projects to replace:
 - Coal-fired San Juan Generating Station (562 MW)
 - PNM's loss of the Palo Verde nuclear contract in 2023 (114 MW)
 - Future exit from Four Corners Coal Plant (200 MW) in 2031
 - Future exit Valencia gas plant in 2028 (158 MW)
- ▶ ETA was used to deny an application to build a 228 MW gas-fired plant
- ▶ Battery storage is not a renewable resource but enhances the value of intermittent solar and wind resources
- ▶ Battery ITC originally tied to solar projects, but is now independent
- ▶ Most storage in IRP's focuses on 4 hr lithium-ion batteries, longer term durations and new technologies under development

Industry Trends - Levelized PPA and Gas Price (2020 \$/ MWh)



Renewable Hybrids in the West

Region	% of Proposed Capacity Hybridizing in Each Region			
	Solar	Wind	Nat. Gas	Battery
CAISO	95%	42%	15%	51%
ERCOT	27%	4%	27%	33%
SPP	18%	1%	0%	24%
MISO	27%	8%	0%	n/a
PJM	21%	1%	0%	n/a
NYISO	6%	3%	0%	3%
ISO-NE	24%	0%	0%	n/a
West (non-ISO)	75%	15%	0%	n/a
Southeast (non-ISO)	28%	0%	0%	n/a
TOTAL	42%	8%	3%	n/a

Hybrid = multiple generator types (e.g., solar + storage, wind + storage)
 Data is from projects in interconnection queues (not all projects will be built)



Supply Side Issues

- ▷ Post-pandemic supply backlogs
- ▷ Price increases along the chain
- ▷ World events
- ▷ Longer interconnection backlogs
- ▷ Increased transmission interconnection costs
- ▷ Utilities working hard to manage increasing project costs and project delays

PRC Roles That Could Impact Energy Storage

- ▷ Acceptance of Utility IRP's
 - ▷ Utilities submit IRP's every 3 years for generation planning
 - ▷ short-term plan based on long-term economics of future generation
 - ▷ focus on adequate reserve margin
 - ▷ provides public input
 - ▷ “In identifying additional resource options, the utility shall consider all feasible supplyside, energy storage and demand side resources.”

PRC Roles that Impact Energy Storage

(cont.)

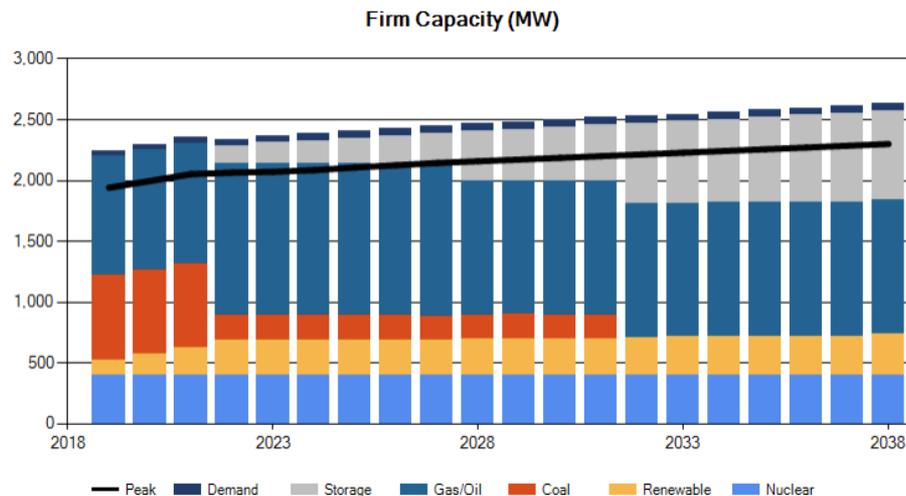
- ▶ Approval of Renewable Portfolio Plans (RPS)
- ▶ Review and Approval of Power Purchase Agreements (PPA) and Energy Storage Agreements (ESA)
- ▶ RPS Compliance
- ▶ Utilities comply with the RPS mainly through PPAs with Independent Power Producers
- ▶ Retire Renewable Energy Certificates to show compliance
- ▶ Resource Adequacy

PRC Roles that Impact Energy Storage (cont.)

- ▶ Power project siting
- ▶ Certificates of public convenience and necessity (utility owned generation)
- ▶ Energy efficiency and load management
- ▶ New Activities (evolving)
 - EV transportation electrification
 - Grid modernization

PNM – New Mexico Demand and Capacity

- ▶ Annual load growth is 1-3%
- ▶ Storage requirements build slowly
- ▶ Biggest opportunity is exports



PNM 2020-2039 IRP

Export Markets

- ▷ California and neighboring states have huge demands for clean power
- ▷ Requires transmission infrastructure for solar and wind and storage
- ▷ Utilities own transmission lines
 - Interstate grid is regulated by FERC
 - Open access tariff, system impact study
 - NM has location control, environmental and ROW approvals (230 kV+)

Conclusion

- ▷ New Mexico is an excellent location to develop energy storage
 - Abundant wind and solar resources
 - Storage complements renewables
- ▷ Renewable resource potential vastly outweighs New Mexico electricity demand
 - Big opportunity for exports
 - Requires transmission infrastructure
- ▷ Clean Energy requirements by the NM legislature require renewables and storage
- ▷ PRC supportive of renewable energy and energy storage development
 - PRC has a more limited role in renewable and energy storage for exports