



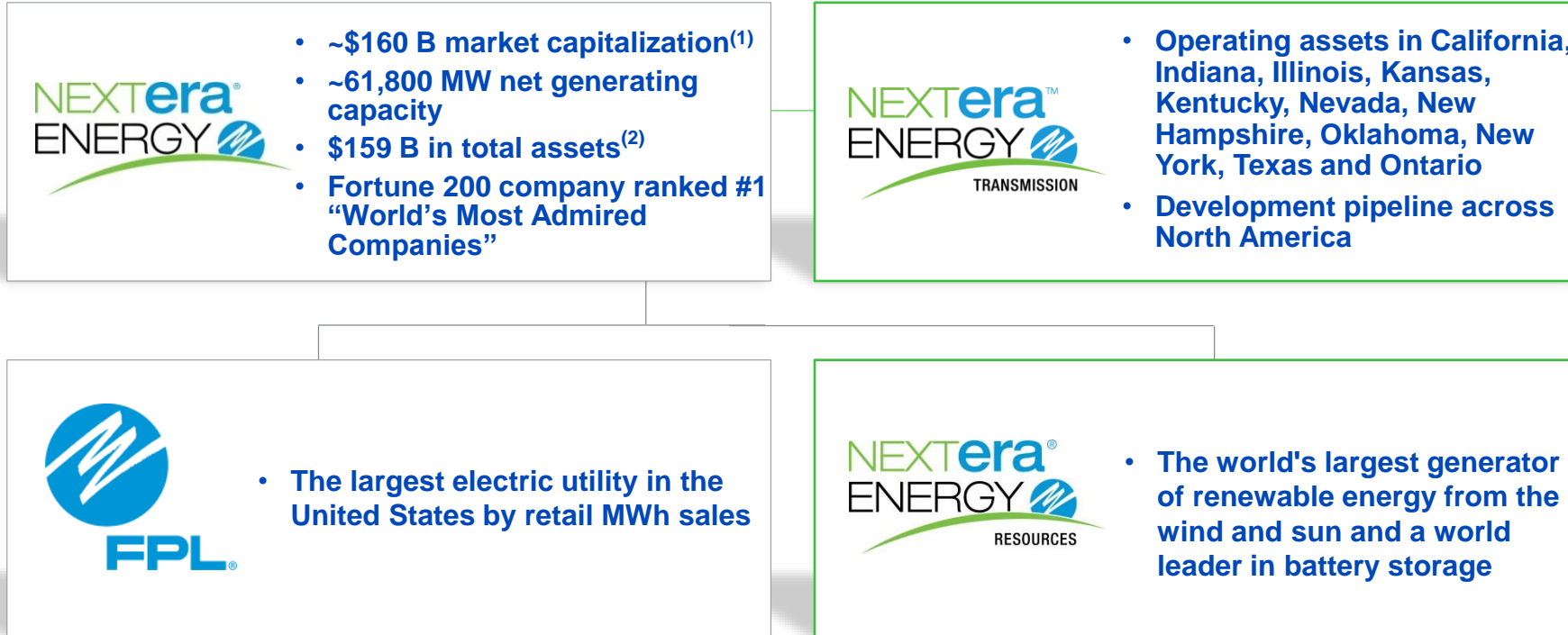
# Utility-Scale Battery Storage & Grid Modernization

New Mexico Water and Energy Interim Committee Hearing

Seth Nelson, Director of Development, GridLiance, NextEra Energy Transmission  
October 4, 2023



# NextEra Energy is a leading clean energy and utility infrastructure company active across North America.



**A growing, diversified and financially strong company**

1) As of March 23, 2023  
2) As of December 31, 2022  
Source: S&P Capital IQ

# NextEra Energy Resources in New Mexico



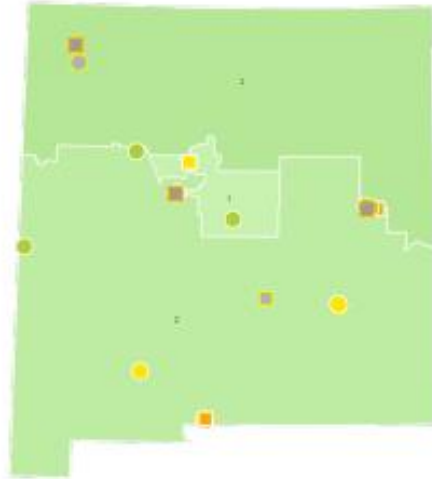
Route 66 Solar Energy Center in Cibola County

- 5**  
wind energy centers  
in operation

**6**  
utility-scale solar energy  
centers in operation
- 1**  
distributed energy  
resource in operation

**2**  
energy storage system  
in operation
- 3**  
energy storage  
systems in development

**3**  
utility-scale solar projects  
in development



Legend: ● Wind ● Utility-Scale Solar ■ Distributed Energy Resources ■ Battery Energy Storage ● Development/Construction

Approximately  
**\$1.5 billion**  
total capital investment



Approximately  
**\$7.2 million**  
annual payroll



**\$2.7 million**  
annual land payments



**\$3.3 million**  
in property taxes, 2022\*

\* Annual Property Taxes: Includes property tax and other indirect taxes. Internal data based on 2022 full year.

## NextEra Energy Resources' New Mexico Wind Energy Centers

Name	County	# Turbines	MW
Borderlands	Catron	34	100.1*
Casa Mesa	De Baca, Quay	21	50.9
High Lonesome Mesa	Torrance	40	99.4
New Mexico	De Baca, Quay	136	204
Red Mesa	Cibola	64	102.4

## NextEra Energy Resources' New Mexico Utility-Scale Solar Energy Centers

Name	County	MW
Bisti (development/construction)	San Juan	100
Buena Vista	Otero	120
Chaves	Chaves	70
Chaves II	Chaves	30
Hatch	Doña Ana	5*
Roswell	Chaves	70*
Route 66	Cibola	49.5
Sky Ranch (development/construction)	Valencia	190
Windy Lane (development/construction)	De Baca, Quay	90

## NextEra Energy Resources' New Mexico Distributed Energy Resources

Name	County	MW
ABC Solar	Bernalillo	1.6*

## NextEra Energy Resources' New Mexico Battery Energy Storage Systems

Name	County	MW
Bisti (development/construction)	San Juan	49.5
Buena Vista	Otero	50
Casa Mesa	De Baca, Quay	1
Route 66 (development/construction)	Cibola	50
Sky Ranch (development/construction)	Valencia	50
Sky Ranch III (development/construction)	Valencia	100
Windy Lane (development/construction)	De Baca & Quay	68

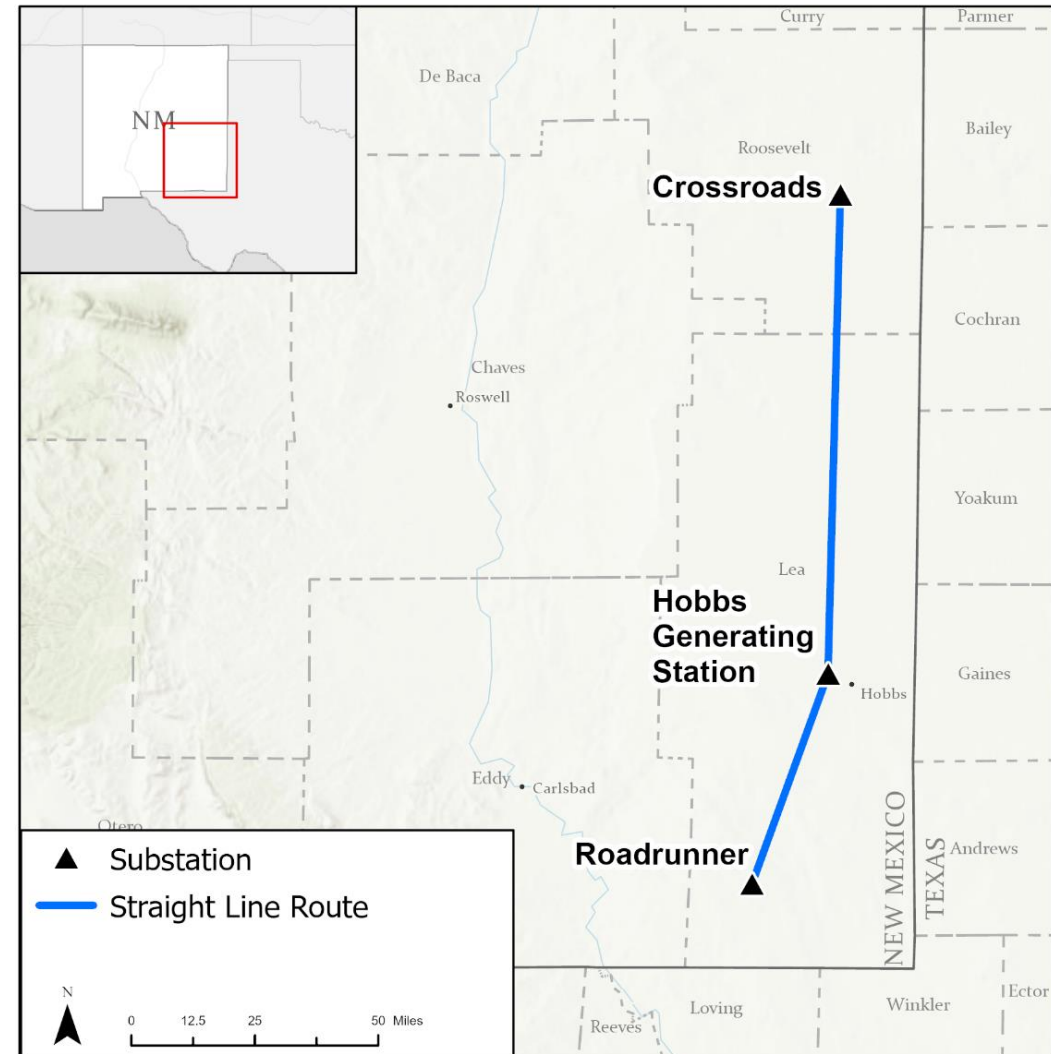
\*Includes megawatts associated with noncontrolling interests related to NextEra Energy Partners, LP.



# NextEra Energy Transmission Southwest in New Mexico

## Crossroads-Hobbs-Roadrunner 345-kV Transmission Project

- NMRETA approved development MOU on September 20, 2023
- \$291.6 million project awarded through competitive bid by Southwest Power Pool (SPP) on August 15, 2023
- 135-mile, 345-kV double-circuit transmission line interconnecting the Crossroads, Hobbs, Roadrunner substations
- Provides access to lower cost wind and solar energy to serve load growth in southeast New Mexico/Permian Basin
- SPP estimates 2.3-3.0 trillion metric tons reduction in carbon emissions in NM annually
- Project will lower energy prices for New Mexico customers and bring voltage stability
- Outreach to 11 Tribes. Mescalero Apache participating in survey efforts.
- Expected commercial operation May 2026

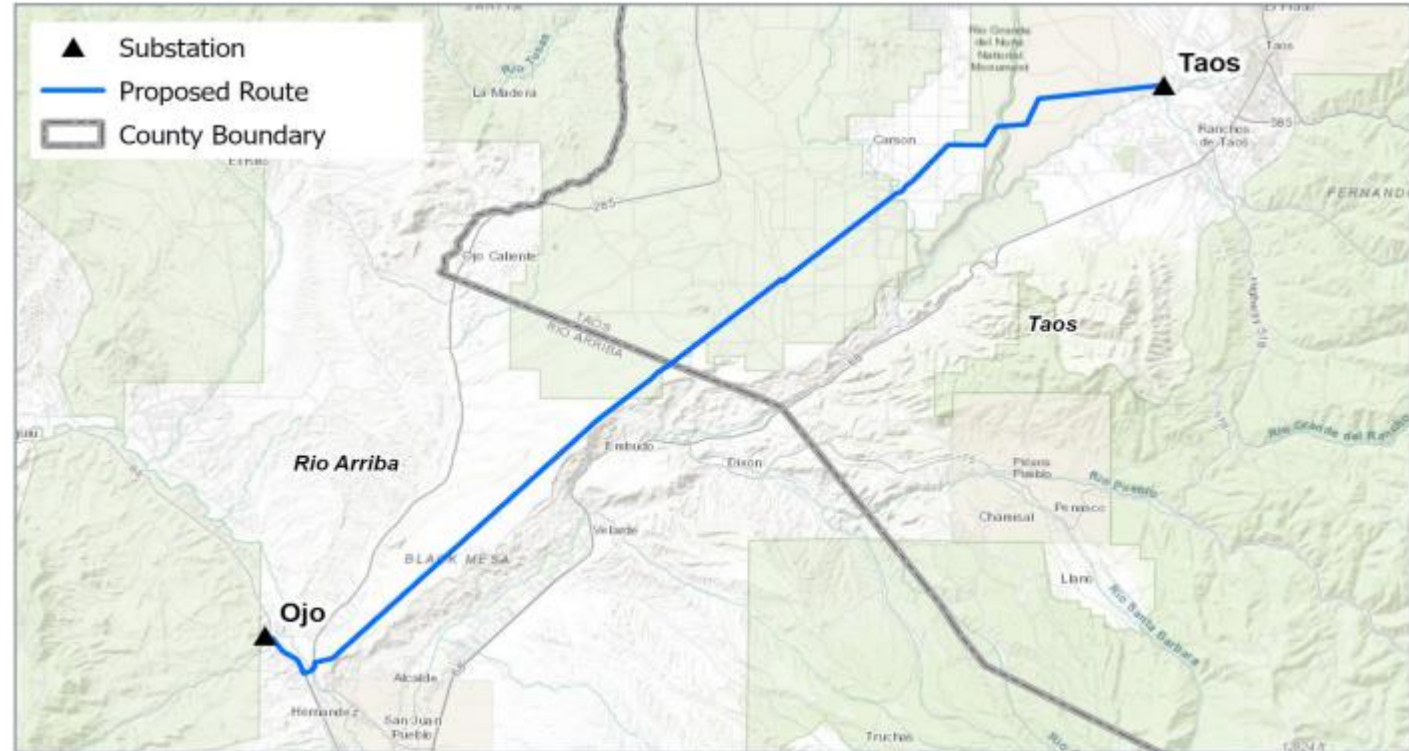


1) Source: SPP 2021 Integrated Transmission Plan Market Economic Models (MEM)

# NextEra Energy Transmission - GridLiance in New Mexico

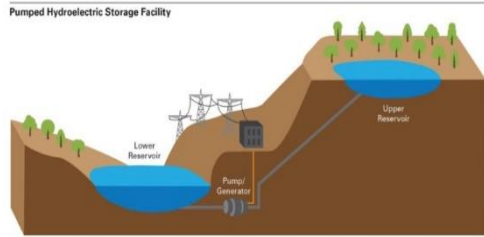
## Green Chile 115-kV Transmission Project

- GridLiance is a subsidiary of NextEra Energy Transmission operating in five states: OK, KS, NV, KY, IL
- Kit Carson Electric Cooperative (KCEC) engaged GridLiance to support development of a new transmission line
- 38-mile, 115-kV overhead transmission line from the Ojo switching station (PNM) to Taos Substation (Tri-State)
- Proposed route traverses Rio Arriba and Taos Counties
- Provides KCEC with (1) more cost-effective access to the regional transmission grid, (2) better connection to generation to serve its members, and (3) better utilization of existing and future renewable resources
- Outreach to 16 Tribes. Pueblo de San Ildefonso responded.
- Permitting process underway with BLM–Taos Field Office

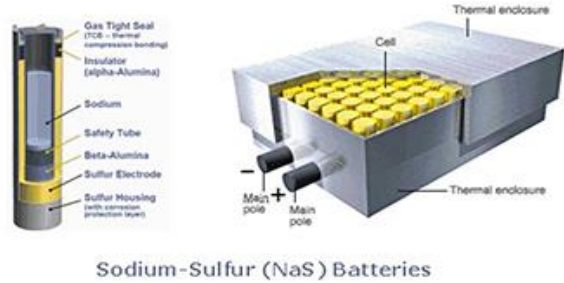


# Energy storage technologies: some commercially available today, others early-stage design or pilot stages

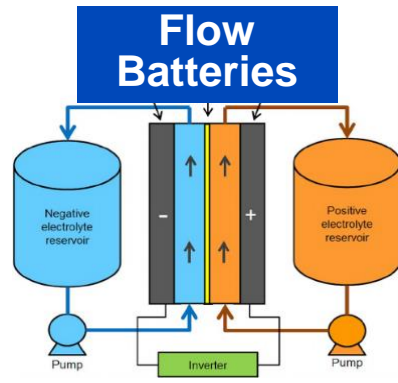
## Pumped Hydro



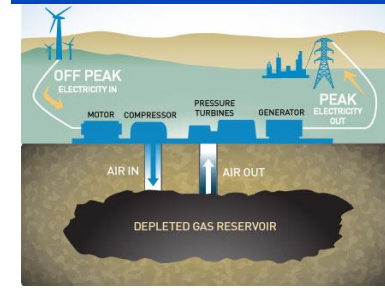
## Sodium Sulphur Batteries



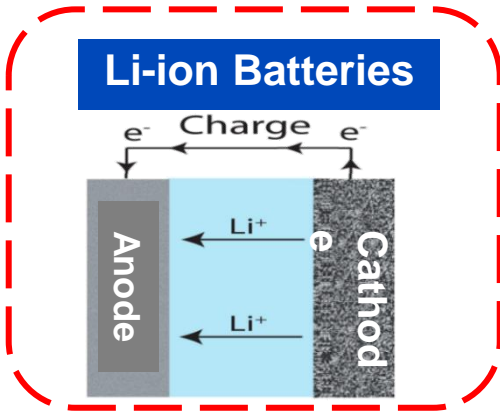
## Flow Batteries



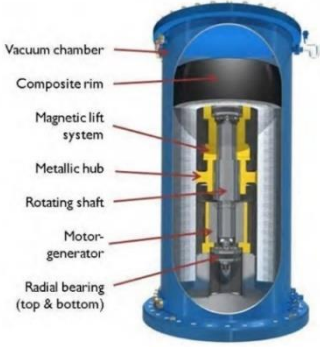
## Compressed Air



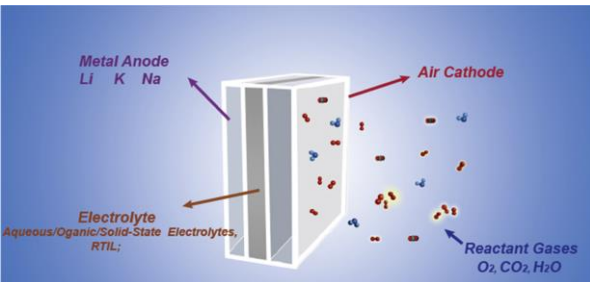
## Li-ion Batteries



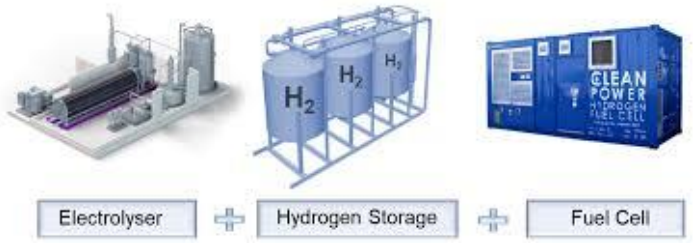
## Flywheel



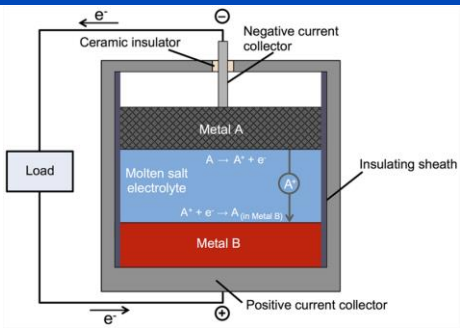
## Metal-Air Batteries



## Hydrogen Storage



## Liquid Metal Battery



Recent market and technology advancements have allowed a rapid increase in lithium-ion based project deployments.



**Lithium-ion battery cells are connected to form battery modules.  
Multiple battery modules are stacked into battery racks.  
Several racks are built within containers or buildings.**

**Battery Cell**



**Battery Module**



**Battery Racks**



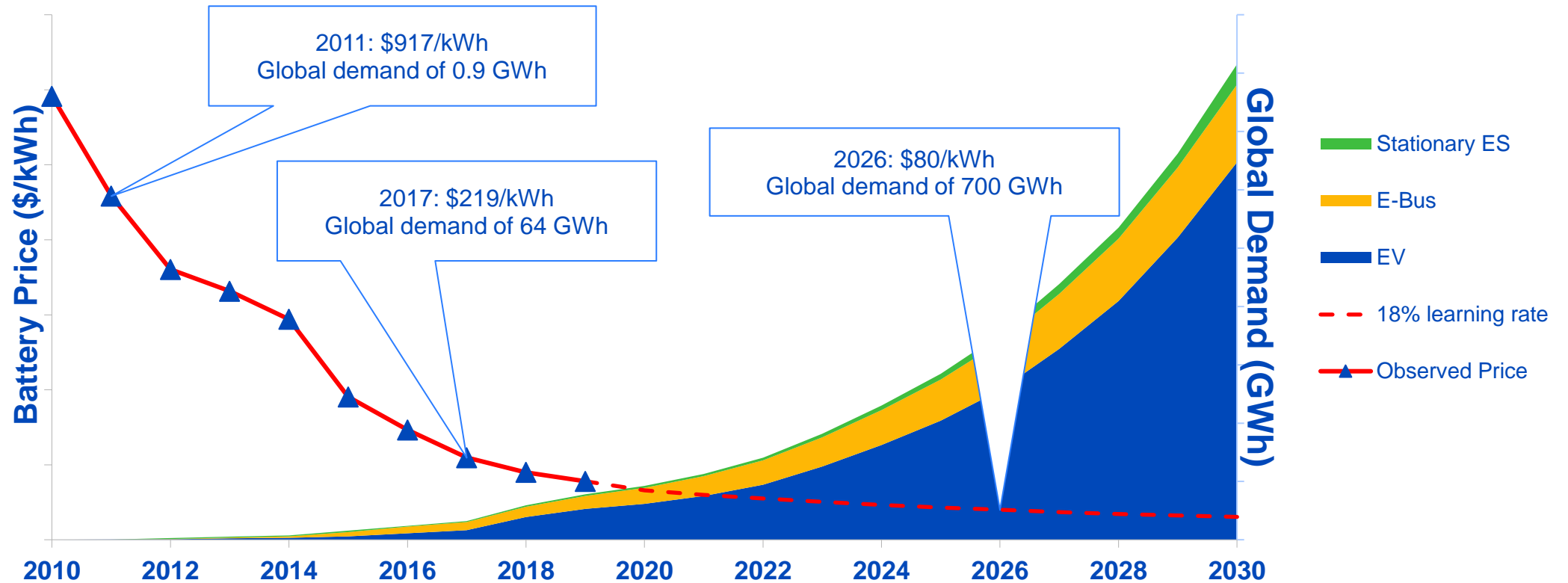
**Battery Containers**



**~7 MWh Energy:  
40-foot Container**

**Total system includes containers, HVAC, power controls, inverters, and transformers - most often provided by different suppliers and integrated by a single system provider.**

# Electric Vehicle (EV) market demand is the primary driver in reducing lithium-ion battery costs for utility storage applications.<sup>(1)</sup>

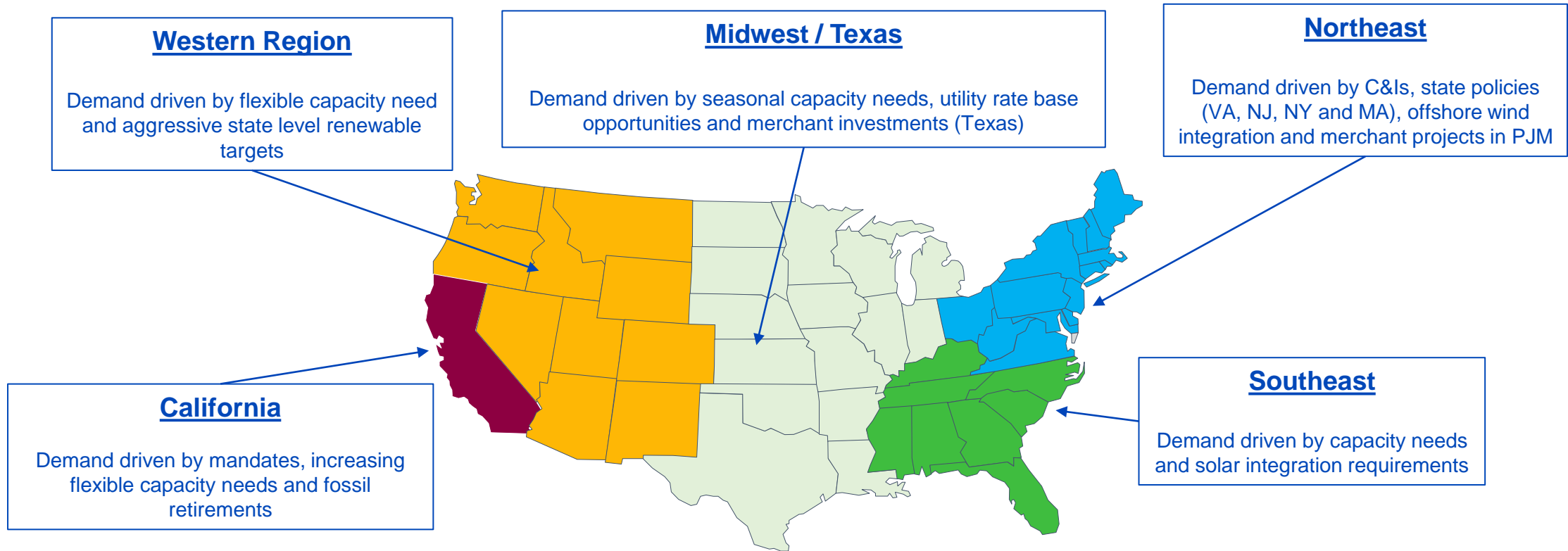


Due in part to these cost declines, the economics of pairing storage with solar to provide a near firm product are now favorable in many regions.

1) Source: Bloomberg New Energy Finance



# In many regions, near-term demand for storage is being driven by resource adequacy procurements and renewable integration needs.



**Over 8.9 GW of battery storage facilities are in operation across the U.S. (NextEra operates 1.2 GW). ~845 MW of these have come online this year alone, nearly 4 GW are under construction<sup>(1)</sup>**

1) Wood Mackenzie US Battery Storage Outlook as of 07-7-2023

# New Mexico's Energy Transition Act & Energy Storage

- **Energy Transition Act of 2019: Renewable Portfolio Standard**
  - Utilities: 40% 2025, 50% 2030, 80% 2040, 100% zero carbon 2045
  - Electric Coops: 40% 2025, 50% 2030, 100% zero carbon 2050
- **HB 233 (2020): Energy Grid Modernization Roadmap Act, Grid Modernization Advisory Group, Whitepaper #11 - Storage**
  - “It is critical to realize that firm, fossil-based, energy resource is being replaced by the renewable resources that are so abundant in NM. Storage provides a non-fossil, firming, resource. Strategically located, storage can be a non-wires alternative and add local resilience.”
  - “Battery based storage, both grid- and customer-scale, appears, at least for now, to be the most feasible storage option for grid modernization in New Mexico.”
  - “We recommend that New Mexico commit to adding 100MW/800 MWH of storage each year to achieve adequate capacity to decarbonize by 2050.”



As utilities and coops achieve higher levels of renewables, there is a greater need for energy storage to “firm” renewables.

# New Mexico's Energy Transition Act & Energy Storage Utilities' Integrated Resource Plans (IRPs)

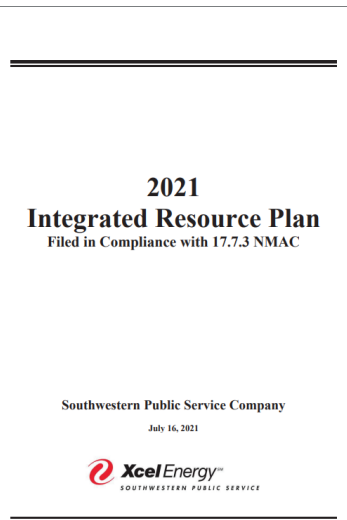
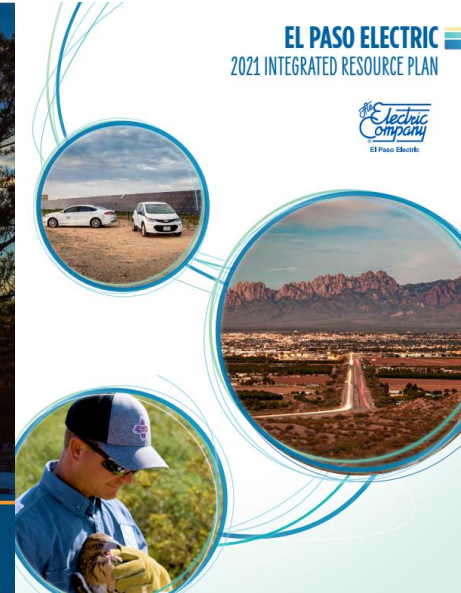
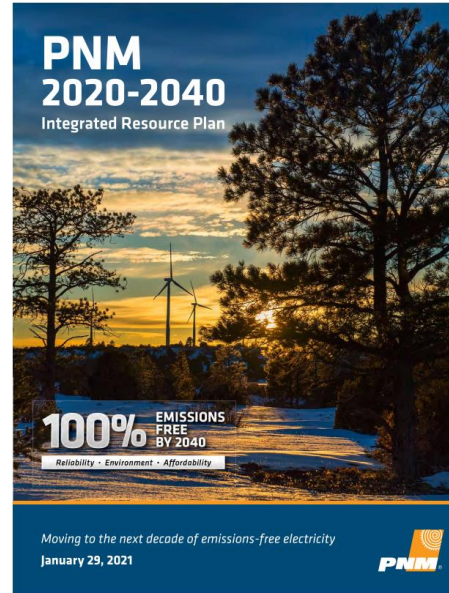
## PNM 2020-2040 IRP

- Need for 523 MW of new storage by 2025 under Technology Neutral Scenario
- Need for 807 MW of new storage by 2025 under No New Combustion Scenario

## El Paso Electric/NM 2021-2040 IRP

- Preferred Plan Need for 94 MW of incremental storage in 2025, +51 MW in 2031, +192 MW in 2035, +101 MW in 2040, and +352 MW in 2045.

## SPS/NM 2022-2041 IRP



As utilities and coops achieve higher levels of renewables, there is a greater need for energy storage to “firm” renewables.

## New Mexico will need to attract a lot more investment in energy storage to achieve ETA-supporting grid modernization.

- **NMRETA and storage: October 23-24 workshop**
- **Potential legislation to extend industrial revenue bond authority (IRB) to standalone energy storage**
  - Currently, some storage co-sited with renewables qualifies for IRB incentives
  - As grid power becomes more renewable (i.e. PNM at 40% renewable/55% carbon-free in 2022), there is an increasing need for T&D storage projects that are not co-sited to store increasingly renewable grid power.
  - Incentives will facilitate deployment of T&D storage projects that are not co-sited.



**IRB standalone storage incentives support the investments needed in battery storage to reach ETA goals and maintain reliability.**

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