



2023 Summer Energy Market and Electric Reliability Assessment/2022 State of the Energy Markets

June 14, 2023



Agenda

- Welcome/Introductions
- Introduction of Staff Presenters
- Summer Markets and Reliability Assessment
- Brief Q&A
- 2022 State of the Markets Report
- Q&A
- Conclude





2023 Summer Energy Market and Electric Reliability Assessment

June 14, 2023



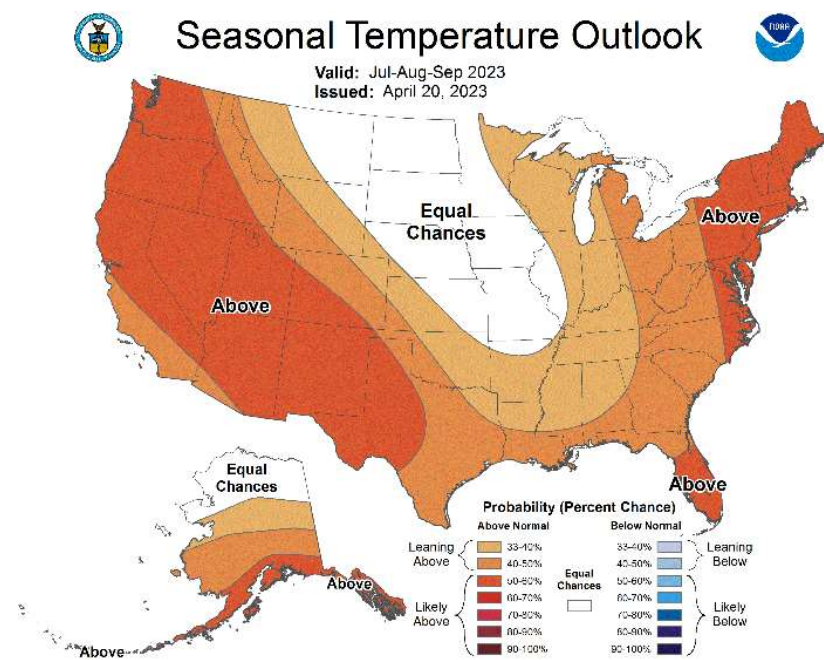
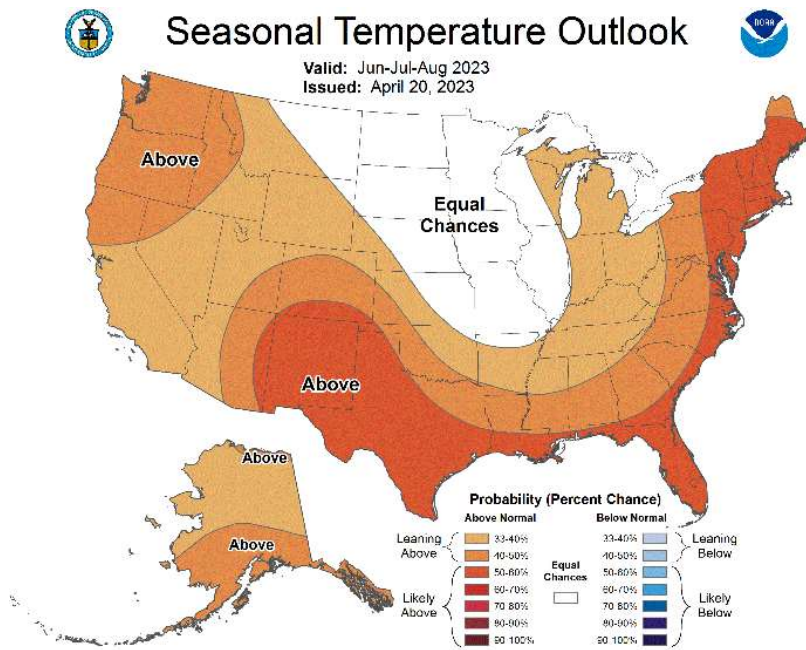
Key Findings

- Warmer-than-average temperatures expected this summer
- NERC forecasts regions will have sufficient generating resources to meet expected summer demand and some regions may require operating mitigations under challenging summer conditions
- Regions facing higher likelihood of tight supply and reliability issues during extreme conditions: ERCOT, MISO, New England, SERC-Central, SPP, and WECC-CAMX, WECC-NW, WECC-SW
- Resource additions outpaced retirements, with rapid growth in storage capacity
- Natural gas prices are expected to be lower this summer than one last with high levels of natural gas production and storage
- Electric industry faces supply chain, economic, and security concerns



Summer Temperatures Likely Warmer Than Normal

Summer 2023 Temperature Forecast



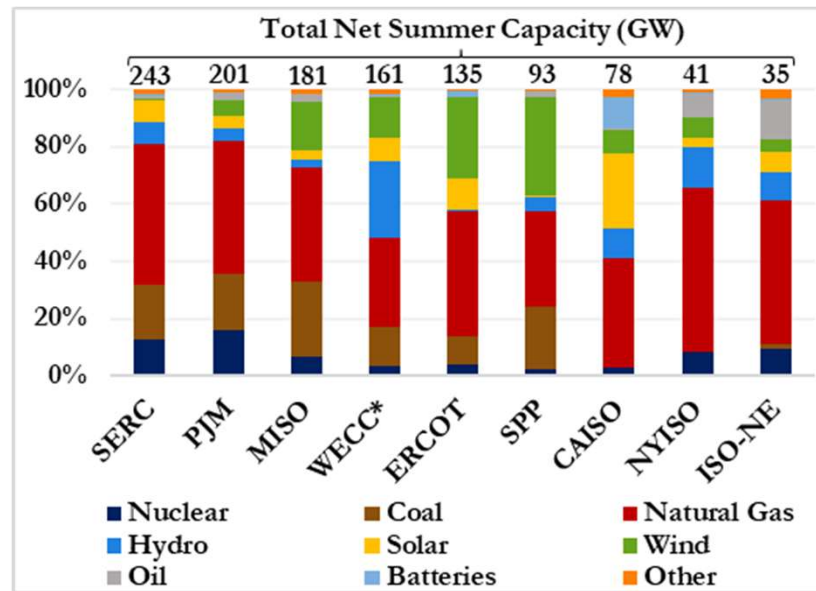
Source: NOAA.



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Summer Resource Mix

Total Net Summer Capacity and Percentage Share by Resource Type in September 2023

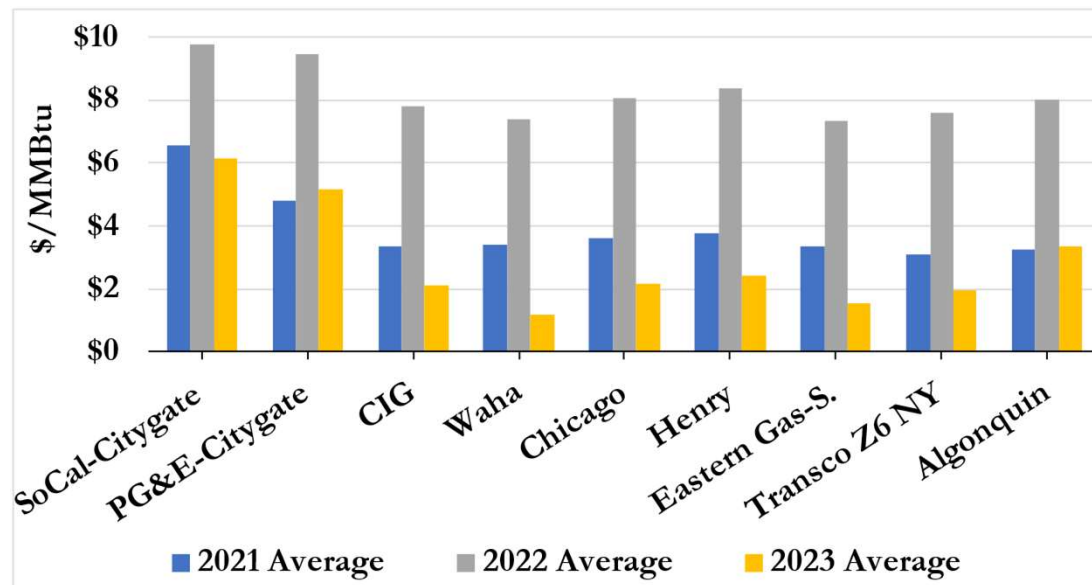


Source: U.S. EIA



Natural Gas Futures Prices Decrease

Natural Gas Futures Prices At Major Hubs (June - September)

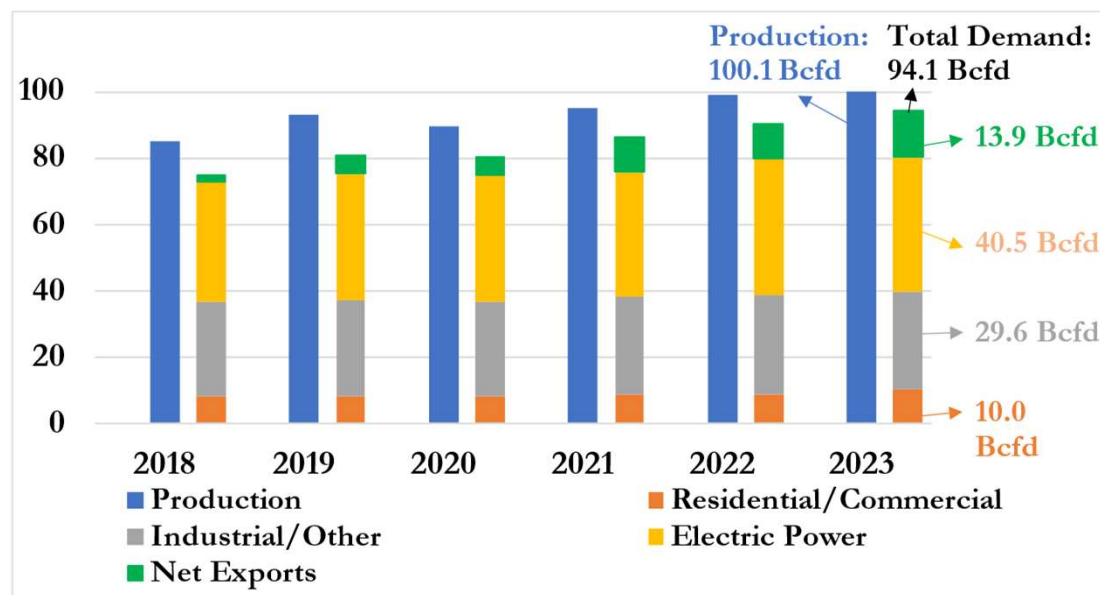


Source: S&P Global Commodity Insights



Natural Gas Demand To Grow Slightly

U.S. Natural Gas Demand and Production

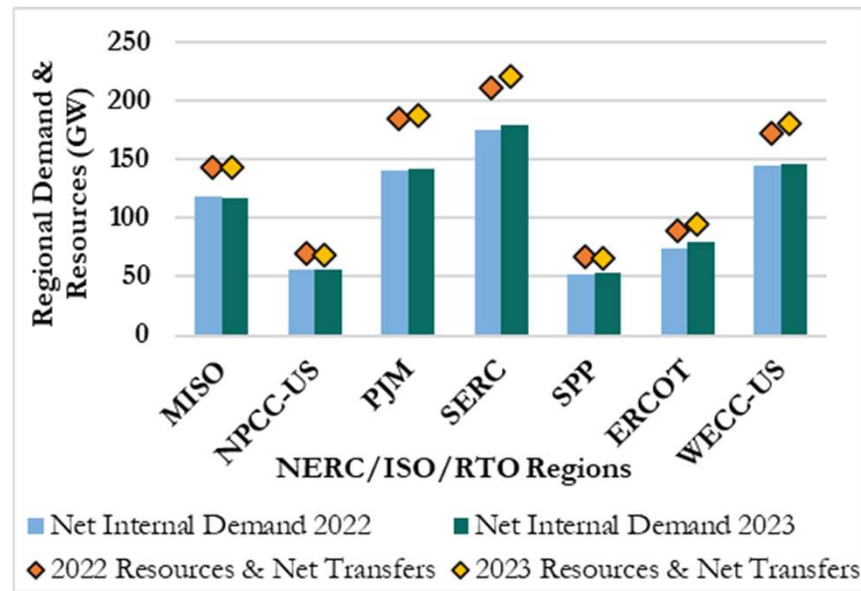


Source: U.S. EIA



Reserve Margins and Net Transfers

2022 and 2023 Demand Resources

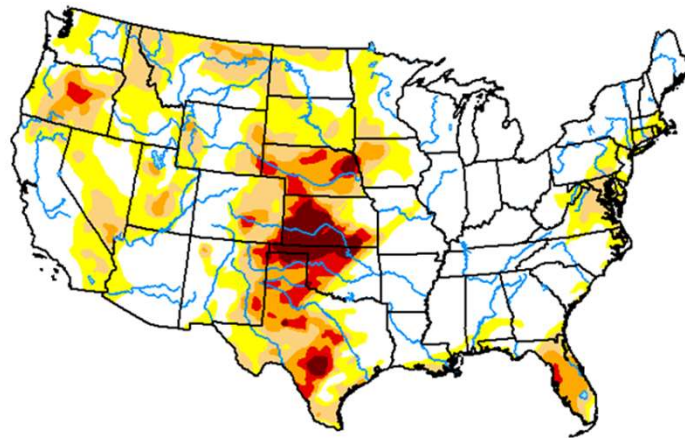


Source: U.S. EIA



Changes in Drought Conditions in the West

Summer Drought Forecast



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

Source: U.S. EIA



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Electric Risks

New and Continuing Reliability Concerns

- Supply Chain Disruptions
- Factors Affecting Solar Development
- EPA Actions and Regulations
- Increase in Physical Attacks on the Grid
- Diablo Canyon Power Plant License Extension

Source Department of Energy OE-417s



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Summer Reliability Risk Area Summary

Resource Adequacy Risks

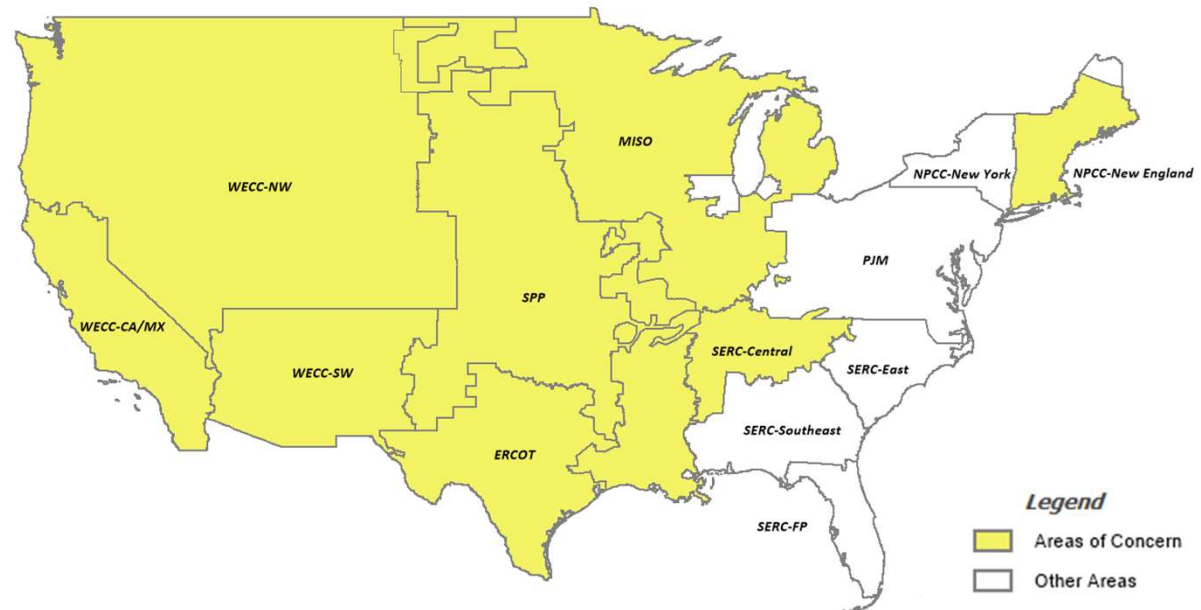
U.S. West: Extreme demand during wide-area heat events strains resources and transmission network.

SPP and MISO: Dispatchable generation insufficient for meeting high demand during low wind.

SERC-Central: Higher demand forecast, and less supply capacity are reducing reserves.

New England: Less supply capacity is reducing reserves and increasing reliance on operating mitigations.

Texas (ERCOT): Demand growth increases strain on dispatchable generation when variable energy resource output is low.



Source: North American Electric Reliability Corporation



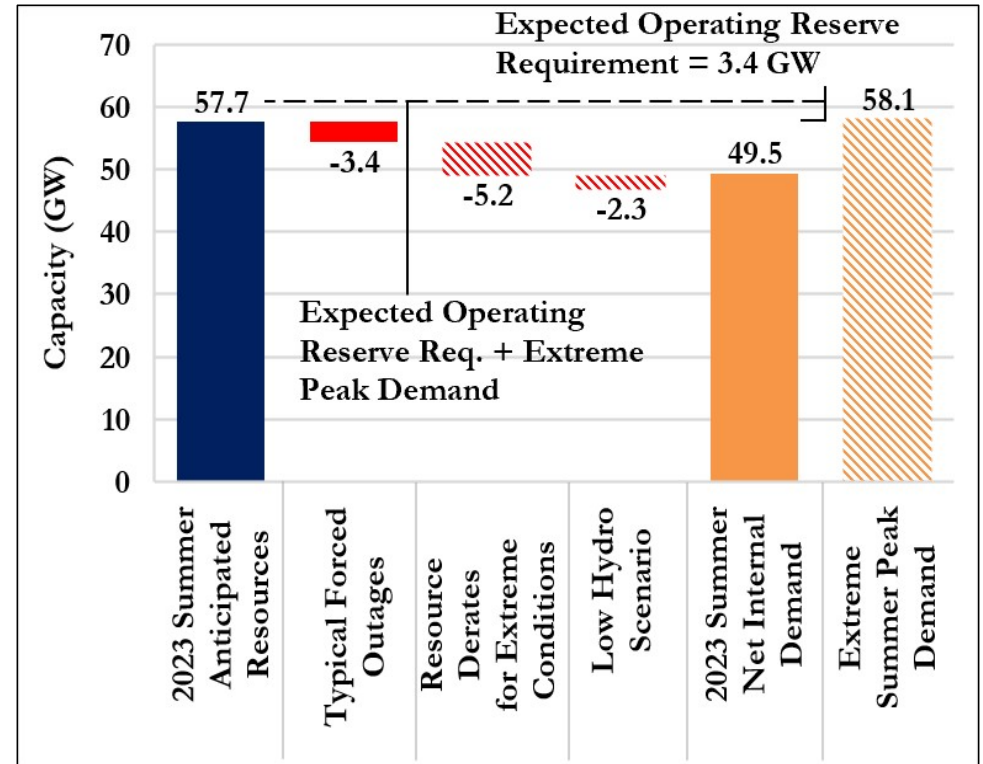
WECC-CAMX Risk Period Scenario

Probabilistic Risk Analysis to Assess Resource Availability

2023 Summer Anticipated Resources: 57.7
GW of anticipated resources.

Demand Scenarios: Normal peak net internal demand (50/50) scenario; and the Extreme summer peak demand (90/10) scenario determined by the regional or sub-regional assessment area.

Factors that affect resource availability: Typical Forced Outages; Resource derate for Extreme conditions; and Low Hydro conditions.



Source: North American Electric Reliability Corporation





Q&A





2022 State of the Markets

June 16, 2023



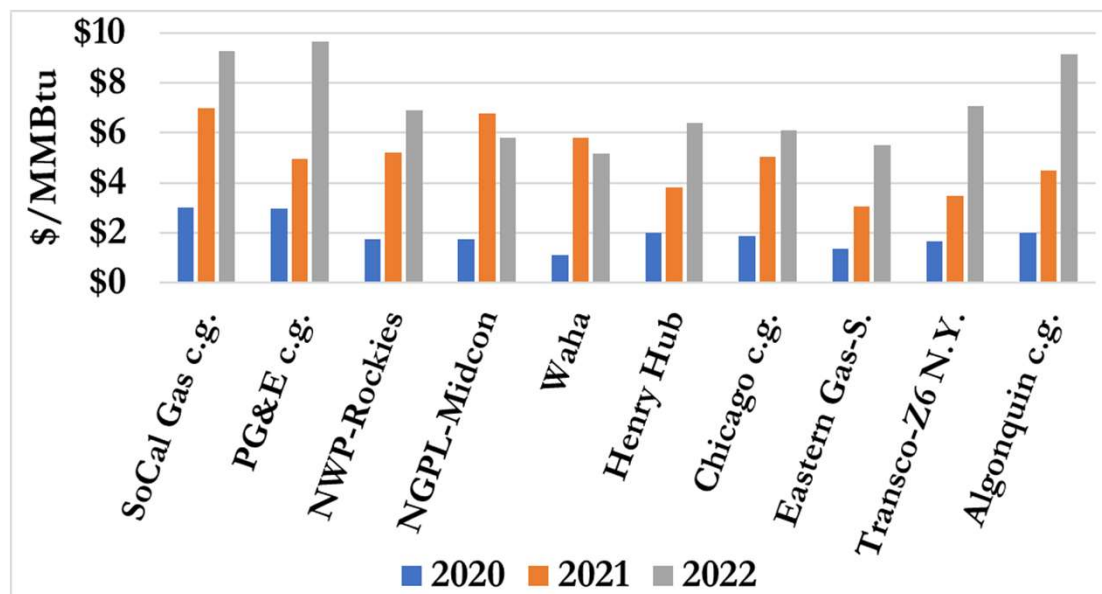
Key Findings

- Most generation capacity additions came from wind and solar resources.
- Most retirements came from coal resources.
- Natural gas still holds the largest share of generation at 38.9% in 2022.
- New generating resources encountered interconnection delays.
- Higher wholesale electricity prices and higher natural gas prices in 2022.
- Largest mean wholesale price increases in NYISO Zone J and PJM – over 80%.
- U.S. LNG exports grew in 2022, though at a slower pace than in 2021.
- Western heat wave impacted the Western Interconnection and CAISO.
- December winter storm triggered power outages mainly in the Southeast.



Natural Gas Prices Increased at Nearly All Major Hubs

Average Natural Gas Spot Prices

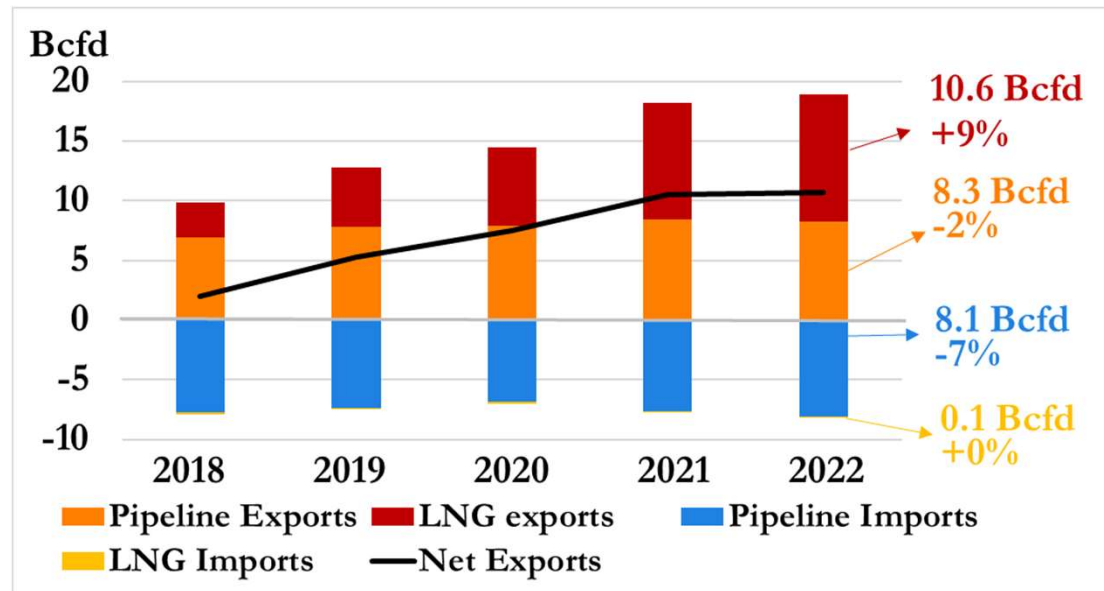


Source: S&P Global Commodity Insights



Natural Gas Net Exports Increase Due to LNG Exports

U.S. Natural Gas Imports and Exports

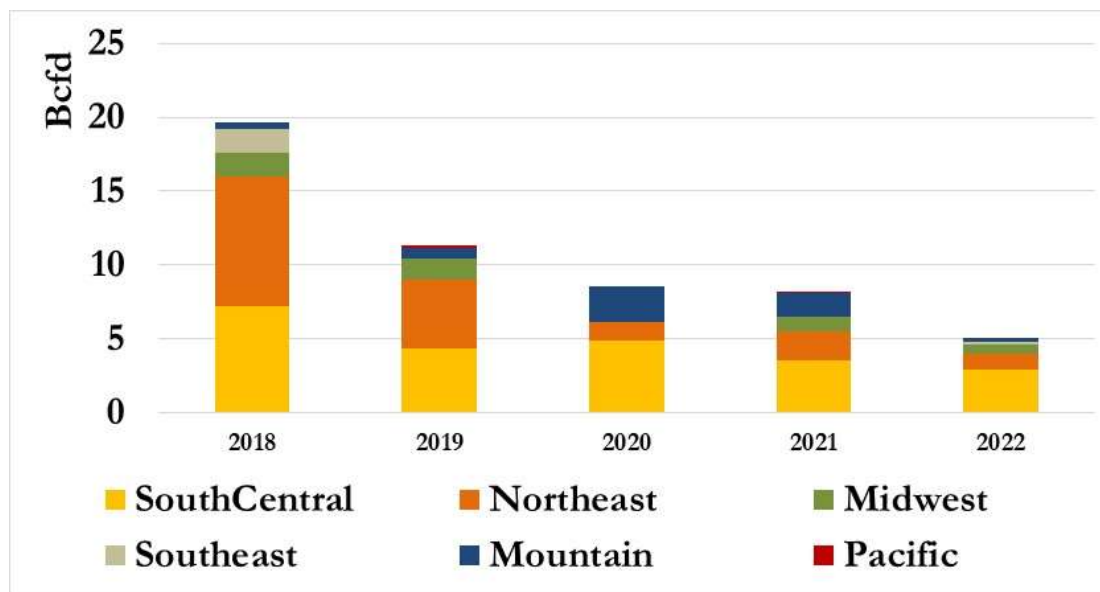


Source: U.S. EIA



South Central Has Added the Most Pipeline Capacity

U.S. Interstate Natural Gas Pipeline In-Service Capacity Additions by Region

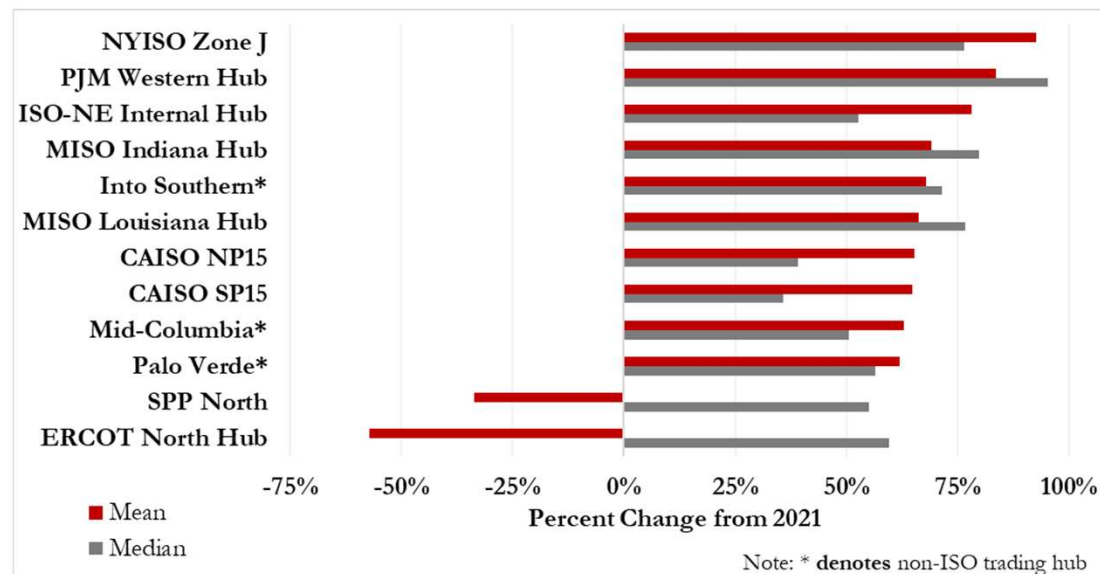


Source: U.S. EIA



Wholesale Electricity Prices Increase Across Hubs

Change in Average Day-Ahead On-Peak Price from 2021 for Select Pricing Hubs

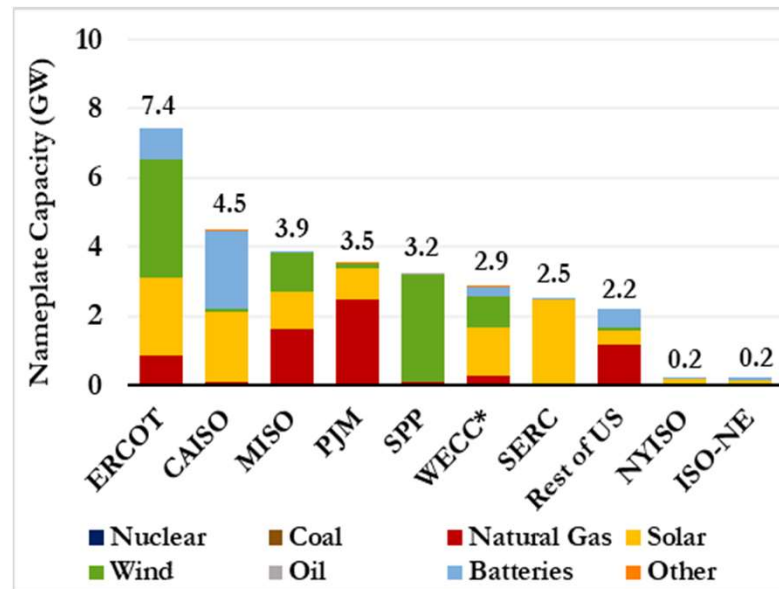


Source: S&P Global Intelligence



Increased Solar, Wind, Gas-fired, and Battery Installed Capacity

2022 Capacity Additions

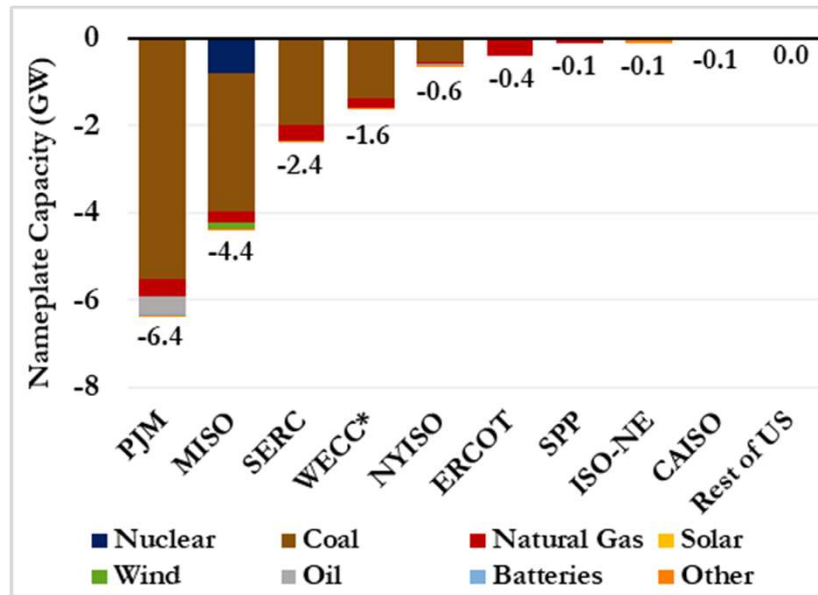


Note: the data do not include Alaska and Hawaii Source: EIA 860M



Largest Share of Capacity Retirements Came from Coal

2022 Capacity Retirements

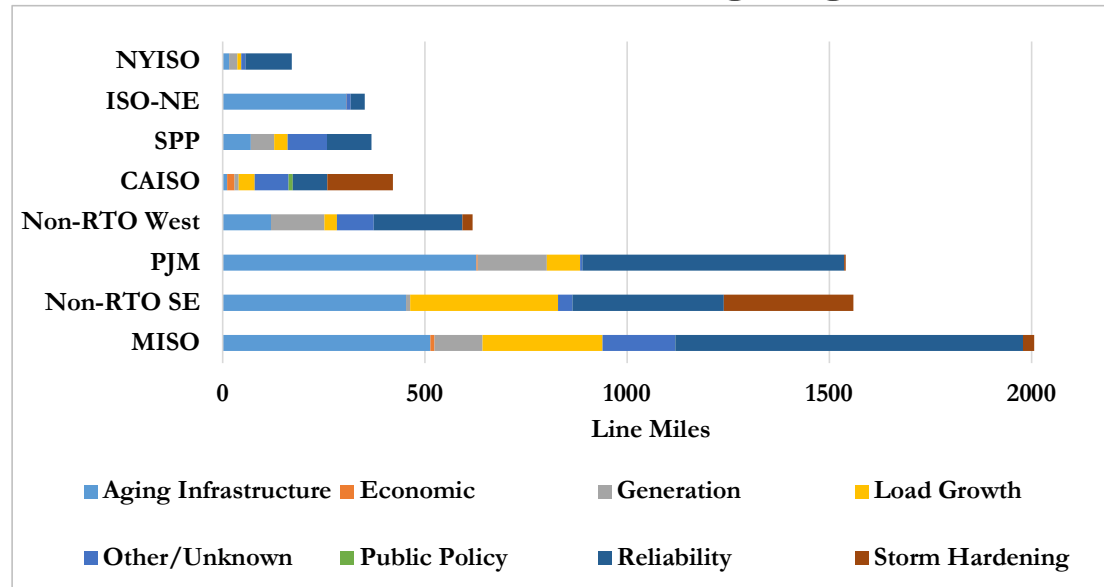


Source: Form EIA-860M, January 2023 Release.



Continued Transmission Investment

2022 Line-Related Transmission Projects within Order No. 1000 Planning Regions

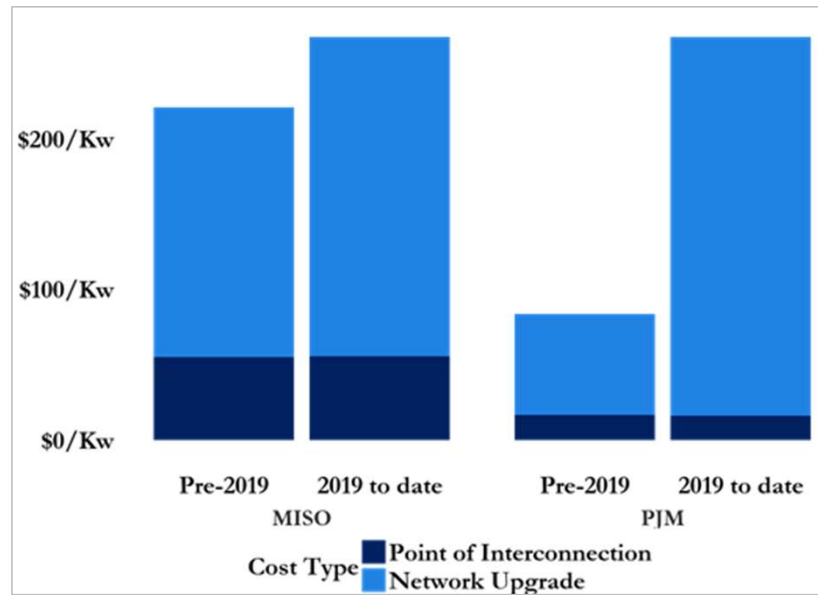


Source: North American Electric Transmission Project Database, The C Three Group, L.L.C.



Interconnection Becoming More Costly

Average Costs to Interconnect, PJM and MISO
Sample



Source: Lawrence Berkeley National Laboratory



Other Topics Discussed in the Report

- Electricity Market Fundamentals
 - Capacity Markets
 - Electricity Demand
 - Electricity Market Expansion and New Arrangements
- Other Market Developments
 - Credit Trends and Events in the Markets
 - Other Fuels Markets
 - Natural Gas Trading





Q&A
