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2021-2022 Winter Energy Market and Reliability Assessment

October 21, 2021



Key Findings

- Recent FERC and NERC reports and guidelines provide recommendations on winterization and seasonal preparations for relevant entities. Implementation of the recommendations may affect electric reliability during extreme weather.
- NOAA forecasts above average temperatures for the winter for most of the U.S.
- Together, solar and wind electric capacity additions may outpace natural gas-fired generation capacity additions this winter.
- All NERC Planning Regions expect available generation to exceed planning reserve margins this winter. Transfer capacity between regions will likely be critical for electric reliability.



Key Findings (continued)

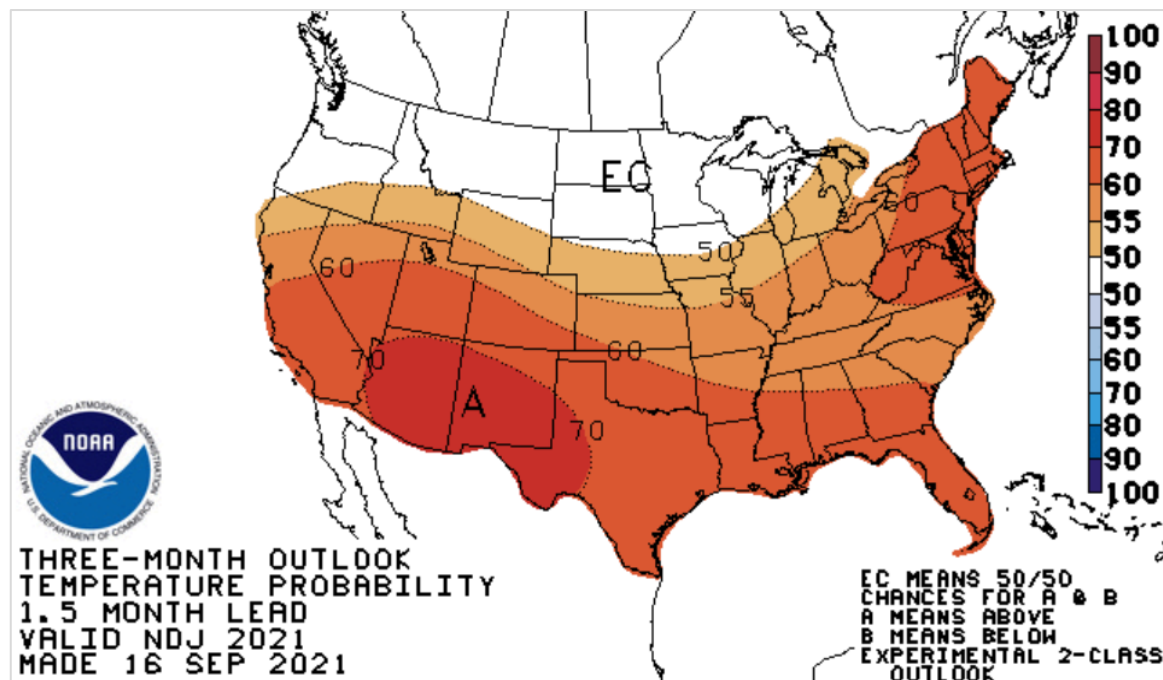
- Higher natural gas prices across the U.S. are expected to decrease power burn but increases in other domestic demand and net exports will likely increase natural gas demand.
- Natural gas and propane storage inventories going into this winter are below the five-year average.
- Increased dependency on natural gas for electric generation and high global LNG demand may increase vulnerability of the Northeast regions to high natural gas prices.



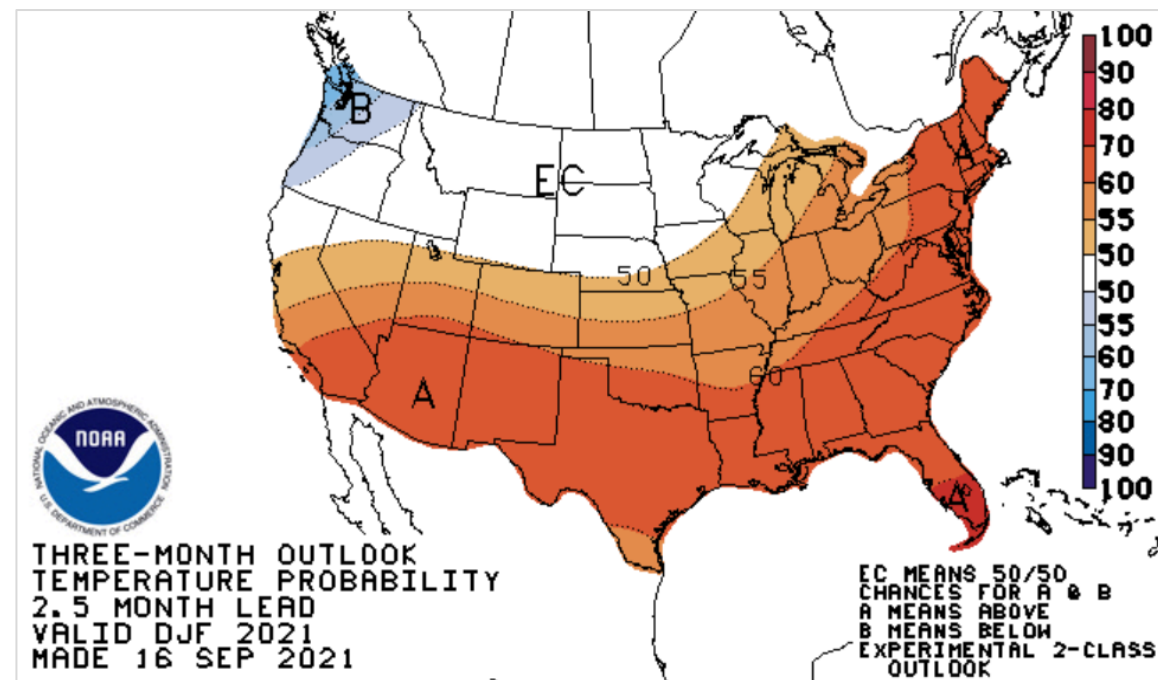
Winter Temperatures Likely Milder Than Normal

Winter 2021/2022 Temperature Forecast

November-December-January



December-January-February



Source: National Oceanic and Atmospheric Administration



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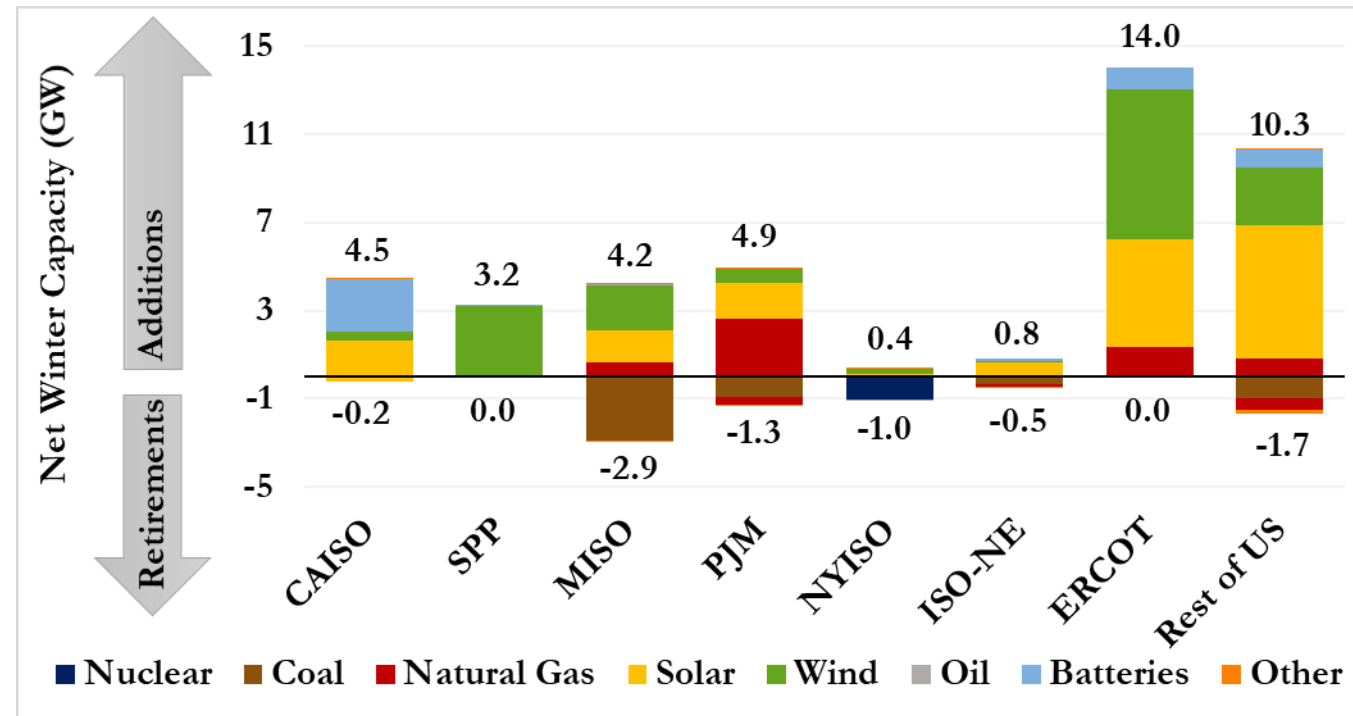
Winter Readiness Recommendations from the 2021 Joint Inquiry

- Generator Owners are to identify and protect cold-weather-critical components and systems for each generating unit.
- Generator Owners are to design new or retrofit existing generating units to operate to specified ambient temperatures and weather conditions.
- Generator Owners that experience freeze-related outages are to establish corrective action plans.
- Generator Owners and Generator Operators are to conduct annual unit-specific cold weather preparedness plan training.



A 34.8 GW Electric Capacity Net Change Expected Since Last Winter

Planned and Actual Capacity Additions and Retirements



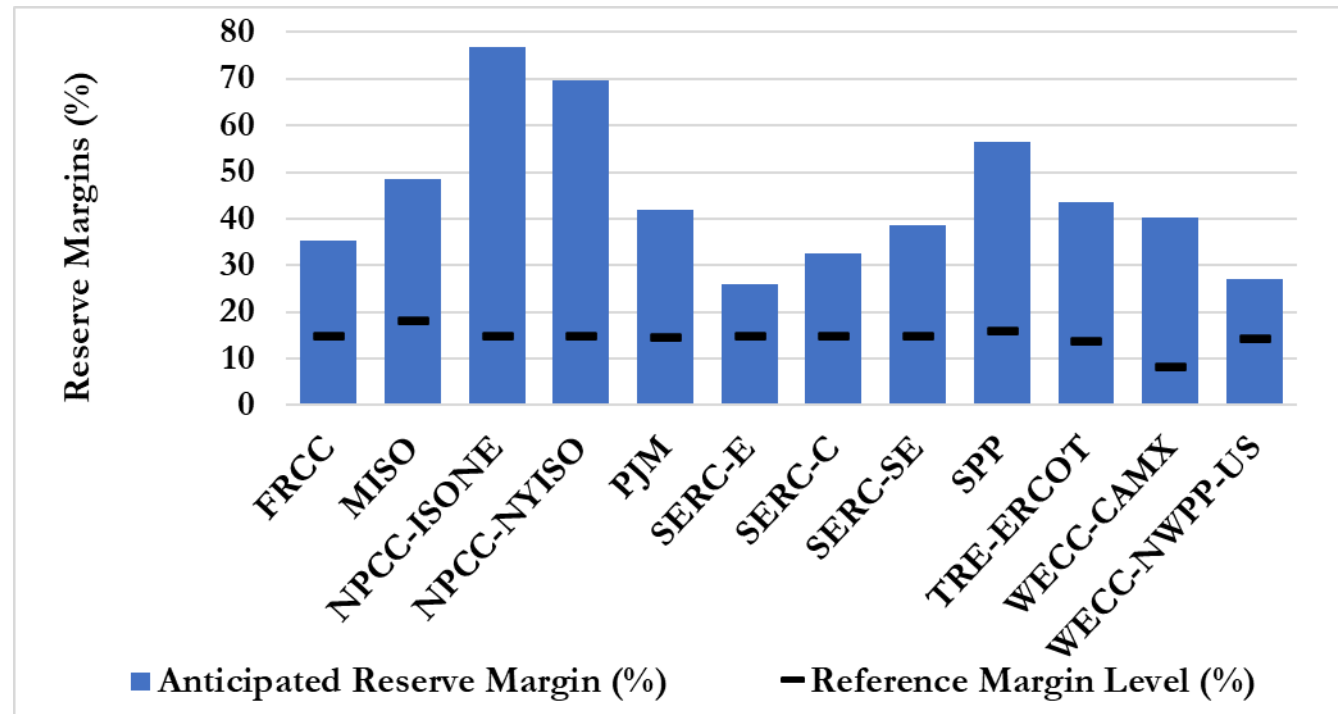
Source: EIA-860M



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Projected Adequate Reserve Margins for All Regions

NERC 2021 Anticipated Reserve Margins

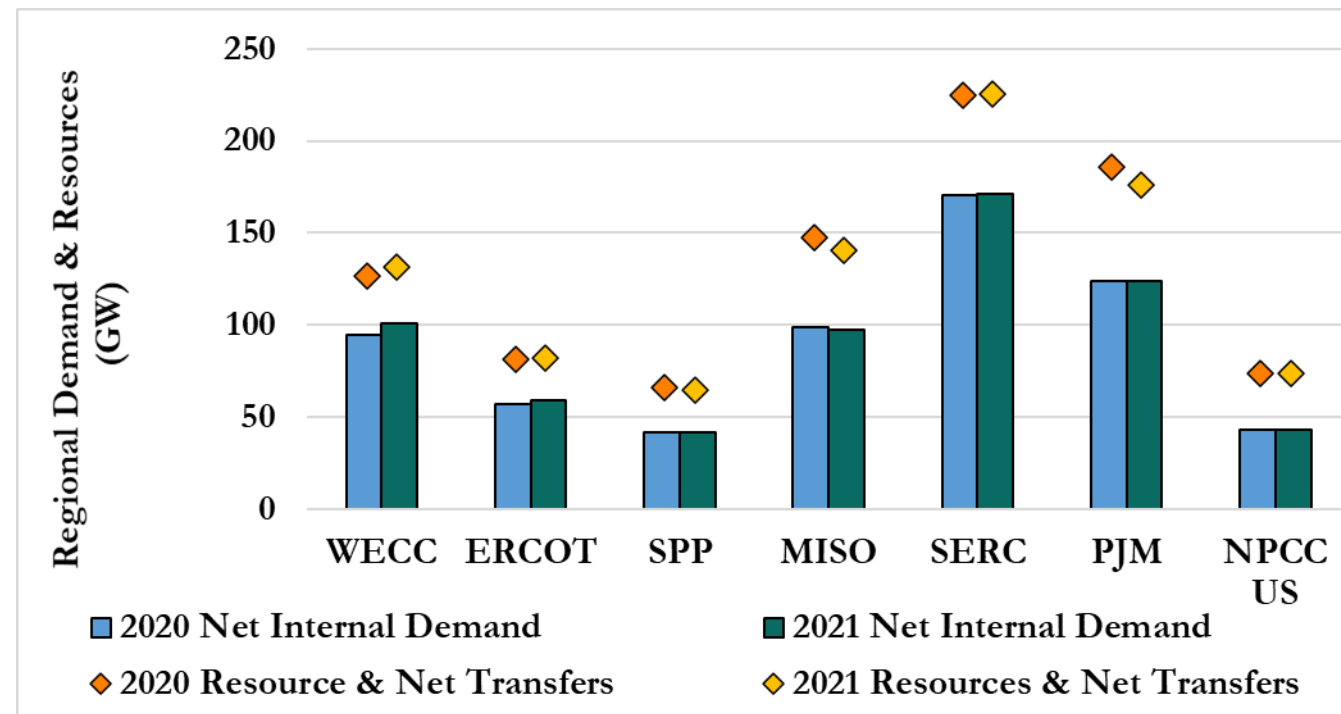


Source: NERC



All Regions Show Available Net Transfers and Regional Resources Exceeding Internal Demand

Winter Regional Demand and Available Resources



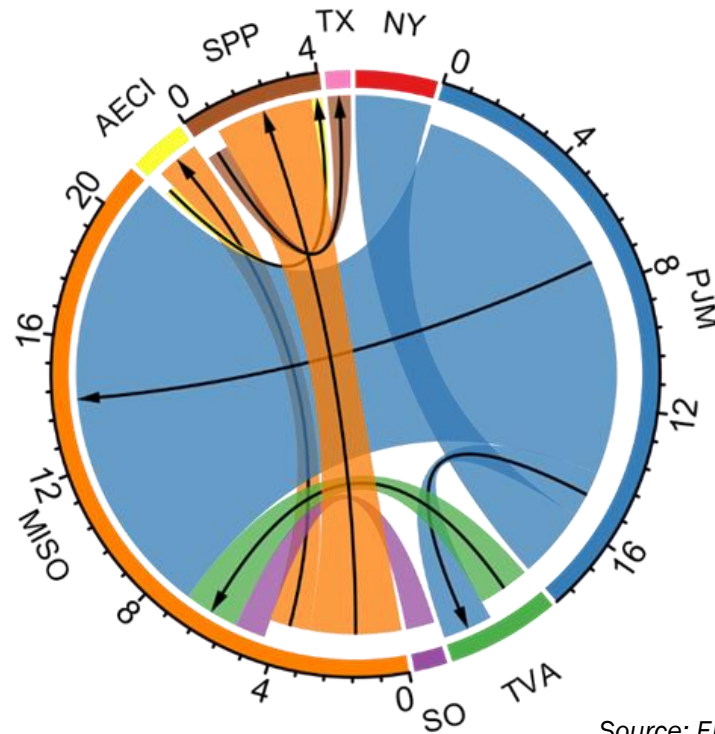
Source: NERC



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Interregional Transfer Capacity May Have a Significant Effect on Power Markets This Winter

Balancing Authority Electricity Transfer from February 14 to 18, 2021, Average Gigawatt



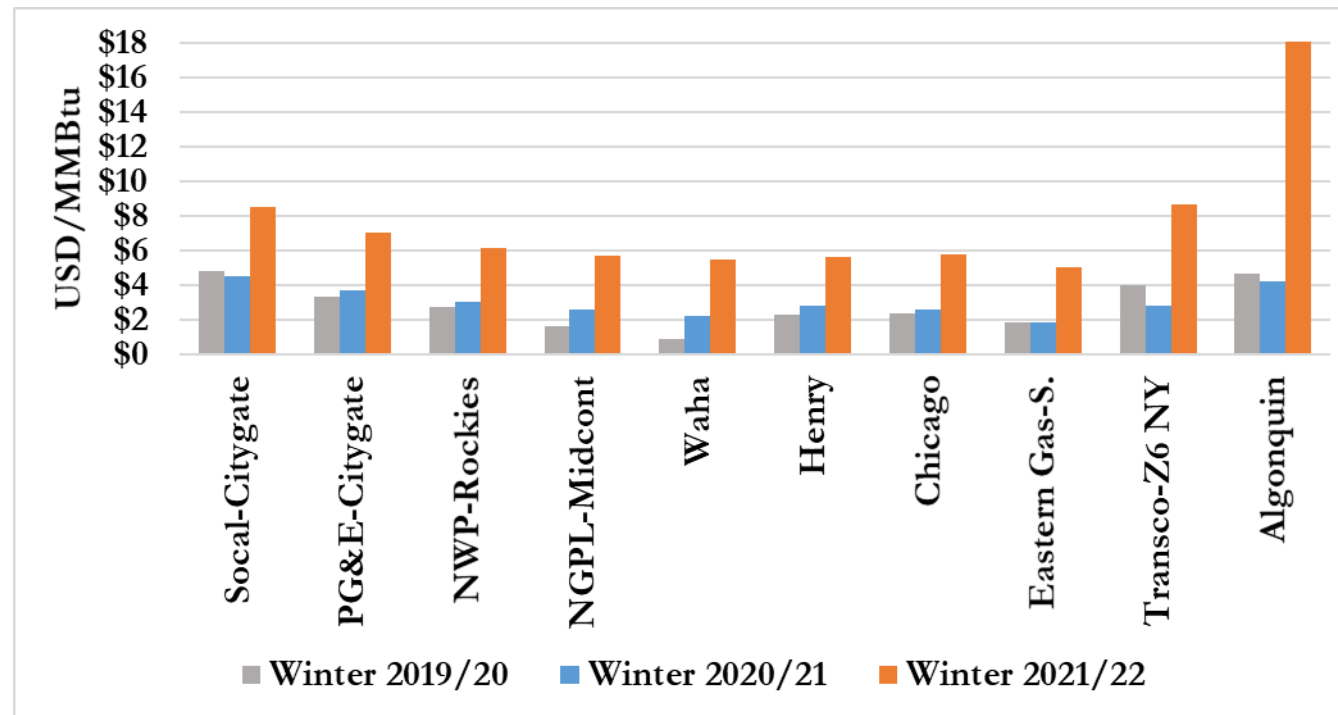
Source: EIA-930 and staff analysis



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Winter Futures Prices Increased at Nearly Every Major U.S. Trading Hub

Average U.S. Natural Gas Futures Prices Across Major Hubs for November - February



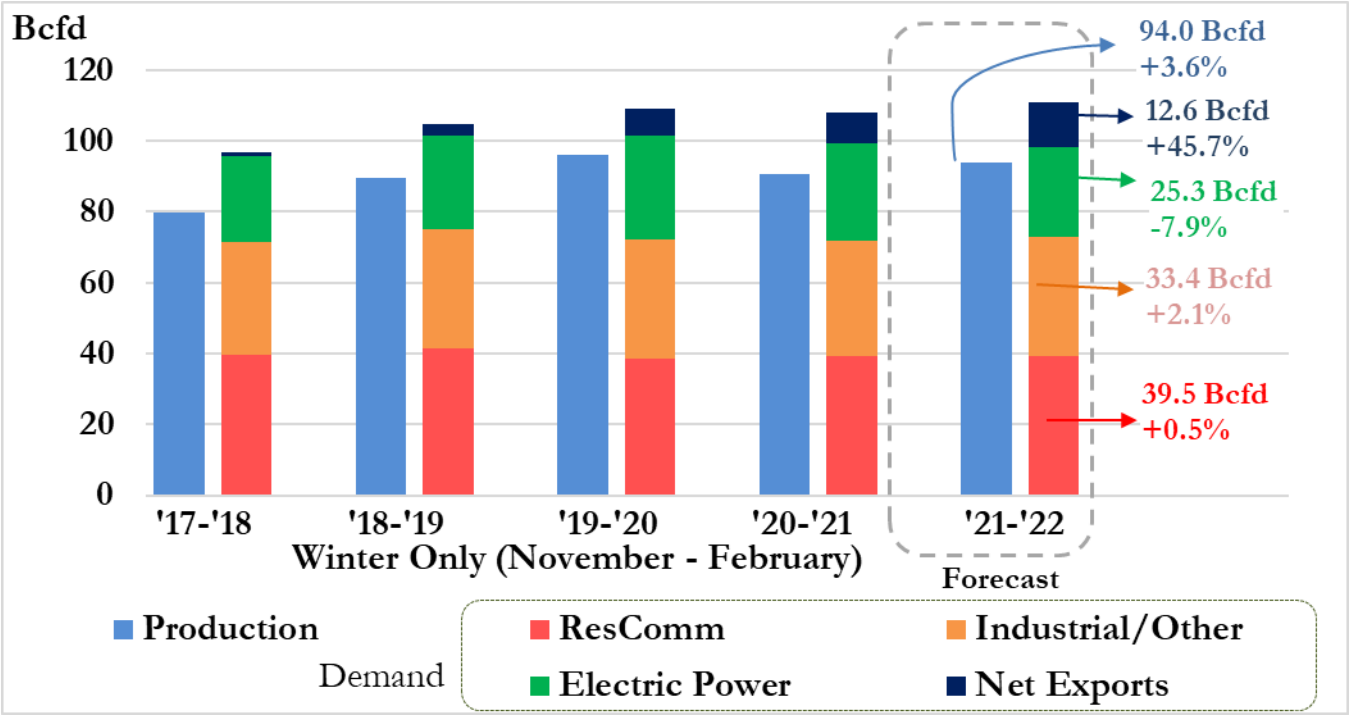
Source: InterContinental Exchange Inc



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Expected Increase in Winter Natural Gas Demand and Production

Winter Natural Gas Production and Demand

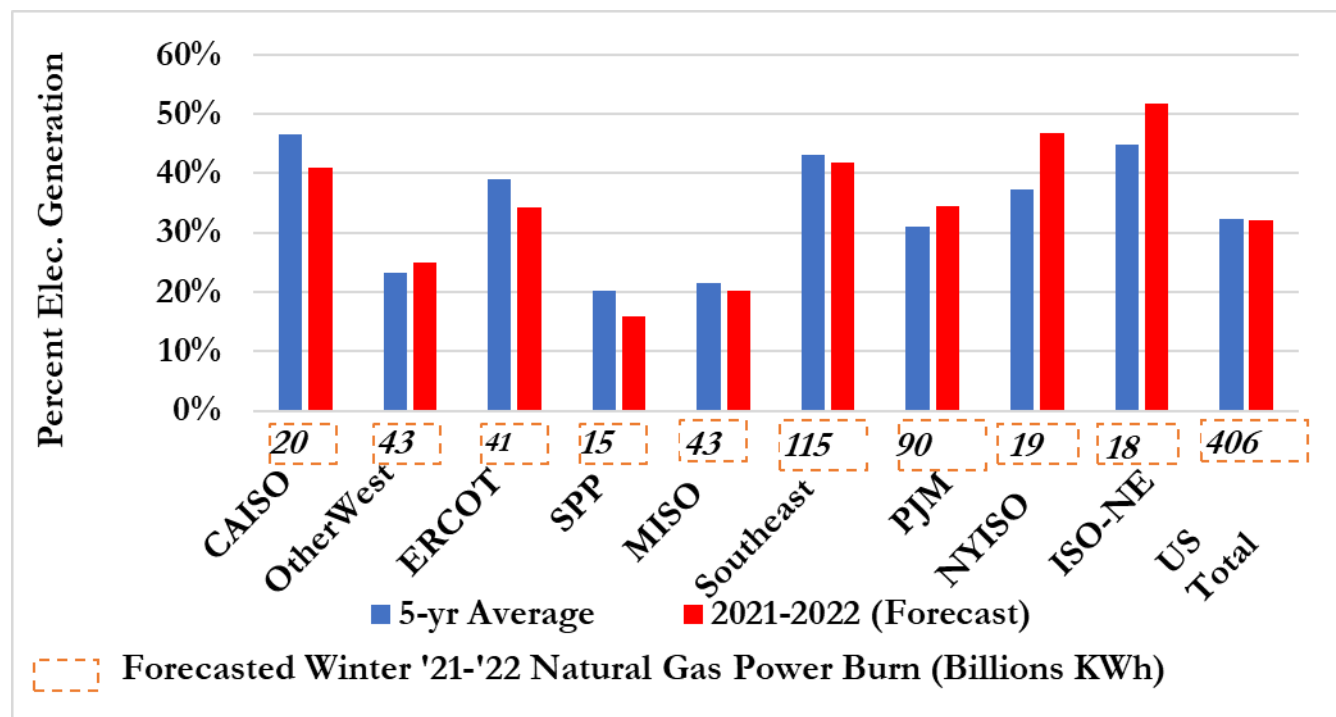


Source: EIA



Expected Decrease in Natural Gas Winter Power Burn

Share of Generation from Natural Gas by Region

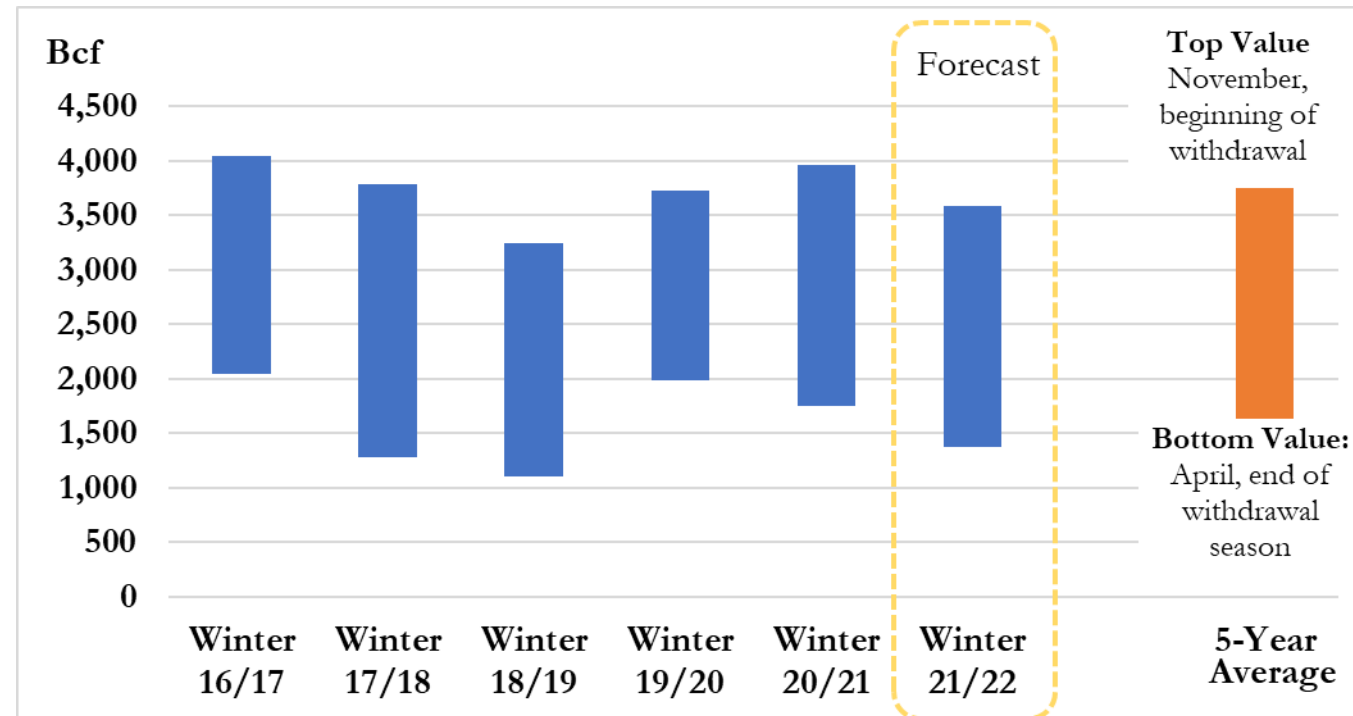


Source: EIA



Lower Expected Natural Gas Inventories at the Start of Withdrawal Season

U.S. Seasonal Change in Lower 48 Natural Gas Inventories



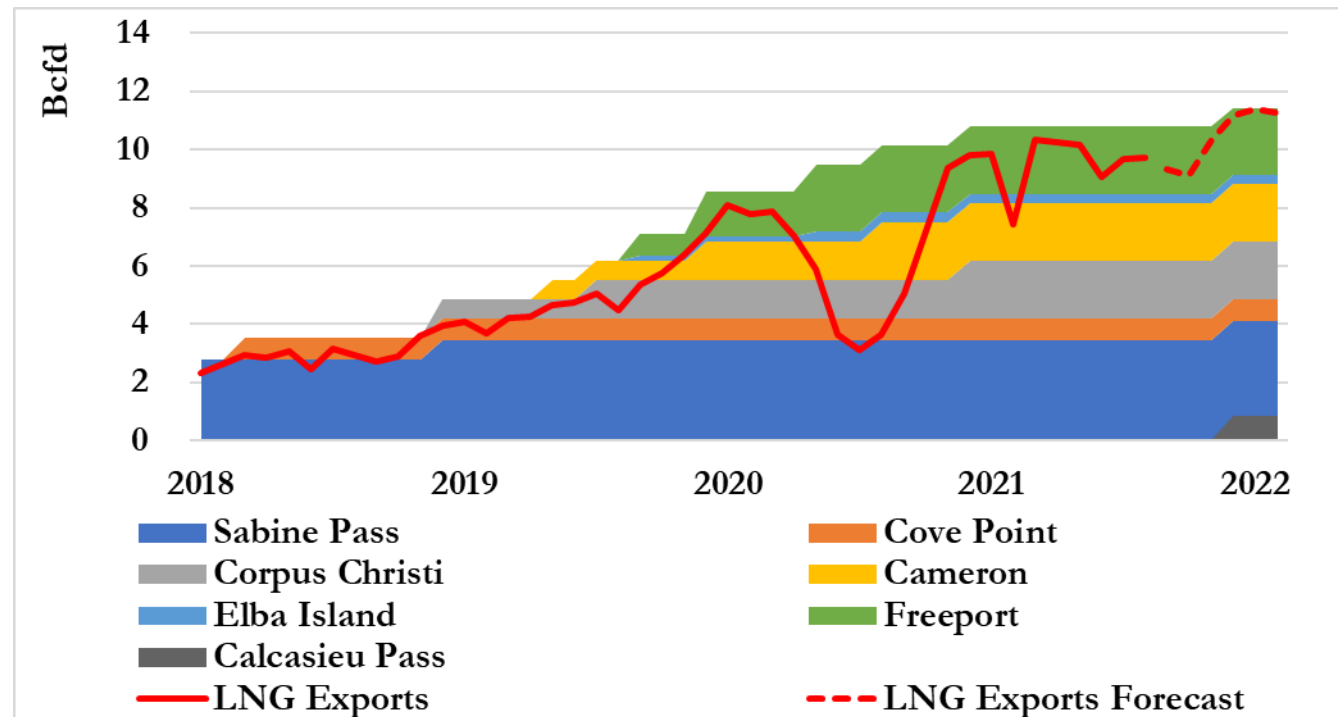
Source: EIA



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Expected Increase in LNG Exports Due to High Global Demand

U.S. LNG Capacity and Feedgas Demand



Source: EIA



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