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*By Docket Room at 11/06/2023 4:31 p.m.*

# 2021-2022 Winter Energy Market and Reliability Assessment

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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)

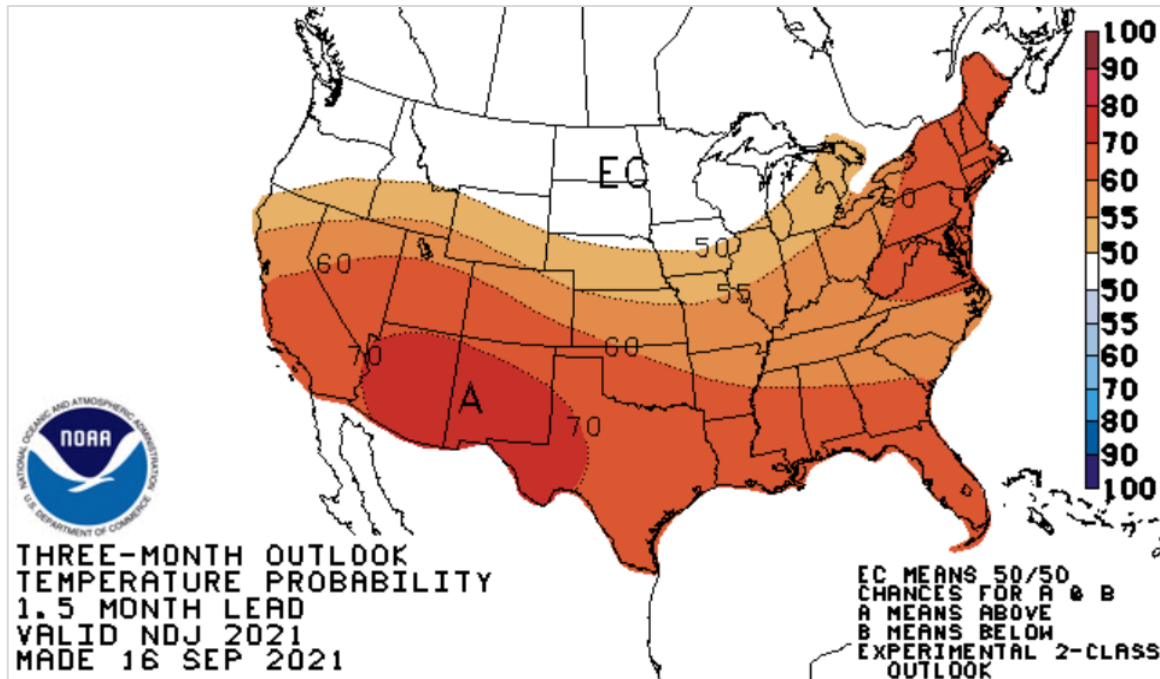
- Higher natural gas prices across the U.S. are expected to decrease power burn but increases in other domestic demand and net exports will likely increase natural gas demand.
- Natural gas and propane storage inventories going into this winter are below the five-year average.
- Increased dependency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



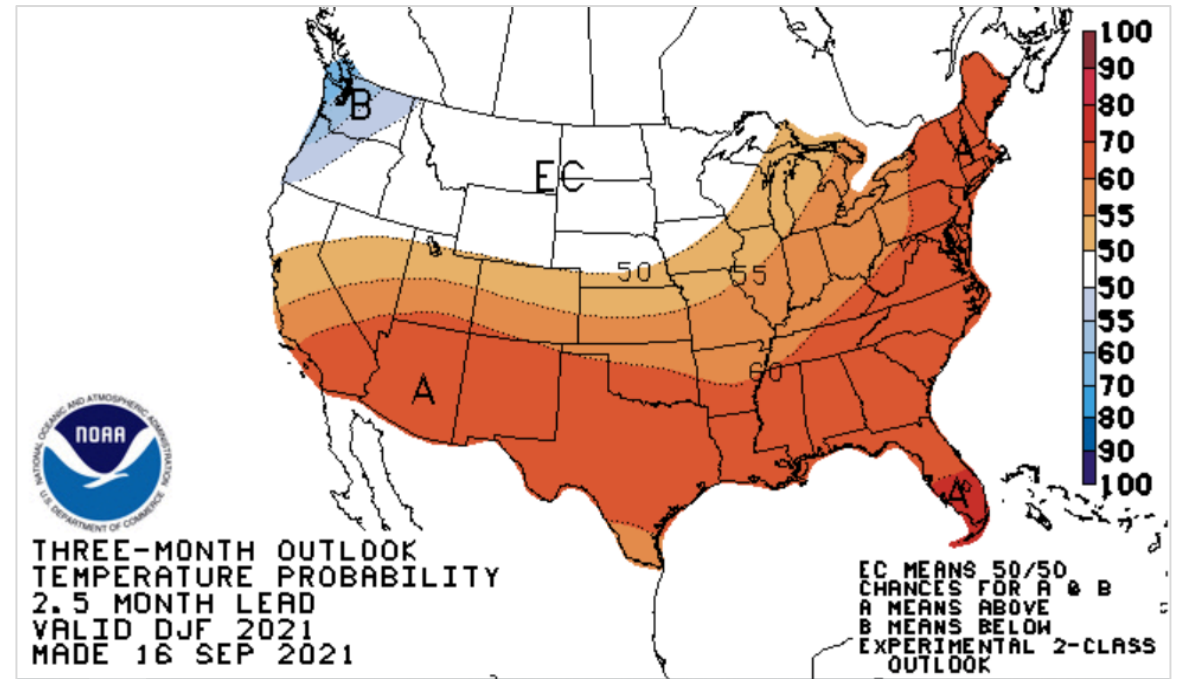
# Winter Temperatures Likely Milder Than Normal

## Winter 2021/2022 Temperature Forecast

November-December-January



December-January-February



Source: National Oceanic and Atmospheric Administration



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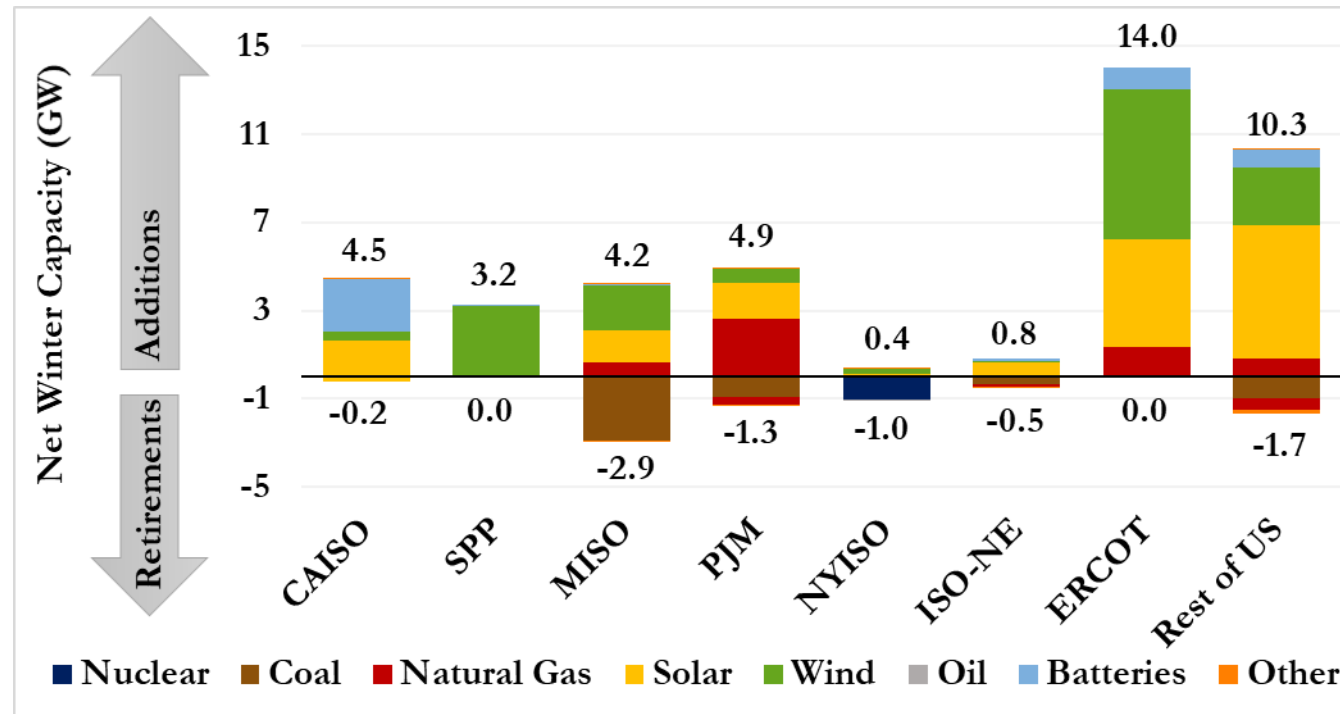
# Winter Readiness Recommendations from the 2021 Joint Inquiry

- 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

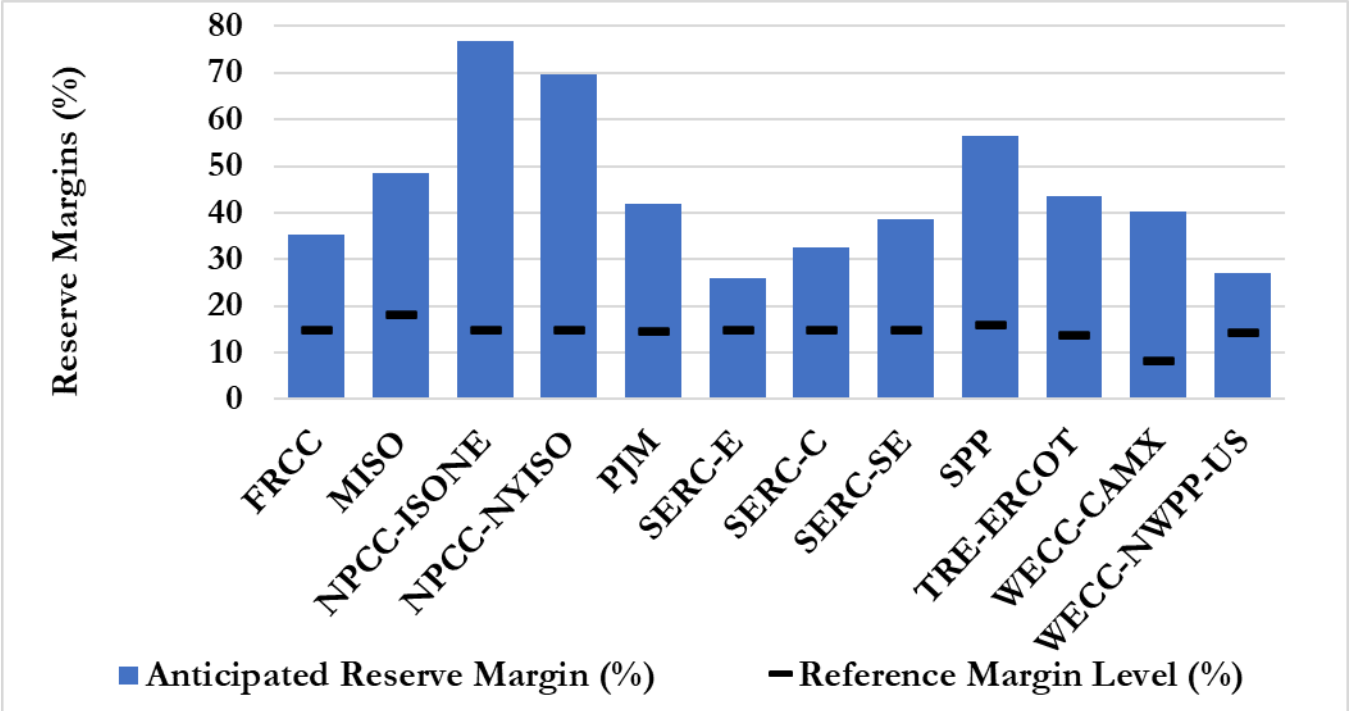


Source: EIA-860M



# Projected Adequate Reserve Margins for All Regions

## NERC 2021 Anticipated Reserve Margins

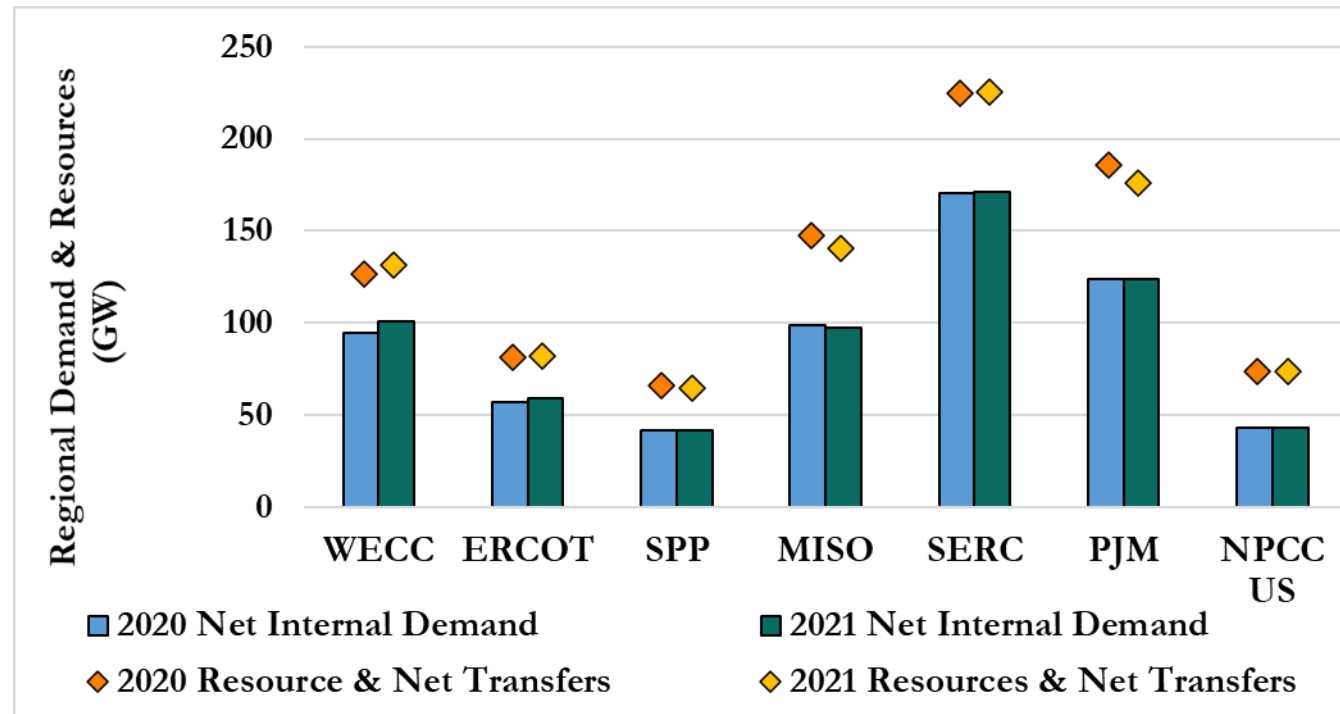


Source: NERC



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

## Winter Regional Demand and Available Resources



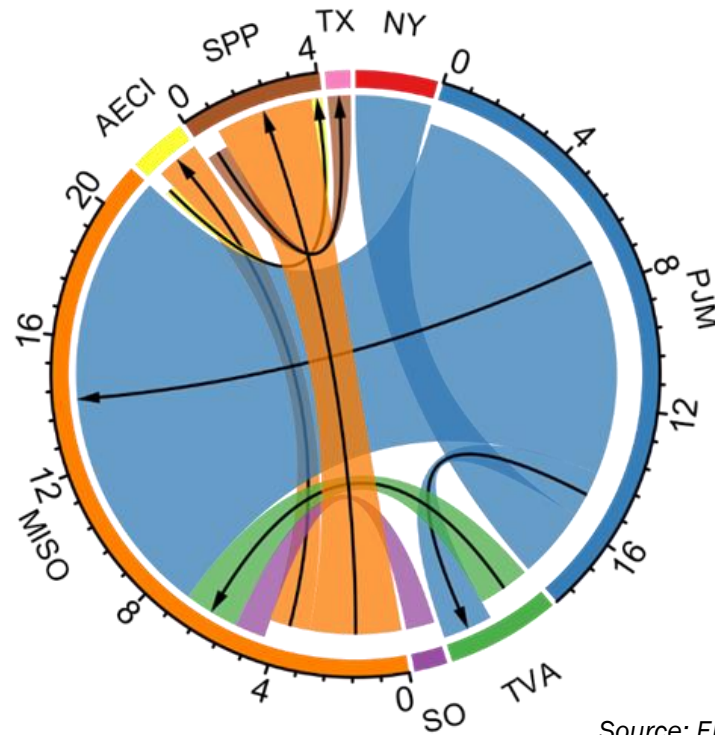
Source: NERC





# 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



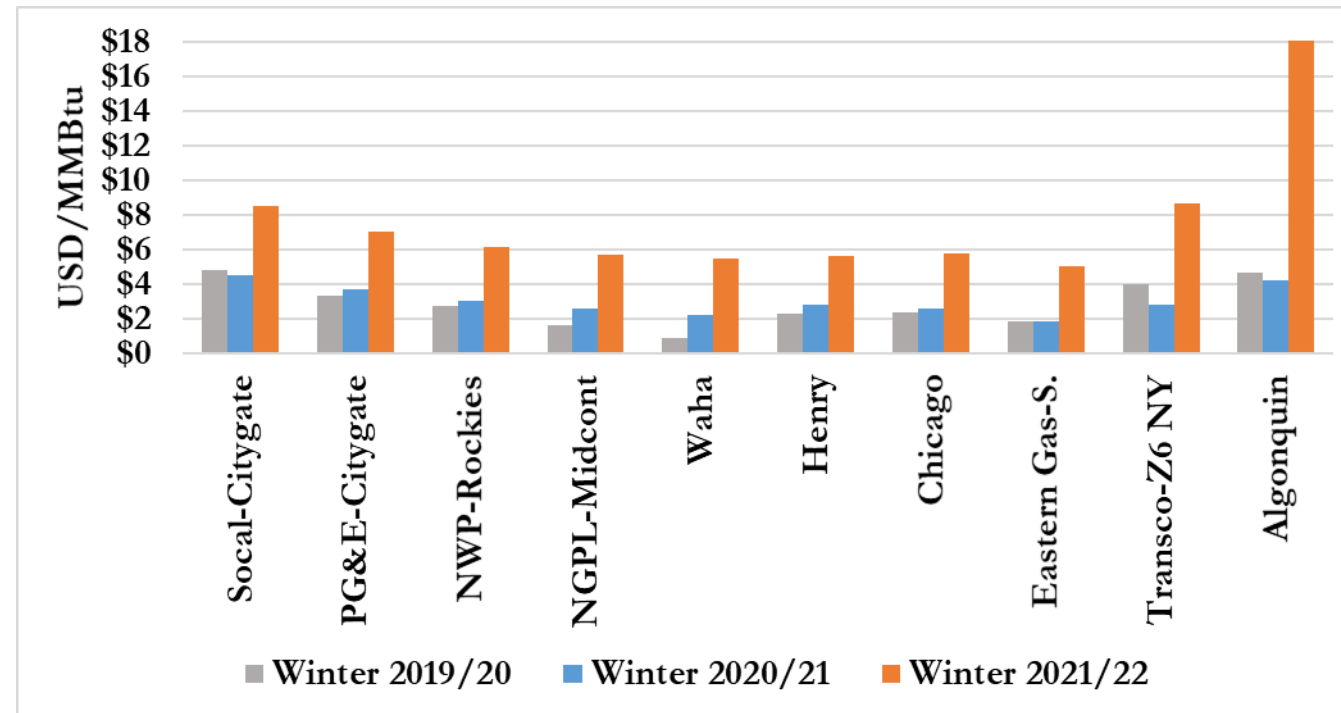
Source: EIA-930 and staff analysis



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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

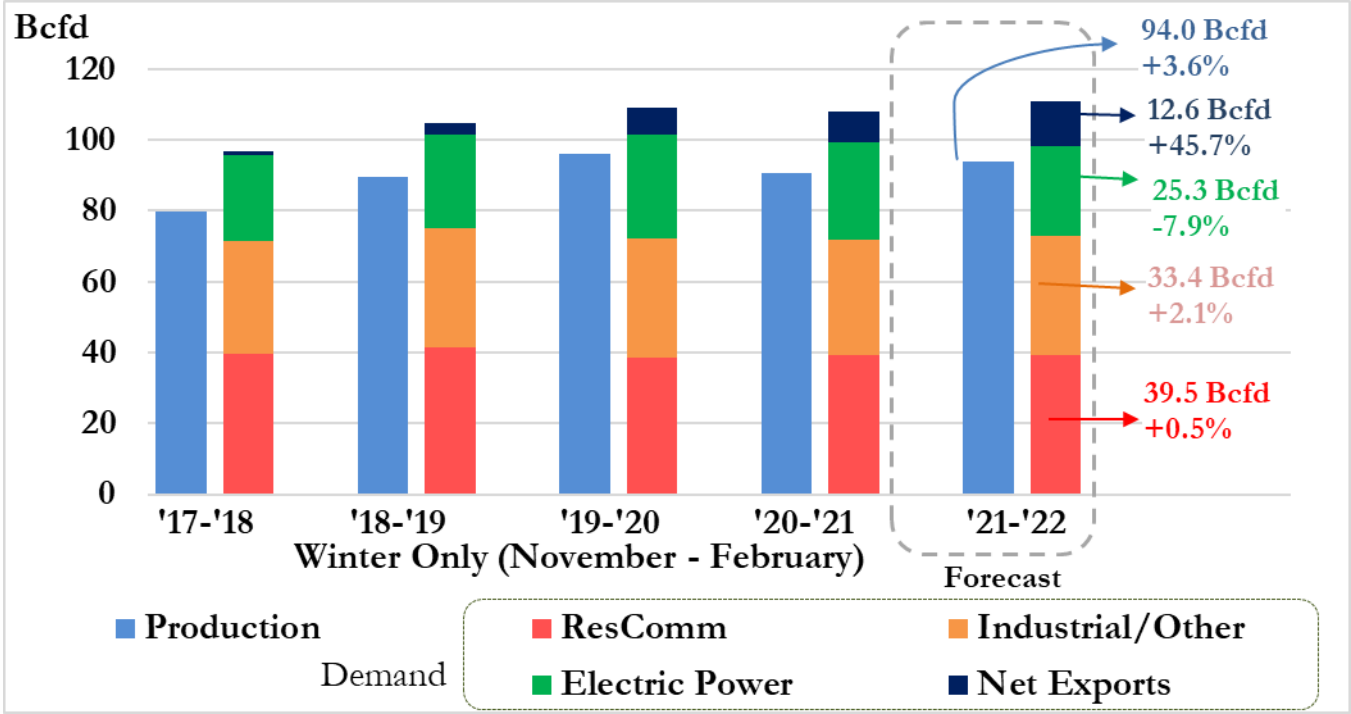


Source: InterContinental Exchange Inc



# Expected Increase in Winter Natural Gas Demand and Production

## Winter Natural Gas Production and Demand

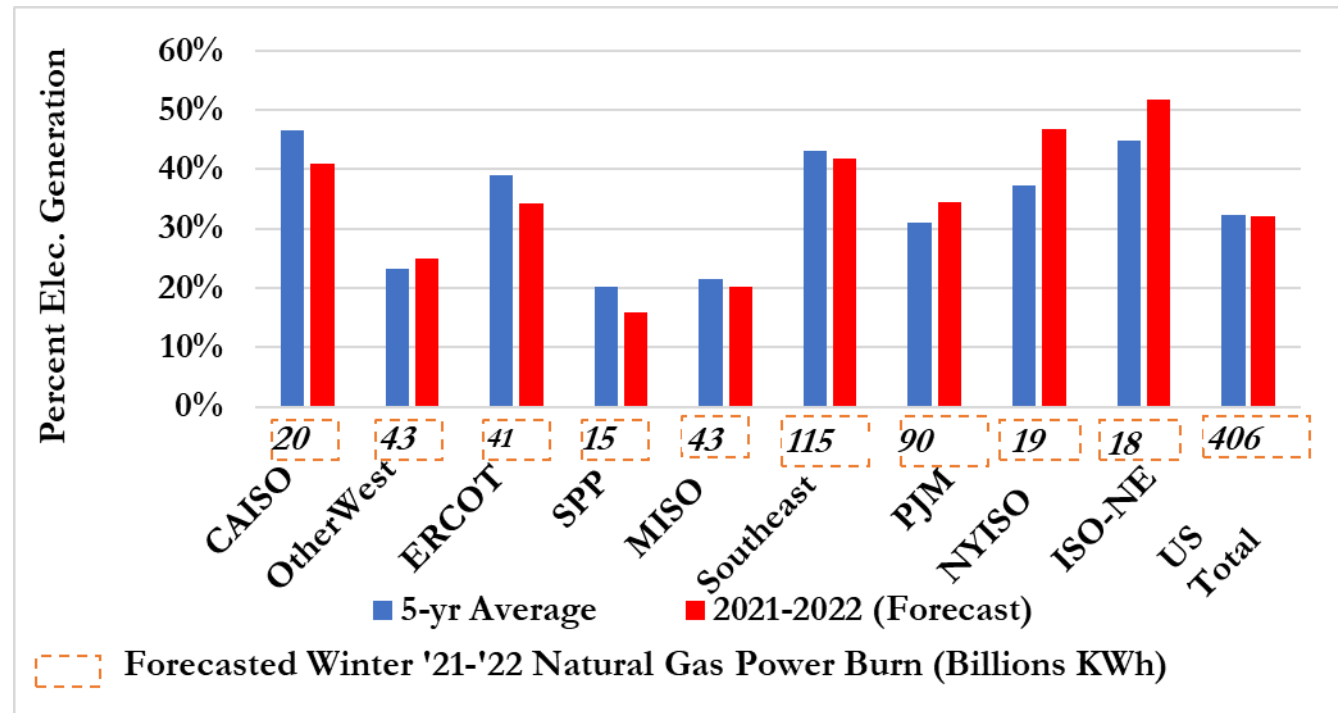


Source: EIA



# Expected Decrease in Natural Gas Winter Power Burn

## Share of Generation from Natural Gas by Region

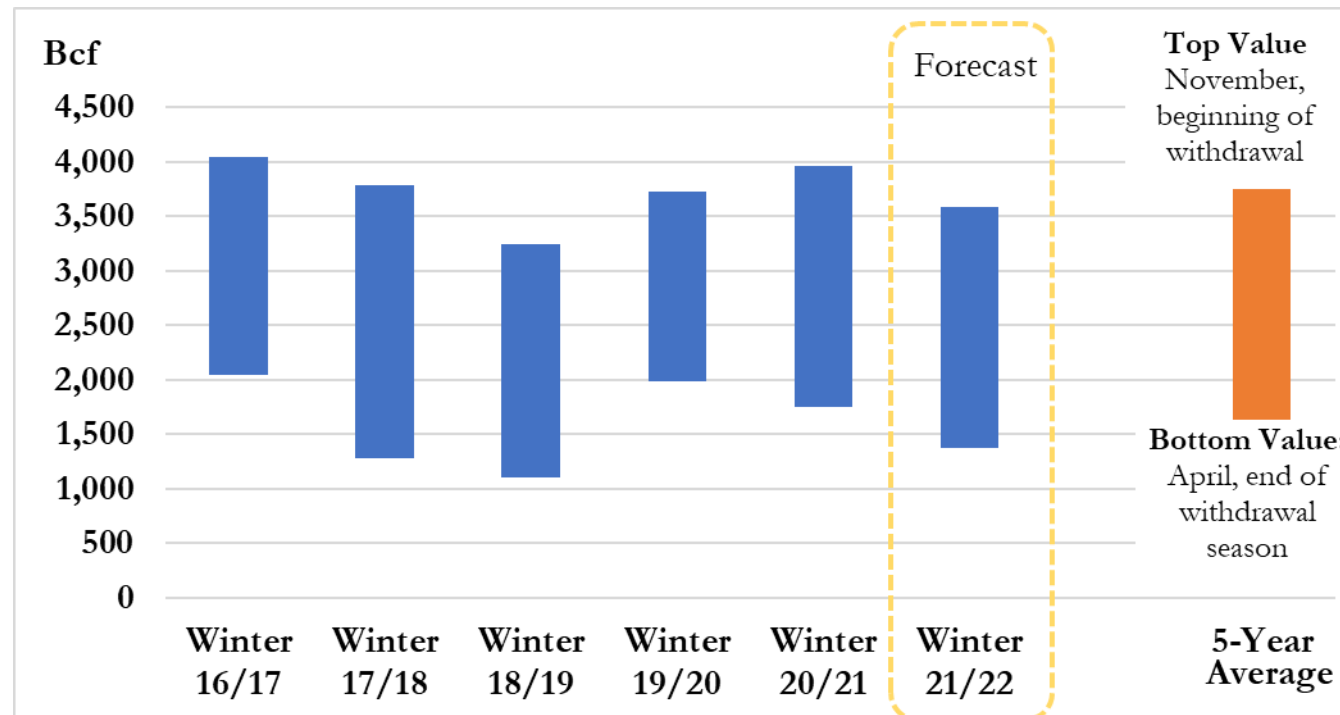


Source: EIA



# Lower Expected Natural Gas Inventories at the Start of Withdrawal Season

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

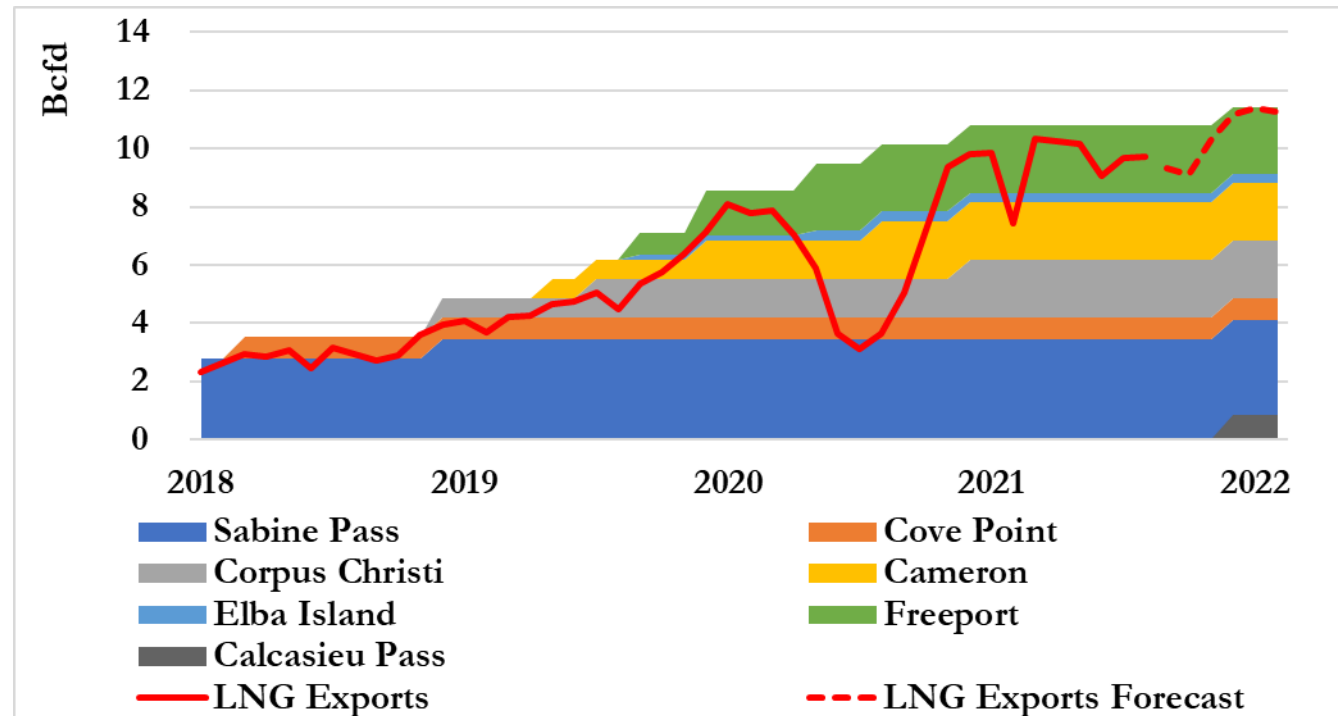


Source: EIA



# Expected Increase in LNG Exports Due to High Global Demand

## U.S. LNG Capacity and Feedgas Demand



Source: EIA





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[market.assessments@ferc.gov](mailto:market.assessments@ferc.gov)



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