

# 2025 Natural Gas Readiness Forum Summit

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# Welcome and AGA Antitrust Compliance Guidelines



Karen Harbert  
President & CEO  
American Gas Association

Matthew Agen  
Chief Regulatory Counsel, Energy  
American Gas Association



# — Opening Remarks



Ann Rendahl  
Commissioner, NARUC President  
Washington Utilities & Transportation Commission

Todd Snitchler  
President & CEO  
Electric Power Supply Association



# National Weather Forecast & Energy Outlook

## Weather Forecast for Late 2025 & Early 2026

Will Lanxton, Meteorologist  
Georgia Emergency Management & Homeland  
Security Agency





# Georgia Emergency Management & Homeland Security Agency

## 2025–2026 Winter Weather Outlook

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Will Lanxton  
State Meteorologist



# Key Points

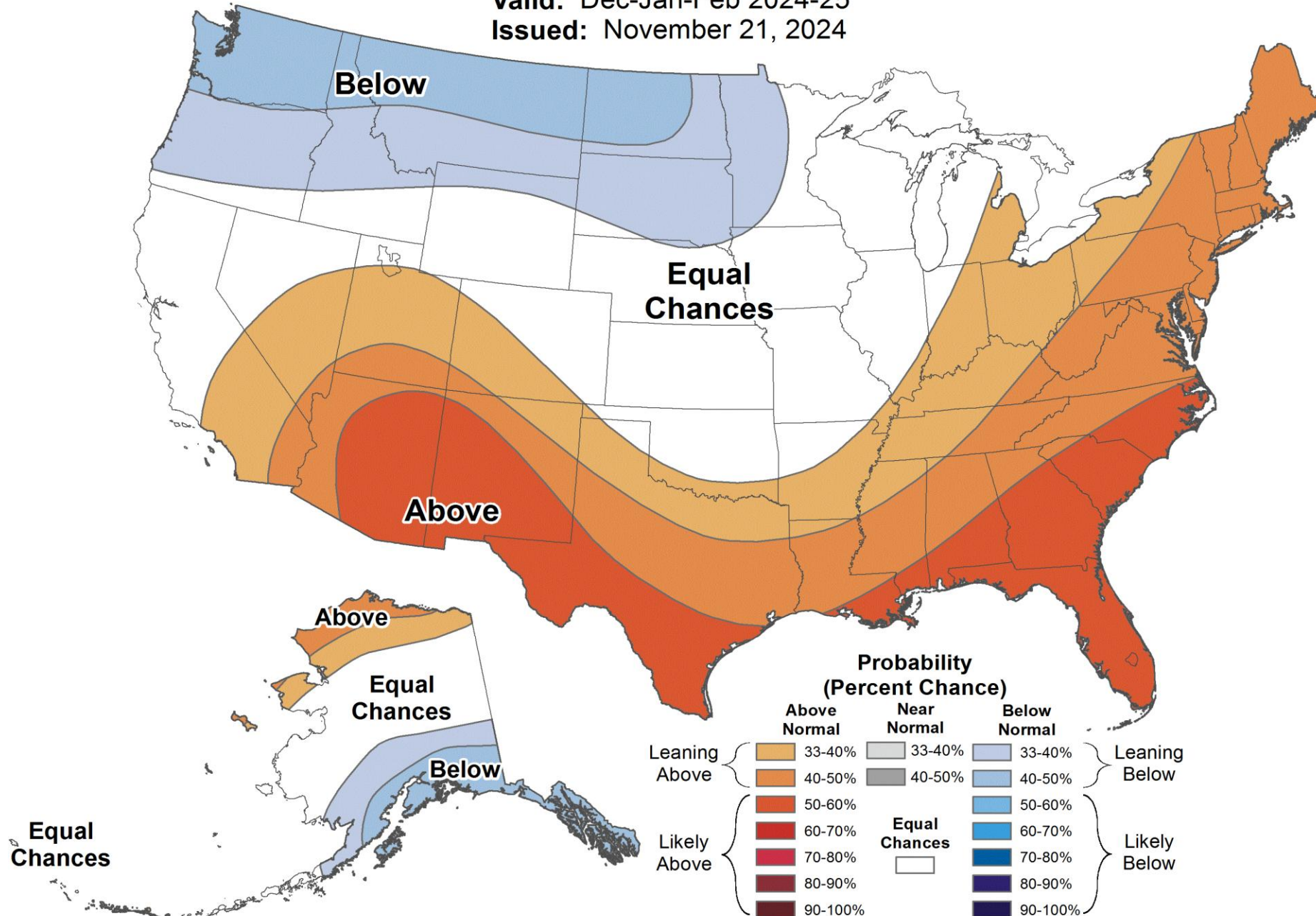
- This winter looks a lot like last winter
- Seasonal outlooks have limitations
  - 90-day outlooks will have ups and downs
  - “Average seasons” often include major swings
- A weaker polar vortex leads to more cold air outbreaks over the eastern U.S.
- Early-to-mid winter (late November through January) this year as opposed to mid-to-late winter (January through February) last year
- Recent analog winters: ‘13–‘14 and ‘24–‘25



# Seasonal Temperature Outlook

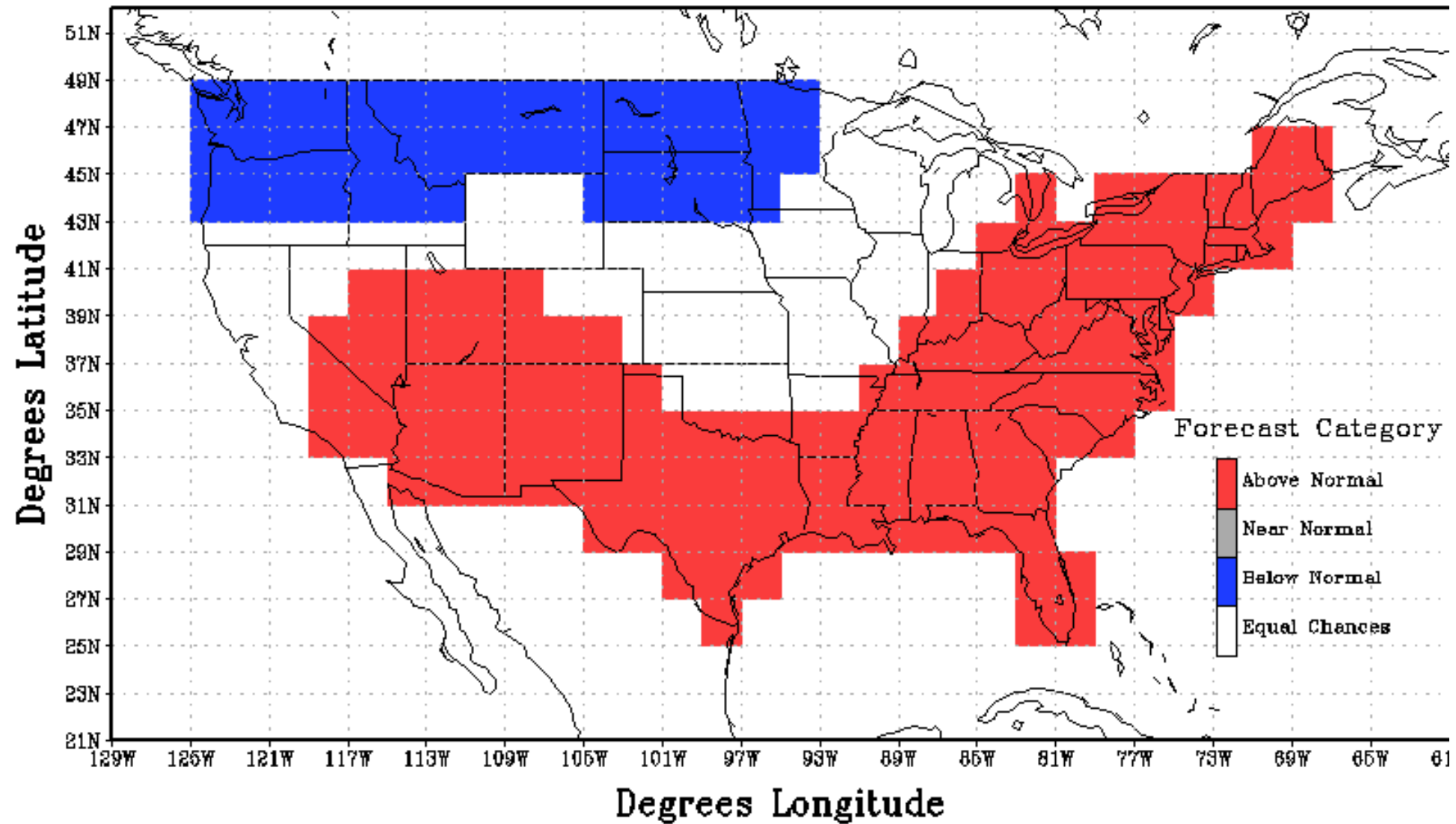


Valid: Dec-Jan-Feb 2024-25  
Issued: November 21, 2024



# Categorical Temperature Official Forecast

Issued: Nov 2024 Valid: Dec-Jan-Feb 2024-25



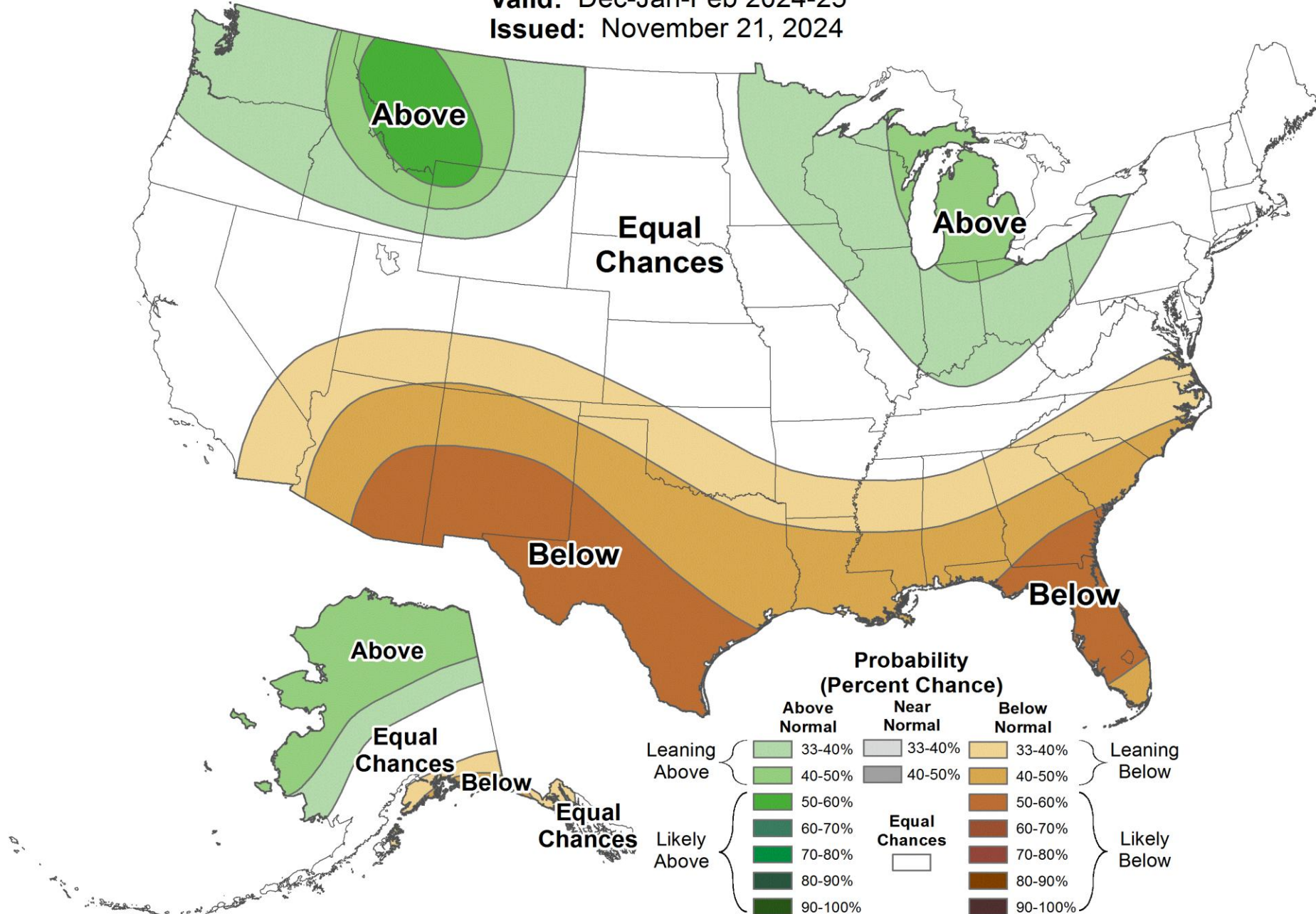




# Seasonal Precipitation Outlook

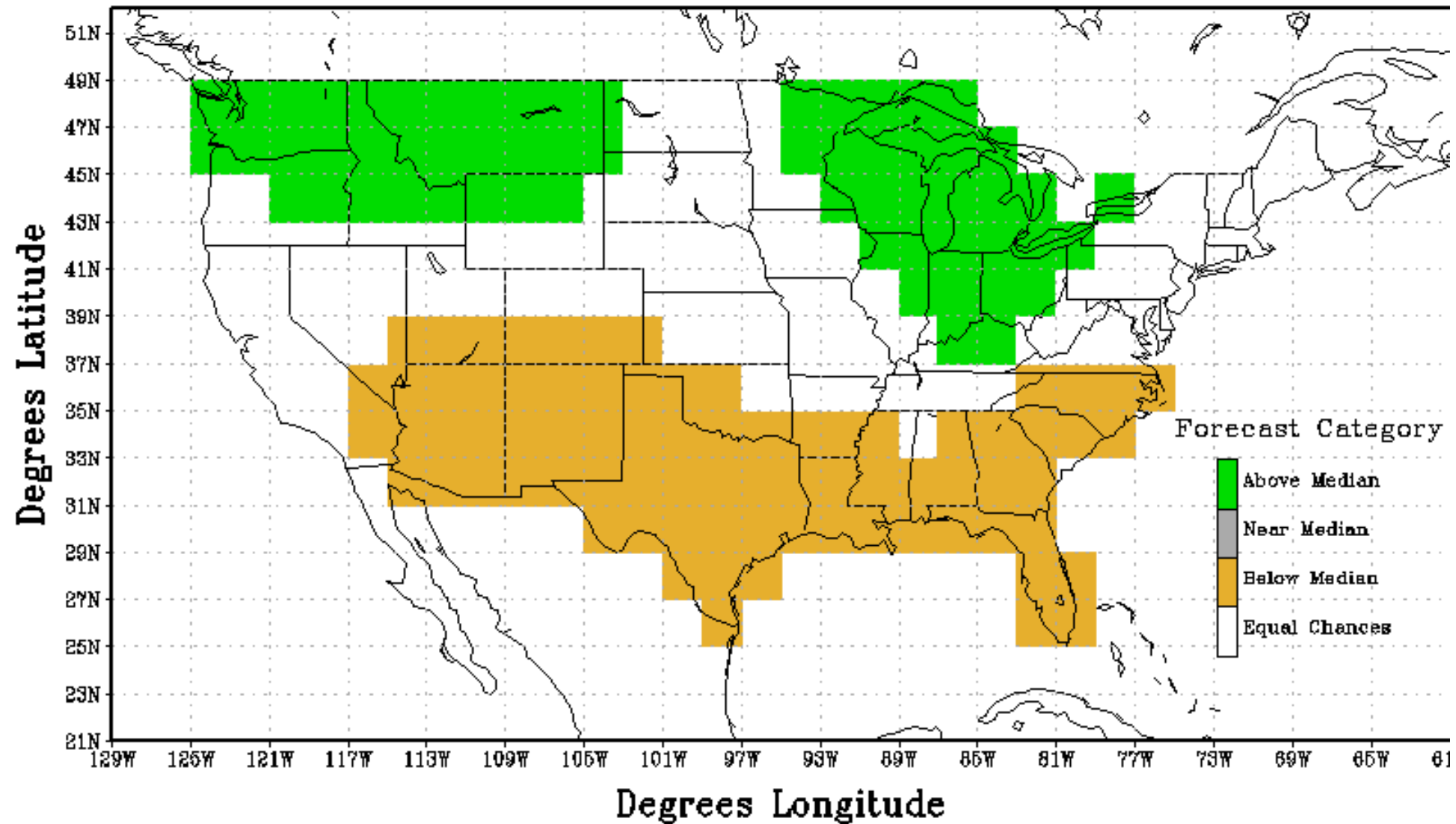


Valid: Dec-Jan-Feb 2024-25  
Issued: November 21, 2024



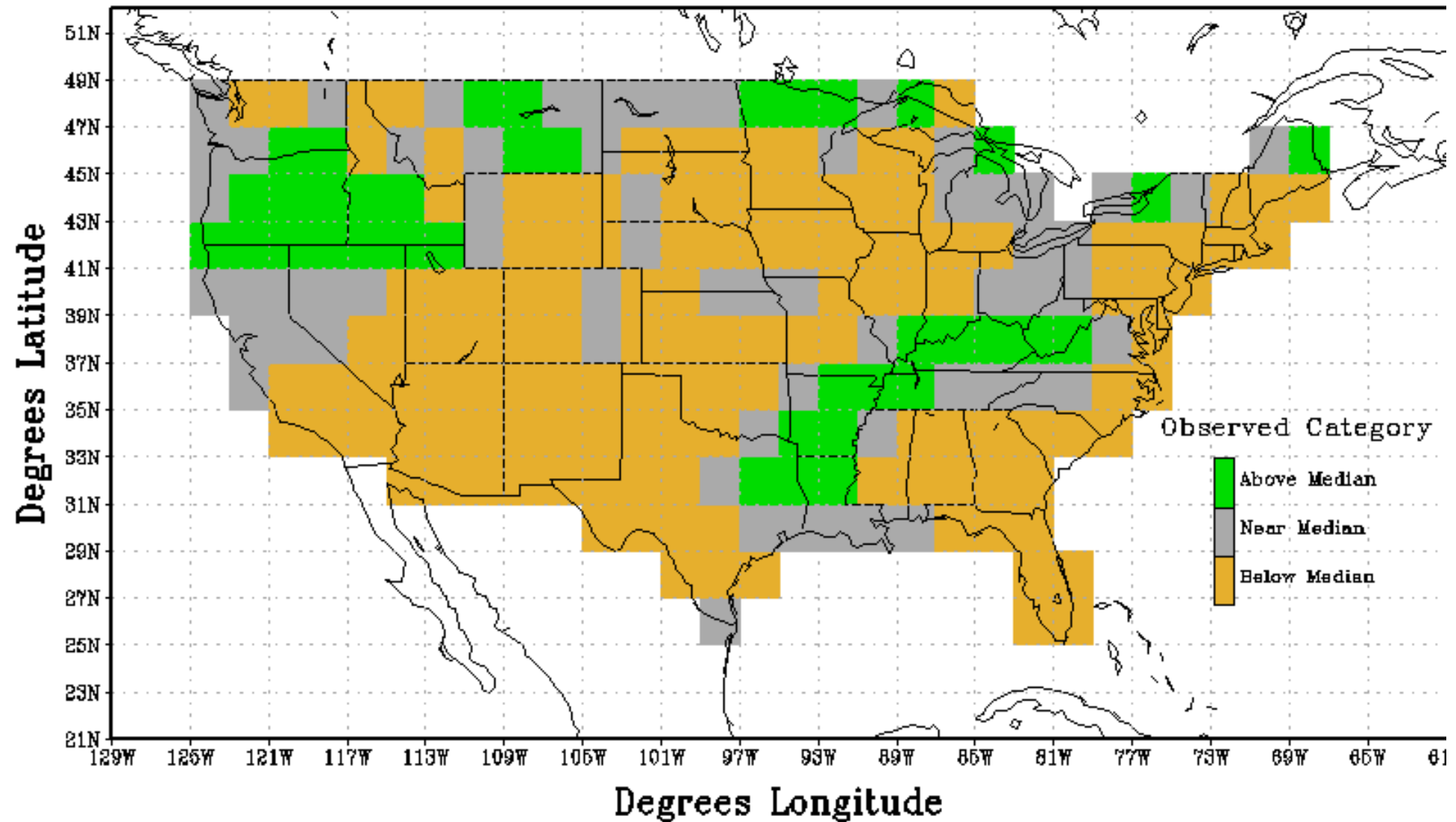
# Categorical Precipitation Official Forecast

Issued: Nov 2024 Valid: Dec-Jan-Feb 2024-25



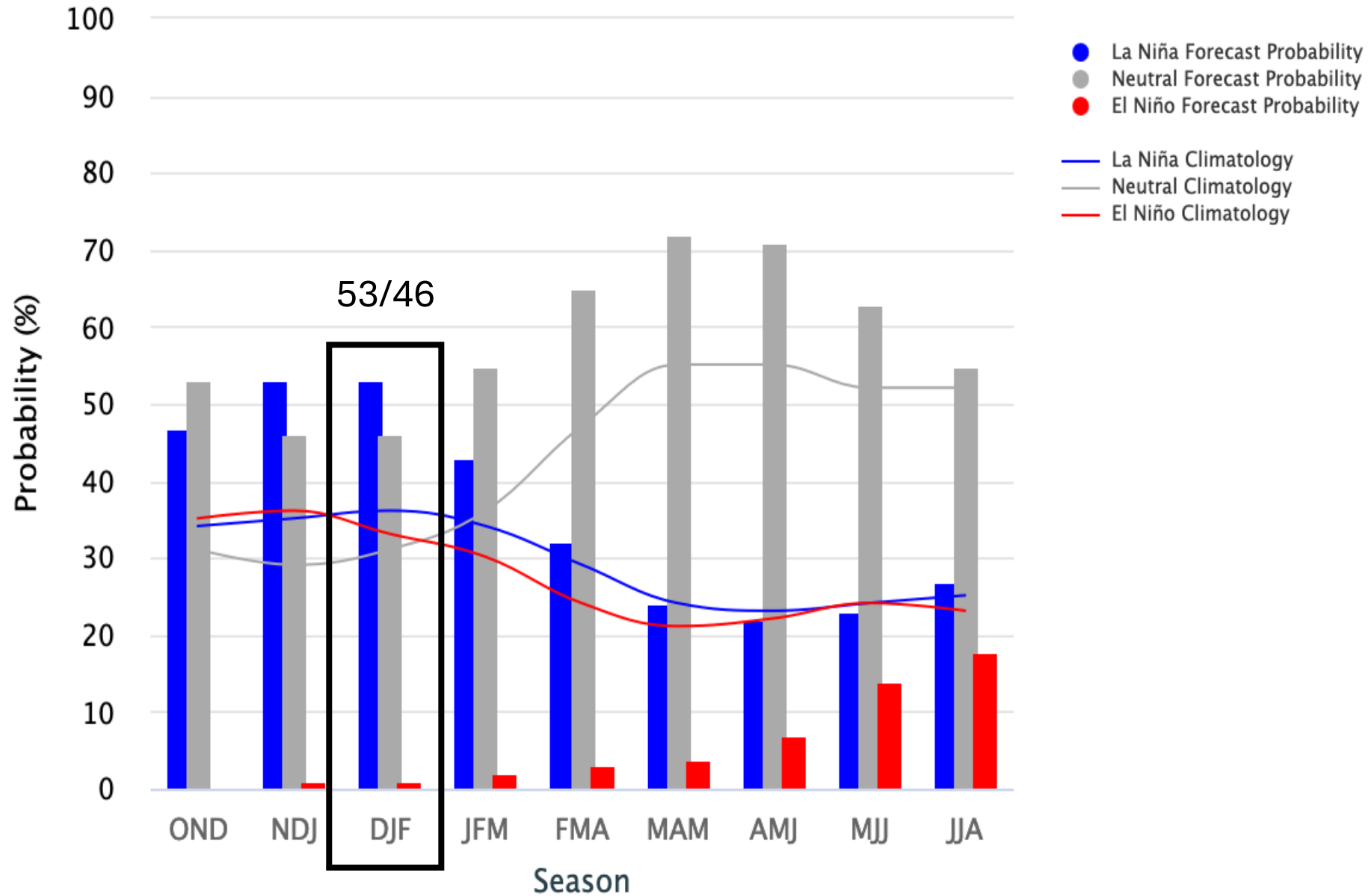
# Categorical Precipitation Observations

Valid: Dec-Jan-Feb 2024-25



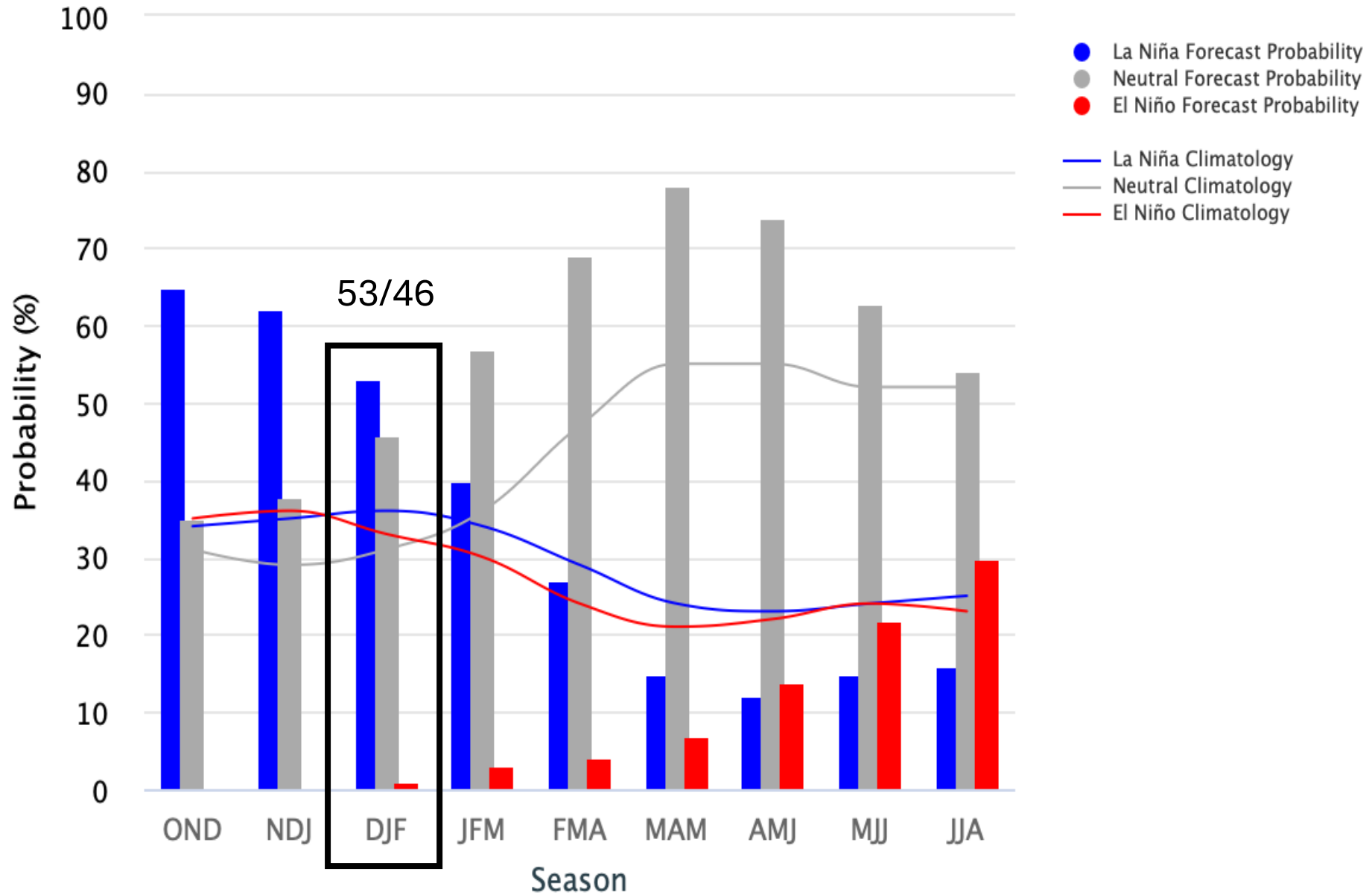
# Mid-October 2024 IRI Model-Based Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly Neutral ENSO:  $-0.5\text{ }^{\circ}\text{C}$  to  $0.5\text{ }^{\circ}\text{C}$



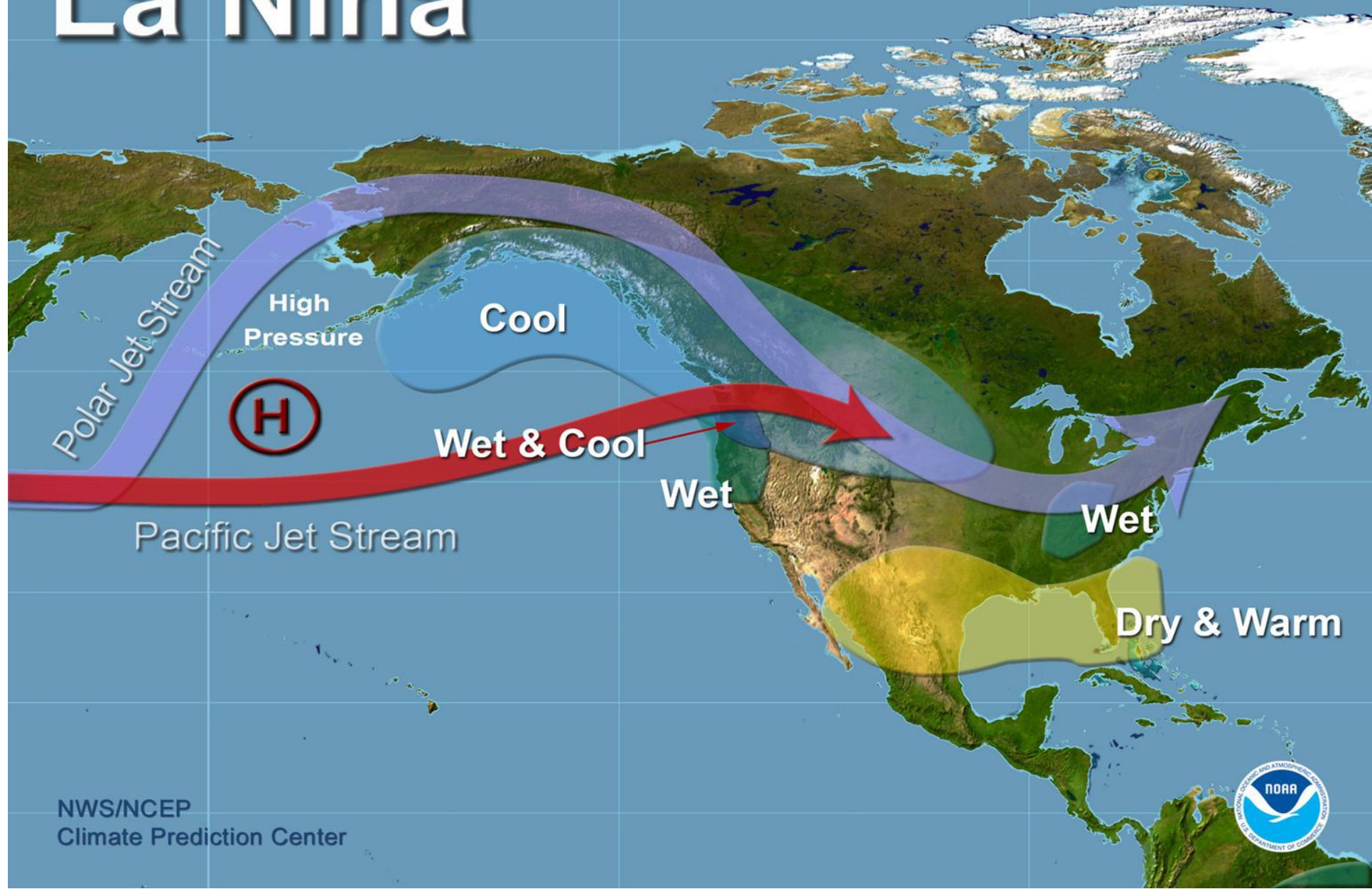
# Mid-October 2025 IRI Model-Based Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly Neutral ENSO:  $-0.5\text{ }^{\circ}\text{C}$  to  $0.5\text{ }^{\circ}\text{C}$



Typical Wintertime Pattern

# La Niña



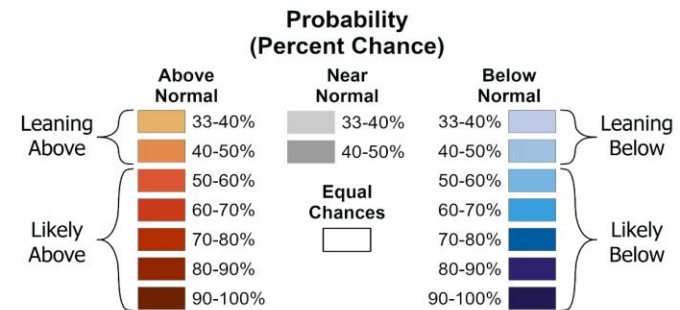
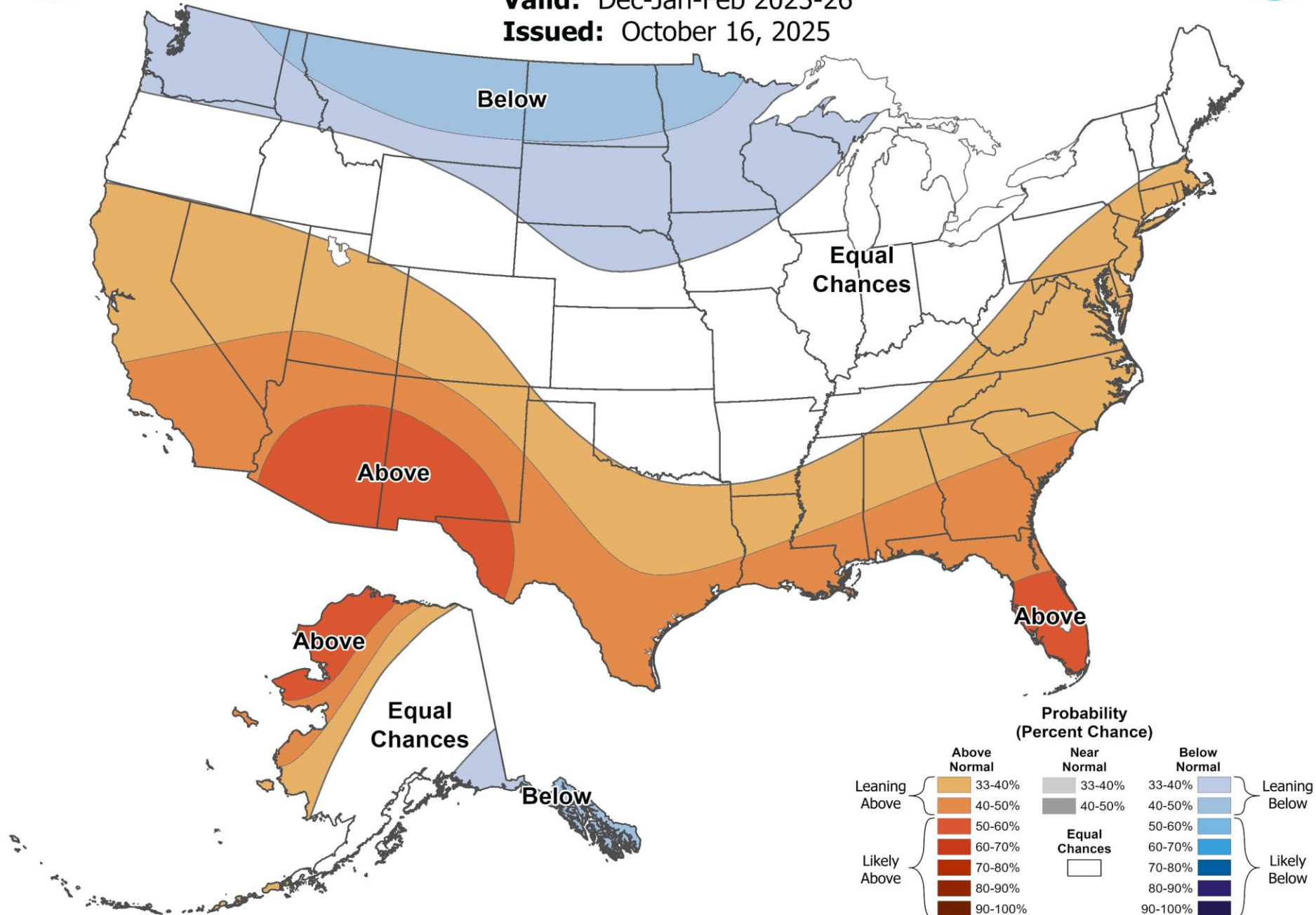


# Seasonal Temperature Outlook



**Valid:** Dec-Jan-Feb 2025-26

**Issued:** October 16, 2025



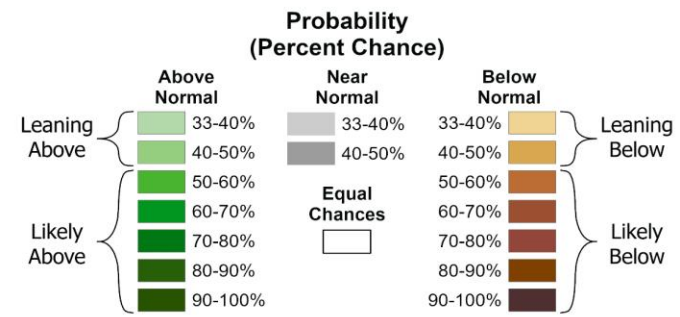
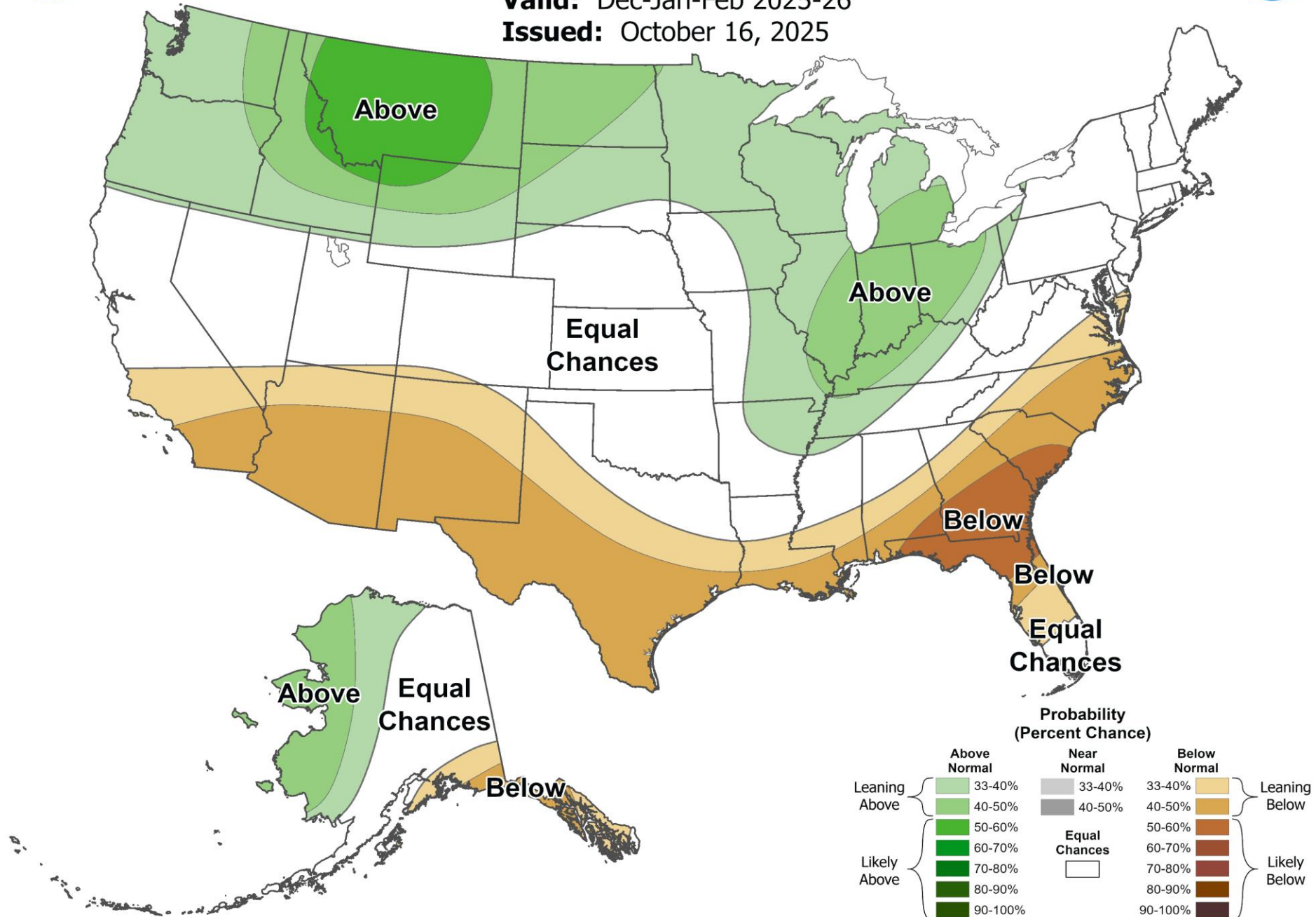


# Seasonal Precipitation Outlook



**Valid:** Dec-Jan-Feb 2025-26

**Issued:** October 16, 2025





# Other Factors Influencing Winter

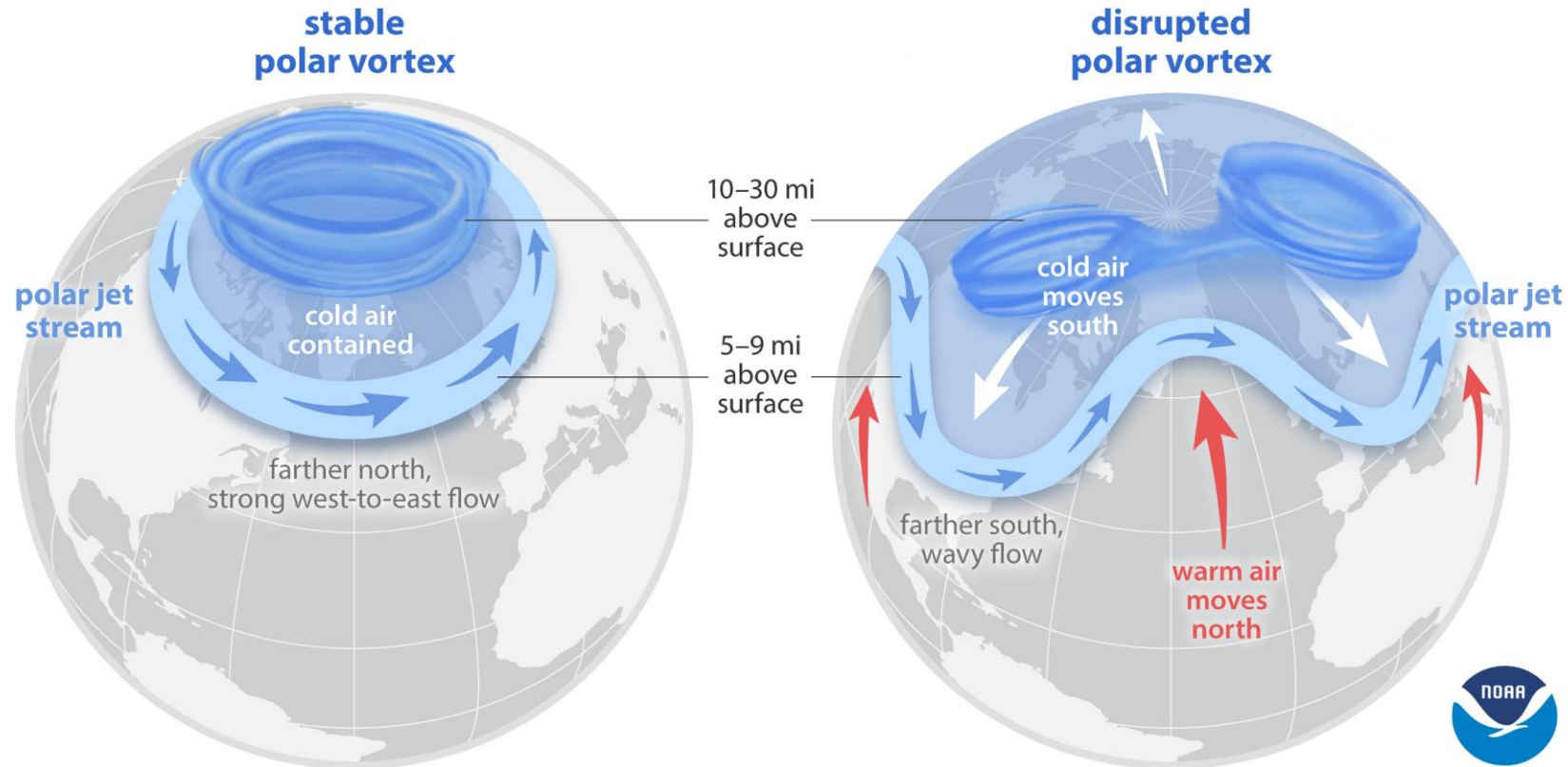
- ENSO (El Niño/La Niña) is a primary driver, but there are many other factors at play
- Warm waters in the North Pacific and North Atlantic (very similar to a year ago)
- These factors reinforce Northern Pacific ridge pattern, which when combined with a weaker polar vortex can lead to increased cold air outbreaks across the eastern U.S.

# Understanding the polar vortex

The Arctic polar vortex is a strong band of winds in the stratosphere, surrounding the North Pole 10–30 miles above the surface.

The polar vortex is far above and typically does not interact with the polar jet stream, the flow of winds in the troposphere 5–9 miles above the surface. But when the polar vortex is especially strong and stable, the jet stream stays farther north and has fewer “kinks.” This keeps cold air contained over the Arctic and the mid-latitudes warmer than usual.

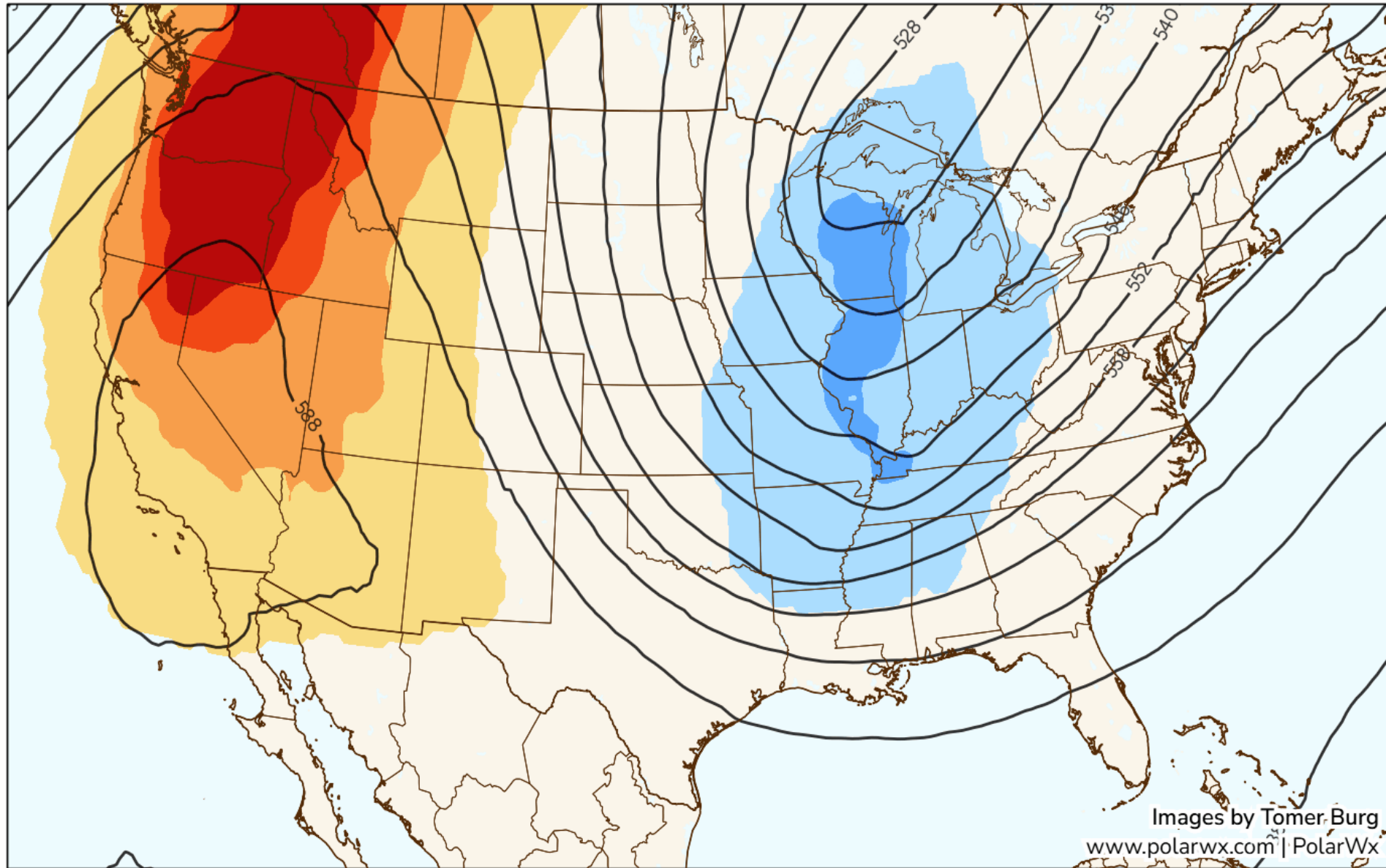
Every other year or so, the Arctic polar vortex dramatically weakens. The vortex can be pushed off the pole or split into two. Sometimes the polar jet stream mirrors this stratospheric upheaval, becoming weaker or wavy. At the surface, cold air is pushed southward to the mid-latitudes, and warm air is drawn up into the Arctic.



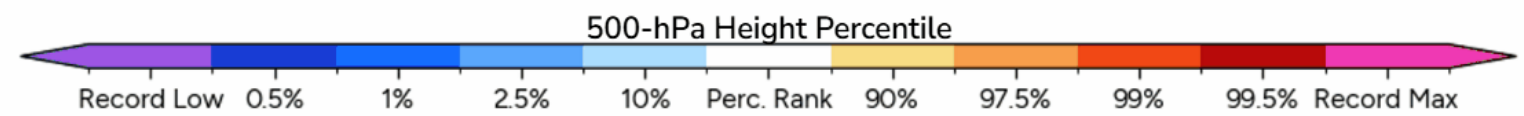
# 0.25° GFS • 500-hPa Height 3-Week Percentile Rank (ERA5, 1979-2021)

Init: 1800 UTC Sun 9 Nov 2025 | Hour: [0] | Valid: 1800 UTC Sun 9 Nov 2025

Contour: 500-hPa Geopotential Height



Images by Tomer Burg  
www.polarwx.com | PolarWx





# Takeaways

- This winter looks a lot like last winter
- Expect major swings, but generally warmer and drier in the southern U.S. and cooler and wetter in the northern U.S.
- A weaker polar vortex leads to more cold air outbreaks over the eastern U.S.
- Early-to-mid winter (late November through January) this year as opposed to mid-to-late winter (January through February) last year
- Earlier severe weather season



# Questions?

# National Weather Forecast & Energy Outlook

## Natural Gas Outlook

Richard Meyer  
Vice President, Energy Markets, Analysis, & Standards  
American Gas Association



# A New Era for Growth

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A Natural Gas Industry Outlook

# About AGA

The American Gas Association, founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 79 million residential, commercial and industrial natural gas customers in the U.S., of which 94 percent — more than 74 million customers — receive their gas from AGA members. Today, natural gas meets more than one-third of the United States' energy needs.



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# State of Play



## Record Gas Demand

Industrial reshoring, growing electric power requirements, LNG exports, new consumers



## Record Gas Supply

Return to historical natural gas pricing trends



## Affordability Front of Mind

Rising electricity prices, while natural gas remains an affordable solution



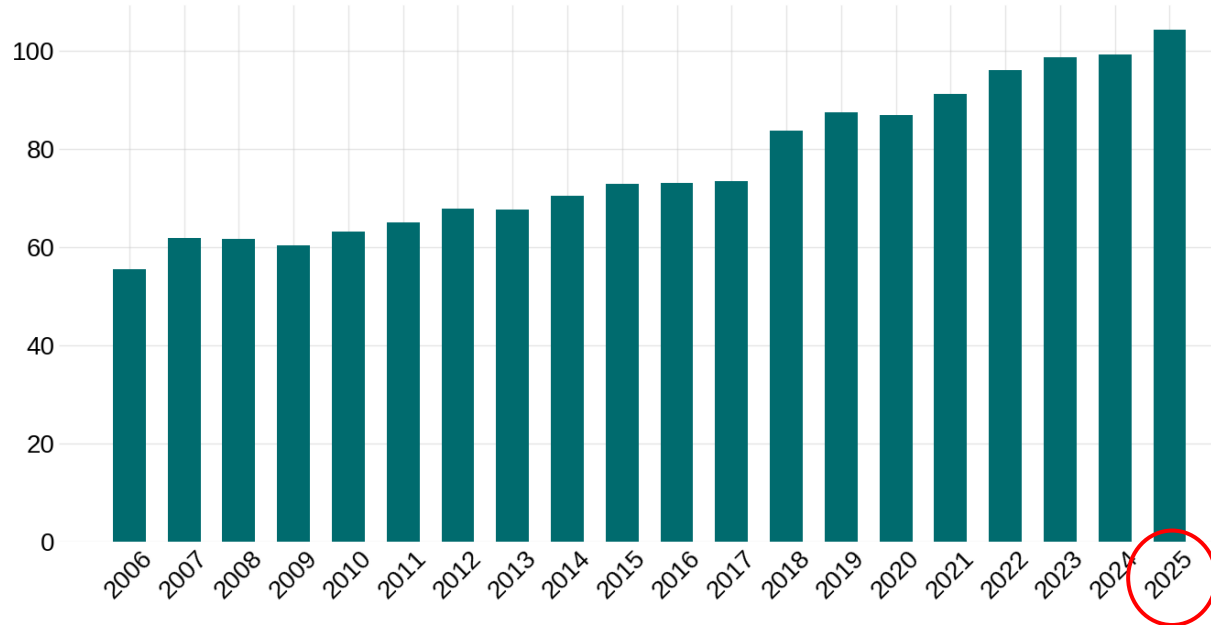
## The Need to Build

Infrastructure additions are needed, and permitting reform is key

# Natural gas demand and production are at a record high

## Demand

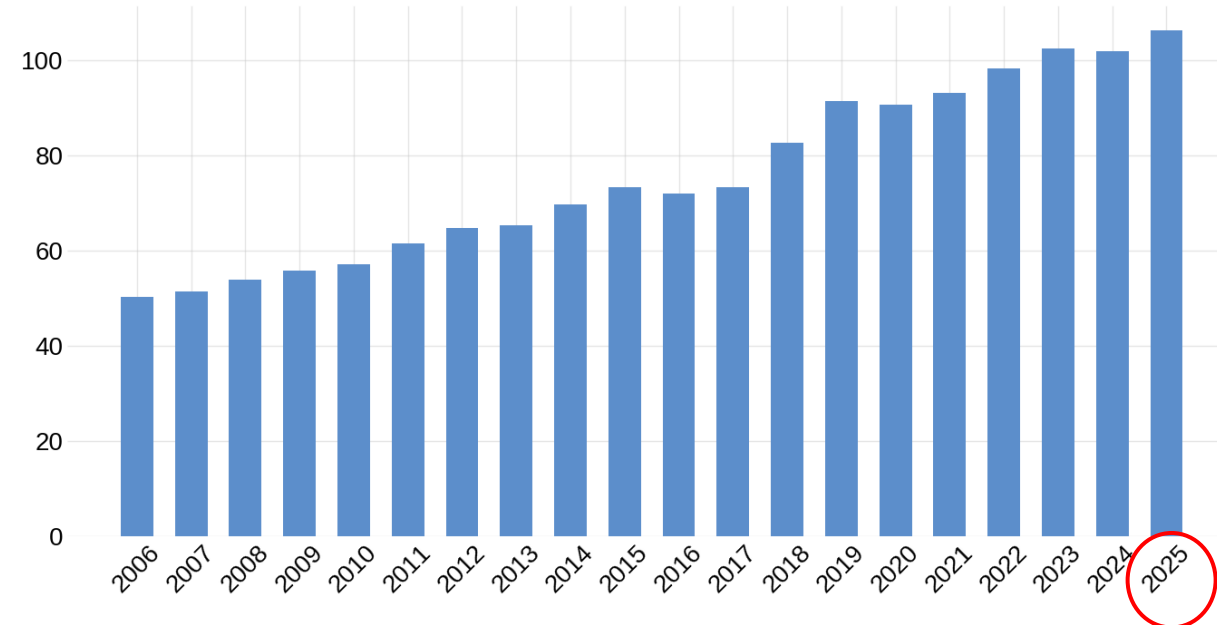
Total Natural Gas Demand, Lower-48 YTD thru Nov 17  
Bcf per day



Source: S&P Global Commodity Insights, ©2025 by S&P Global Inc., Chart: American Gas Association, Data as of Nov 17, 2025, Subject to Revision

## Production

Natural Gas Production, Lower-48 YTD thru Nov 17  
Bcf per day

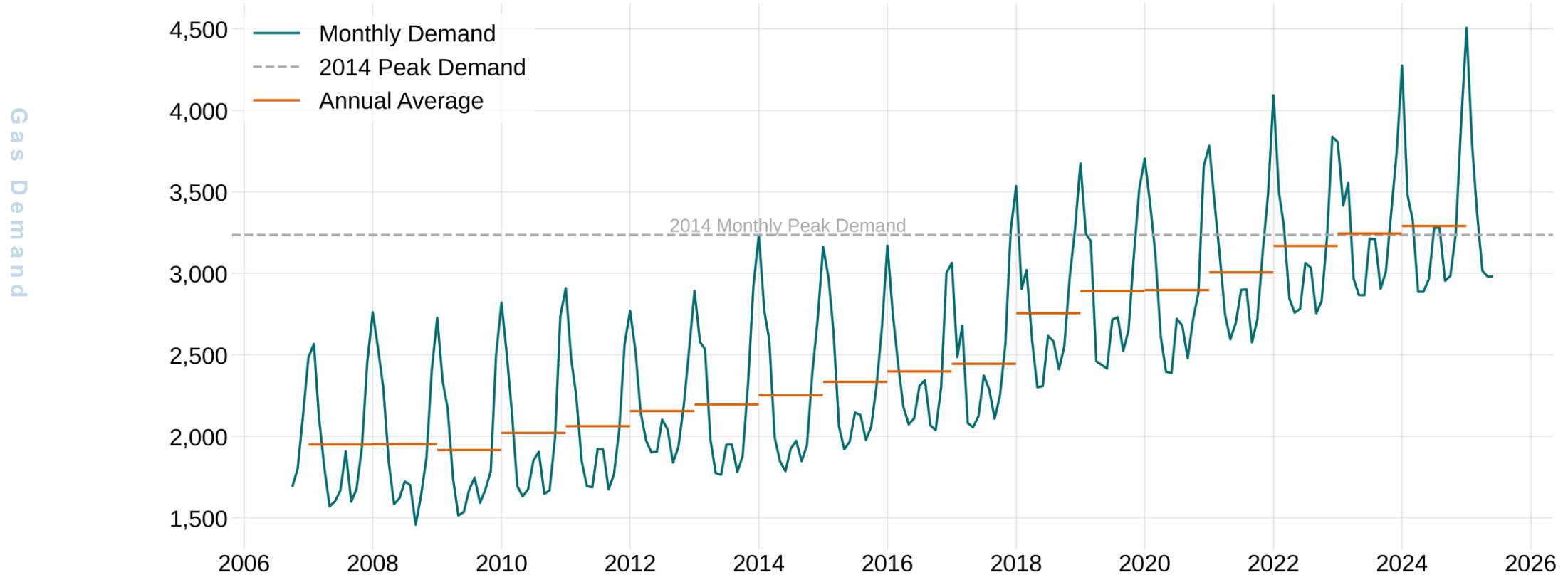


Source: S&P Global Commodity Insights, ©2025 by S&P Global Inc., Chart: American Gas Association, Data as of Nov 17, 2025, Subject to Revision

# U.S. natural gas consumption set seven monthly records and an annual record in 2024

## Natural gas demand growing over time

U.S. Monthly Natural Gas Consumption (incl. exports)  
Bcf per Month



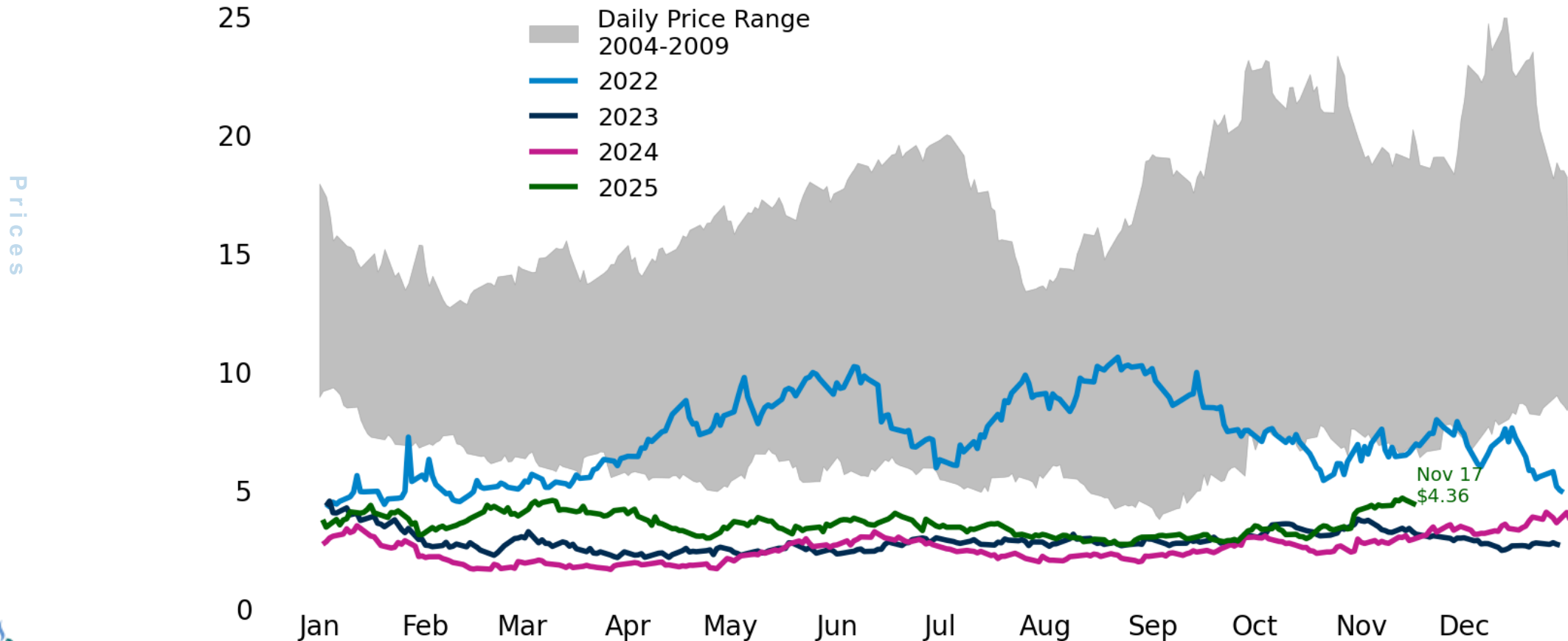
Source: S&P Global Commodity Insights, ©2025 by S&P Global Inc. Chart: American Gas Association, Data as of Jul 11, 2025, Subject to Revision

# Inflation-adjusted prices are much lower compared to history

## Natural gas futures prices

Natural Gas Prompt-Month Futures Prices, Henry Hub  
Inflation Adjusted (Sep-2025 USD/MMBtu)

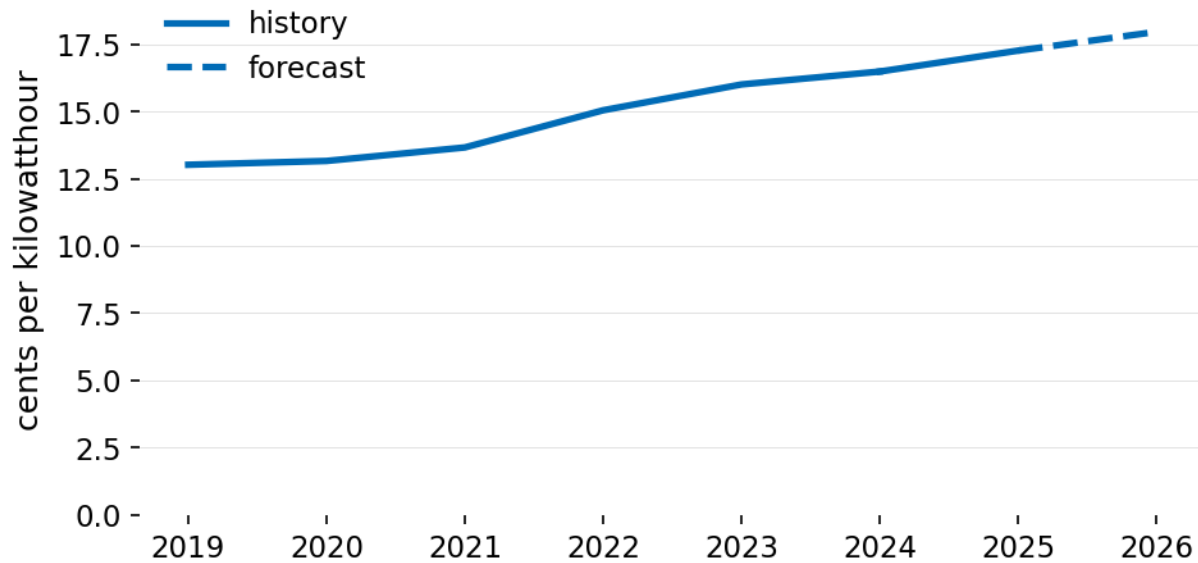
Source: S&P Global Market Intelligence / FRED  
Chart: American Gas Association



# Residential electricity prices expected to rise while natural gas falls

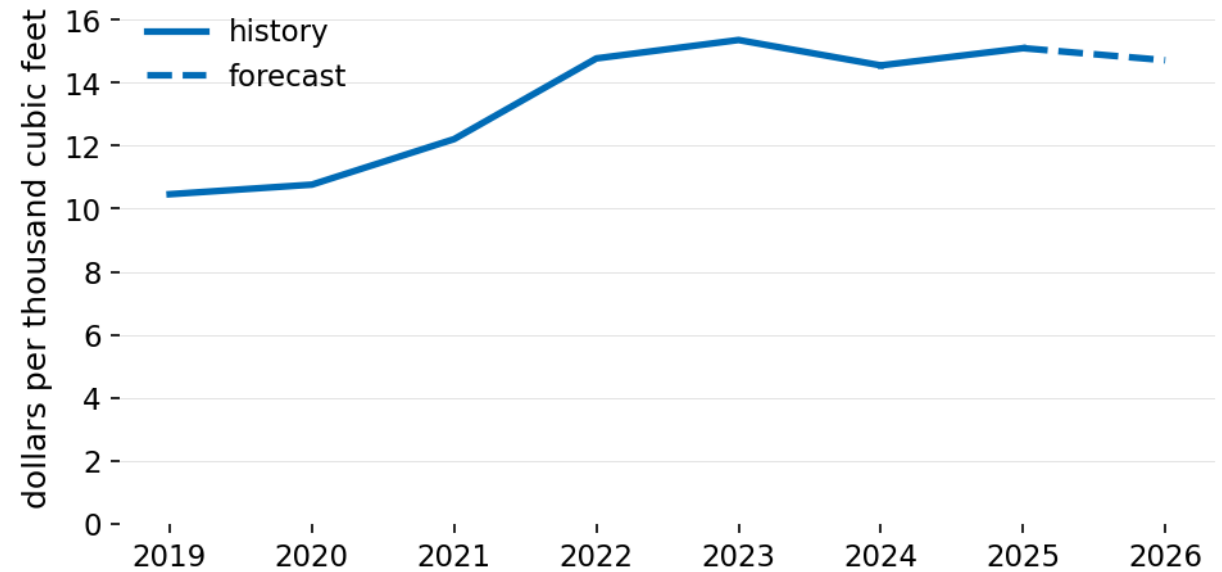
## Residential energy prices

Annual nominal residential electricity prices



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2025

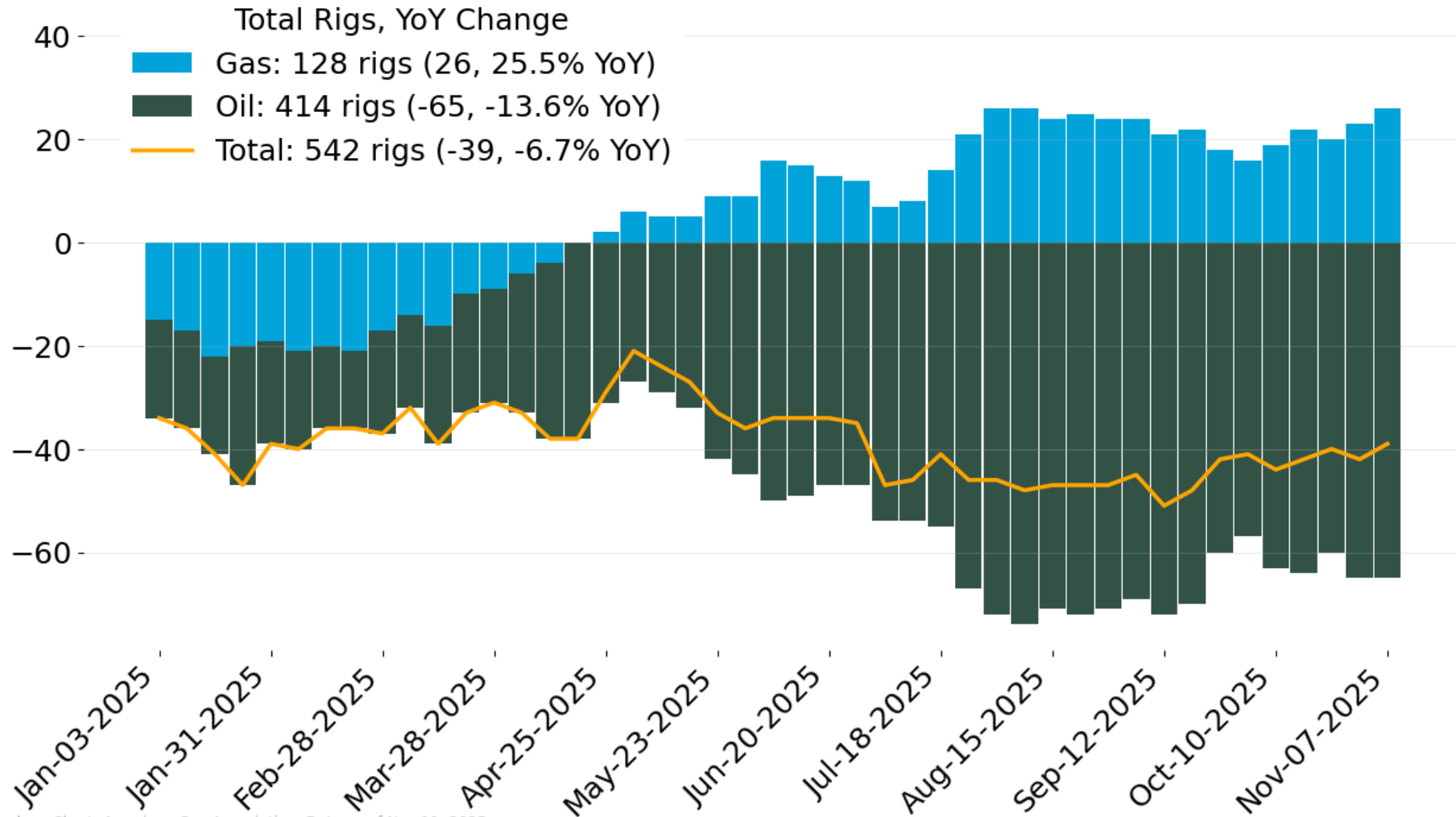
Annual nominal residential natural gas prices



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2025

# Natural gas drilling rig count up 26% as oil has declined

Year-over-Year Change in U.S. Operating Rigs (2023-2025)

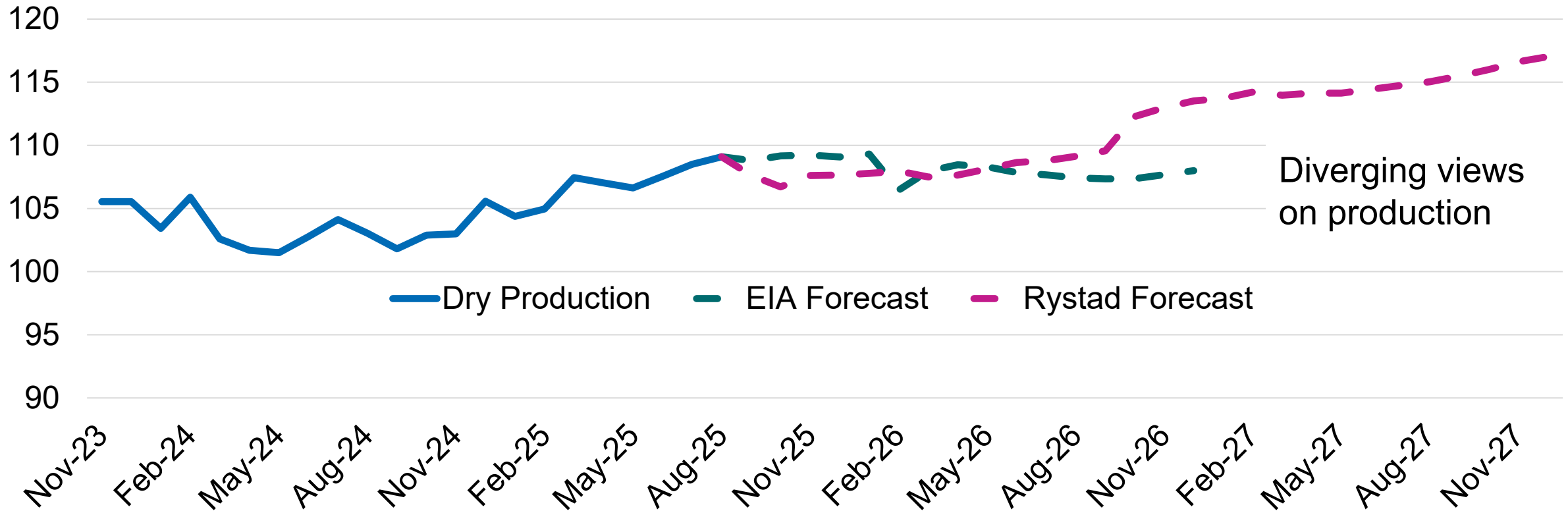


Source: Baker Hughes, Chart: American Gas Association, Data as of Nov 11, 2025

# Natural gas production expected to rise; different views on timing

## Total Dry Natural Gas Production, Historical and Forecast

Bcf per day

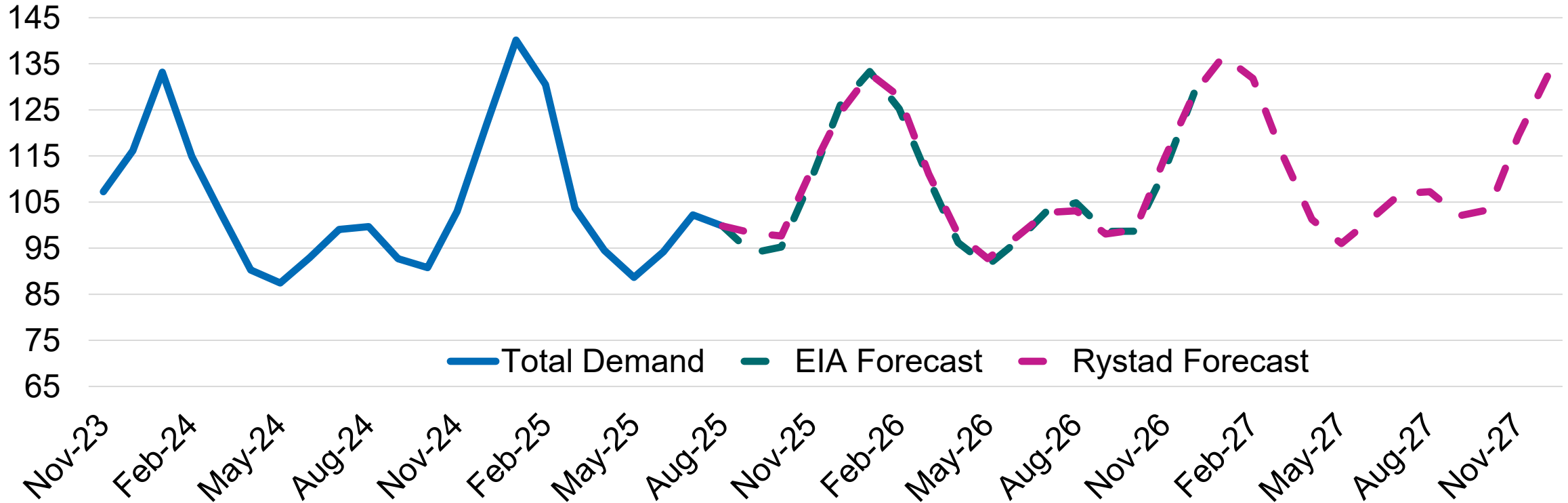


Sources: Energy Information Administration, November 2025 Short-Term Energy Outlook; Rystad Energy Forecasts benchmarked from August 2025 production data from EIA.

# Natural gas use is expected to grow, driven by LNG exports, industrial demand, and the electric power sector.

## Total Natural Gas Demand Including Exports, Lower-48

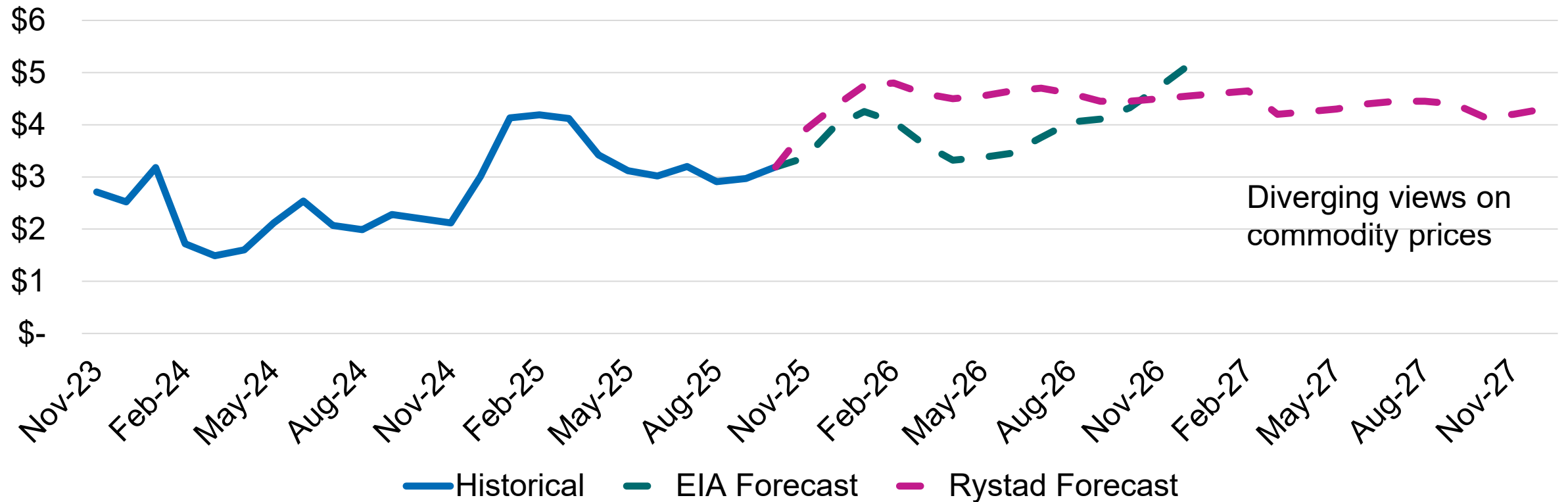
Bcf per day



Sources: Energy Information Administration, November 2025 Short-Term Energy Outlook; Rystad Energy Forecasts benchmarked from August 2025 demand data from EIA.

# Outlooks for natural gas prices into 2026-2027 differ. Pricing in all cases remains low relative to historical levels.

## Natural Gas Spot Prices at Henry Hub \$/MMBtu



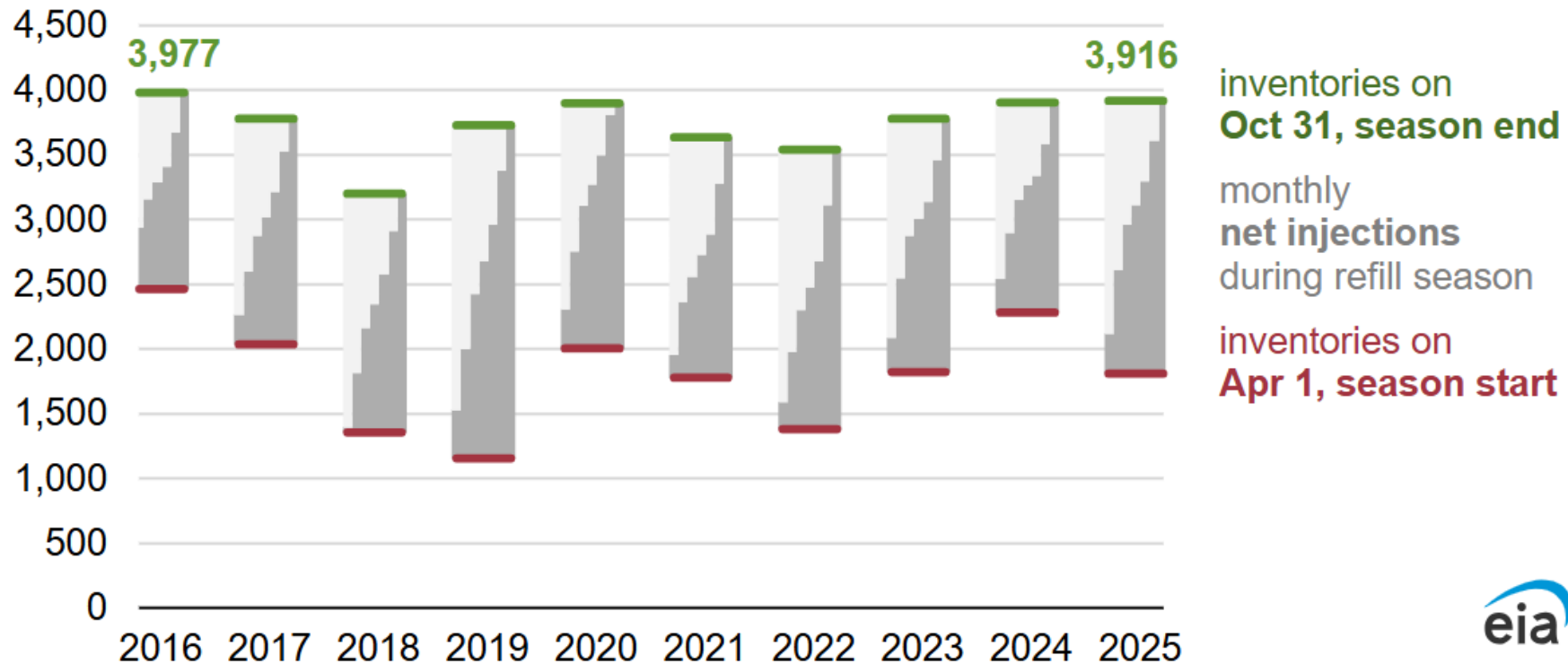
Sources: Energy Information Administration, November 2025 Short-Term Energy Outlook; Rystad Energy  
Forecasts benchmarked from October 2025 price data from EIA.

# U.S. natural gas inventories enter winter at the highest level since 2016

## Underground natural gas storage

Lower 48 states end-of-injection season natural gas inventories (2016–2025)

billion cubic feet



inventories on  
**Oct 31, season end**  
monthly  
**net injections**  
during refill season  
inventories on  
**Apr 1, season start**

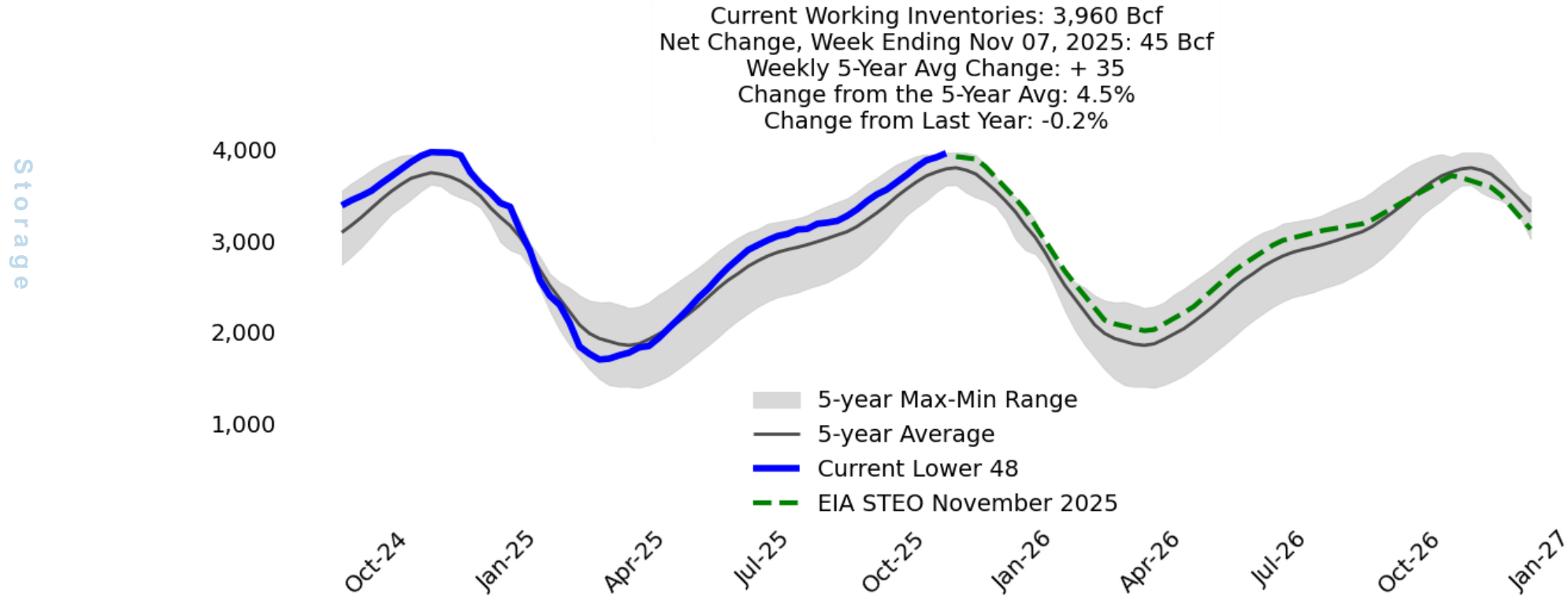


Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook* (STEO), November 2025

# EIA expects natural gas inventories to remain above average through the winter.

## Natural gas storage

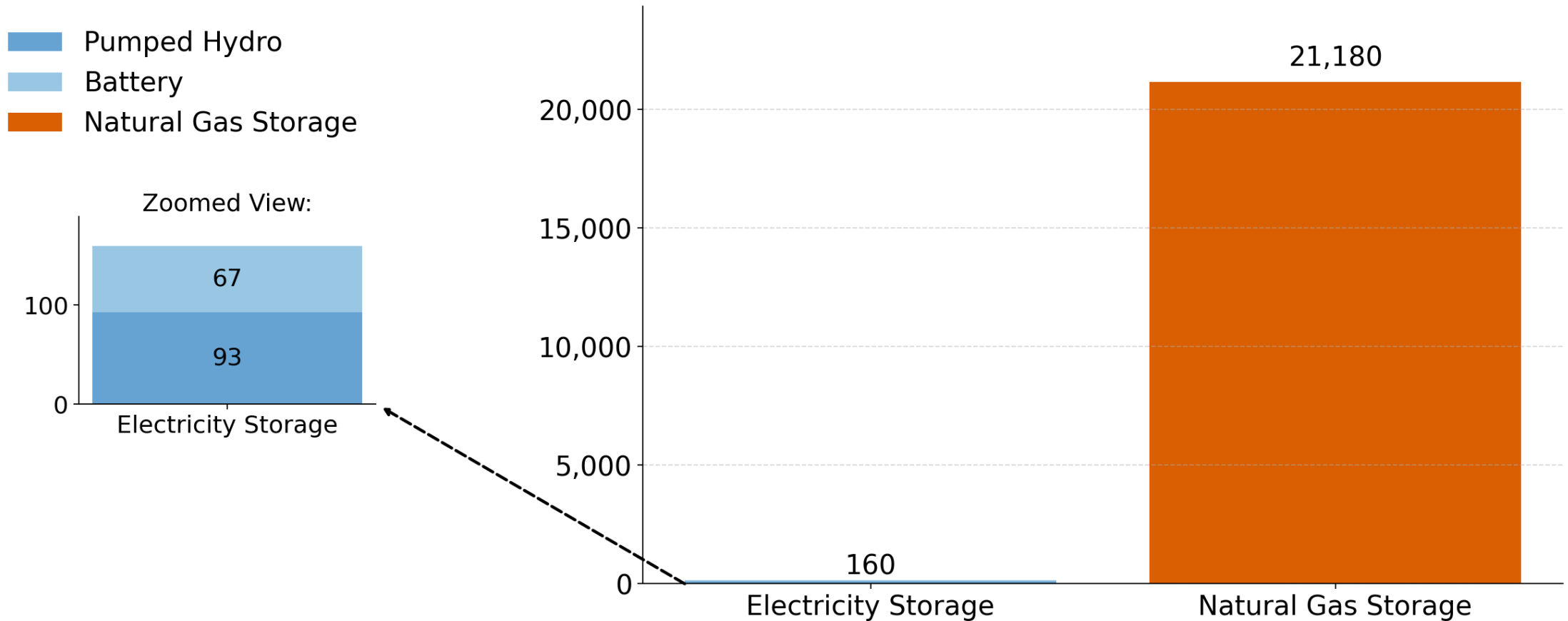
U.S. Working Gas in Underground Storage Compared with the Five-Year Minimum and Maximum  
Billion cubic feet



Source: U.S. Energy Information Administration, Chart: American Gas Association, Data as of Nov 14, 2025, Subject to Revision  
The shaded region represents the five-year range relative to the reporting period for the historical data. Projections utilize current five-year data available.  
EIA STEO Release: November 2025

# Storage is a critical balancing tool for natural gas utilities during the winter, with a daily dispatch capacity 130x greater than electric storage

Estimated Daily Storage Output by Resource  
Gigawatt Hours per Day



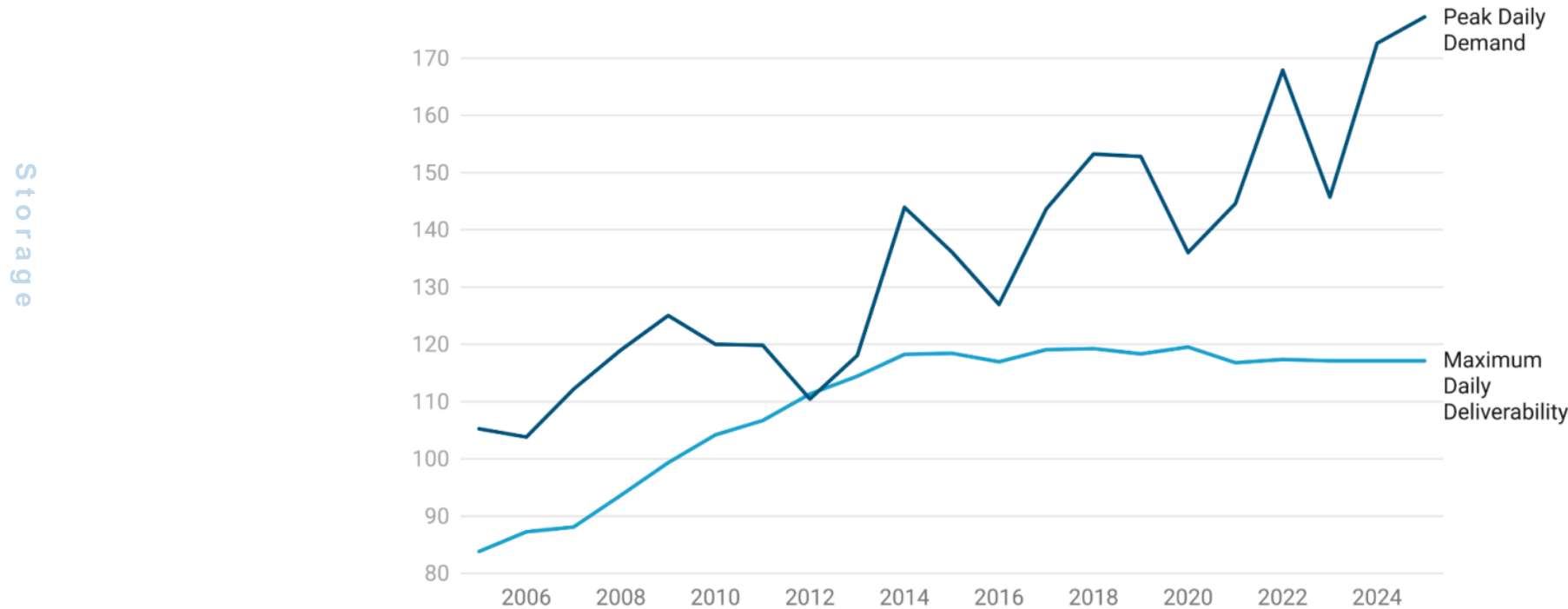
Source: Energy Information Administration, S&P Global Commodity Insights, Data as of Sept 11, 2025. NG output on Jan 21, 2025. Electric output estimated using EIA June 2025 maximum nameplate capacity \* maximum daily dispatch capacity.

# More natural gas storage is needed. Natural gas peak demand has grown while maximum storage deliverability has been flat

## Peak demand vs natural gas storage

### Underground Storage Maximum Daily Deliverability vs. Peak Daily Demand

Billion Cubic Feet per Day (Bcf/d)



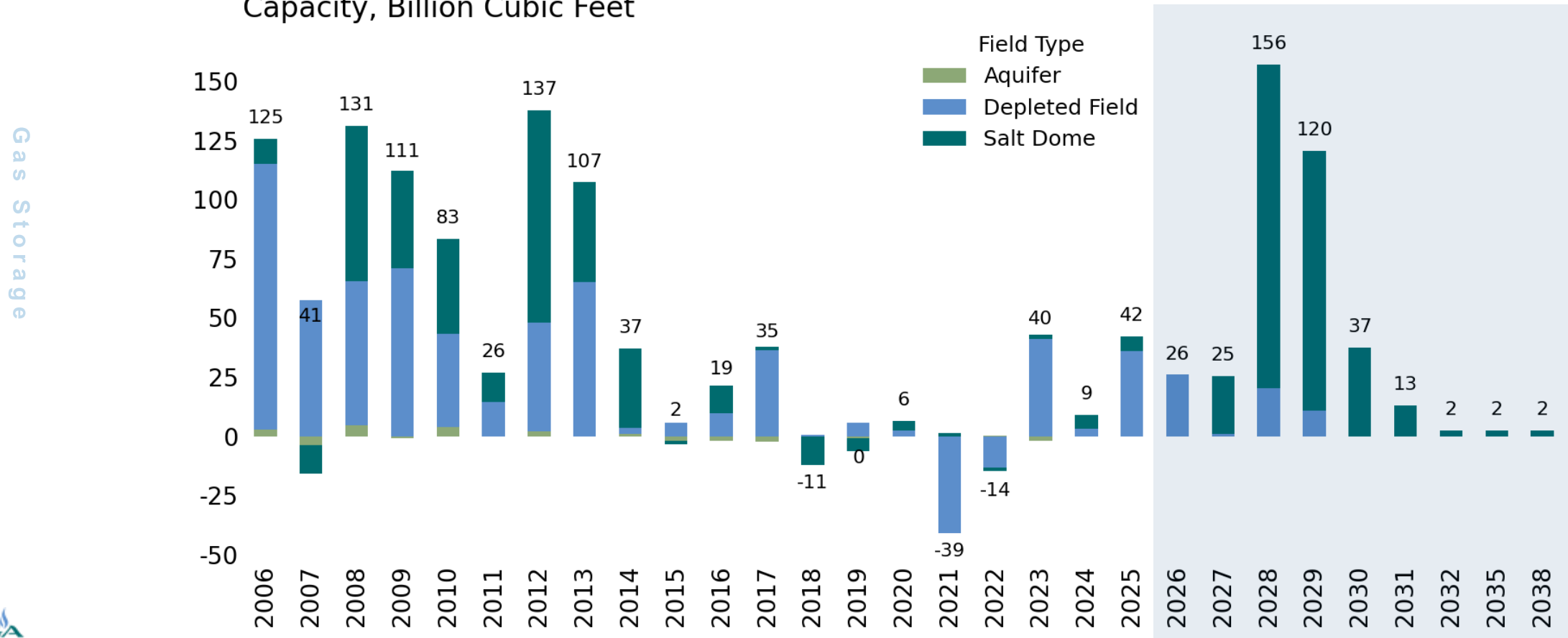
Subject to Revision

Source: Energy Information Administration, S&P Global Commodity Insights © 2025 by S&P Global, Inc. • Created with Datawrapper

# More than 400 Bcf of natural gas storage additions now expected through 2030, largely located in Gulf Coast, Rockies, & Southeast

## Working Gas Storage Additions

U.S. Lower 48 Working Gas Storage Capacity Changes by Field Type  
Capacity, Billion Cubic Feet

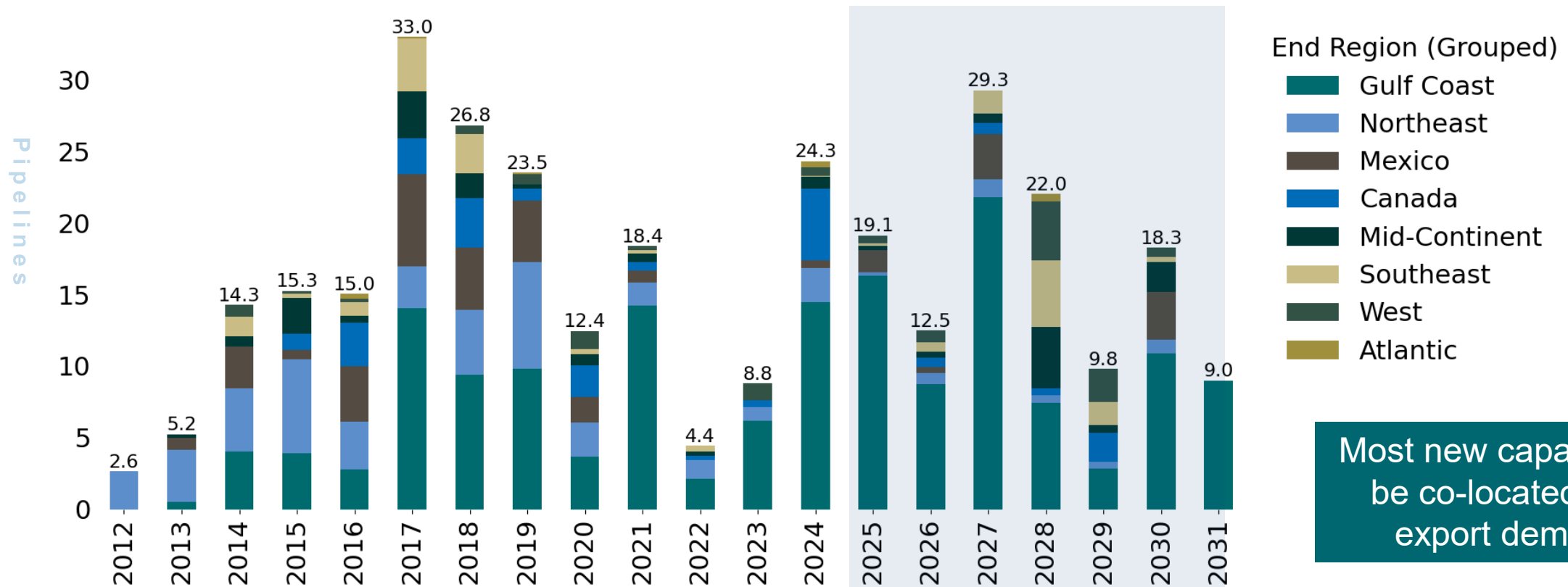


Source: S&P Global Commodity Insights, ©2025 by S&P Global Inc., Chart: American Gas Association, Data as of Oct 16, 2025, Subject to Revision

# New pipeline capacity is expected, largely intrastate projects located in the Gulf Coast. Interstate projects outside of the South remain a challenge.

## New pipeline capacity

North American Natural Gas Pipeline Capacity Expansions by End Region (Grouped)  
Billion Cubic Feet per Day



Source: S&P Global Commodity Insights, ©2025 by S&P Global Inc., Chart: American Gas Association

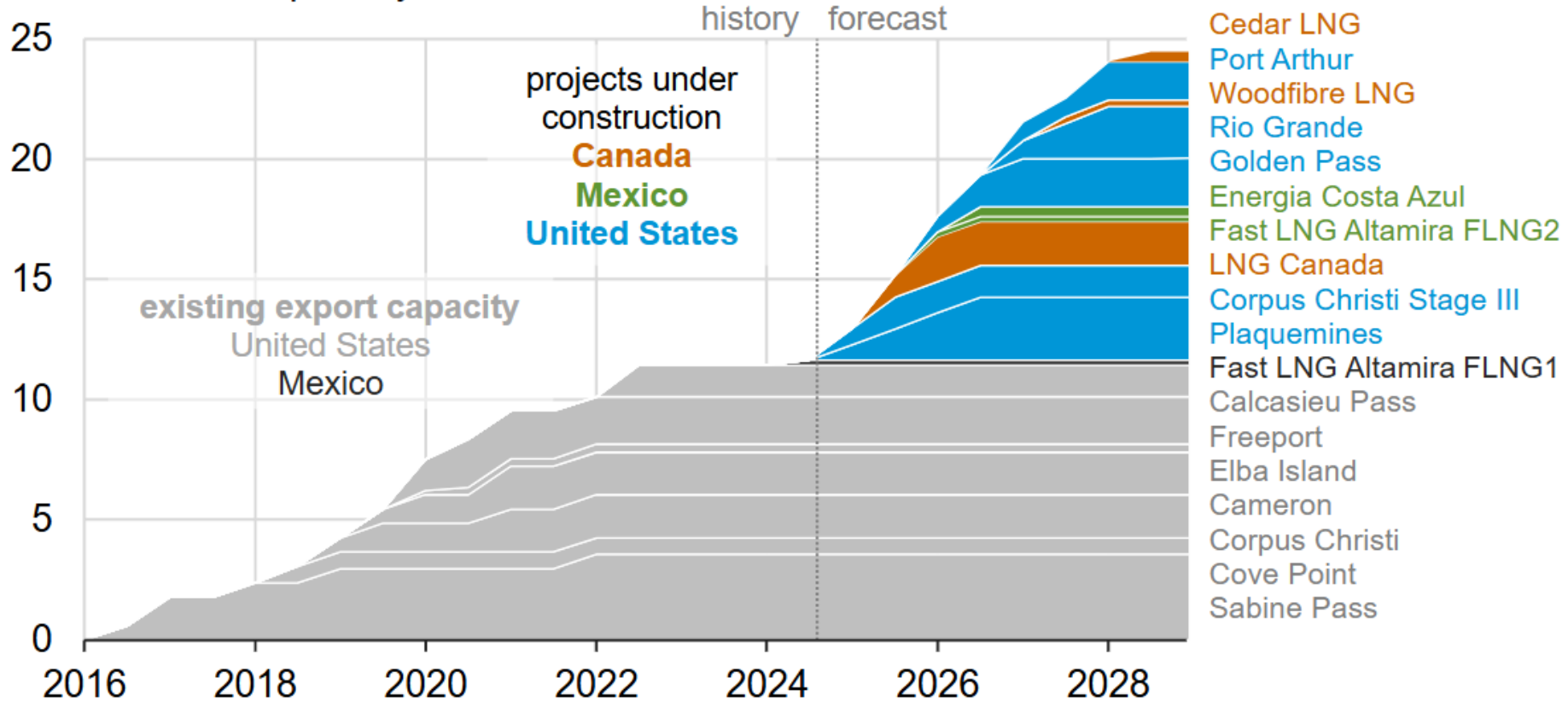
# U.S. LNG export capacity set to more than double by 2028

## Export capacity for liquefied natural gas

North America liquefied natural gas export capacity by project (2016–2028)  
billion cubic feet per day

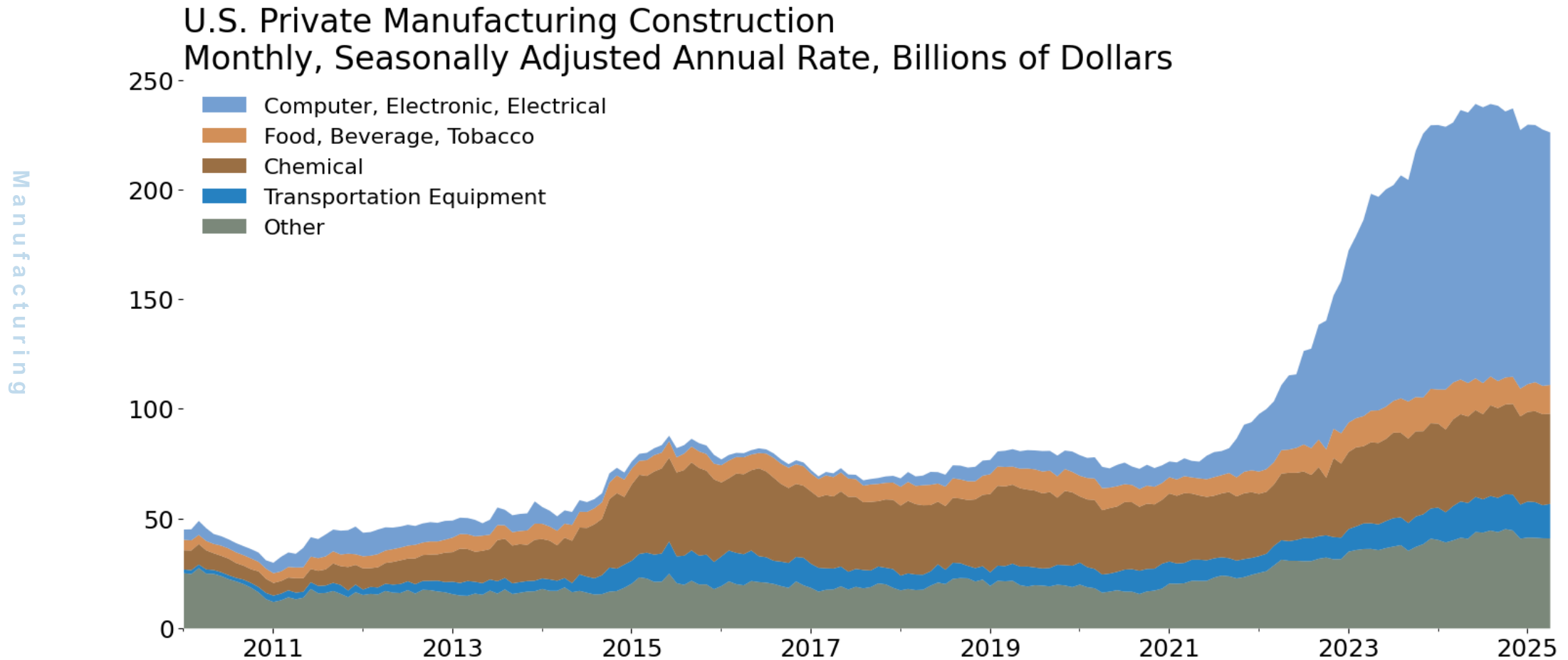


LNG Exports



# Manufacturing investment has tripled in four years, spurred by computer, electronic, and electrical spending

## Manufacturing Construction



Source: U.S. Census Bureau | Chart: American Gas Association

# Data center electricity demand projected to grow. How fast?

## Data Center Electricity Demand Outlook (2024 Forecast)

Projections of potential electricity consumption by U.S. data centers: 2023–2030

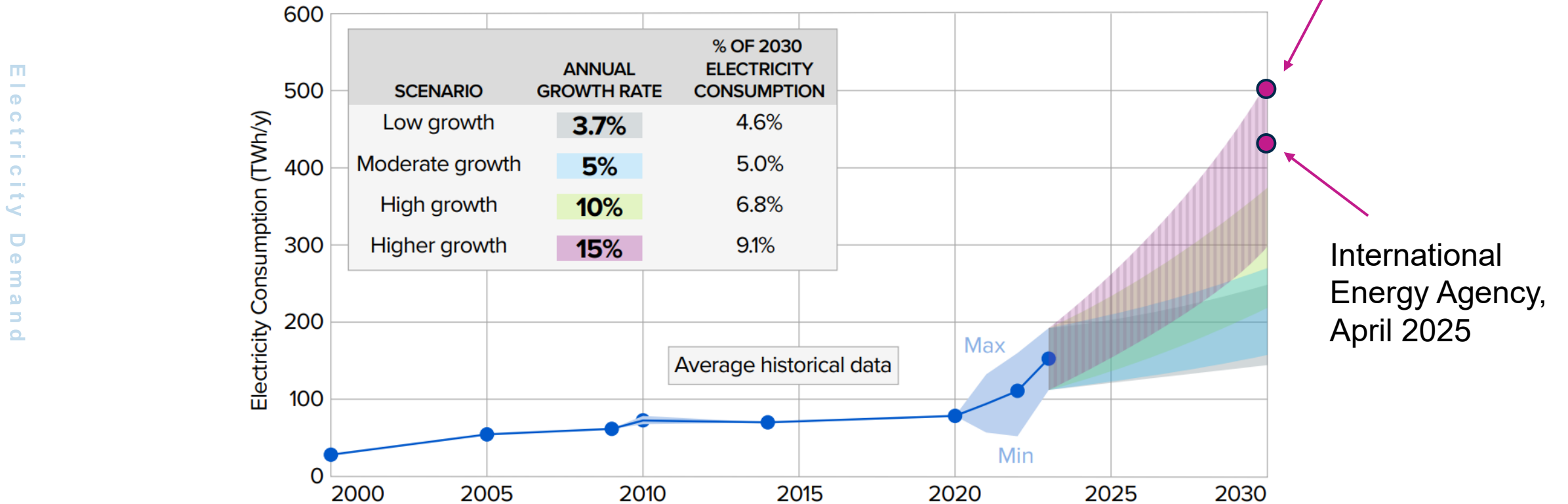


Figure ES-1. Projections of potential electricity consumption by U.S. data centers: 2023–2030. % of 2030 electricity consumption projections assume that all other (non-data center) load increases at 1% annually.

# Final Thoughts



## **Gas demand and supply is growing**

LNG exports, industrial demand, and electric power sector consumption drive new requirements.



## **New infrastructure is necessary**

Gas pipeline and storage infrastructure will be necessary to meet growing demand and maintain price stability.



## **Natural gas is critical for reliability**

Gas for electric power remains essential for meeting load growth and peak requirements. Maintaining generation, fuel deliverability, and infrastructure is essential for reliability.

# Recurring AGA Projects



Scan this QR code to receive AGA's Natural Gas Market Indicators in your inbox.



## Energy Insights

AGA's Energy Insights dive into topics and trends relevant to the natural gas market, member utilities, and consumers. Visit <https://www.aga.org/topics/energy-insights/> for more information.



## Natural Gas Market Indicators (NGMI)

NGMI is a biweekly publication focused on natural gas market trends such as supply, demand, prices, imports and exports, and storage inventories. Visit <https://www.aga.org/topics/ngmi/> for more information.



## Surveys and Data Collection

AGA distributes and analyzes responses from several surveys throughout the year. As one example, the Winter Heating Season Performance Survey collects data on winter heating planning from members to track trends on preparedness.

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# Contact

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[www.aga.org](http://www.aga.org)

# National Weather Forecast & Energy Outlook

## Electric Outlook

John Moura  
Director, Reliability Assessment & Systems Analysis  
North American Electric Reliability Corporation



**NERC**

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# 2025/26 Winter Reliability Assessment

NERC Reliability Assessments

National Natural Gas Readiness Forum Summit

November 18, 2025

John Moura, Director, Reliability Assessment and Performance Analysis

RELIABILITY | RESILIENCE | SECURITY

## Key Takeaways

- Resources are adequate across North America for expected peak conditions
- Regulatory and industry initiatives appear to be reducing winter reliability risks
  - Past two winters indicate improvement in the delivery of natural gas to generators since winter storms Elliott and Uri with overall less natural gas production decline during cold weather and fewer natural gas infrastructure force majeure
- Extreme winter cold weather challenges for BPS reliability
  - Uneven application of voluntary natural gas infrastructure freeze protection mitigations across most of North America
  - Timing misalignments between the natural gas and electric markets challenge fuel procurement over holiday weekends

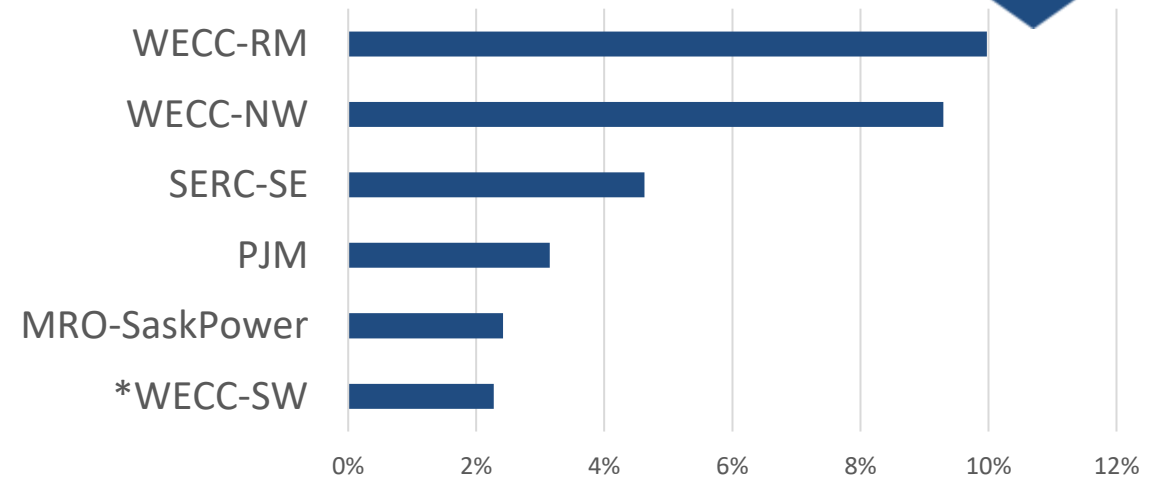
### 2025–2026 Winter Reliability Assessment

November 2025

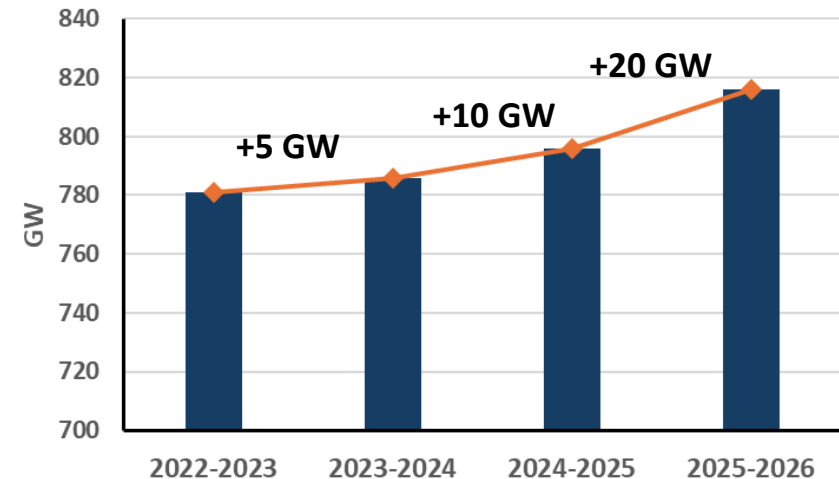


The WRA examines resource adequacy, risk scenarios, and industry preparations for the winter season.

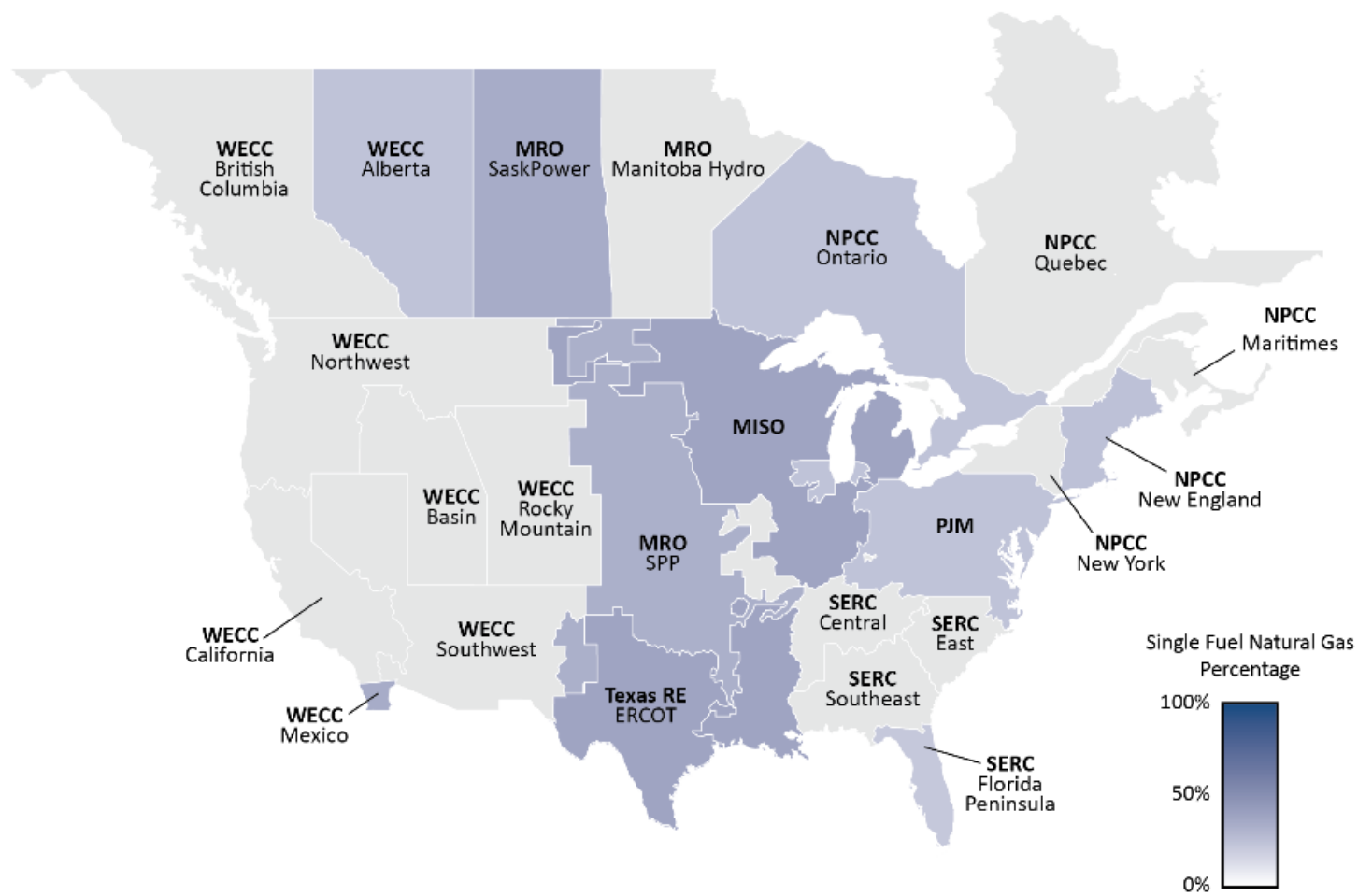
- Aggregate peak demand for all NERC assessment areas has risen by 20 GW (2.5%) since last Winter.
- Reserve margins in WECC-Basin and WECC-RM have fallen precipitously since Winter 2024-2025.
- In light of demand growth, winter capabilities of the future resource mix for adequacy remain of paramount concern for planners.



**Annual Increase in Peak Winter Demand (2% or More)**



# Single Fuel Gas-Fired Capacity 2025–2026 Winter



Note: Areas with less than 20% natural gas are shown in light gray.

## Single-Fuel Natural-Gas-Fired Generation

	Winter Capacity (GW)	Contribution to Total Winter Resource Mix
MISO	63.9	38%
TRE-ERCOT	53.0	38%
WECC-MX	2.2	34%
MRO-SaskPower	2.5	34%
SPP	33.4	32%
NPCC-New England	12.1	24%
PJM	60.9	23%
WECC-AB	13.9	23%
NPCC-Ontario	8.0	23%
SERC-FP	45.6	21%
WECC-CA	35.9	18%
WECC-SW	21.5	17%
WECC-Basin	4.9	16%
WECC-RM	6.2	14%
SERC-C	17.0	13%
SERC-SE	21.5	13%
WECC-NW	8.7	12%
SERC-E	11.3	9%
NPCC-New York	5.0	8%
NPCC-Maritimes	0.5	7%
MRO-Manitoba	0.3	4%
WECC-BC	0.1	1%
NPCC-Quebec	0.0	0%

***Supply shortages anticipated during extreme conditions***

**NPCC-Maritimes:** Imports needed for peak demand

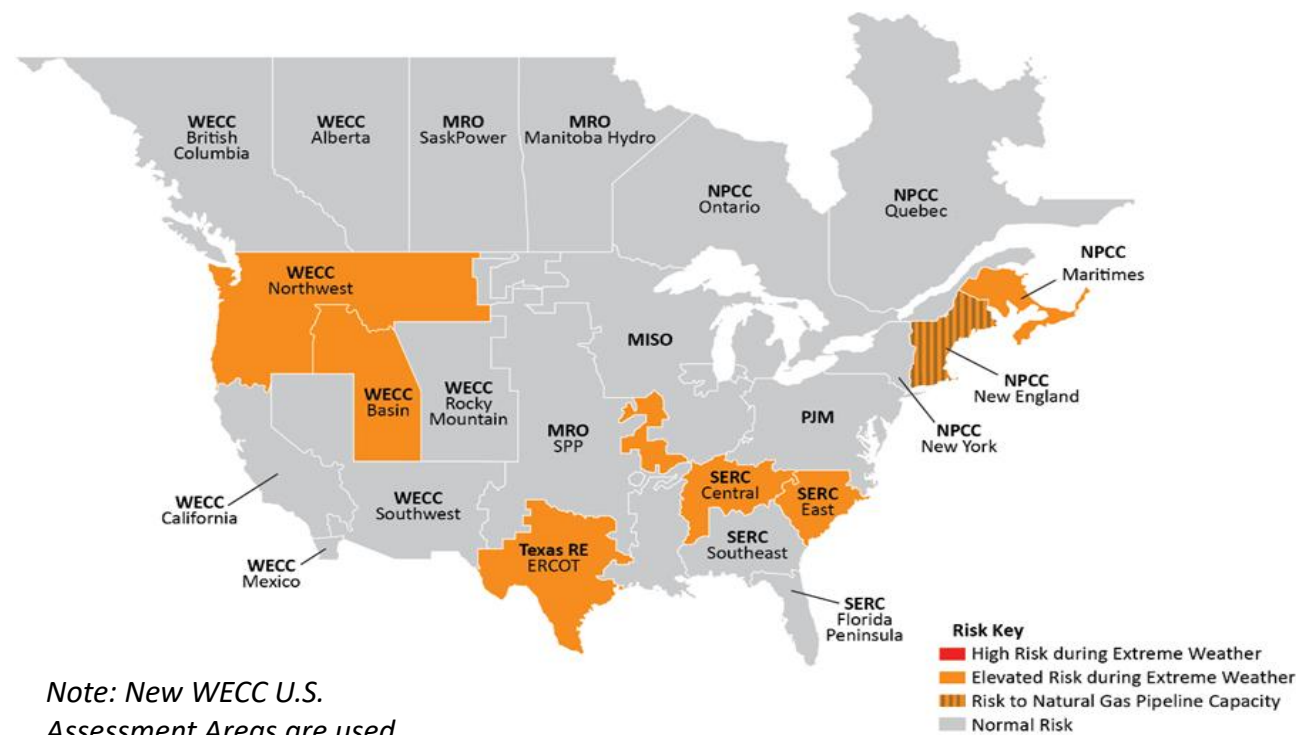
**NPCC-New England:** Stored fuels that mitigate natural gas infrastructure limitations can be depleted in extended extreme conditions

**SERC-Central:** Reserves are not sufficient for assessed extreme demand scenarios

**SERC-East and Southeast:** Resource shortages can occur during early morning hours in extreme cold

**TexasRE-ERCOT:** Strong load growth is contributing to continued risk of supply shortfalls in extreme cold

**WECC-Northwest and Basin:** Regional resources may not be sufficient during extreme conditions that cause thermal plant outages and wind performance issues



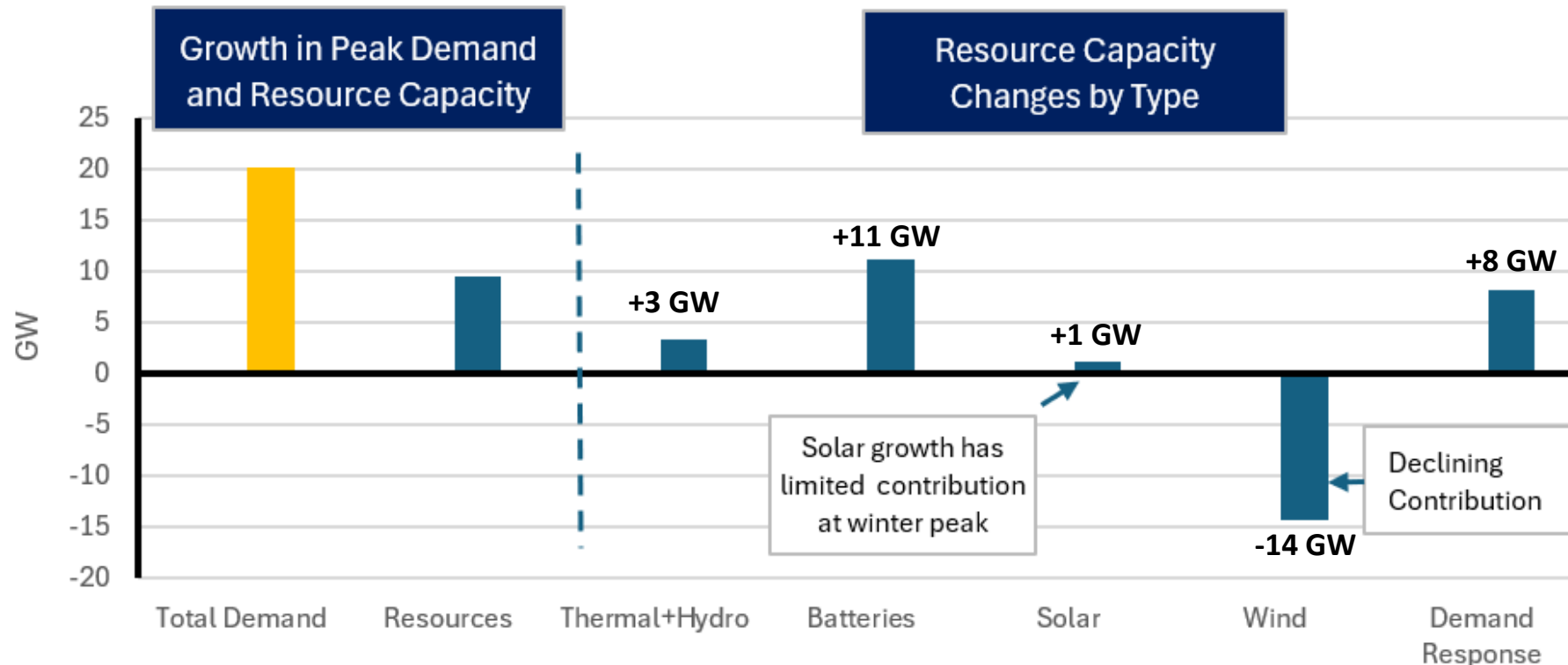
*Note: New WECC U.S. Assessment Areas are used in the 2025-2026 WRA*

Seasonal Risk Assessment Summary	
<b>High</b>	Potential for insufficient operating reserves in normal peak conditions
<b>Elevated</b>	Potential for insufficient operating reserves in above-normal conditions
<b>Normal</b>	Sufficient operating reserves expected

*Extreme conditions include 90/10 demand scenarios, historical high generator outage rates, and low variable energy resource scenarios*

# Resource gains fall short of rising winter demand

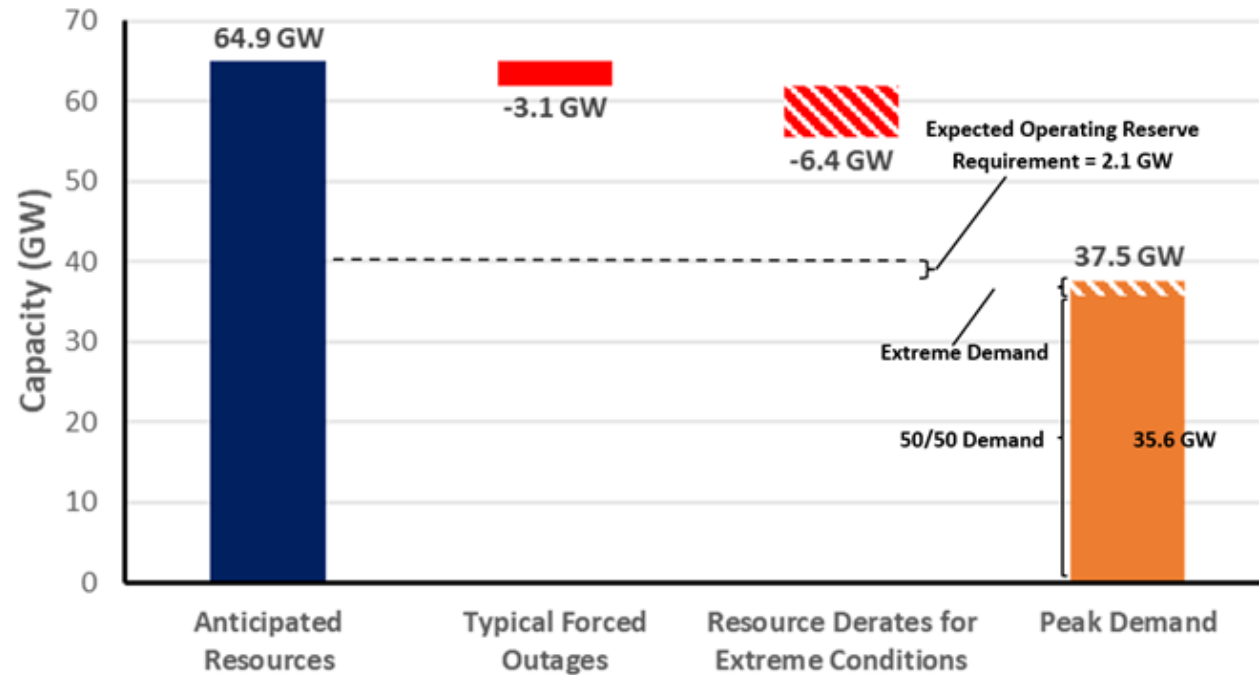
- Total BPS resources have increased by 9.4 GW since last winter (net change)
- Batteries and expanded demand response account for most additions
- An increasingly complex resource mix brings additional challenges for operators



**Electricity Demand and Supply Resource Changes Since Last Winter**

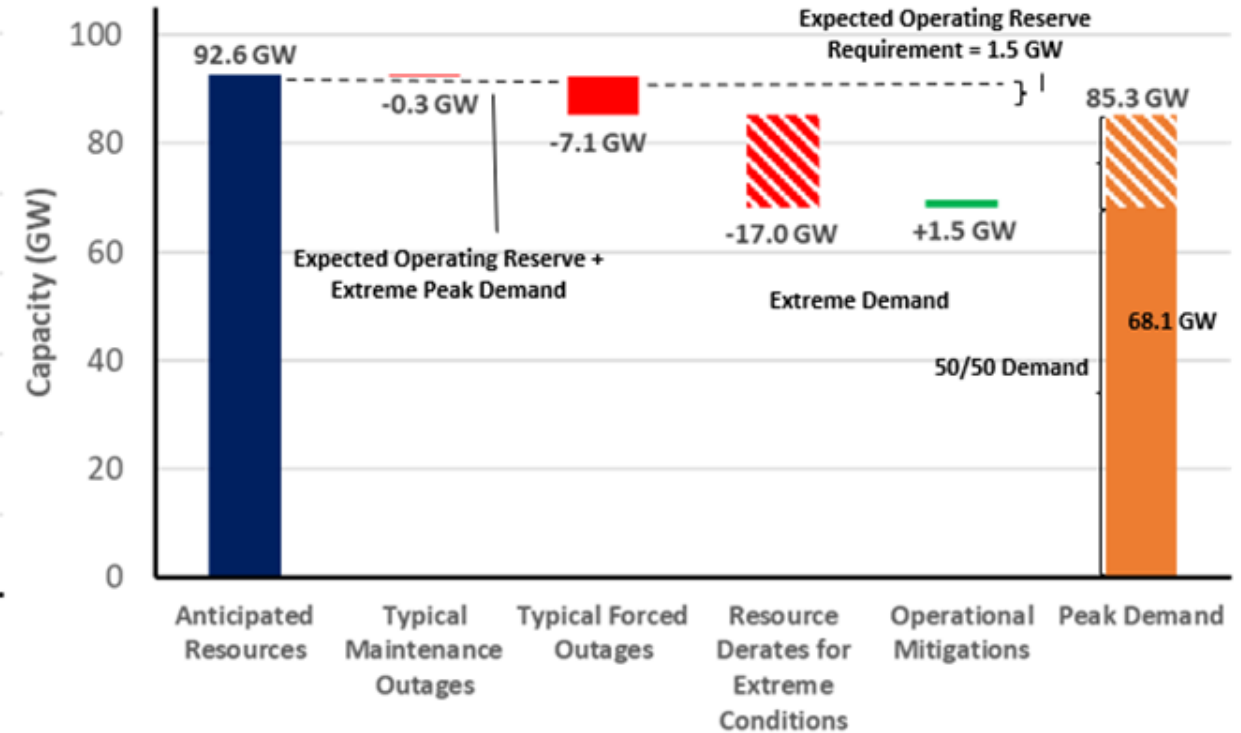
## Normal Risk

*2025-2026 Winter Risk Period Scenario  
WECC-California*



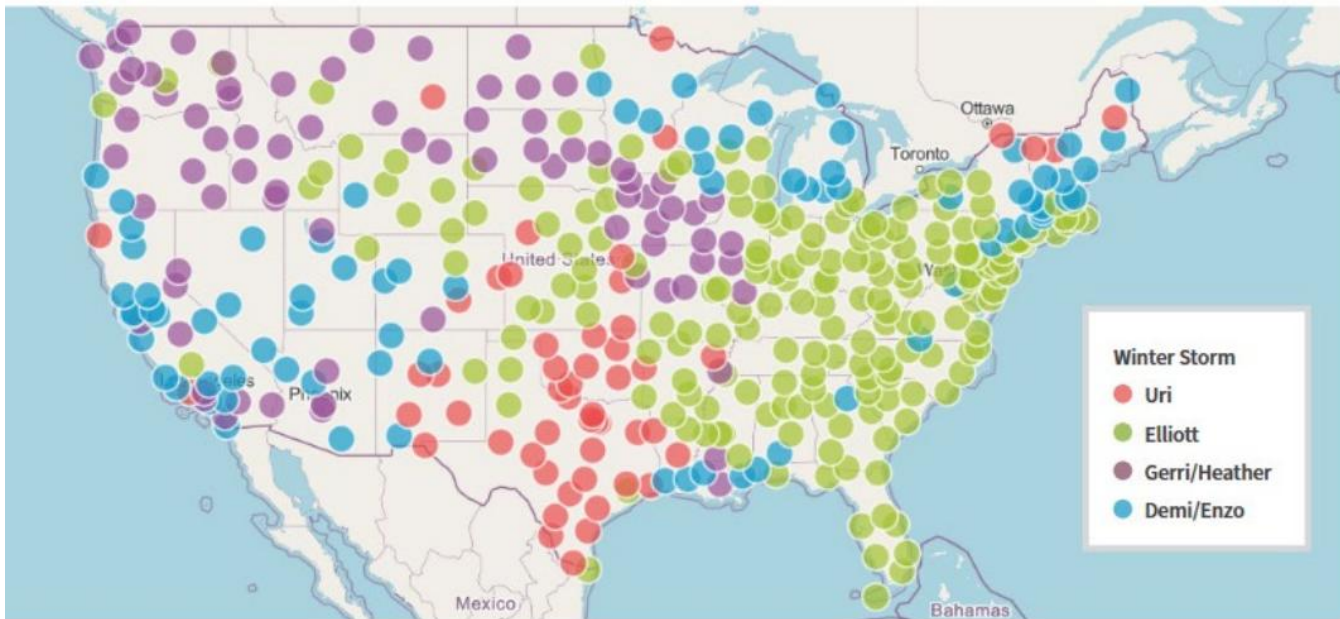
## Elevated Risk

*2025-2026 Winter Risk Period Scenario  
TexasRE-ERCOT*

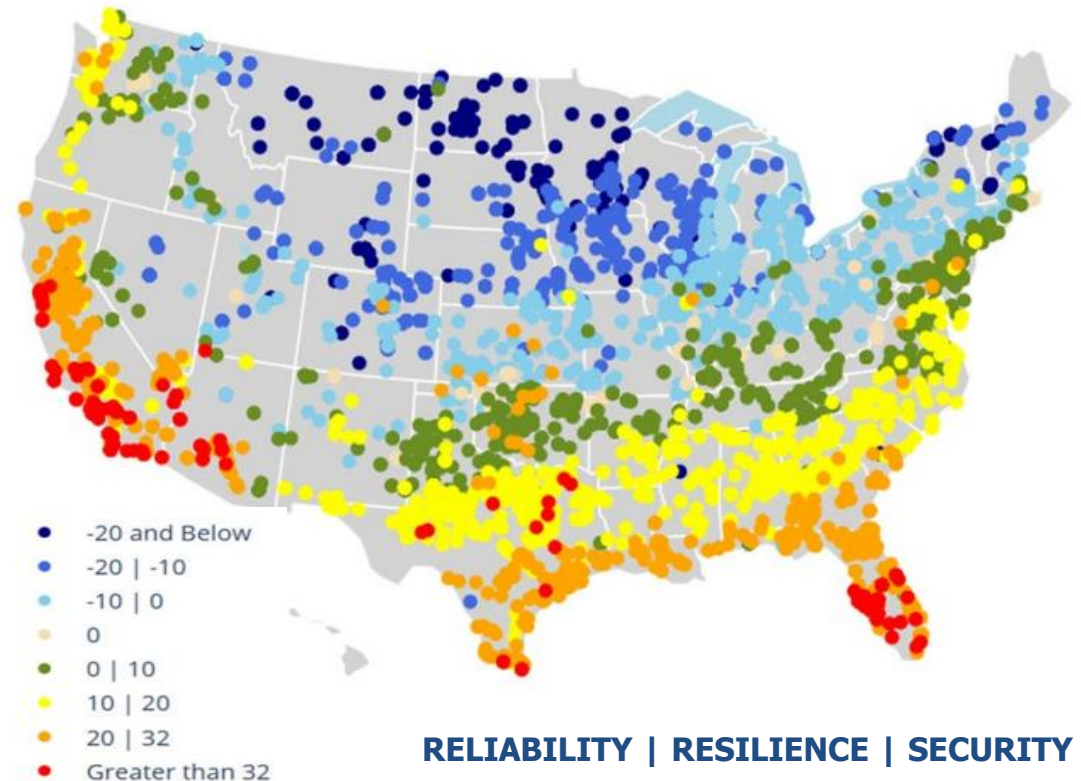


- January 2025 Arctic Storms resulted in no load shed events
- Improved generator performance attributed to weatherization, early unit commitment

- Reliability standards implemented in 2023 and 2025 require generator cold weather plans and operator coordination
- 96% of total net winter capacity report extreme cold weather temperatures (ECWT) at or below 32 degrees F



Source: NOAA (via Velocity Suite, © 2025 Hitachi Energy, The Velocity Suite)



- **State regulators and policy makers** – support environmental and transportation waivers when requested to manage potential emergencies

For grid owners and operators:

- **Cold Weather Preparations** – Operators should review seasonal operating plans, communications protocols, and lessons-learned
- **Fuel** – Balancing Authorities (BA) should implement generator fuel surveys to monitor the adequacy of fuel supplies
- **Generator Readiness** – GO/OPs should complete winter readiness preparations, deploy weatherization packages in advance of winter storms, frequently check mitigations; & maintain awareness of natural gas procurement/transportation close dates that precede long holiday weekends.
- **Load Forecasting** – BA should anticipate load forecasts uncertainty and be prepared to manage potential reserve deficiencies

## 1. Natural Gas Supply and Transportation Risks

- Production Well Freeze-Offs and Winterization
- Dependence on Electricity
- Pipeline Constraints
- Facility Outage / Disruption

## 2. Electric and Gas Market Harmonization Risks

- Fuel and Transportation Scheduling
- Unit Commitment
- Operational Coordination
- Planning Coordination

## 3. Resource Adequacy and Capacity to Support Large Ramps Risks

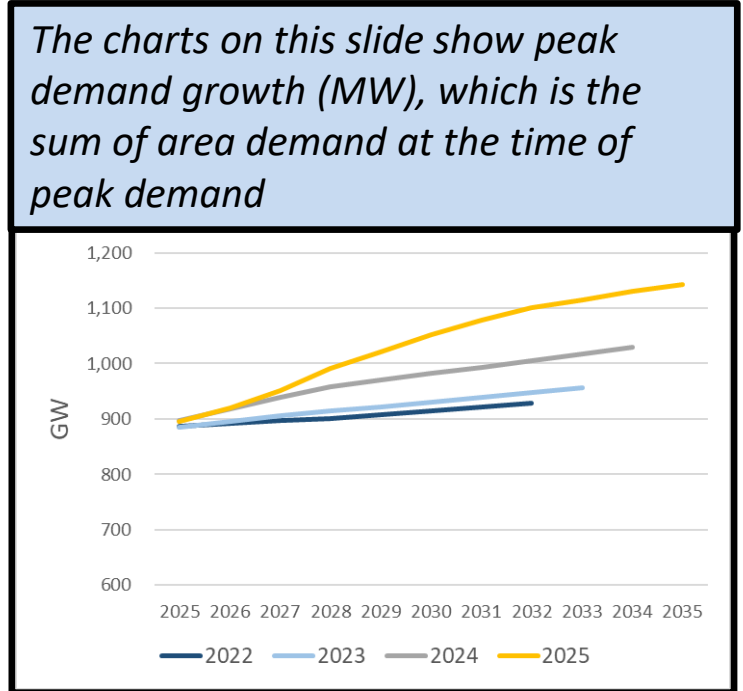
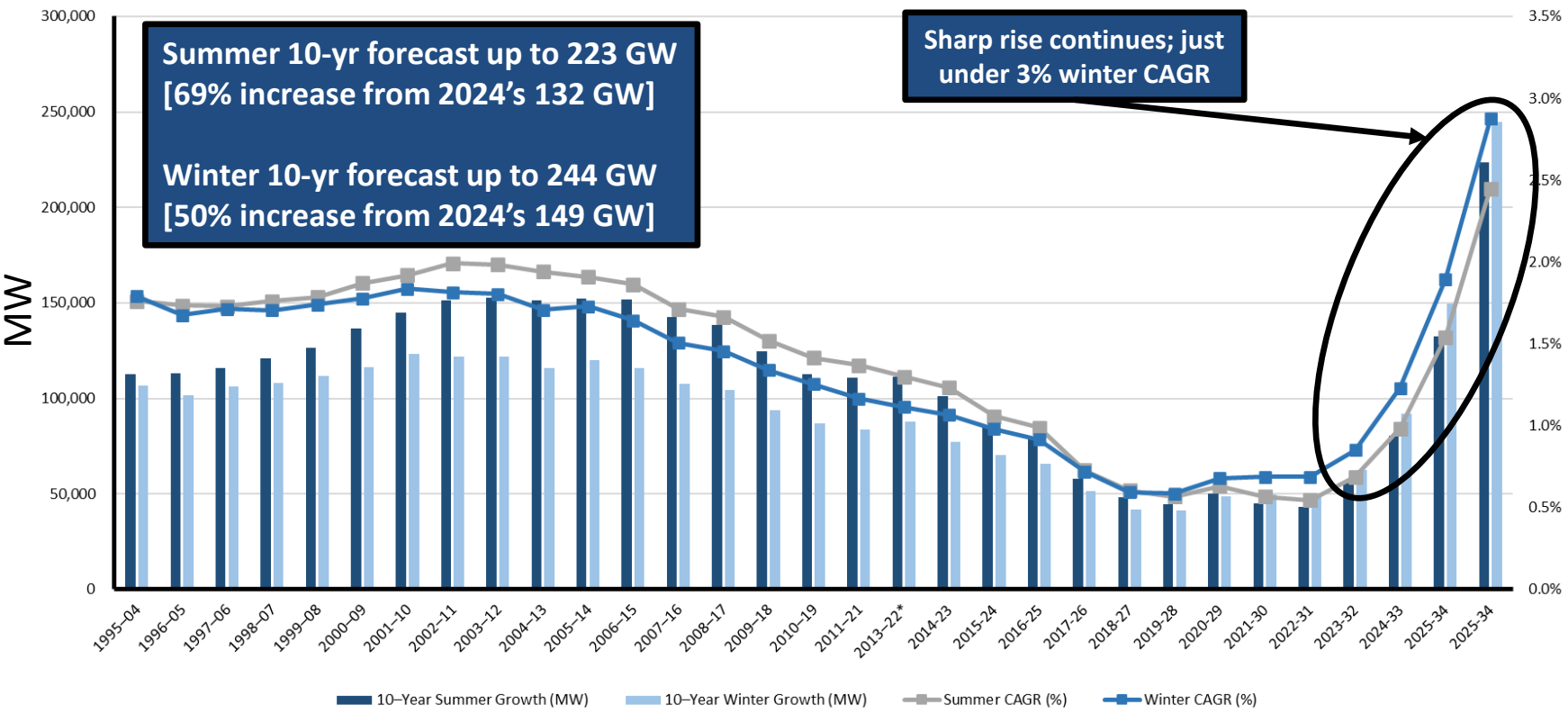
- Resource Performance During Winter Peak Demand
- Generation Preparedness and Fuel Assurance

## 4. Vulnerabilities in Generator Winterization Risks

- Implementation Challenges
- Actual Winter Conditions More Severe than Design Capability
- Back-up Fuel Unavailability

## Mitigation Opportunities

- Enhanced Winterization
- Capacity and Energy Planning Enhancements
- Operational Coordination and Preparedness
- Improved Communication Protocols
- Market Reforms
- Cross-Market and Regulatory Coordination



**10-year BPS Summer Peak Demand Growth**  
With 10-year Growth From Previous LTRA

Other demand insights:

- Data centers and other new load types are making demand more complex
- Data center load factors are more round-the-clock than other load types (e.g., heating, industrials) causing load to remain high over more hours
- More load variability as some large loads can respond to grid or demand conditions

Preliminary, do not cite



# Questions and Answers

**Break**  
**2:45 – 3:15**

# Winter Preparedness for Energy Reliability

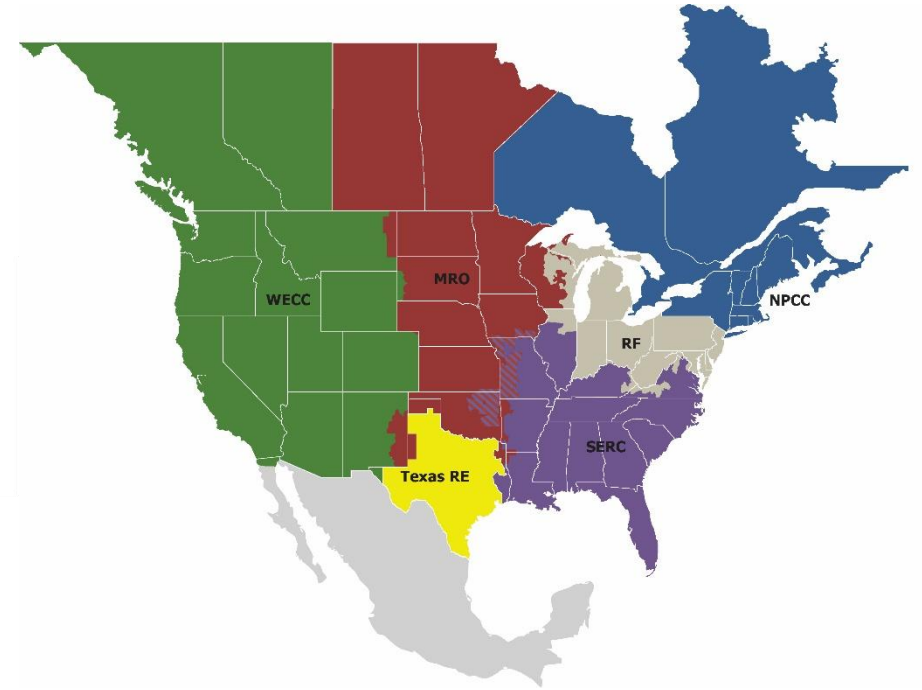
## Overview of January 2025 Arctic Events

Kal Ayoub  
Director, Office of Electric Reliability  
Federal Energy Regulatory Commission





**NERC**  
NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION



# System Performance Review of the January 2025 Arctic Events

National Natural Gas Readiness Forum Summit: November 18, 2025



*This presentation and its contents were prepared by the staff of the Federal Energy Regulatory Commission (FERC) in consultation with staff from the North American Electric Reliability Corporation (NERC) and its Regional Entities. The presentation, its contents, and the accompanying remarks do not necessarily reflect the views of FERC, NERC, or any of its Regional Entities.*



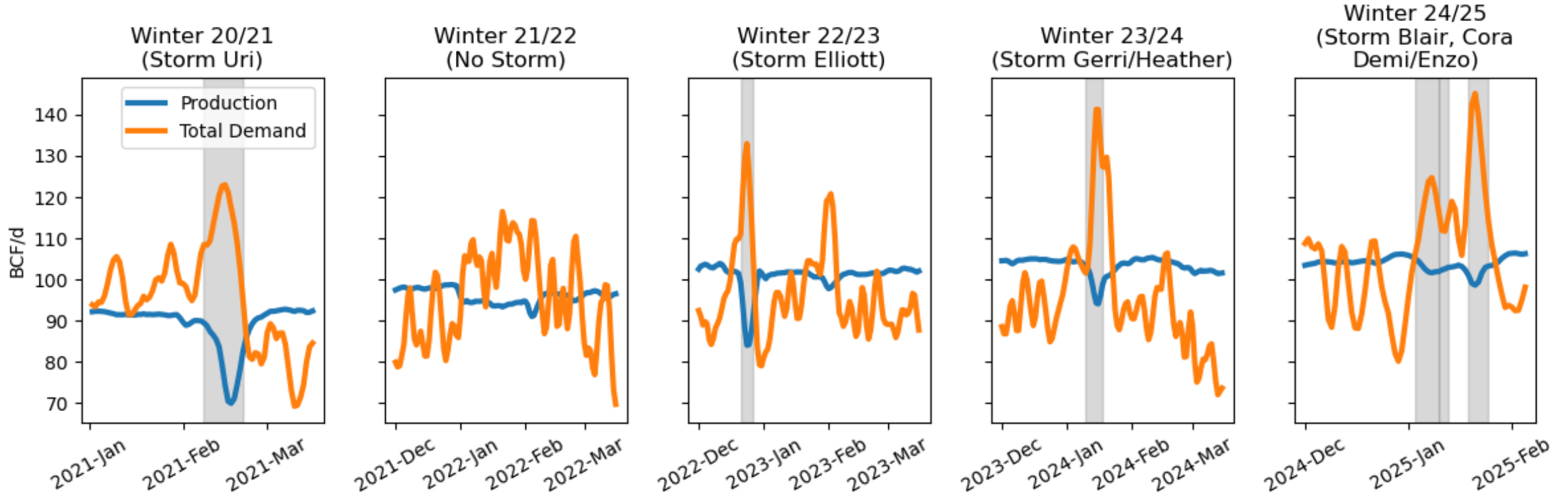
# Major Takeaways

- The January 2025 arctic events review identified-improved communication and coordination between the natural gas and electric industries successfully navigating natural gas and electric demand as well as generation outages.
- Generators appeared to perform better compared to prior winter storms, in part due to:
  - Improved winter preparedness;
  - Increased situational awareness; and
  - Implementing lessons learned from prior extreme cold weather events and report recommendations.
- The natural gas system performed well with only minor production declines and *force majeure*.
- There is a continued need to implement recommendations from prior reports, studies, and reviews.





# Winter Natural Gas Production and Demand



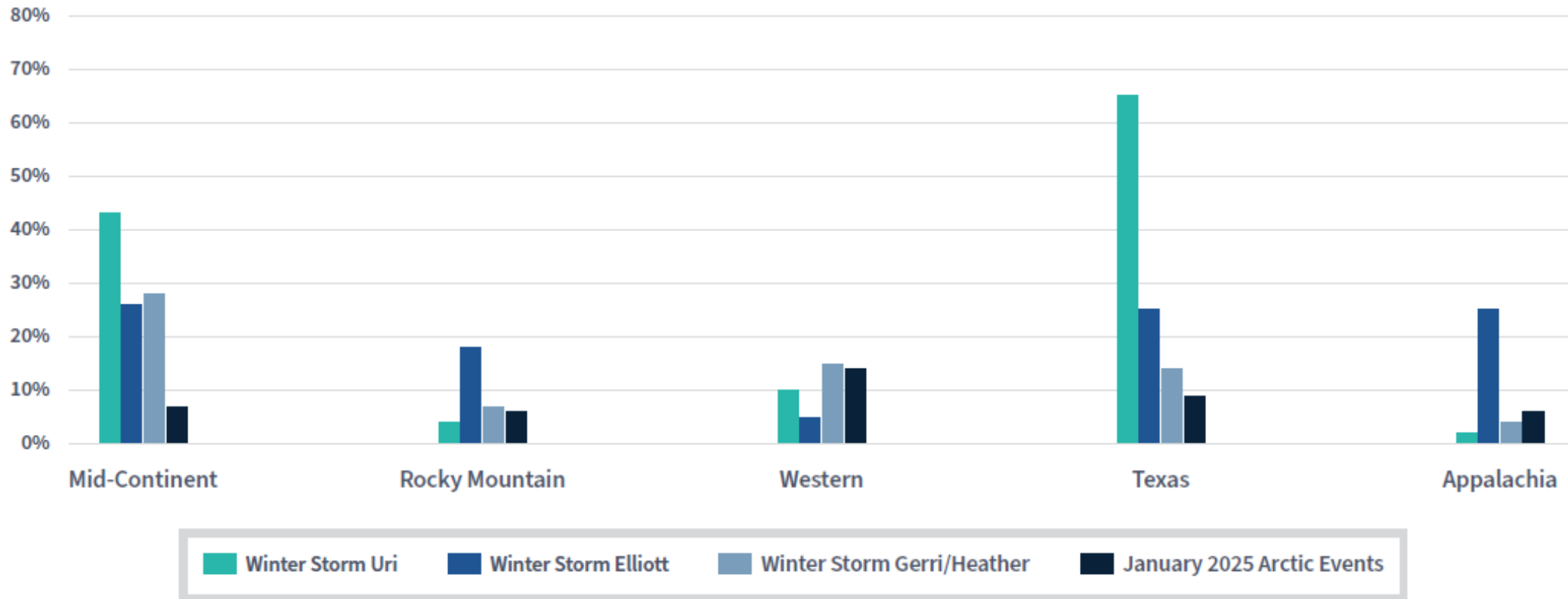
Source: S&P Global



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# Natural Gas Production Declines



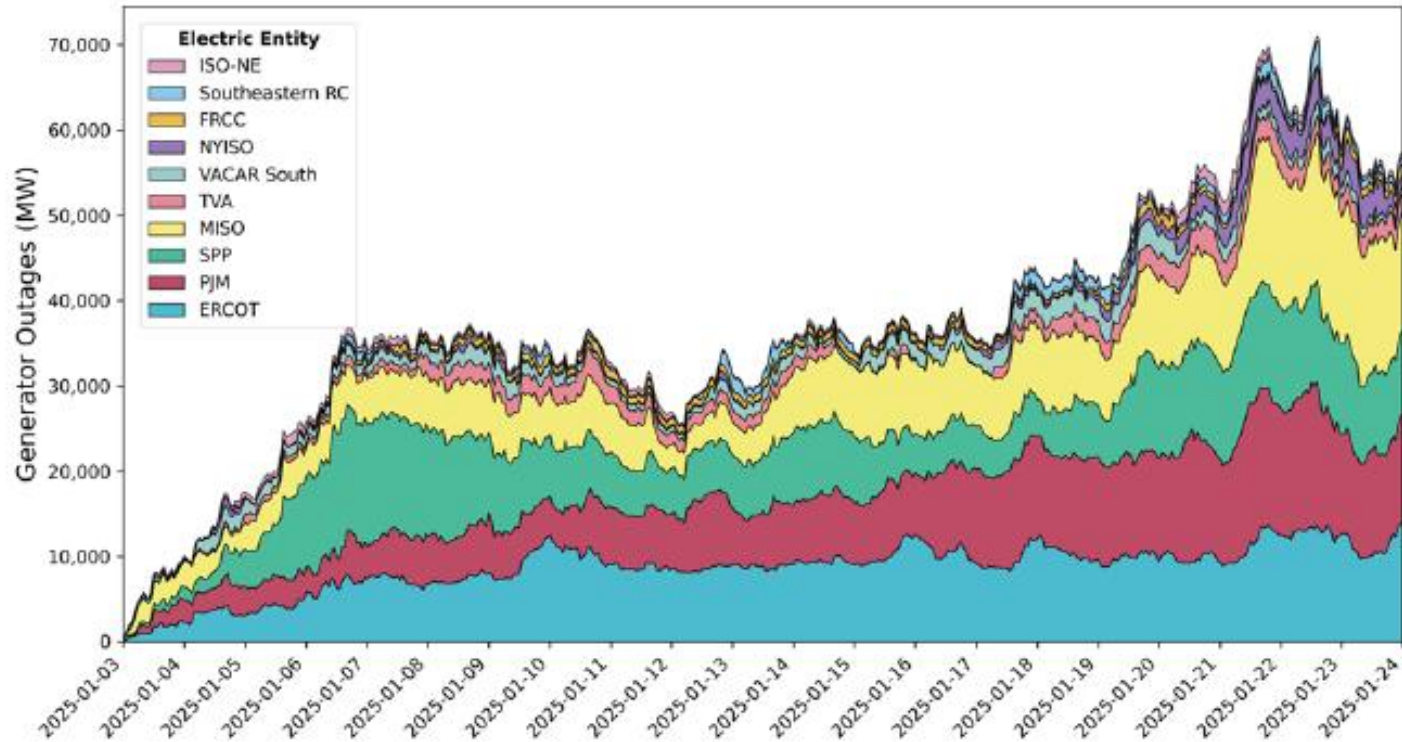
Source: S&P Global Commodity Insights. © 2025 by S&P Global Inc.



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# Cumulative Incremental Unplanned Generator Outages in the Eastern and Texas Interconnections from January 2-24, 2025



Data Source: 2025 January Arctic Events Data Requests

Jan 3-9, 2025 Winter Storm Blair      Jan 9-12, 2025 Winter Storm Cora      Jan 19-24, 2025 Winter Storm Demi/Enzo

Source: 2025 January Arctic Events Data Requests



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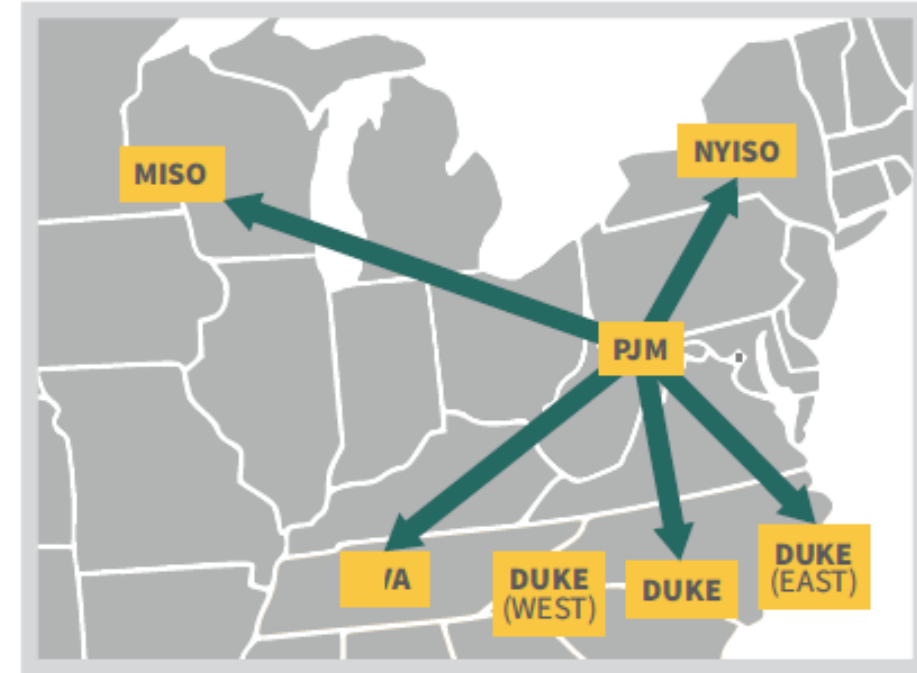
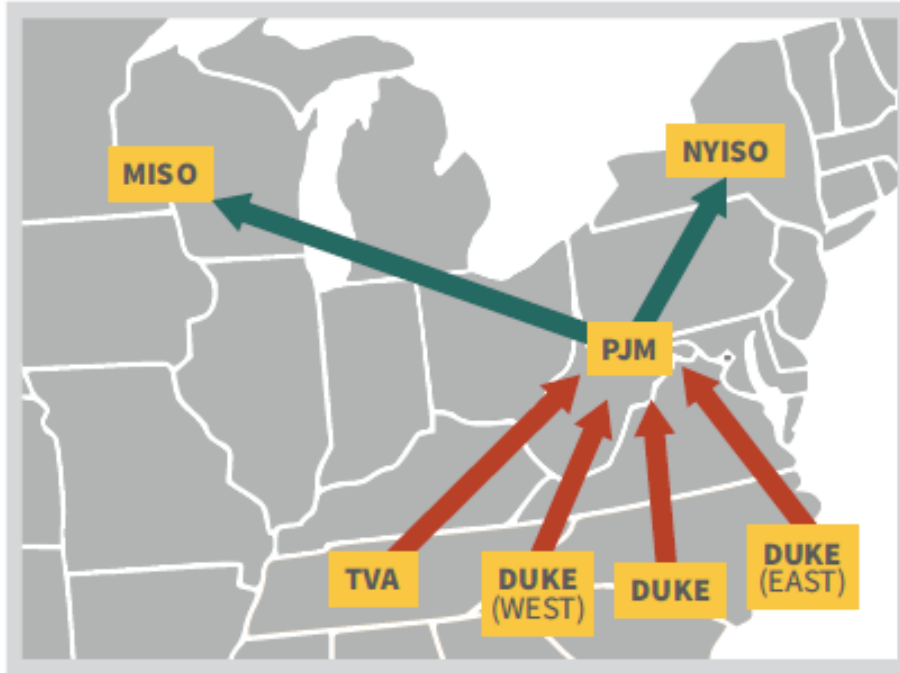
# Energy Transfers

TYPICAL WINTER HOUR

Average Net Intercange = 1962 MW

DEMI/ENZO DEMAND PEAK

Average Net Intercange = 7650 MW



PJM interchange at time of maximum demand (1/22/2025 at 8:00 AM to 9 AM EST)

Source: Energy Information Administration (EIA)

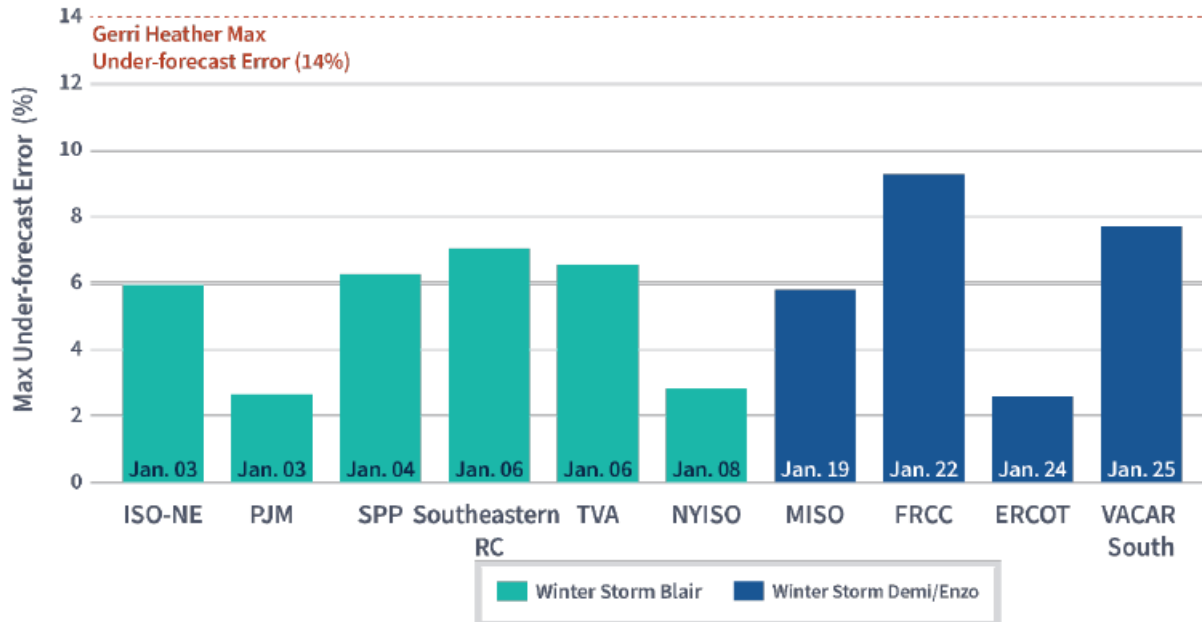


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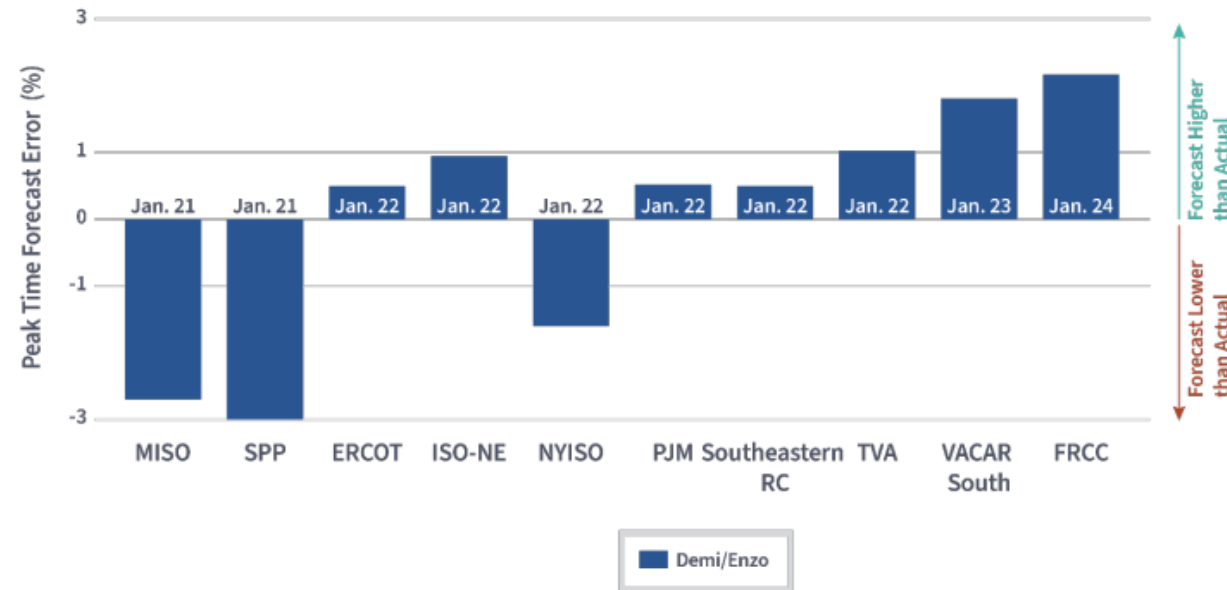


# Load Forecasting

## Largest Under-Forecast Percent Error – January 2025

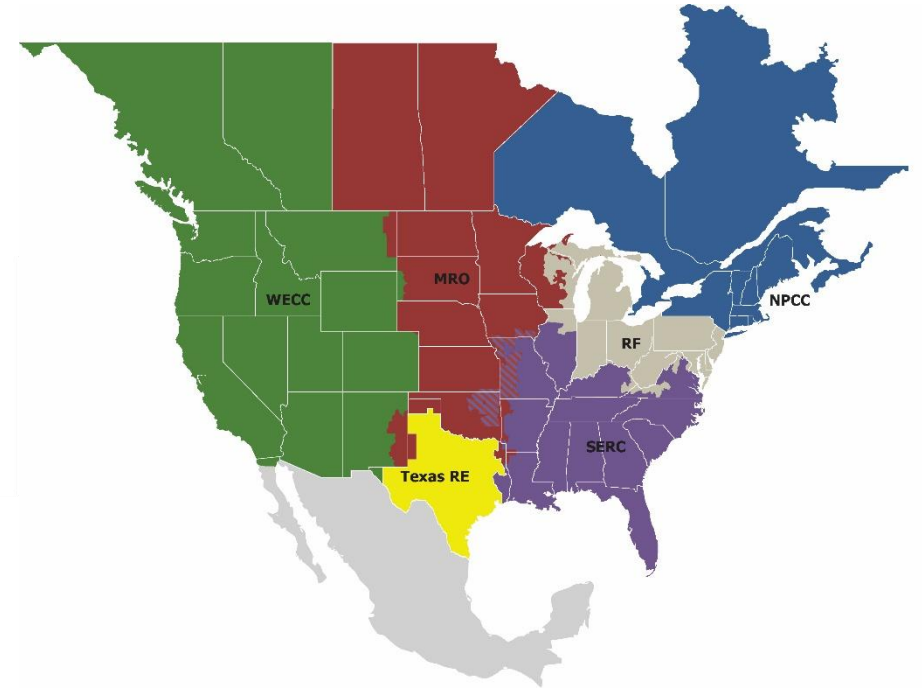


## Forecast Percent Error at Peak Demand – January 2025





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RELIABILITY CORPORATION



# System Performance Review of the January 2025 Arctic Events

National Natural Gas Readiness Forum Summit: November 18, 2025



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# Winter Preparedness for Energy Reliability Federal Perspective

Bernard McNamee  
Partner and Former Commissioner  
McGuireWoods



# — Winter Preparedness for Energy Reliability State Perspective



Jim Kerr  
Chairman, President & CEO  
Southern Company Gas



Commissioner, NARUC  
President  
Washington Utilities &  
Transportation Commission



Jehmal Hudson  
Commissioner  
Virginia State Corporation  
Commission



Tricia Pridemore  
Commissioner

# Closing Remarks

Karen Harbert  
President & CEO  
American Gas Association



# 2025 Natural Gas Readiness Forum Summit

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# Welcome back and AGA Antitrust Compliance Guidelines



Karen Harbert  
President & CEO  
American Gas Association

Matthew Agen  
Chief Regulatory Counsel, Energy  
American Gas Association



# — Opening Remarks

Timothy Kocher  
Deputy Director, Office of Cybersecurity, Energy  
Security, and Emergency Response  
US Department of Energy



# — Keynote

Dwight Keen  
Commissioner  
Kansas Corporation Commission



# Natural Gas/Electric Coordination Organized Electric Market Panel



Heather Polzin  
Senior Reliability Advisor  
SERC Reliability Corporation



John Stevenson  
Energy Security Principal  
New York Independent  
System Operator (NYISO)



Mike Mattox  
Senior Advisor, Operations  
Midcontinent Independent  
System Operator (MISO)



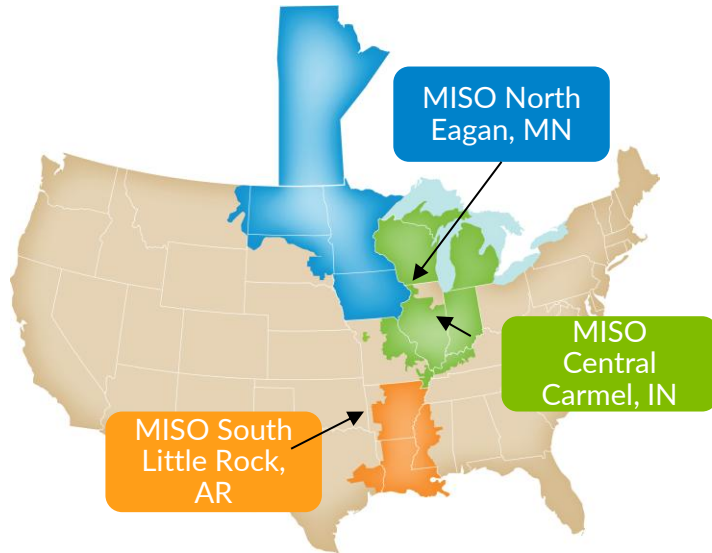
# AGA Natural Gas Readiness Forum

Atlanta, GA  
November 19, 2025

Mike Mattox, Senior Advisor – Operations  
[mmattox@misoenergy.org](mailto:mmattox@misoenergy.org)

# MISO Overview

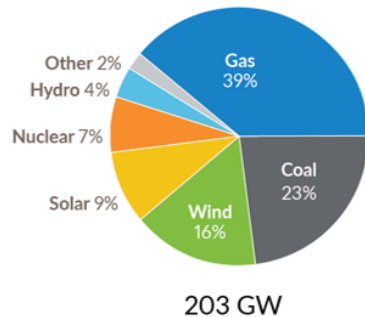
MISO's reliability footprint and regional control center locations



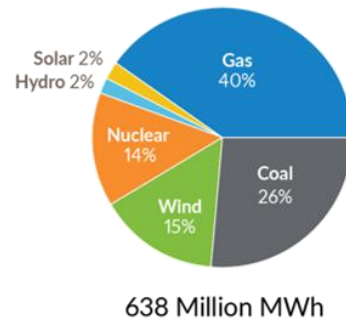
## MISO KEY FACTS

Area Seved	15 U.S. States and Manitoba, Canada
Population Served	45 Million
Transmission Line	79,000 Miles
Generating Units	~1,949
Record Demand	127.1 GW 7/20/2011
Wind Peak	25.6 GW 1/12/2024
Solar Peak	14.5 GW 9/7/2025
Members	56 Transmission Owners
	175 Non-transmission Owners
Market Participants	> 550
Market Transactions	> \$33 billion in 2024

**INSTALLED CAPACITY**  
June 2025



**ENERGY PRODUCTION**  
January-December 2024



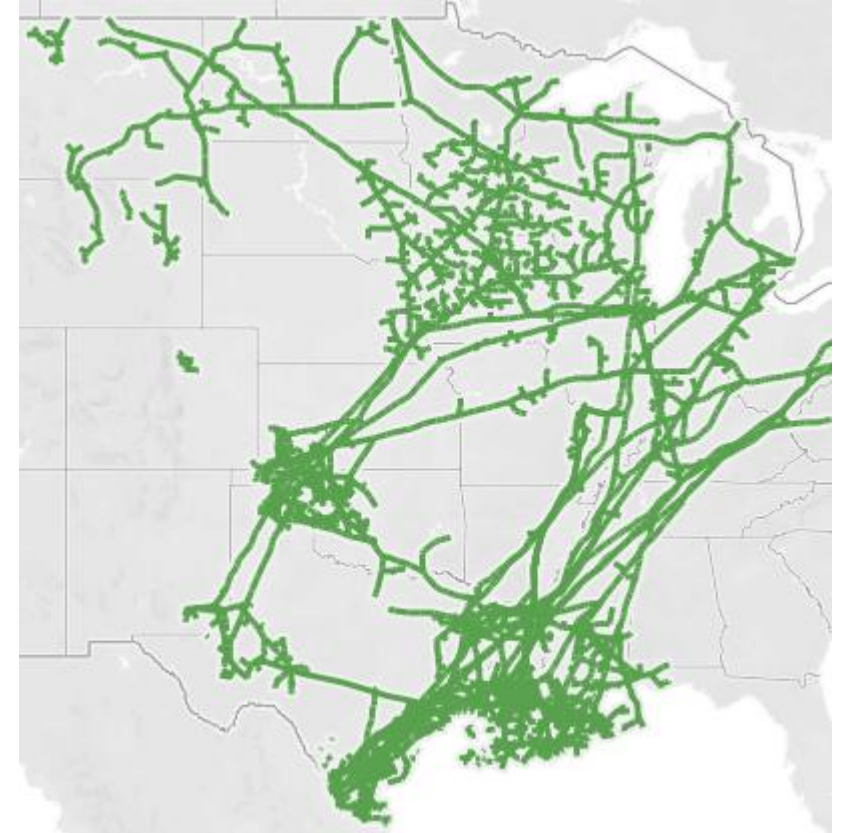
More info at

[www.misoenergy.org](http://www.misoenergy.org)

# Gas Pipelines serving MISO Units

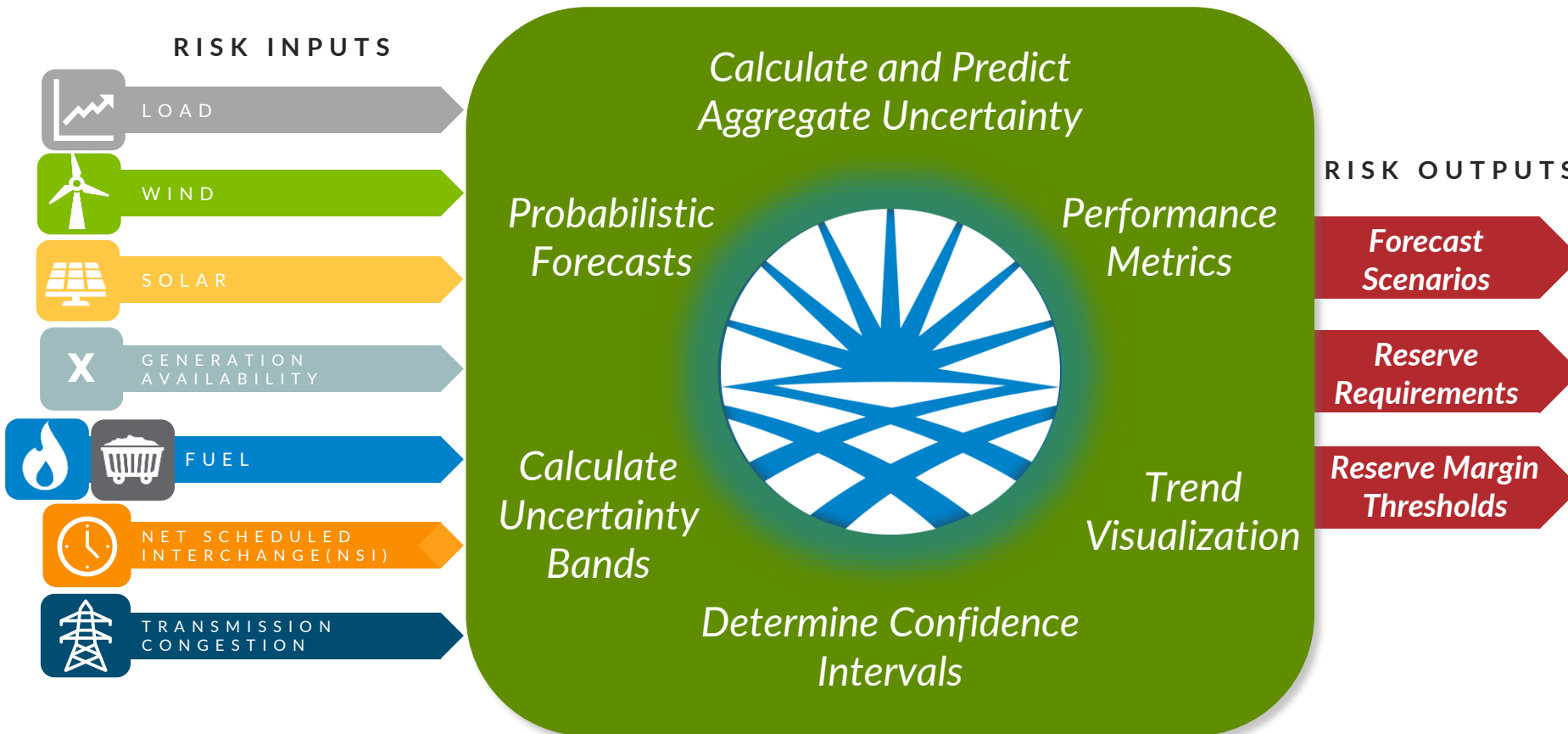
## 2025 Generator Winterization Survey

- 28 Inter-State pipelines
- 14 Intra-State pipelines
- 21 Local Distribution Companies



# Grid uncertainties are reinforcing the need for new methods of decision making

## MISO UNCERTAINTY PLATFORM



### Key Components:


- Availability and confidence of data
- Situation awareness for extreme events
- Reliability and market efficiency
- Scalable cloud-centric platform

# — Natural Gas/Electric Coordination

## Winter Readiness Activities from a Natural Gas Transmission Perspective

Chris Smith  
Regulatory Counsel  
Interstate Natural Gas Association of America



The background of the slide is a photograph of several large, parallel industrial pipes, likely for natural gas, stretching into the distance. The pipes are supported by blue metal brackets. The scene is set during sunset or sunrise, with a warm, orange and yellow glow in the sky and a blurred industrial facility in the background.

# Winter Readiness Activities from a Transmission Perspective

---

Interstate Natural Gas Association of America

Natural Gas Readiness Forum  
November 19, 2025

# INGAA Winterization Commitments Reflect Commitment to Reliability.

INGAA members always have invested in facilities and undertaken pre-winter preparation activities to ensure safe, reliable service.

INGAA's voluntary commitments reflect members' long experience with preparing for extreme weather.

**Winter Weather Headlines**

The National Weather Service issues watches, warnings and advisories for winter weather. Here's the criteria for these products in central and southeast Illinois:

Watches	Advisories	Warnings
<p><b>Winter Storm Watch:</b> Conditions favorable for a winter storm event, which is a threat to life or property.</p> <p><b>Blizzard Watch:</b> Conditions favorable for a blizzard event (low visibility &lt; 1/4 mi. with winds at least 35 mph)</p>	<p><b>Winter Weather Advisory:</b> Issued for one or more of the following:</p> <ul style="list-style-type: none"><li>- Snow of 3-5" in 12 hrs</li><li>- Sleet &lt; 1/2"</li><li>- Freezing rain with sleet/snow</li><li>- Blowing snow</li></ul> <p><b>Freezing Rain Advisory:</b> Ice accumulation &lt; 1/4"</p>	<p><b>Winter Storm Warning:</b> Heavy snow of 6" in 12 hrs or 8" in 24 hrs, or sleet of 1/2" or more</p> <p><b>Ice Storm Warning:</b> Ice accumulation 1/4" or more</p> <p><b>Blizzard Warning:</b> Blizzard conditions for at least 3 hours</p>

*Commitments focus on three areas:*

- Asset Integrity
- Stakeholder Coordination
- Personnel Safety

***Some preparations occur pre-winter. Others occur as needed in advance of storms.***

***The list is not exhaustive. INGAA members might undertake other actions to prepare for winter or specific storms.***

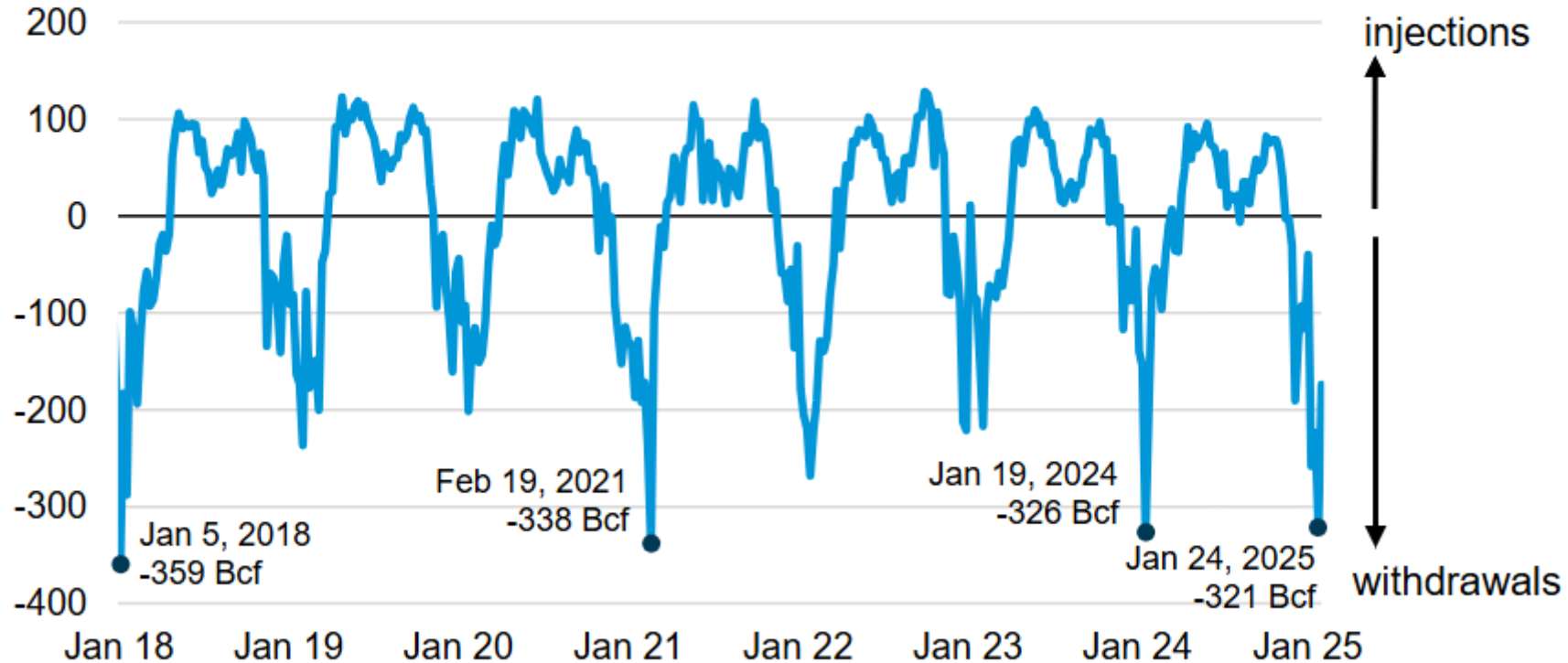
# Asset Integrity: Extreme Cold Creates Significant Demand for Gas.

FEBRUARY 10, 2025

## Recent cold snap results in fourth-largest withdrawal from underground natural gas storage

### Weekly net natural gas storage changes, Lower 48 states (2018–2025)

billion cubic feet (Bcf)



**Data source:** U.S. Energy Information Administration, [Weekly Natural Gas Storage Report](#)

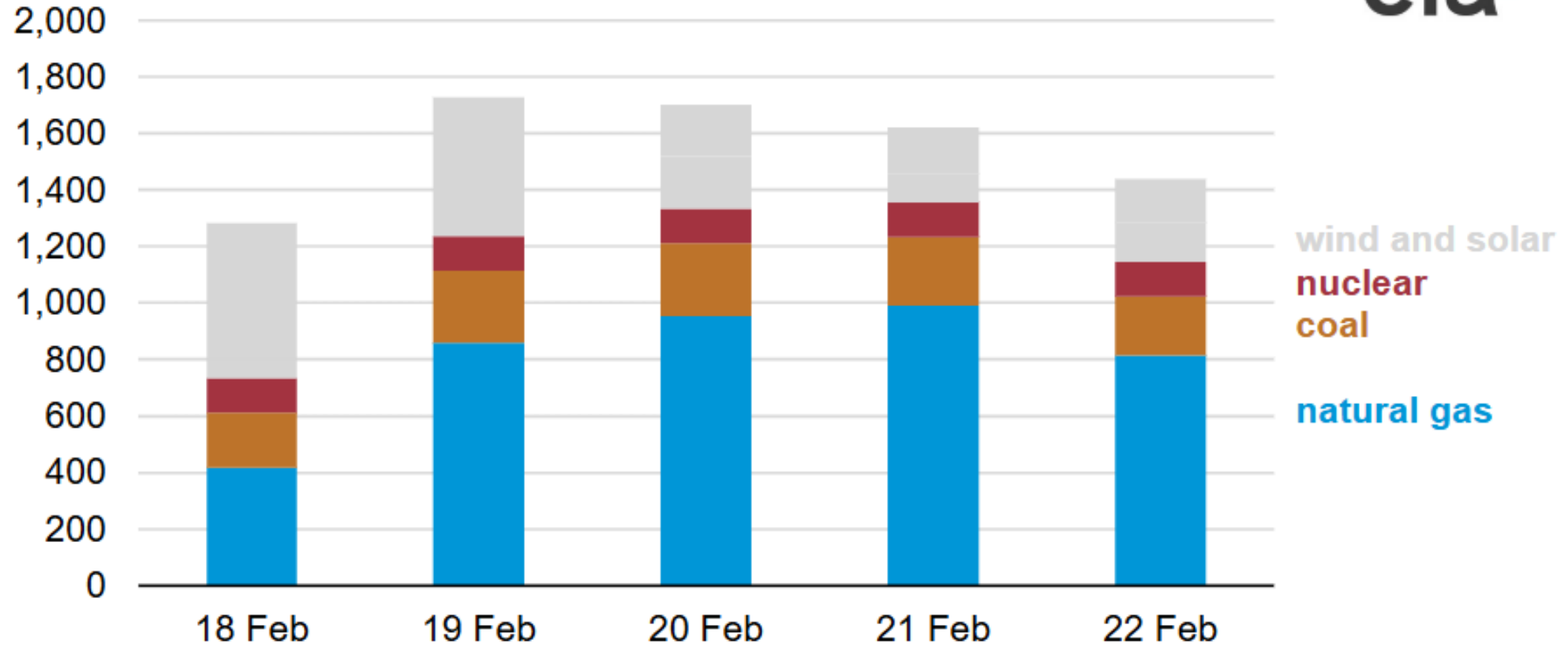
**Note:** Weekly net changes in natural gas storage are netted across the East, Midwest, Mountain, Pacific, and South-Central regions.

[Link to Article](#)

# Asset Integrity: Extreme Cold Creates Significant Demand for Gas.

ERCOT daily generation by source (Feb 18–22, 2025)

gigawatthours



**Data source:** U.S. Energy Information Administration, [Hourly Electric Grid Monitor](#)

**Note:** ERCOT=Electric Reliability Council of Texas

[Link to Article](#)

# Asset Integrity Aims to Have All Facilities Ready to Meet Peak Demand.

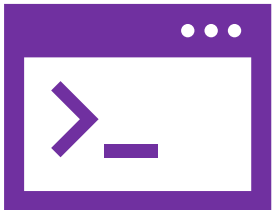
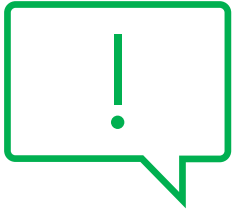
**Challenge:** Pipelines must rely on equipment that runs infrequently to meet the peak natural gas demand created by extreme cold weather events.

**Solution:** Several commitments focus on ensuring equipment is ready to run when needed most.



- Periodically test-run compressors and other equipment that will be required during peak demand, to confirm their operation prior to the time of greatest need.
- Test-start and safety-check dehydration equipment.
- Stage and test backup power generators, where needed.
- In the event of a winter storm, where warranted and feasible, run compressors in the path of the winter storm before the onset of the event so ancillary systems remain warm.

# Stakeholder Coordination: Pipelines Communicate 24-7-365.



- **FERC has taken several steps to promote transparency and gas-electric coordination:**
  - 18 C.F.R. §§ 284.12, 13 requires regular, public posting of substantial operational information.
  - Order 698 requires communication procedures between pipes and generators and pipes and RTOs/ISOs.
  - Order 787 permits sharing of non-public, operational information between pipes and RTOs/ISOs.
- **FERC Regulations and NAESB Standards govern how interstate pipelines post and deliver “notices” to shippers and the public.**
  - Notices can cover a variety of issues ranging from capacity constraints to maintenance updates to pipeline conditions to weather.
  - Pipelines must designate a notice as “critical” if the conditions described in the notice affect scheduling or adversely affect scheduled gas flow.
  - NAESB Standards dictate the form, content, and method of delivery (e.g., email, EDI) for these notices.

# Stakeholder Coordination: Recent Efforts Aim to Improve Accessibility of Info.

**Challenge:** Pipelines post a substantial amount of data on operations and system conditions, but electric grid operators must be able to filter and interpret data quickly during extreme cold weather.

**Solution:** Pipes and RTOs developed proposal to modify NAESB standards for pipeline postings.



- Create a “Gas Electric Coordination” posting category on pipeline EBBs that includes applicable scheduled quantity information for power plants that are directly connected to the pipeline; and
- Supports the inclusion of the geographic information of impacted area(s), location(s), and/or pipeline facility(ies) by a transportation service provider when issuing a critical notice.

# — Natural Gas/Electric Coordination

## Lead Takeaways from 2025 Regional Mini-Forum Tabletop Exercise

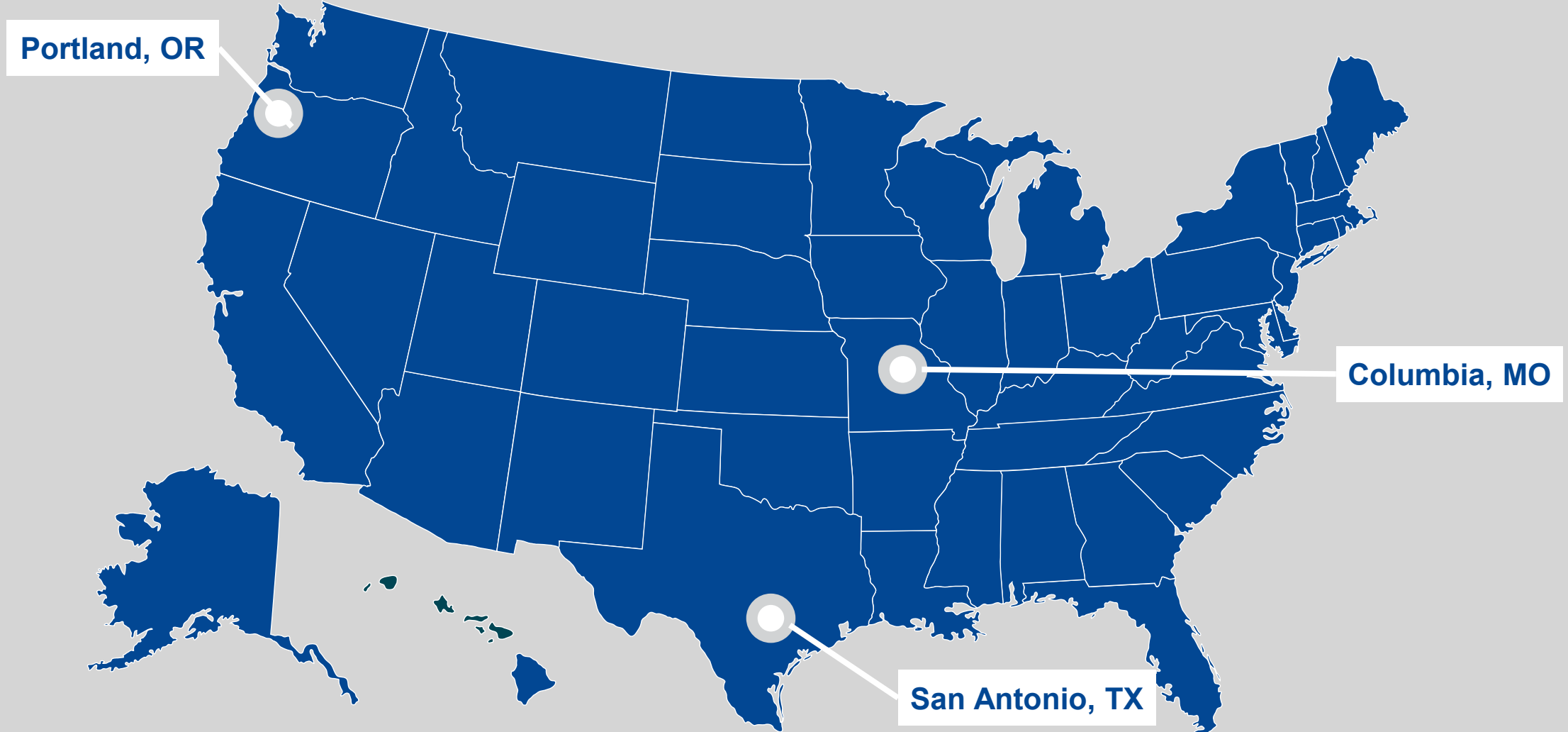


Kimberly Denbow  
Vice President, Security & Operations  
American Gas Association

Amanda Sramek  
Director, Security & Preparedness  
American Gas Association



# 2025 Regional Mini-Forums



# Regional Mini-Forum Objectives

1

Conduct a tabletop-style exercise to bring together manager and supervisor-level personnel from the natural gas industry and related organizations for an open discussion on their **incident management policies and processes**.

2

Ensure the exercise focuses on building shared understanding of industry and organizational-level incident management **processes and policies** through the use of generalized, non-attributational scenarios designed to shape “**how**” and “**why**”-based **discussions**.

3

Explore regionally-specific topics related to the reliability of the energy system and how the natural gas system prepares for **high-demand seasons and severe weather events**.

4

Foster regional **operational education, situational awareness, and peer-to-peer connections** across the natural gas industry, the electric sector, and end-users.

# General Observations Regional Mini-Forums

1

These TTX's are a great opportunity to strengthen understanding of natural gas industry operations.

2

These TTX's have allowed us to facilitate conversations within organizations and stakeholders regarding incident management.

3

There are many complex policies and regulations impacting the natural gas industry, and not all stakeholders have the same understanding of operational implications.

4

The natural gas industry is cognizant of, and preparing for, all many weather-related hazards (not just cold weather).

# Western Natural Gas Readiness Mini-Forum

## OPPORTUNITY 1



**Educate** Natural Gas Customers on the Difference Between Firm and Interruptible Service.

## CONSIDERATION

Natural gas customers and natural gas operators should periodically **discuss contract and service types** to best serve the customers' needs.

## OPPORTUNITY 2



**Strengthen** Understanding Of Natural Gas Characteristics and Resiliency.

## CONSIDERATION

Natural gas operators can provide **informational workshops to external stakeholders** on the characteristics of natural gas, its resiliency, and how it impacts and allows for flexibility of the system.

# Southern Natural Gas Readiness Mini-Forum

## OPPORTUNITY 1



**Strengthen Communication Device Policies and Procedures.**

## CONSIDERATION

Consider developing a **region-wide plan for regularly testing primary and alternate communications**, particularly satellite phones, and a physical handbook detailing communications policies and procedures.

## OPPORTUNITY 2



**Explore the Potential of Clarifying or Creating Pre-Staging Policies and Procedures for Personnel and Equipment.**

## CONSIDERATION

**Explore policies and procedures** (existing or to-be-created) to **facilitate pre-staging of mobile natural gas supply and other equipment** as well as stationing personnel at field offices.

## OPPORTUNITY 3

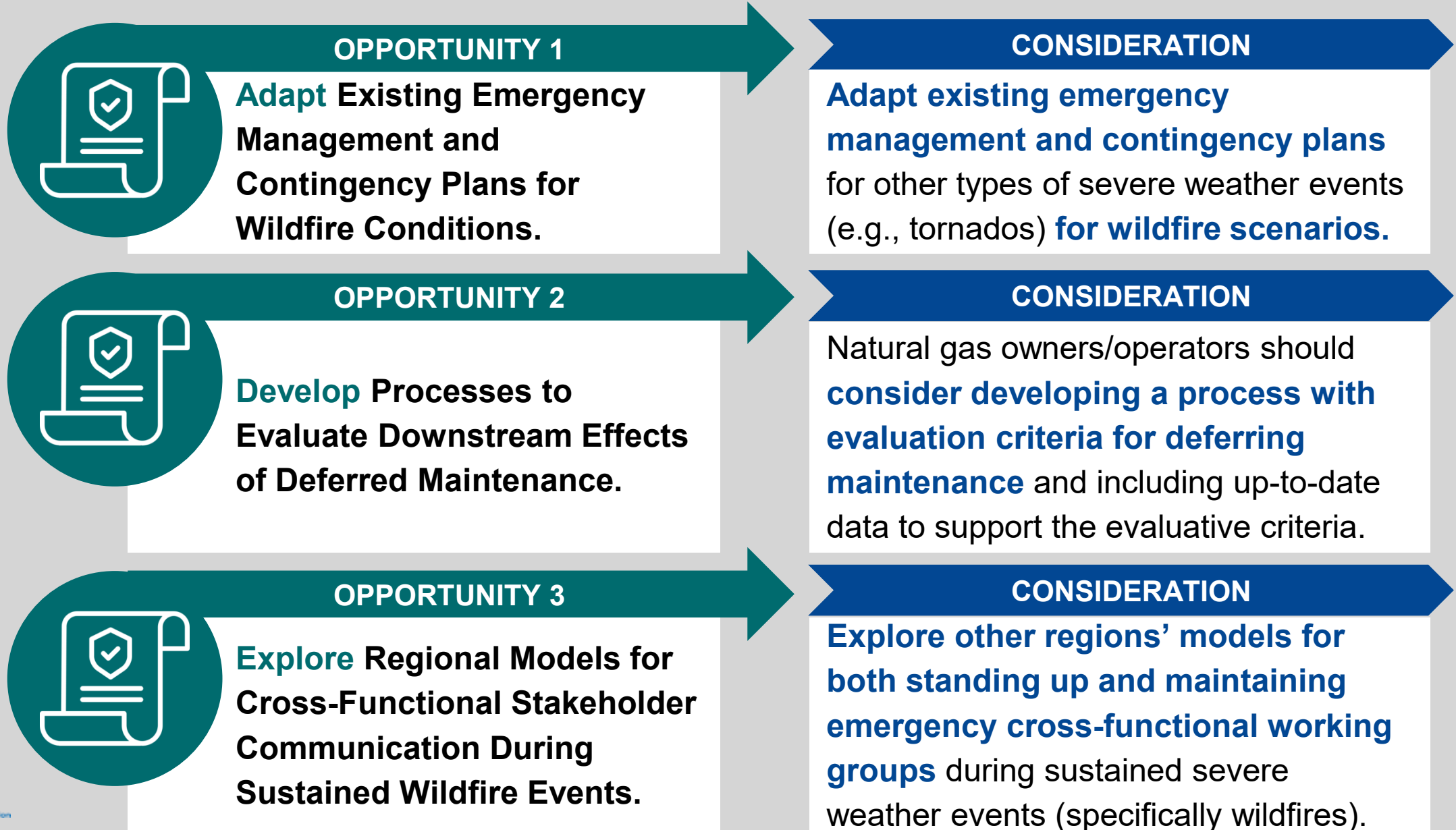


**Educate Stakeholders on Policies and Procedures Around Customer Prioritization.**

## CONSIDERATION

Educate stakeholders on **customer prioritization policies** and the **operational impacts of reduction of gas service** to customers.

# Midwestern Natural Gas Readiness Mini-Forum



# What's Next – 2026 Regional Mini-Forums & Annual Summit

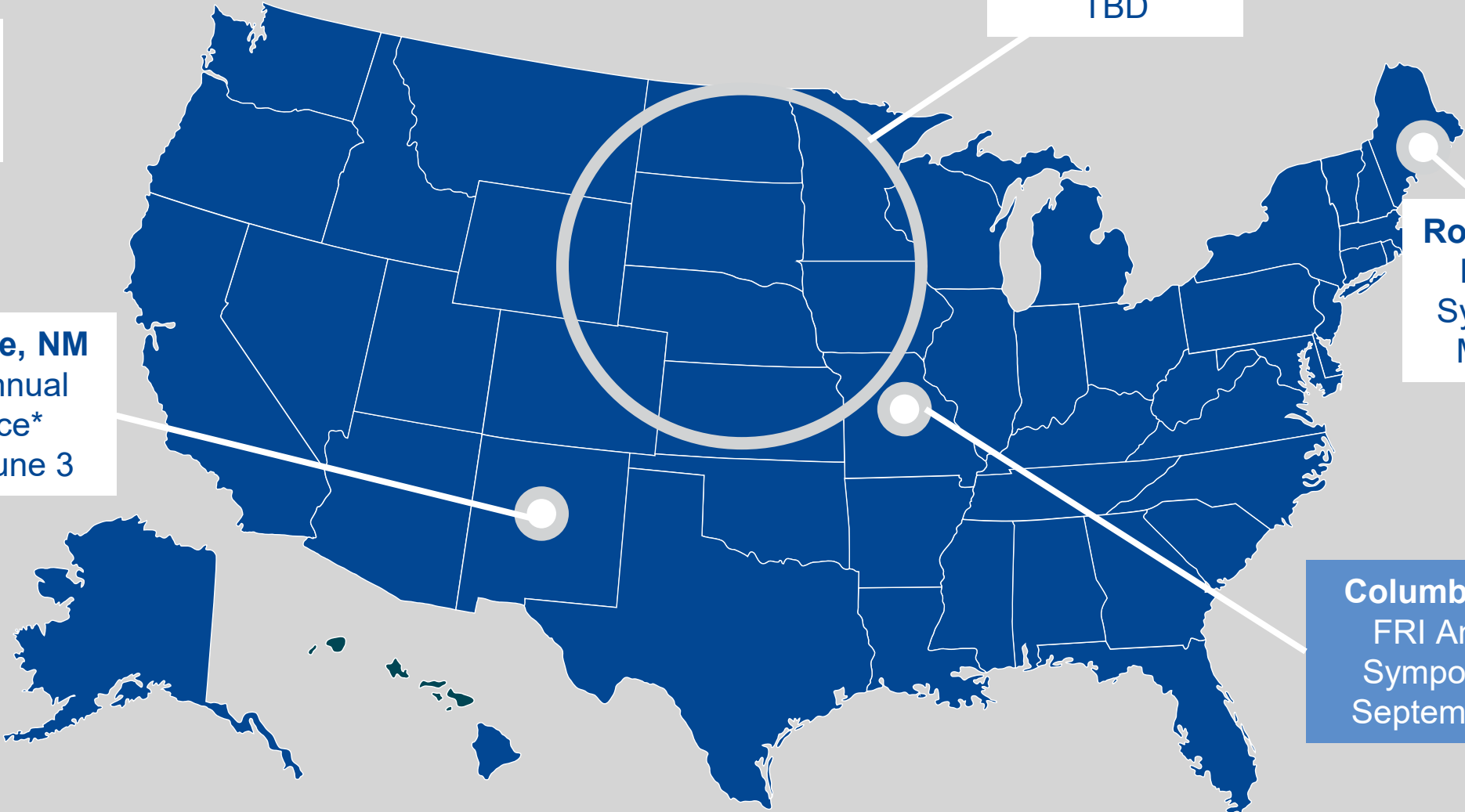
\*All dates and locations are subject to change

Midwest  
TBD

Rockport, ME  
NECPUC  
Symposium\*  
May 18-20

Albuquerque, NM  
WCPSC Annual  
Conference\*  
May 31 – June 3

Columbia, MO  
FRI Annual  
Symposium\*  
September 18



# — Closing Remarks

Karen Harbert  
President & CEO  
American Gas Association



# Thank you!

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