

2026 National Natural Gas Readiness Forum

Introduction of Keynote and Opening Remarks



Jim Steffes
Chief Operating Officer
American Gas Association

Kimberly Denbow
Vice President, Security & Operations
American Gas Association



Opening Remarks and Keynote

Kayla Hahn
Chair
Missouri Public Service Commission



Welcome and AGA Antitrust Compliance Guidelines

Matthew Agen
Vice President of Regulatory Affairs &
Chief Regulatory Counsel, Energy
American Gas Association



Jim Steffes
Chief Operating Officer
American Gas Association



— AGA Antitrust Compliance Guidelines & Safety Culture Statement

Antitrust Compliance Guidelines

AGA and its members are committed to full compliance with all laws and regulations and to maintaining the highest ethical standards in the way we do business. This commitment includes strict compliance with federal and state antitrust laws. In the materials distributed with the agenda for this meeting, you will find guidelines outlining AGA's antitrust compliance policy and procedures. If you have any questions or concerns regarding antitrust issues, please feel free to raise them at any time during the meeting.

Safety Culture Statement

AGA and its member companies are committed to promoting positive safety cultures among their employees throughout the natural gas distribution industry. All employees, as well as contractors and suppliers providing services to AGA members, are expected to place the highest priority on employee, customer, public and pipeline safety.

National Weather Forecast for Late 2026 & Early 2027

Eric Aldrich
Meteorologist and Assistant Teaching Professor
University of Missouri - Columbia



2026 Weather Recap & 2027 Forecast

**2026 National Natural Gas Readiness Forum
Columbia, MO**



Eric Aldrich
Assistant Teaching Professor of Meteorology
University of Missouri
College of Agriculture, Food & Natural Resources

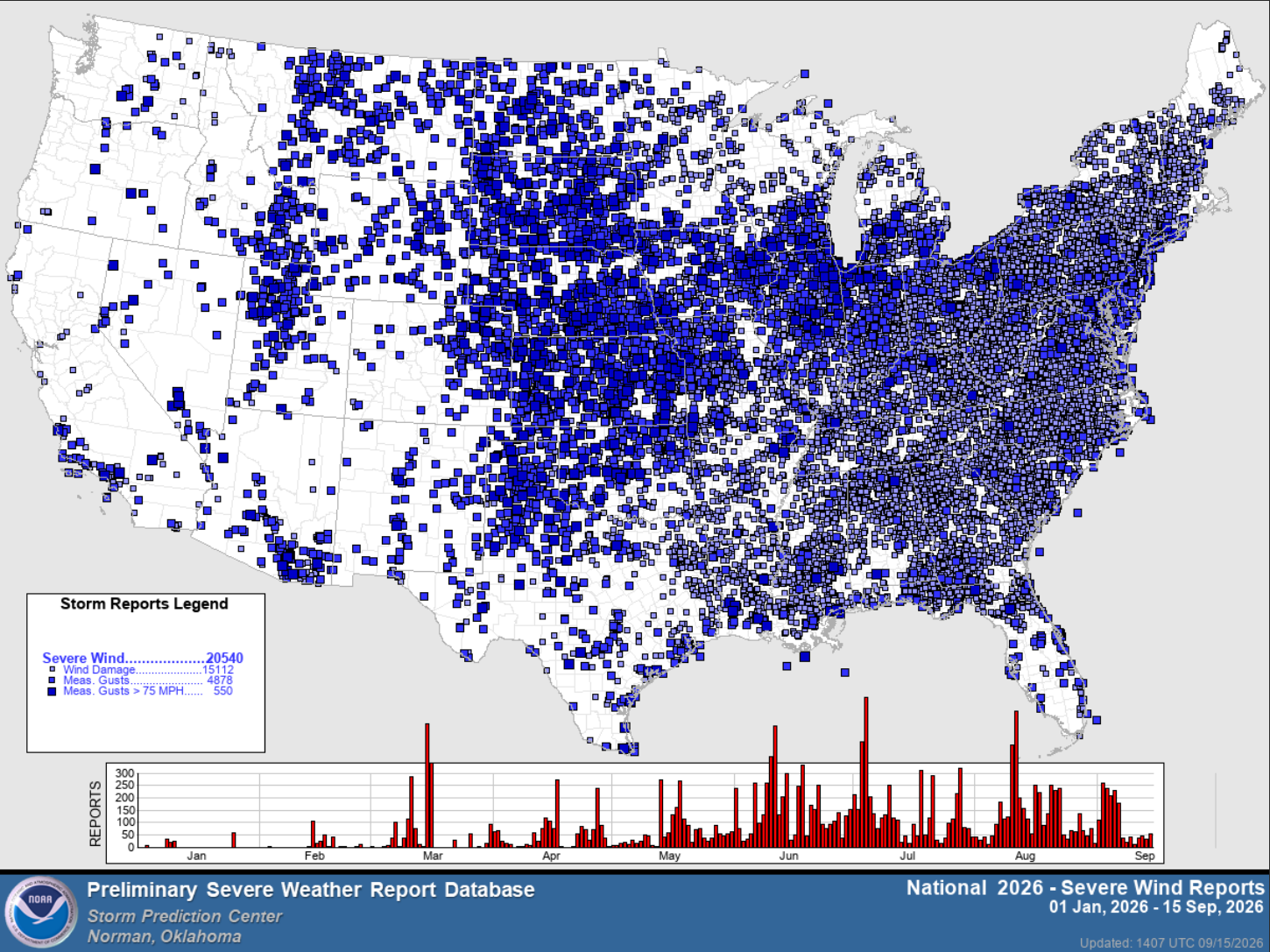
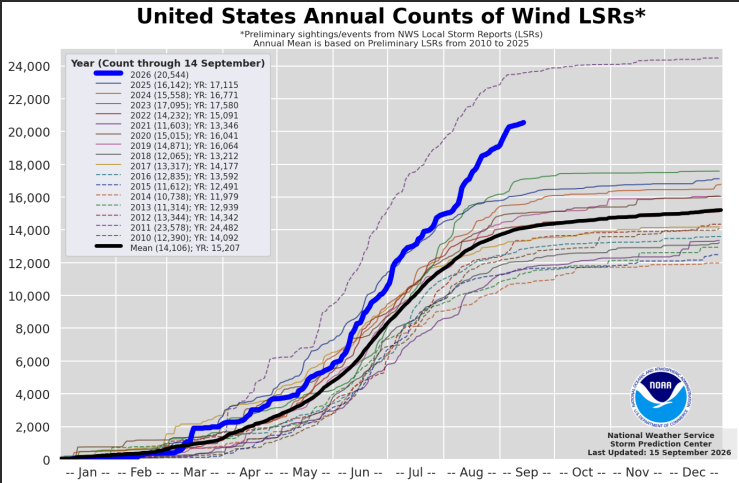


A Look Back at the Weather - 2026

- Thunderstorm Damage from 2026 – United States
 - Wind Reports

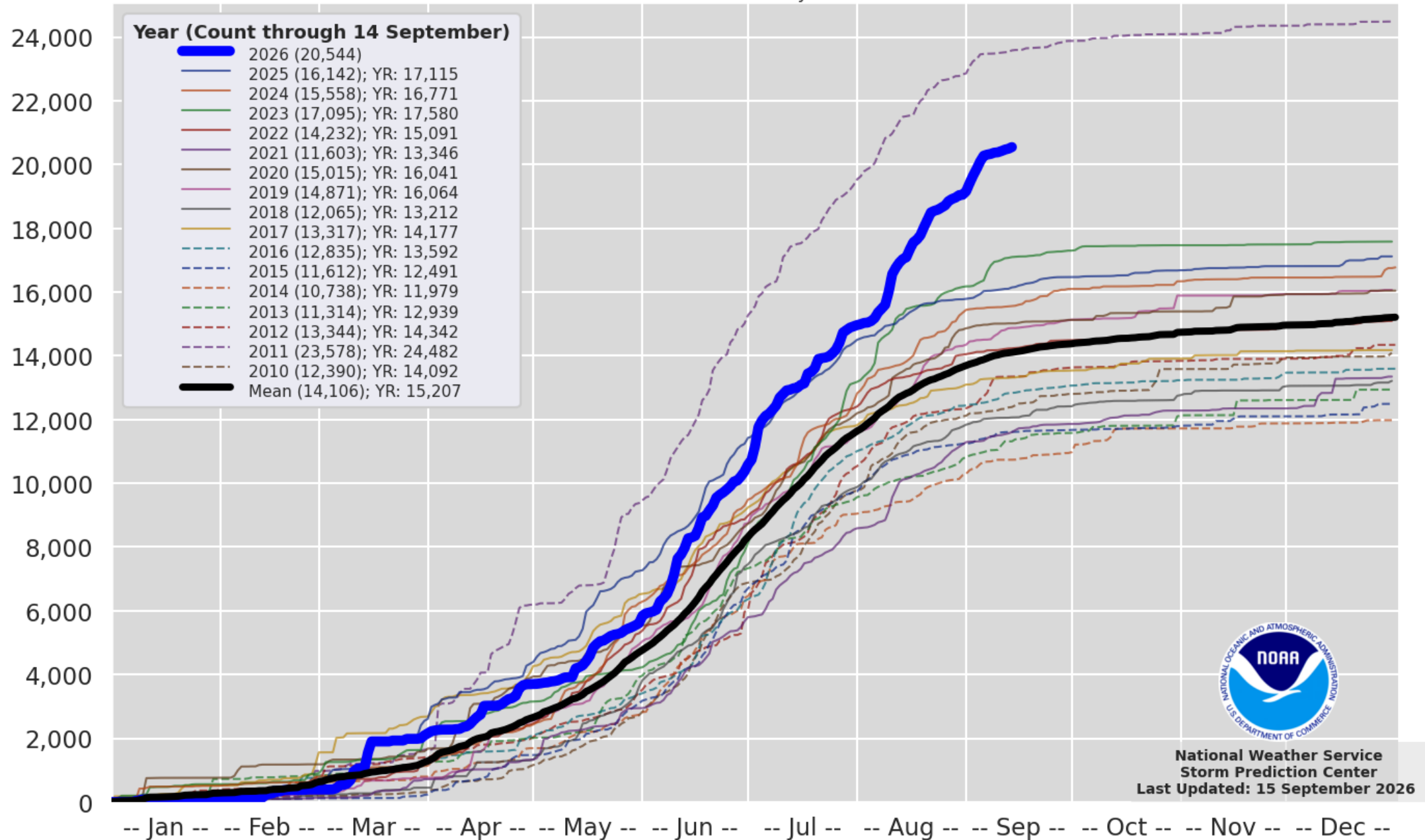
20,540

Wind > 58mph (60 kts.)



United States Annual Counts of Wind LSRs*

*Preliminary sightings/events from NWS Local Storm Reports (LSRs)
Annual Mean is based on Preliminary LSRs from 2010 to 2025

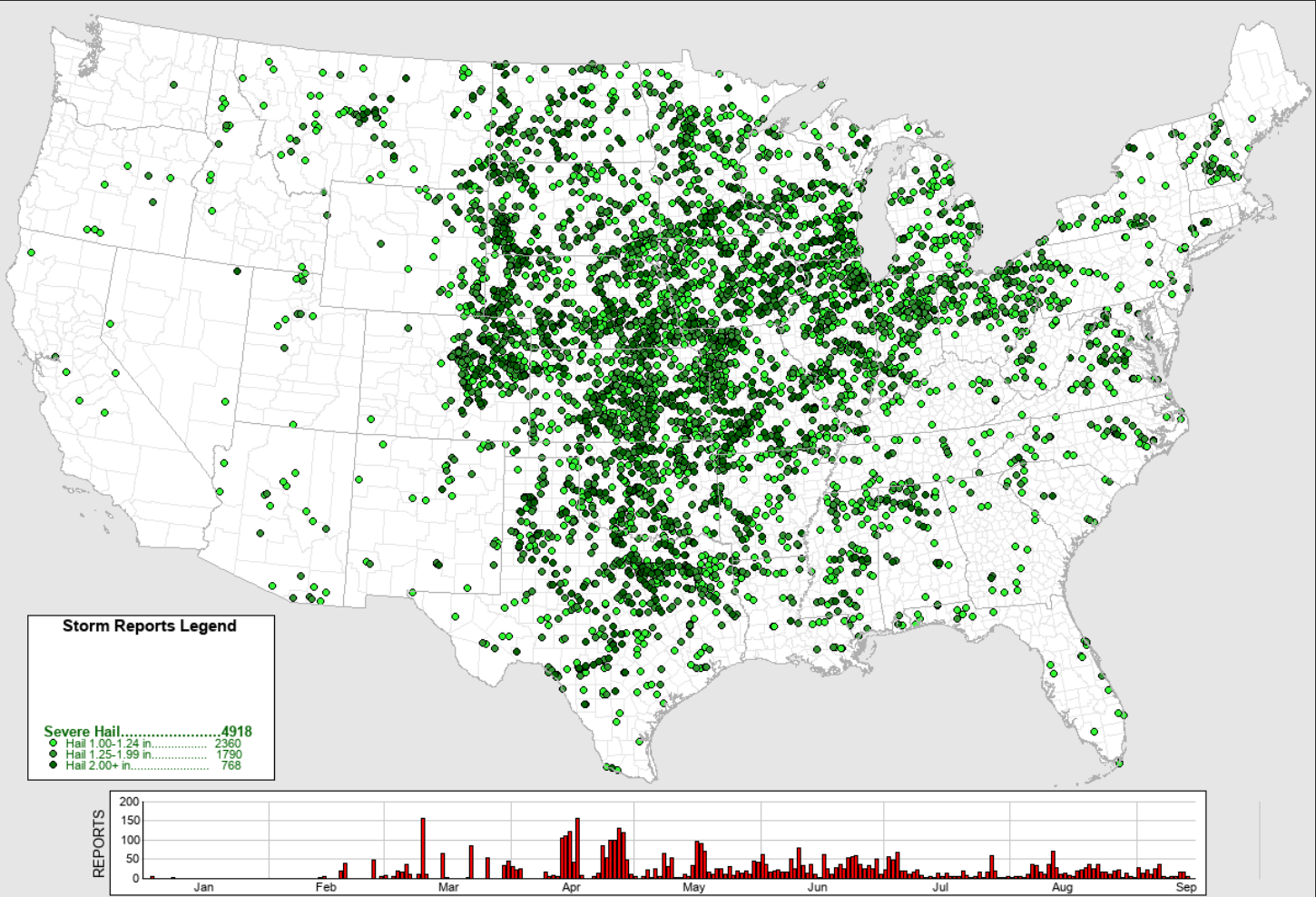
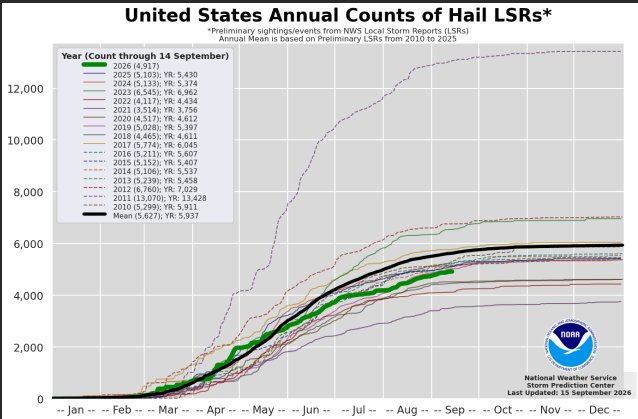


A Look Back at the Weather - 2026

- Thunderstorm Damage from 2026 – United States
 - Hail Reports

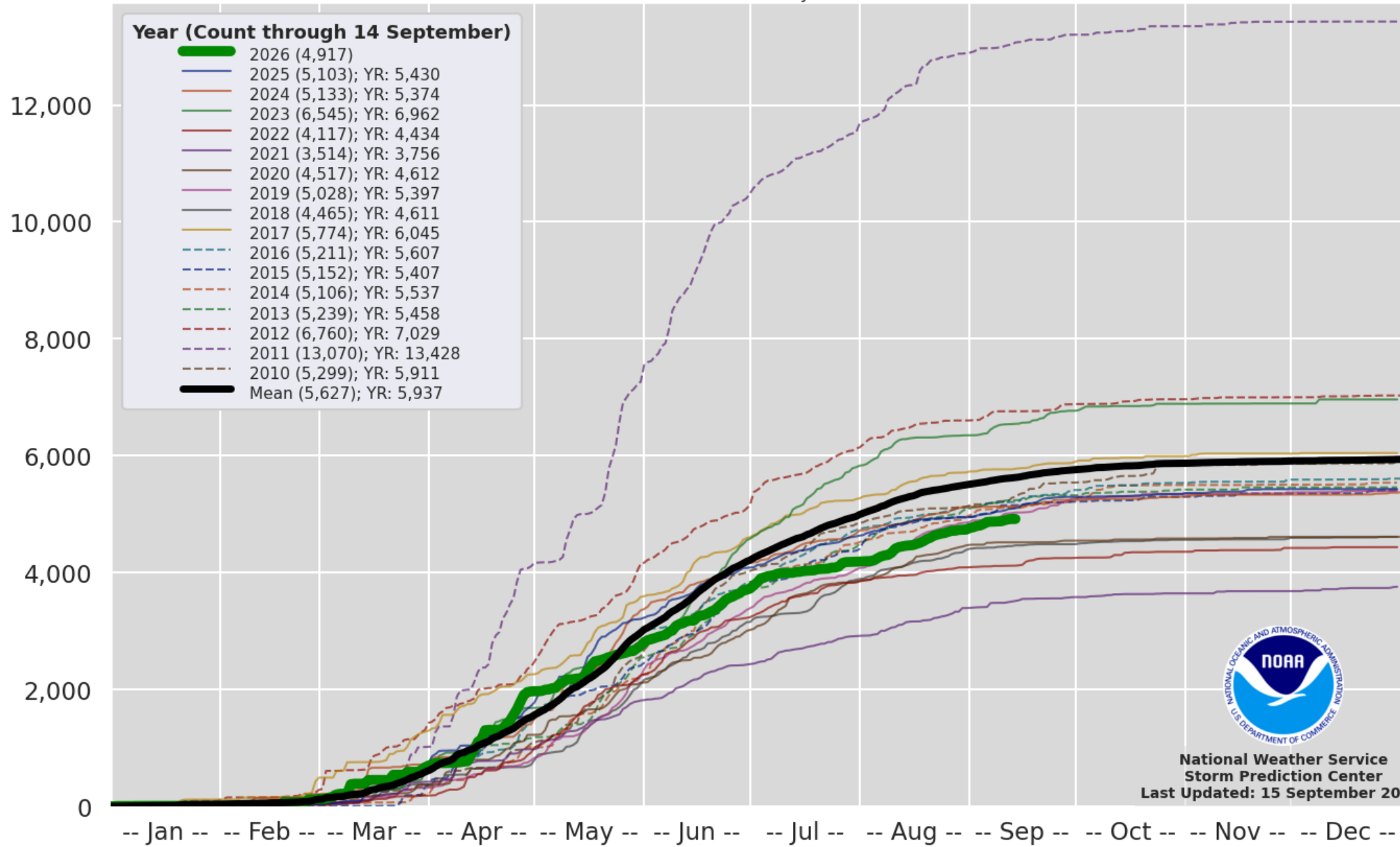
4,918

Hail > 1"



United States Annual Counts of Hail LSRs*

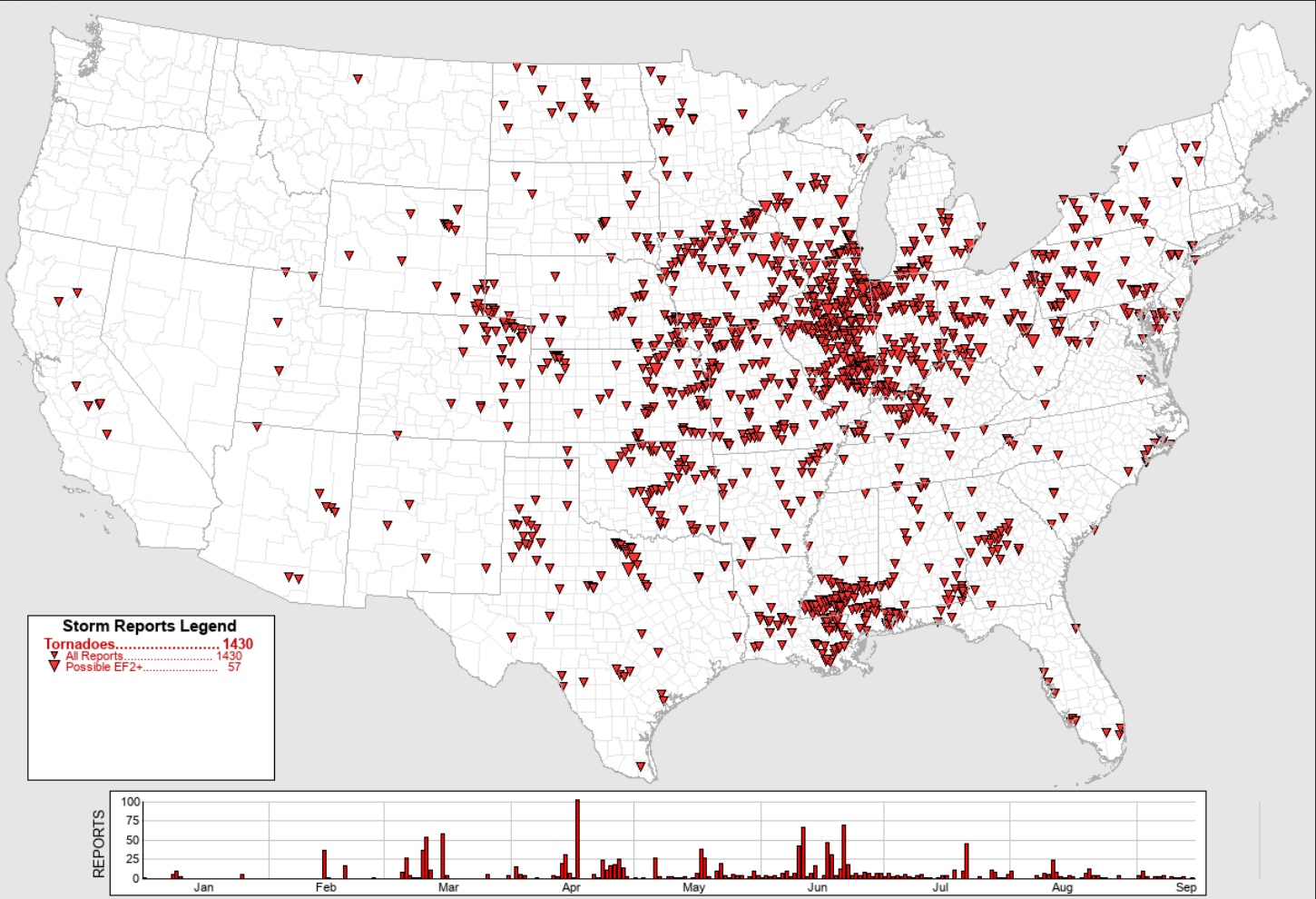
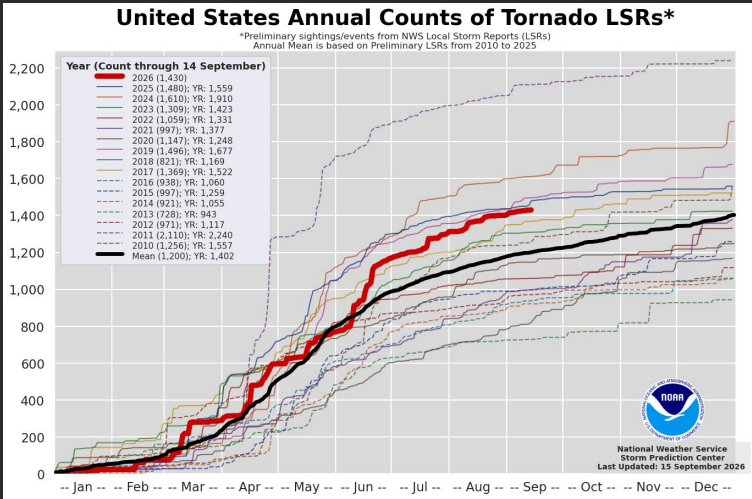
*Preliminary sightings/events from NWS Local Storm Reports (LSRs)
Annual Mean is based on Preliminary LSRs from 2010 to 2025



A Look Back at the Weather - 2026

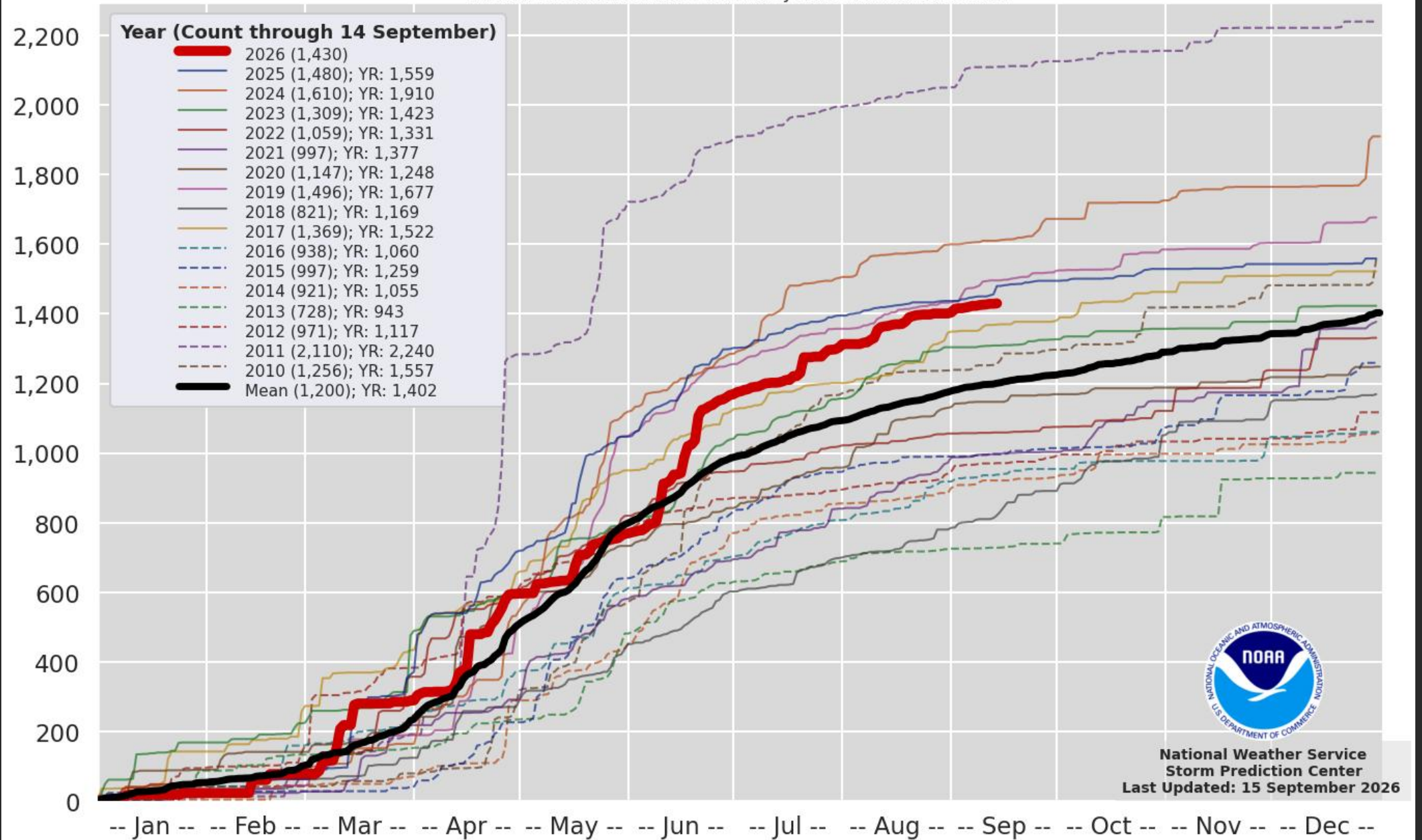
- Thunderstorm Damage from 2026 – United States
 - Tornado Reports

1,430



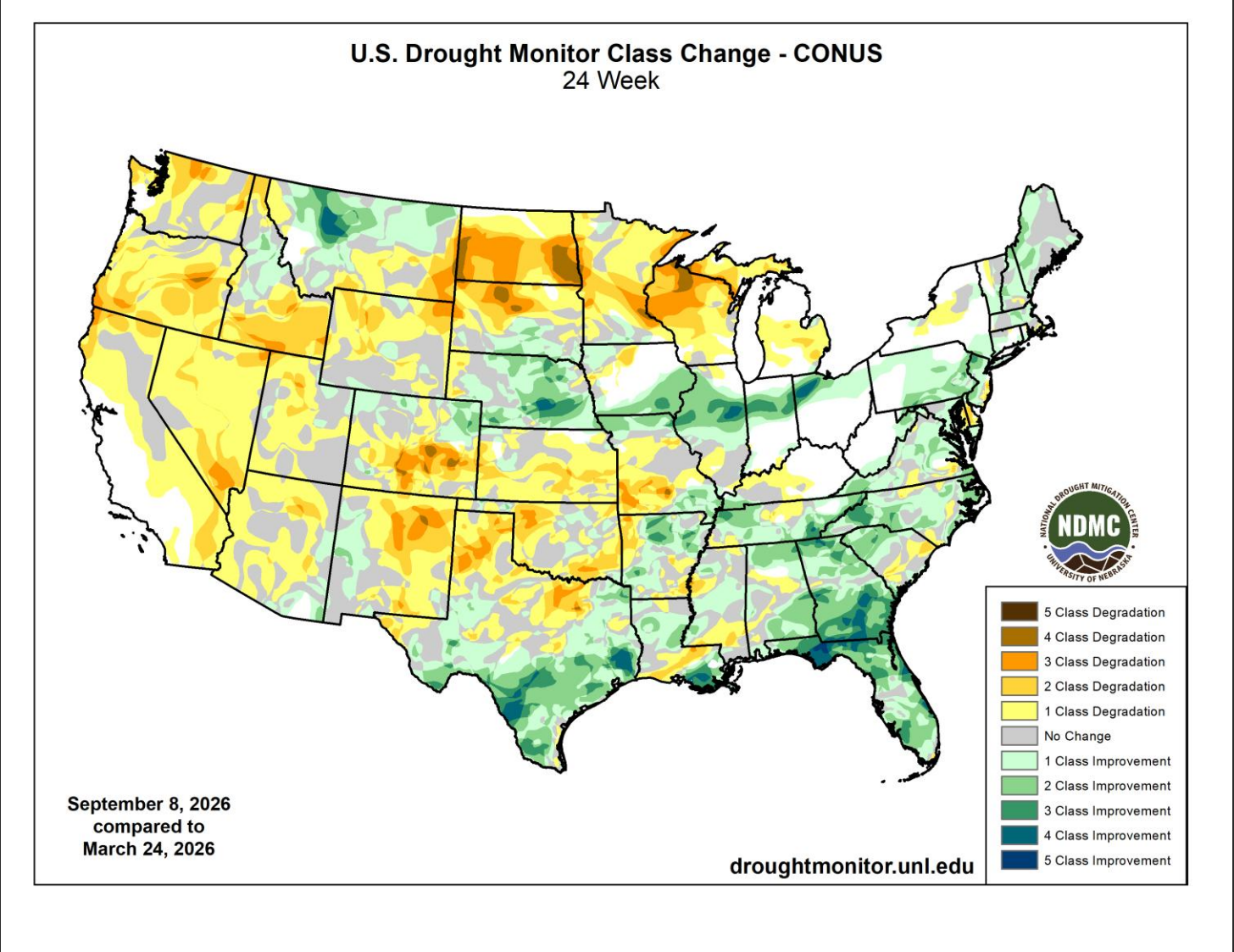
United States Annual Counts of Tornado LSRs*

*Preliminary sightings/events from NWS Local Storm Reports (LSRs)
Annual Mean is based on Preliminary LSRs from 2010 to 2025

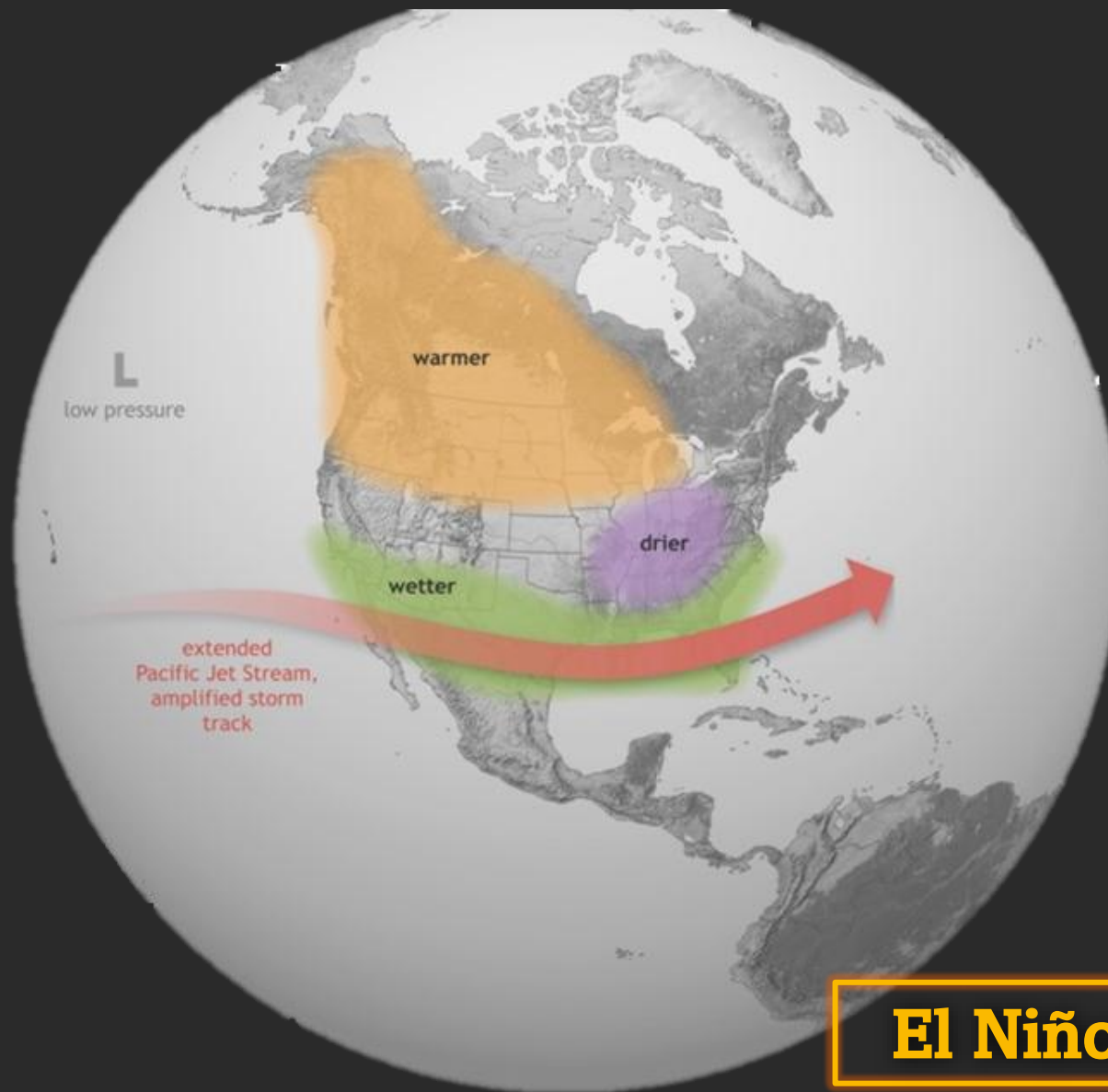


A Look Back at the Weather - 2026

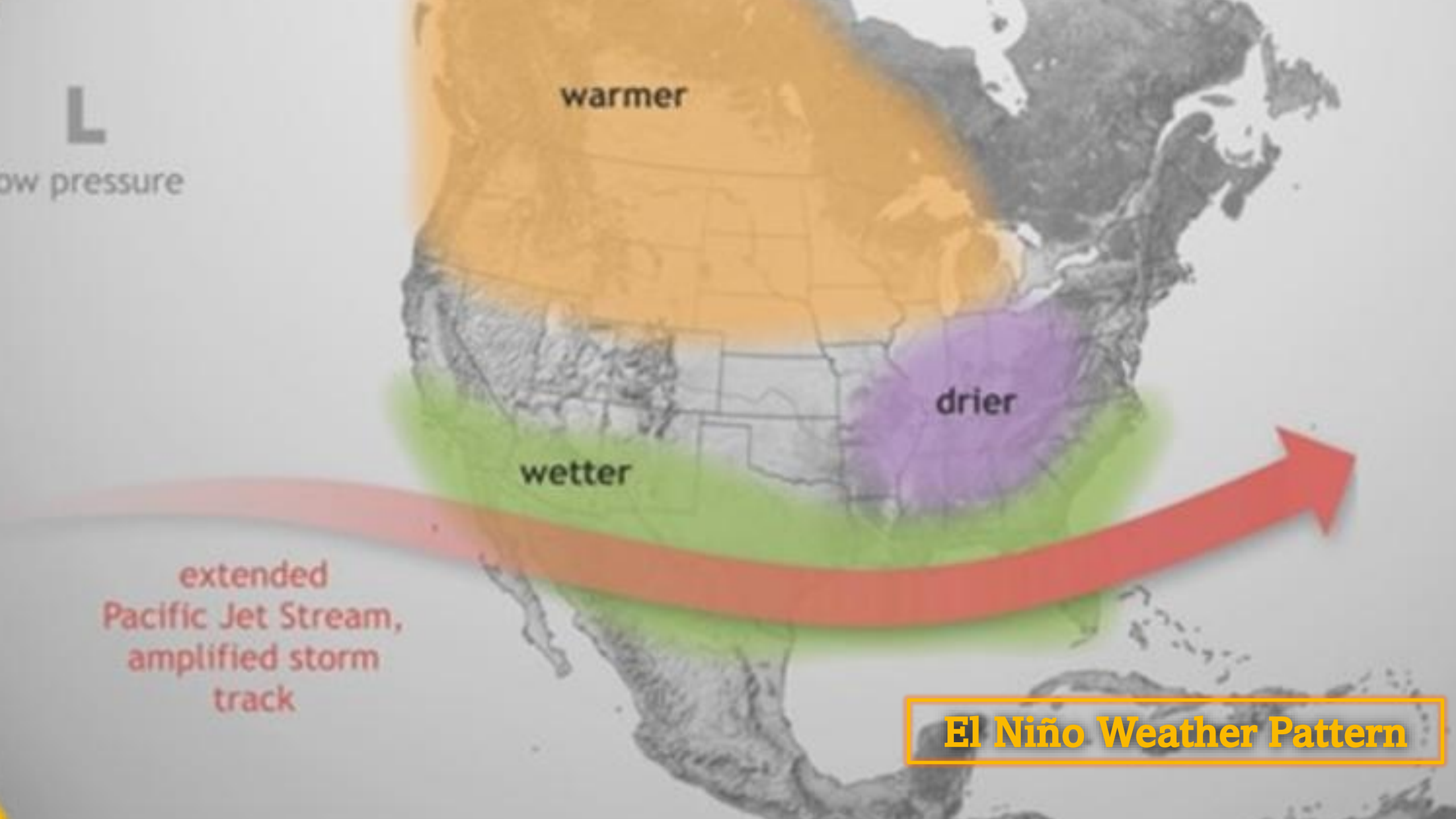
- Drought Monitor: March – September 2026**



Looking Ahead at United States Weather – 2026/2027



El Niño Weather Pattern



L
low pressure

warmer

drier

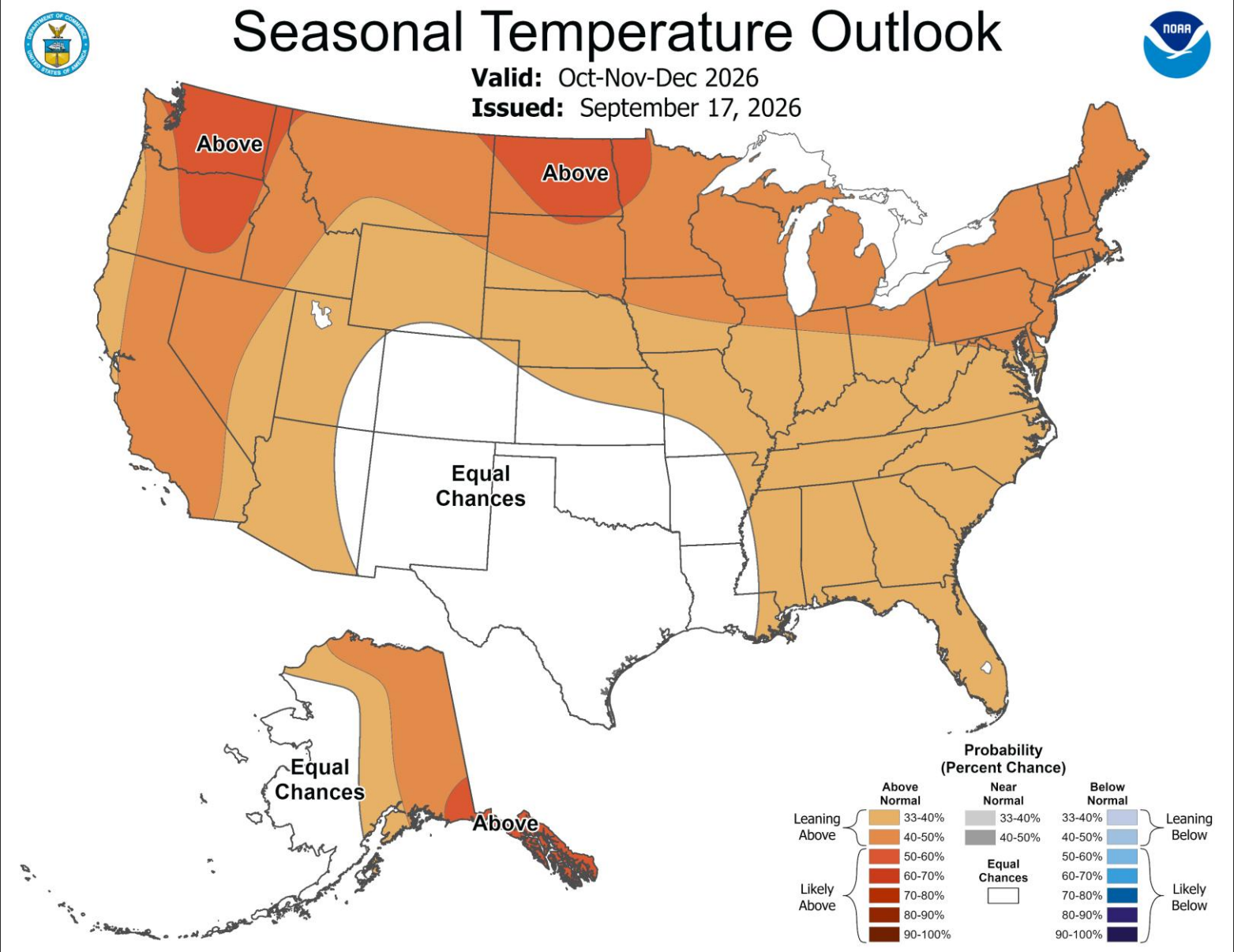
wetter

extended
Pacific Jet Stream,
amplified storm
track

El Niño Weather Pattern

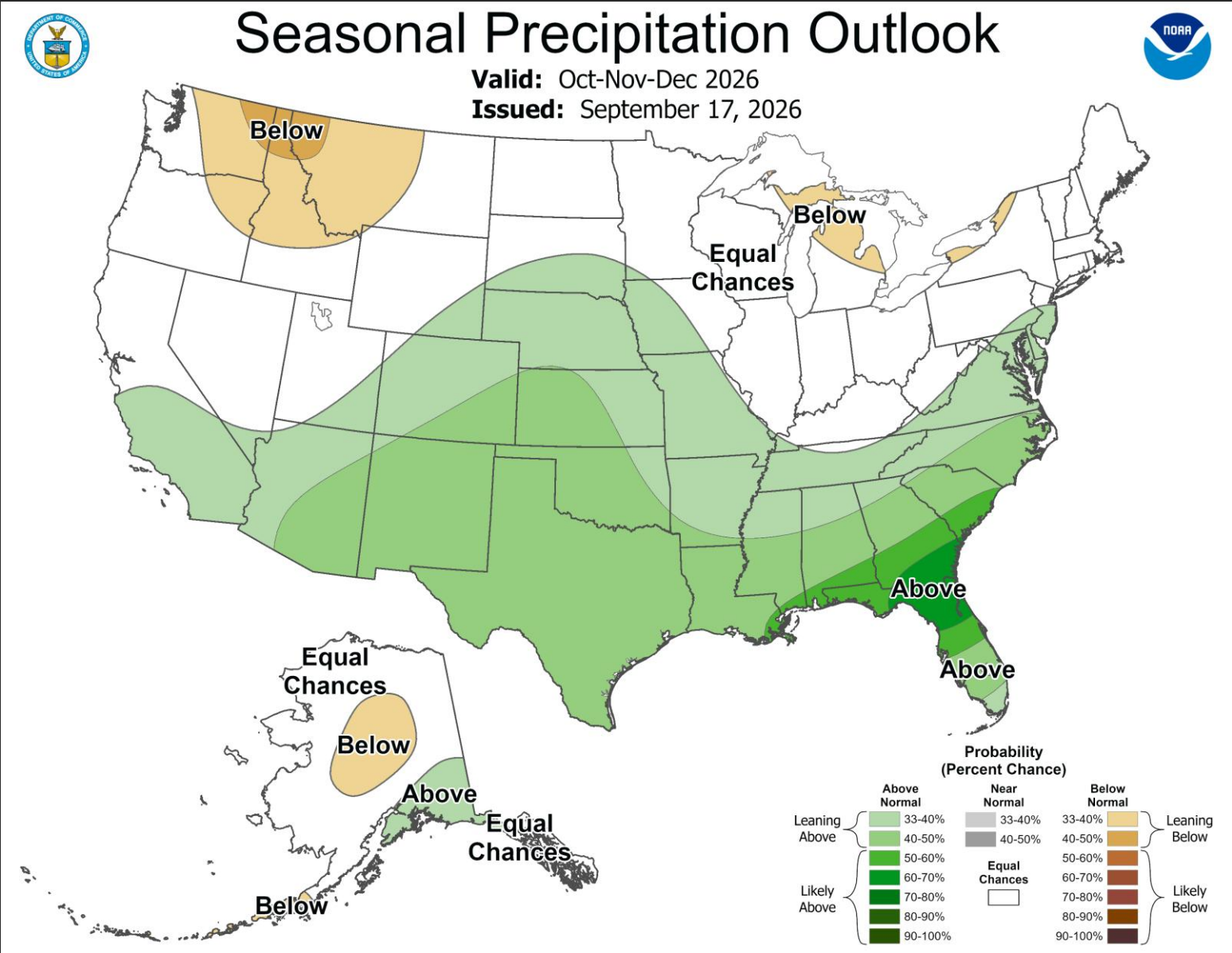
Looking Ahead at United States Weather – 2026/2027

El Niño Weather Pattern



Looking Ahead at United States Weather – 2026/2027

La Niña Weather Pattern



Any
Questions

National Energy Outlook Dialogue



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



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



Matthew Agen
Vice President of Regulatory
Affairs & Chief Regulatory
Counsel, Energy
American Gas Association
(Moderator)

Natural Gas Outlook and Winter Readiness

National Natural Gas Readiness Forum
Columbia, Missouri

Strong supply provides a supportive starting point for winter

1

RECORD PRODUCTION

111.7 Bcf/d

2026 dry gas forecast

New annual production record

2

HIGH STORAGE

3,969 Bcf

End-October forecast

5% above the five-year end-of-October average.

3

MODEST PRICES

\$3.13/MMBtu

Q4 2026 Henry Hub

Forecast quarterly average

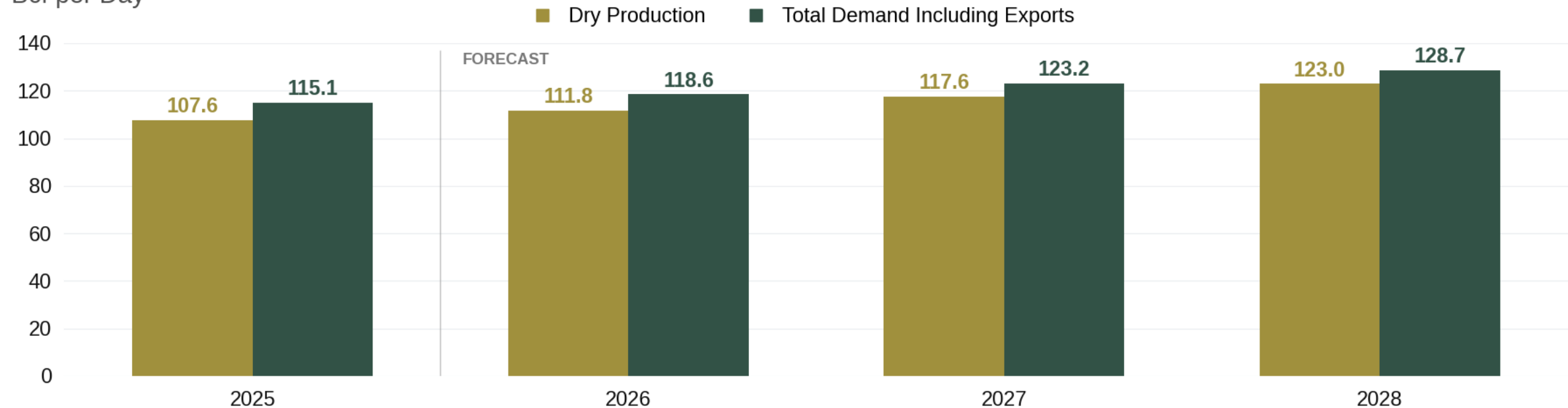
BOTTOM LINE

The natural gas market is poised to enter the heating season from a fundamentally strong position, supported by ample supply and growing demand.

Domestic production growth expected to outpace demand growth

U.S. Annual Average Dry Natural Gas Production and Total Demand

Bcf per Day



Year-over-Year Change

Series	2026	2027	2028
Production	+3.9%	+5.2%	+4.6%
Total Demand	+3.0%	+3.9%	+4.5%

2025–2028 Annual Growth Rate
Production: +4.6%
Total Demand: +3.8%

Source: Rystad Energy North American Gas Market Report, August 2026. Chart: American Gas Association. Subject to revision.

Winter temperatures create a dual call on the natural gas system

Cold Winter Weather

Higher heating needs across the energy system

Direct Natural Gas Use

Homes + Businesses

- Natural gas furnaces, boilers, etc.
- Water heating, cooking, and other end uses

Electric Power Demand

Higher Winter Electricity Load

- Electric furnaces, heat pumps etc.
- Typical power demand continues

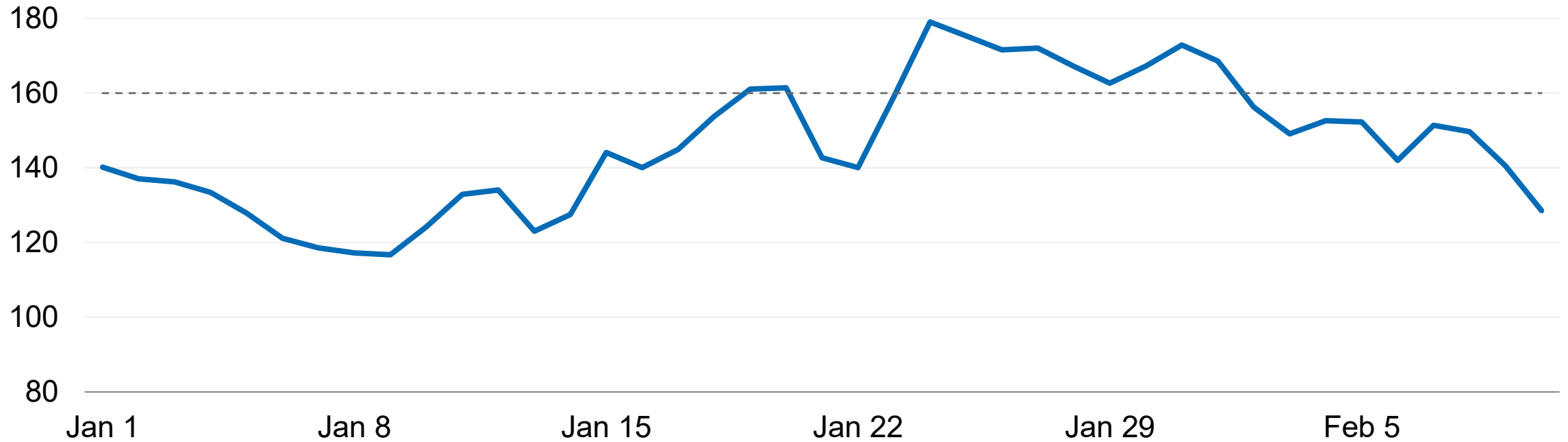
Greater Simultaneous Call on the Natural Gas System

During cold periods, natural gas serves heating demand directly and indirectly through electricity generation.

Nine consecutive days above 160 Bcf/d during Fern

January 24–February 1, 2026

Total natural gas demand, Bcf/d

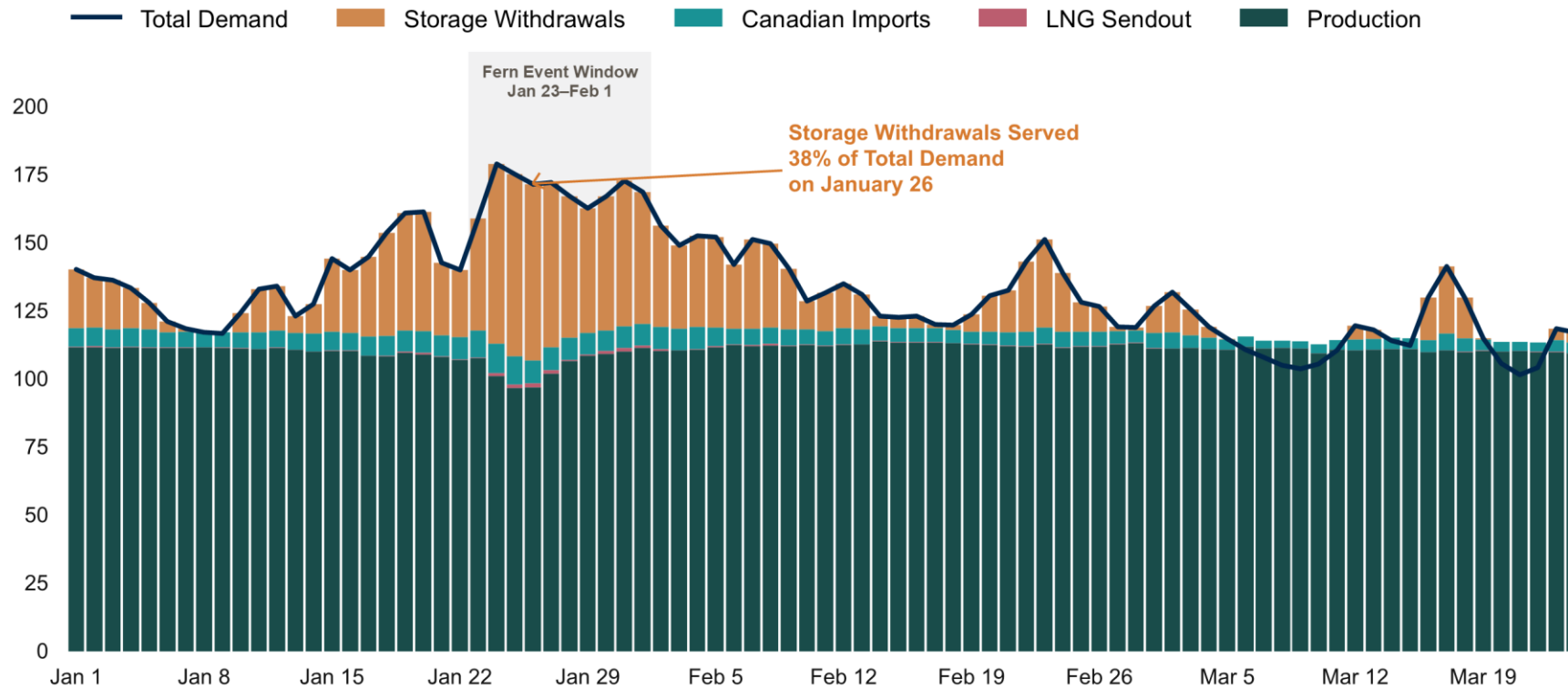


Source: S&P Global Energy Gaslytics, refreshed September 17, 2026. Lower 48, modeled demand including exports and fuel.

How the natural gas system met record sustained demand

Natural Gas Supply and Demand

Critical Role of Natural Gas Storage in Balancing Winter Supply & Demand U.S. lower 48, Bcf per day | Winter Storm Fern



Source: S&P Global Energy Gaslytics, ©2026 by S&P Global Inc., Chart: American Gas Association, Data as of Sep 22, 2026, Subject to Revision

Note: Production represents dry gas production minus the balancing item. Storage withdrawals are modeled estimates implied by the gas balance. On withdrawal days, storage is added to the stack. On injection days, the amount by which displayed supply exceeds demand reflects net injections into storage.

Peak-day preparation starts before winter

Capability

Pipeline supply and firm transportation

Storage access and withdrawal capability

Local peaking supplies

Planning question

Can contracted gas reach the citygate under stressed operating conditions?

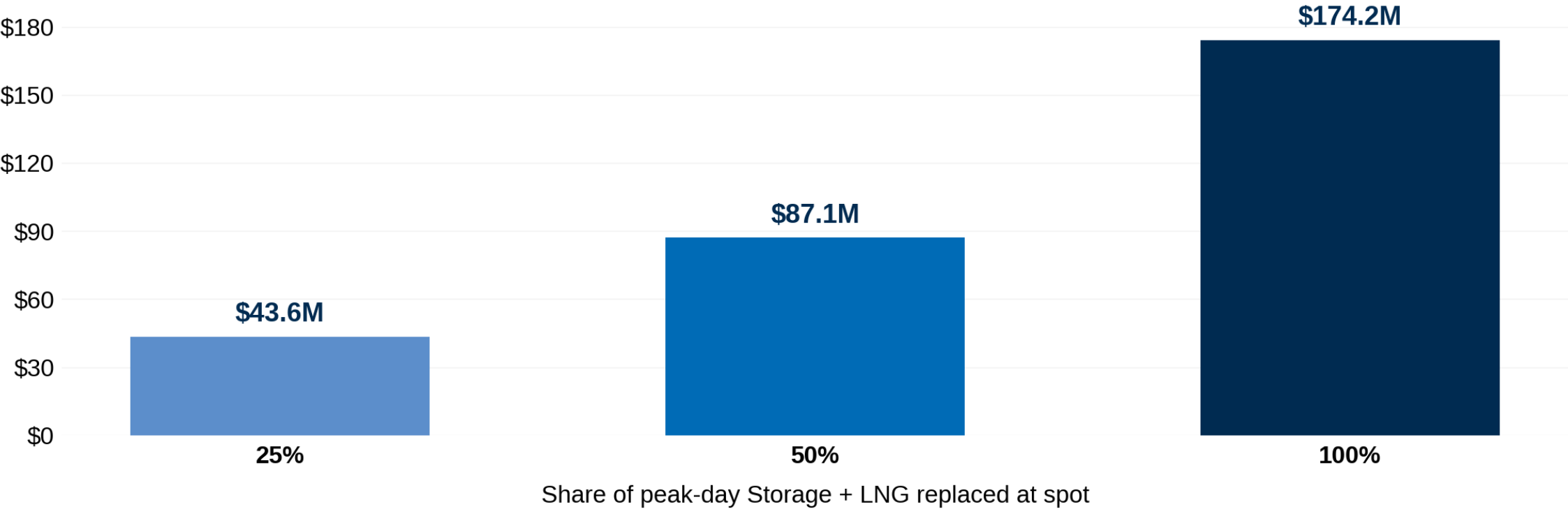
What withdrawal rate can be sustained through a prolonged cold spell?

How long can LNG or propane supplies operate before replenishment?

Source: AGA Winter Heating Season Performance Survey and winter-readiness presentations. Qualitative planning framework.

Flexible supply helped mitigate potential spot-market exposure across peak days, with the largest impact during Fern

Illustrative Cost Premium if Flexible Peak Day Supply Were Replaced with Spot Purchases
Daily Million \$ | 2025–2026 WHS



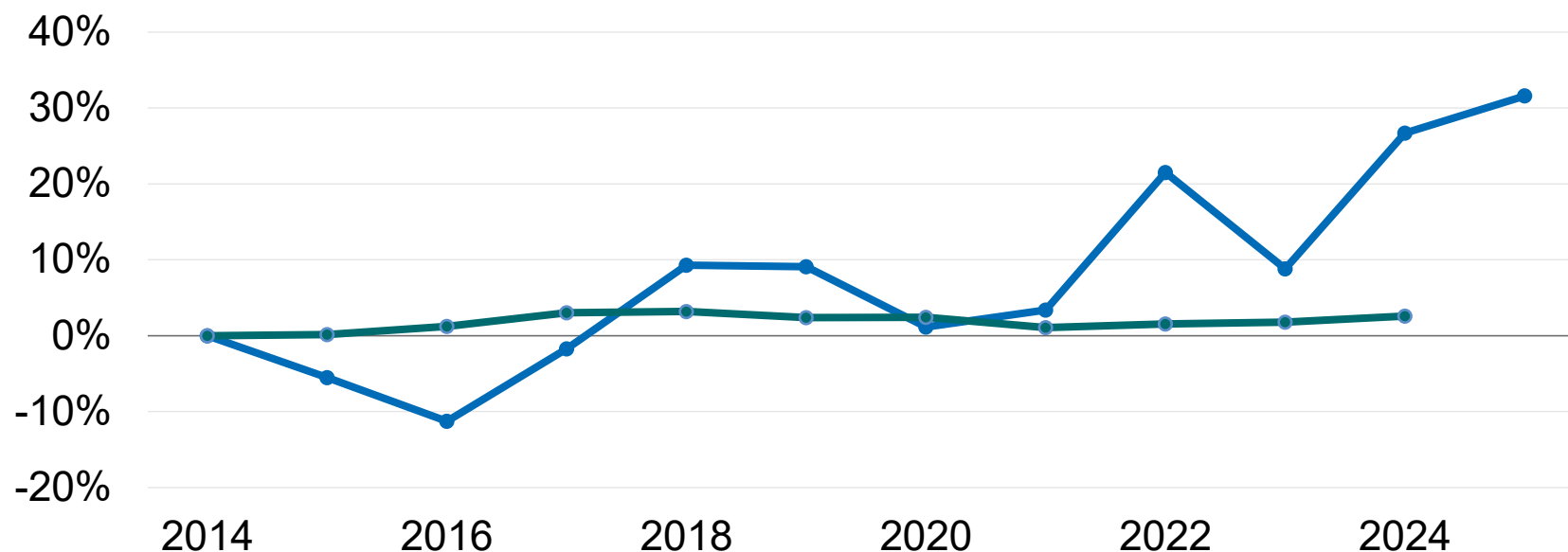
Source: 2025–2026 AGA Winter Heating Season Performance Survey; U.S. EIA Henry Hub Natural Gas Spot Price | Chart: American Gas Association.
Note: Illustrative premium equals peak-day Storage + LNG volume, converted from Mcf to MMBtu, multiplied by the difference between the contemporaneous Henry Hub spot price and the WHS-average Henry Hub price. Negative price differentials are retained. Results are illustrative and do not represent realized utility savings.

Peak demand has outpaced reported storage deliverability

Lower 48, change since 2014

Annual peak demand, through 2025

Reported storage deliverability, through 2024



2025 annual peak

185.6 Bcf/d

+31.6% since 2014

2026 through Sep. 16

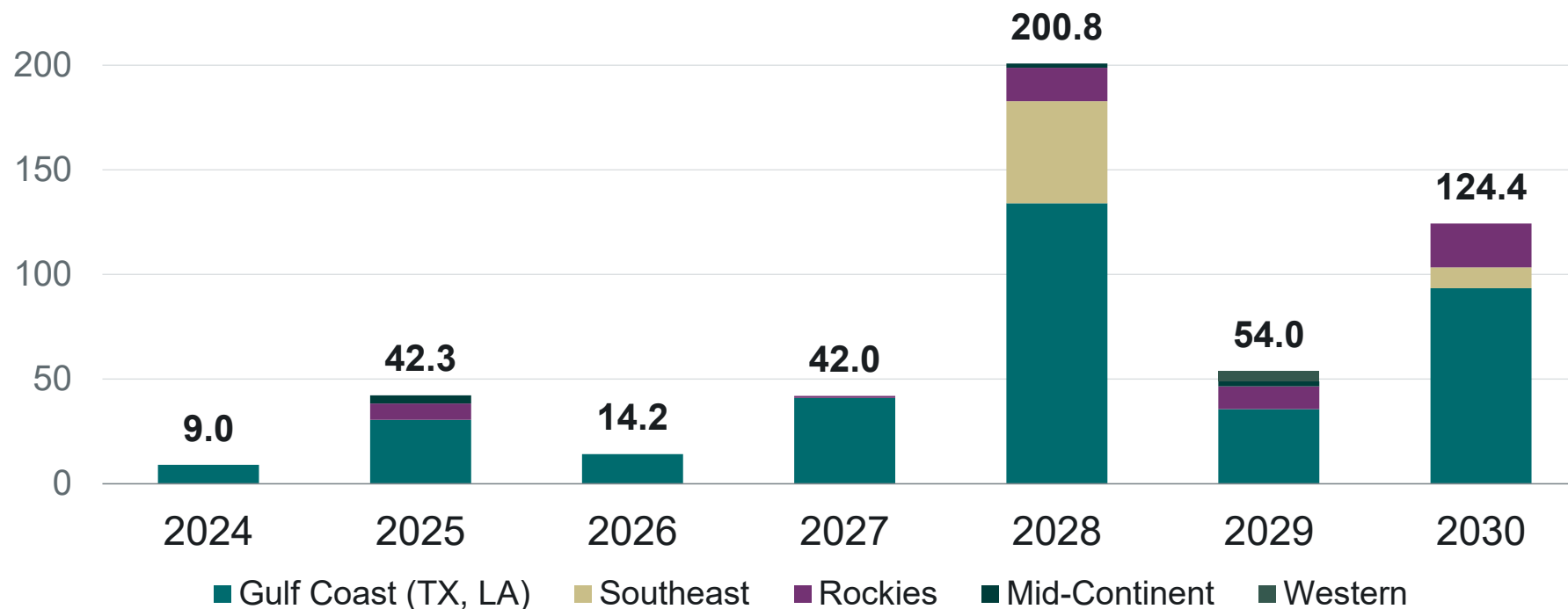
179.0 Bcf/d

Peak on January 24

Sources: EIA Form 191 and S&P Global Energy Gaslytics, refreshed September 17, 2026. Field ratings do not measure peak-date available supply.

S&P lists 435 Bcf of storage additions for 2026–2030, with 73% in Texas and Louisiana

S&P storage project additions by region, Bcf



2026–2030

73%

Texas and Louisiana
318.3 of 435.3 Bcf

Amounts and years as reported by S&P. Project schedules remain subject to change.

Source: S&P Global Energy Gaslytics. Data checked September 18, 2026.

Final Thoughts



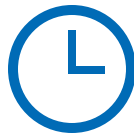
Strong supply provides a solid starting point for this winter.



Preparation and infrastructure investment support reliable services.



Natural gas provides budget-friendly and cost-effective home heating services.



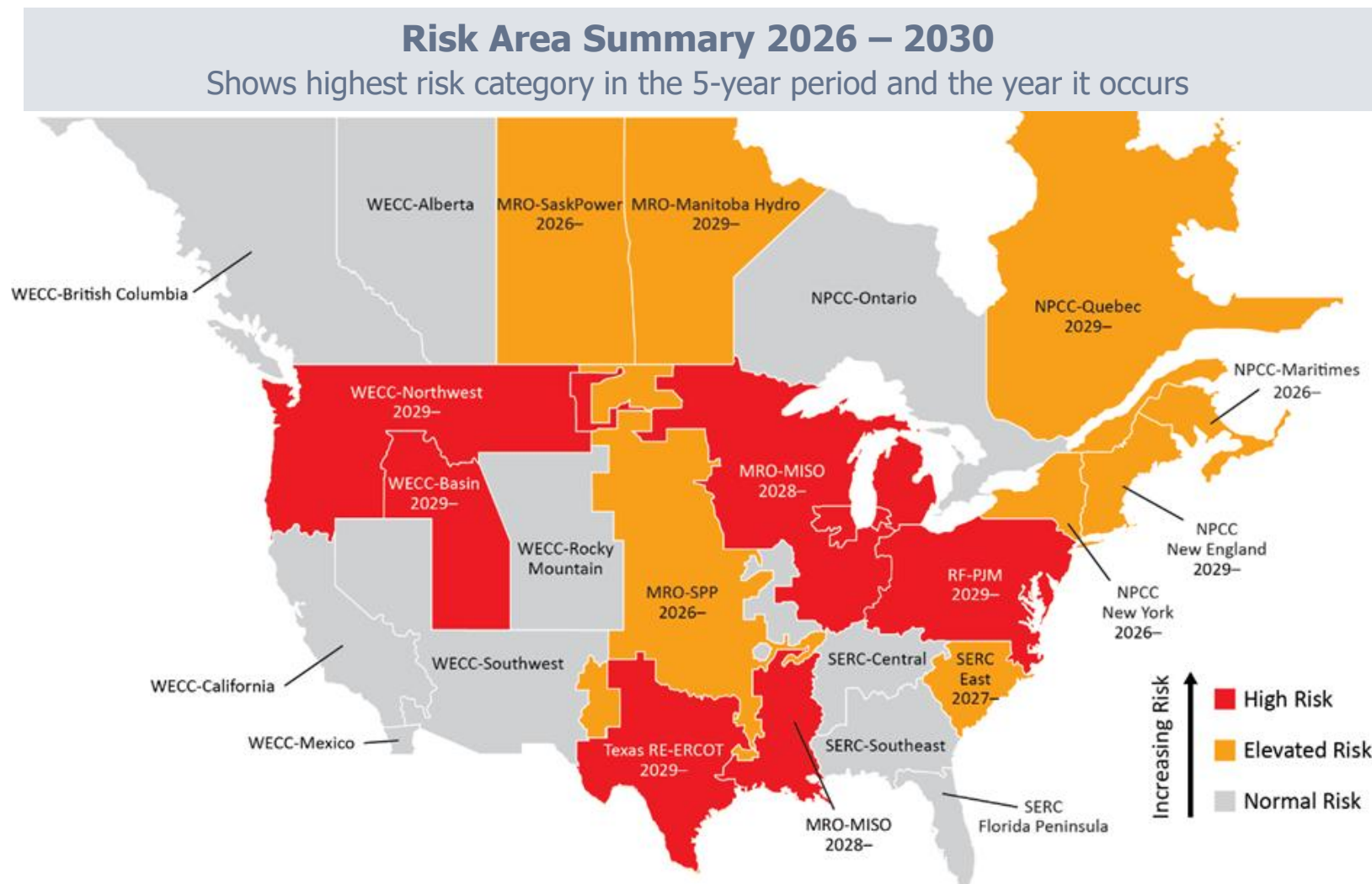
As demand grows, readiness requires firm access and sustained storage withdrawals during prolonged cold.

Reliability and the Evolving Risk Landscape for the Bulk Power System:

NERC Reliability Assessments

John Moura, Director, Reliability Assessment and Performance Analysis
Natural Gas Readiness Forum
National Energy Outlook Dialogue
September 22, 2026

2025 LTRA Risk Summary



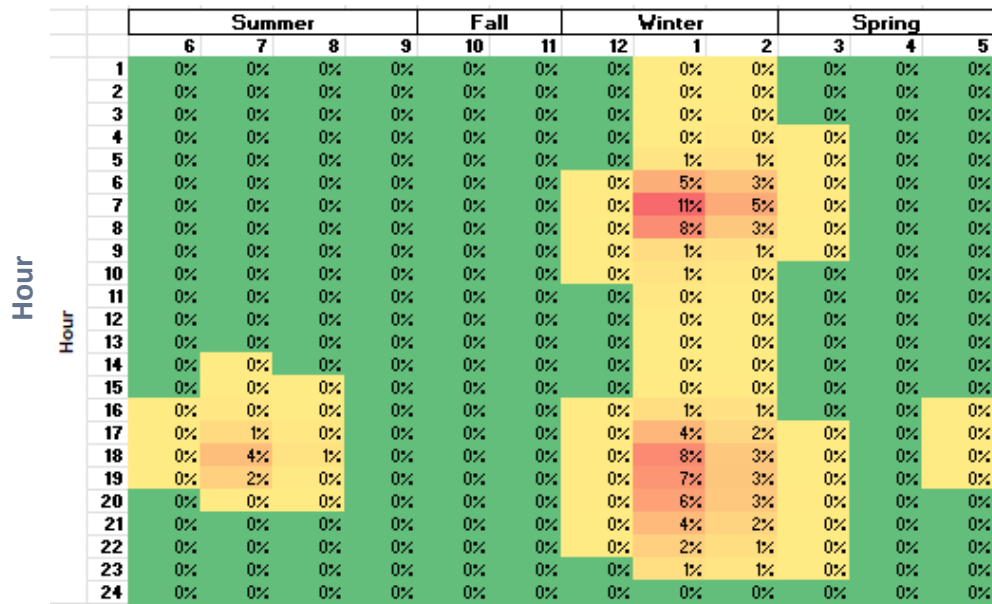
Note: Assessment inputs include: 1) Probabilistic assessment (studied years 2027 and 2029) and planning reserve margins (2026 through 2030). Risk determination based on established resource adequacy criteria (1-day-in-10 years) and [NERC-National Academy of Engineering Workshop Report](#) criteria for load-loss and unserved energy

Probabilistic Assessments | Enhanced Area Risk Details NERC

Demand growth, declining dispatchable generation, and more variability in resource output heightens resource adequacy concerns

PJM Base Case Summary of Results			
	2026*	2027	2029
EUE (MWh)	537.52	3,251	67,581
NEUE (ppm)	0.00	0.2	4.2
LOLH (hours per Year)	0.1	0.6	10.0
Category	Elevated	Elevated	High
* Provides the 2024 ProbA Results for Comparison			

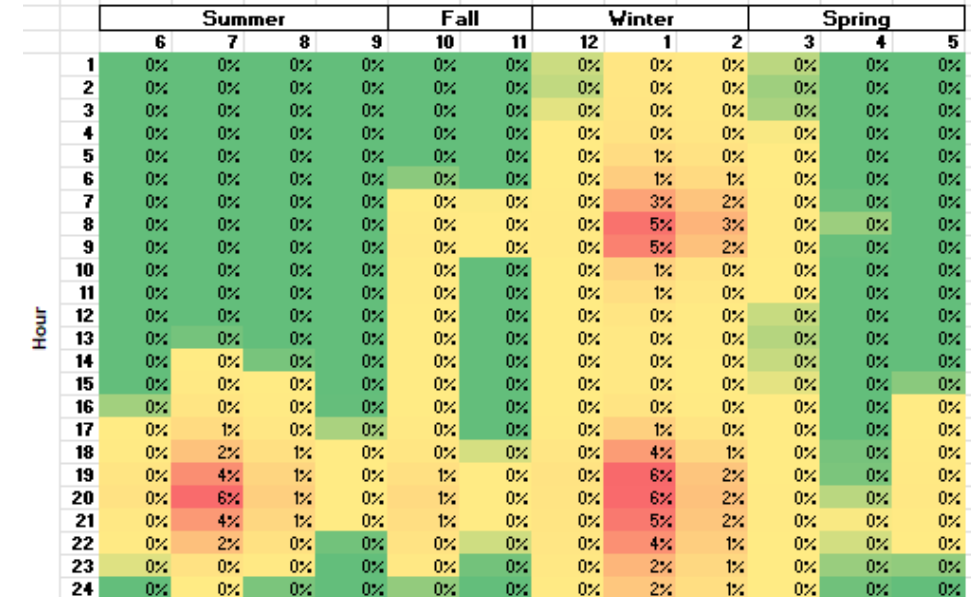
2027-2028 ProbA Heat Map for PJM



- New periods of risk emerge in shoulder months
- Summer and winter risk hours expand



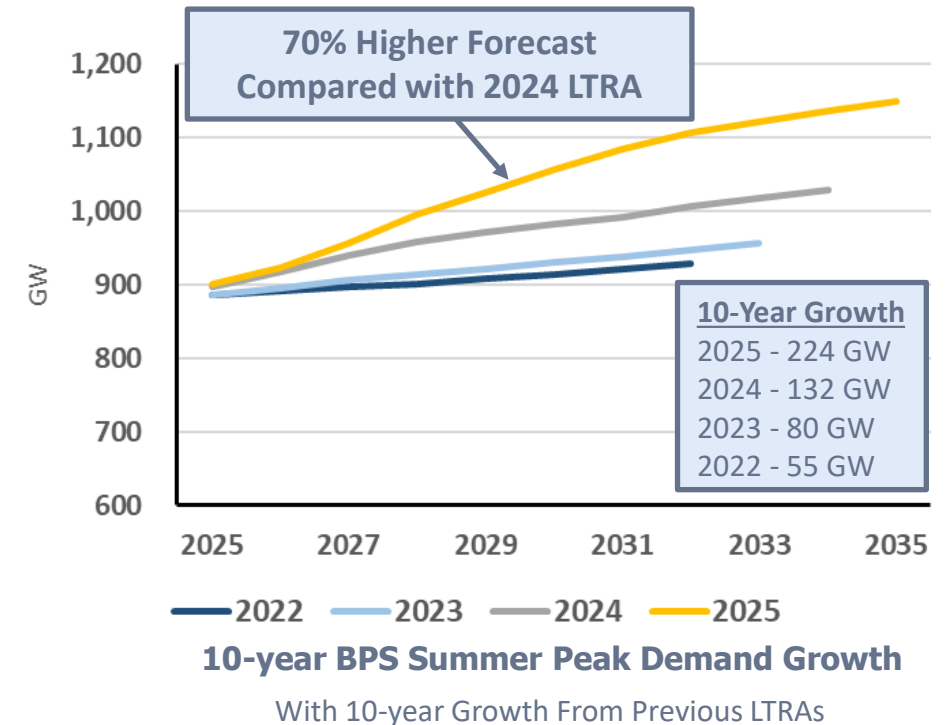
2029-2030 ProbA Heat Map for PJM



Heat maps show the distribution of unserved energy events during the study year

Demand Forecasts Continue Rapid Ascent

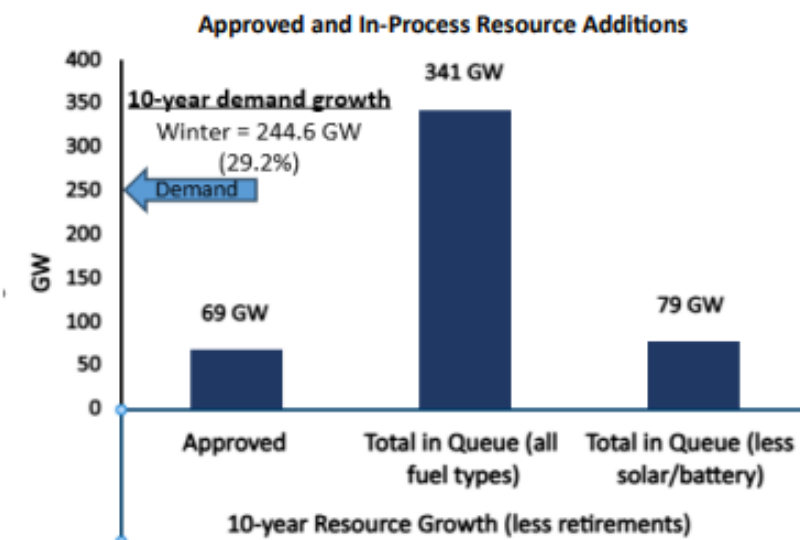
- Assessment area summer peak demand is forecast to rise by over 224 GW (24% increase from 2025 peak demand)
- New data centers are the main source of load growth followed by other large industrial loads and electrification
- Winter peak demand growth continues to exceed summer growth (Rising 245 GW over 10 years)
- Data centers and large industrial loads drive the demand forecasts and increase forecast volatility



Load forecasts submitted to NERC for the LTRA are from the first half of 2025. Some newer forecasts are beginning to emerge. In ERCOT and PJM, new load forecasts indicate lower growth projections in the next few years due to data center project delays or cancellations but continued increases in later years.

BPS Resource Growth - Uncertain Pace

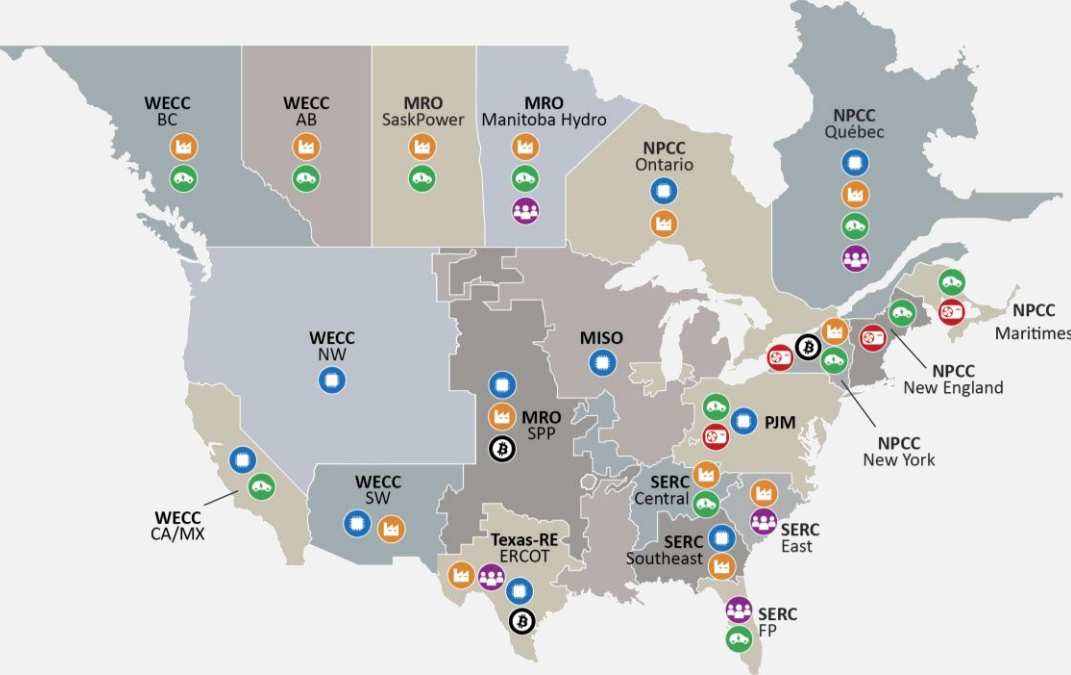
- Historic levels of sustained resource growth over the 10-year period is needed to meet demand forecasts
- BPS resource capacity fell short of 2024 LTRA projections due to unanticipated generator retirements and delays in connecting new resources
- Expedited resource programs in MISO, SPP, PJM are stimulating the flow of additional resources into the interconnection process
 - 2025 LTRA risk assessment does not include projects from recent expedited resource programs due data timing and project status
 - MISO has 20 GW of new interconnection agreements to come online over 2028-2030 including 18 GW are gas-fired generation
 - Timely implementation of ERAS resources will eliminate reserve margin shortfalls in MISO and improve expected unserved energy metrics



Total Resource Capacity in the Interconnection Process (10-years)

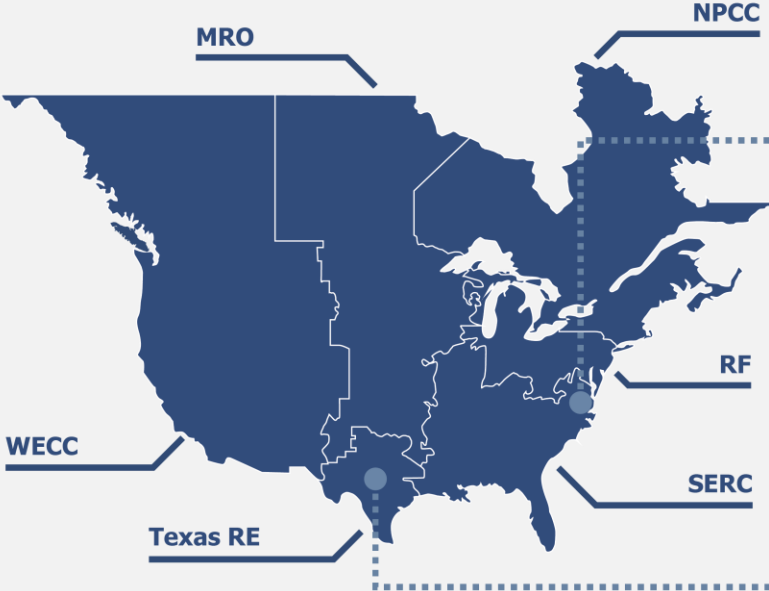
Approved = with Interconnection Agreements (Tier 1)
Total in Queue = Tier 1 and Tier 2

Rapid Growth



-  DATA CENTERS
-  LARGE INDUSTRIAL LOADS
-  TRANSPORTATION ELECTRIFICATION
-  CRYPTO
-  HEAT PUMPS
-  DEMOGRAPHIC CHANGES

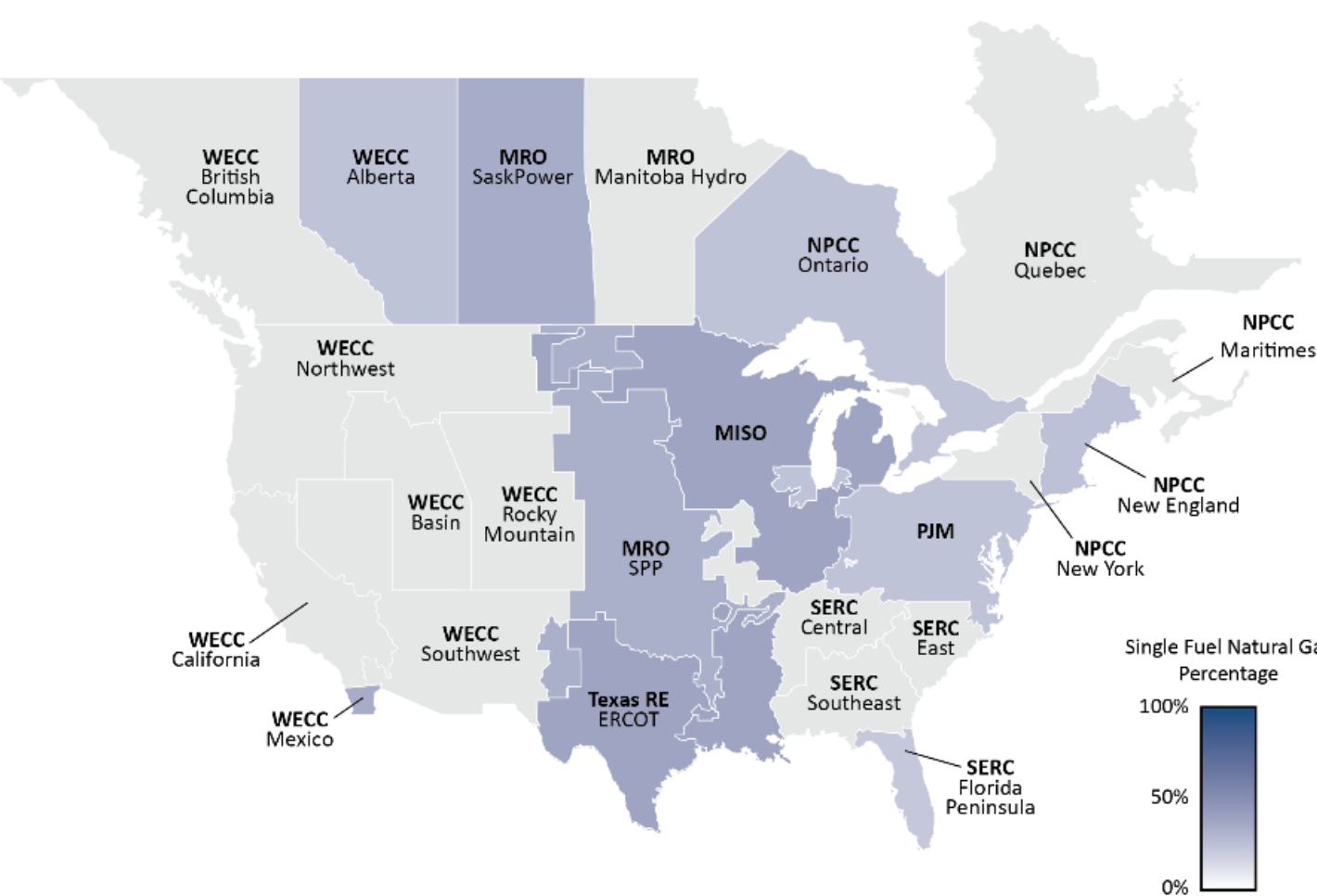
System Events



- EI Data Center Load Loss Events**
- 1500 MW Load Loss (July 2024)
 - 1800 MW Load Loss (February 2025)

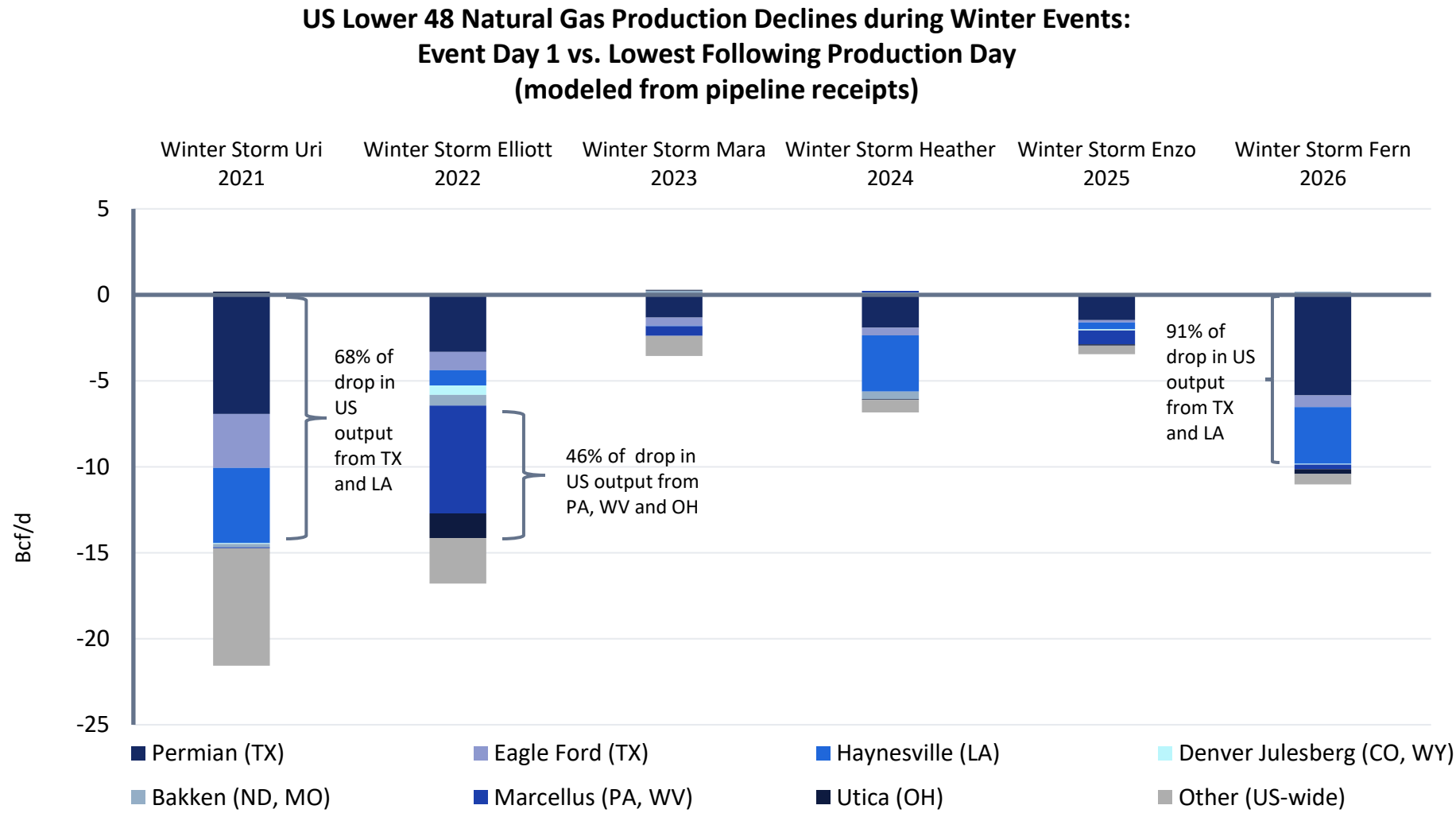
- ERCOT Crypto Mining Load Loss Events**
- 25 Loss Events (November 2023–January 2025)
 - 100–400 MW Load Loss

Single Fuel Gas-Fired Capacity 2025–2026 Winter



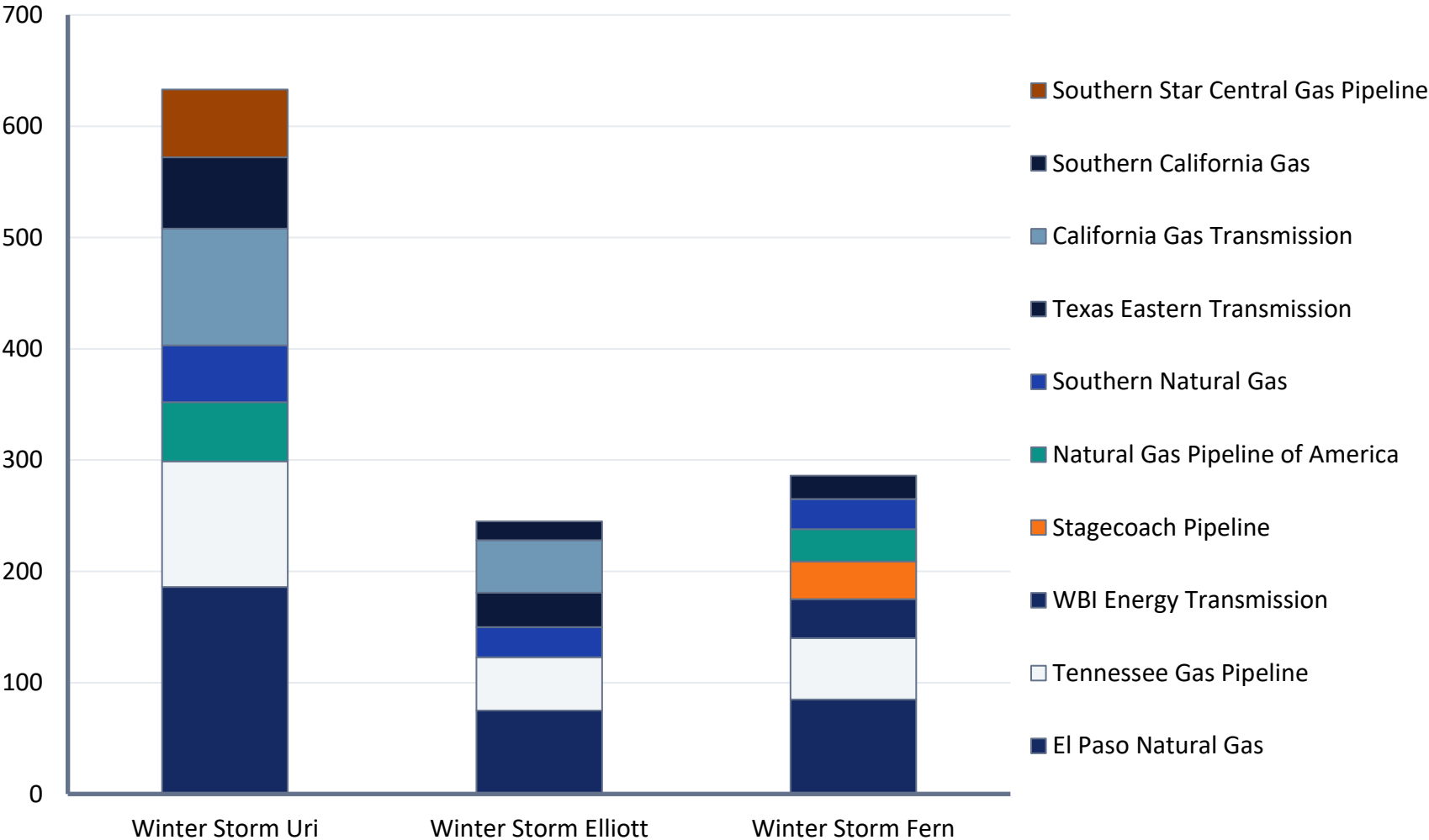
Note: Areas with less than 20% natural gas are shown in light gray.

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%



Source: S&P Global Energy

Top 5 Pipelines by Critical Notice Count and by Winter Event in US Lower 48



Source: S&P Global Energy

Key Reliability Risks / Mitigation Opportunities for Increasing Dependency on Natural Gas

1. Natural Gas Supply and Transportation Risks

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

3. Resource Adequacy and Capacity to Support Large Ramps Risks

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

2. Electric and Gas Market Harmonization Risks

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

4. Vulnerabilities in Generator Winterization Risks

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

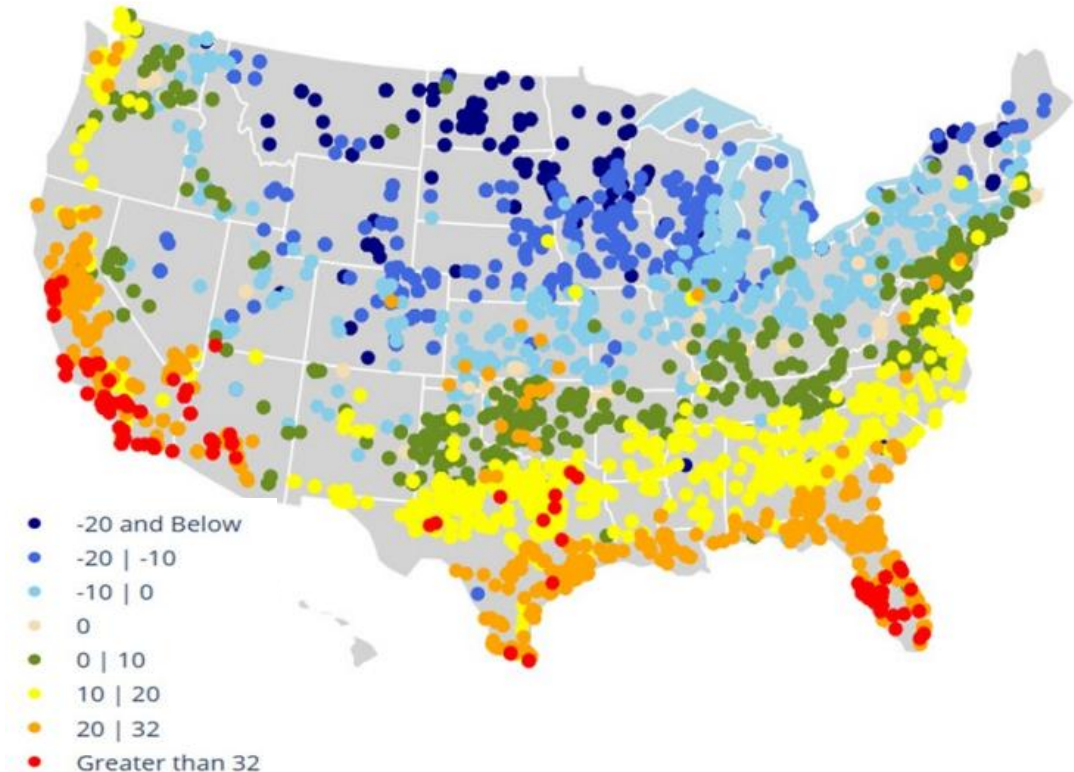
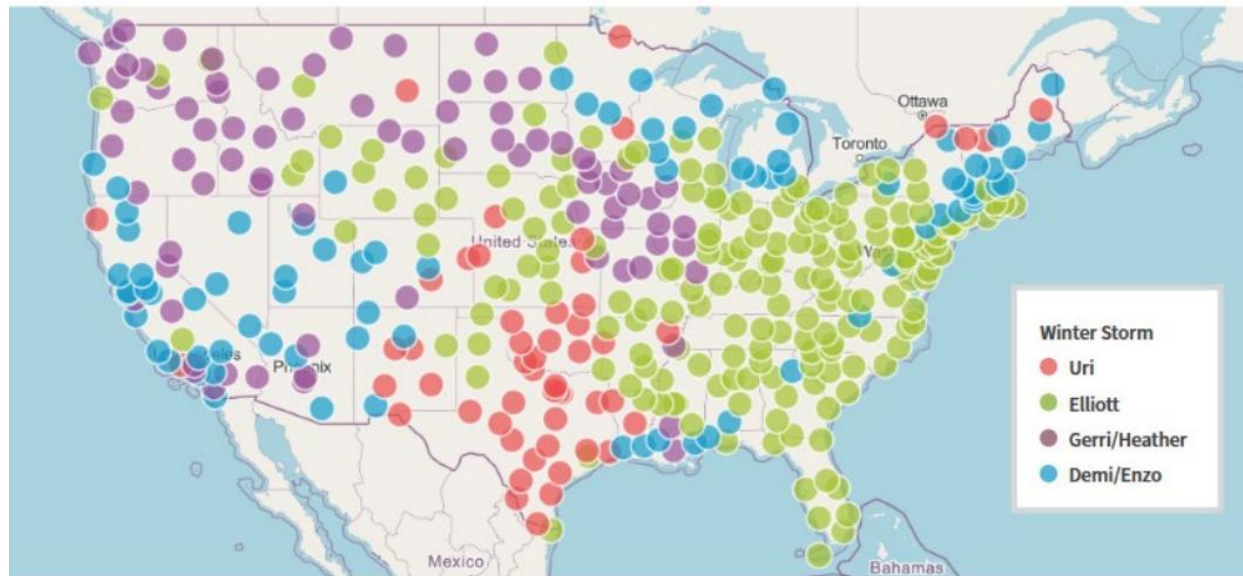
Mitigation Opportunities

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

Extreme Cold Weather Temperature Resilience

NERC

- 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



A light blue map of the United States is shown in the background. A vertical line is drawn through the center of the map, passing between the words "NERC" and "Discussion".

NERC

Discussion

— Winter Preparedness for Energy Reliability – Government Perspective



Megan Levy,
SLTT Program
Manager
U.S. Department
of Energy, Office
of Cybersecurity,
Energy Security,
and Emergency
Response



Dave Schryver
President & CEO
American Public
Gas Association



Kimberly Denbow
Vice President, Security
& Operations
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Association
(Moderator)



Claire Eubanks
Director of the
Industry Analysis
Division
Missouri Public
Service
Commission



Ben Bolton
Assistant Director,
Energy Security,
Emergency
Preparedness &
Resilience
TN Dept of
Environment and
Conservation

Winter Preparedness for Energy Reliability – Government Perspective

Megan Levy, SLTT Program Manager

American Gas Association Natural Gas Readiness Forum Summit

September 22, 2026



U.S. DEPARTMENT
of **ENERGY**

Office of Cybersecurity, Energy Security,
and Emergency Response

Coordination in Steady State & During Energy Emergencies

State, Local, Tribal, and
Territorial (SLTT) Governments



Energy Government
Coordinating Council (EGCC)



NASEO **NARUC** **NGA**

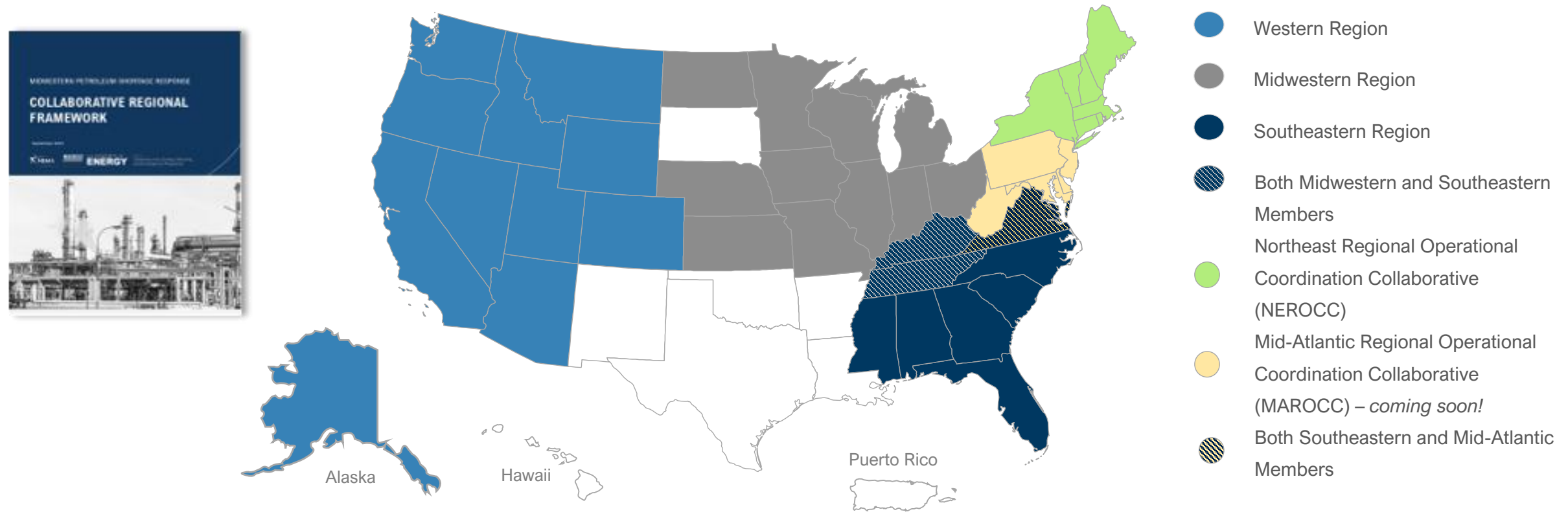
Industry Councils



U.S. DEPARTMENT of ENERGY

Western, Midwestern, Southeastern and Northeast Regional Response Collaboratives- Coming Soon- **Mid-Atlantic!**

With the kick-off of the Mid-Atlantic Collaborative in 2027, DOE has supported 43 states and DC in critical planning and response activities



Emergency Support Function (ESF) #12 Overview

Federal Role

DOE ESF #12 is responsible for coordinating with:

- Federal Government entities
- The Energy sector
- SLTT governments

DOE ESF #12 is responsible for managing:

- Regional and State Field Responders
- Energy Subject Matter Experts (SMEs)



State Role

Emergency Support Functions:

- How state emergencies are declared
- How/when state national guard can be activated

Authorities/responsibilities vary based on which agency holds ESF-12 role

- Many states identify primary and supporting agencies
- Responsibilities for disruptions affecting the electric sector may be separated from oil and natural gas
- Lead ESF #12 agency can be the state energy office, public utility commission, or emergency manager



CESER SLTT Contact Information



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U.S. DEPARTMENT
of **ENERGY**

Office of Cybersecurity, Energy Security,
and Emergency Response



U.S. DEPARTMENT *of* ENERGY

Office of Cybersecurity, Energy Security,
and Emergency Response

About APGA

Over 730 member utilities in 38 States. APGA is the only not-for-profit trade organization representing America's publicly owned natural gas local distribution companies.

APGA members stats:

- Serves approximately 5 Million Customers
- Members have approx. 21,000 Employees
- Members operate 120,000 Miles of Main
- Sizes range from 38 to 500,000+ meters

Winter Preparedness for Energy Reliability

Perspectives from Staff of the Missouri PSC

About the PSC



Investor-owned water,
sewer, and steam heat
utilities



Investor-owned gas
utilities
Intrastate natural gas
pipelines (safety)



Investor-owned
electric utilities
Electric cooperatives
(safety)



Telecommunications
providers

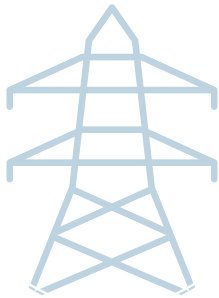


Manufacturers and
dealers of
manufactured homes
and modular units

- ▶ Our mission is to ensure that Missourians receive safe and reliable utility services at just, reasonable and affordable rates.
- ▶ The Commission is made of 5 members appointed by the Governor and confirmed by the Senate.
- ▶ The Staff of the Commission is a team of experts in the fields of engineering, accounting, economics, finance, and law.

PSC Role in Preparedness & Response

- ▶ Emergency Support Function 12 (Energy)
 - Situational awareness
 - Technical expertise
 - Coordinate with utility, state, and federal partners



Utility Partners

Assess damage
restore service



State Emergency
Management Agency
Coordinates statewide
response



Public Service
Commission
ESF-12 (Energy)



MDNR – Division of
Energy
ESF-12 Partner



USDOE
Federal Partner

Other Related Work

- ▶ Certificate of Convenience and Necessity
 - Grants the authority to a utility to build/acquire/operate utility infrastructure or expand service territory.
 - 2,910 MW of natural gas plants approved July 2025 – current.
- ▶ Pipeline safety program
 - Staff performs safety inspections of jurisdictional pipelines and investigates incidents.
- ▶ Electric Integrated Resource Planning
 - A plan that seeks to find an optimal combination of resources to satisfy future energy demands in an economic and reliable manner.
 - New rules are being drafted to implement Senate Bill 4.

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Missouri

PSC

Public Service Commission

— Natural Gas/Electric Coordination — Organized Electric Market Panel



Brian Fitzpatrick
Principal Fuel Supply Strategist
PJM Interconnection



Mike Mattox
Senior Advisor, Operations
Midcontinent Independent
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John Stevenson
Energy Security Principal
New York Independent System
Operator (NYISO)



Matthew Agen
Vice President of Regulatory
Affairs & Chief Regulatory
Counsel, Energy
American Gas Association
(Moderator)



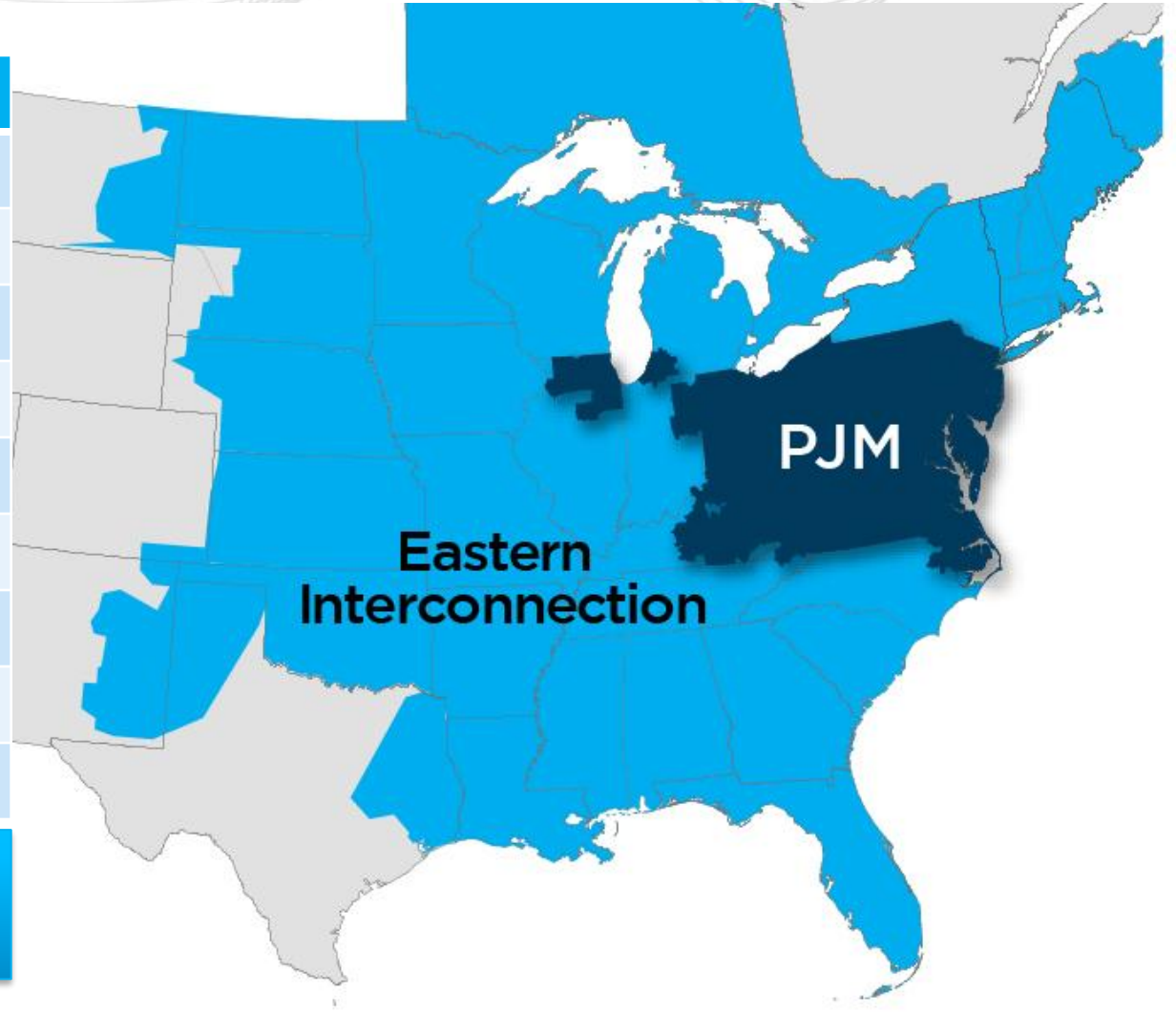
PJM Overview

Brian Fitzpatrick
Principal Fuel Supply Strategist, PJM
AGA NGRF
September 22, 2026

Key Statistics

Member companies	1,116
Millions of people served	67+
Peak load in megawatts	165,563
Megawatts of generating capacity	185,989
Miles of transmission lines (Bulk Electric System)	88,417
Gigawatt hours of annual energy	828,161
Generation sources	1,673
Square miles of territory	368,906
States served	13 + DC

- 25.6% of generation in Eastern Interconnection
- 25.2% of load in Eastern Interconnection



As of 2/2026

PJM Gas Generation Delivery Sources

~ 90 GW
of installed gas
generation

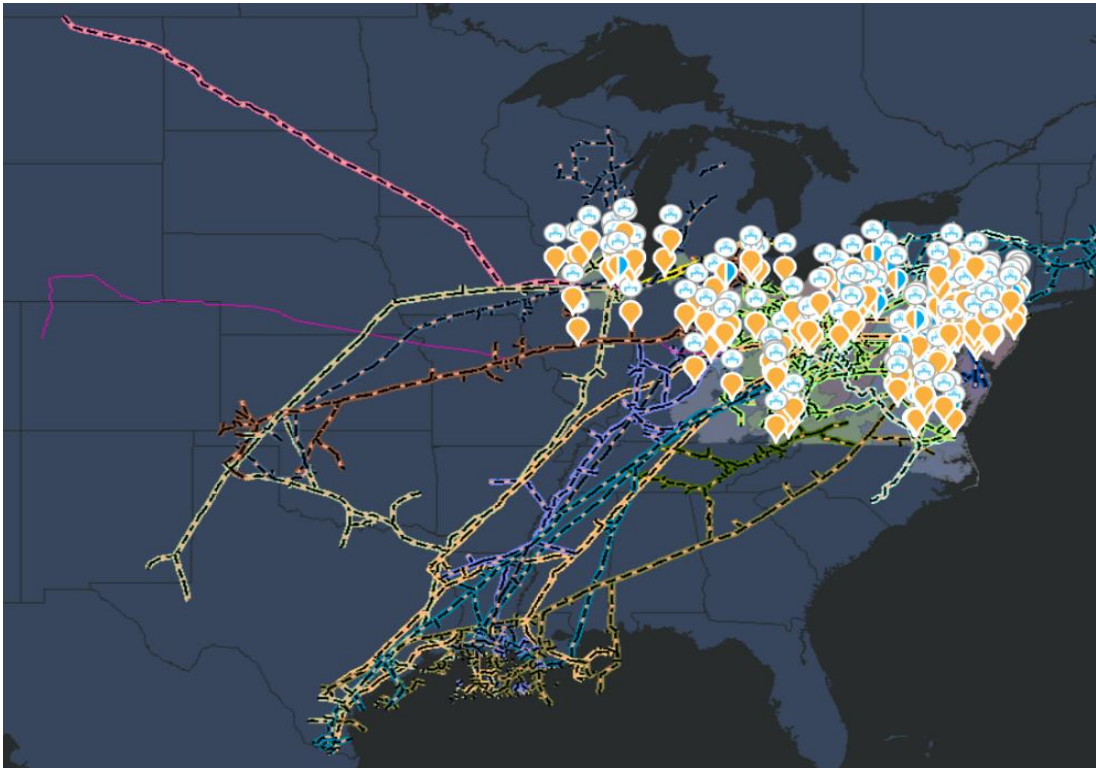
80%
served directly by
interstate pipelines

19.8%
served by local
distribution companies

0.2%
served via gas
gathering systems

29%
dual
fuel

51%
firm delivery –
gas only



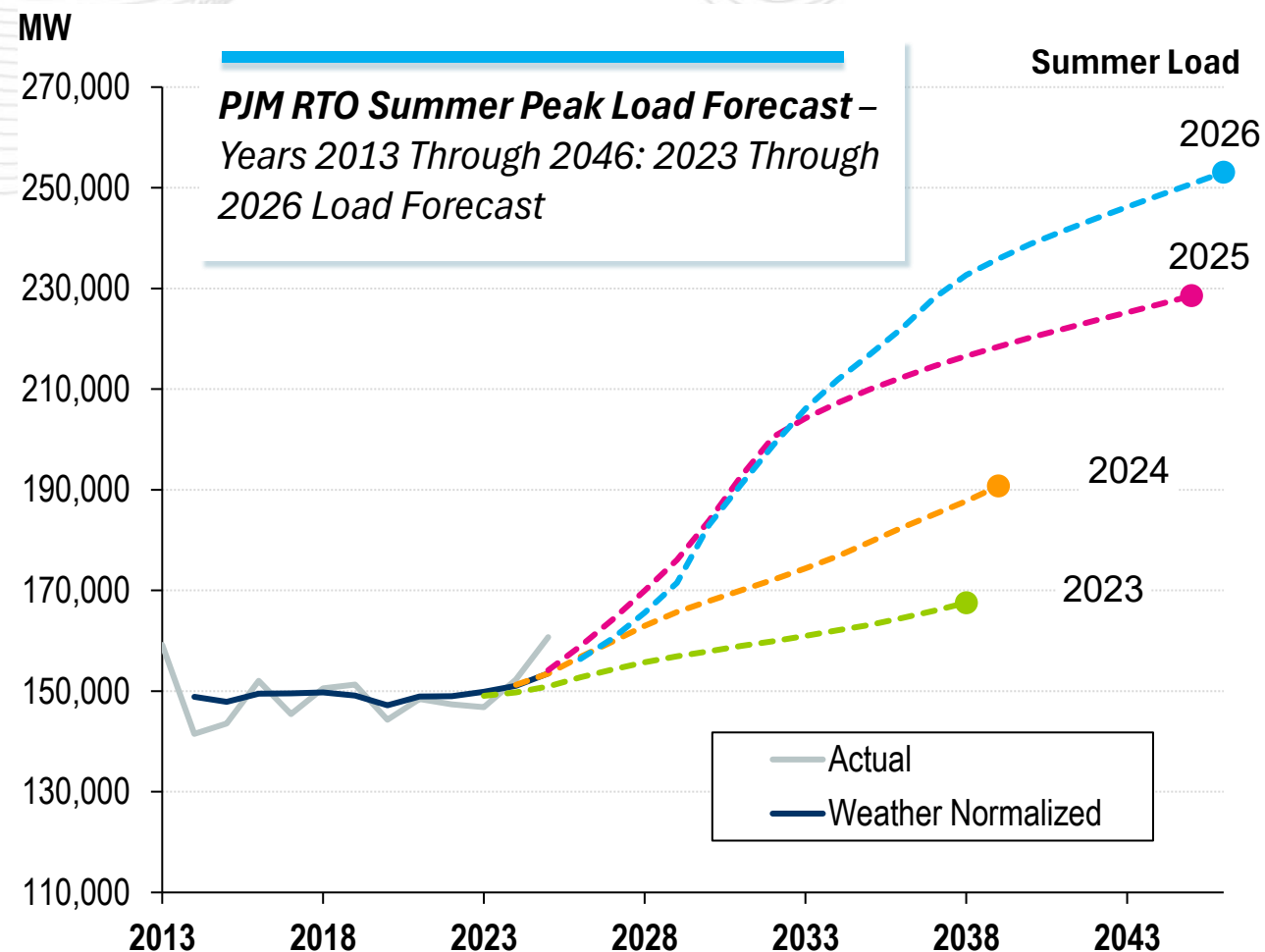
25
interstate
pipelines
serving the PJM
system

32
local
distribution
companies across
the footprint

Over a decade of predictable flat load growth is over

- Demand for electricity is accelerating
- Capacity is increasingly constrained
- Our grid's operational characteristics and risks are evolving
- Our macroeconomic environment is becoming more volatile

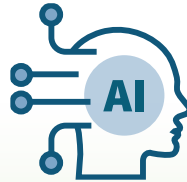
Our industry is changing in structural ways



PJM's Reformed Generation Interconnection Queue



**Queue Not
Closed: 1-2 Year
Turnaround
Time to be Studied**



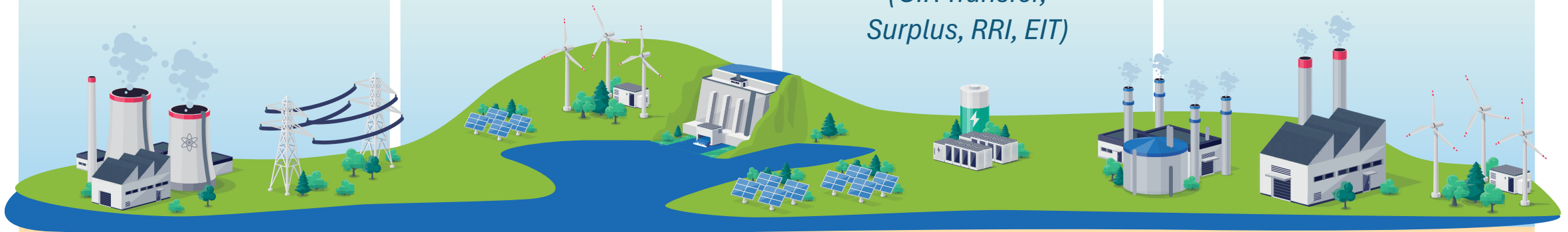
**Google AI to
Further Expedite**



**Creation of
On-Ramps to Go
Quicker**
*(CIR Transfer,
Surplus, RRI, EIT)*



**~57 GW
Have Agreements**



**PJM has shifted from queue reform to delivery with faster study timelines,
new on-ramps, and significant new supply already approved or connected.**

New Generation Projects Seek To Connect Under PJM's Reformed Process

Cycle 1

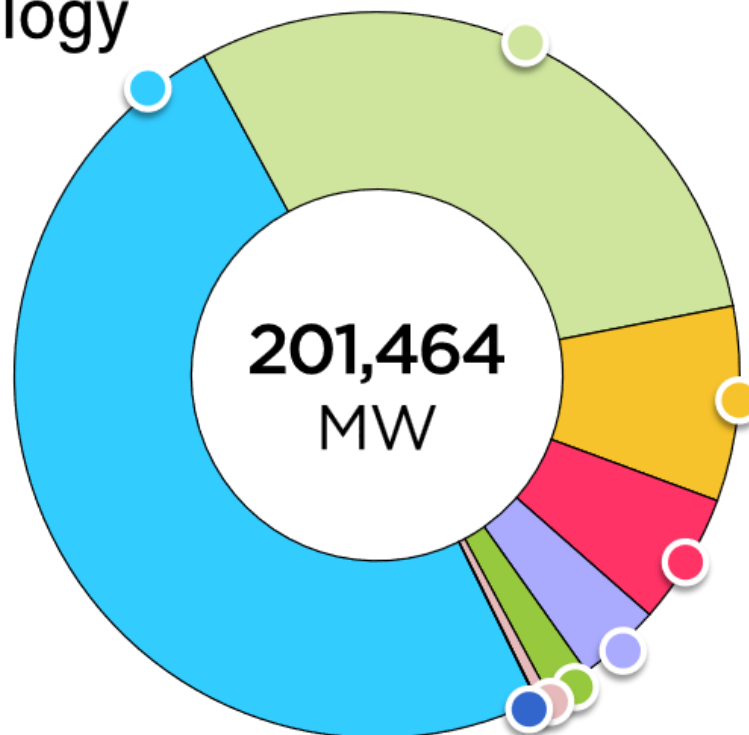
by Fuel/Technology Type (MWE)

No. of Units:

715

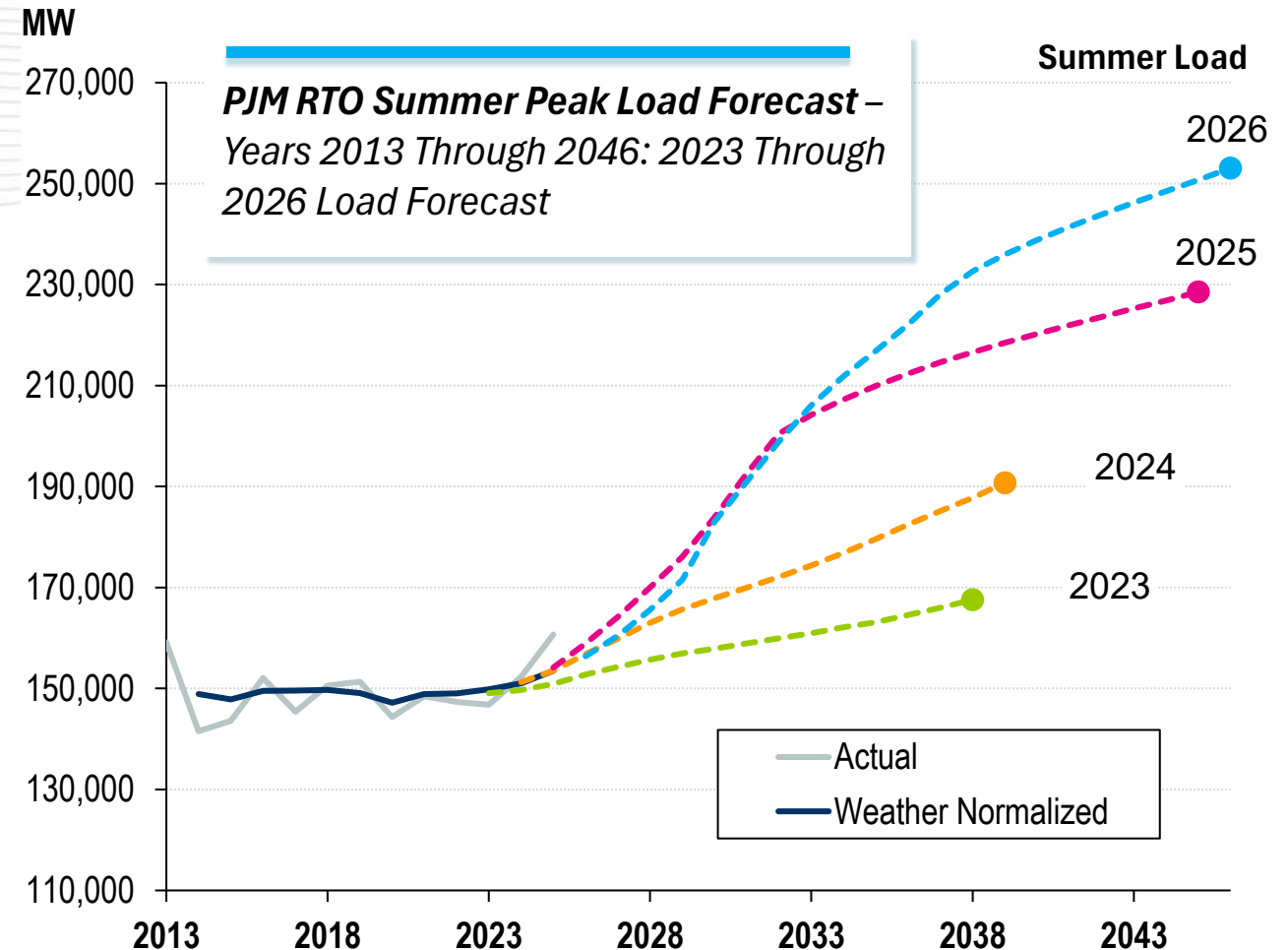
Generation
Interconnection
Requests

As of August 3, 2026



● Natural Gas , 99,791 MW	147
<i>Includes single and dual fuel</i>	
● Storage , 60,014 MW	314
● Nuclear , 17,306 MW	24
● Solar , 11,754 MW	117
● Solar/Storage , 7,546 MW	37
● Wind , 3,888 MW	61
● Other , 1,099 MW	10
<i>Includes Biomass, Coal, Fuel Cell, Fusion, Methane</i>	
● Hydro , 66 MW	5

- Rapid data center demand growth is having unprecedented impact
- Next 5-10 years will have heavy dependence on natural gas generation to maintain system reliability
- Transmission & generation build-out will need corresponding natural gas infrastructure buildout
- Gas & electric markets will need to evolve to support needed investments



Appendix

Managing Rapid Demand Growth Interim Resource Adequacy Service (IRAS)*

▶ IRAS helps protect reliability as large new customers connect to the grid

- 1 *Demand is growing rapidly* – large load new customers adding significant electricity demand to the grid
- 2 *Extreme conditions stress the grid* – during extreme weather or other grid emergencies, available power supplies can tighten significantly.
- 3 *IRAS helps reduce the strain* – reducing consumption or temporarily reducing power from the grid (e.g. use backup generation) – begin June 2027*
- 4 *Reliability is protected* – reducing demand helps avoid more serious emergency actions



* Filed with FERC in August and pending FERC approval

Managing Rapid Demand Growth Reliability Backstop Procurement*

- The proposal addresses the shortfall from the PJM Reliability Requirement of the recent capacity auction (~6.8 GW unforced capacity)
- With this one-time action, PJM is focused on its core responsibility to preserve grid reliability

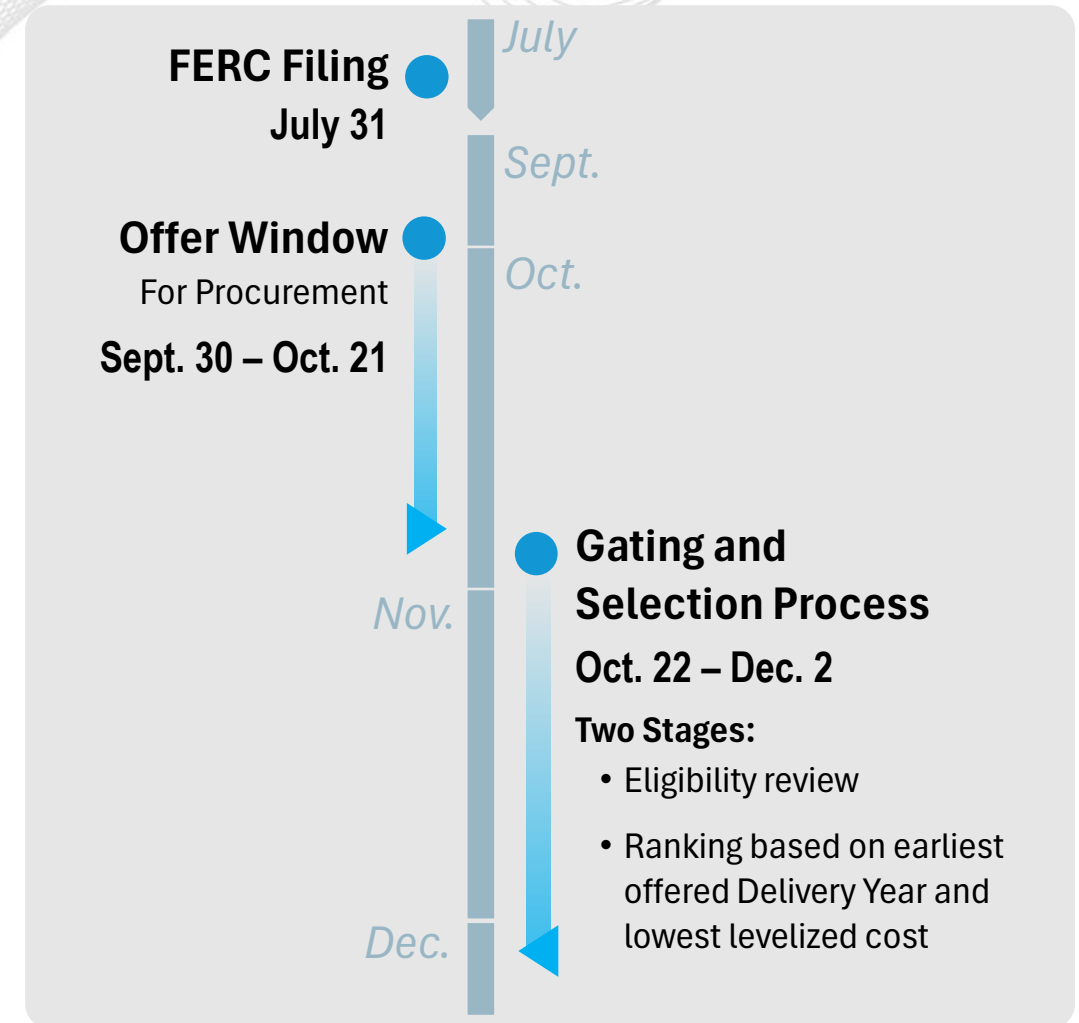
The parallel path approach is:

A Central Procurement

Begins in September

Bilateral Contract Matchmaking

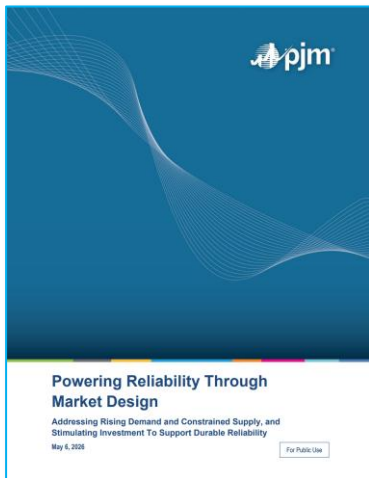
Already underway



* Filed with FERC in July and pending FERC approval

January 2026 PJM Board of Managers

- Directed PJM staff to examine whether the foundational assumptions of the market design still hold
- Named the core tension: *price volatility that is economically rational is placing unsustainable stress on the regional compact that allows the market to function*



PJM issued whitepaper (identifying key issues and needed decisions)

These are choices for the region — with PJM’s role being to ensure the trade-offs are clearly understood.

Following the release, the task ahead is well summarized in Commissioner Rosner’s recent concurrence:

“[...] PJM, its members, and its states must come together to turn good intentions into durable market design and state policies that support needed investment in new energy infrastructure.”

The current supply shortage is **structural**, not cyclical

Demand surging faster than new supply



- Hyperscale data centers are adding load at an unprecedented pace - a data center can connect in 2–3 years, a new power plant takes 4 (optimistically) to 6 or more.

New generation costs twice as much, takes twice as long



- Capital costs for a new Combined Cycle plant have ~doubled
- Supply chain backlogs & permitting timelines add to the delay

Rapid growth of new large loads without new supply create significant risks for maintaining reliability

Long-term decade-long transition, not a one or two year gap

The Foundational Questions for PJM Markets

Before we can choose a path, we must confront foundational questions

1

Is resource adequacy a common good that is shared by all – “shared reliability compact” and who is responsible for making it financially durable?

- *PJM’s grid has operated on the principle that all customers share in a common standard of reliability and willingness to pay to meet it*
- *Preserving that compact requires that most load be insulated from spot market price volatility through long-term forward commitments – who bears the burden of those requirements?*

2

Or should we decide that reliability must be explicitly rationed?

- *If not all load can be served at the historical 1-in-10 standard, prioritize by geography, customer class, or contractual contribution to supply?*

3

In either case: should the primary long-term hedging instrument be the capacity product or energy?

- *If long-term contracting is required under, should the market be designed to incentivize long-term contracting around a capacity product or the underlying physical commodity – energy?*



MISO Overview

American Gas Association National Natural Gas Readiness Forum

September 22, 2026

Meet MISO

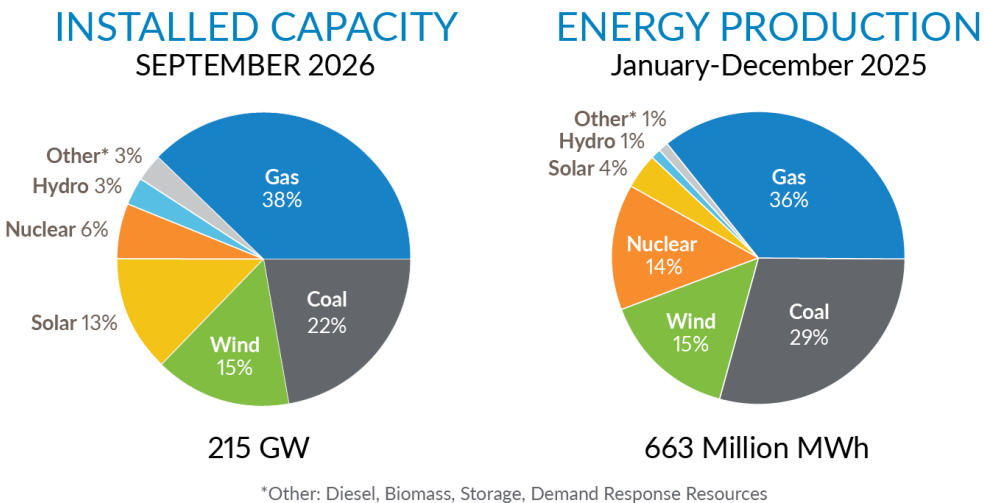
MISO is an independent, not-for-profit, member-based organization responsible for keeping the power flowing across 15 U.S. states and Manitoba reliably and cost-effectively.



MISO's reliability footprint and regional offices

KEY FACTS

Population Served	45 Million
Transmission Line	79,000 Miles
Generating Units	Approximately 2,000
Total MISO Members	230+
Market Participants	550+
Market Transactions	Over \$53 billion in 2025
Carbon Reduction	Approximately 32% since 2014



MISO Gas Generation Fuel Delivery



INSTALLED
GAS
GENERATION*
~79 GW

60% Inter or Intra-State Pipelines

37% Local Distribution Companies

13% Dual Fuel

33% Firm Delivery Service

28

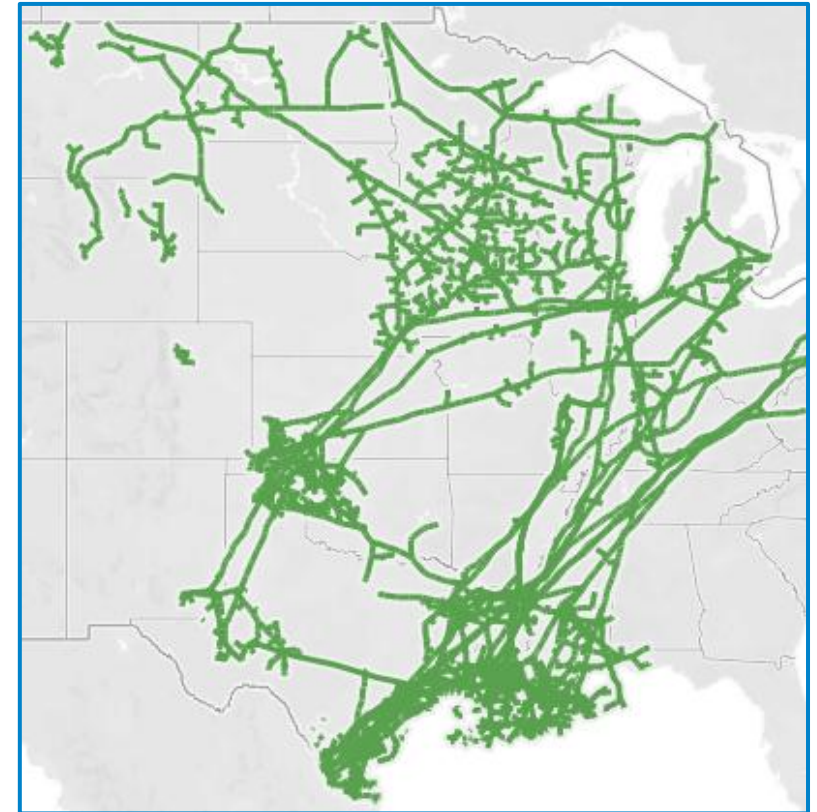
Interstate
Pipelines

14

Intrastate
Pipelines

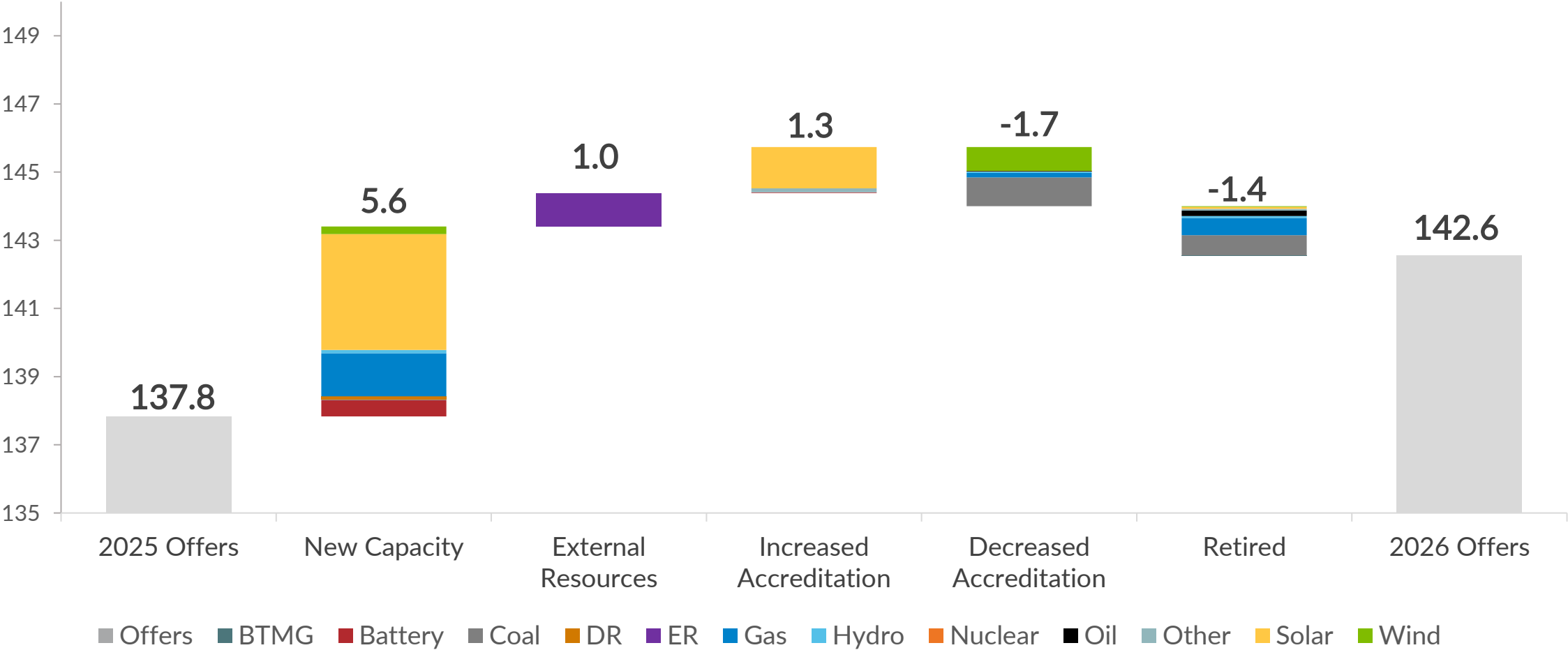
20

Local Distribution
Companies



New capacity additions outpaced decreased accreditation and suspensions/retirements

Capacity Offered Summer 2026 vs. Summer 2025 (GW)



BTMG: Behind the Meter Generation. Capacity indicated is offered accredited value.

MISO Updates

- [MISO Issue MSC-2024-3](#), FERC Docket ER26-510 approval of tariff change to better address fuel procurement cost recovery risk due to commitment cancellation by MISO
- [Large Load Working Group](#)
 - Defining Large Loads
 - Creating requirements/tariff language to quickly and reliably study and interconnect Large Loads and associated generation
- Capacity Accreditation – resources that reliably show up during high-risk periods receive higher accredited capacity
- [MISO Market Capacity Emergency Procedure SO-P-EOP-11-002](#) updated to align event steps with NERC EEA levels
- [Uncertainty Management](#) – continued improvements to Dynamic Regulation Reserve Requirement/Ramp Capability Product and Risk Platform

MISO Winter Readiness Workshop

- Tentatively October 28, 2026, 2-4pm EPT
- Open to the public
- Registration not required, meeting details forthcoming at <https://www.misoenergy.org/engage/committees/seasonal-readiness/>

Regional Natural Gas/Electric Coordination – What Happens in Practice



Justin Powers
Vice President, Gas
Supply
Spire



Charles Crews
Executive Vice
President & Chief
Operating Officer
Southern Star
Central Gas
Pipeline



Jeff Pollock
Director, Pacific
Mountain Region
TC Energy



Stephen Wassell
VP, System and
Peaking
Operations
Southern
Company Gas



Maggie O'Connell
Vice President of Security,
Reliability, and Resilience
Interstate Natural Gas
Association of America
(Moderator)

— The Calm Before Winter Storm Fern: NGA's Gas Supply Task Force Planning for Severe Weather Events and the Results



Alana Daly
Vice President, Corporate Affairs
and Policy
Northeast Gas Association



Caroline Hon
Vice President of New
England Regulation and
Pricing
National Grid



Kent Mottice
Energy Industry Analyst, FERC
Storm Assessment Team
Federal Energy Regulatory
Commission



Amanda Sramek
Director, Security &
Preparedness
American Gas Association
(Moderator)



NGA
NORTHEAST GAS ASSOCIATION

Natural Gas Readiness Forum

September 2026

Alana Daly , Vice President, Corporate Affairs & Policy

Northeast Gas Association (NGA)

The NGA is the Northeast gas industry's voice in supporting the safe, reliable, efficient and affordable delivery of gas energy to customers as a continuing part of an environmentally responsible energy future

- Serves New England, New York, New Jersey, Pennsylvania, Delaware, & Maryland
- **NYSEARCH**, the RD&D Division of NGA
- 36 Local Energy Distribution Companies
- Pipeline Companies
- LNG Importers, Storage, CNG Suppliers and Transporters
- 300+ Associate Members (Vendors/Contractors)

Preparing, Communicating & Responding

- NGA Gas Control Committee
- NGA Gas-Electric Cross-Grid Management Committee
- Co-Chair with NE-ISO: Electric-Gas Operating Committee
- Mutual Assistance
- Annual Pre-Winter Briefing
- NGA Gas Supply Task Force



Gas Supply Task Force

The Task Force is responsible for:

- Monitoring regional gas system deliverability during the winter.
- Facilitating assistance to companies in need of gas supply, if necessary.
- Providing updates to state government agencies and Northeast electric grid operators.
- Coordinating public information on regional gas supply contingencies and conservation appeals during peak demand or supply curtailment.
- Gathering and distributing aggregated member company gas supply information for our Gas Supply Manual for confidential distribution to key stakeholders.

GSTF Participants:

Interstate pipelines, LNG Importers, Storage Companies, CNG & LNG transporters, LDCs, & production sector representatives.





nationalgrid

Winter Reliability Beyond the Peak: Lessons from Winter Storm Fern

AGA Natural Gas Readiness Forum – September 2026

Caroline Hon - Vice President, New England Regulation and Pricing

Winter Reliability Crosses System Boundaries

National Grid's perspective as a New England gas and electric operator

As both a gas and electric operator in New England, National Grid sees directly how winter conditions in one system affect reliability in the other..



Gas operating perspective

- Firm heating demand and customer service obligations
- Supply, transportation, storage and LNG deliverability
- Flexibility through prolonged cold



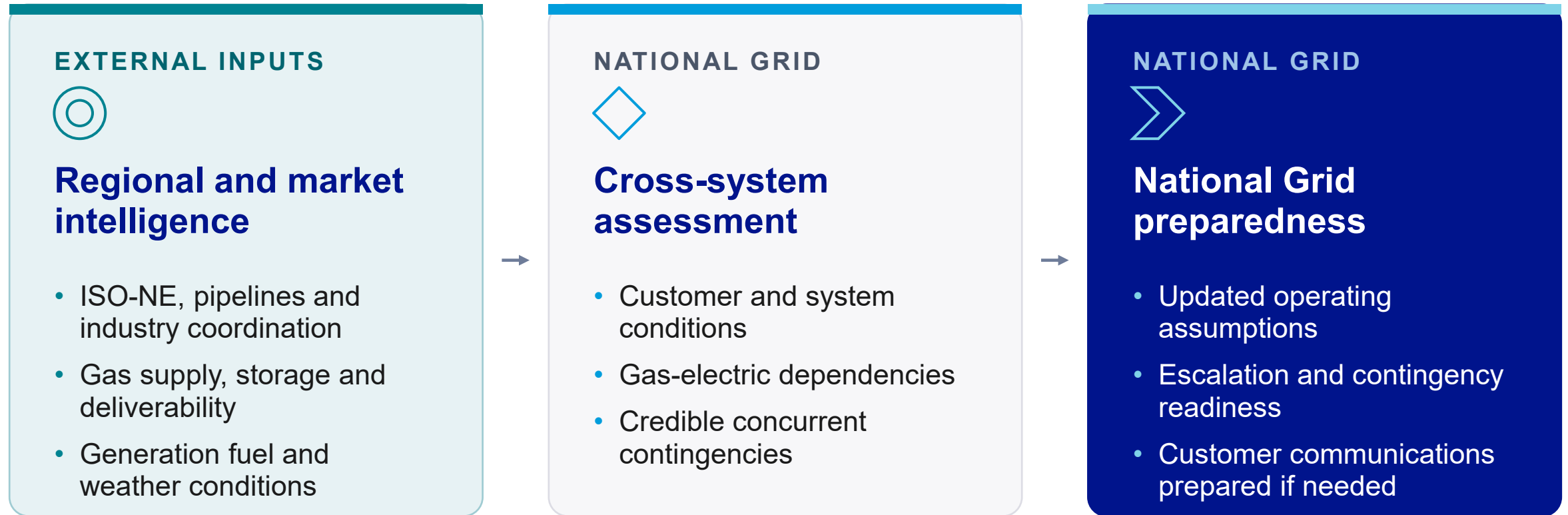
Electric operating perspective

- Customer demand and generation availability
- Fuel conditions and weather-driven contingencies
- Reliability through extended cold

Winter reliability is an interconnected energy-system challenge requiring coordinated gas and electric planning.

One event, two systems, one operating picture

Connecting regional intelligence with internal operating decisions during Winter Storm Fern



A shared operating picture improved visibility and preparedness, while recognizing that coordination does not remove physical constraints.

Fern's central lesson: endurance matters

Prolonged winter conditions test the full energy supply chain

19 consecutive days of below-average temperatures in New England

Source: FERC, NERC and Regional Entities, System Performance Review of the Winter 2026 Arctic Cold Period, September 2026.



Sustained cold progressively reduces operating flexibility

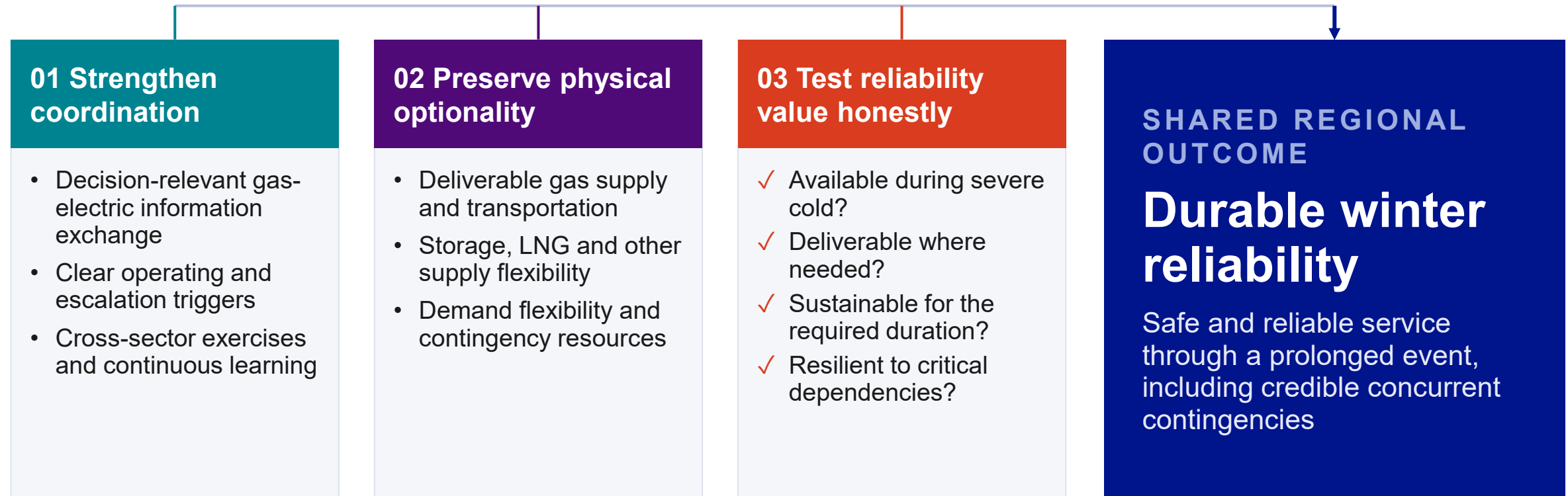
- Stored fuels and inventories decline
- Equipment and supply chains remain under sustained stress
- Replenishment and contingency options become more constrained

How many additional disruptions could the system absorb before customer impacts became unavoidable?

Fern demonstrated the value of coordinated preparation across operators, customers, suppliers and regional institutions. It also highlighted persistent interdependencies across the energy supply chain.

The forward agenda: coordination plus capability

Preserve what worked during Fern and address the constraints that remain



Coordination helps the region use available capability effectively. It cannot create capacity, inventory, deliverability or duration that is not physically available.

A balanced portfolio still requires decisions about capabilities that are demonstrably needed.

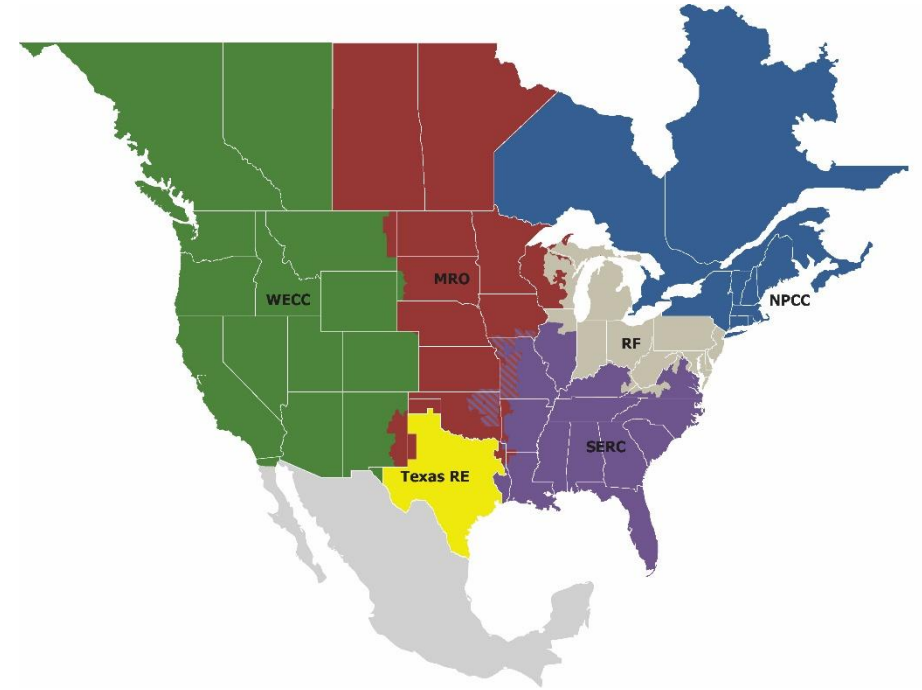
national**grid**

Thank You





NERC



System Performance Review of the Winter 2026 Arctic Cold Period

Natural Gas Readiness Forum: September 22, 2026



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Weather and Demand During Winter 2026 Arctic Cold Period

- The eastern United States and Texas experienced a prolonged cold snap.
 - ISO-NE saw 19 consecutive days of below average temperatures; and
 - PJM reported a 10-day cold span with forecasted peaks exceeding historic demand records.
- Total U.S. natural gas demand peaked at 172 Bcf/day on January 24, 2026.
- Total U.S. electric demand reached 666 GW on January 27, 2026.
- No manual load shed.





Major Takeaways

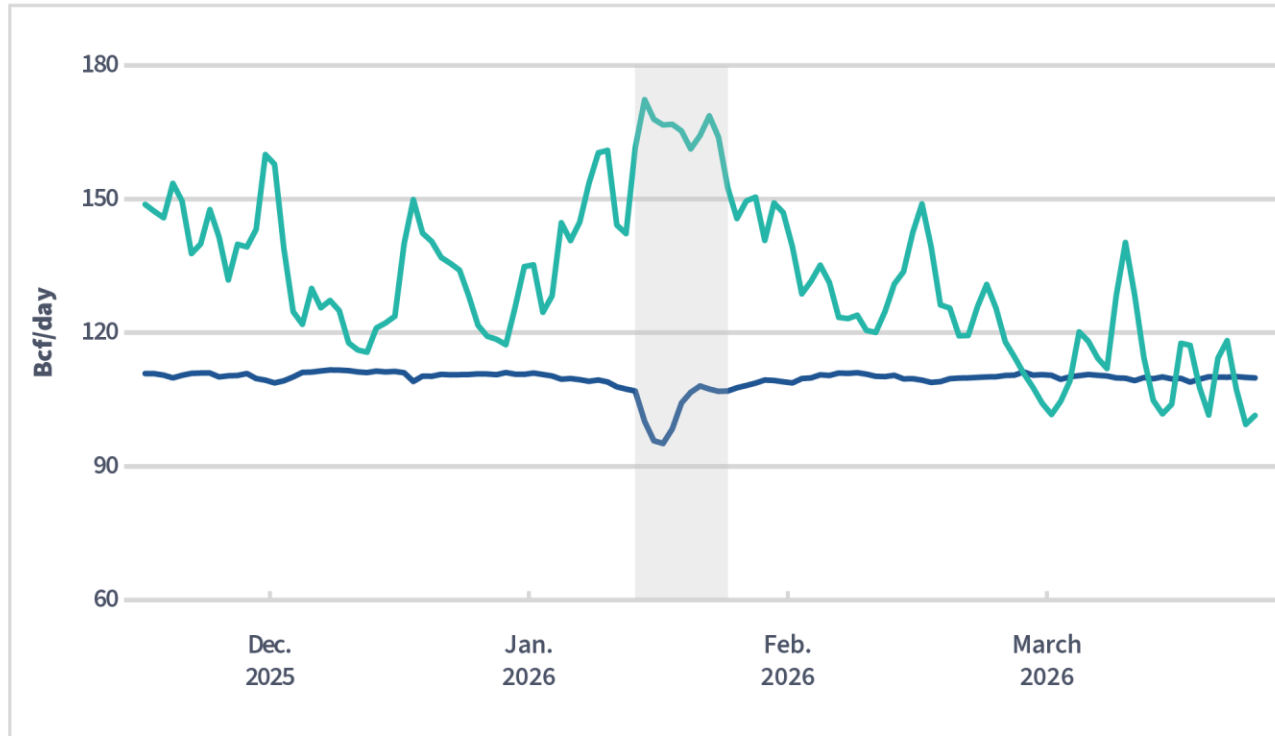
- During the winter 2026 arctic cold period, the magnitude of generator outages was on par with the January 2025 arctic events.
- Generators' performance was similar to performance during the January 2025 arctic events and was improved compared to prior winter storms, in part due to:
 - Application of lessons learned from prior events, such as
 - Advanced commitments;
 - Strengthened preparedness and improved situational awareness; and
 - Implementation of NERC cold weather reliability standards.
- The natural gas system performed well with only moderate production declines and some limited short-duration *force majeure* events.
- Although electric and natural gas entities are implementing recommendations from prior events, there remain opportunities to maintain reliability during arctic cold events by: improving gas-electric communication, strengthening load forecasts, and building out natural gas storage.



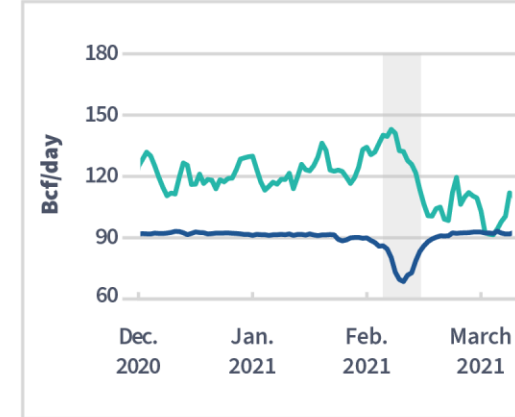


Total Natural Gas Demand and Production by Winter Storm (in Bcf/day)

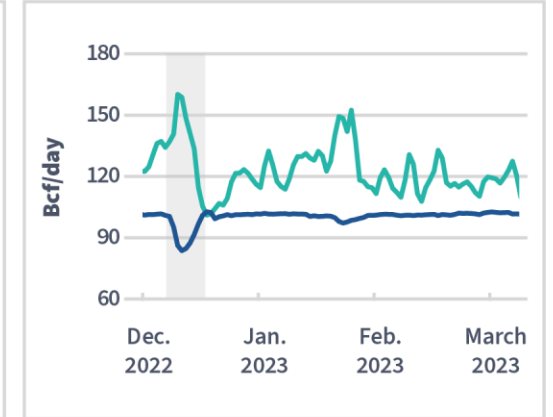
Winter 2025-26 (Winter Storm Fern/Gianna)



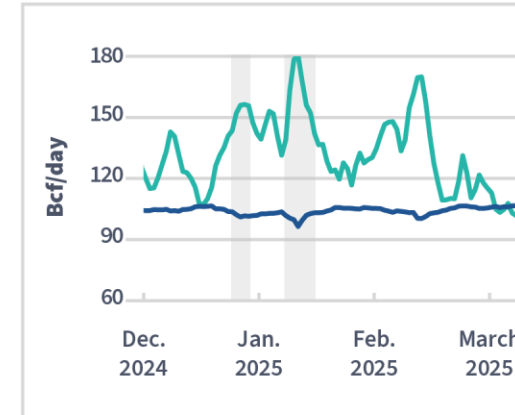
Winter 2020-21 (Winter Storm Uri)



Winter 2022-23 (Winter Storm Elliott)



Winter 2024-25 (Winter Storm Blair/Cora, Demi/Enzo)



— Total Production — Total Demand

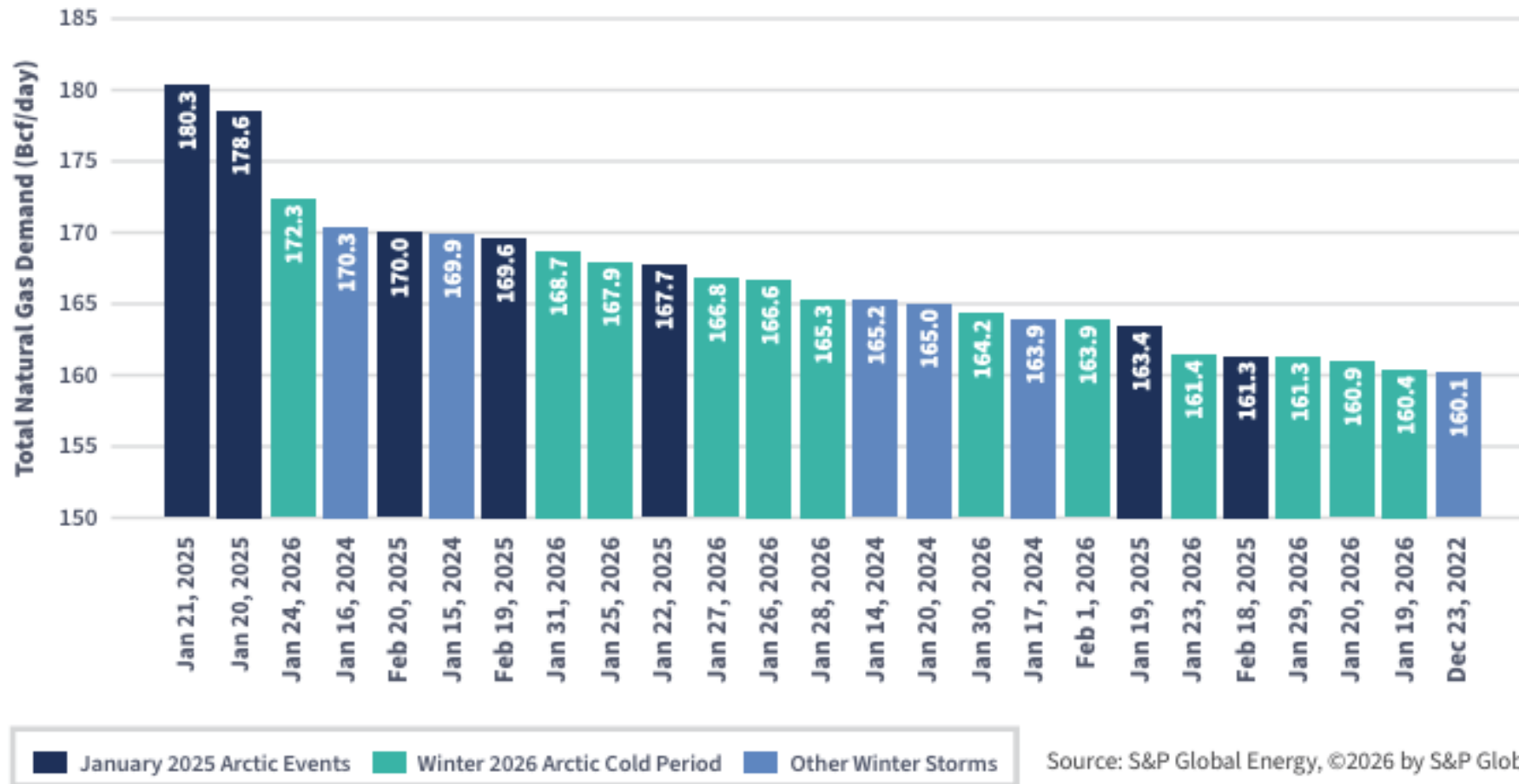
Source: S&P Global Energy,
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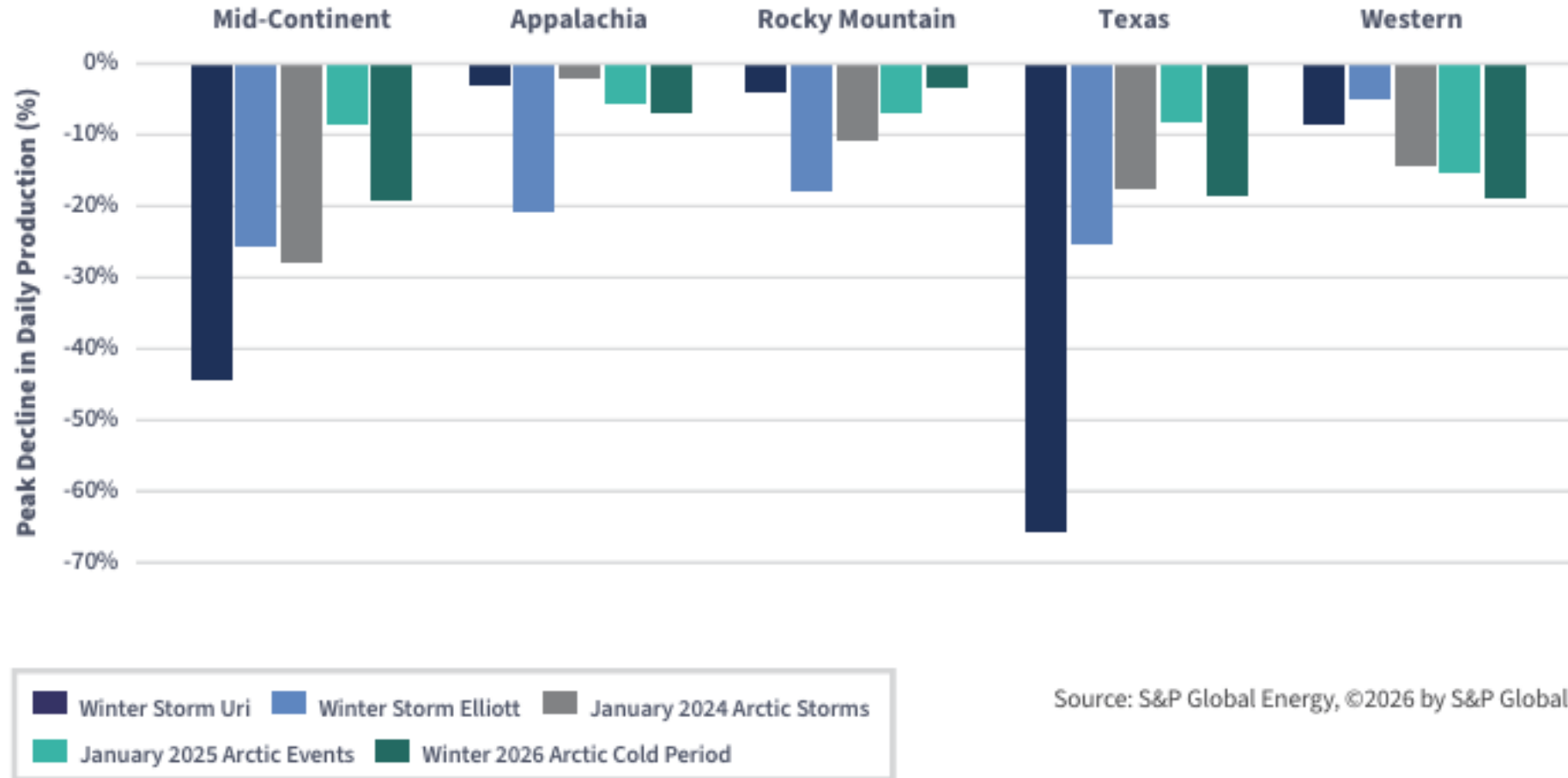
Top 25 All-Time Natural Gas Demand Days



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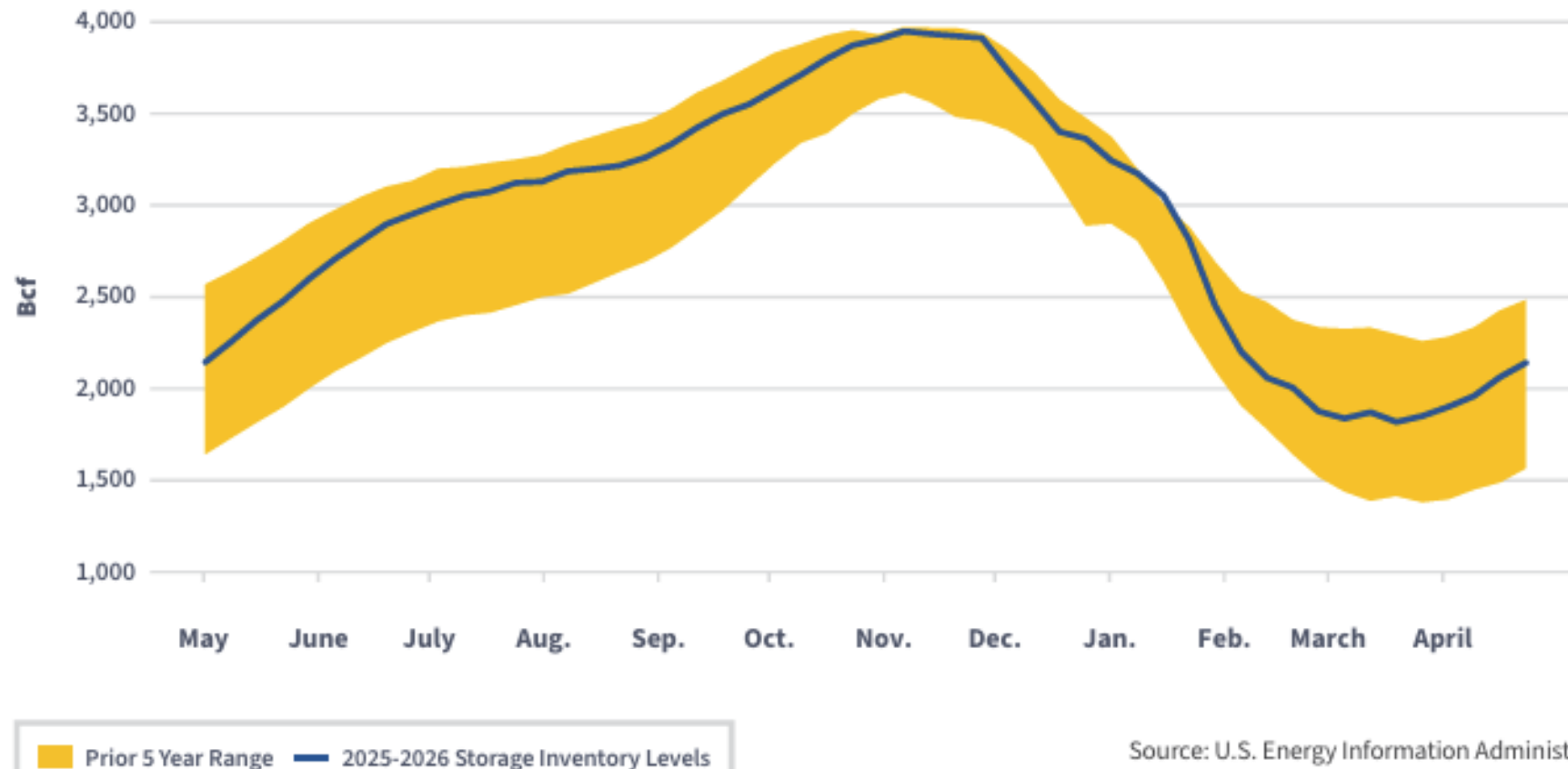


Peak Daily Production Declines By Storm





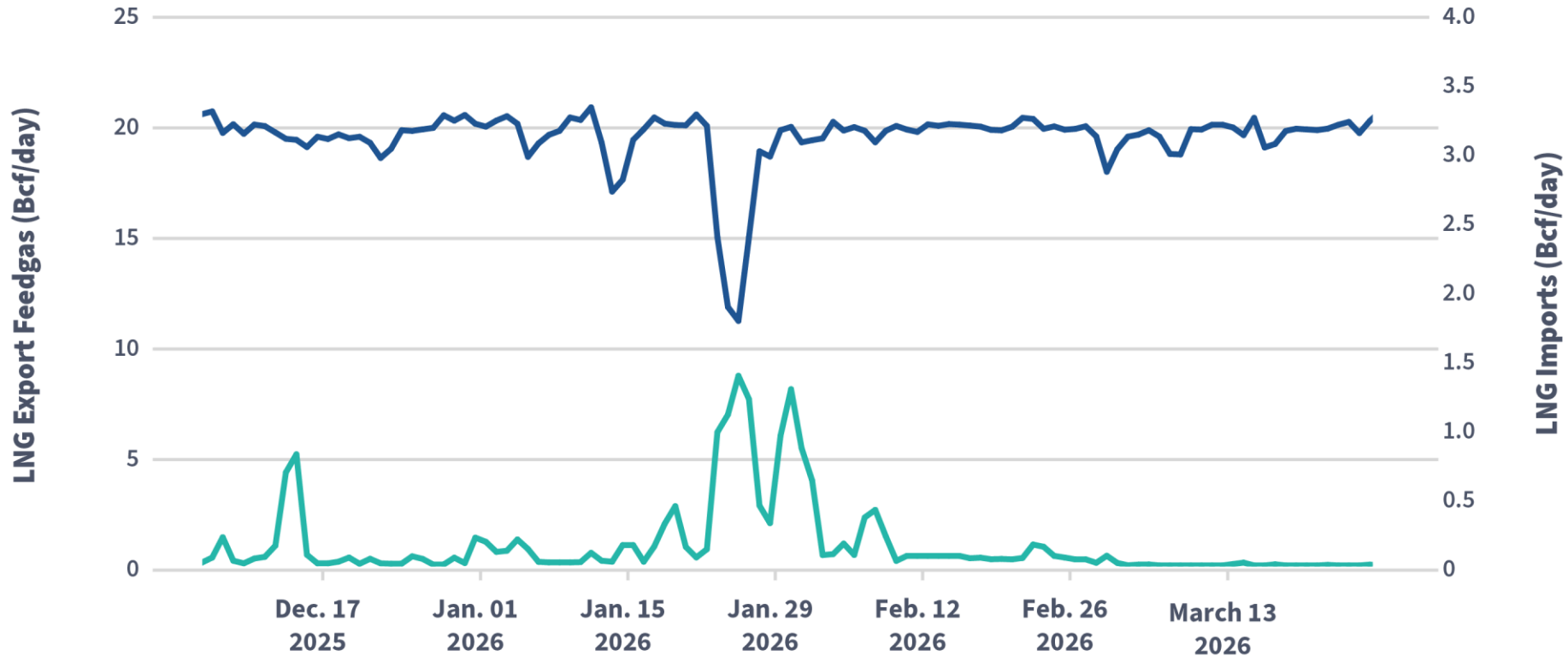
Total U.S. Storage Inventory Levels vs. the Prior 5-Year Storage Range



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LNG Feedgas Demand v. LNG Imports (in Bcf/day)



— LNG Feedgas Demand — LNG Imports

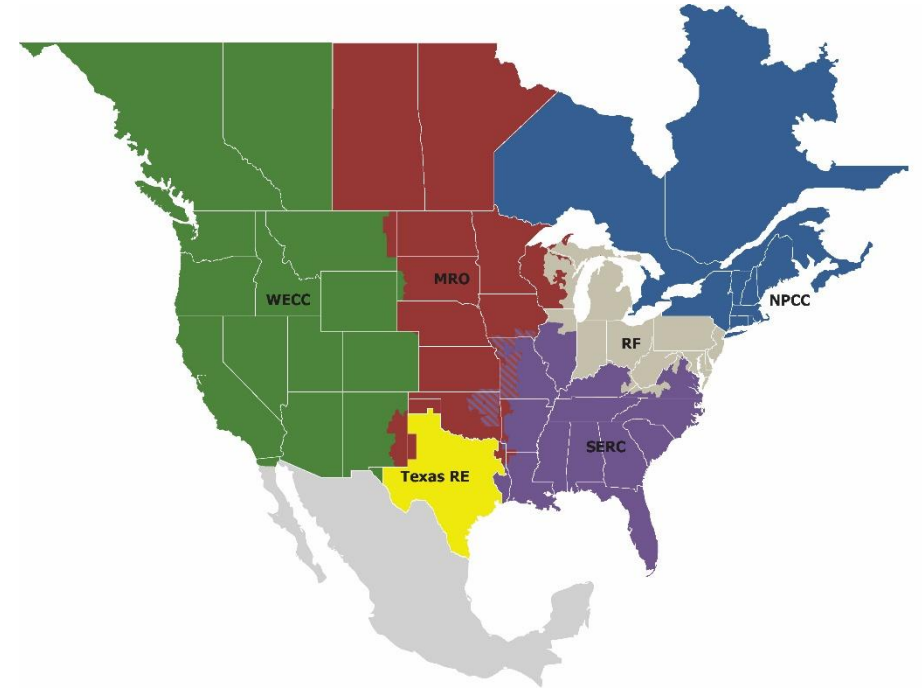
Source: S&P Global Energy, ©2026 by S&P Global Inc



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NERC



System Performance Review of the Winter 2026 Arctic Cold Period

Natural Gas Readiness Forum: September 22, 2026



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Natural Gas/Electric Coordination – Lead Takeaways from 2026 Regional Forum Tabletop Exercises



Amanda Sramek
Director, Security &
Preparedness
American Gas Association

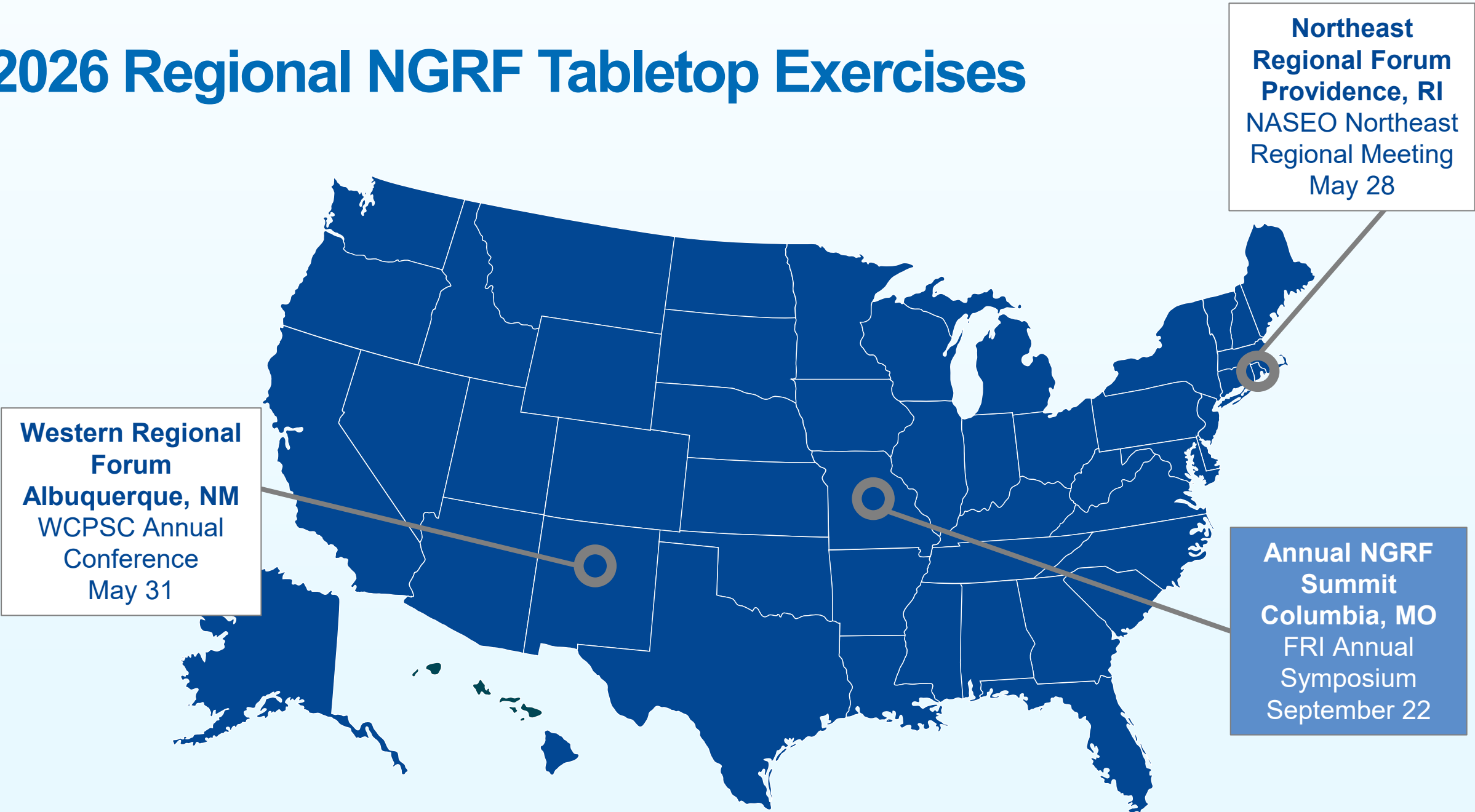
Kimberly Denbow
Vice President, Security &
Operations
American Gas Association



2026 Regional NGRF Tabletop Exercise

Key Takeaways

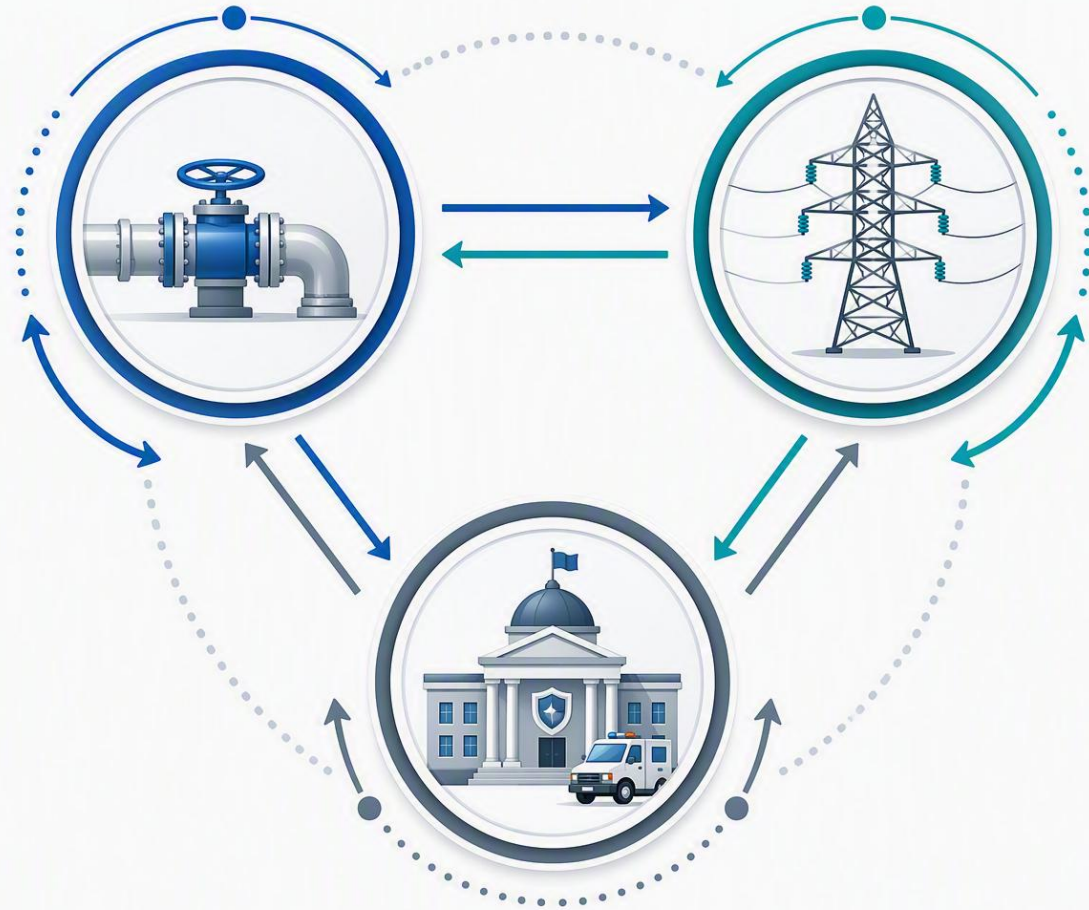
2026 Regional NGRF Tabletop Exercises



Why These Exercises Matter

Realization of Interdependencies:

- Natural Gas
- Electricity
- Government / Community Partners



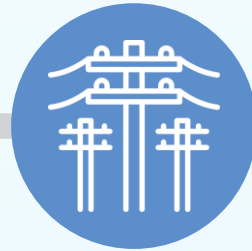
Northeastern Regional NGRF Exercise

Scenario Overview



System Stress

Prolonged cold snap, LNG terminal disruptions, and a suspected cyber incident strain regional gas and electric systems.



Grid Escalation

Rapidly worsening conditions trigger rolling brownouts and force the invocation of federal emergency authorities.



Recovery Complications

Sustained freezing temperatures, low pipeline pressure, and Canadian fuel deliverability issues complicate restoration efforts.

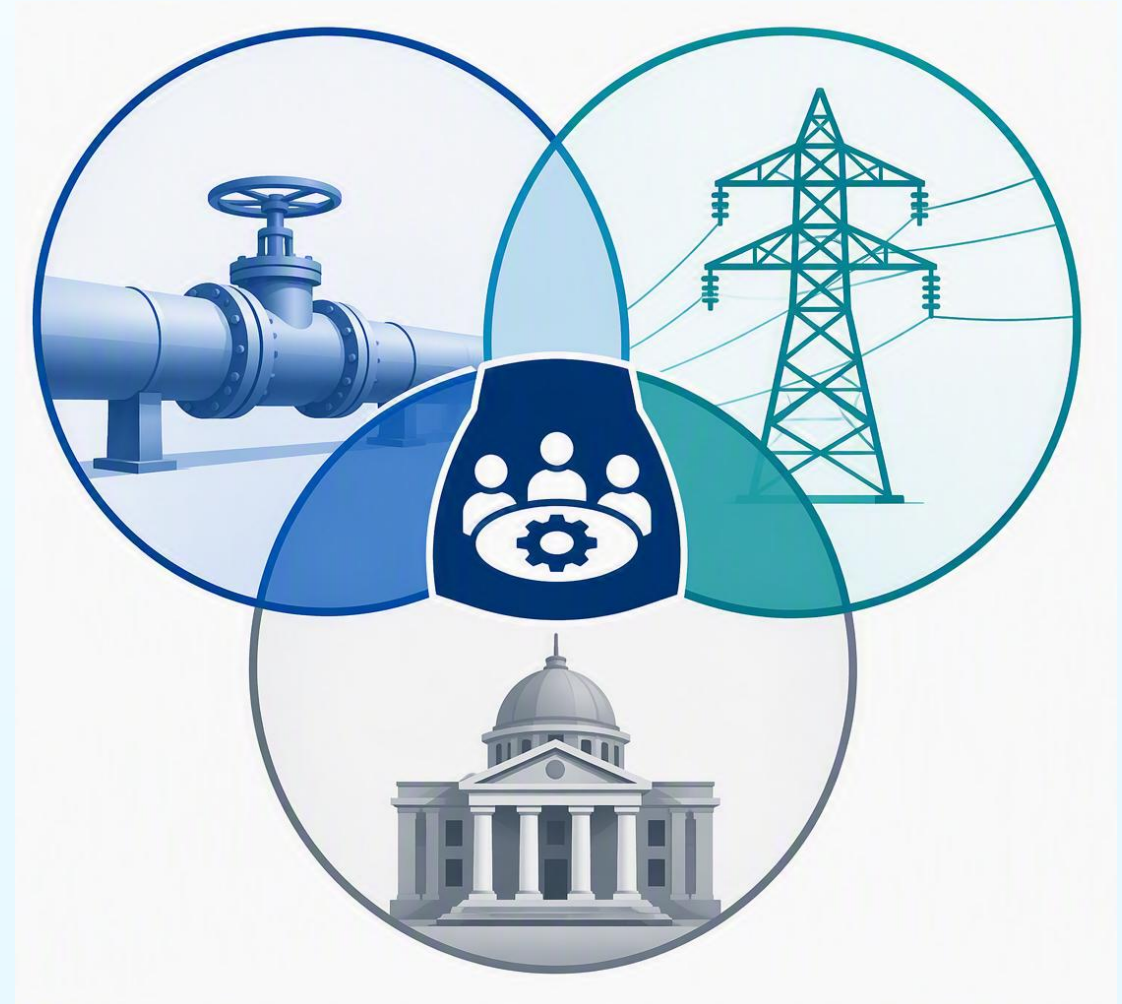
Northeastern Regional Takeaway #1

Cross-Sector Interdependency

Explore expansion of regional engagement to improve coordinated decision-making during cross-sector incidents.

Consideration

Improve cross-sector operational understanding by conducting joint exercises and appointing liaisons to support real-time coordination and bridge knowledge gaps in system interdependencies.



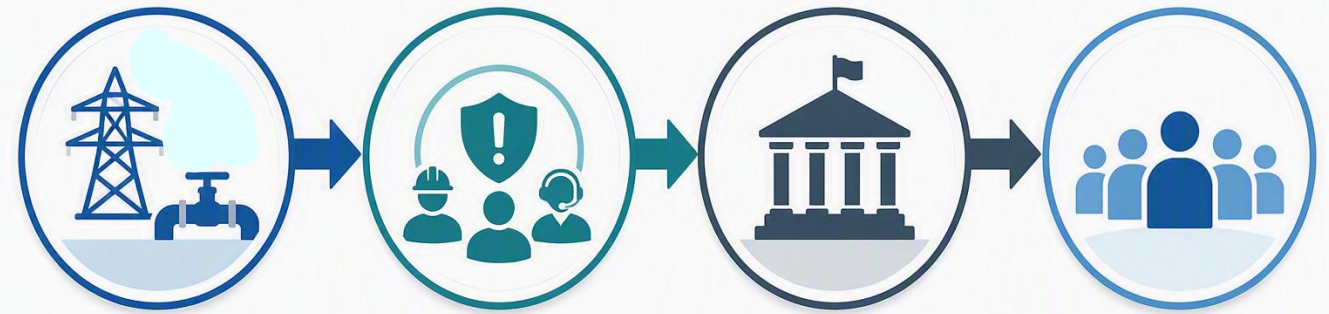
Northeastern Regional Takeaway #2

Strengthen Incident Communications

Mitigate inconsistent communication flows and fragmented roles through a shared understanding of each other's incident protocols.

Consideration

Establish formal communication structures, including clear notification triggers and liaison roles, to strengthen relationships and support structured information sharing during incidents.



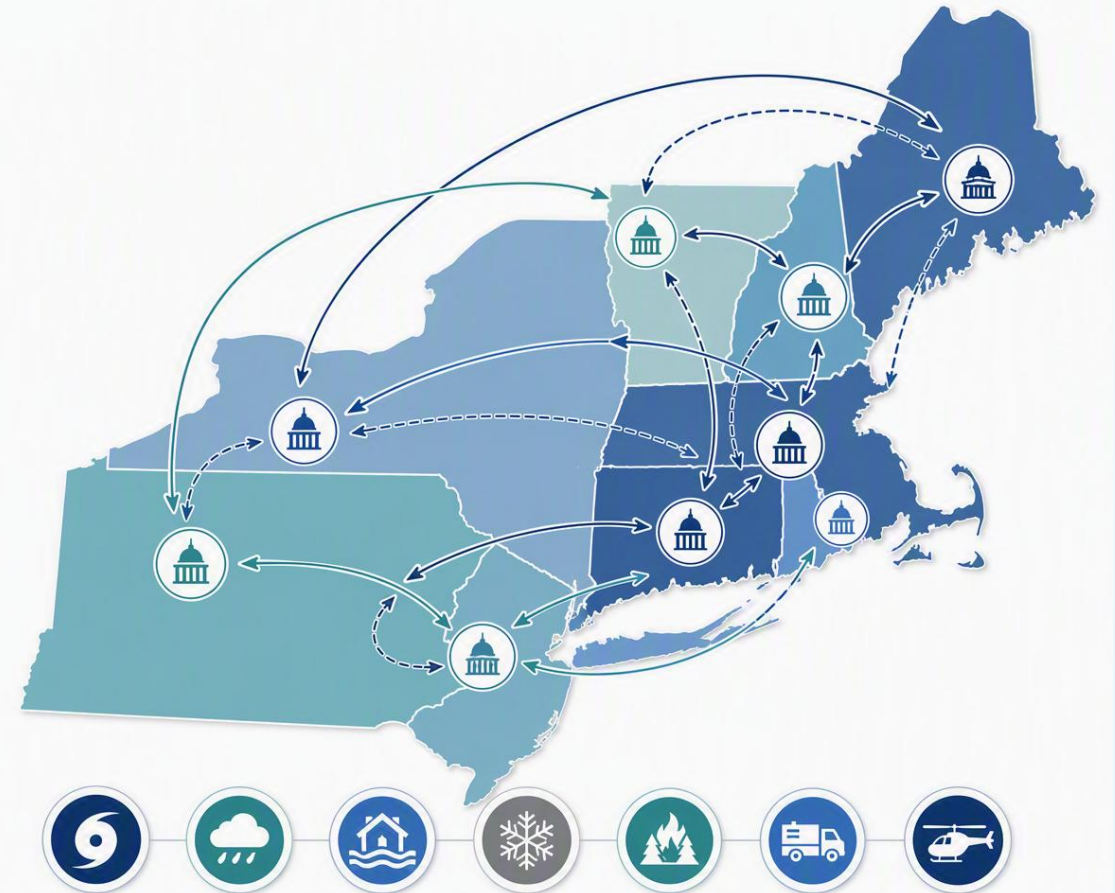
Northeastern Regional Takeaway #3

Regional Accountability

Natural gas owners/operators should continue leveraging existing relationships and capabilities to understand coordination structures and strengthen effective multi-state response.

Consideration

Leverage existing relationships with state and federal partners to clarify regional roles, waiver procedures, and mutual assistance protocols before incidents occur, ensuring coordinated multi-state response.



Western Regional NGRF Exercise

Scenario Overview



Compounding Hazards

Extreme temperatures, storms, and wildfires trigger immediate gas constraints and drop renewable energy output.



Cascading Failures

Public safety power shutoffs, SCADA failures, and physical hazards disrupt field operations.



Regional Escalation

Generation capacity from renewable energy sources reduced and emergency orders issued force complex, multi-agency coordination.

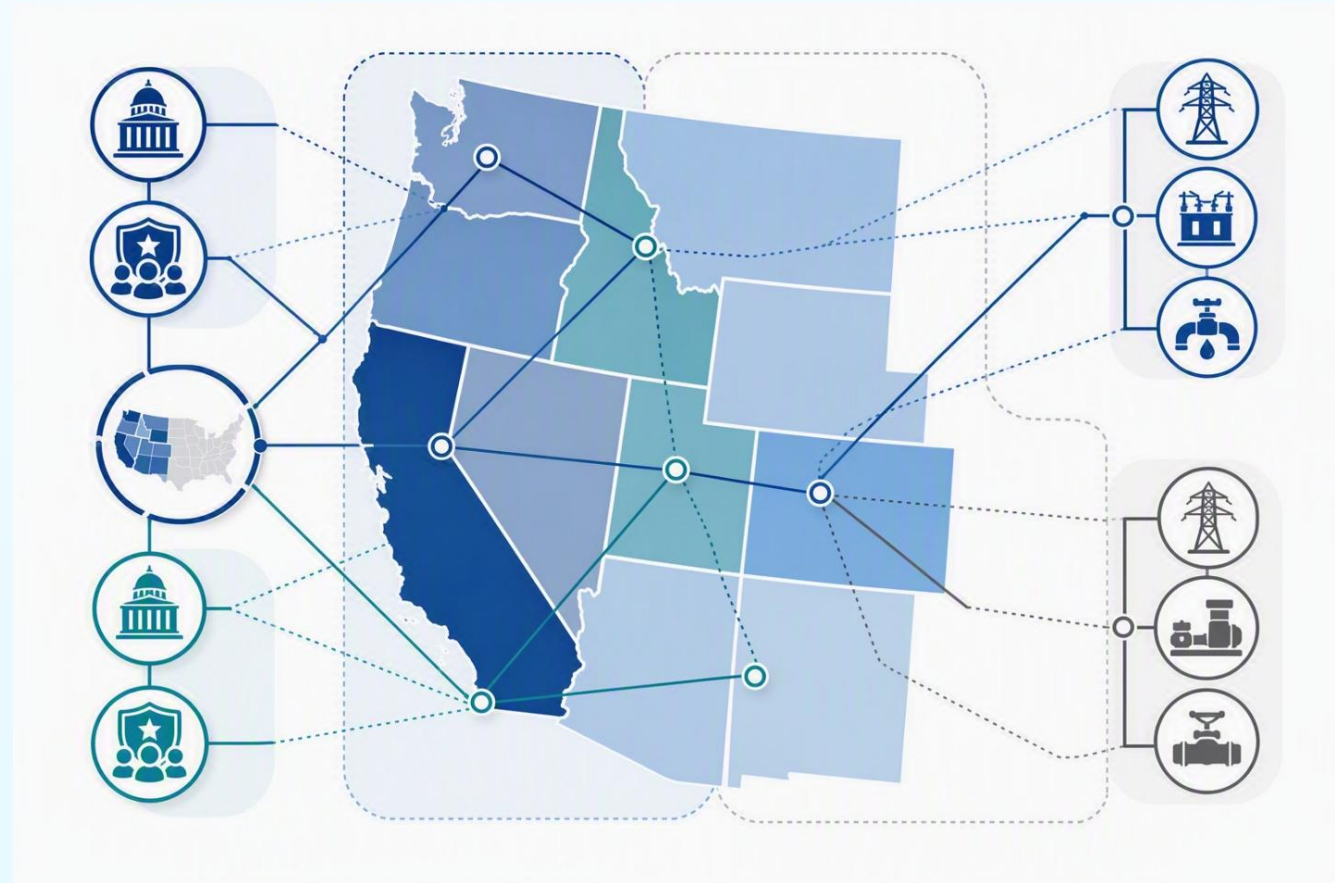
Western Regional Takeaway #1

Cross-Border Incident Planning

Improve regional cross-jurisdiction coordination capabilities between inter- and intra-state organizations, state governments, and natural gas owner/operators.

Consideration

Clarify cross-state notification triggers and coordination processes for severe events to encourage open sharing of operational data, reducing visibility gaps across neighboring jurisdictions.



Western Regional Takeaway #2

Backup Generator Tracking

Develop a strategy for tracking and managing demand loads of residential and commercial natural gas generators.

Consideration

Develop methods to identify and incorporate backup generator loads into system planning to address unexpected demand spikes and improve visibility into system conditions during outages.



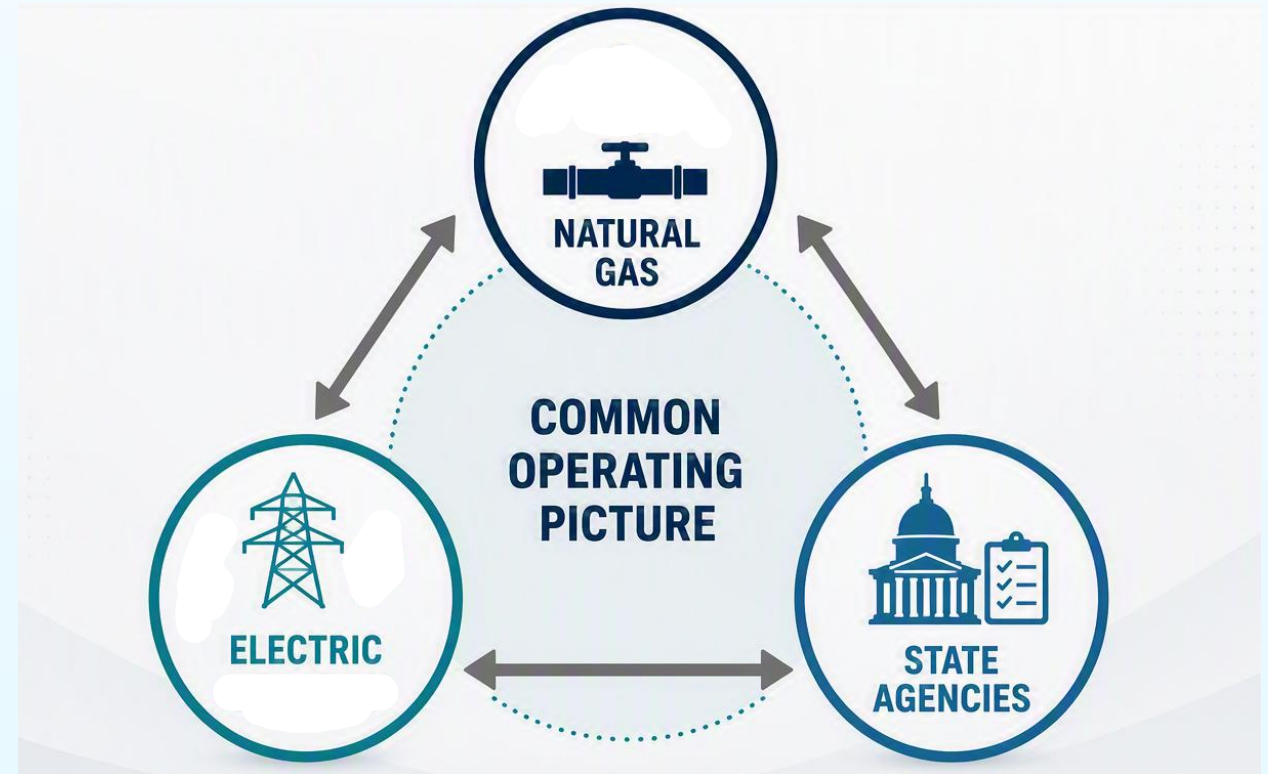
Western Regional Takeaway #3

Communications Protocols

Strengthen intrastate communications and response between electric systems, natural gas owners and operators, and state agencies.

Consideration

Resolve multi-sector incident communication gaps by establishing a protocol between gas, electric, and state stakeholders that aligns decision-making and provides timely visibility into cross-system impacts.



Comparison of TTX Takeaways

Northeastern



Multi-fuel Engagement



Structured Communication

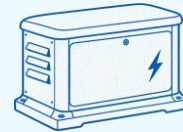


Multi-state Response

Western



Cross-Jurisdictional Coordination



Generator Demand Visibility



Intrastate Gas-Electric-State
Communication

Four Priorities to Strengthen Gas–Electric Coordination



Continue joint exercises

Include gas, electric, and government participants in joint exercises.



Clarify communication protocols

Define liaison roles and when, how, and with whom stakeholders communicate.



Plan for cascading impacts

Strengthen planning for cascading gas–electric impacts at regional and state levels.



Improve demand visibility

Track emerging demand drivers, including backup generator loads, to better forecast system conditions during power outages.

Questions?



Closing Remarks & What's Next

Jim Steffes
Chief Operating Officer
American Gas Association



*Tell us
how we did!*



2026 National Natural Gas Readiness Forum
