2025 NATURAL GAS READINESS REGIONAL MINI-FORUM

MIDWEST REGION

COLUMBIA, MO SEPTEMBER 16

PROGRAM AGENDA

Working Lunch (11:30 – 12:45)

- **Welcome & Antitrust Compliance Guidelines** (Kimberly Denbow & Mathew Agen, AGA)
- **Opening Remarks** (Commissioner Erik Helland, Iowa Utilities Commission)
- **Midwest Weather Forecast and Seismology Overview** (Eric Aldrich, University of Missouri Meteorology & Francisco "Paco" Gomez, University of Missouri, Geological Sciences)

Break (12:45 – 1:00)

General Session (1:00 to 2:00)

- **Midwest Natural Gas Outlook** (David Yonce, Spire)
- **Midwest Electric Outlook** (Mike Mattox, MISO & Scott Aclin, SPP)
- **States Communication Coordination** (Trevor Rucker, Missouri Public Service Commission)
- **Natural Gas/Electric Coordination Case Study** (Duffy Mooney, City Utilities)
- **General Session Closing Remarks** (Commissioner Kayla Hahn, Missouri Public Service Commission)

Break (2:00 – 2:30)

Regional Tabletop Emergency Exercise (Invitation Only, No Media) – Mid-West (2:30 to 4:00)

- **Welcome** (Amanda Sramek, AGA)
- **Exercise** (Facilitated by Meredith Pringle, Converge Strategies)

WELCOME

KIMBERLY DENBOW
VICE PRESIDENT, SECURITY & OPERATIONS
AGA

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.

Matthew Agen
Chief Regulatory Counsel, Energy
AGA

AGA
American Gas Association

Safety Moment

Fall leaves bring lots of beautiful color, but also can be extremely slippery.

OPENING REMARKS

ERIK HELLAND
COMMISSIONER
IOWA UTILITIES COMMISSION

MIDWEST WEATHER FORECAST

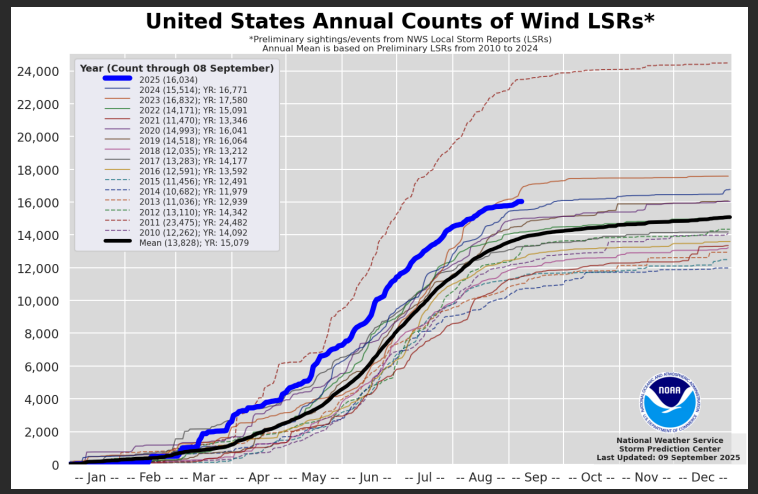
ERIC ALDRICH
ASSISTANT TEACHING PROFESSOR
UNIVERSITY OF MISSOURI
METEOROLOGY

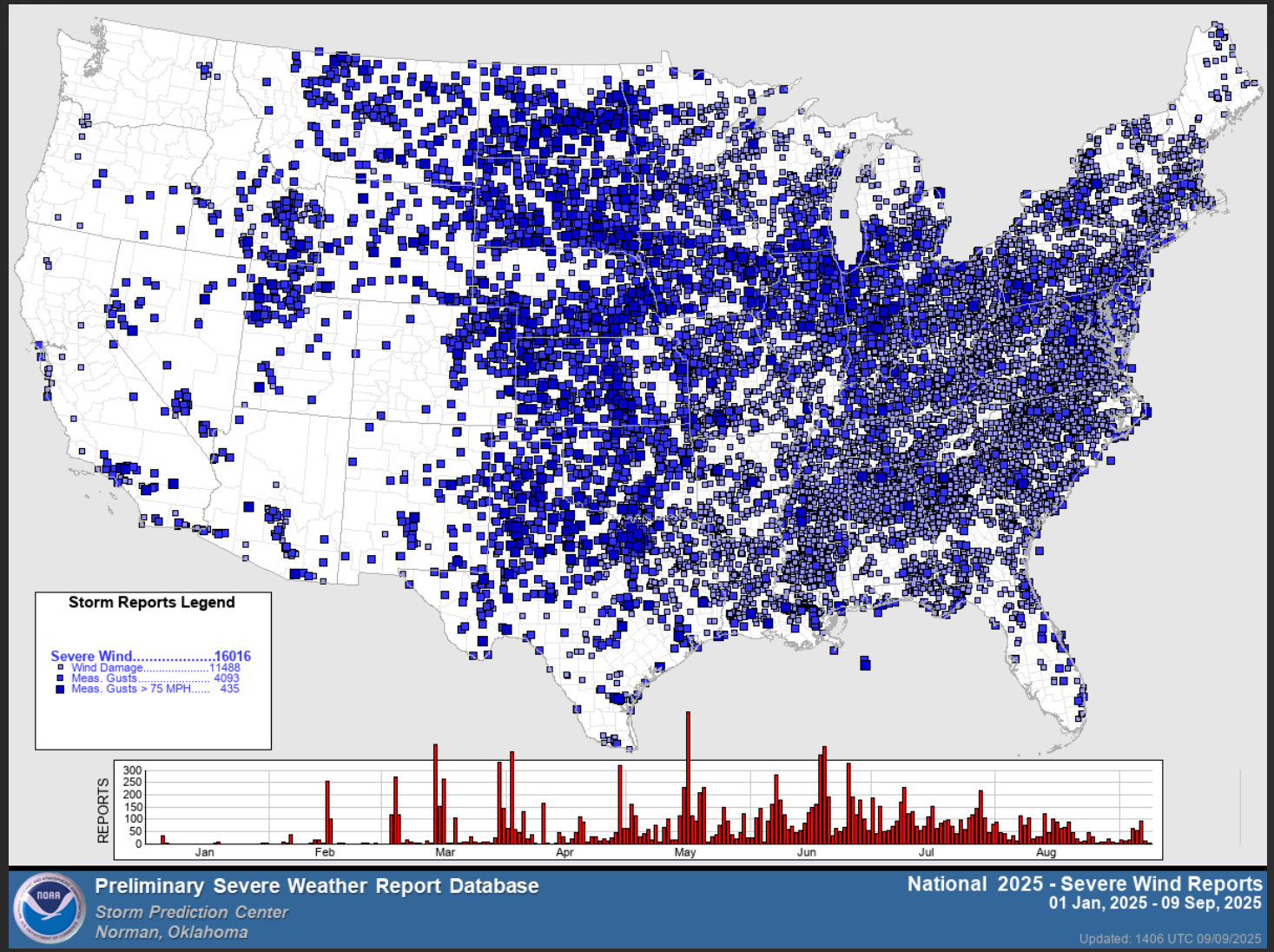
A Look Back at the Weather in Missouri - 2025

- **Thunderstorm Damage from 2025 – United States**
  - **Wind Reports**

16,016

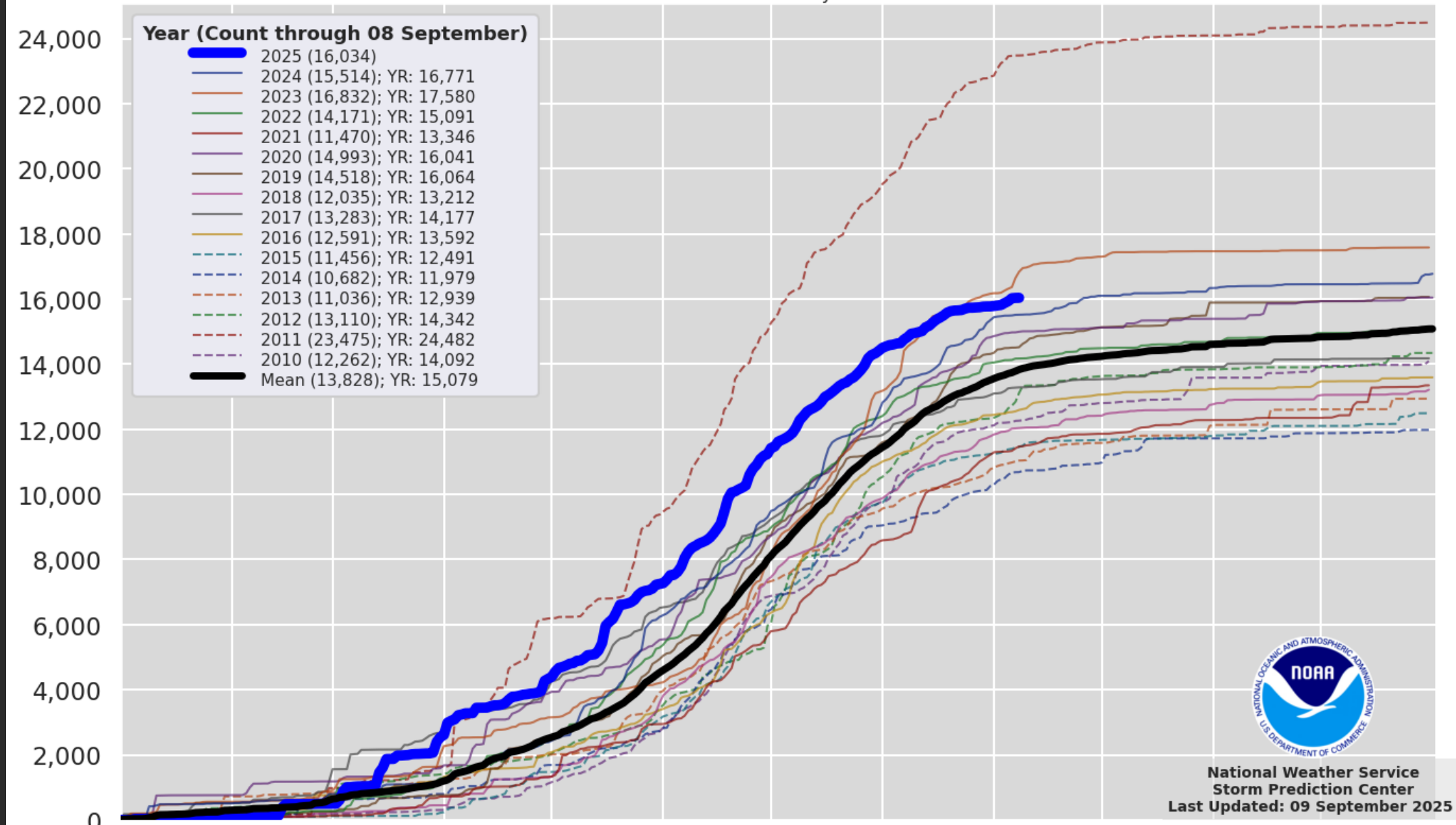
Wind > 58mph (60 kts.)





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 2024

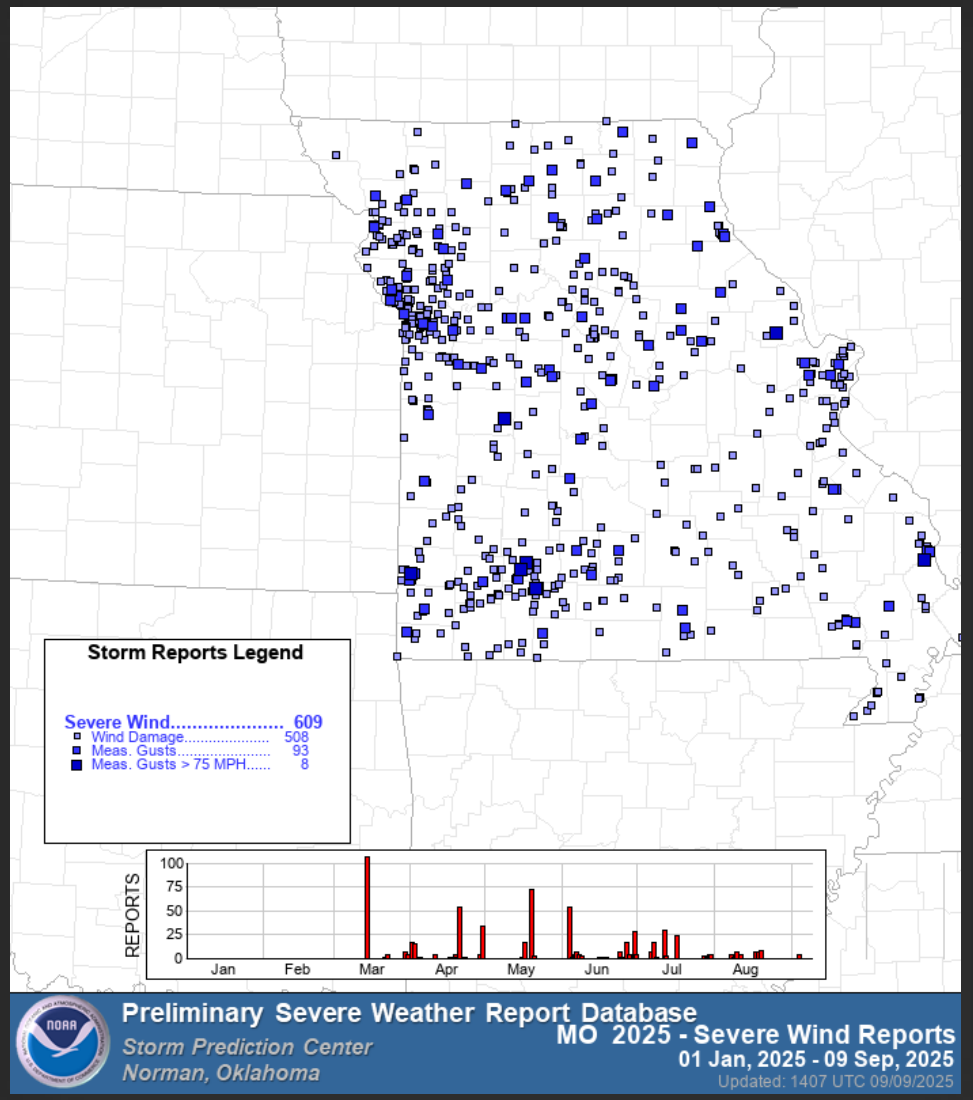


A Look Back at the Weather in Missouri - 2025

- **Thunderstorm Damage from 2025 - Missouri**
  - **Wind Reports**

609

Wind > 58mph (60 kts.)

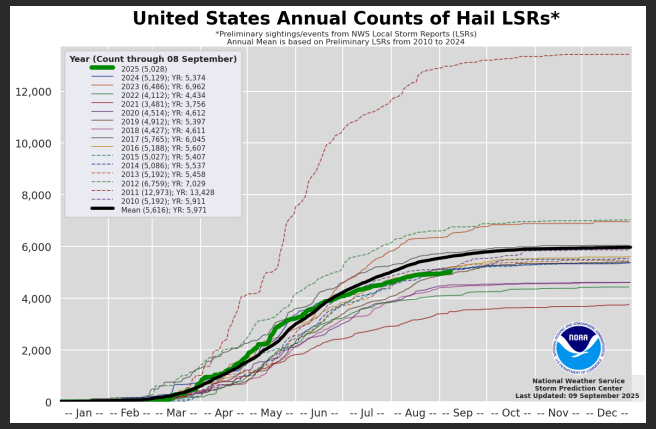


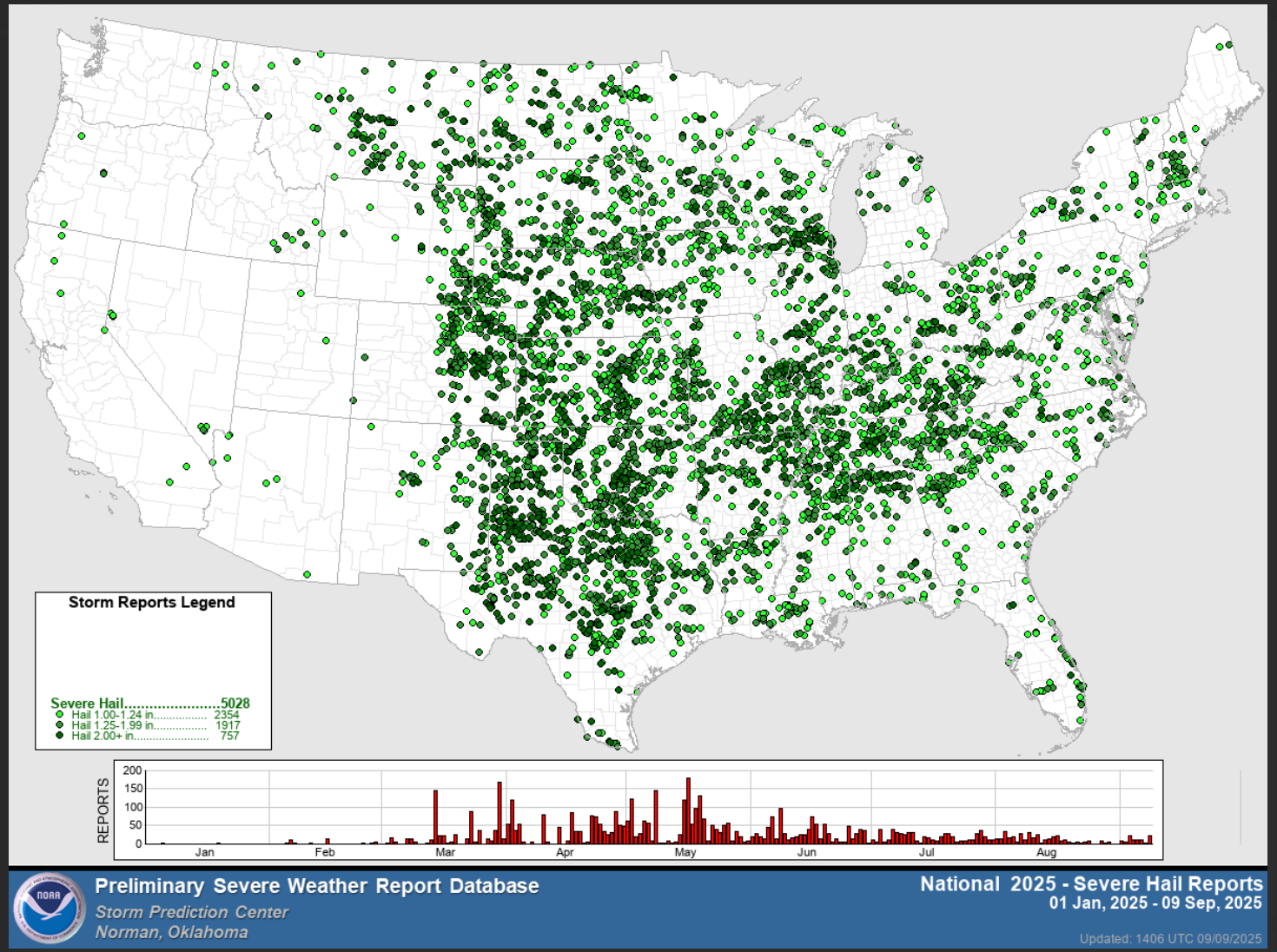
A Look Back at the Weather in Missouri - 2025

- **Thunderstorm Damage from 2025 – United States**
  - **Hail Reports**

5,028

Hail > 1”





United States Annual Counts of Hail LSRs*

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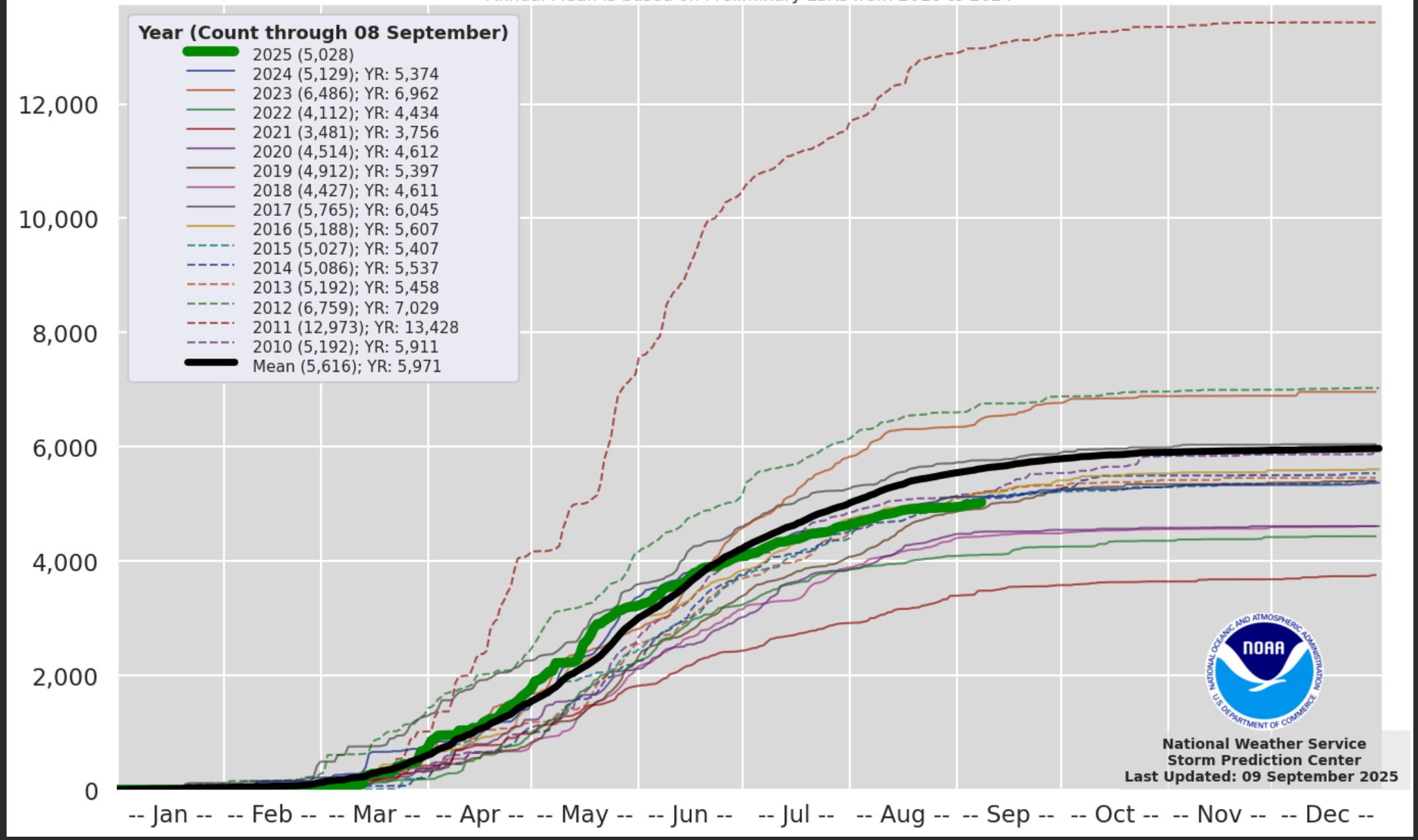
Annual Mean is based on Preliminary LSRs from 2010 to 2024

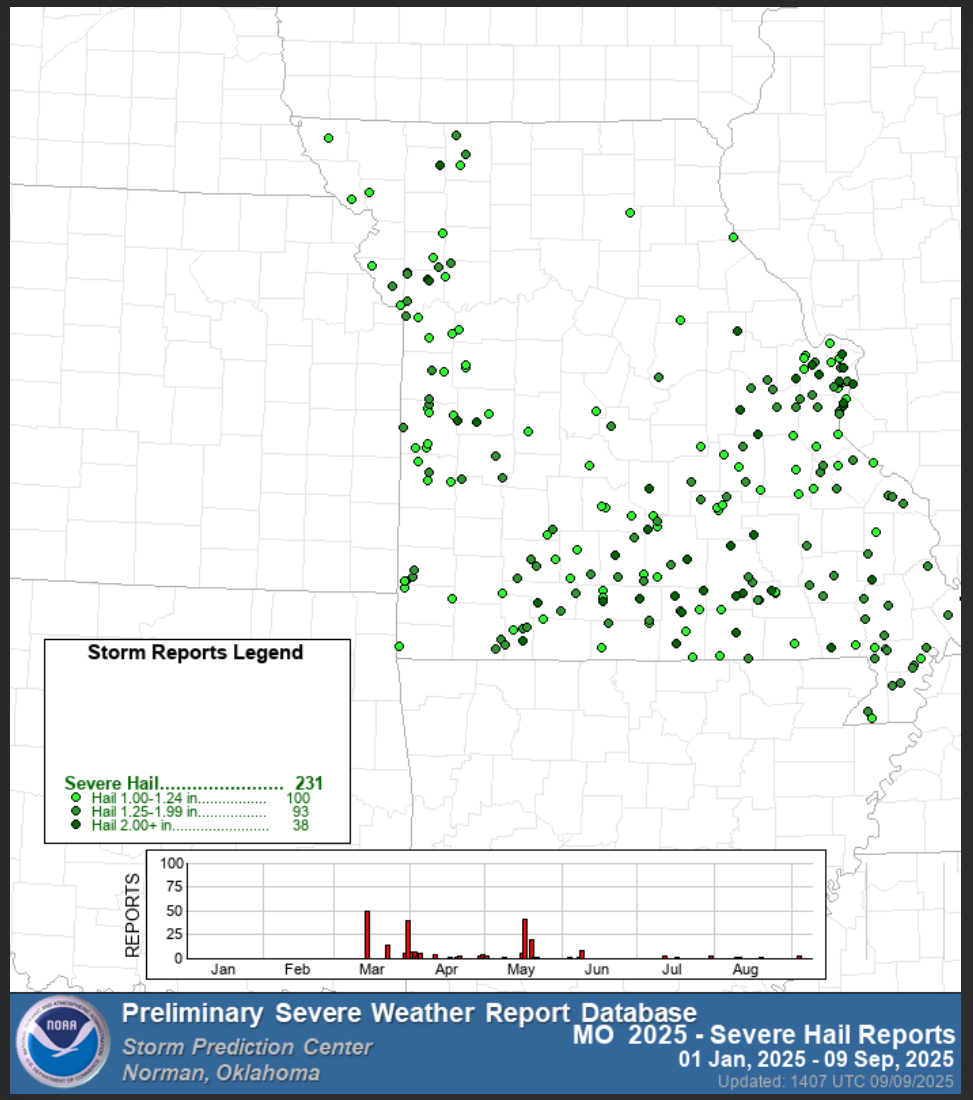


A Look Back at the Weather in Missouri - 2025

- **Thunderstorm Damage from 2025 - Missouri**
  - **Hail Reports**

73

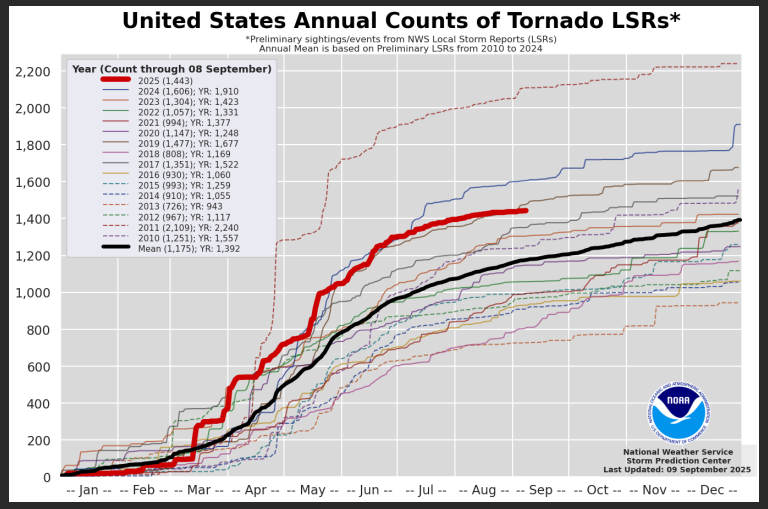
Hail > 1”

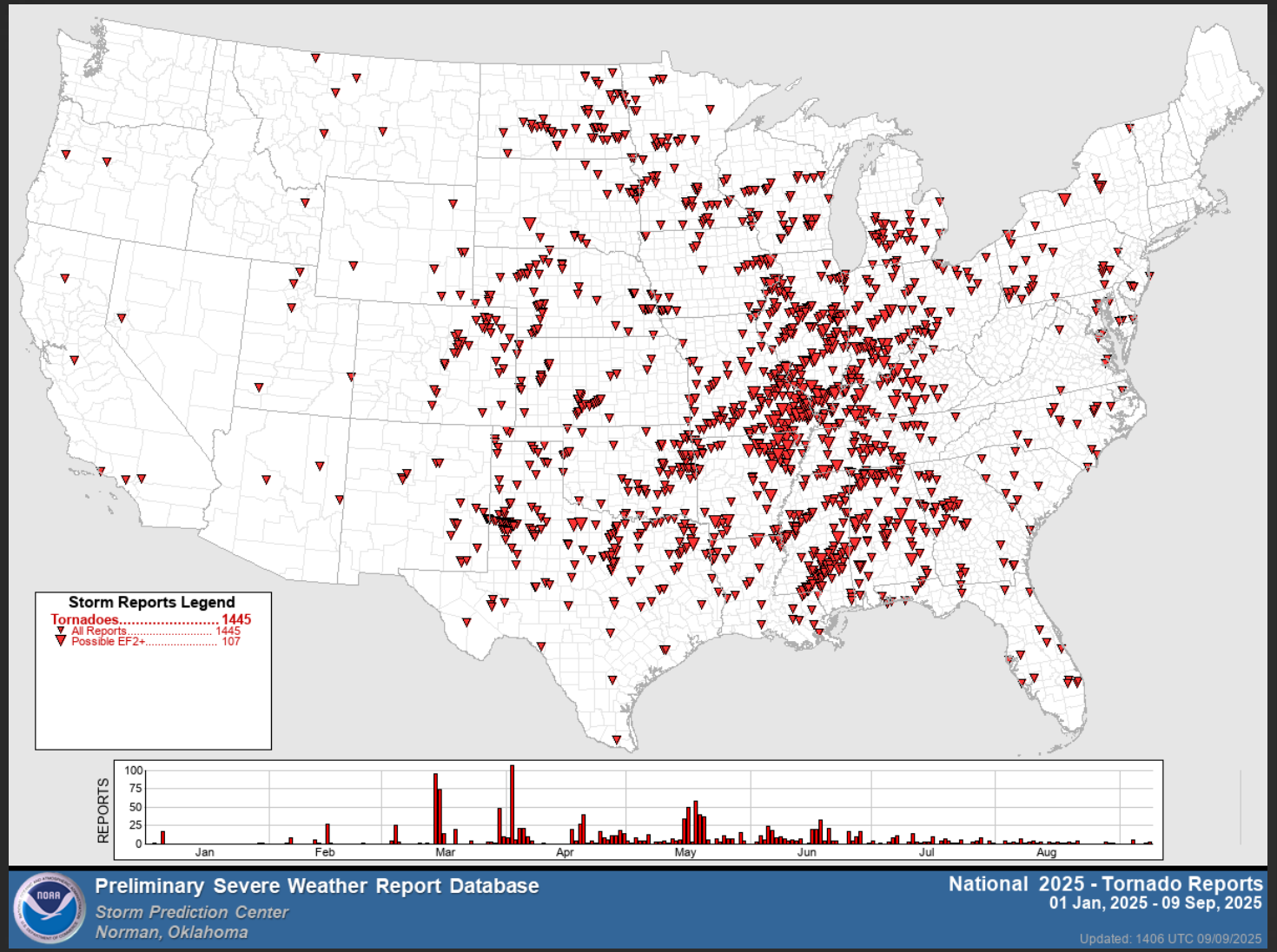


A Look Back at the Weather in Missouri - 2025

- **Thunderstorm Damage from 2025 – United States**
  - Tornado Reports

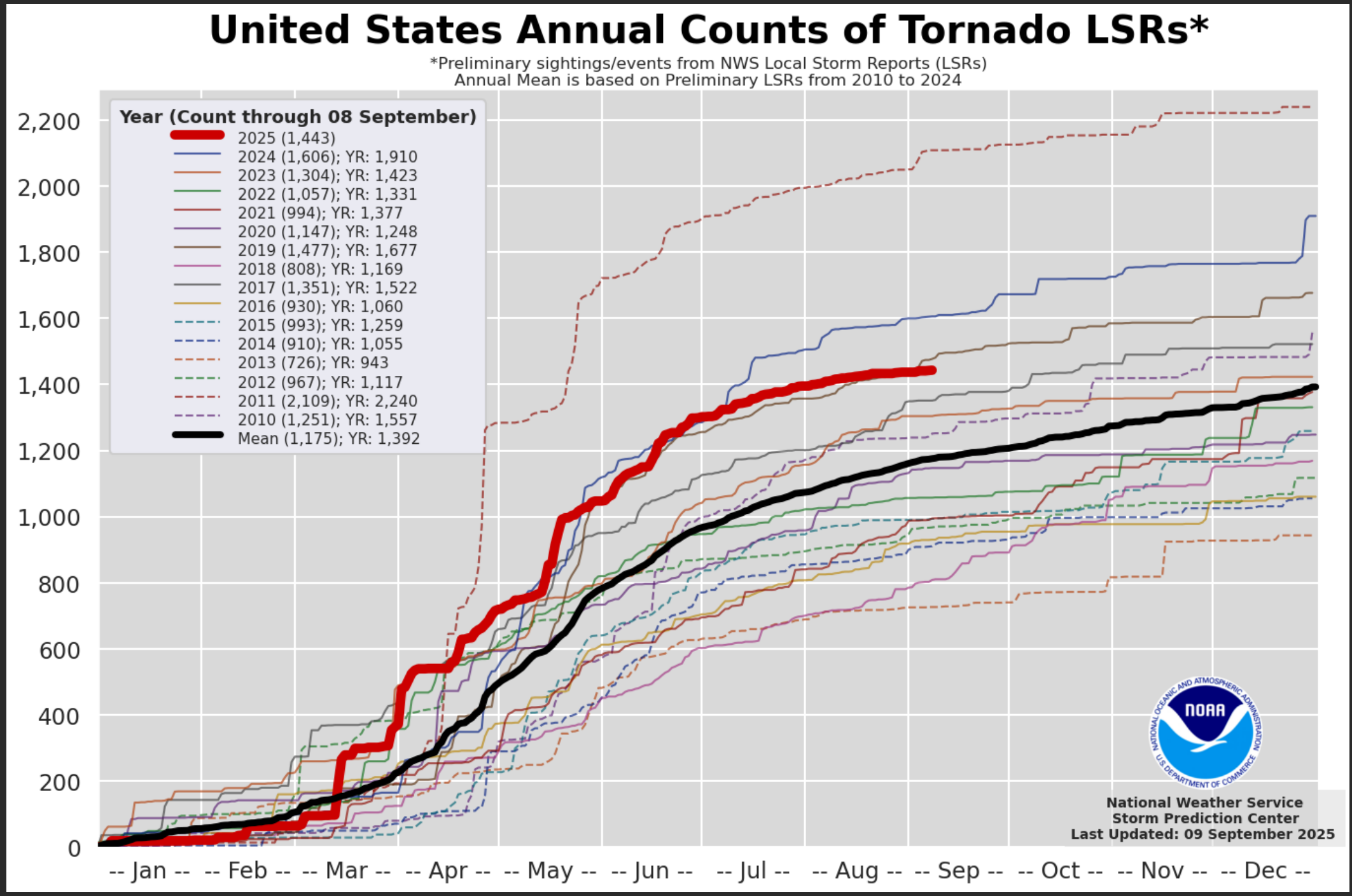
1,445





United States Annual Counts of Tornado LSRs*

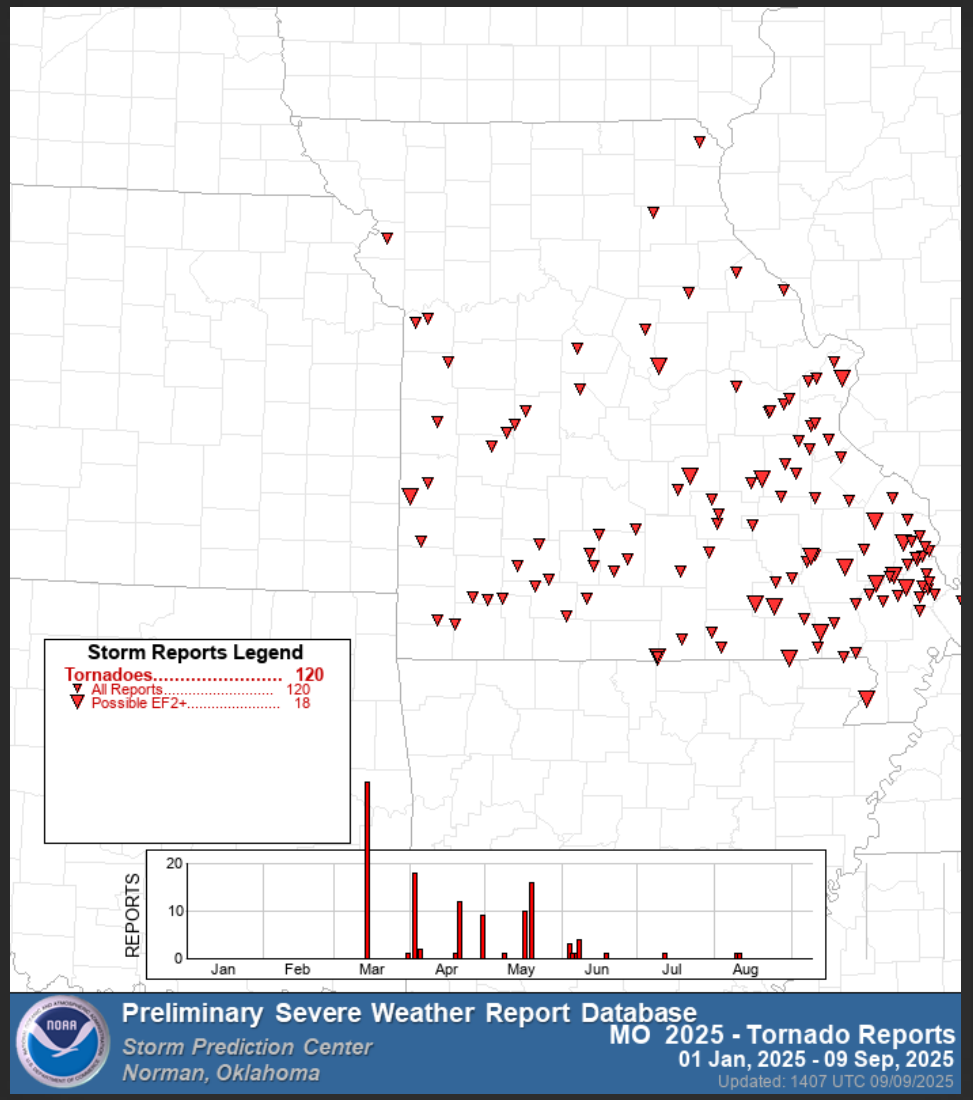
*Preliminary sightings/events from NWS Local Storm Reports (LSRs)
Annual Mean is based on Preliminary LSRs from 2010 to 2024



A Look Back at the Weather in Missouri - 2025

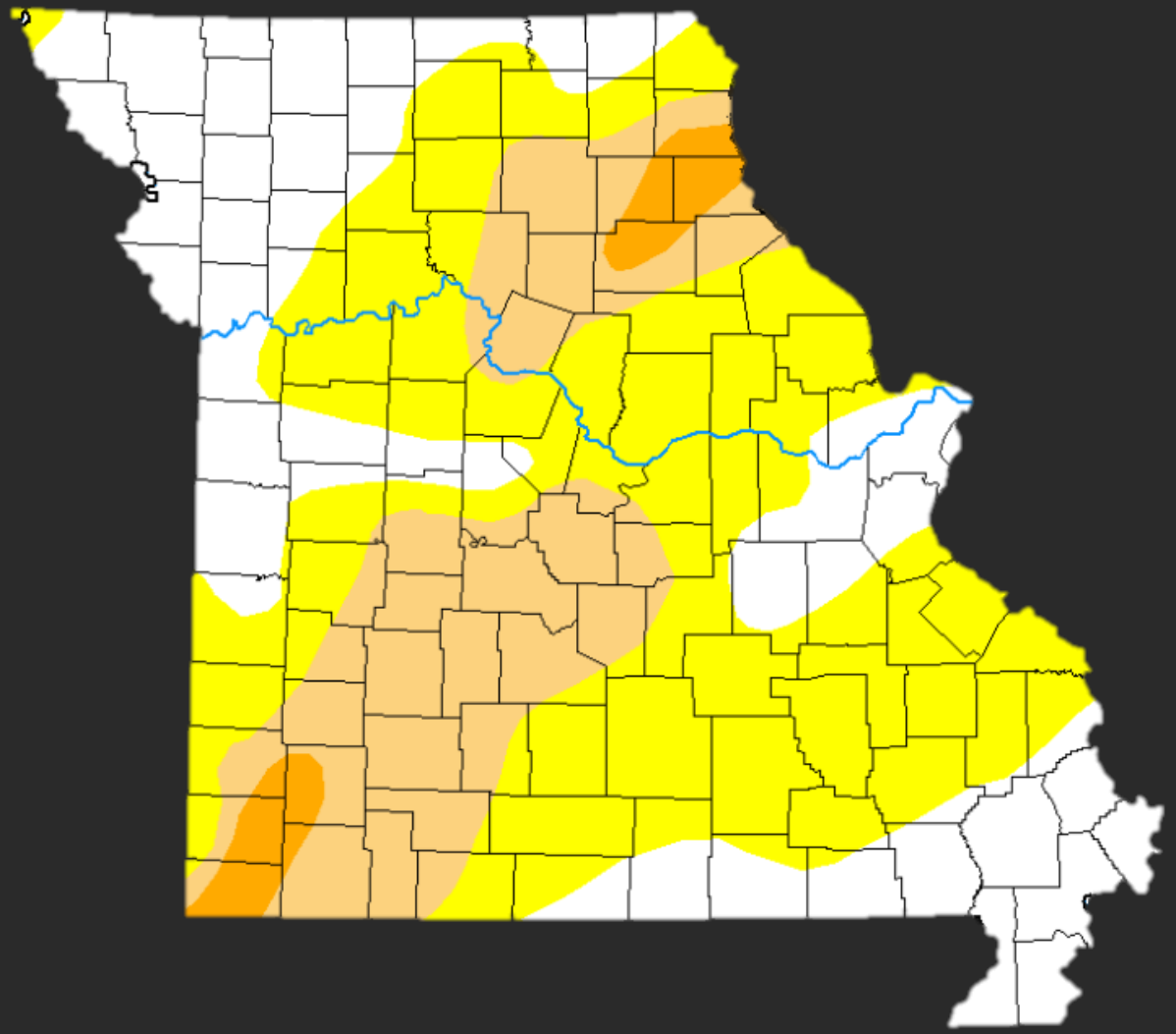
- **Thunderstorm Damage from 2025 - Missouri**
  - Tornado Reports

120



A Look Back at the Weather in Missouri - 2025

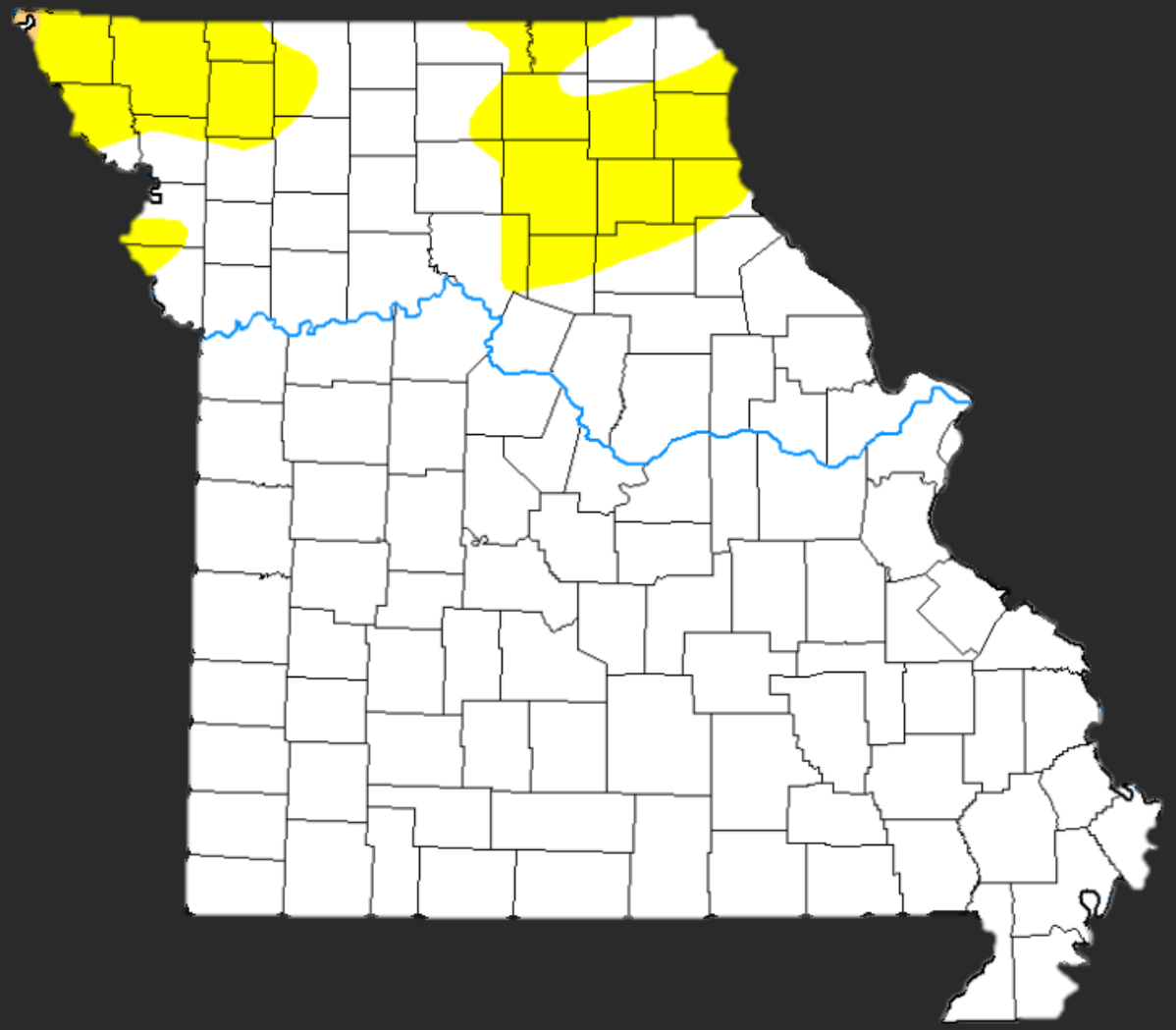
- ## Drought Monitor – March 2025



None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

A Look Back at the Weather in Missouri - 2025

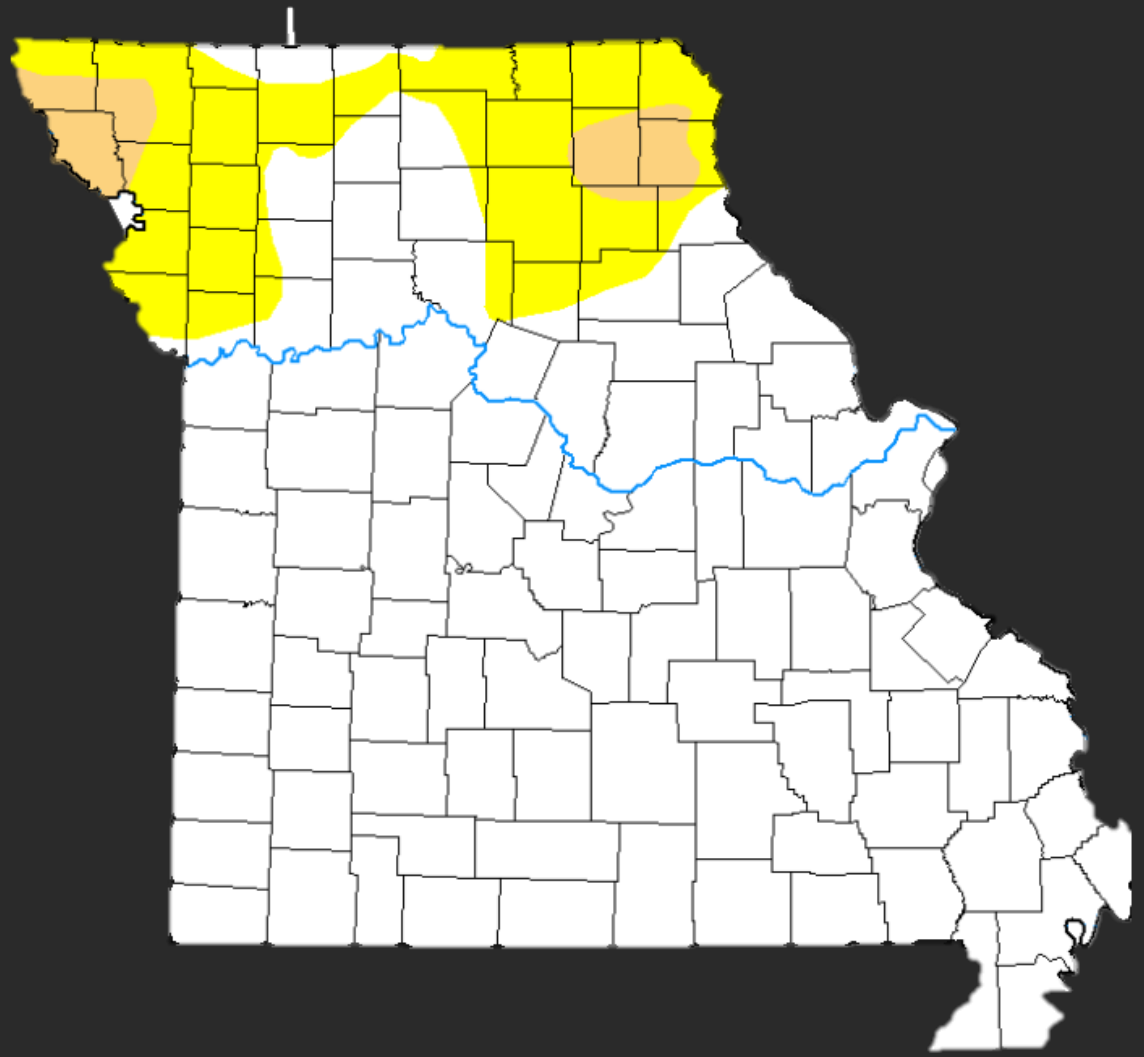
- **Drought Monitor – April 2025**



None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

A Look Back at the Weather in Missouri - 2025

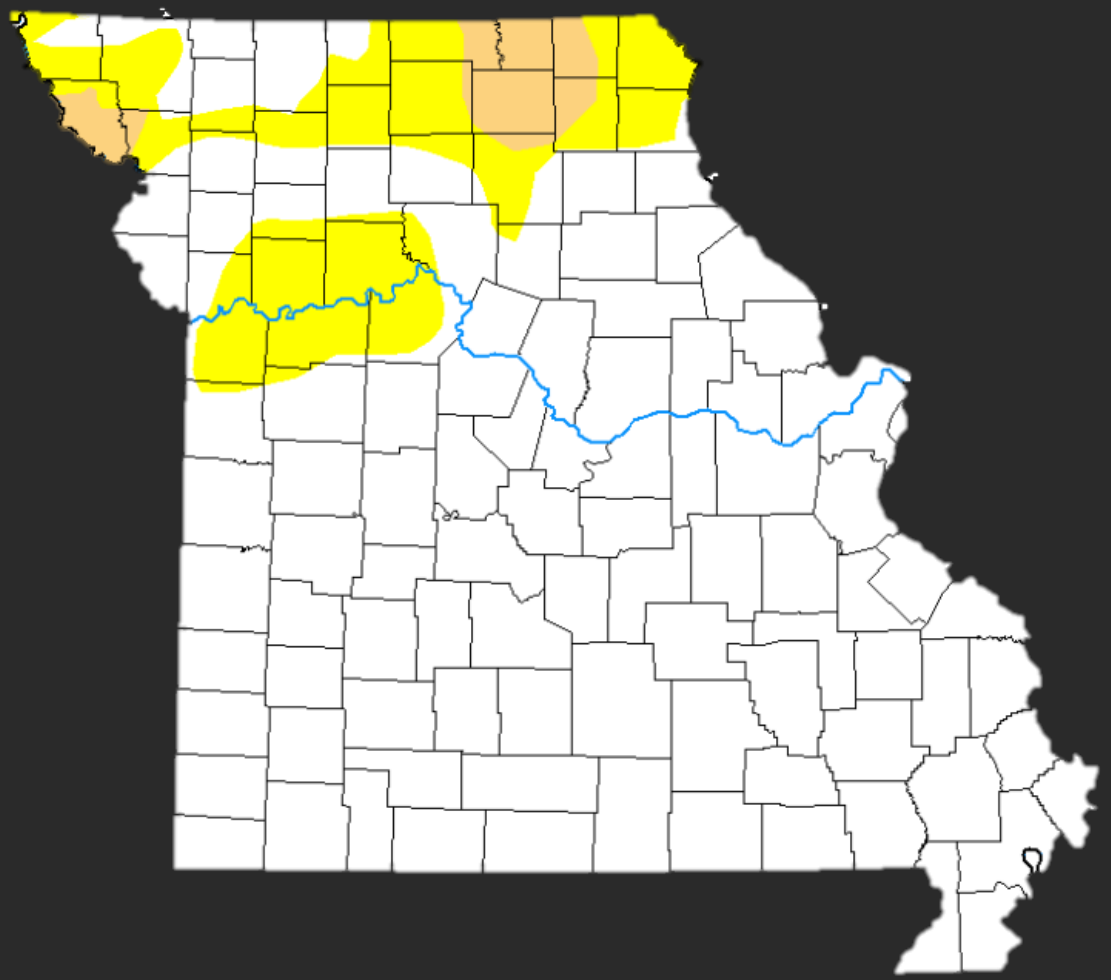
- ## Drought Monitor – May 2025



None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

A Look Back at the Weather in Missouri - 2025

- ## Drought Monitor – June 2025



None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

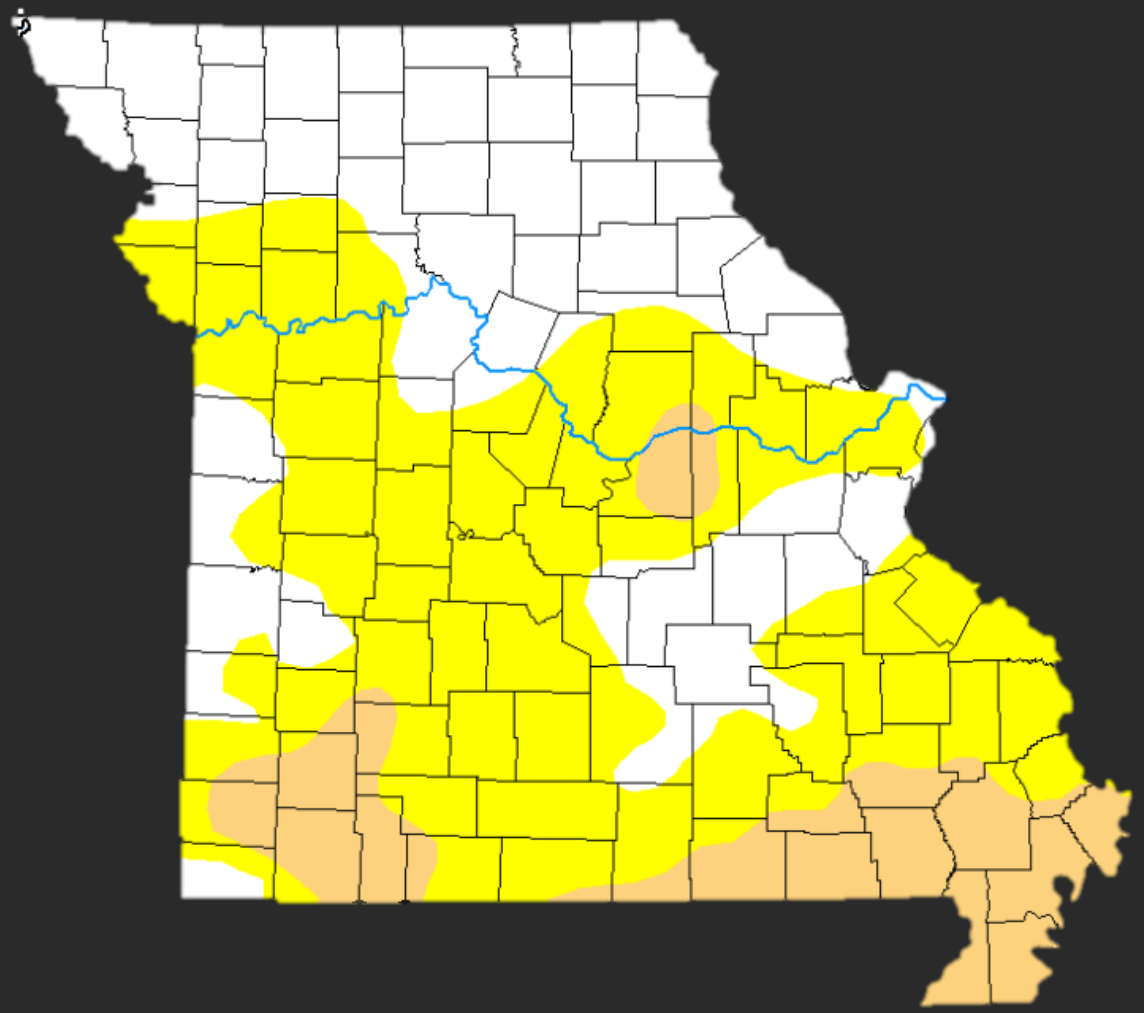
A Look Back at the Weather in Missouri - 2025

- **Drought Monitor – July 2025**

None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

A Look Back at the Weather in Missouri - 2025

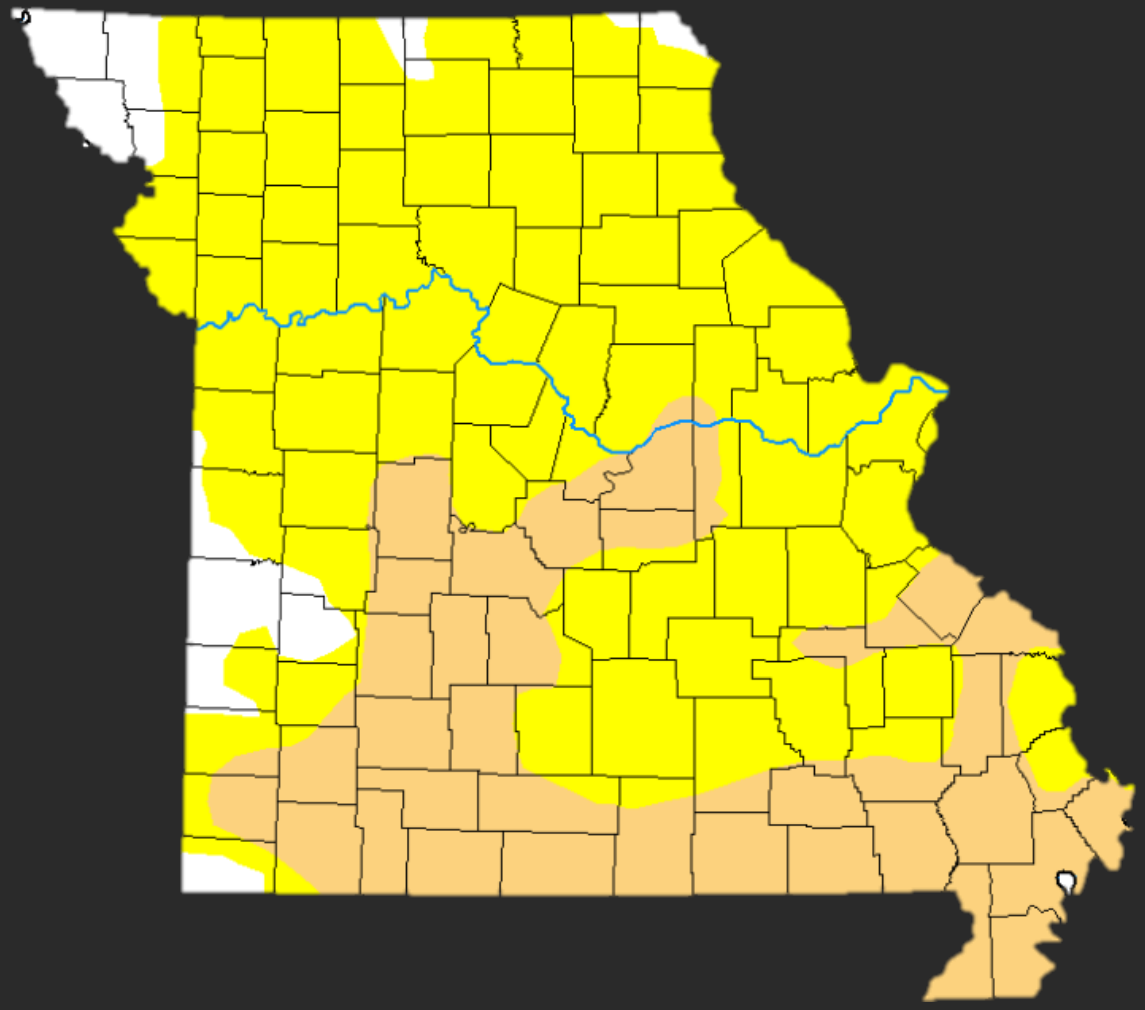
- ## Drought Monitor – August 2025



None
Abnormally Dry
Moderate Drought
Severe Drought
Extreme Drought
Exceptional Drought

A Look Back at the Weather in Missouri - 2025

- ## Drought Monitor – September 2025



None
Abnormally Dry
Moderate Drought
Severe Drought
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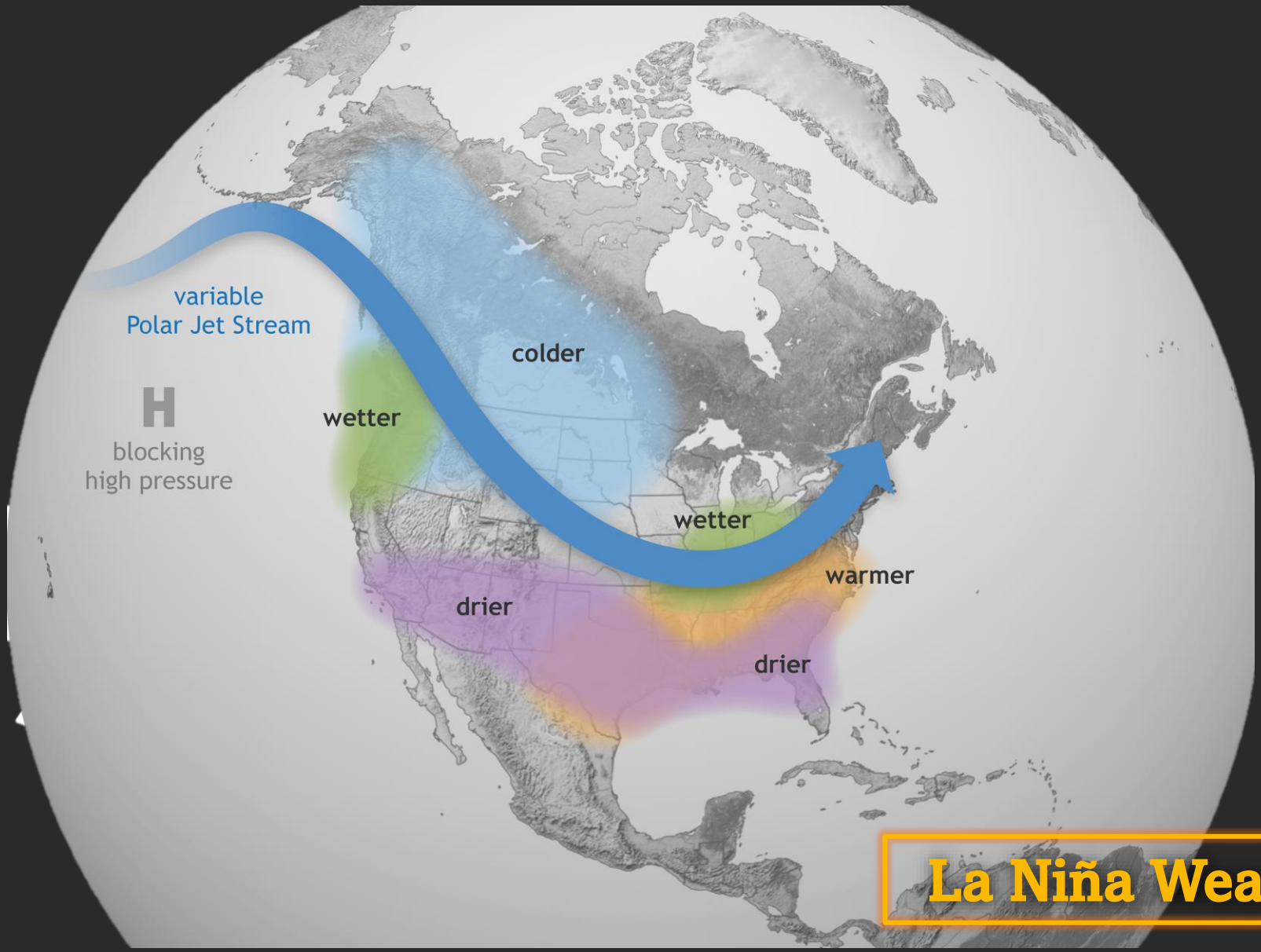
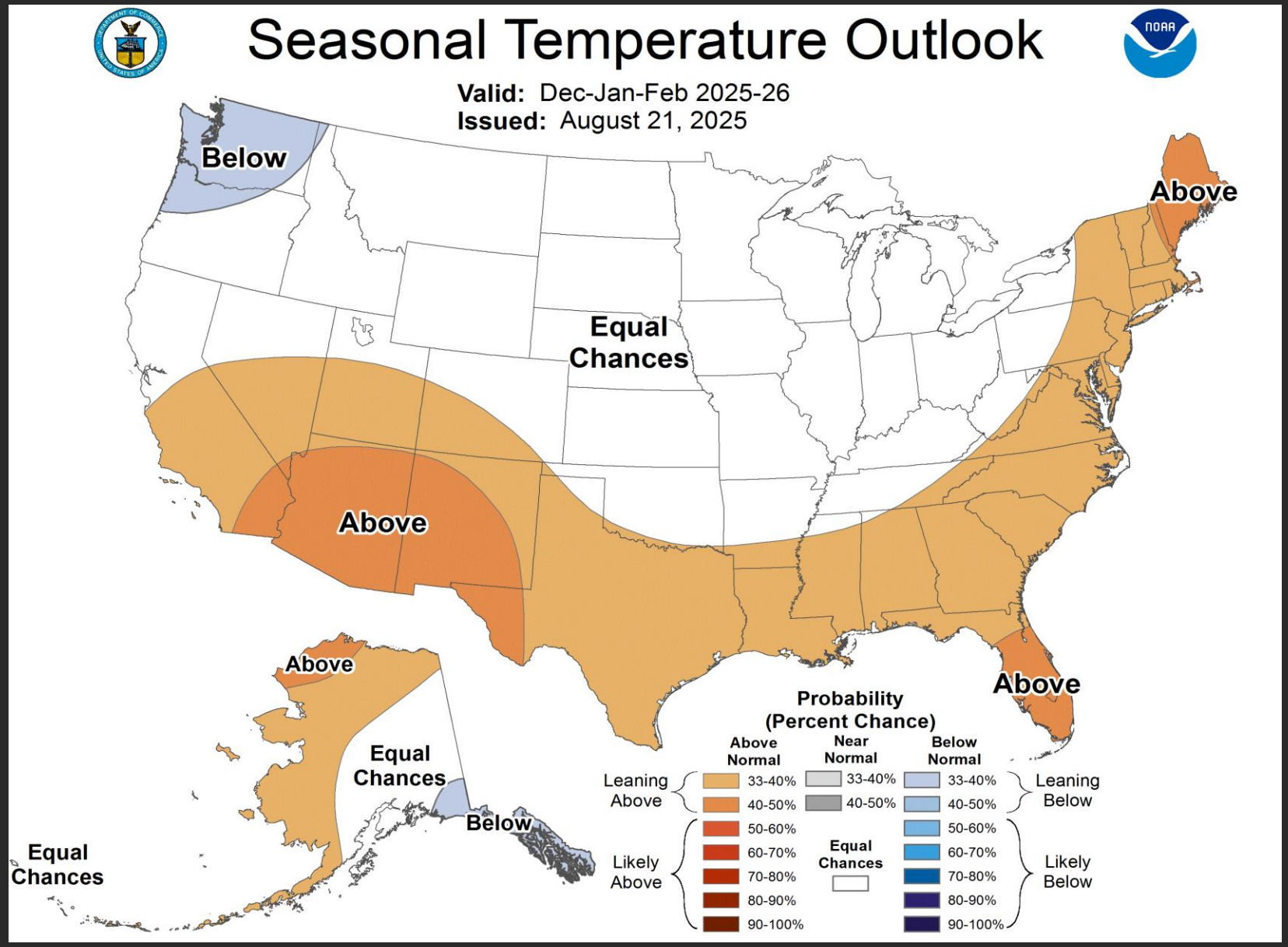
Looking Ahead at Missouri's Weather – 2025/2026



La Niña Weather Pattern

Looking Ahead at Missouri's Weather – 2025/2026

La Niña Weather Pattern

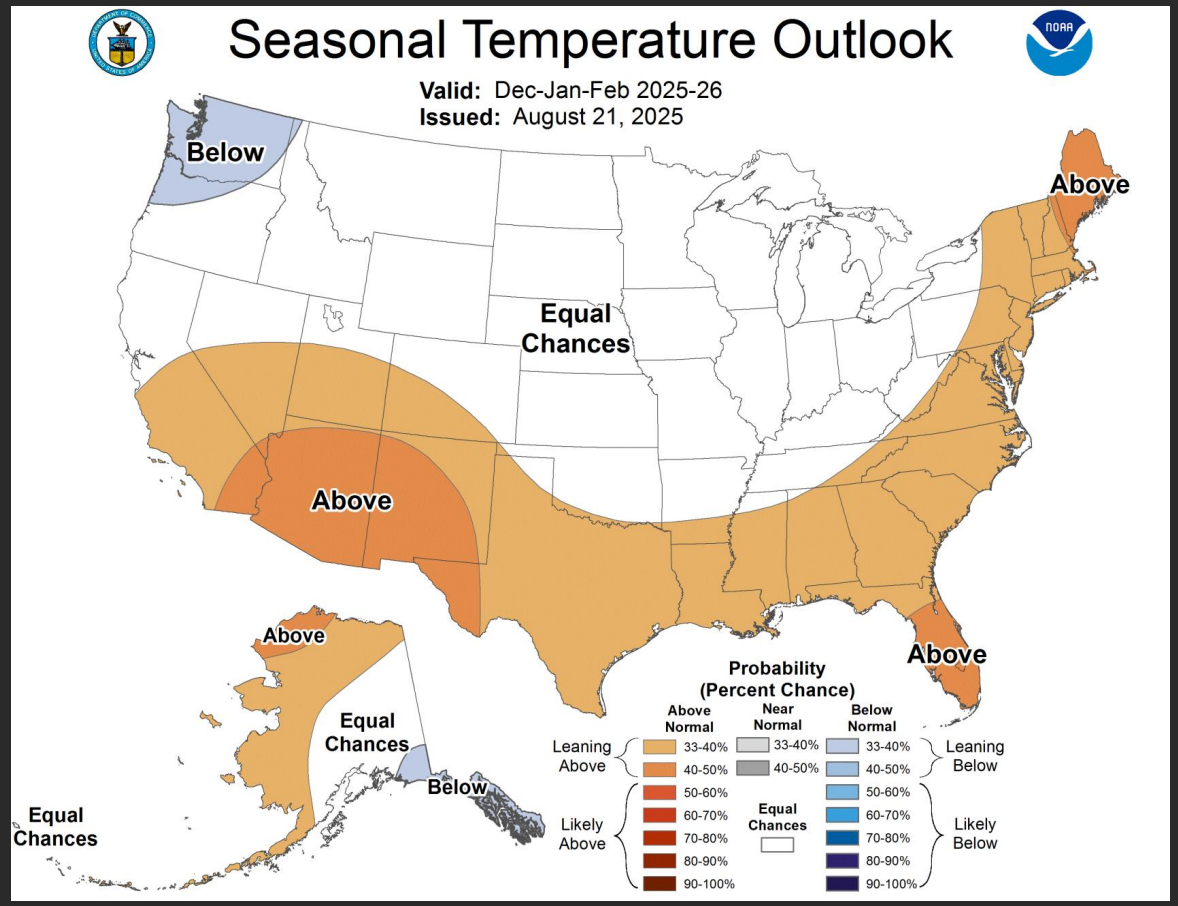


Looking Ahead at Missouri's Weather – 2025/2026

La Niña Weather Pattern

Temperature:

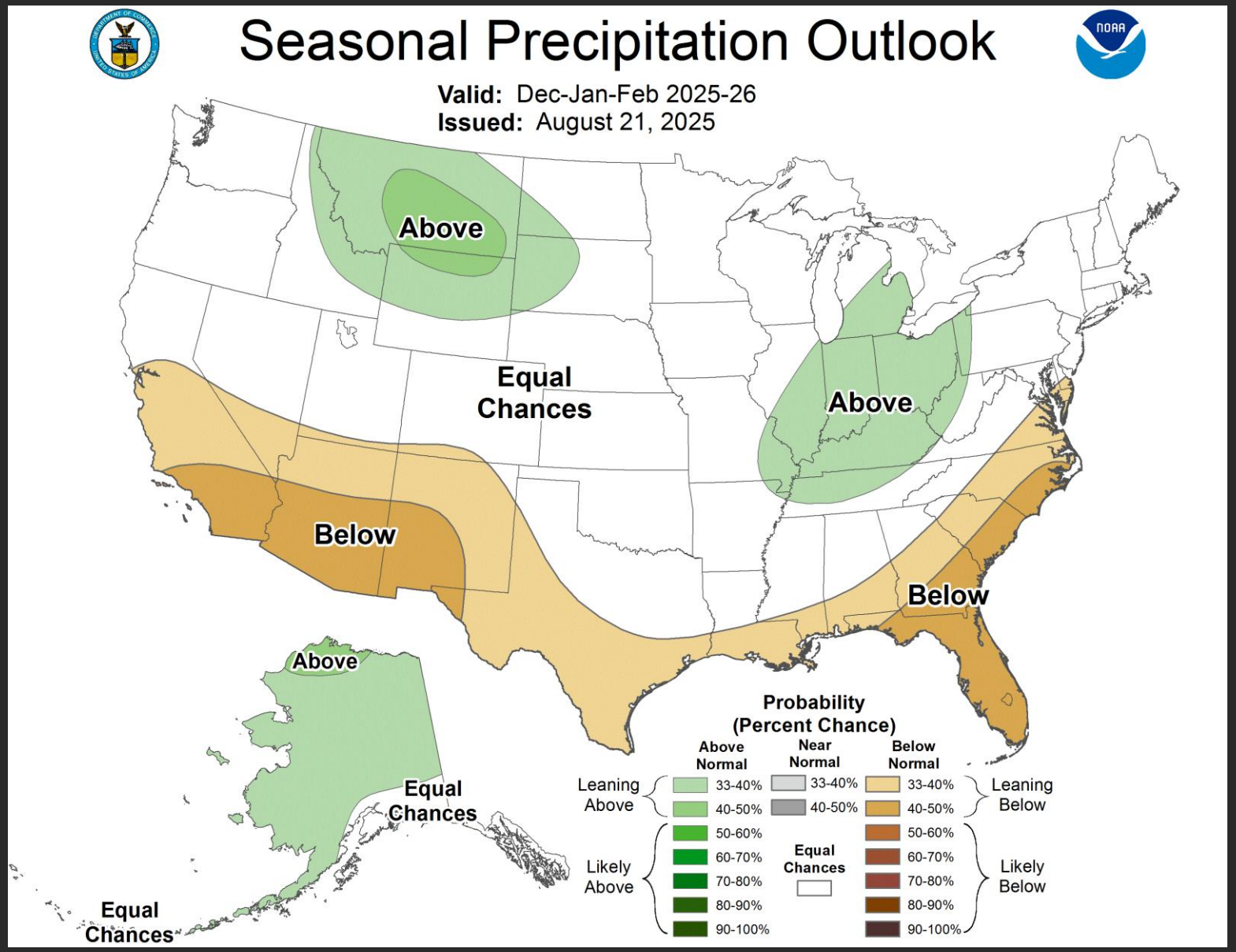
- Overall: Pretty typical (near average)
- It *will* be cold, but lots of swings



Forecast Provided By: Dr. Anthony Lupo – Professor of Meteorology, University of Missouri

Looking Ahead at Missouri's Weather – 2025/2026

La Niña Weather Pattern

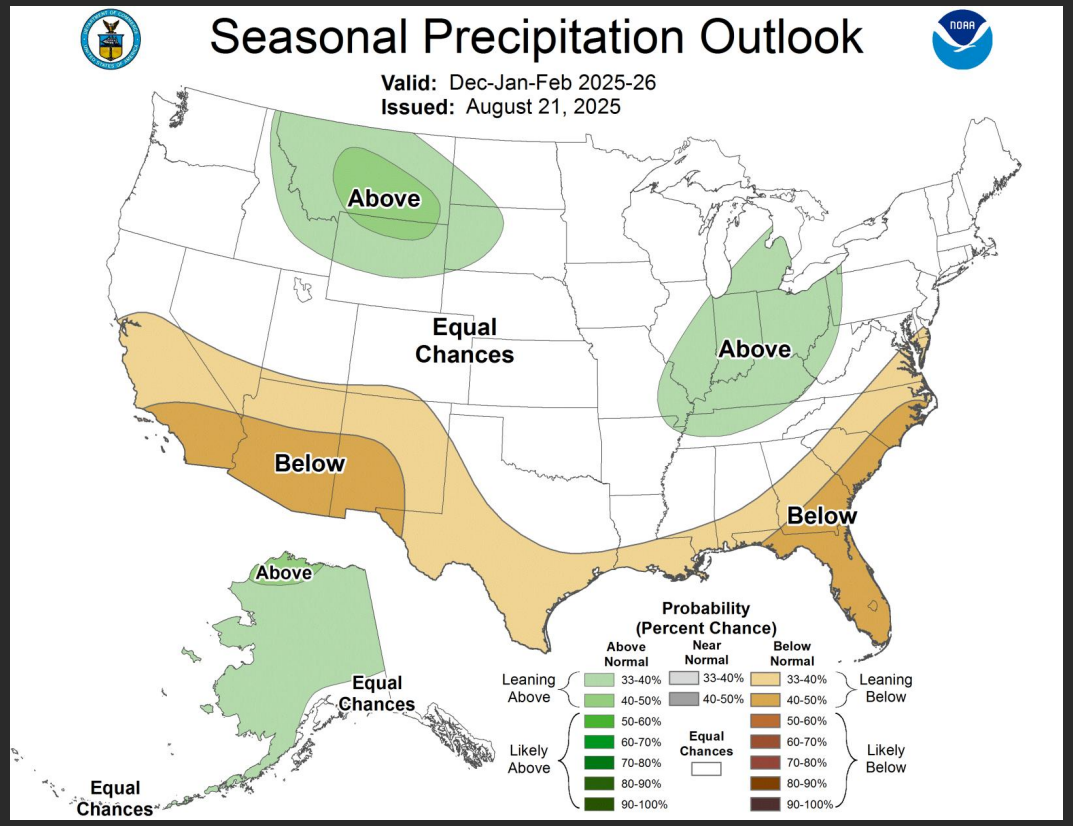


Looking Ahead at Missouri's Weather – 2025/2026

La Niña Weather Pattern

Precipitation:

- Average Snowfall: 15-20"
- Moderate snowfall events, but nothing drastic…
- Spring Snow = Dependent on Cold Air



Forecast Provided By: Dr. Anthony Lupo – Professor of Meteorology, University of Missouri


Any
Questions

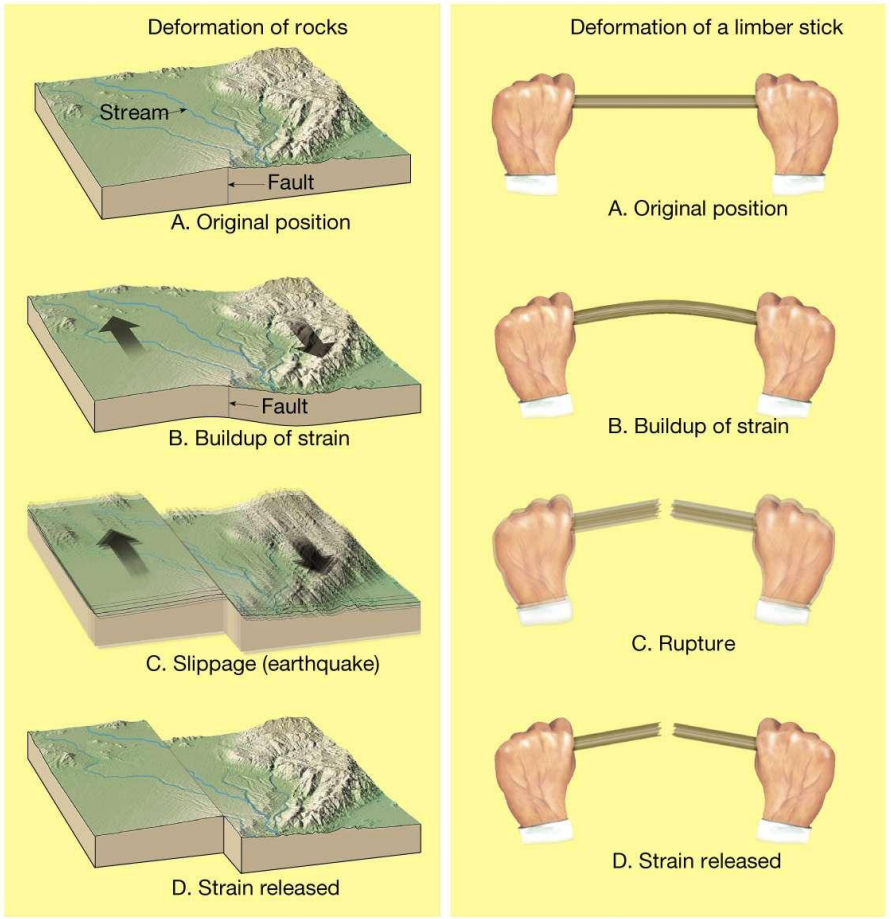
MIDWEST SEISMOLOGY OVERVIEW

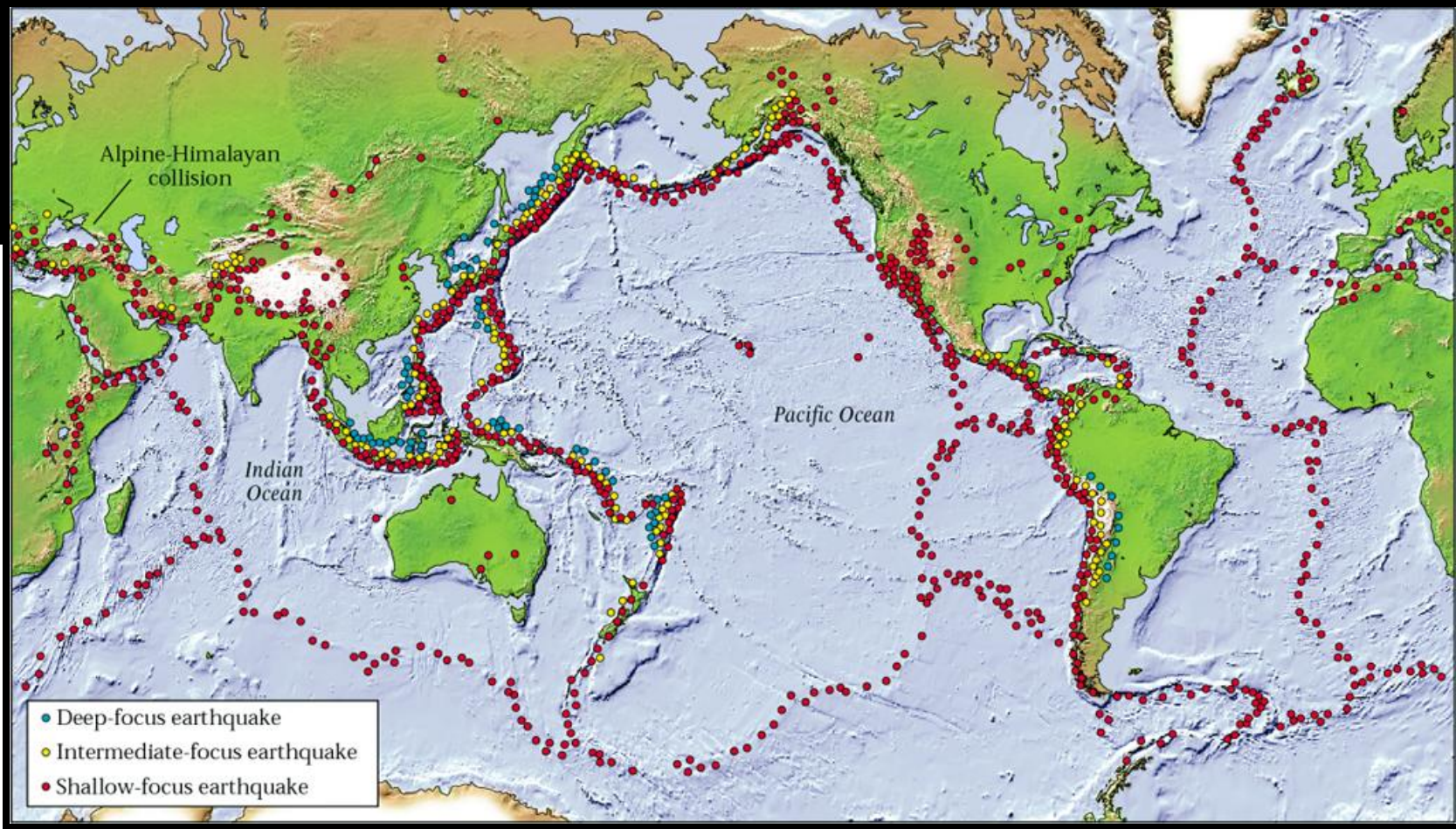
FRANCISCO "PACO" GOMEZ
ASSISTANT TEACHING PROFESSOR
UNIVERSITY OF MISSOURI DEPARTMENT
OF GEOLOGICAL SCIENCES

Earthquake Hazard in and around Missouri

Paco Gomez
Department of Geological Sciences
University of Missouri

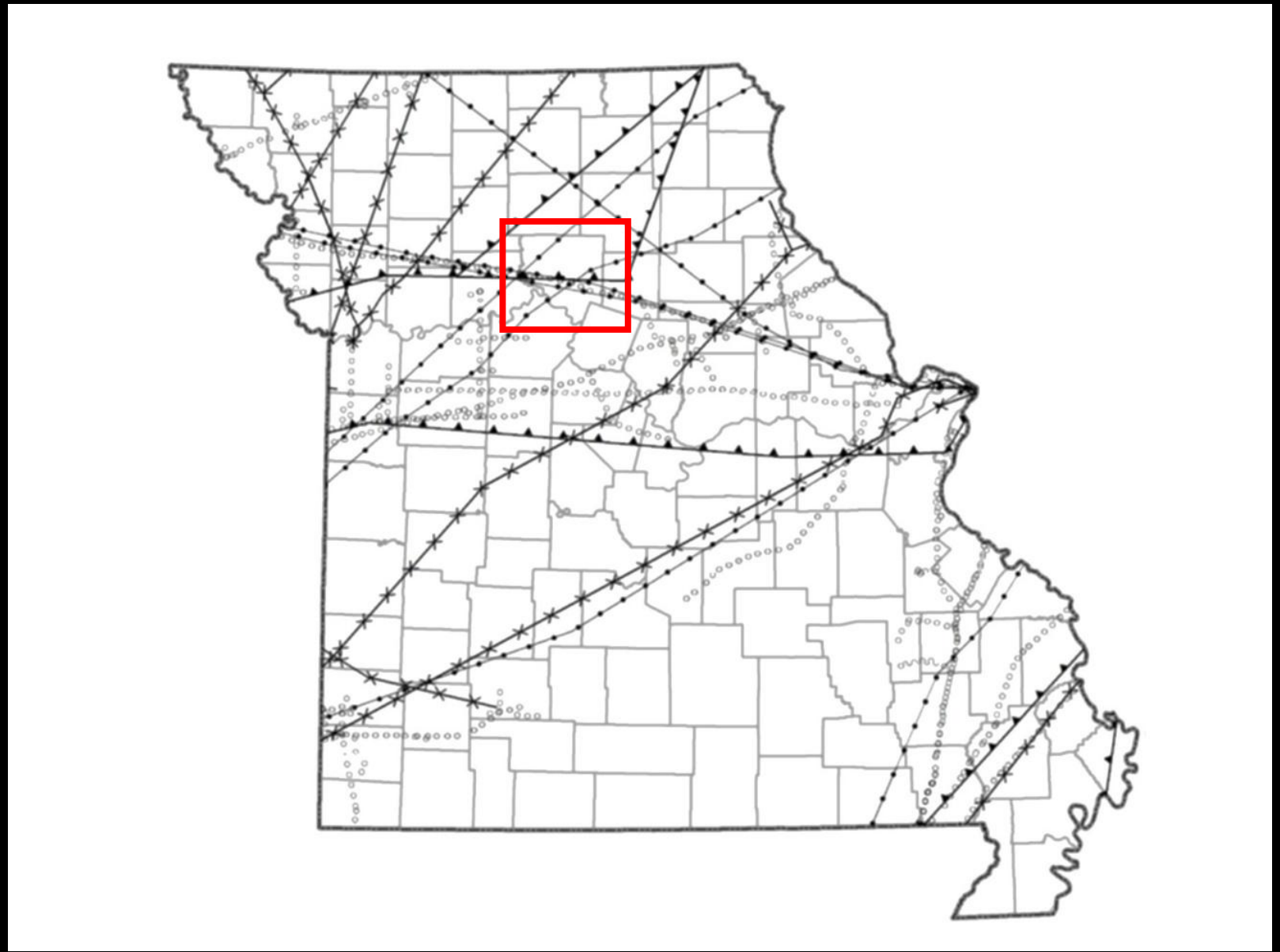
Earthquakes: What and Where?



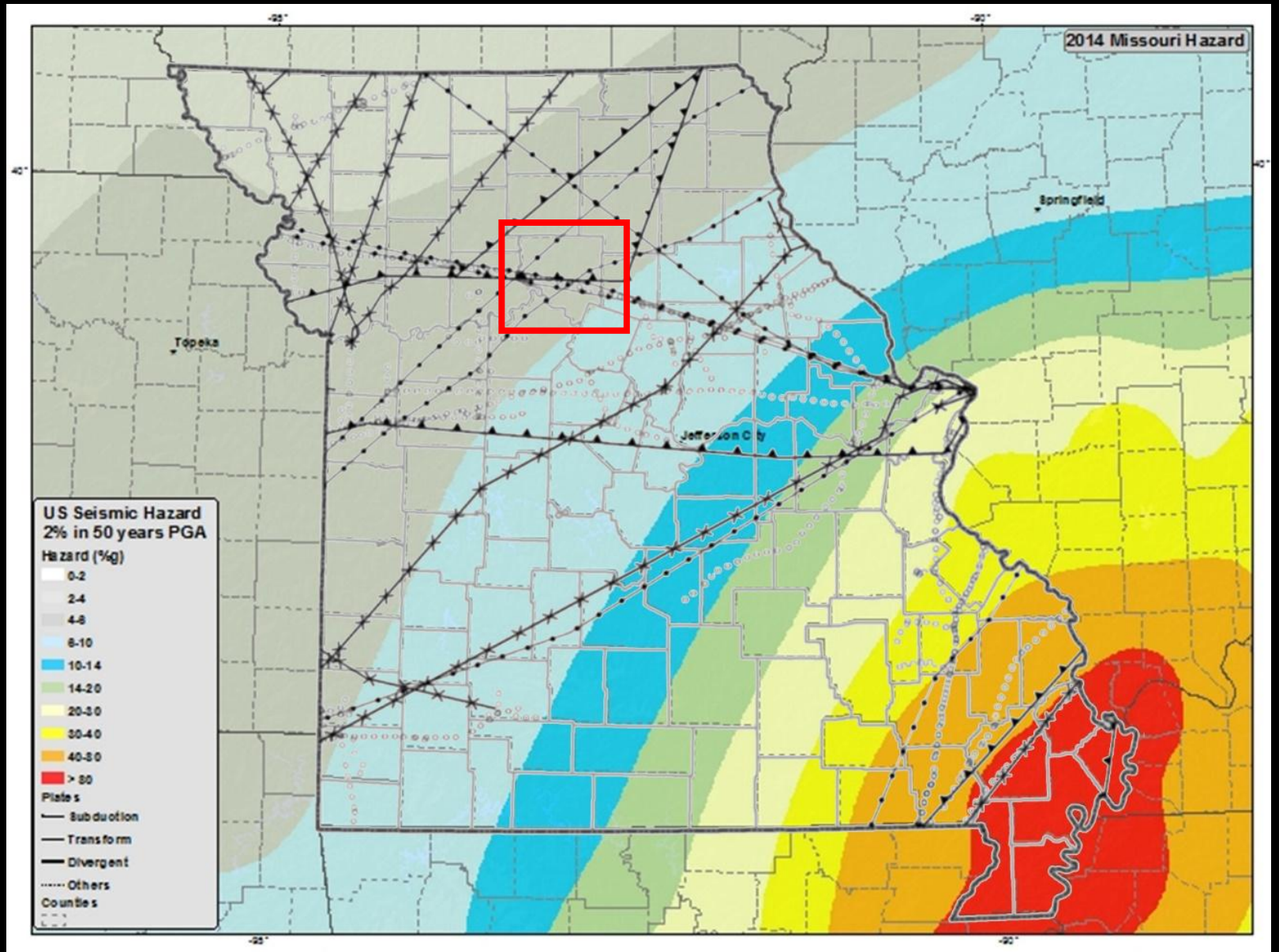


- Most active faults move episodically
  - Stress builds up (fault is “locked”)
  - At critical stress, they break (fault slips) → Earthquake

Missouri Gas Infrastructure (MODOT)

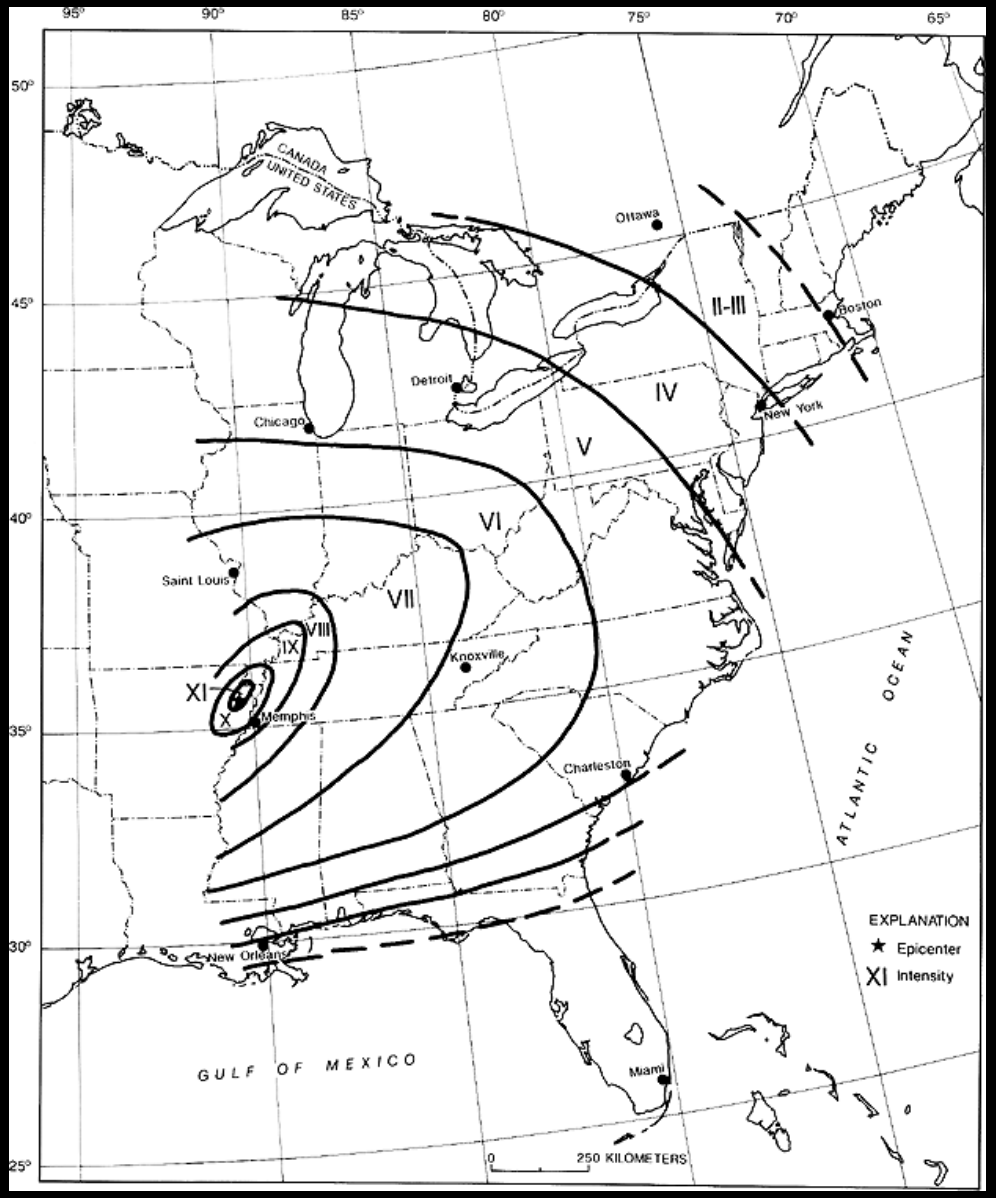


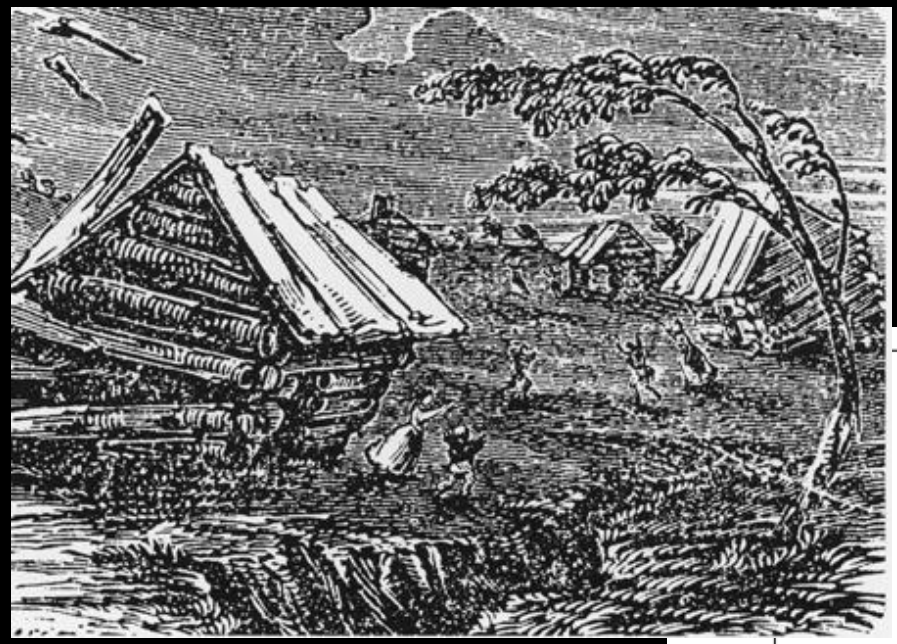
2014 Earthquake Hazard Map for Missouri

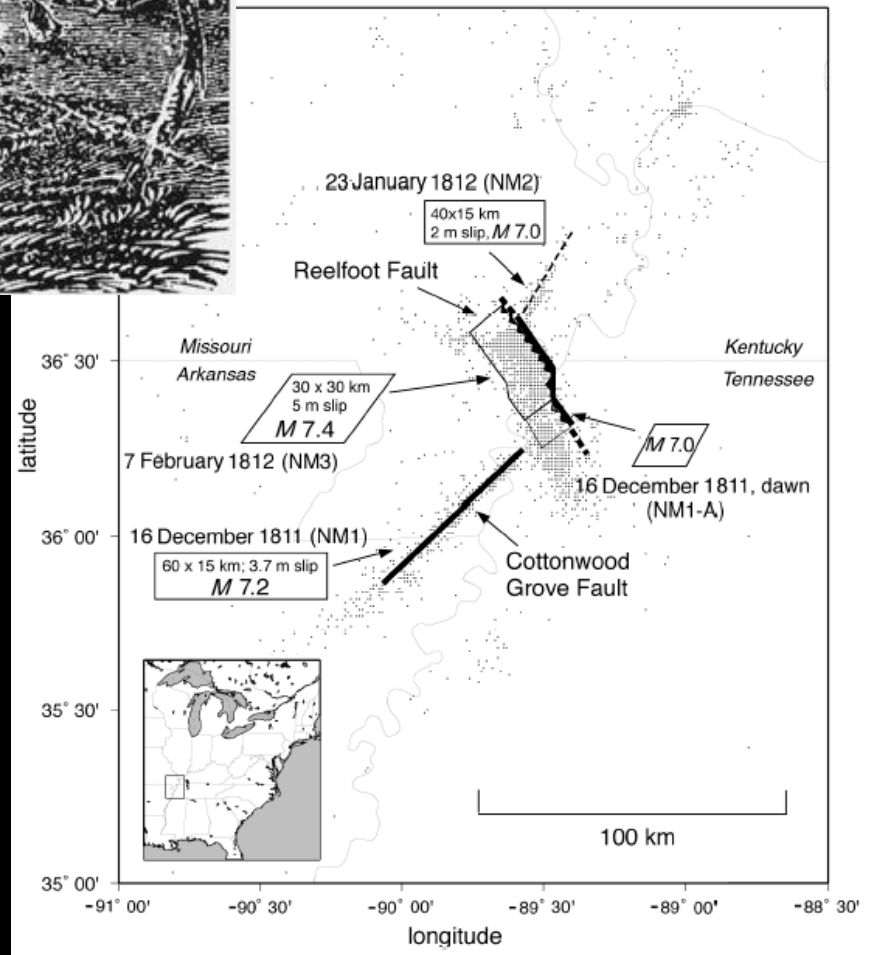


(USGS)

New Madrid Earthquakes (1811 & 1812)

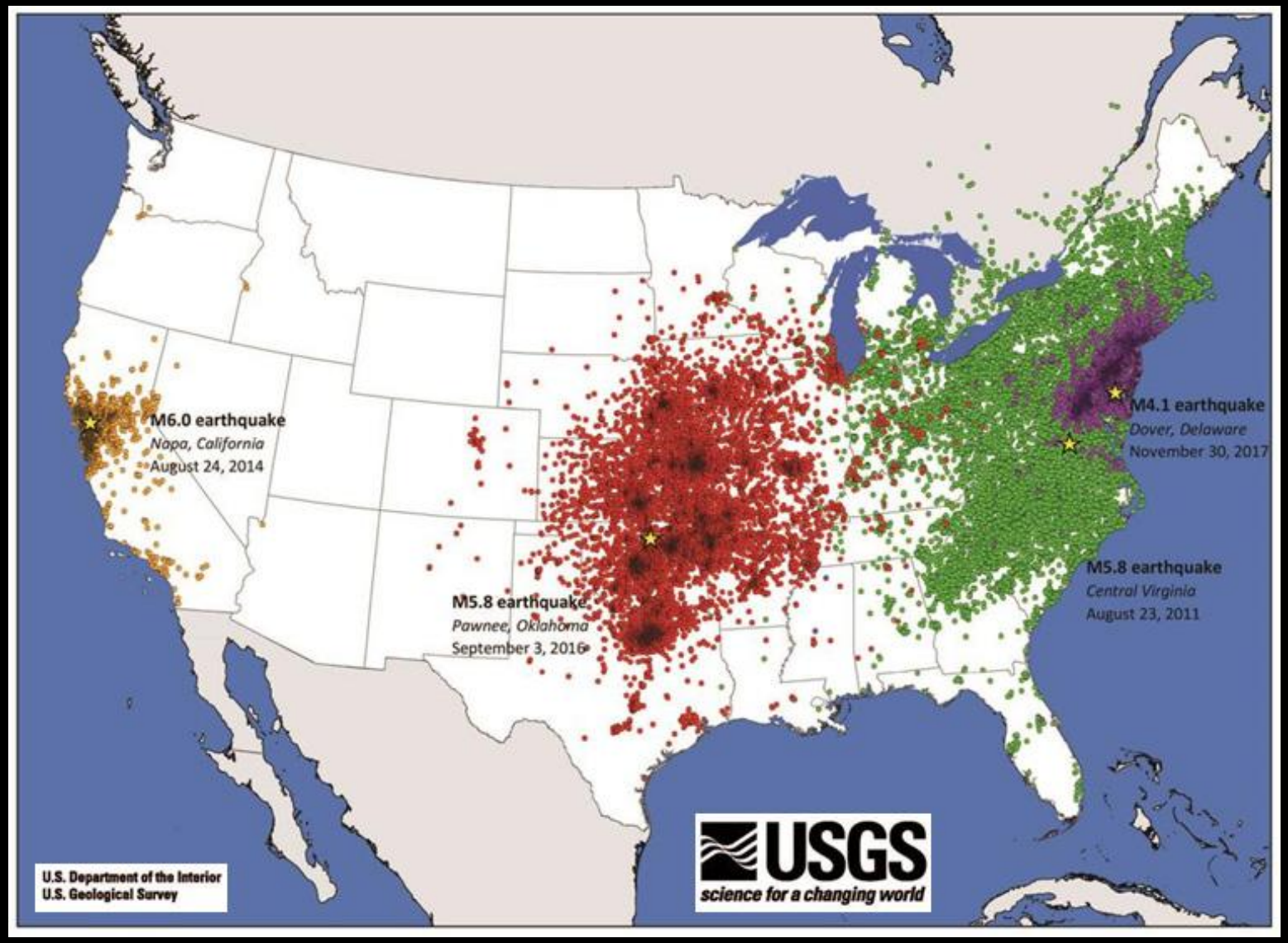




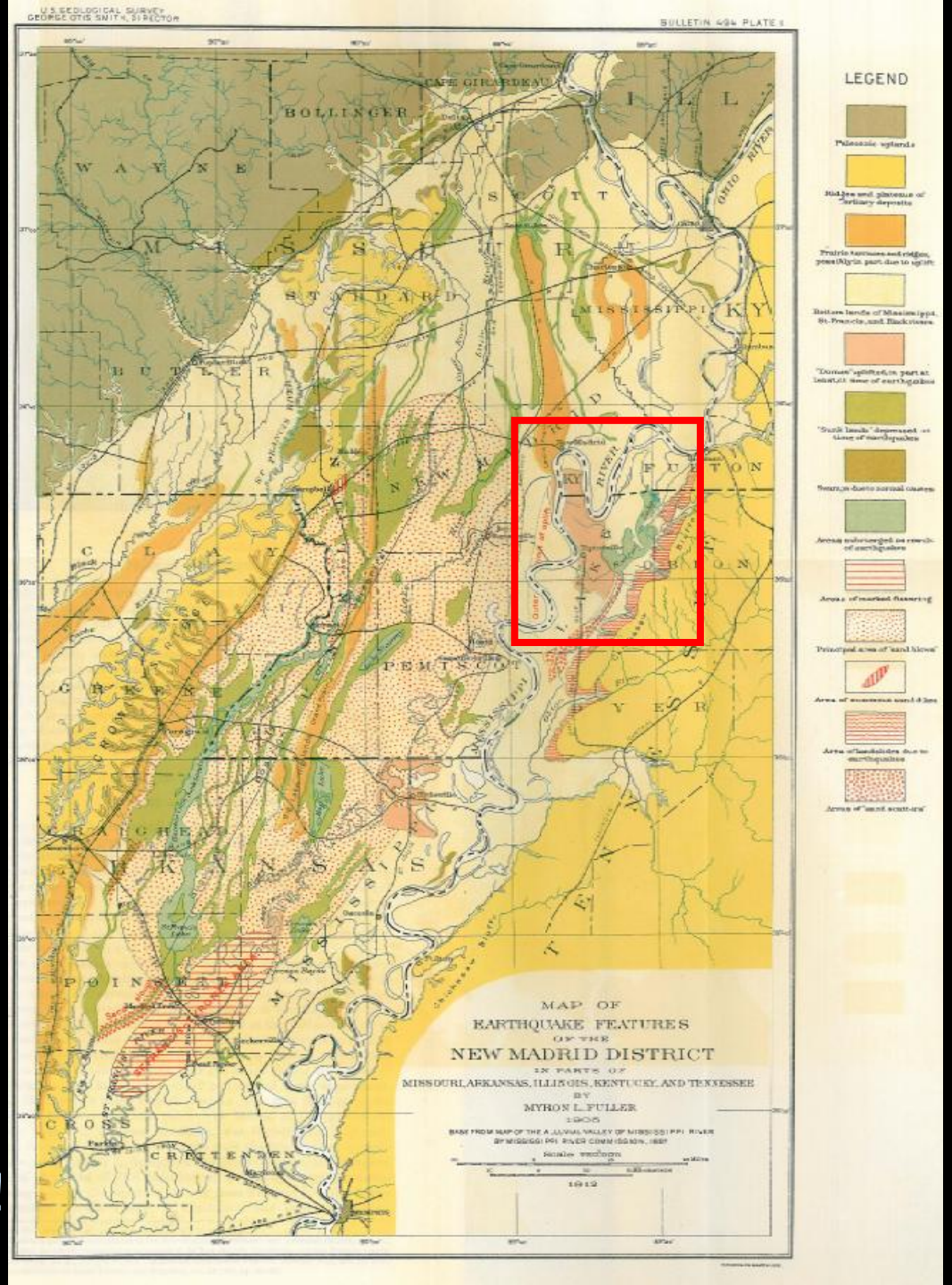


Earthquakes: CEUS vs. Western North America

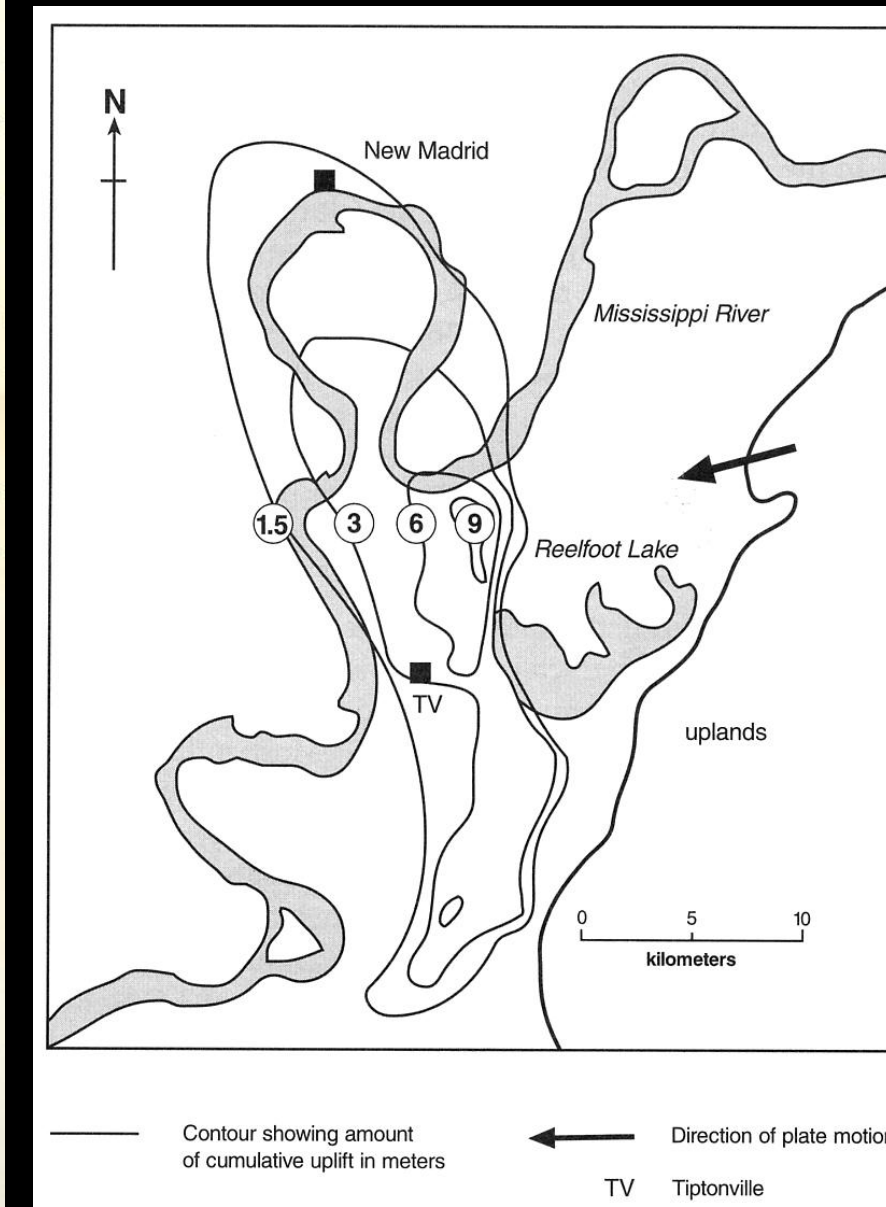
- Earthquake energy transmits more efficiently east of the Rocky Mountains
- Effects (and shaking) more intense at greater distances



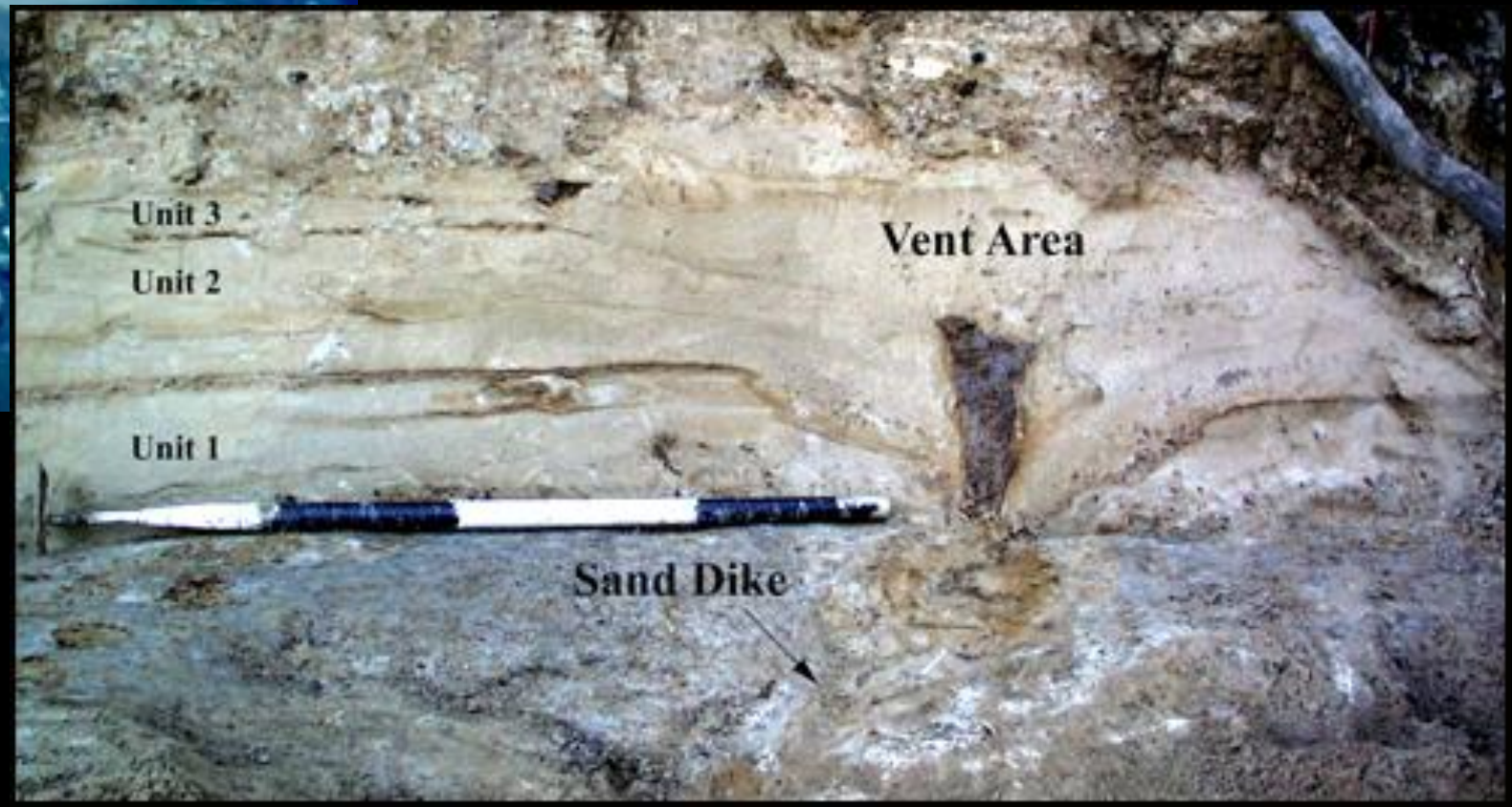
Earthquake Effects: Fuller's map of the New Madrid Seismic Zone (1912)



Areas of uplift and submergence are identified – very helpful!



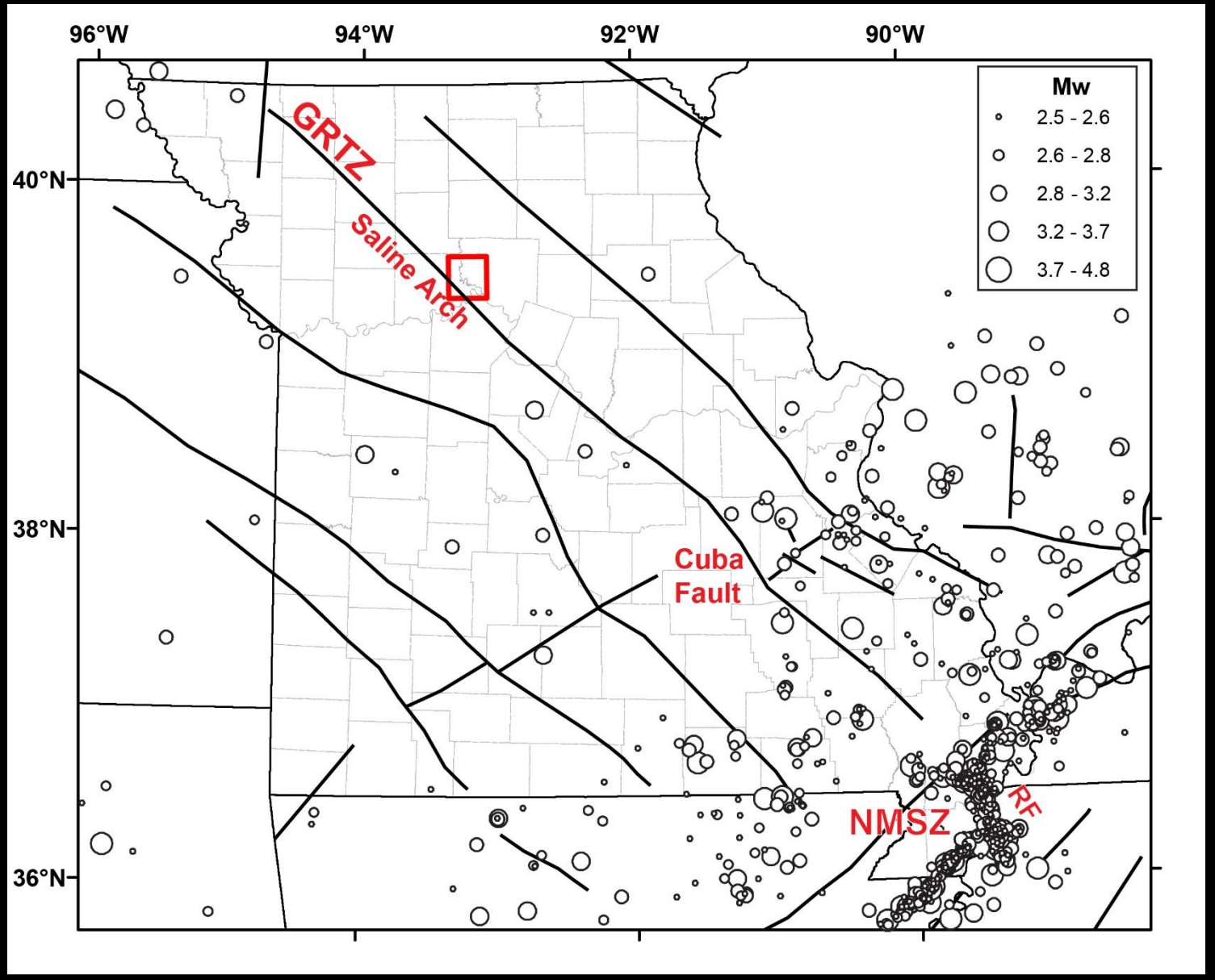
Earthquake Evidence: Liquefaction



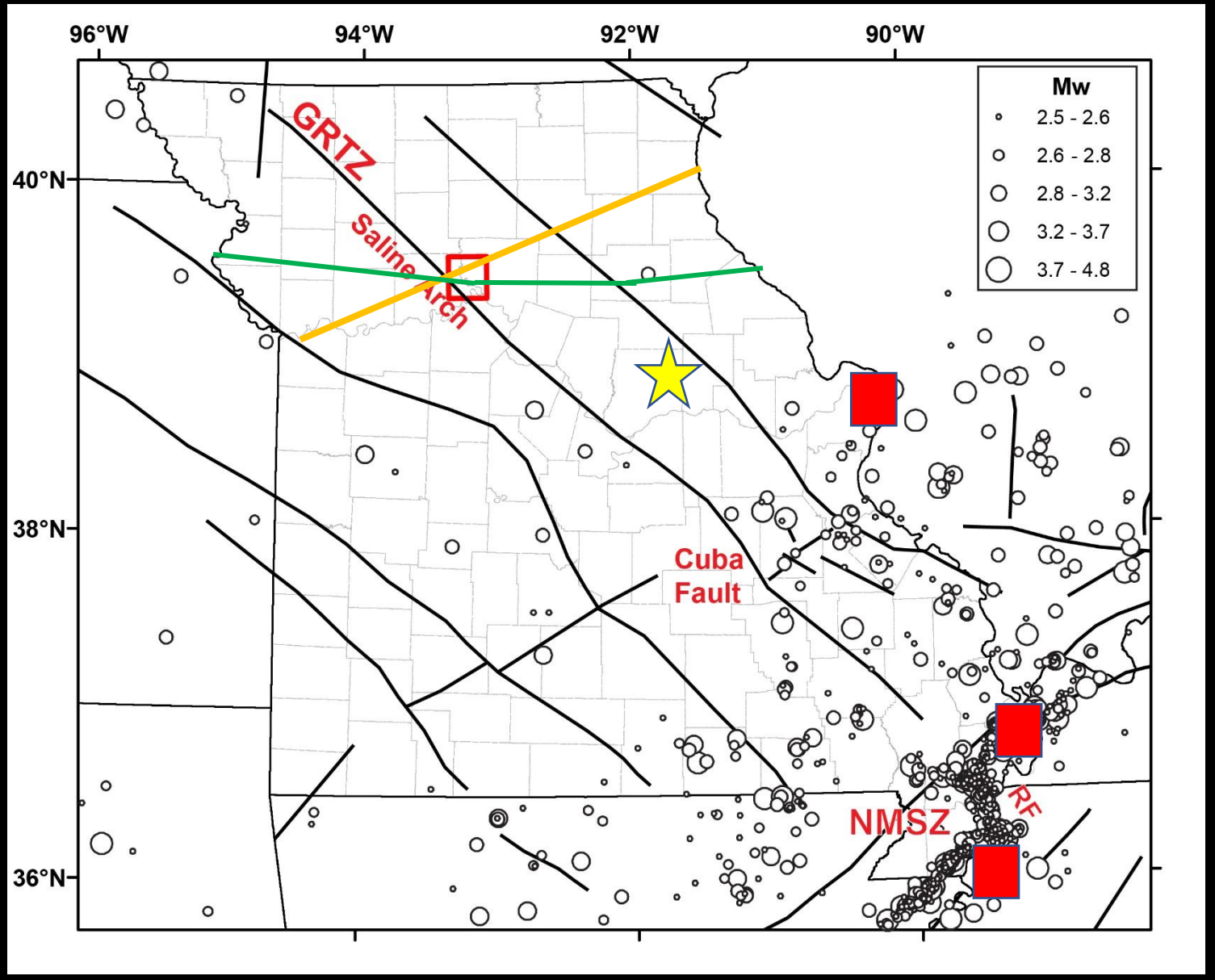
Potential Earthquakes beyond NMSZ?

- There are many old faults in and around Missouri

- NMSZ is one example
- Prominent NW-SE structural trends
- Grand River Tectonic Zone (red box)

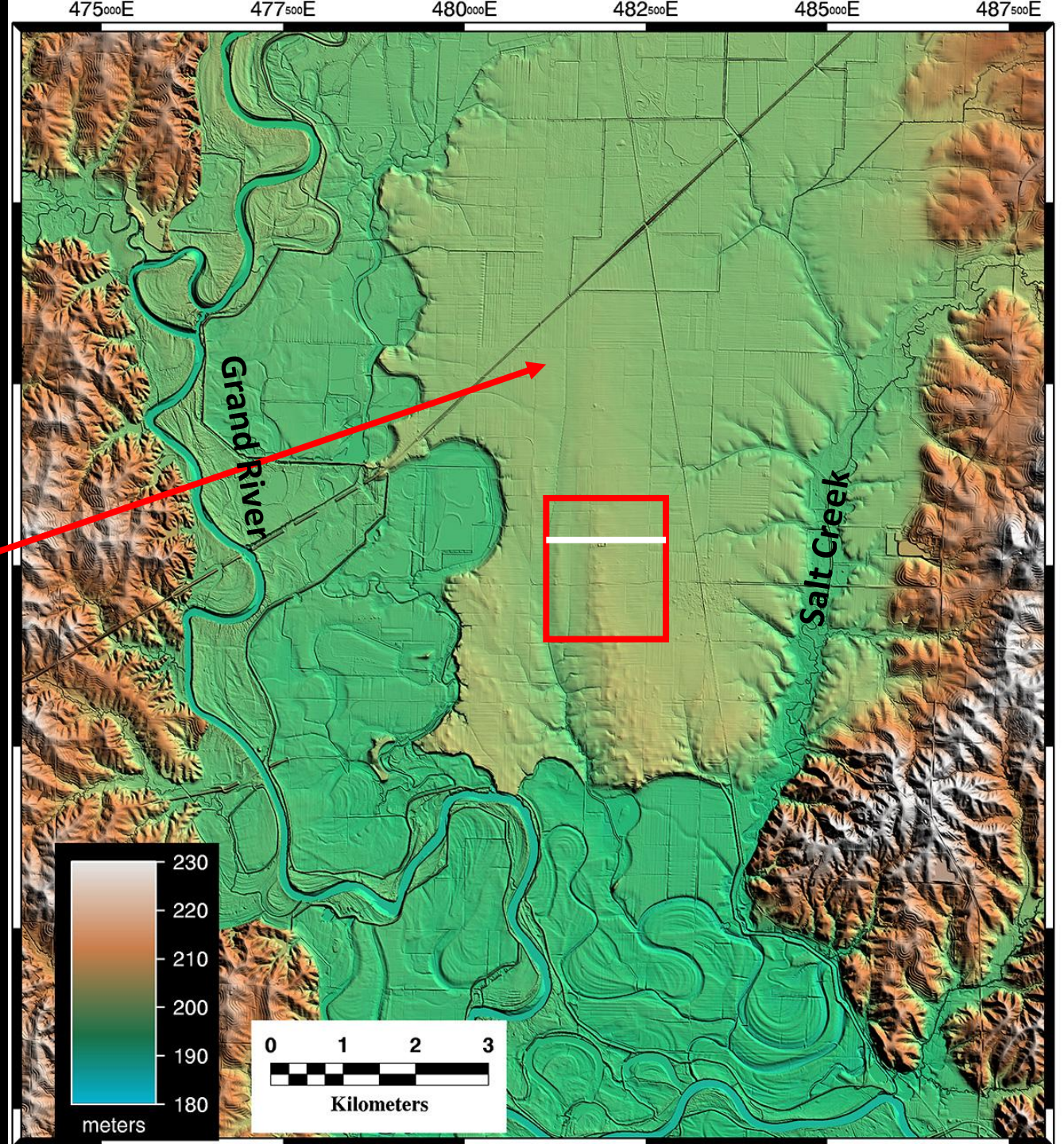


- Interstate Highways and Bridges (red) across the Mississippi River
- Ameren's Callaway powerplant (yellow)
- Major railways (orange)
- Pipelines
- Grainbelt Express (planned) (green)

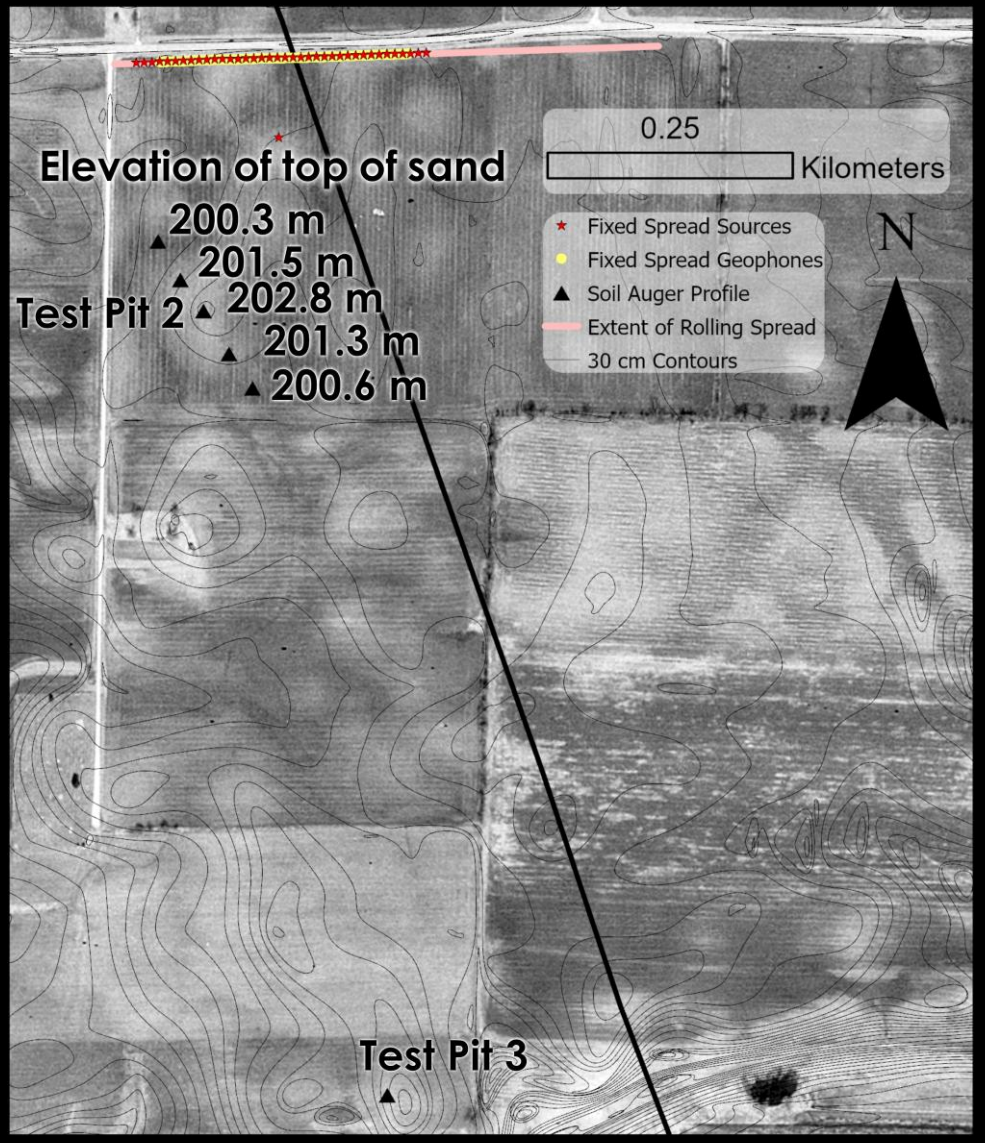


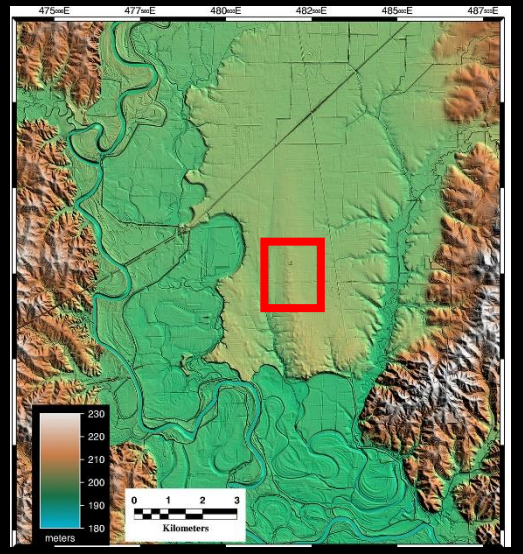
Tectonic Anomaly in Chariton County, MO

- Relief is very subtle
  - 50 meters from river to ridge top
  - 6 meters from river to “Triplett” surface
  - Unusul N-S ridge



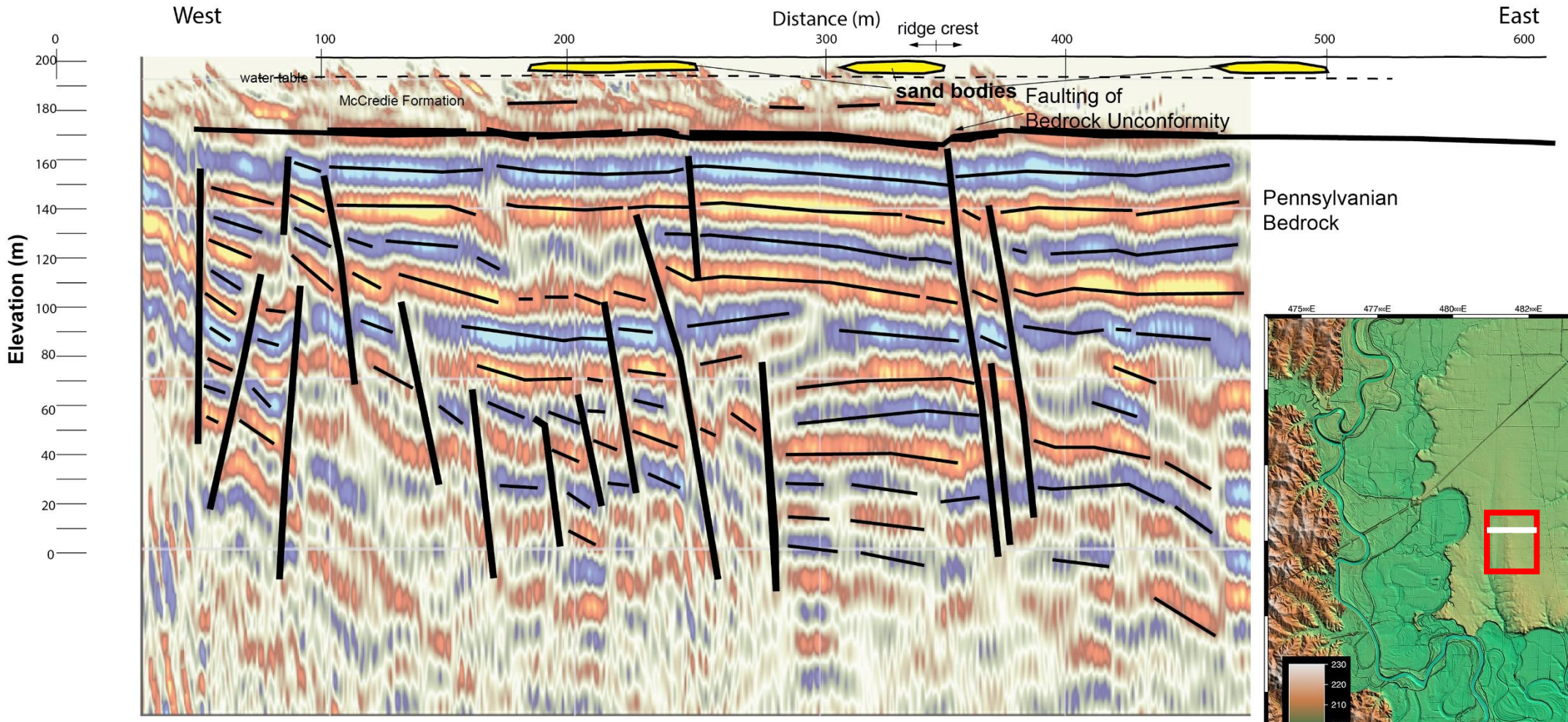
“Mounds” (cryptic sand blows)





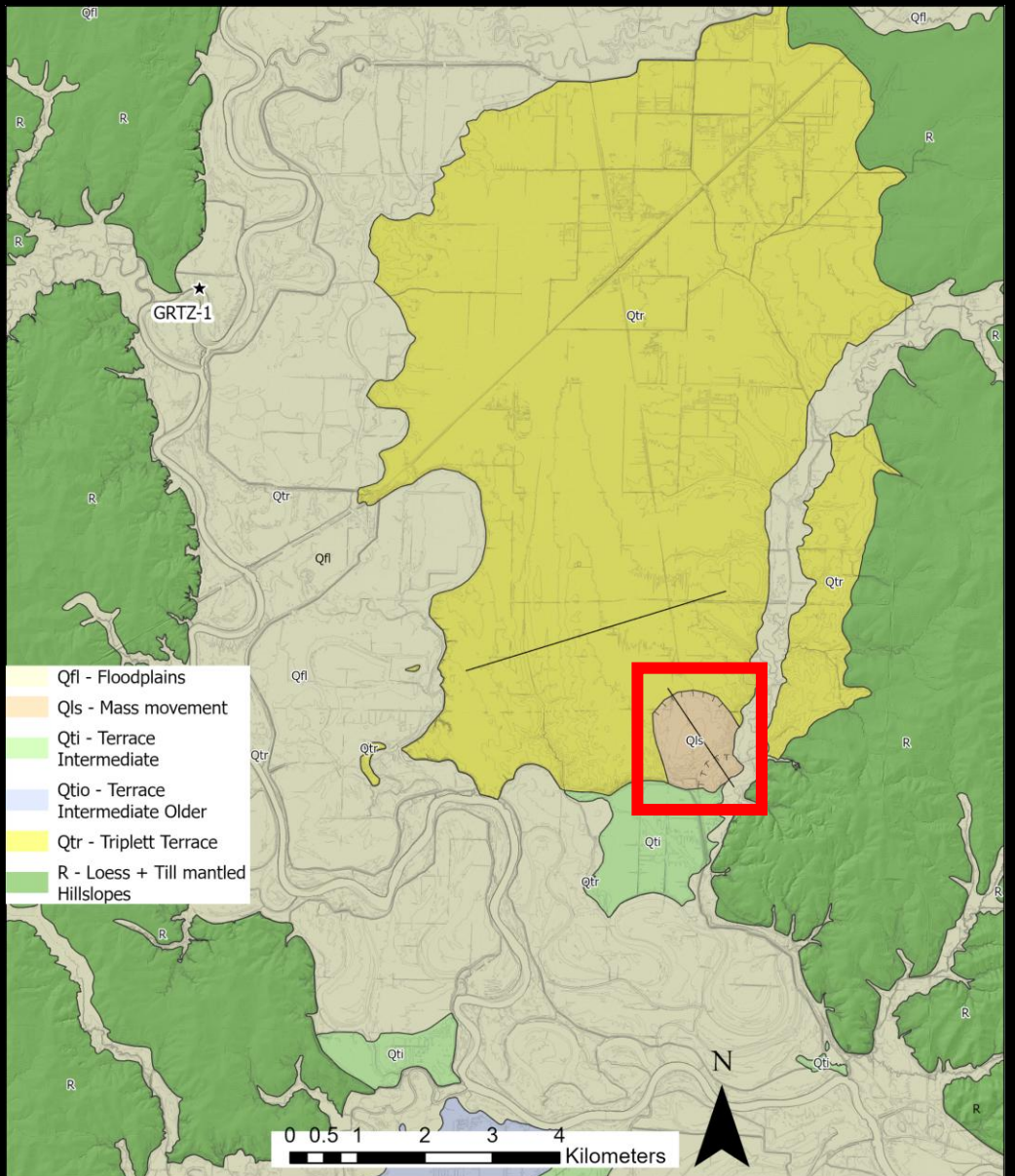
Check out poster Poast 28-1 (Tuesday morning) by Liz Cahalan & Autumn Achey to learn more about the soil auger investigation

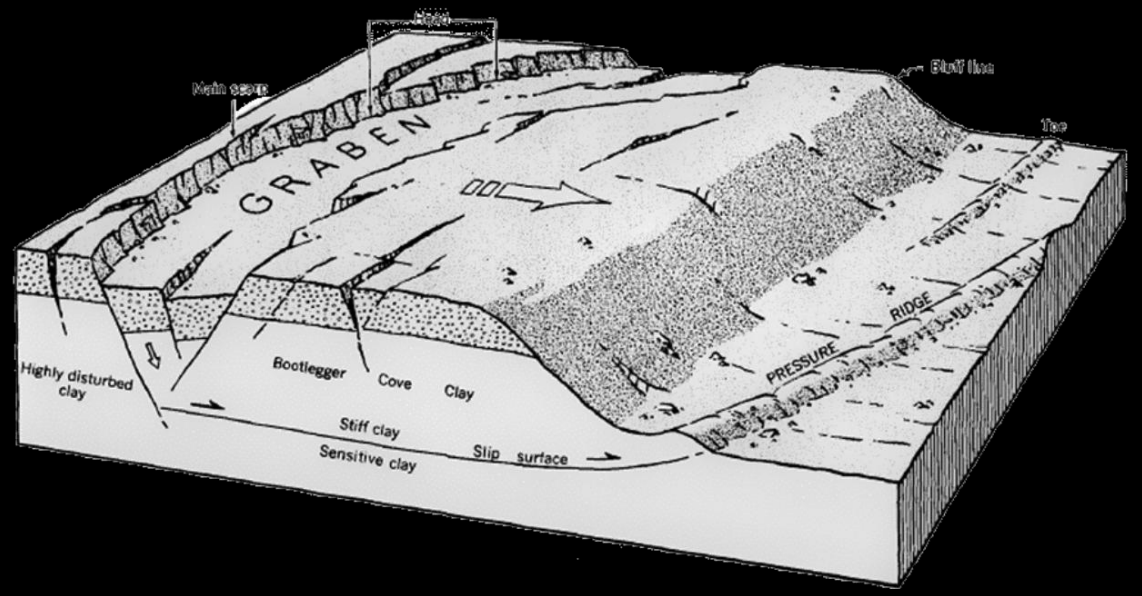
Subsurface Investigations



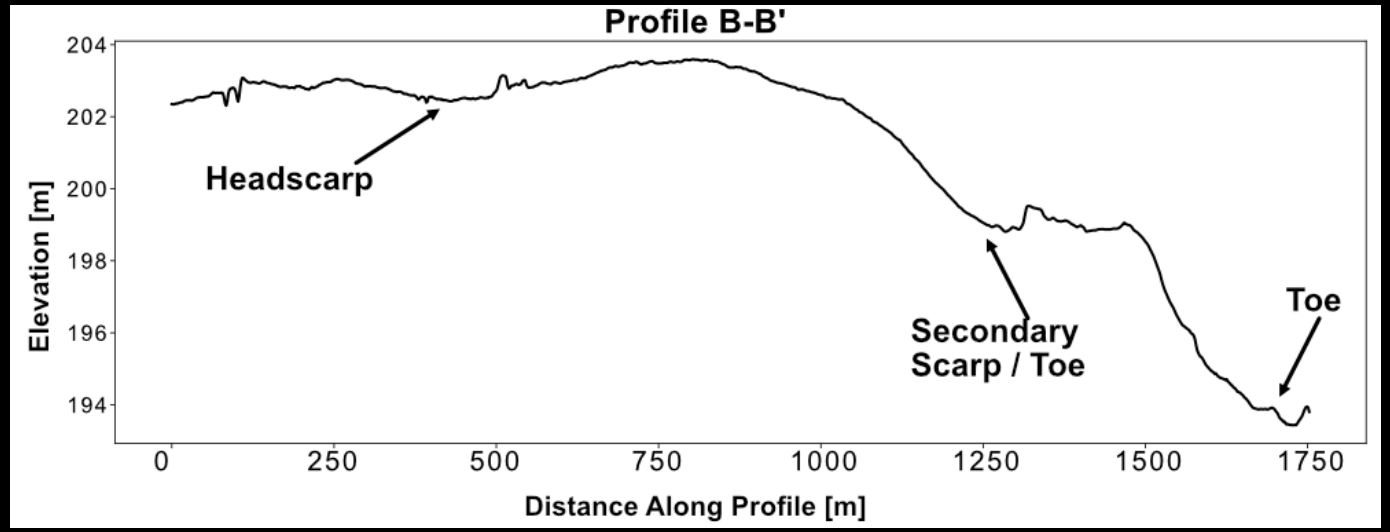
All together → M ~6.5 (max), twice in past 10,000 years

Paleo Earthquake Effects: Lateral Spread

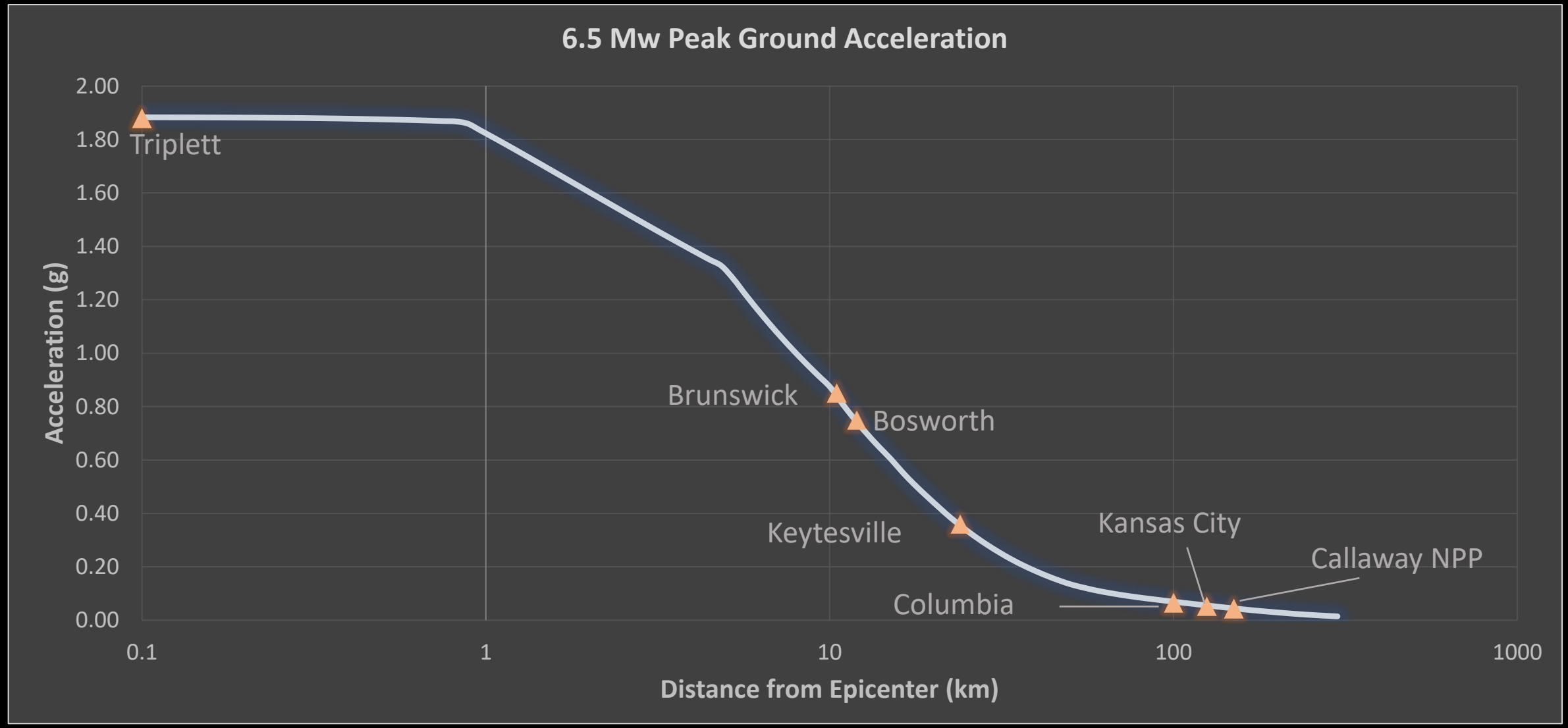




Block diagram of a lateral spread in Alaska: USGS Professional Paper 542-A



Deterministic Hazard Modeling



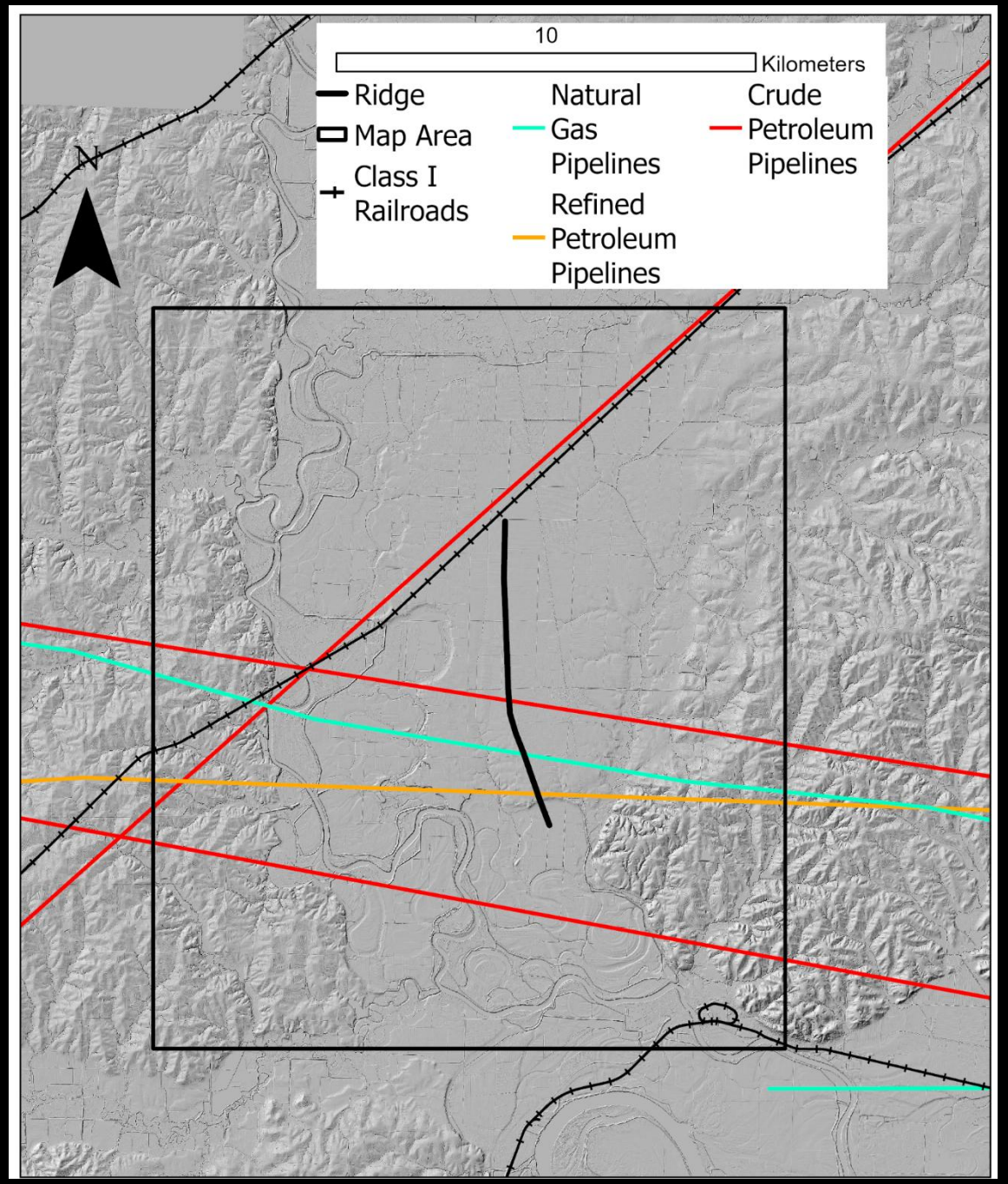
PGA calculated using USGS Earthquake Hazard Toolbox, CEUS Combined 2023 model, Mw 6.5

Potential Local Hazards

- Few people live in nearby communities

Name	2020 Pop.	Distance	PGA
Triplett	33	0 – 1 km	1.88 g
Brunswick	801	10.5 km	0.85 g
Bosworth	213	12 km	0.75 g
Keytesville	440	24 km	0.36 g

- The lower Grand River Valley is a crossroads for various transport infrastructure
  - 2 Class I railroads
  - 3 crude petroleum pipelines
  - 1 refined petroleum pipeline
  - 1 natural gas pipeline



Conclusions

- Intraplate earthquakes affect greater distances in the Central/Eastern U.S.

- The New Madrid Seismic Zone is a big consideration, but not the only one
- Grand River Tectonic Zone (Chariton County) is an example of a multi-earthquake source outside of the Mississippi Embayment

- Particular emphasis on infrastructure resilience needed across deep river valleys, owing to potential for liquefaction

2025 NATURAL GAS READINESS REGIONAL MINI-FORUM

MIDWEST REGION

BREAK 12:45 - 1:00

NATURAL GAS OUTLOOK

DAVID YONCE
MANAGING DIRECTOR, REGULATORY AFFAIRS
SPIRE

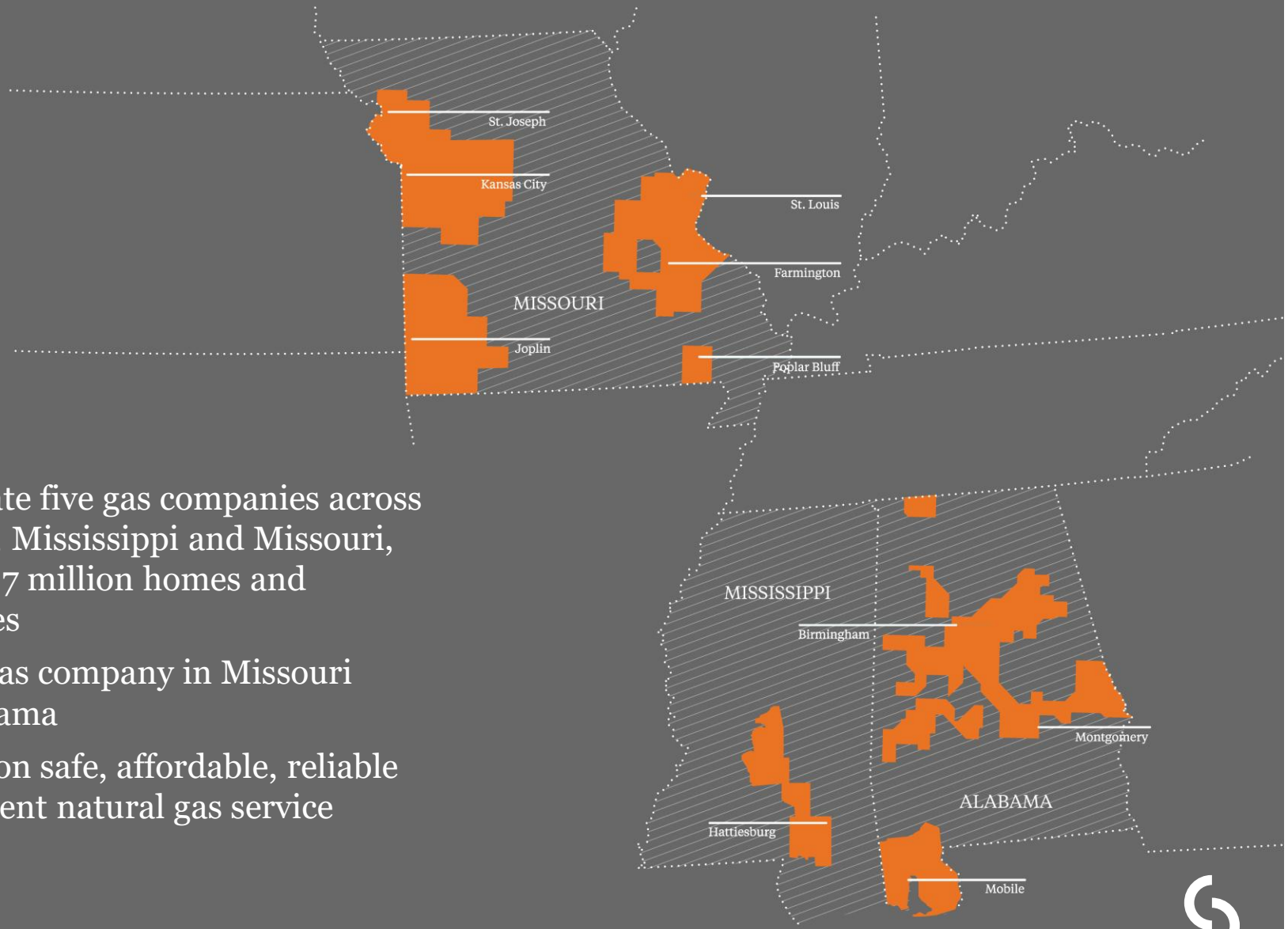
Natural gas market update

David Yonce

Managing Director, Regulatory Affairs

spire

Our utility footprint



- We operate five gas companies across Alabama, Mississippi and Missouri, serving 1.7 million homes and businesses
- Largest gas company in Missouri and Alabama
- Focused on safe, affordable, reliable and efficient natural gas service

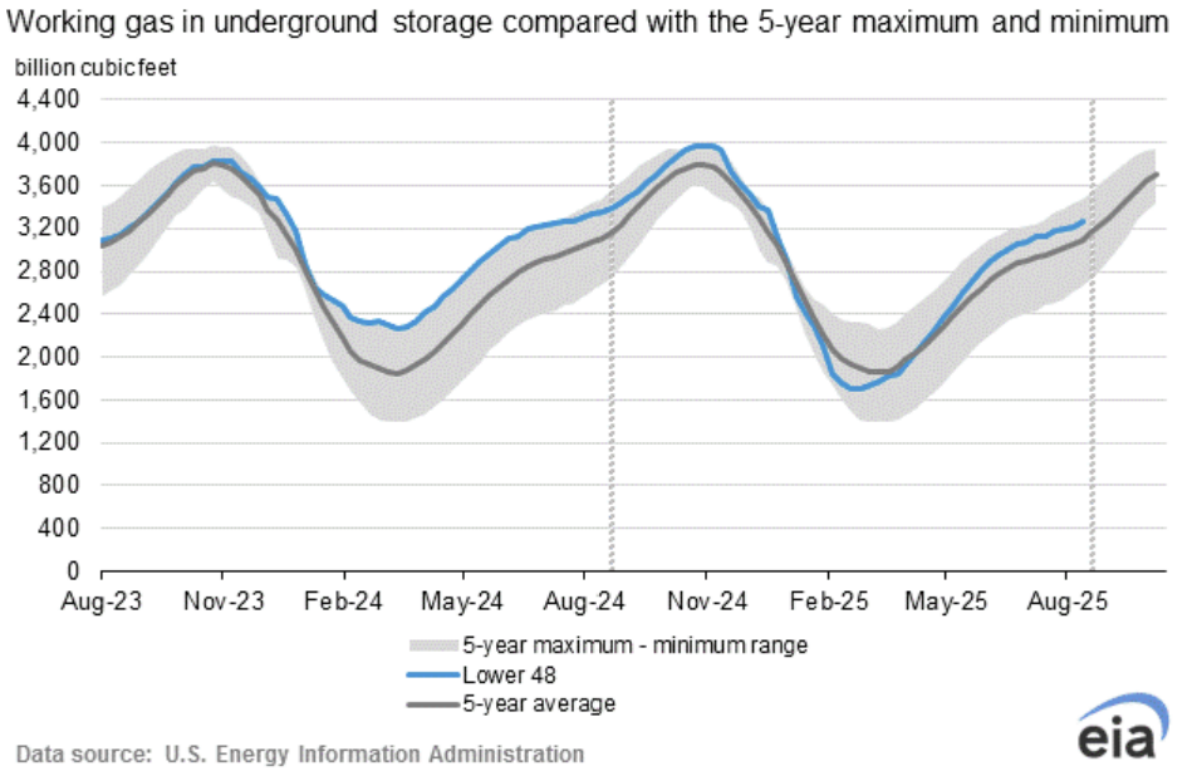
Price outlook

U.S. energy market indicators	2024	2025	2026
Brent crude oil spot price (dollars per barrel)	**$81**	**$68**	**$51**
Retail gasoline price (dollars per gallon)	**$3.30**	**$3.10**	**$2.90**
U.S. crude oil production (million barrels per day)	**13.2**	**13.4**	**13.3**
Natural gas price at Henry Hub (dollars per million British thermal units)	**$2.20**	**$3.50**	**$4.30**
U.S. liquefied natural gas gross exports (billion cubic feet per day)	**12**	**15**	**16**
Shares of U.S. electricity generation			
Natural gas	42%	40%	40%
Coal	16%	17%	16%
Renewables	23%	25%	26%
Nuclear	19%	18%	18%
U.S. GDP (percentage change)	**2.8%**	**1.7%**	**2.4%**
U.S. CO_2 emissions (billion metric tons)	**4.8**	**4.8**	**4.8**

Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook,* September 2025
Note: Values in this table are rounded and may not match values in other tables in this report.

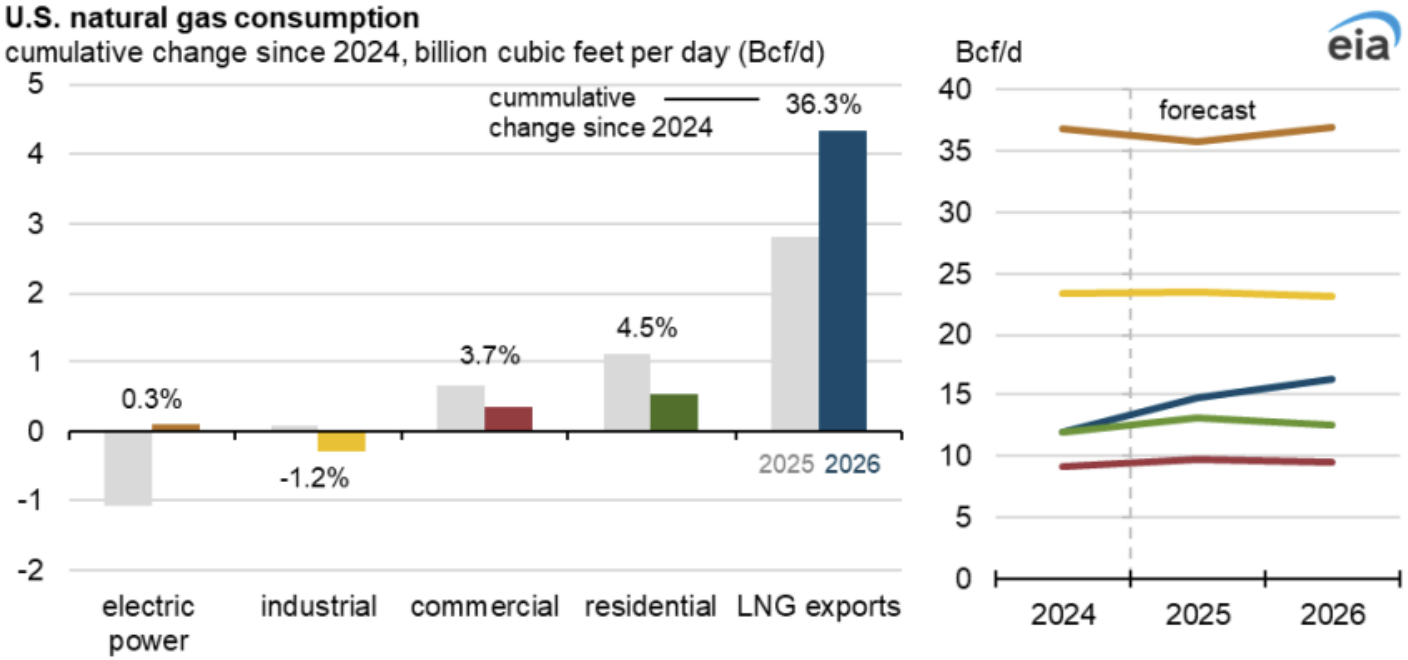
Source: U.S. Energy Information Administration

Natural gas storage inventories



Source: U.S. Energy Information Administration

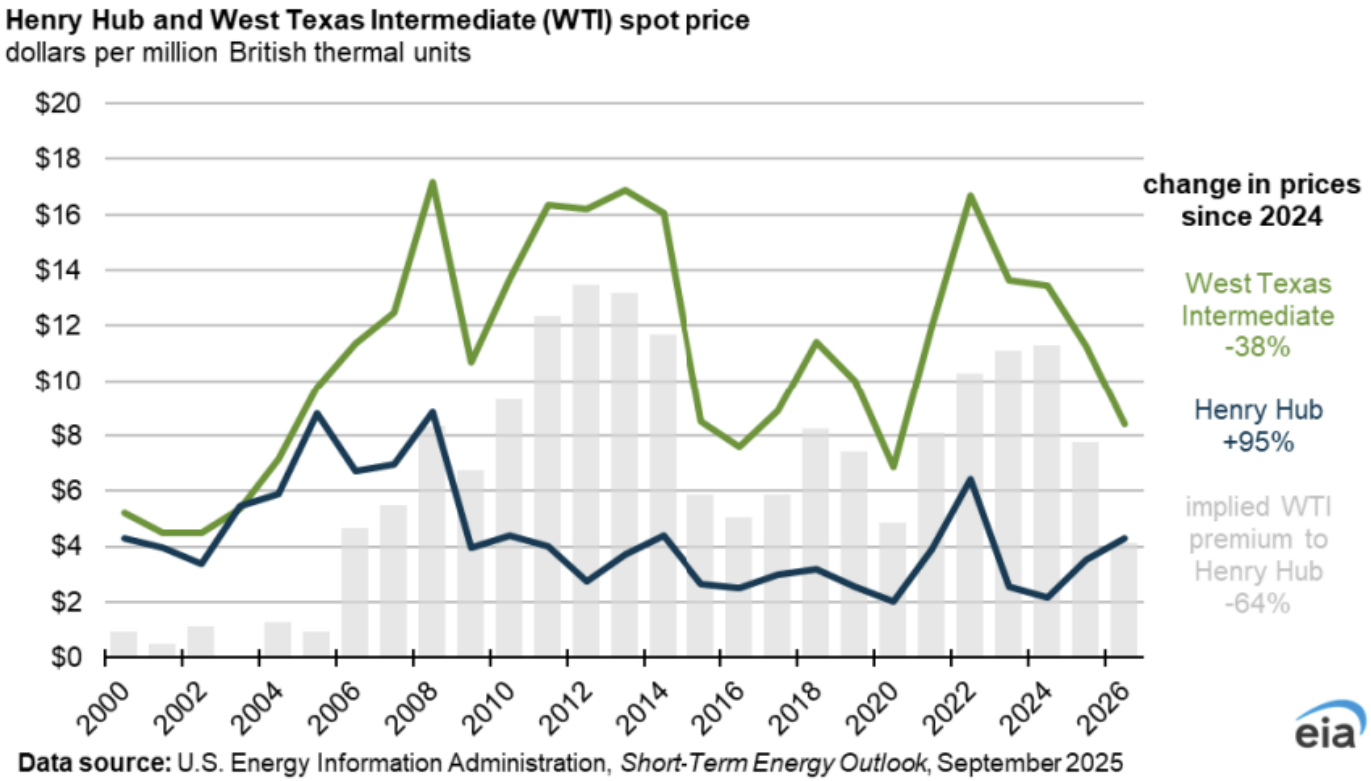
U.S. natural gas consumption



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

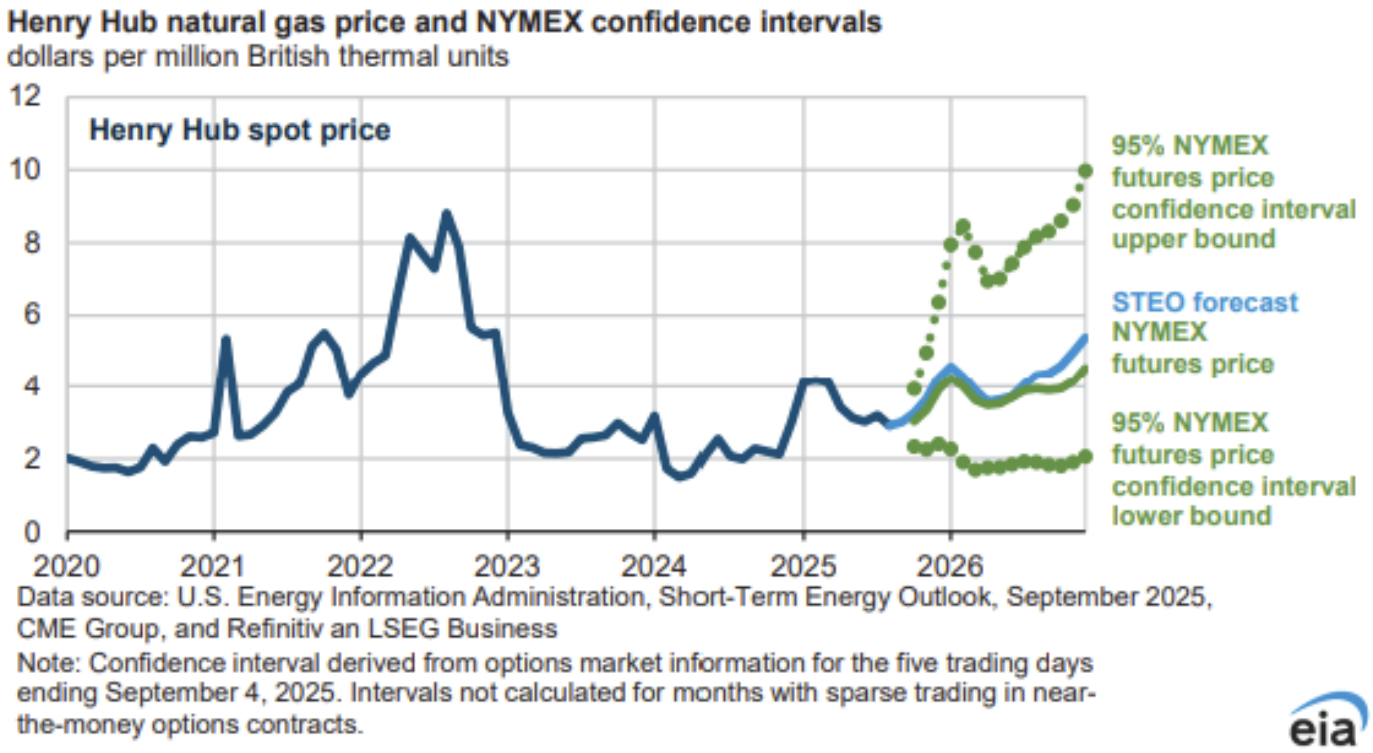
Source: U.S. Energy Information Administration

Oil and natural gas price trends



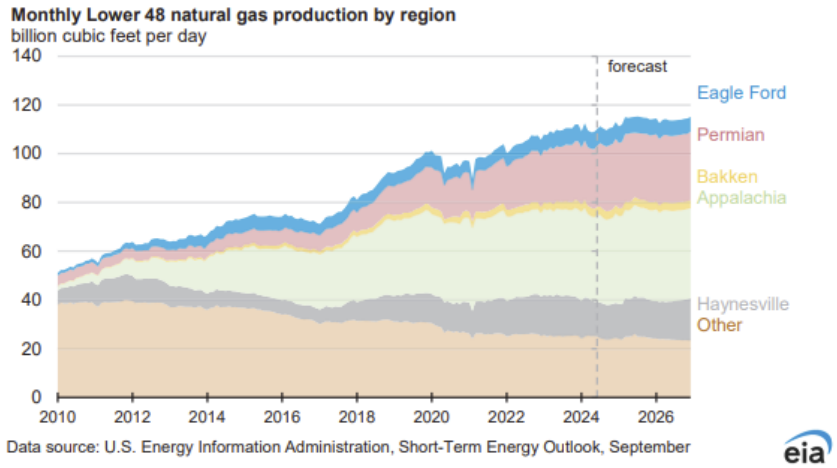
Source: U.S. Energy Information Administration

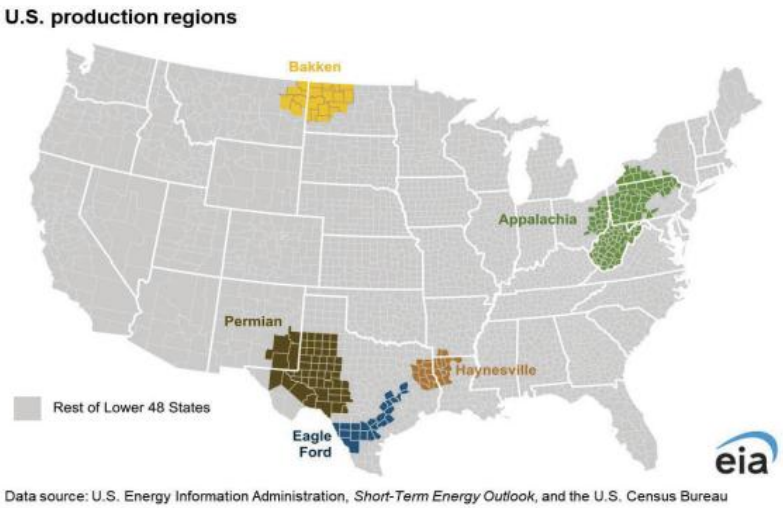
Natural gas futures



Source: U.S. Energy Information Administration

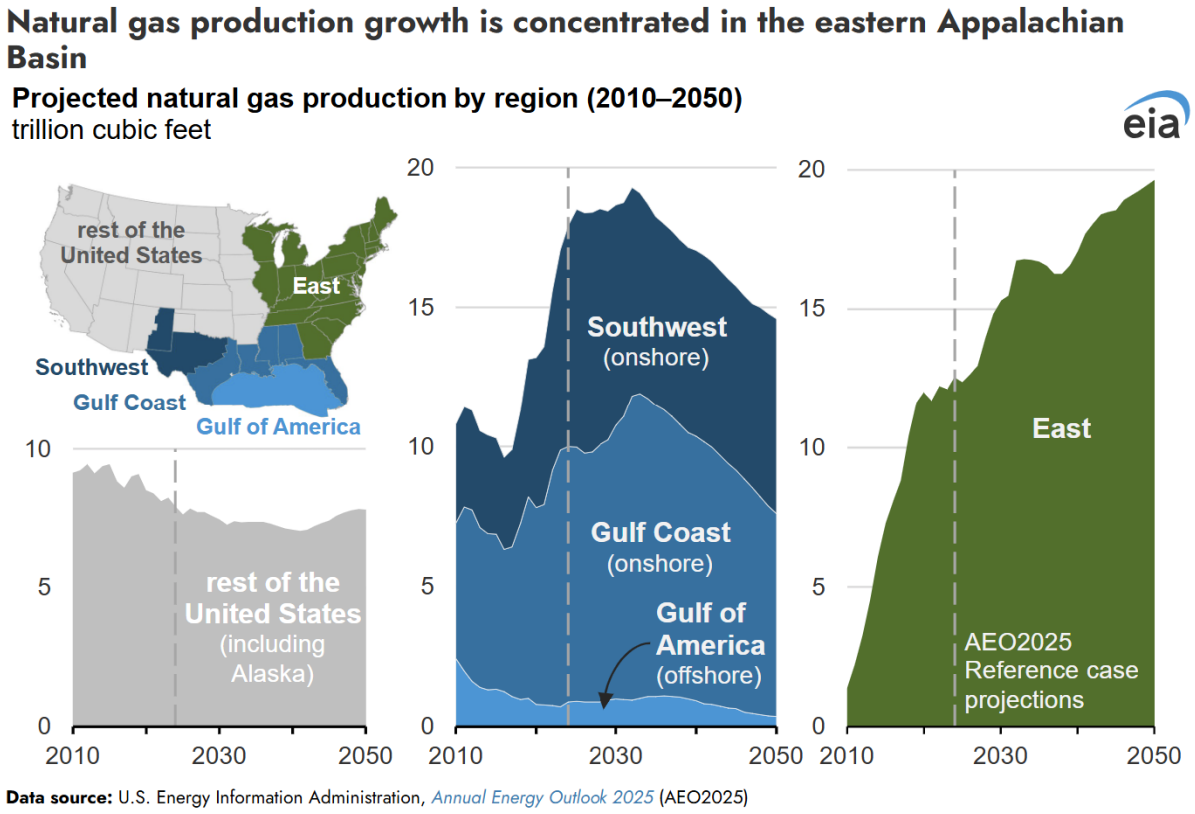
Natural gas production





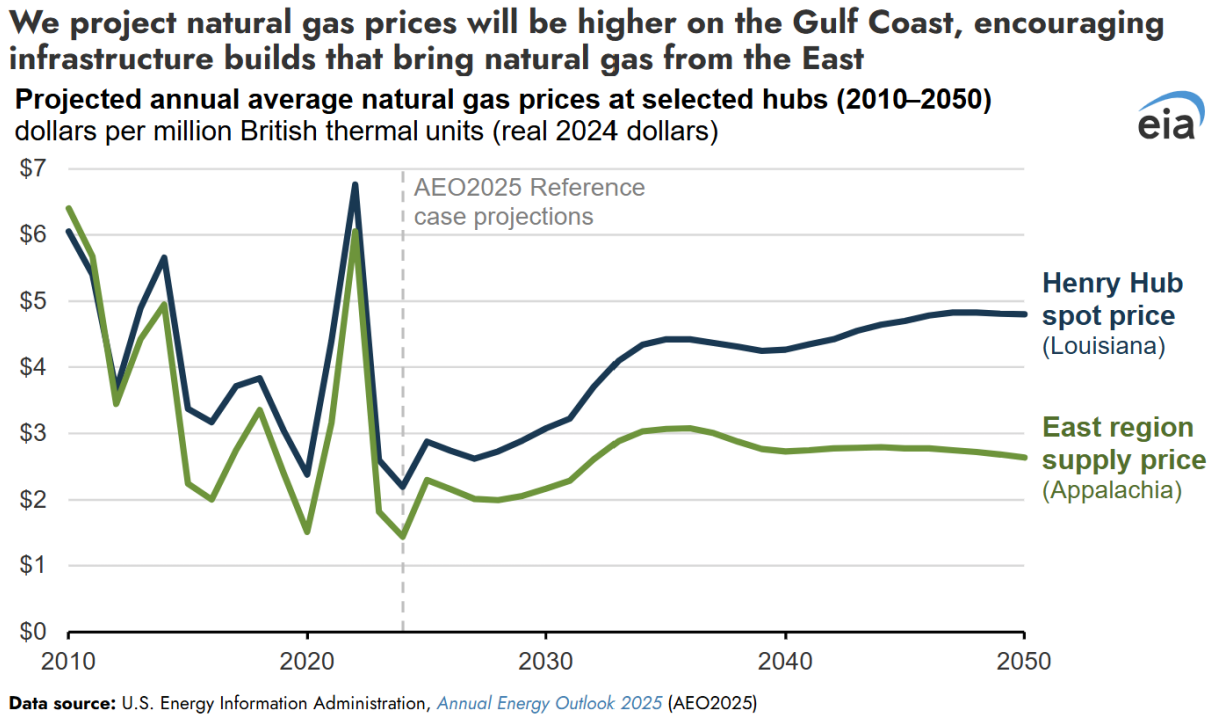
Source: U.S. Energy Information Administration

Production growth



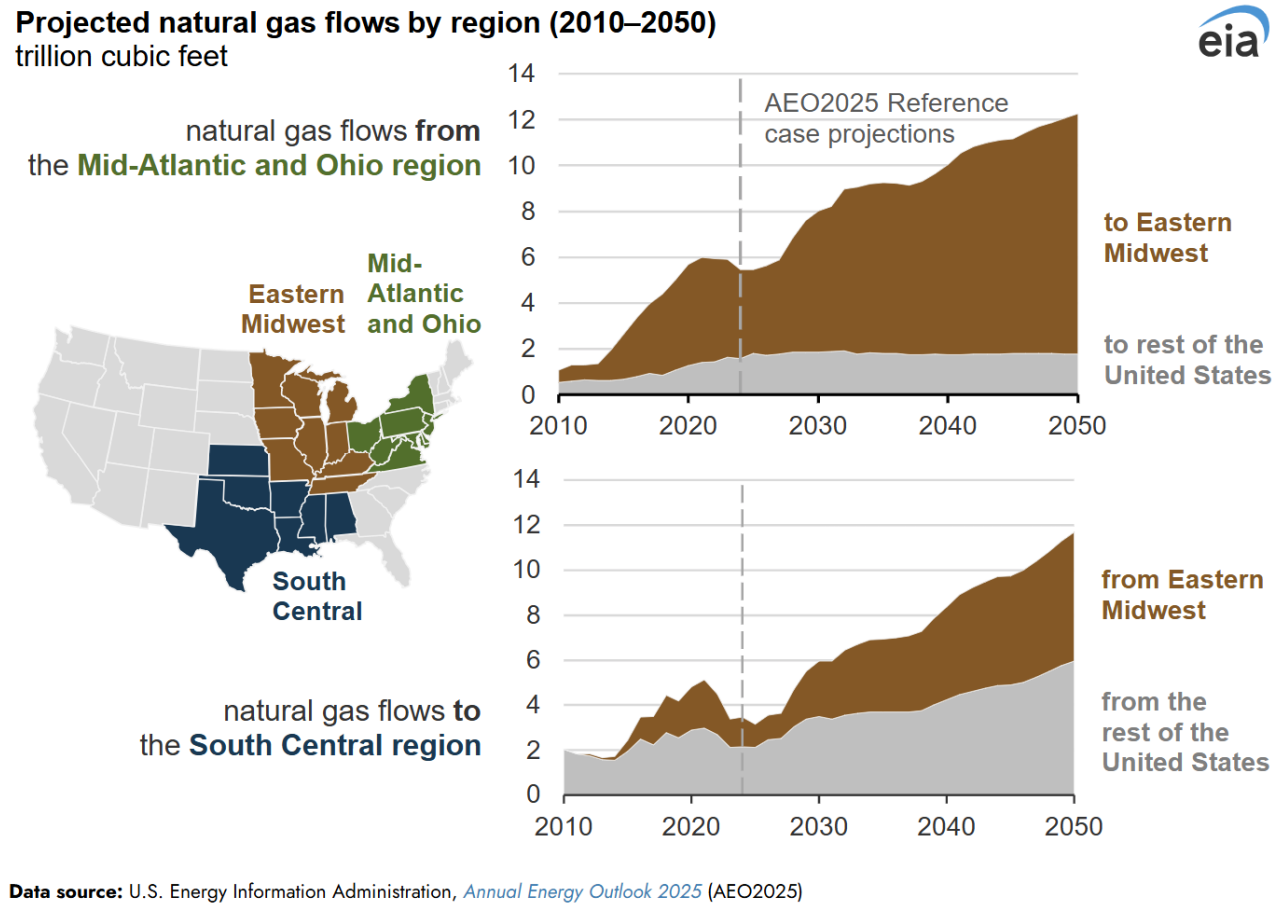
Source: U.S. Energy Information Administration

Regional price differentials



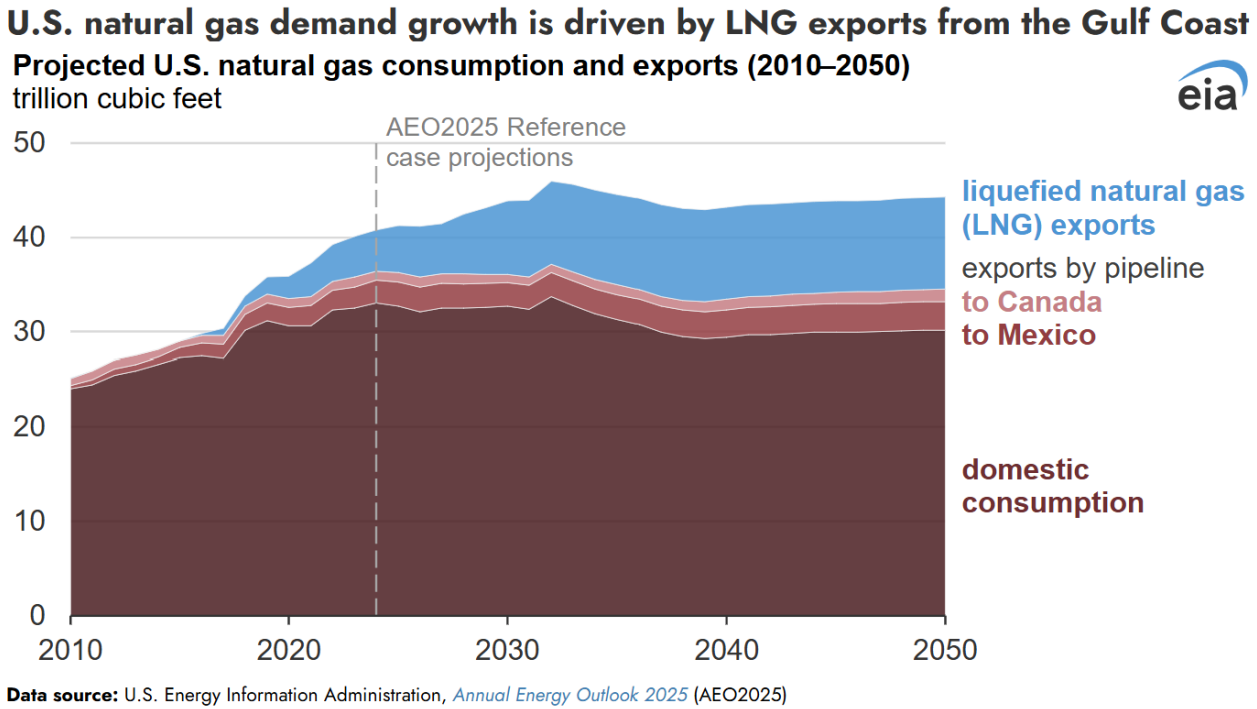
Source: U.S. Energy Information Administration

Natural gas flows



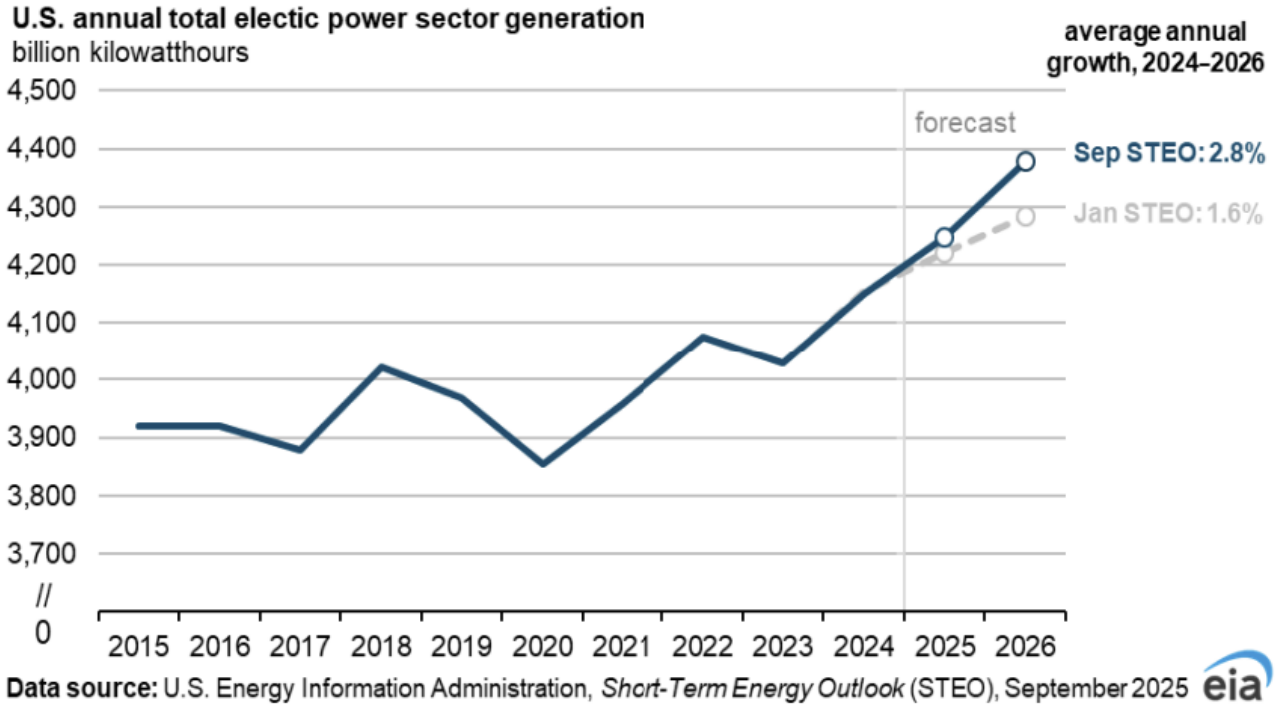
Source: U.S. Energy Information Administration

Natural gas demand



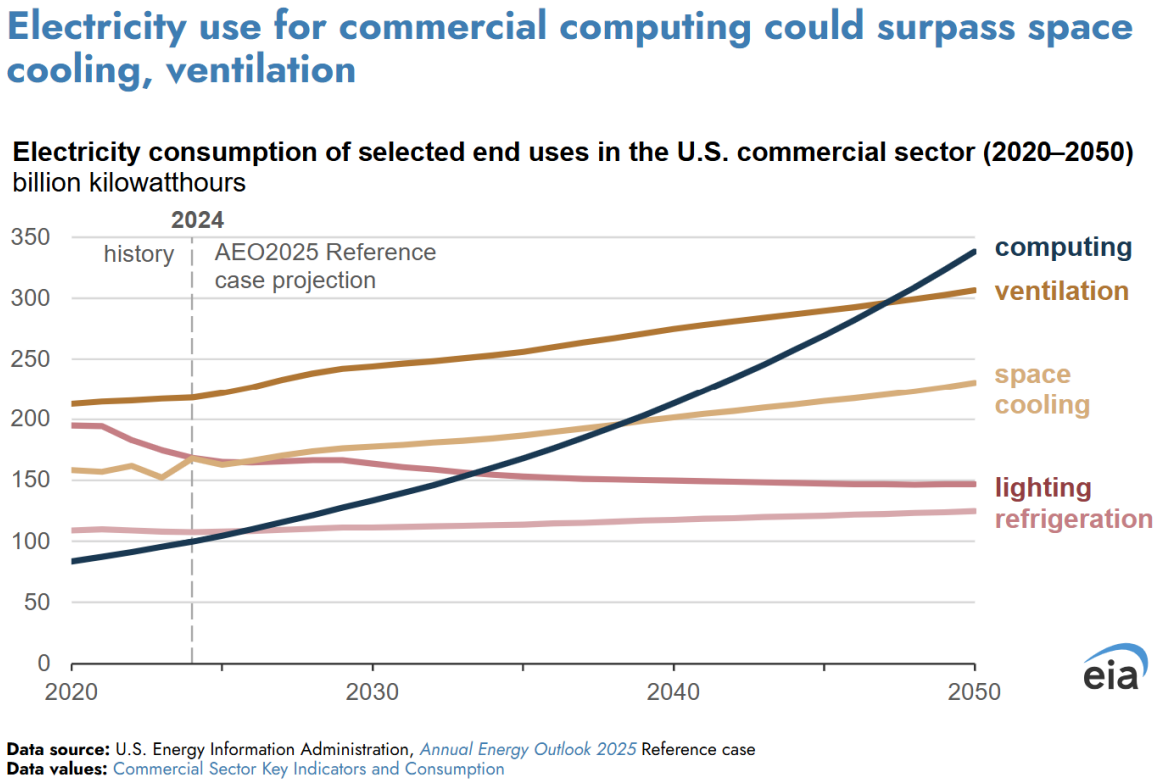
Source: U.S. Energy Information Administration

Electric generation



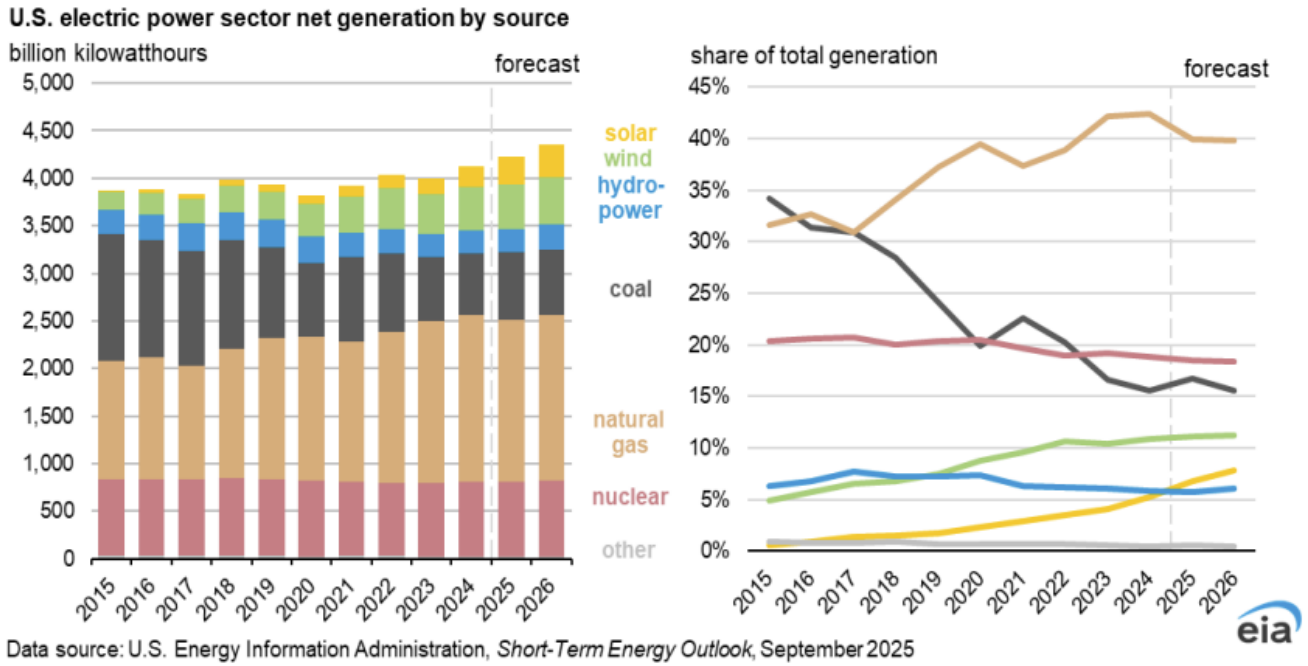
Source: U.S. Energy Information Administration

Data centers



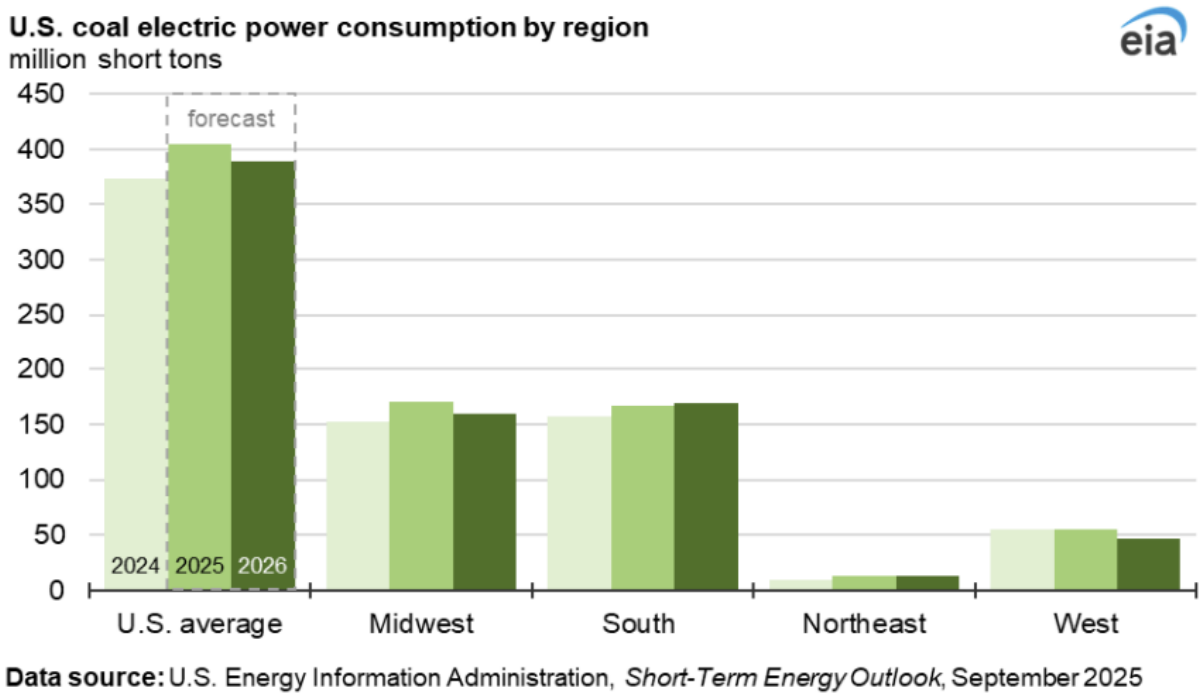
Source: U.S. Energy Information Administration

Electric generation by source



Source: U.S. Energy Information Administration

Electric generation by coal



Source: U.S. Energy Information Administration

Takeaways

- Prices in the Midwest look poised to gradually rise through the winter. Forecasts call for steeper inventory withdrawals than normal.
- U.S. natural gas production has been strong but is showing signs of flattening. Meanwhile, rising export demand (especially through LNG) is putting more draw on supply.
- As electric demand continues to grow (especially from data centers), pressure will mount for dispatchable generation. Natural gas plants will have an important role, particularly during peak or off-solar periods.
  - But fuel cost exposure remains a constraint: natural gas generators are vulnerable to price swings, and when gas is expensive, coal or other dispatchable sources may reassert.
- Grid reliability concerns in peak periods (heat, etc.) could heighten reliance on gas plants. Also, the ramping up of renewables requires backing up, often with gas or storage.

ELECTRIC OUTLOOK

SCOTT ACLIN,
MANAGER OF RELIABILITY COORDINATION,
SOUTHWEST POWER POOL

MIKE MATTOX
SENIOR ADVISOR
MIDCONTINENT INDEPENDENT SYSTEM OPERATOR

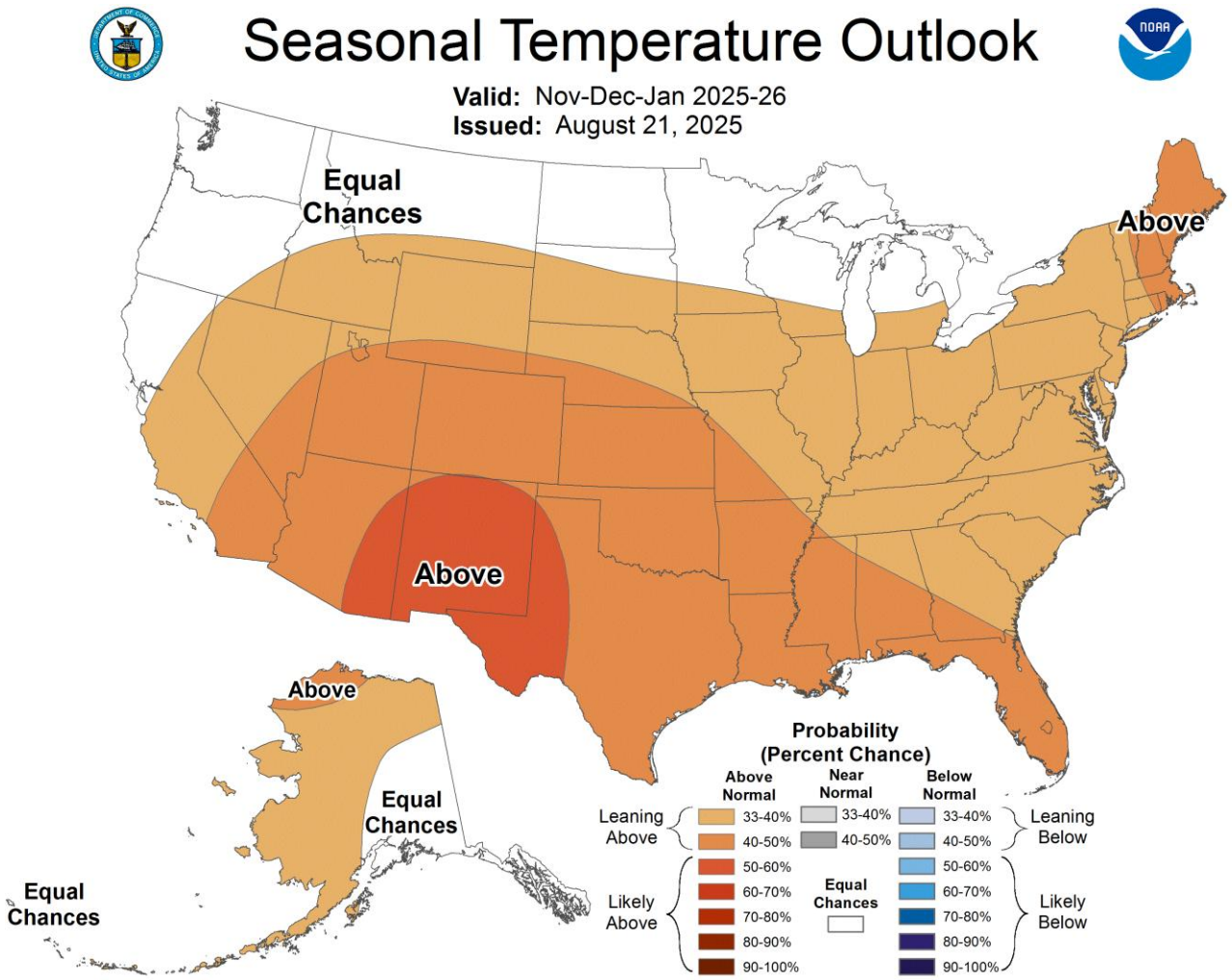
2025 NATURAL GAS READINESS REGIONAL MINI-FORUM MIDWEST

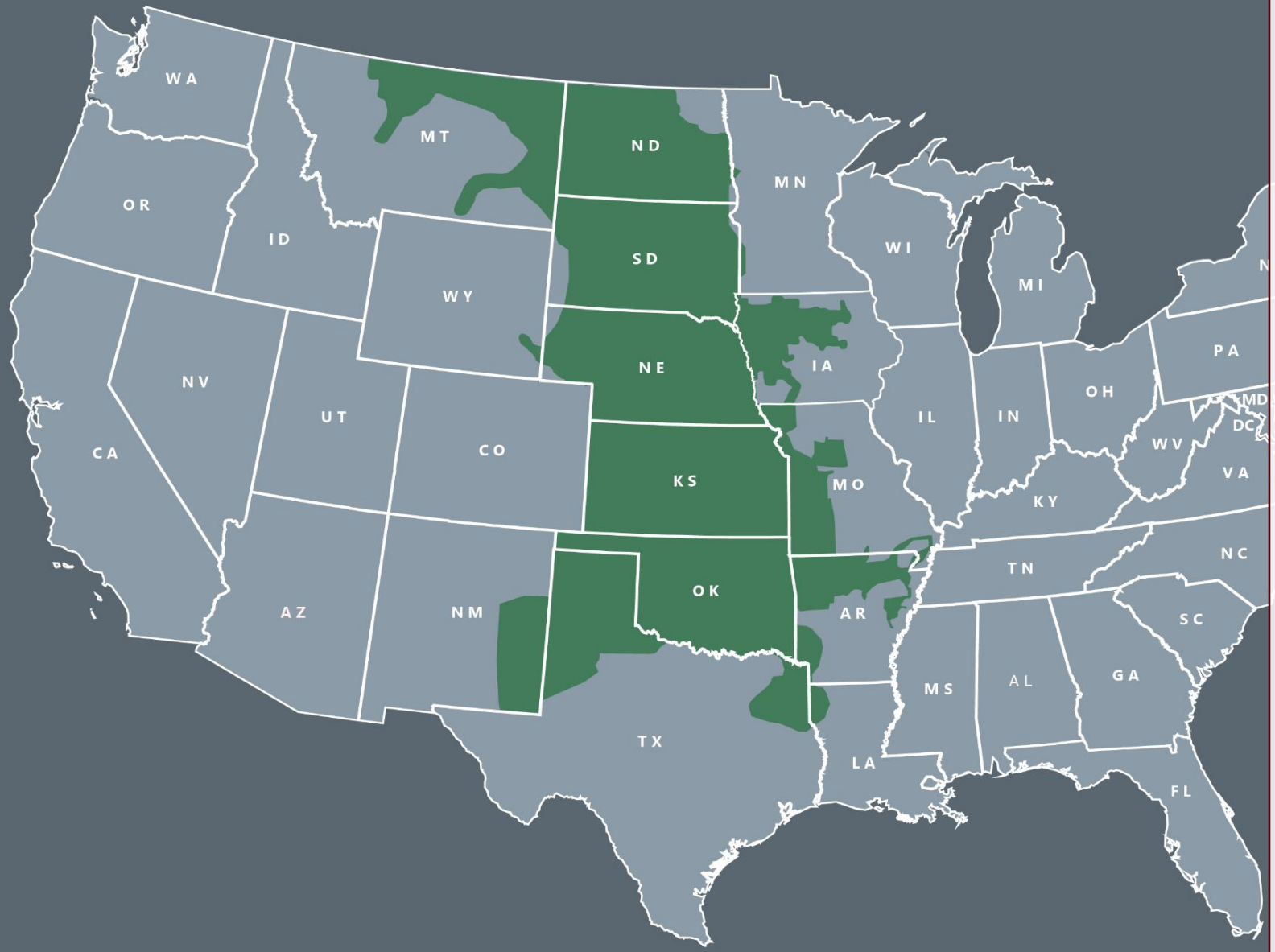
SEP 16, 2025

SCOTT ACLIN

WINTER WEATHER FORECAST

WINTER WEATHER FORECAST

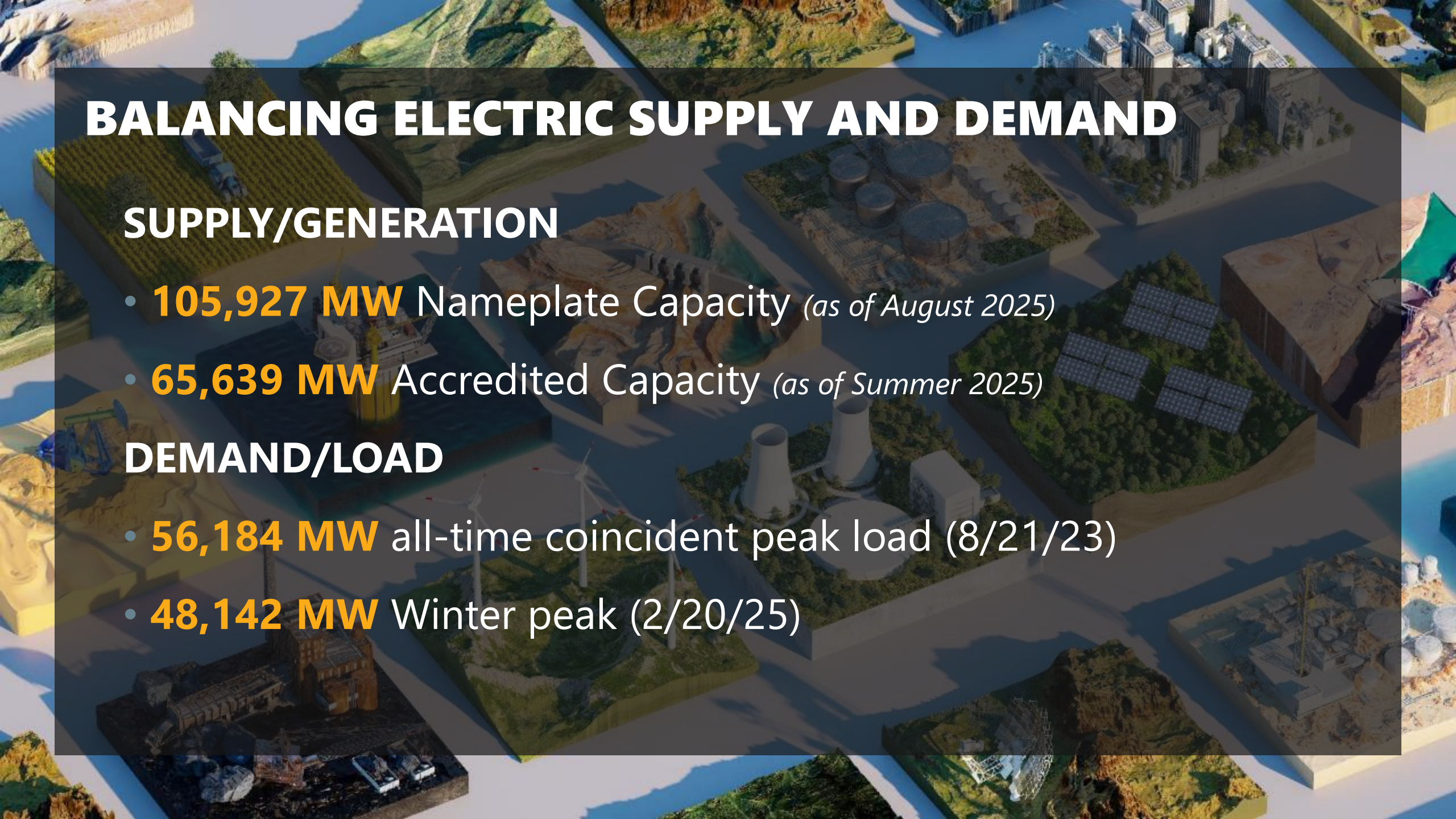




RTO OPERATING REGION

- **557,546** square mile service territory
- **~18 million** population served
- **1,007*** generating plants
- **5,292*** substations

* In SPP's balancing authority area



BALANCING ELECTRIC SUPPLY AND DEMAND

SUPPLY/GENERATION

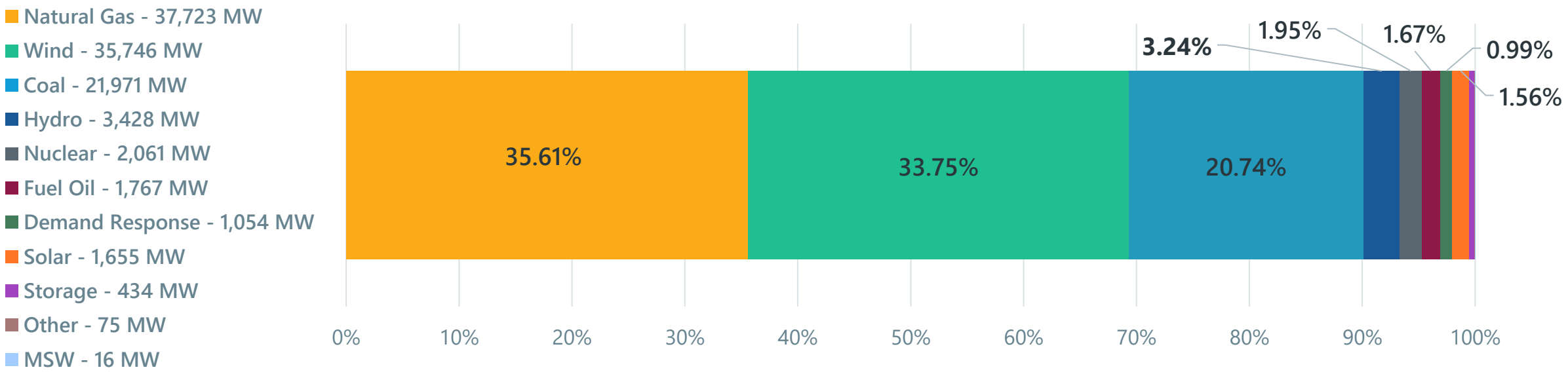
- **105,927 MW** Nameplate Capacity *(as of August 2025)*
- **65,639 MW** Accredited Capacity *(as of Summer 2025)*

DEMAND/LOAD

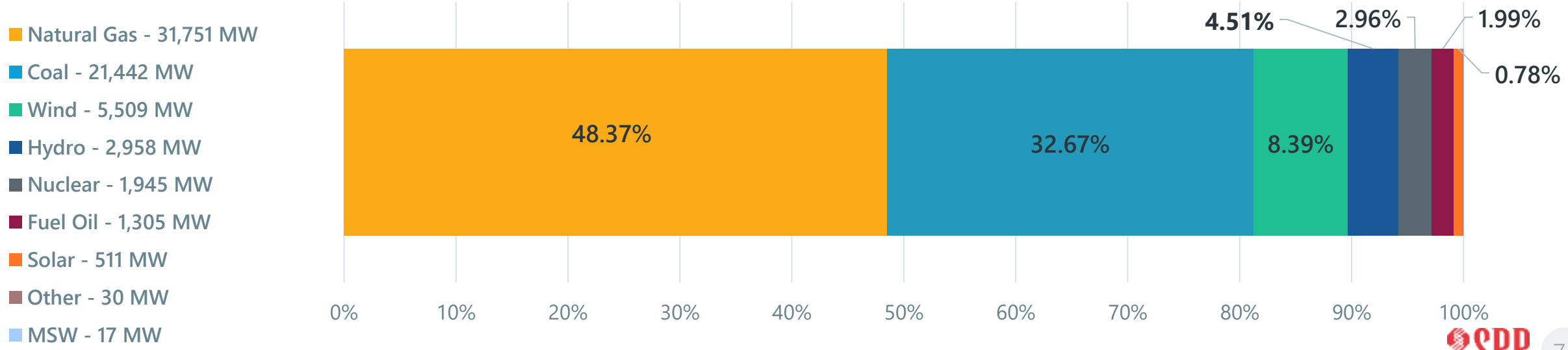
- **56,184 MW** all-time coincident peak load (8/21/23)
- **48,142 MW** Winter peak (2/20/25)

FUEL MIX

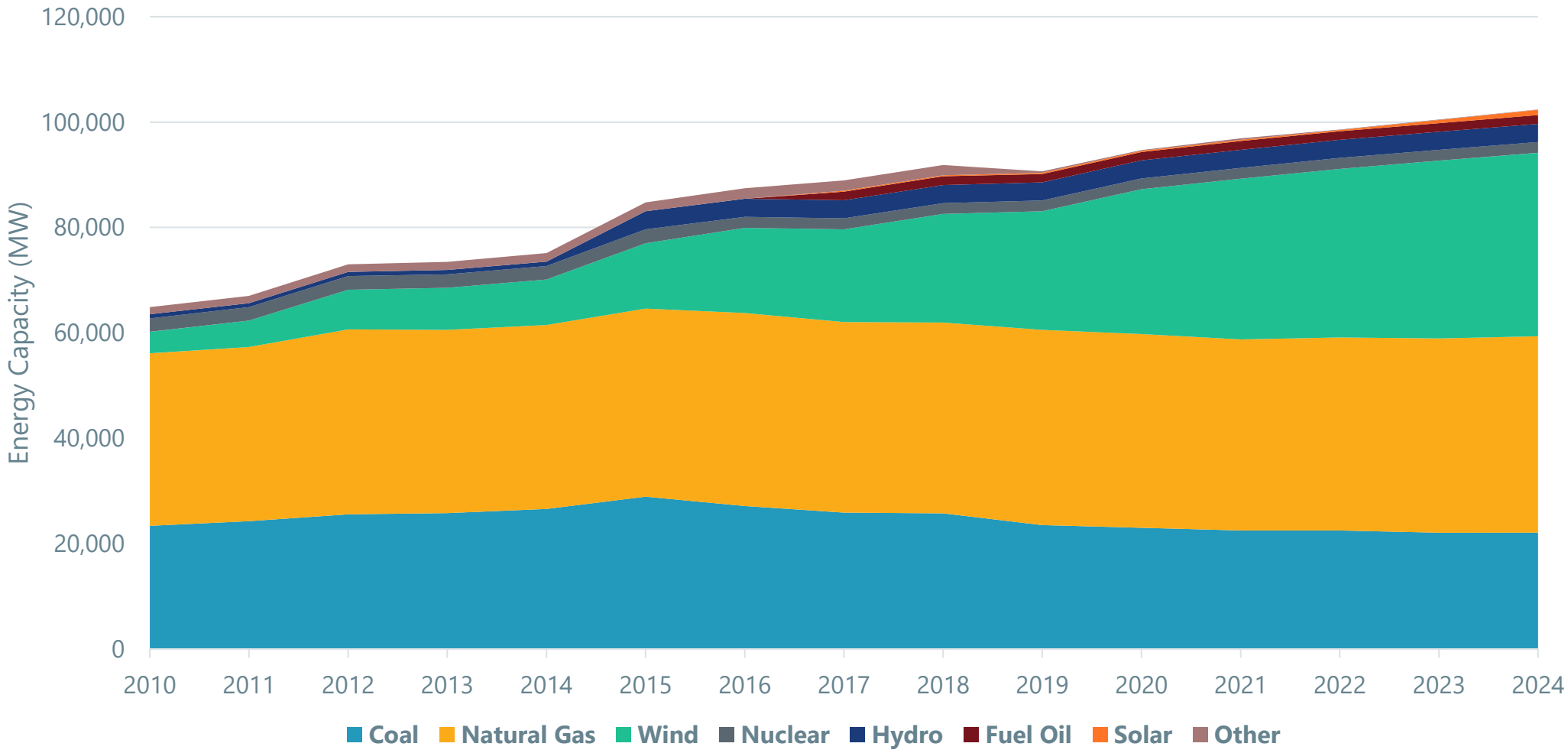
NAMEPLATE GENERATING CAPACITY – 105,927 MW *(As of August 2025)*



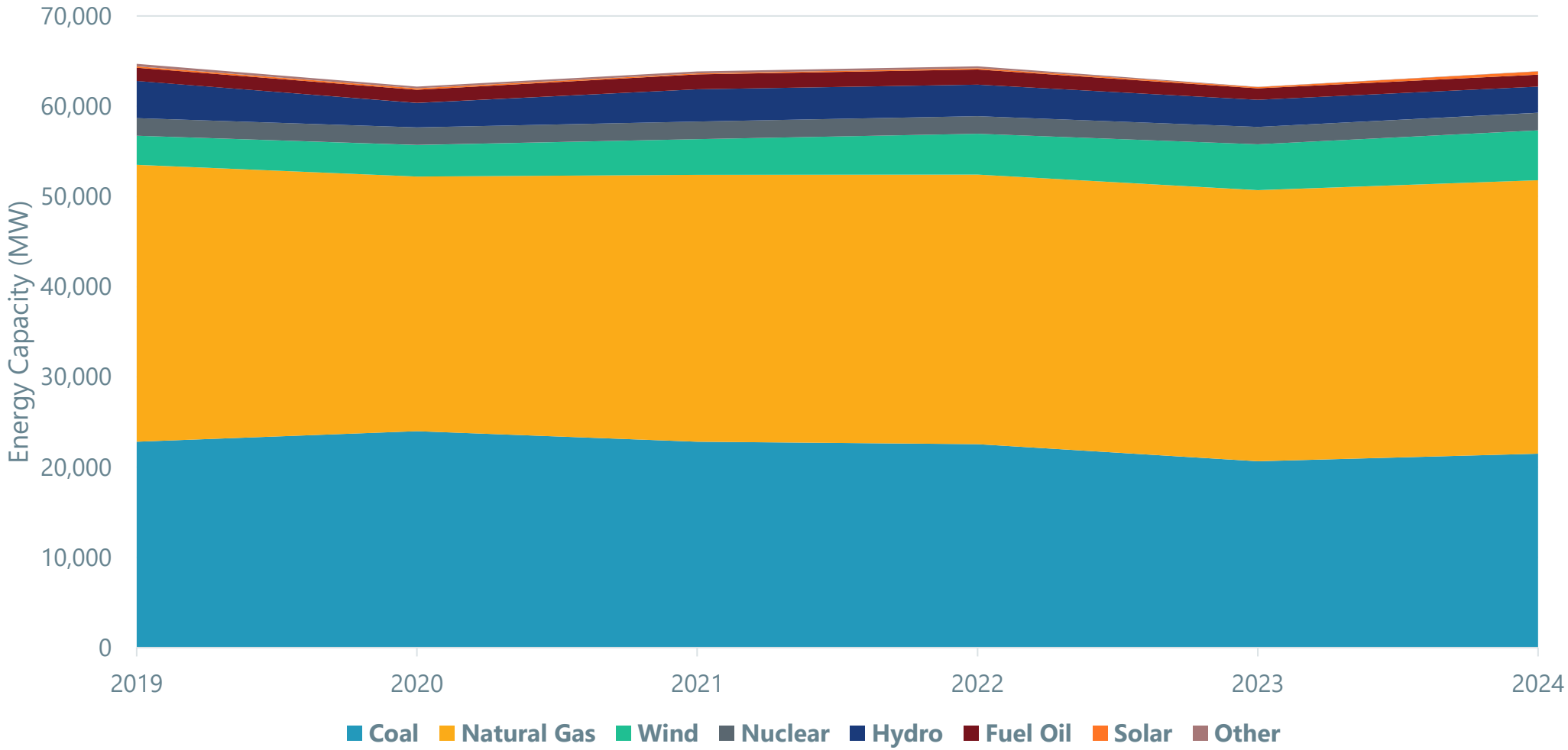
ACCREDITED GENERATING CAPACITY – 65,639 MW *(As of Summer 2025)*



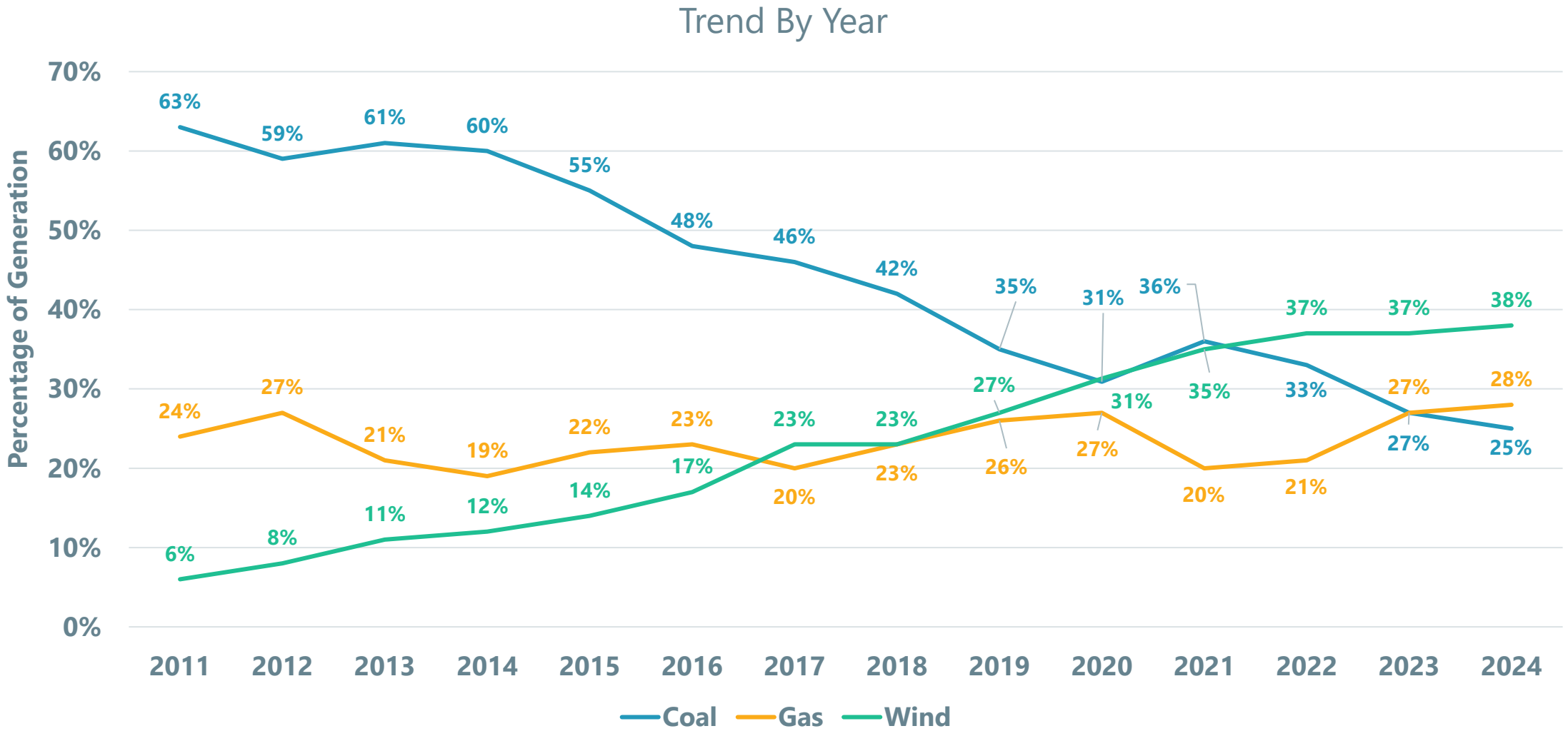
NAMEPLATE GENERATING CAPACITY
BY FUEL MIX OVER TIME



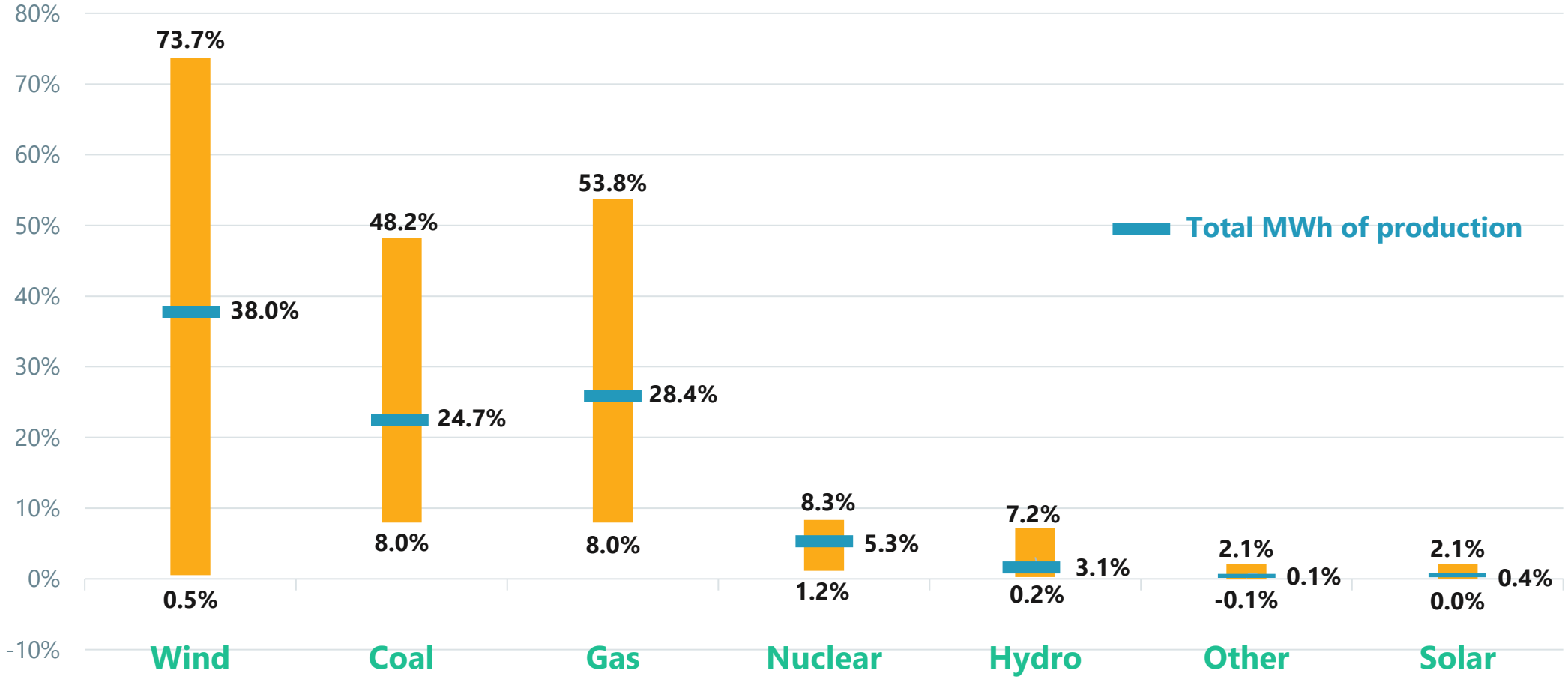
ACCREDITED GENERATING CAPACITY BY FUEL MIX OVER TIME



OUR EVOLVING ENERGY MIX

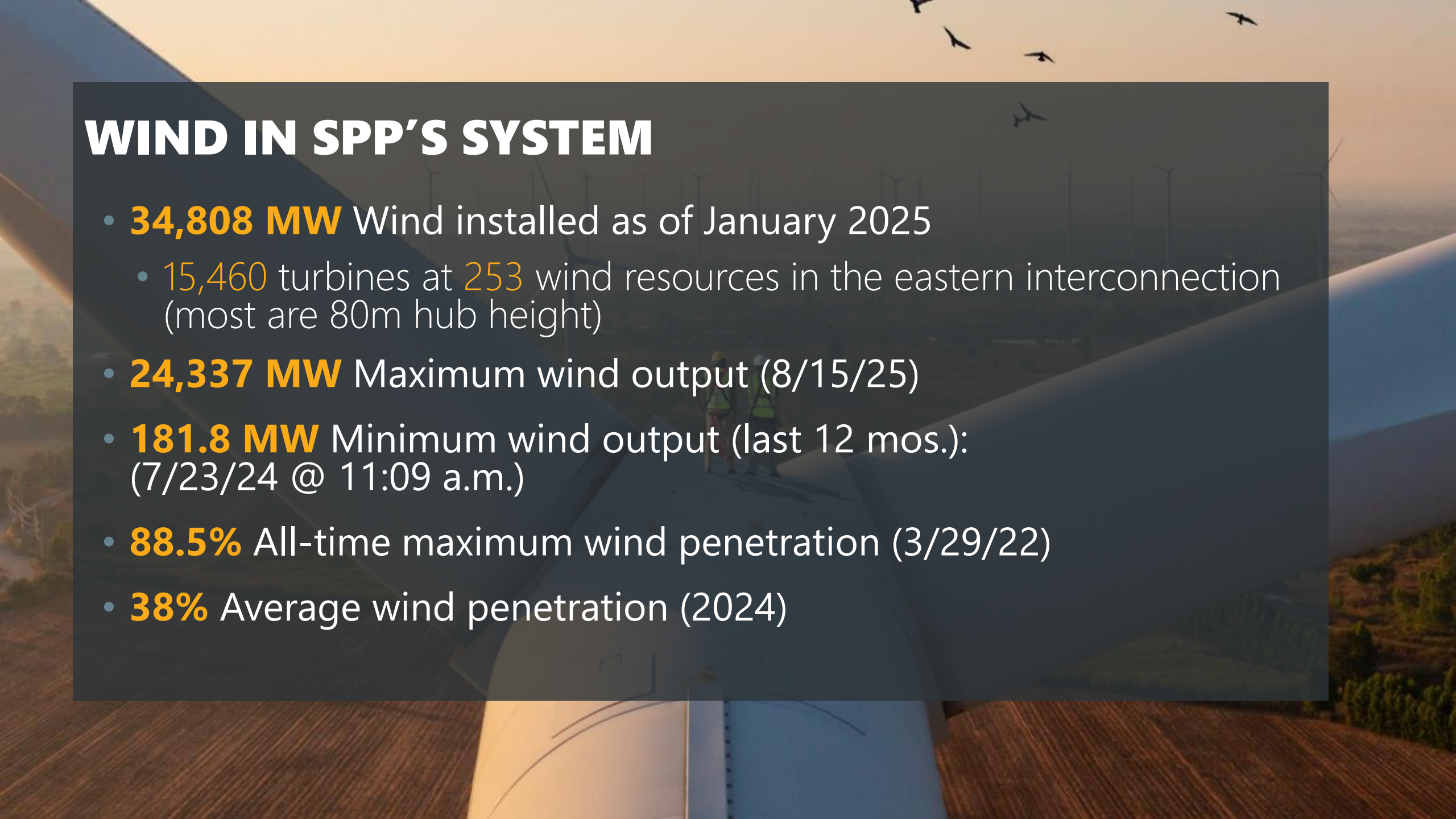


MIN AND MAX PERCENT OF GENERATION BY FUEL TYPE
JANUARY 2024 – DECEMBER 2024



Min and Max % based on the highest and lowest percent from individual real-time balancing market (RTBM) intervals for the period.
Total MW/h of production is based on the sum of RTBM dispatch MW across the period.

RENEWABLE RECORDS

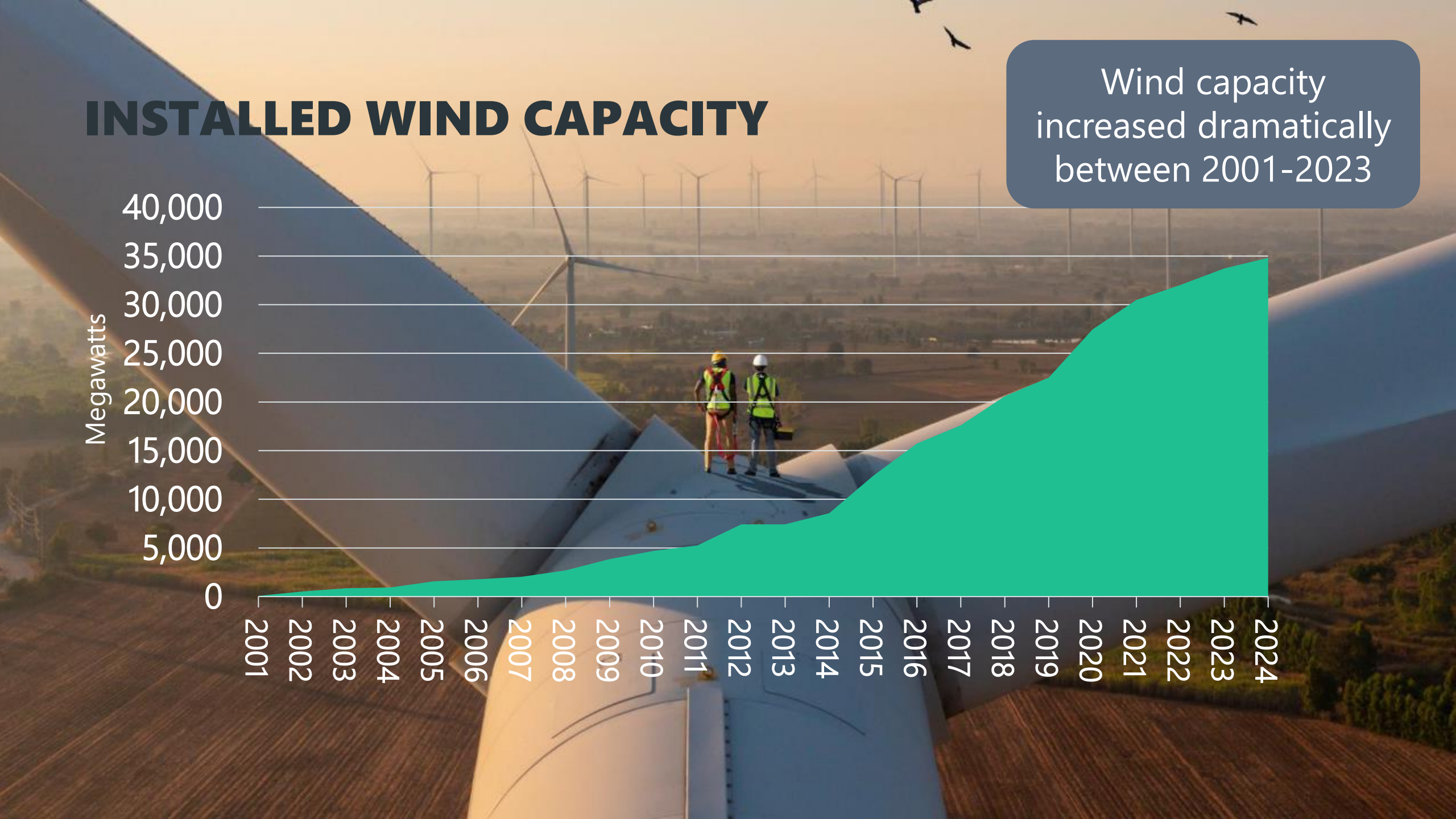


WIND IN SPP'S SYSTEM

- **34,808 MW** Wind installed as of January 2025
  - 15,460 turbines at 253 wind resources in the eastern interconnection (most are 80m hub height)
- **24,337 MW** Maximum wind output (8/15/25)
- **181.8 MW** Minimum wind output (last 12 mos.): (7/23/24 @ 11:09 a.m.)
- **88.5%** All-time maximum wind penetration (3/29/22)
- **38%** Average wind penetration (2024)

INSTALLED WIND CAPACITY

Wind capacity increased dramatically between 2001-2023

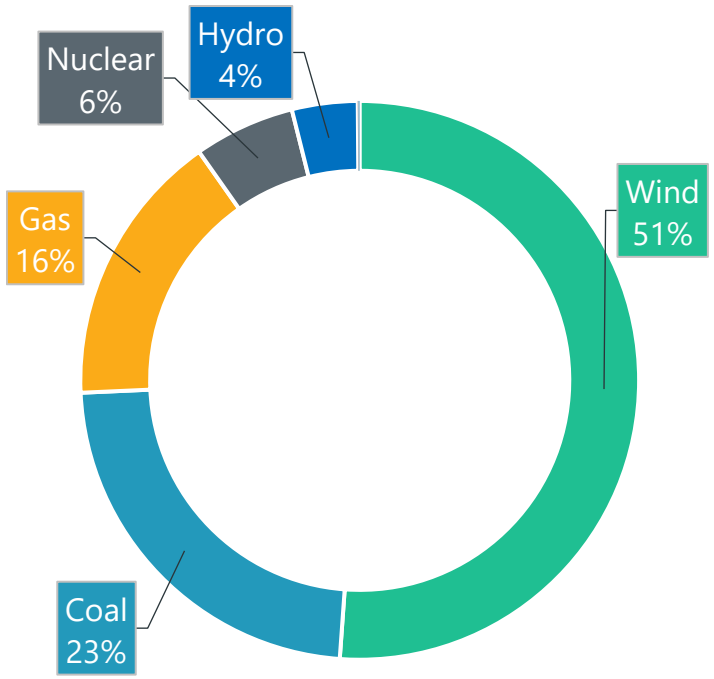


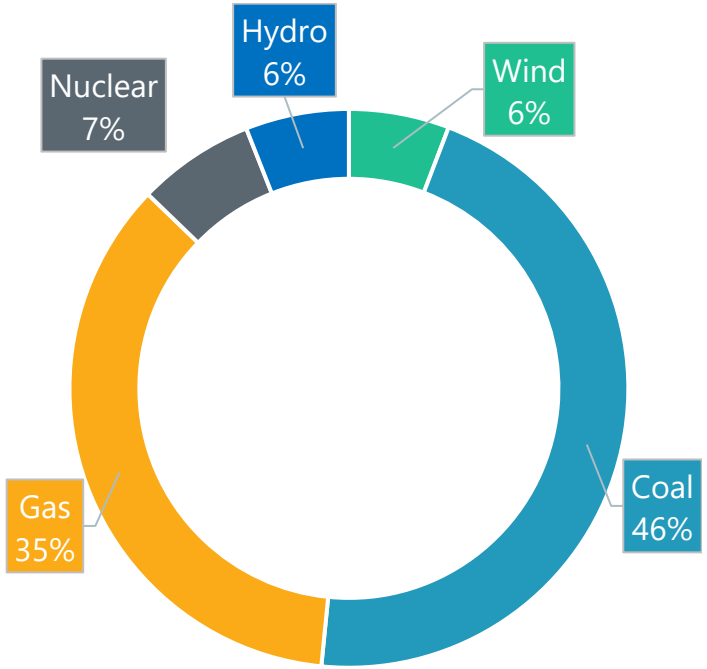
THE DIFFERENCE A DAY MAKES: DEC. 11, 2019

- Dec. 11, 2019: 17.9 GW of wind power served 51% of load. Approx. 21 hours later, wind shrank to 6% of generation mix.
- Sources like coal and gas ramped up to serve load.

This illustrates the value of a diverse fuel mix able to accommodate a wide variety of operational circumstances!

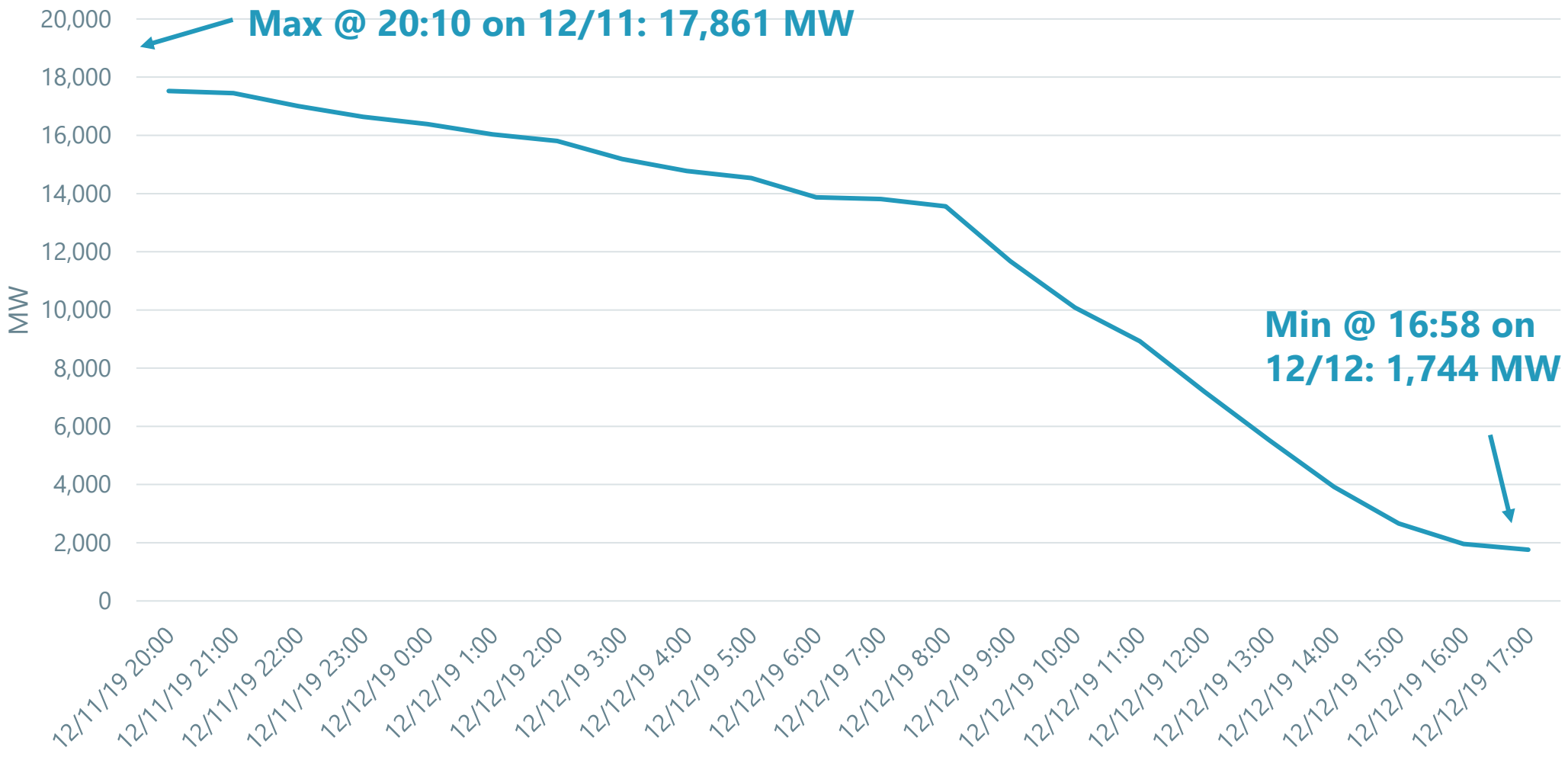
Dec. 11@ 20:10



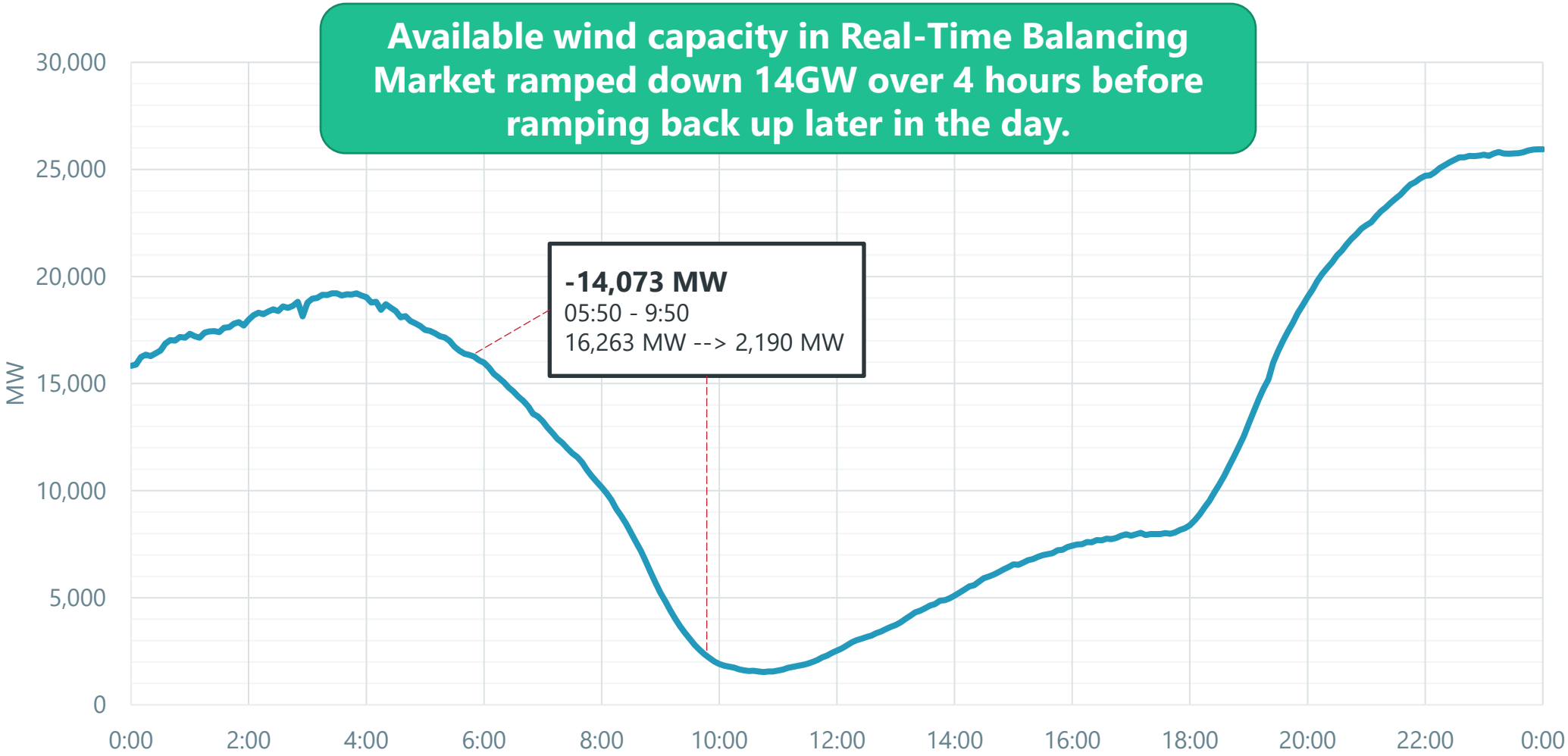


Approx. 21 hours later

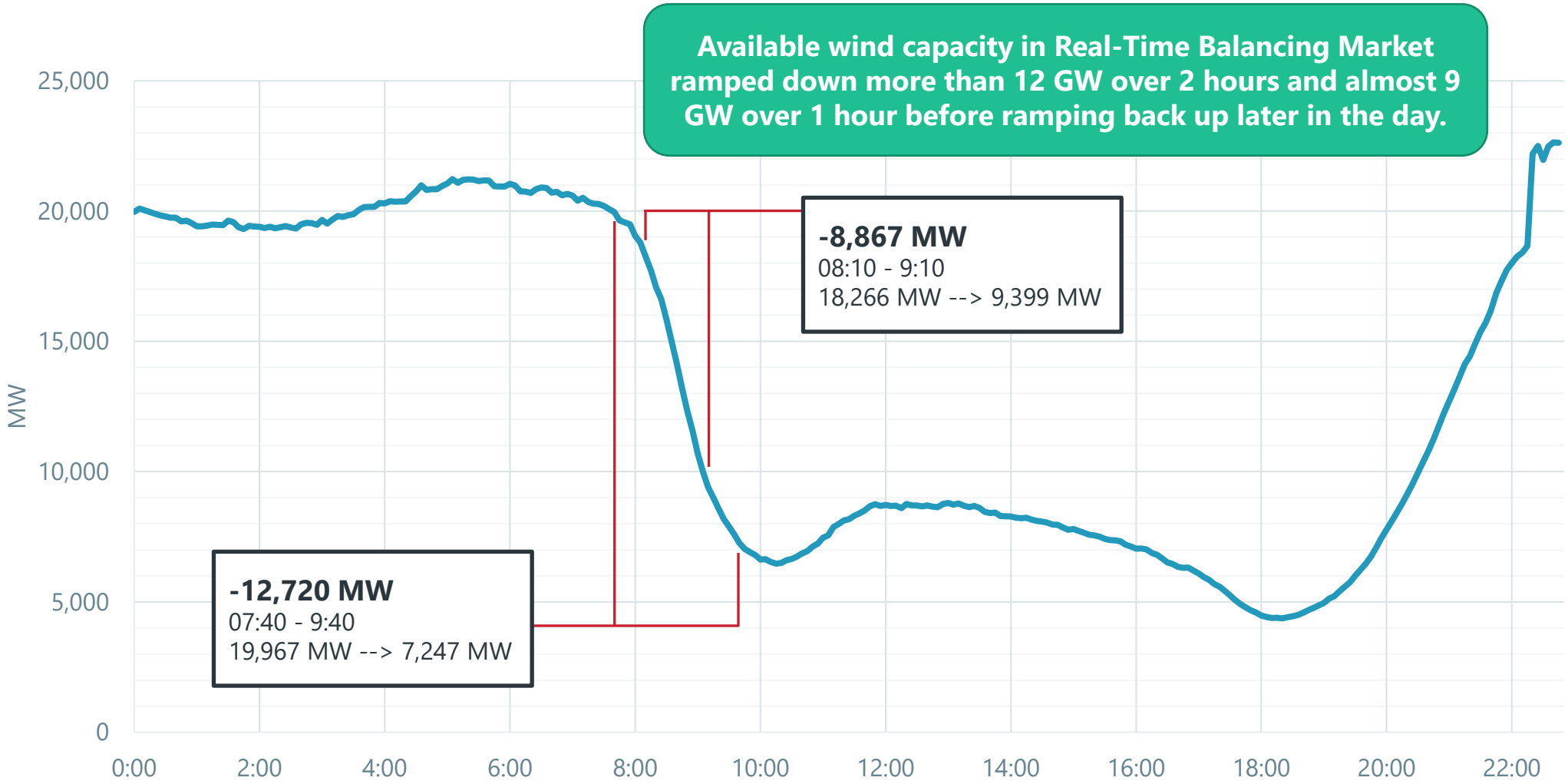
WHY FUEL DIVERSITY MATTERS:
SPP'S RECORD WIND DROP (16 GW IN 21 HOURS, 12/11/19)

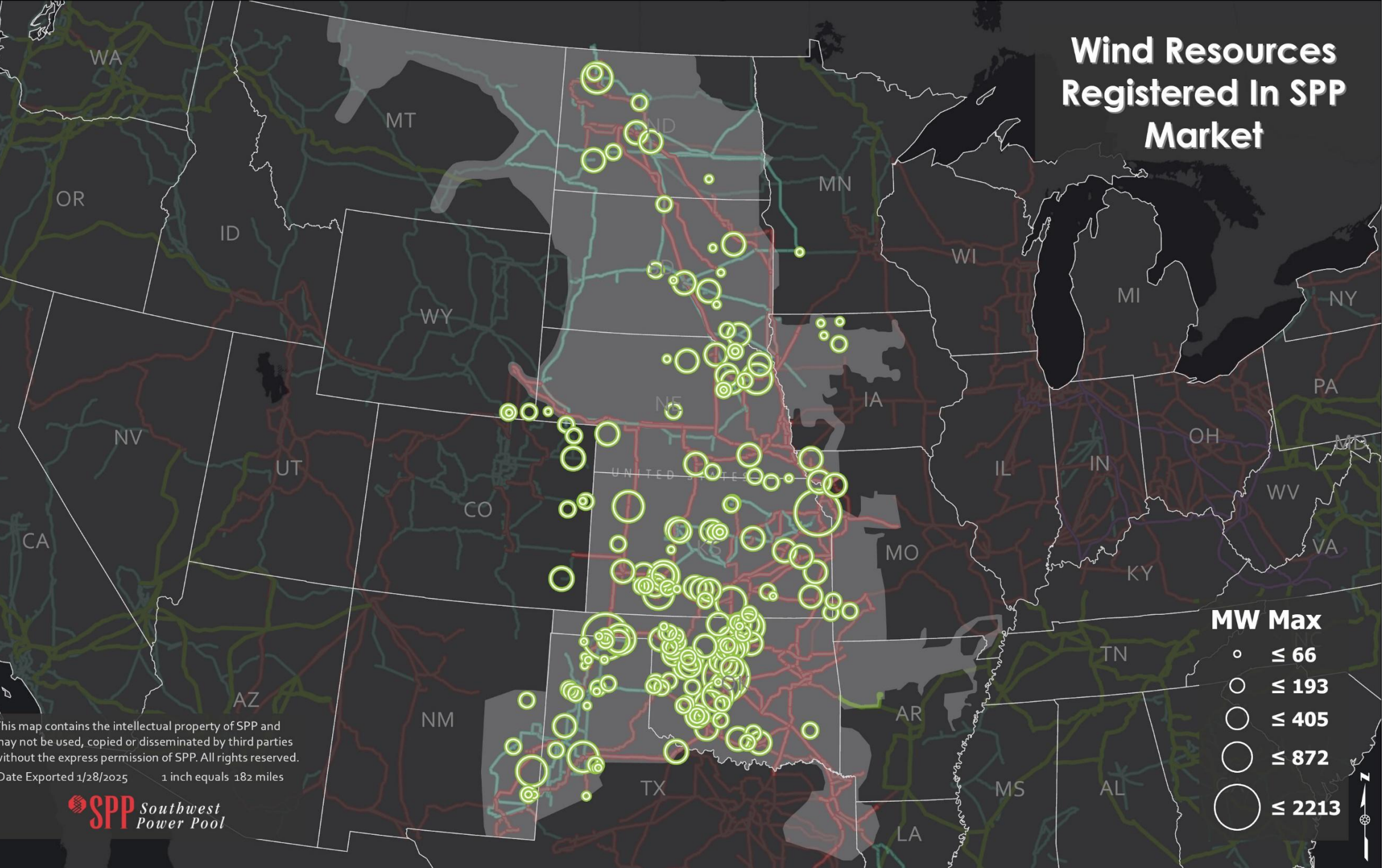


WHY FUEL DIVERSITY MATTERS:
RECORD DOWN WIND RAMP IN 4 HOURS (2/18/24)



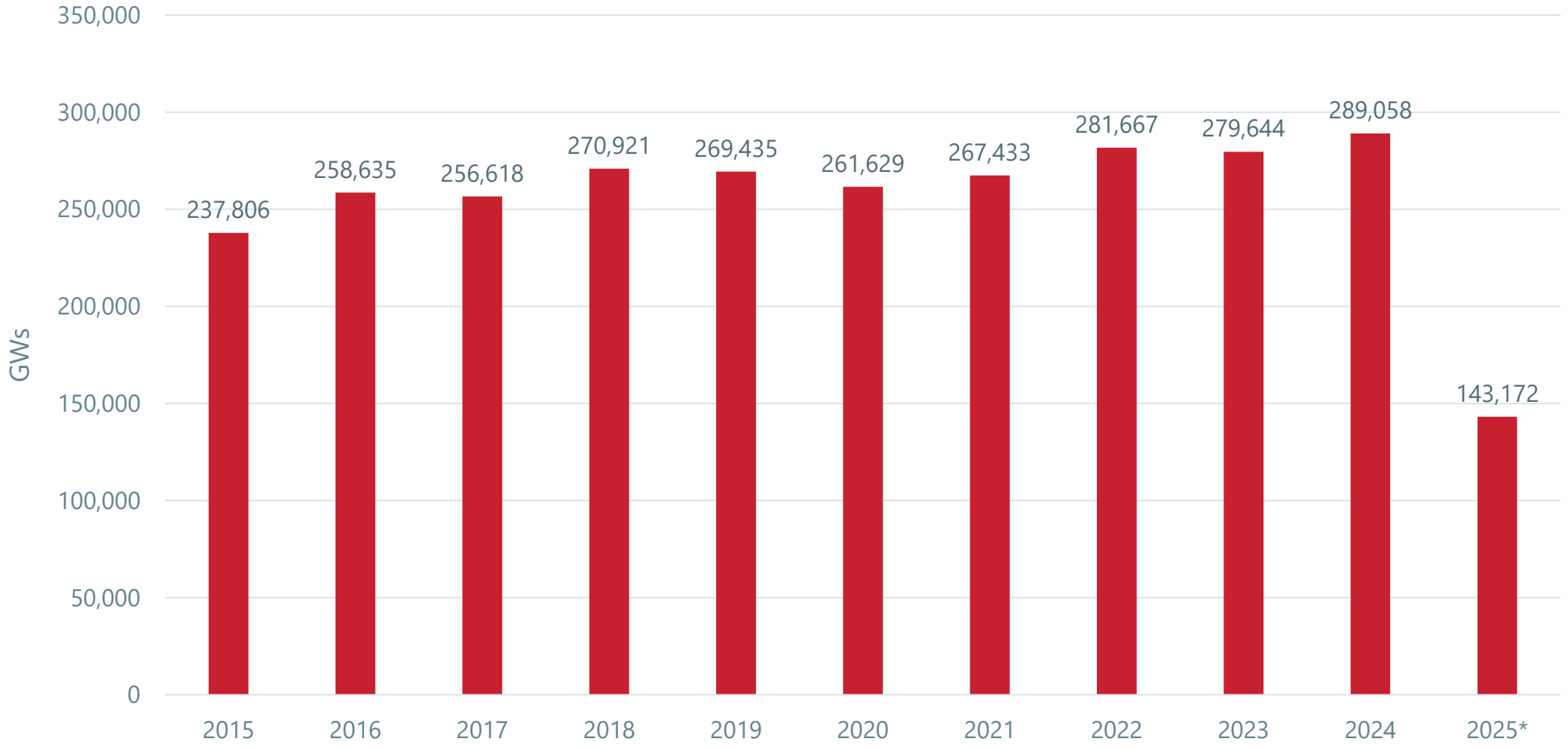
WHY FUEL DIVERSITY MATTERS:
RECORD DOWN WIND RAMP IN 2 HOURS & 1 HOUR (2/27/25)




Wind Resources Registered In SPP Market
WA
MT
ND
MN
OR
ID
SD
WI
MI
NY
WY
NE
IA
PA
NV
UT
IL
IN
OH
WV
CO
KS
MO
VA
KY
CA
TN
AZ
NM
AR
TX
MS
AL
LA
MW Max
≤ 66
≤ 193
≤ 405
≤ 872
≤ 2213
This map contains the intellectual property of SPP and may not be used, copied or disseminated by third parties without the express permission of SPP. All rights reserved.
Date Exported 1/28/2025
1 inch equals 182 miles
SPP Southwest Power Pool

DEMAND FORECASTS

ENERGY CONSUMPTION
(TOTAL LOAD + LOSSES)



*up to 7/1/2025

WHERE WE ARE GOING

56GW

SPP Peak Load as of Today

75GW

Latest 2026 ITP **BR Forecast** (Y10)

110 GW

2026 ITP Forecast *including* Spot Loads (Y10)

30% of Spot Loads submitted in 2025 ITP are now included in 2026 ITP BR Models as **firm load**

SEASONAL ASSESSMENT

SEASONAL ASSESSMENT

- Load forecast uses the last 5 years of data to predict a 90/10 load forecast
- Planned outages and historic forced outages are applied to represent a peak outage timeframe within the season.
- Perform N-1 & Transfer Analysis
  - Internal North – South and South – North
  - External import and exports with neighbors
- Evaluate Specific conditions with high potential to stress the system
  - Low water
  - Low coal (due to transport issues)
- Results are shared with TOPs in our footprint

GAS – ELECTRIC COORDINATION

GAS – ELECTRIC COORDINATION

- Monthly calls
- Attend pipeline Users' Conference
- Pipeline visit to SPP (a day in the life)
- SPP Current Grid Conditions (spp.org)

MISO Winter Preparation/Outlook

American Gas Association Mini-Forum

September 16, 2025

Executive Summary

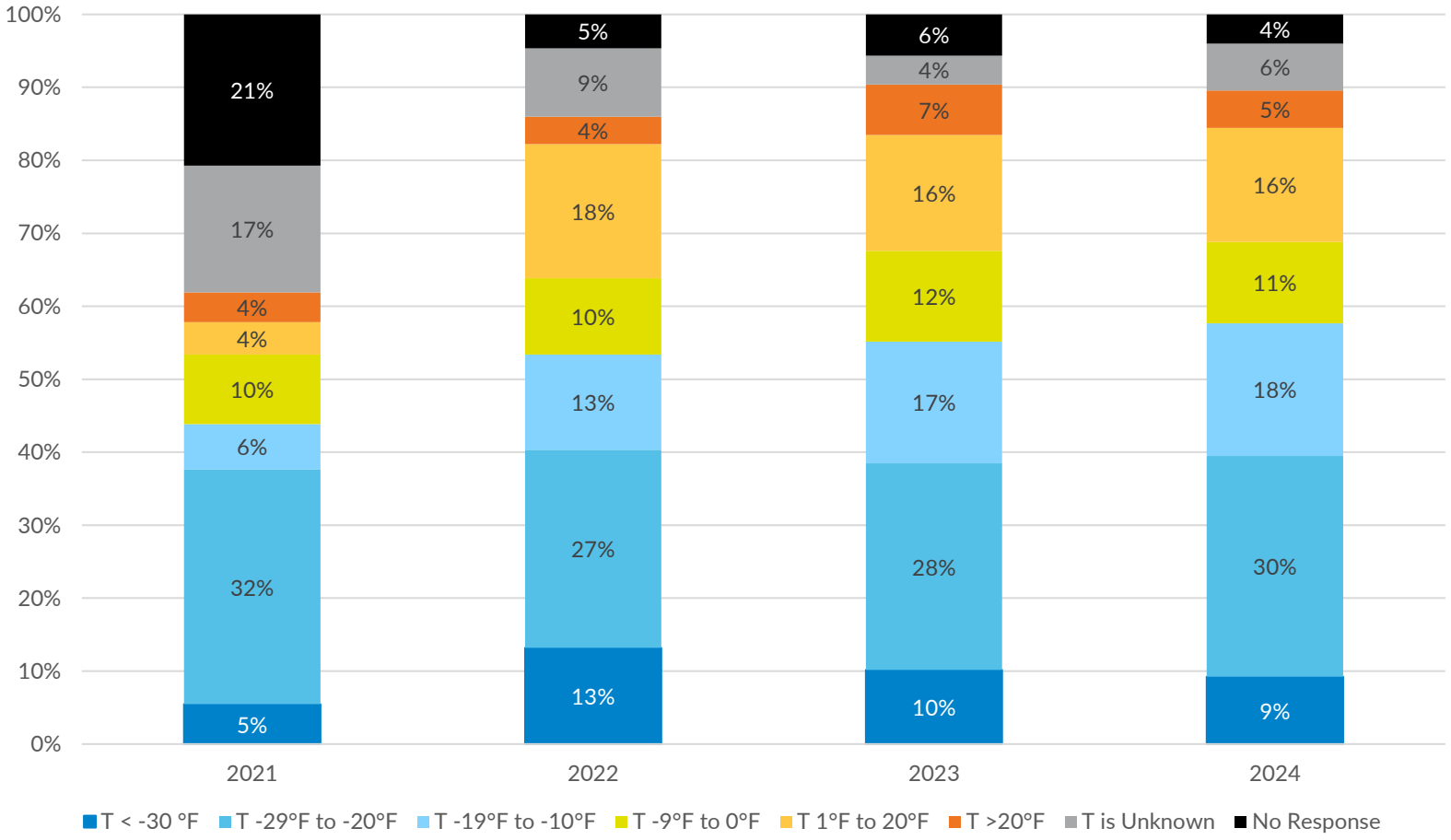
- Winter Load/Generation Outlook
- Gas Industry Collaboration
- Monitoring and assessing risk prior to and during cold weather events

2024 Generator Winterization Preparations

- 91% have a plan to prepare for winter
- 90% have reviewed NERC's Guidelines for Unit Winter Weather Readiness
- 90% have a severe cold weather checklist
- Improvement observed over time in minimum operating temperature capability

Note values are as a % of MW

Prior Survey Minimum Operating Temperature shows general improvement in overall cold weather capability



2024 Generator Winterization Preparations

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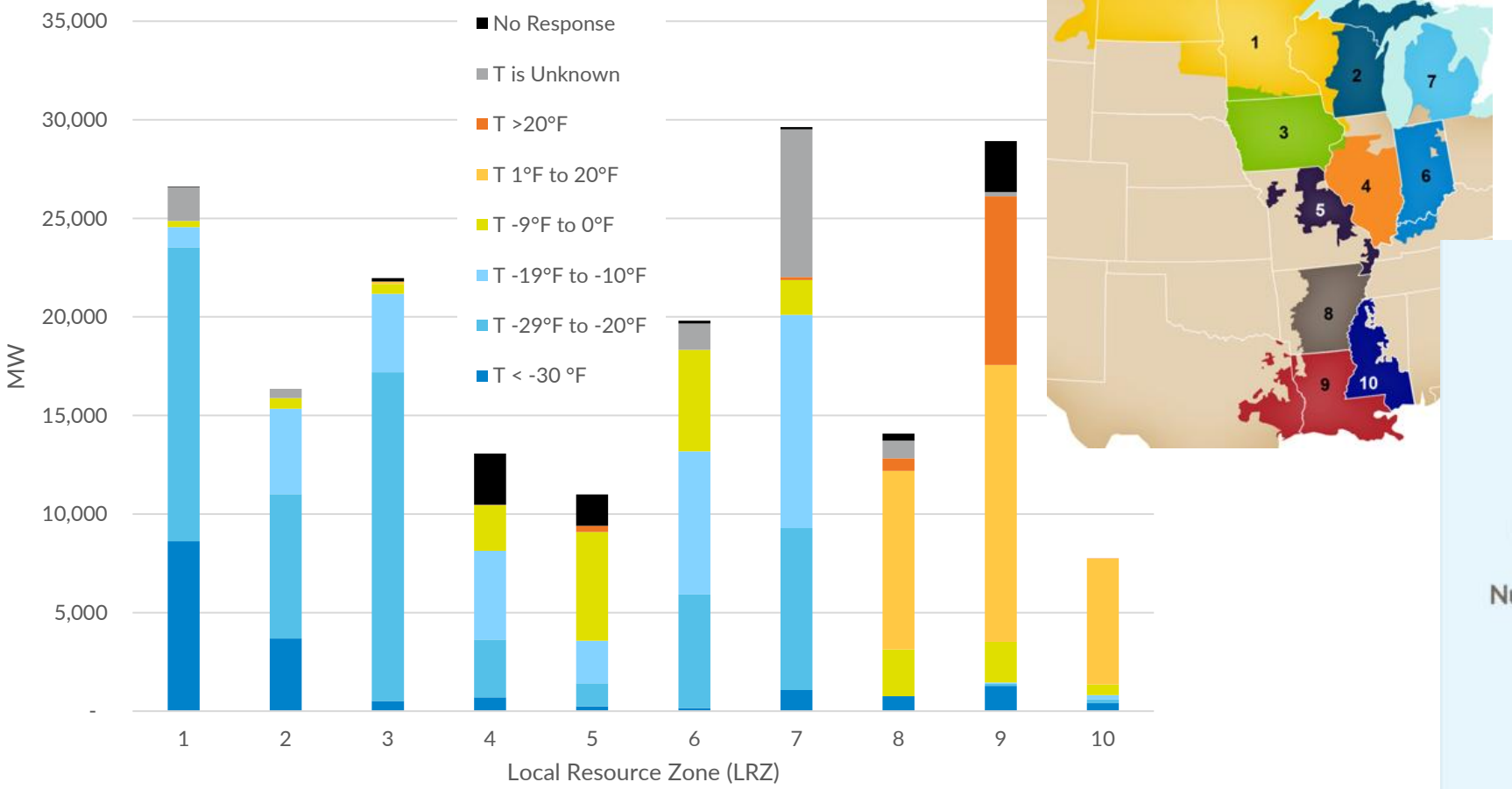
Minimum Operating Temperature by LRZ



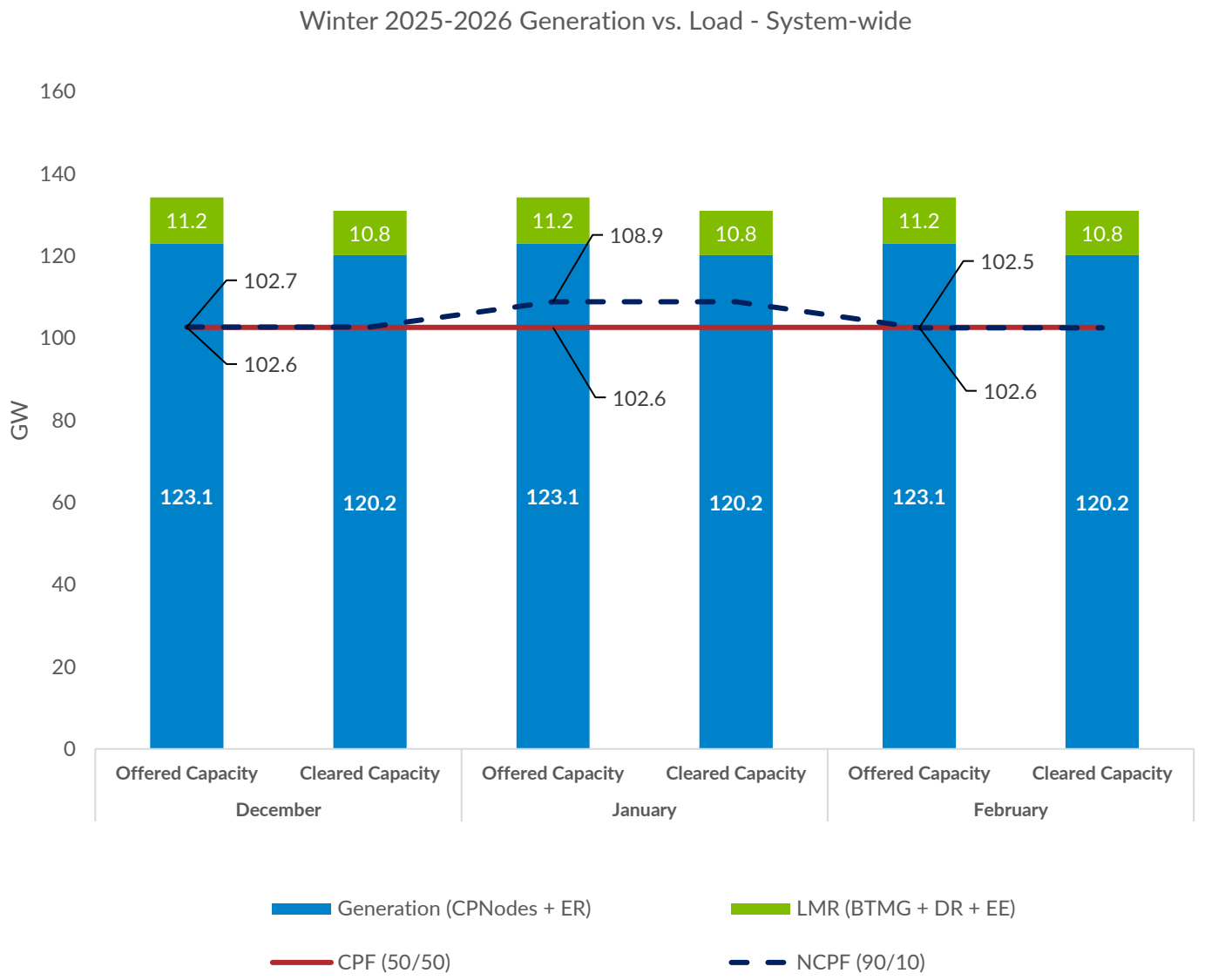
MISO systemwide accredited capacity compared to demand submitted by LSEs

Projected Winter Peak – 102.6 GW

Coincident Peak Forecast is submitted by MISO LSEs relative to the MISO seasonal peak and calculated on a seasonal basis

High Demand Projected Peak – 108.9 GW

Non-Coincident Peak Forecast is the peak load submitted by each LSE per month



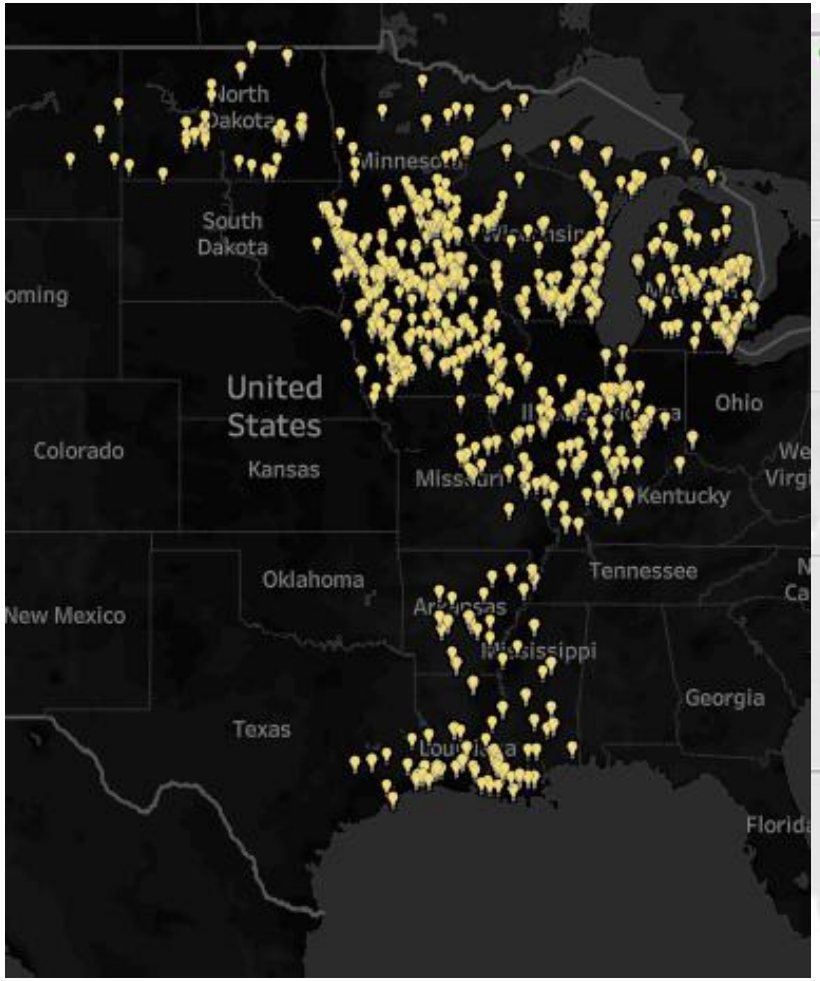
LMR: Load Modifying Resource CPNodes: Commercial Pricing Nodes ER: External Resource BTMG: Behind the Meter Generation DR: Demand Resource EE: Energy Efficiency CPF: Coincident Peak Forecast NCPF: Non-Coincident Peak Forecast

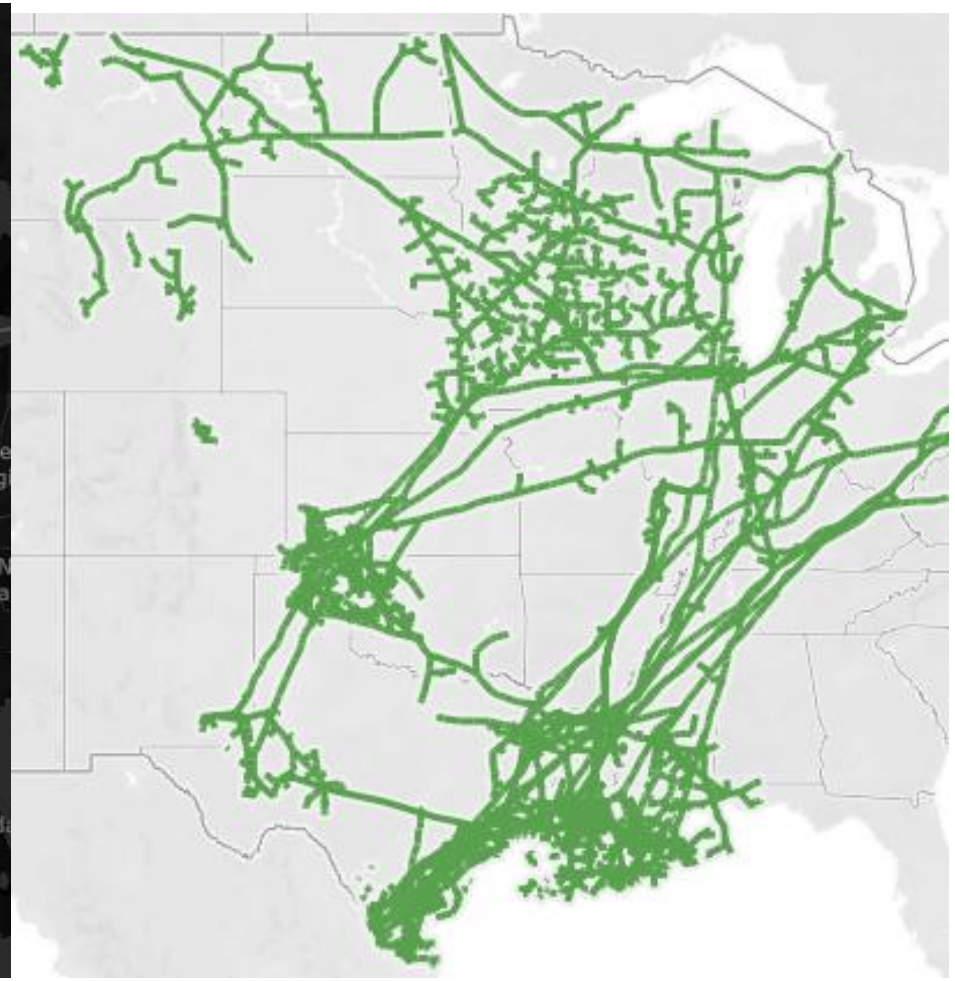
Gas-Electric Coordination is an on-going effort

- Annual INGA/NGSA/IRC-EGTF meeting in Houston between ISOs/RTOs, natural gas pipelines and producers
- Mutual education to understand each industries differences, similarities and limitations
- Communication/outreach prior to and during cold weather events with pipelines

Gas Pipelines serving MISO Units

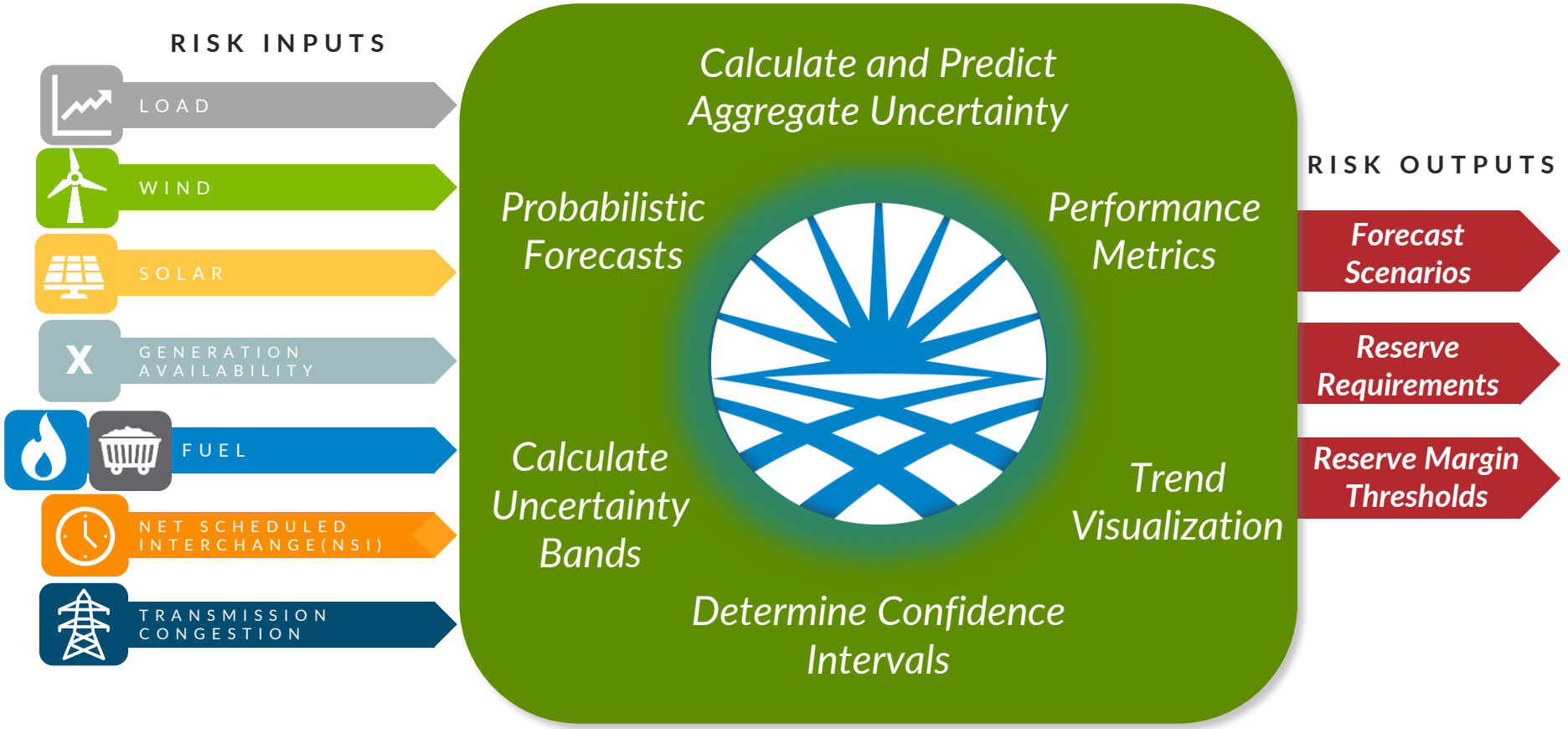
- 27 Inter-State gas pipelines
- 12 Intra-State gas pipelines
- 25 Local Distribution Companies





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

MISO UNCERTAINTY PLATFORM



Key Components:

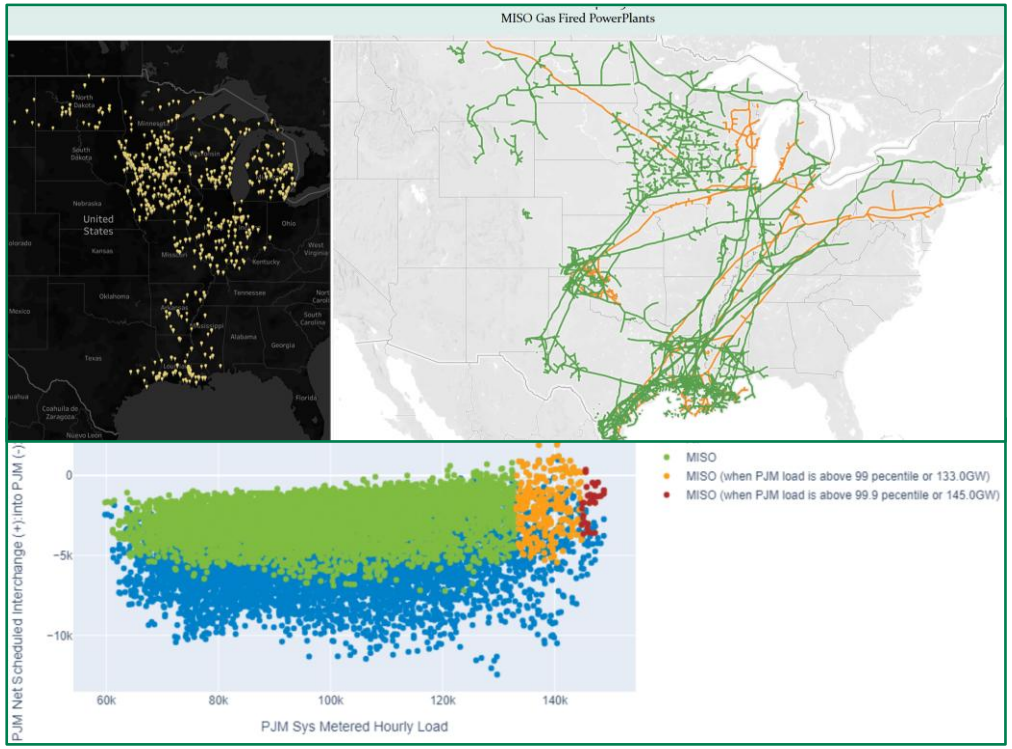
- Availability and confidence of data
- Situation awareness for extreme events
- Reliability and market efficiency
- Scalable cloud-centric platform

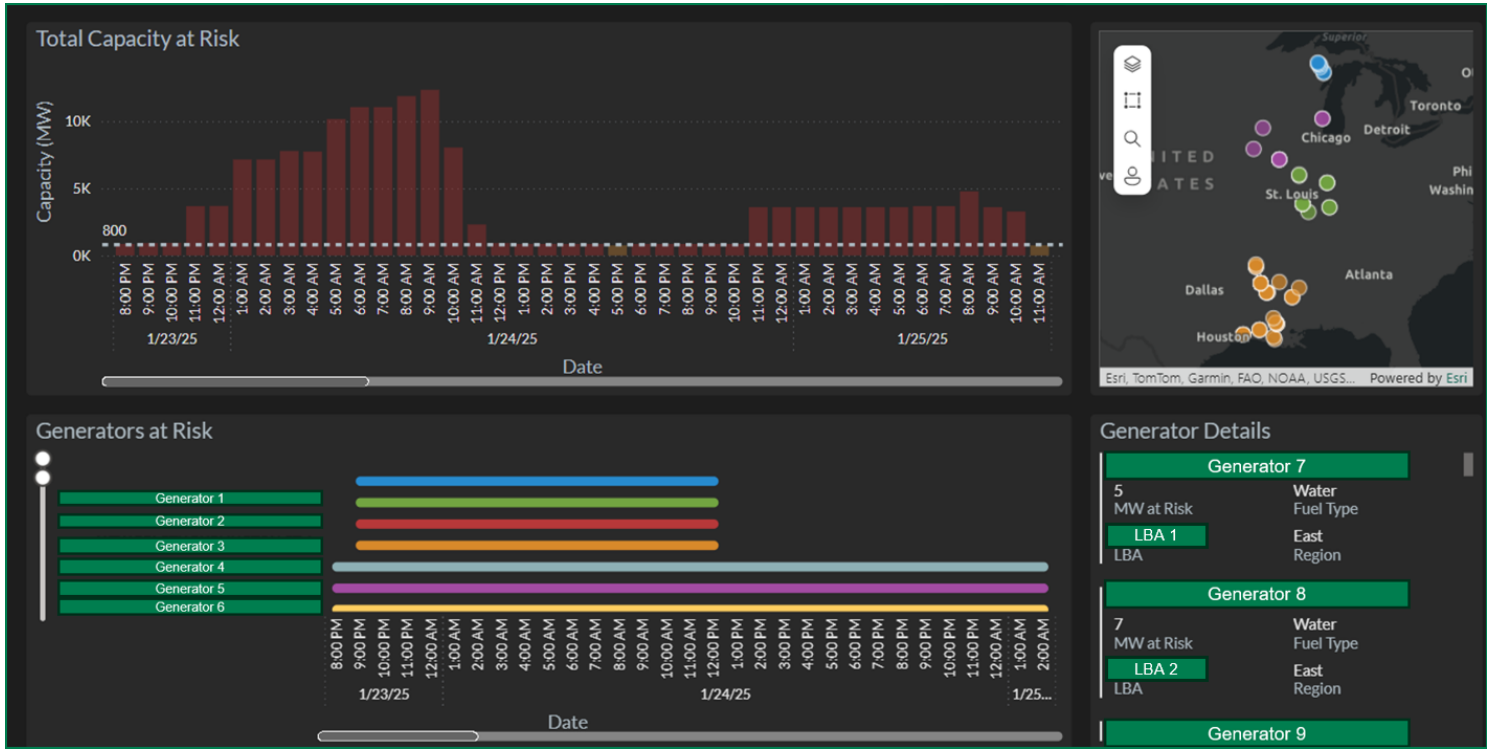
Risk analytics & visualization –situational awareness for extreme events

Natural gas system risk

Net-schedule interchange historical risk

Generation at risk of failing to start





MISO Winter Readiness Workshop

- October 29, 2025, 2-4pm EPT
- Open to the public
- Registration not required, https://www.misoenergy.org/events/2025/winter-readiness-workshop---october-29-2025/

Questions?

Mike Mattox, Senior Advisor – Operations

mmattox@misoenergy.org

STATES COMMUNICATION COORDINATION

TREVOR RUCKER
ASSOCIATE ENGINEER
MISSOURI PUBLIC SERVICE COMMISSION

State Agency Communication and Coordination

Trevor Rucker – Associate Engineer
Engineering Analysis Department

Missouri State Emergency Management Agency (SEMA)

- SEMA coordinates with various local, state, and federal agencies to plan for extreme events, including periodic exercises
- Emergency Support Function (ESF) #12 – Energy
  - Missouri Public Service Commission (PSC) is the lead state agency

State Emergency Operations Center (SEOC)

- PSC personnel are ESF #12 representatives when SEOC is activated
  - Personnel serve as a conduit for information between utilities, SEMA, and other agencies
- SEOC has four activation levels
  - Level 4: Enhanced Monitoring
  - Level 3: Partial Activation
  - Level 2: Full Activation
  - Level 1: Full State/Federal Response

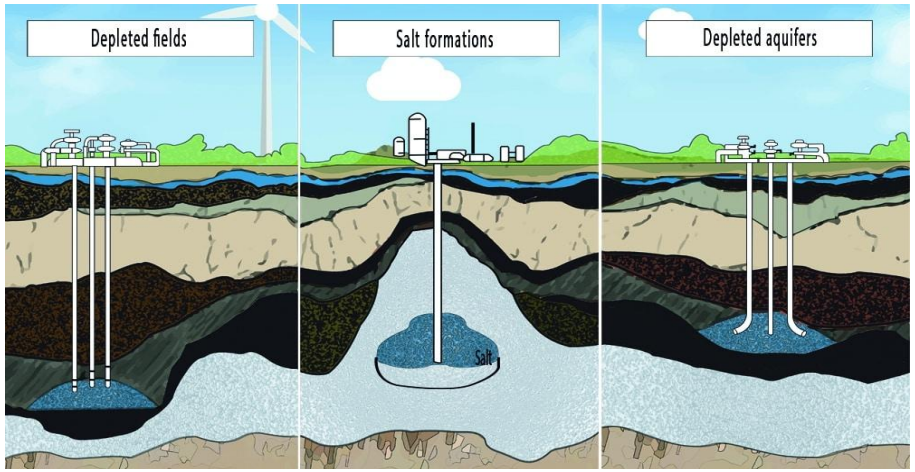
Certificates of Convenience and Necessity (CCNs)

- Natural gas supply adequacy and impacts
  - Service territory expansions
  - Electric generation facilities
- System improvements
  - Pipelines to provide multiple feeds
  - Additional pipelines to provide extra capacity
  - Larger pipelines to reduce flow limitations
  - Higher pressure pipelines to provide extra capacity
- Energy storage facilities
  - Support electricity generation at times of high demand

Additional Capacity Options

- Temporary liquified natural gas (LNG)
  - PSC Staff inspect temporary LNG facilities before they are put into operation

- Natural gas storage
  - Another option to increase natural gas availability is storage such as underground natural gas storage (UNGS) or compressed natural gas (CNG)



Winter Operations

- Operate pipelines closer to maximum allowable operating pressure (MAOP)
- Utilize additional takepoints
- Heaters or insulation for pipeline components susceptible to extreme low temperatures
- PSC Staff discuss and review with utility personnel during pipeline safety inspections

Emergency Response Procedures

- Tariffs
  - Governing documents that include procedures related to emergency curtailment
  - Identifies priority facilities (e.g. hospitals) to maintain service
  - PSC Staff review tariff sheets filed by utilities
- Commission pipeline safety rules related to emergency response require procedures for:
  - Responding to emergencies
  - Liaison and communication with local emergency and public officials
  - Restoring service after outages

Winter Storm Uri

- In February 2021, an extended period of extreme cold temperatures caused rolling electrical outages and natural gas supply issues which resulted in extreme price spikes
- Docket No. AO-2021-0264
  - The Commission opened a case to investigate Missouri's electric and natural gas utilities' preparation and response to the February 2021 extreme cold weather event

Wildfire Mitigation Working Group

- The prevalence of wildfires nationally and in Missouri in recent years has caused concern regarding the impact of wildfires on electrical and natural gas facilities
- Docket No. OW-2025-0314
  - The Commission opened a working case to gather information from utility stakeholders regarding current wildfire mitigation preparedness
  - The information gathered will be used to assist in developing best practices

Contact Information

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  - Associate Engineer – Engineering Analysis Department
  - Email: trevor.rucker@psc.mo.gov
  - Phone: 573-751-4729
- Claire Eubanks
  - Engineer Manager – Engineering Analysis Department
  - Email: claire.eubanks@psc.mo.gov
  - Phone: 573-526-2953
  - Contact regarding PSC and SEMA coordination

NATURAL GAS/ELECTRIC COORDINATION CASE STUDY

DUFFY MOONEY
DIRECTOR, NATURAL GAS SUPPLY & DELIVERY
CITY UTILITIES OF SPRINGFIELD

Natural Gas For Power Generation During High Demand

Duffy Mooney

Director – Natural Gas Supply & Delivery

City Utilities of Springfield, MO

City Utilities
Connecting Our Community

Natural Gas Pipeline Terminology

Capacity = *"Reserving seats on the train."*

- Total daily amount of natural gas a pipeline can flow; cubic feet per day

Supply = *"Train tickets available on a given day."*

- Total amount of natural gas flowing on a pipeline on a given day.

Demand = *"The number of tickets the reserving customers need."*

- Total amount of natural gas flowing on a pipeline on a given day.

Firm Customers vs. Interruptible Customers

- Firm customers *"reserve the seats"* & buy supply *"tickets"* as needed.
- Interruptible customer can purchase excess supply *"tickets"* as available.
- During high demand periods, excess *"tickets"* become scarce = Interruption

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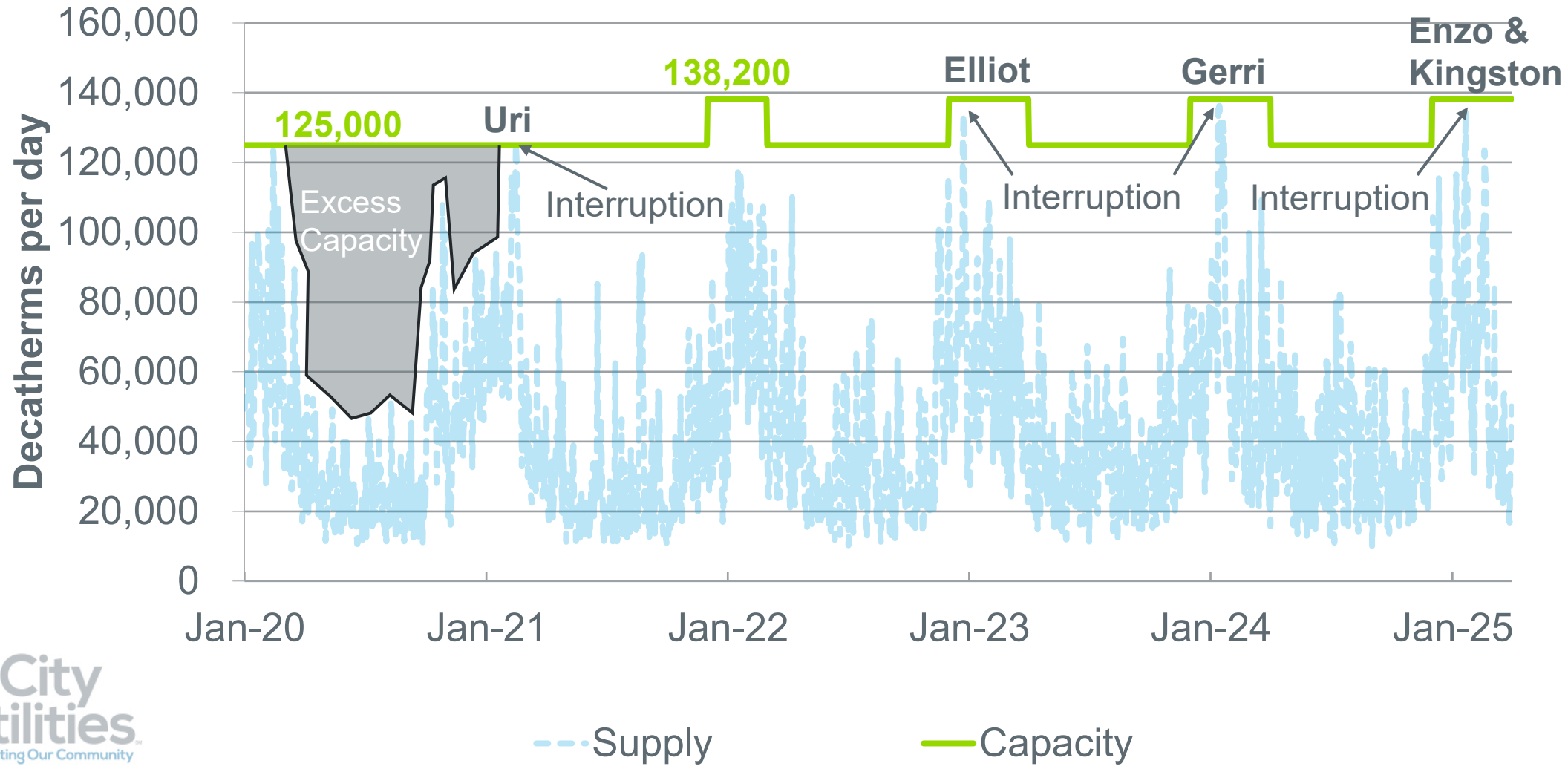
Power Generation & Capacity vs. Supply

- **Firm Capacity**
  - Pro: Always available
  - Con: Typically, long-term contracts for year-round or seasonal capacity = $$$
- **Interruptible Supply**
  - Pro: Purchase as needed, no out-of-pocket on days when generation is not called = $
  - Con: When interrupted, no firm natural gas for generation, even for reliability.

City Utilities Natural Gas Profile



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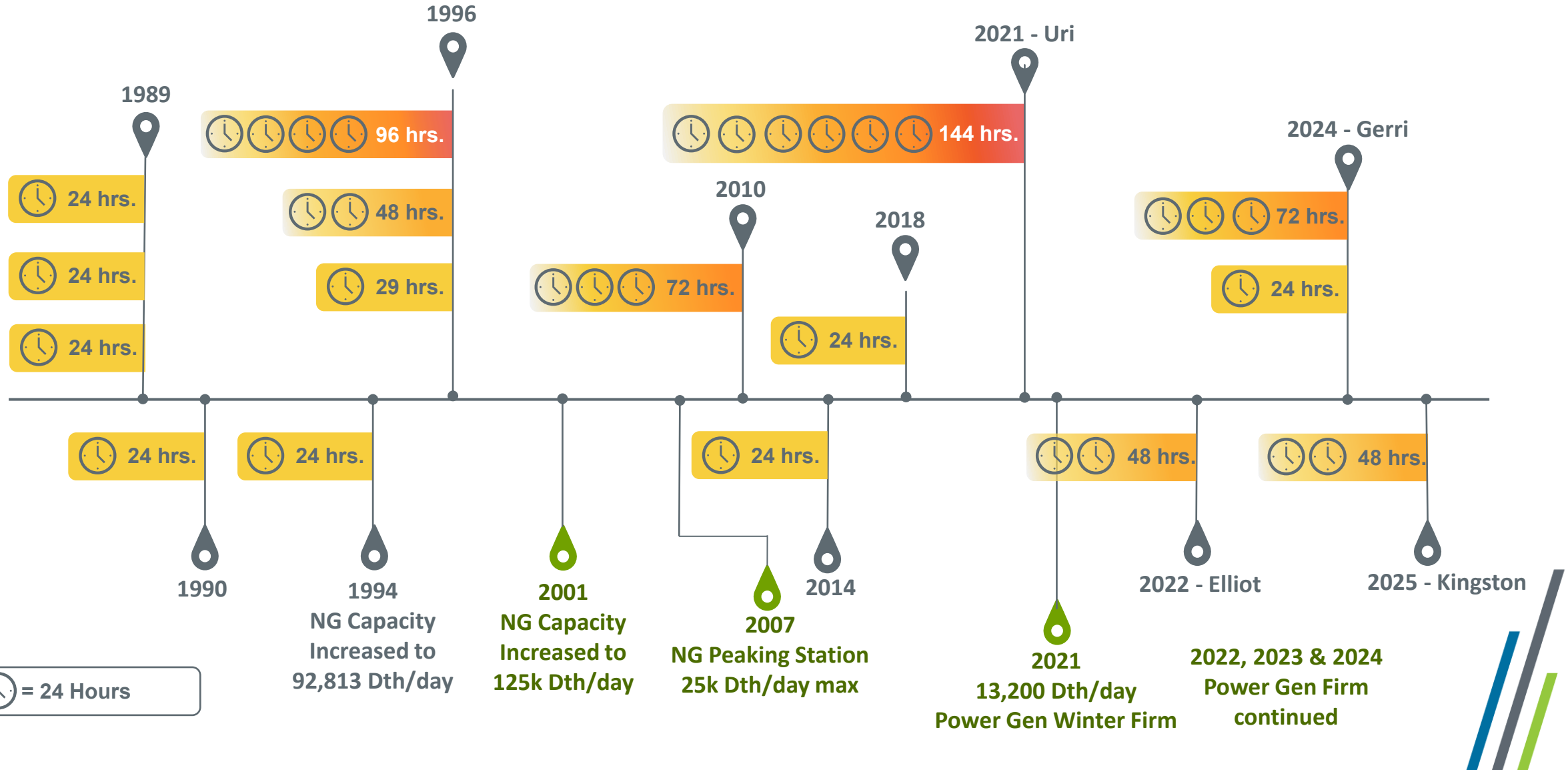
City Utilities Capacity & Curtailment History



Tracking Power Gen Natural Gas

Interruption Threshold = 120,000

		Current Day			
		DAY 0	DAY 1	DAY 2	DAY 3
		Tuesday 18-Feb-2025	Wednesday 19-Feb-2025	Thursday 20-Feb-2025	Friday 21-Feb-2025
	City Utilities	115,959	124,692	118,630	98,766
	City Util Firm	105,851	114,614	108,280	88,831
	City Util CI	10,344	10,411	10,275	9,441
	Difference	-236	-333	75	495
Daily Total Limit:		125,000	125,000	125,000	125,000
Hourly Flow Limit		6,250	6,250	6,250	6,250
Allowable Power Plant Use FIRM:		13,200	13,200	13,200	13,200
Allowable Power Plant Use NON FIRM:		4,041	-	1,370	21,234
Allowable Power Plant Use MAX:		17,241	13,200	14,570	34,434

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- No Power Gen Non-Firm Gas Available = Interruption
- Still have 13,200 Dth Firm Gas

Tracking Power Gen Natural Gas

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City Utilities
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- Power Gen still has 13,200 Dth Firm Gas
- Non-Firm Gas Available = No Interruption***
- ***CAUTION – Very limited fuel availability. Bid Units Carefully!

Hourly NG Demand Tracking Process

Hour Ending	7AM Forecasted CU Sendout	Latest Hourly Forecasted CU Sendout	Hourly Forecast % Diff	7AM Cumulative CU Firm Sendout	Latest Hourly Cum. CU Sendout	7AM Forecast to Latest Cum. Sendout % Diff
10:00						
11:00						
12:00						
1:00						
2:00						
3:00						
4:00						
5:00						

Actual Firm & CI Sendout	Latest Forecast to Actual % Diff.	City Gates	Power Plants	Curtailable Customers	Firm Customers	Propane Plant
25,920						
31,415						
41,575						

IRPS			ITEC			Cumulative PP Sendout

Projected Firm Usage:	113,618	
GasDay Firm Forecast:	105,151	(8,467) Diff.
Projected CI Usage:	9,344	
GasDay CI Forecast:	10,344	1,000 Diff.
Projected CU Sendout:	122,962	/125,000
GasDay CU Forecast:	115,959	(7,003) Diff.
Projected Power Gen Usage:	2,447	/13,200
Projected NG Usage:	125,409	/138,200

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Natural Gas for Power Gen Takeaways

- Firm Gas is **expensive** when Interruptible Gas is available.
- Firm Gas is **priceless** when Interruptible Gas is not available, and electric system reliability is on the line.
- **Communication, Collaboration & Coordination** between natural gas operators and electric operators is *essential* during high-demand periods.
- **Natural gas infrastructure investment is necessary** to meet power generation's growing demand challenges.

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Connecting Our Community

CLOSING REMARKS

KAYLA HAHN
CHAIR
MISSOURI PUBLIC SERVICE COMMISSION