



TEXAS RE

2026 Texas RE Regional Risk Assessment

**Eric Newnam
Reliability Engineer**

October 27, 2026

Because this event brings together market participants who may be viewed as actual or potential competitors, we must be mindful to conduct it in a manner that is consistent with the antitrust and competition laws. Participants should not disclose non-public, proprietary, or competitively sensitive information.

Attendees should exercise independent judgment and avoid even the appearance of discussions of agreements or concerted actions that may be viewed as restraining competition. For example, avoid discussions regarding current or potential vendors or suppliers that involve sensitive information like pricing or terms, or discussions involving employee wages or hiring decisions. Any company decisions that are informed by your discussions today must be made independently.

This guidance is not intended as legal advice, and each attendee is responsible for seeking their own legal advice with respect to compliance with applicable antitrust and competition laws. However, any questions on Texas RE's Antitrust Compliance Corporate Policy may be directed to Texas RE's General Counsel.



November 4, 2026

Fall Standards,
Security, &
Reliability
Workshop



November 10, 2026

Gas and Electric
Coordination and
Communications



December 16, 2026

Q4 MRC, AGRE, Board,
and Membership
Meetings

The logo for NPCC NERC, featuring a stylized blue 'P' with a white dot inside a circle, followed by the text 'NPCC NERC' in a bold, blue, sans-serif font.The logo for SERC, featuring a stylized blue 'S' followed by the text 'SERC' in a bold, blue, sans-serif font.

Date	Event
November 3, 2026	<u>WECC Grid Fundamentals</u>
November 16, 2026	<u>Technical Talk with RF</u>
November 24, 2026	<u>MRO Regional Winter Assessment</u>

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Impact or Consequence

How could a typical event affect BPS reliability?

Severe	Widespread effects across North America
Major	Widespread effects across an RC area
Moderate	Widespread effects across multiple entities or a portion of an RC area
Minor	Effects on one entity
Negligible	Small or non-existent effects

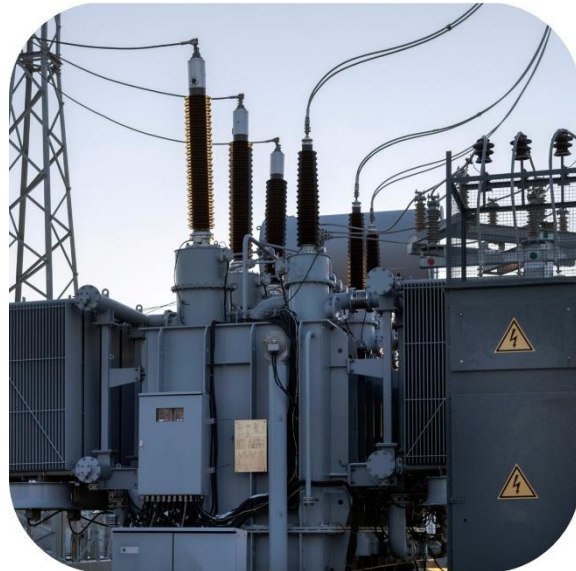
- Combined effort between RAPA and CMEP teams
- Data sources include:
 - NERC RISC Risk Priorities report
 - Texas RE ARP and NERC SOR
 - NERC CMEP IP
 - ERCOT
 - Violations/AOC's/Recommendations

Likelihood

What is the reasonable probability that the event will occur?

Almost Certain	Mandatory Controls – No NERC Reliability Standards in place for mitigation Emerging Trends – Increasing trends have been identified Event History – Widely publicized/documented events have been recorded
Likely	Mandatory Controls – No NERC Reliability Standards in place for mitigation Emerging Trends – Some trends have been identified Event History - Publicized events have been recorded
Possible	Mandatory Controls – NERC Reliability Standards in place for limited mitigation Emerging Trends – Some trends have been identified Event History – Moderate or no documented events have been recorded
Unlikely	Mandatory Controls – NERC Reliability Standards in place for mitigation Emerging Trends – Some trends have been identified Event History – Minimal or no documented events have been recorded
Very Unlikely	Mandatory Controls – NERC Reliability Standards in place for mitigation Emerging Trends – No trends have been identified Event History – No documented events have been recorded

Regional Risk Assessment



Regional Risks Register

- **Grid Transformation**
 - Disorganized Integration of Large Loads (*primary risk*)
 - Inverter Based Resource (IBR) Ride-through
 - Inaccurate Resource Modeling
 - Energy Availability
 - Provisions of Ancillary Services from a Changing Resource Mix (*upgraded*)
- **Resilience to Extreme Events**
 - Extreme Weather Response
 - Gas Supply Chain Restrictions During Cold Weather
 - Facility Ratings
 - Workforce Changes (*new for 2026*)
- **Cyber and Physical Security**
 - Remote Connectivity
 - Supply Chain
 - Physical Security
 - Artificial Intelligence and Machine Learning Security
 - Cloud Security (*new for 2026*)

Regional Risk Assessment

					Likelihood				
					1	2	3	4	5
					Very Unlikely	Unlikely	Possible	Likely	Almost Certain
					Y N N	Y S N	LSN	N S Y	N Y Y
Consequence/Effect	Wide spread effect	ERO	5	Severe					
	Wide spread effect	Interconnection	4	Major		Extreme Weather Response	Energy Availability Supply Chain Gas Supply Chain Restrictions During Cold Weather Physical Security	IBR Ride-Through Disorganized Integration of Large Loads	
	Wide spread effect	Large TOP/GOP	3	Moderate		Artificial Intelligence and Machine Learning Security	Inaccurate Resource Modeling Provision of Essential Reliability Services from a Changing Resource Mix		
						Facility Ratings	Workforce changes Remote Connectivity		
	Local Entity	Small TOP/GOP/DP	2	Minor			Cloud security		
	Small	Single Facility	1	Negligible					

Primary Regional Risk

- Disorganized Integration of Large Loads

Upgraded Risk from 2025

- Provisions of Essential Reliability Services from a Changing Resource Mix

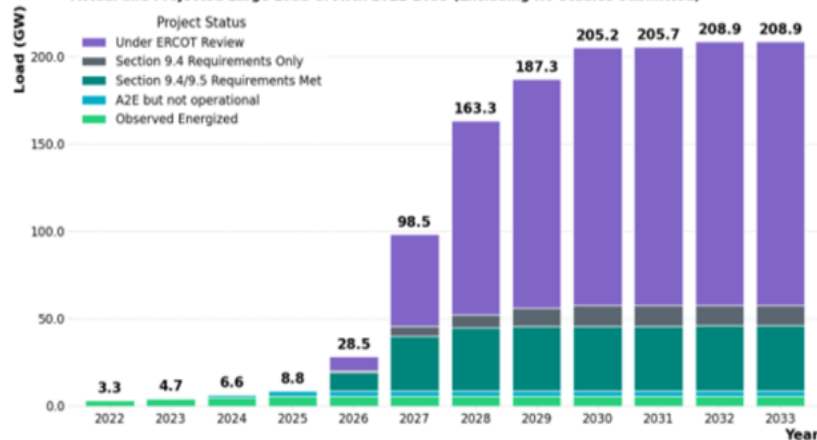
New Risks for 2026

- Cloud Security
- Workforce Changes

Disorganized Integration of Large Loads Risks

Likelihood: Likely
Impact: Major

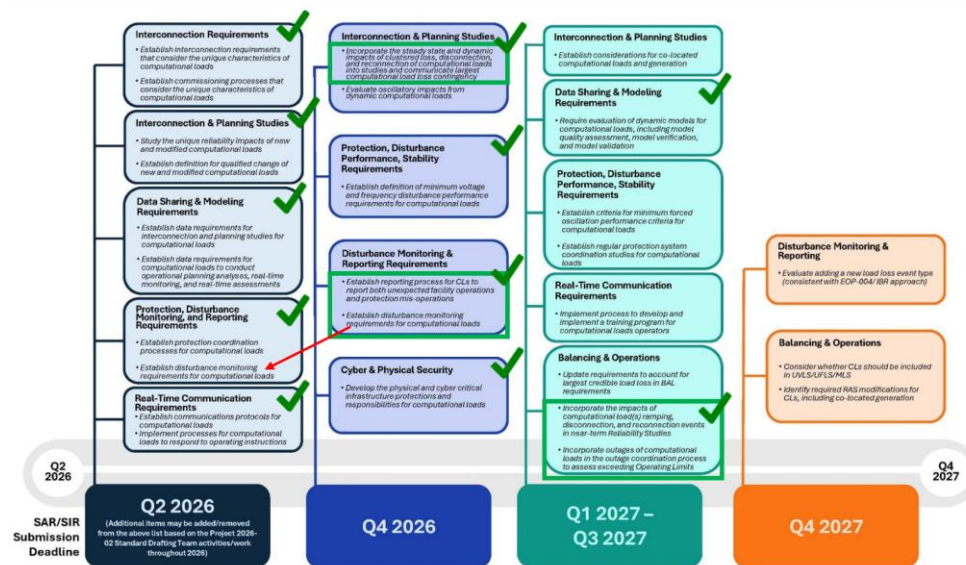
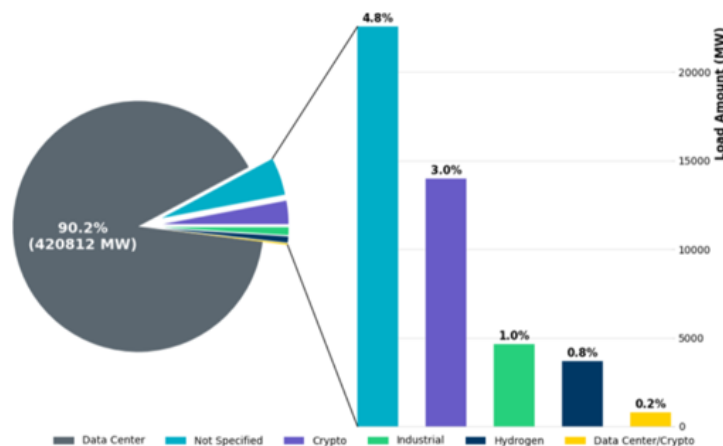
Actual and Projected Large Load Growth 2022-2033 (Excluding No Studies Submitted)



Project Status	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Under ERCOT Review	0.0	0.0	0.0	0.0	8.1	52.9	111.0	131.2	147.7	148.2	151.1	151.1
Section 9.4 Requirements Only	0.0	0.0	0.0	0.0	1.5	5.7	7.2	10.4	11.8	11.8	11.8	11.8
Section 9.4/9.5 Requirements Met	0.0	0.0	0.0	0.0	10.1	31.0	36.1	36.8	36.8	37.1	37.1	37.1
A2E but not operational	0.0	0.4	1.8	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Observed Energized	3.3	4.3	4.8	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Total (GW)	3.3	4.7	6.6	8.8	28.5	98.5	163.3	187.3	205.2	205.7	208.9	208.9

- Primary risk for the Texas RE Region
- 36 GW of new loads by 2030, with approved planning studies and have met ERCOT planning guide requirements
- Additional 148 GW of load under ERCOT review could interconnect by 2030
- 90% of new load requests are data centers
- Risk mitigation measures
 - NERC ROP changes to define Computation Load Entity
 - NERC Standard roadmap for large loads

Large Load Project Distribution by Type



New Risks

Workforce Changes

Likelihood: Possible
Impact: Moderate

- Loss of institutional knowledge
- Increasing system complexity
- Insufficient staffing/expertise on cyber security
- Risk Mitigation Measures
 - Training for system operations
 - BES cyber systems training, access management, and security awareness

Costs of Institutional Knowledge Loss



Reputational Damage

Damage to reputation and customer loyalty due to quality and service issues, mistakes, and errors.

Damaged Relationships

Disrupted relationships with customers and suppliers, etc.



Cloud Security

Likelihood: Possible
Impact: Minor

- Dependency on 3rd party platforms
- Increasing reliance on common cloud service providers with shared infrastructure dependencies
- Increased exposure of critical data within cloud-based systems
 - Data breaches
 - Incorrectly configured cloud settings
 - DoS attacks
 - Supply chains
- Risk Mitigation Measures
 - Project 2023-09 Risk Management of 3rd party Cloud Services

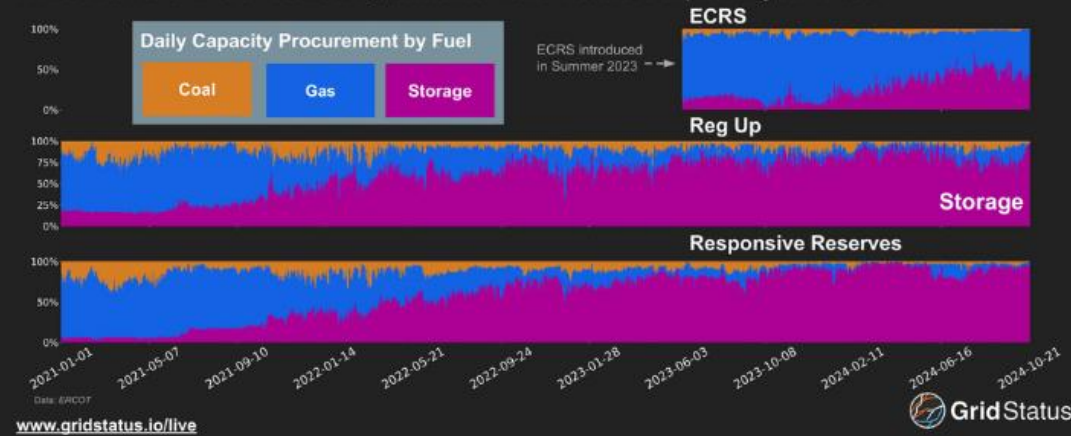


Provisions of Essential Reliability Services from a Changing Resource Mix Risks

Likelihood: Possible
Impact: Moderate

Batteries have reshaped ERCOT's ancillary services procurement

Battery generation capacity has made up 50%+ of awards for reg up and responsive reserves since 2022. In these, coal and gas regularly account for <20% of capacity. While ECRS is more restrictive, batteries have reached a plurality at times.



ERCOT Market Rule Changes in Progress

Introduction of Mitigation of ESRs	NPRR1255
Establishing Advanced Grid Support Service as an Ancillary Service	NPRR1278
Add Energy Storage Resource (ESR) State of Charge (SOC) Information to the Ancillary Services Capacity Monitor	NPRR1326
Establish an Incentive Program for Advanced Grid Support	NPRR1333
Dispatchable Reliability Reserve Service Ancillary Service with Energy Storage Resource Participation	NPRR1340

- Increased reliance on energy storage resources (ESRs) for critical ancillary services
- ERCOT market rules for Advanced Grid Support
- Risk Mitigation Measures
 - Standards related to:
 - Interconnection requirements for IBRs
 - Studies to assess reliability impact of new IBR interconnections
 - IBR models
 - IBR Ride-through
 - IBR protection system coordination
 - Frequency control performance
 - Balancing contingency event performance with increased ESR participation
- ERCOT market rule changes

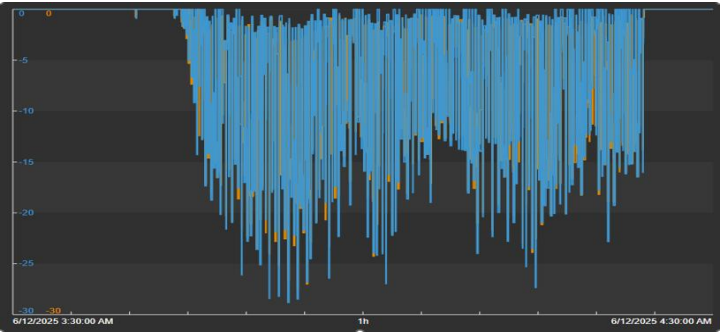


Likelihood: Likely
Impact: Major

IBR Standards Planned for 2026	
Operational Studies Planning Studies	Project 2025-03 Project 2025-04
Ride-Through Revisions	Project 2025-05
Verification of Generator Models	MOD-026-2

Event Type	# of events in 2024	# of events in 2025
IBR Ride-Through Events	7	12
IBR Oscillation Events	35	24

Year	Count of Hours with Renewable Penetration > 70%
2023	1
2024	39
2025	163
2026 YTD	321

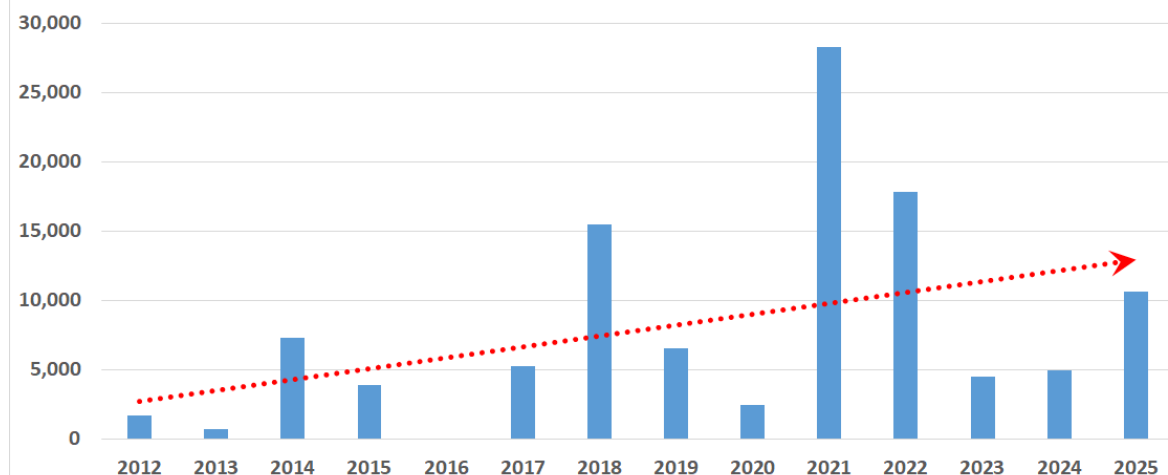


- Increased reliance on IBRs to meet load
- FERC Order 901 projects
- NERC Alert on IBR model quality
- Category 2 IBR registration Implementation
- No IBR ride-through events in 2024/25 > 500 MW
- Risk Mitigation Measures
 - Standards related to:
 - Interconnection requirements for IBRs
 - Studies to assess reliability impact of new IBR interconnections
 - IBR models
 - IBR ride-through
 - IBR protection system coordination
 - Frequency control performance
 - Balancing contingency event performance with increased ESR participation

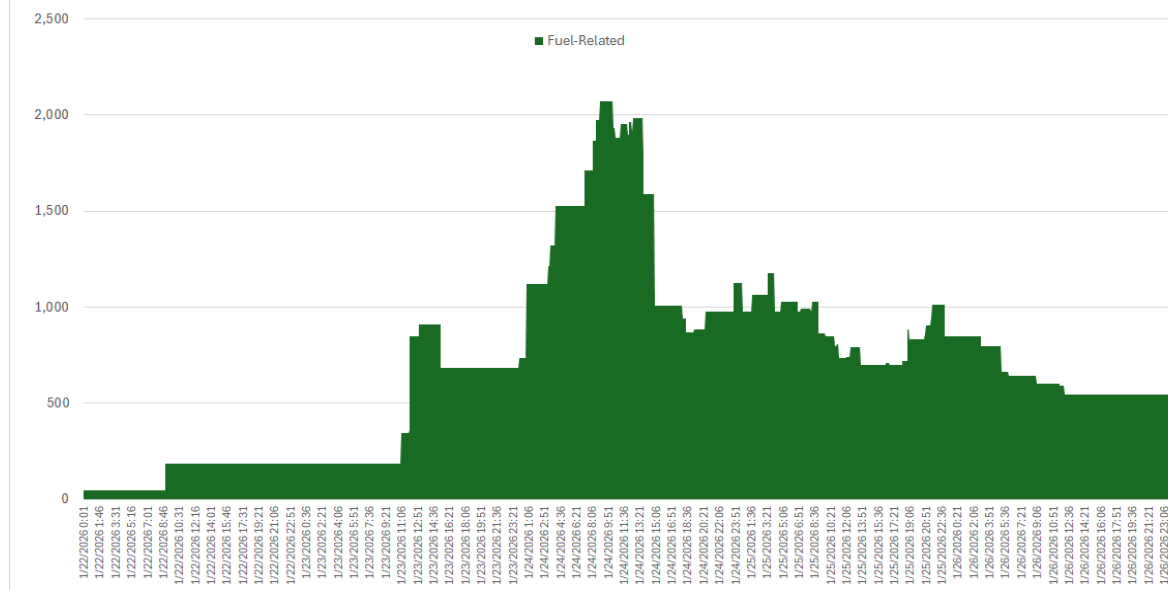
Gas Supply Chain Restrictions During Cold Weather

Likelihood: Possible
Impact: Major

Cumulative MW of Gas Curtailments by Year (Winter Months Only)



Winter Storm Fern - Outages by Cause



- Cumulative MW impact from gas curtailments increased in 2025, however, larger than normal increases were observed in summer and fall months
- Risk Mitigation Measures
 - Standards related to:
 - Identification of critical natural gas infrastructure loads
 - GO plans to mitigate operational limitations for fuel supply and inventory concerns
 - Proposed Standards and ERCOT Rules:
 - NPRR1335 Implementation of PUCT Changes to Firm Fuel Supply Service
 - NPRR1346 Updates to the Fuel Oil Price

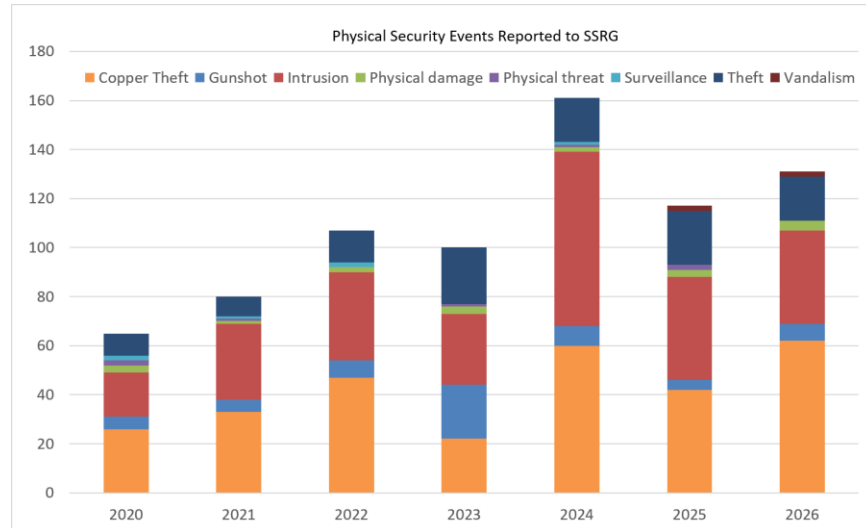


Physical Security Risks

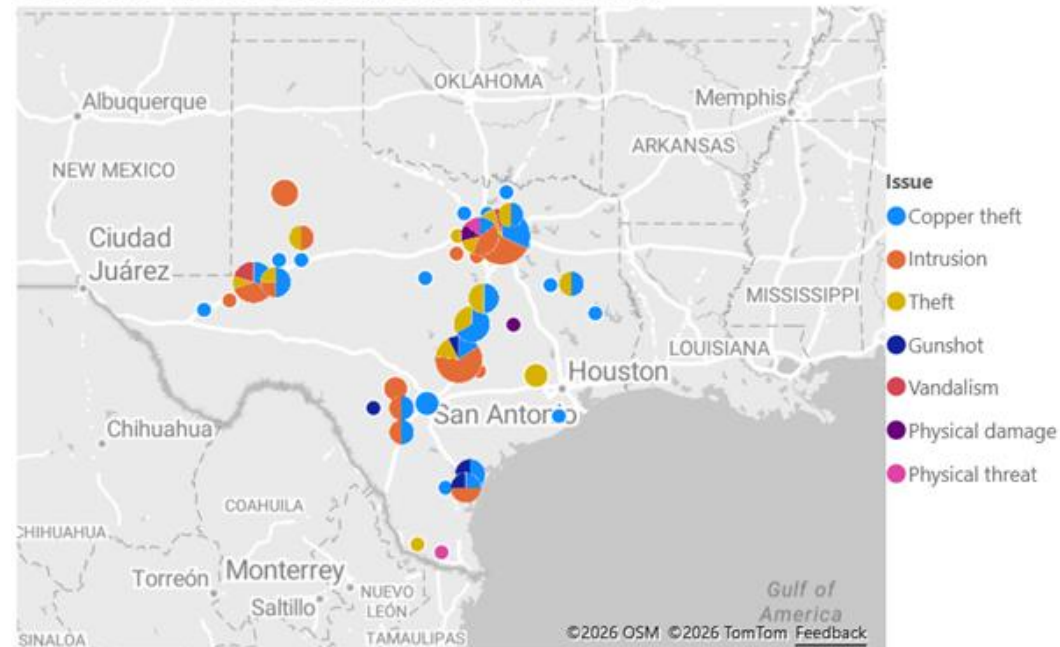
Likelihood: Likely

Public

Impact: Moderate



Count of Physical Security Events by Location



- **Increasing Trends in Physical Security Incidents**
 - Intrusions
 - Copper theft
 - Ballistic damage
- **Risk Mitigation Measures**
 - Standards related to:
 - Risks to the reliable operation of the BPS as the result of a Physical Security Incident
 - Risks to the reliable operation of the BPS as they relate to physical security programs
 - Risks to the reliable operation of the BES as the result of increased Physical Security events related to low impact assets
 - **Proposed Standards and ERCOT Rules:**
 - Project 2021-03 CIP-002
 - NPPR1334 Revision to Cybersecurity Incident Notification



Energy Availability Risks

Likelihood: Possible
Impact: Major

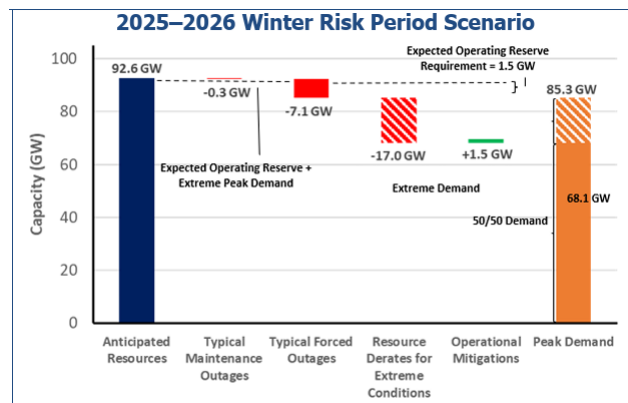
Public



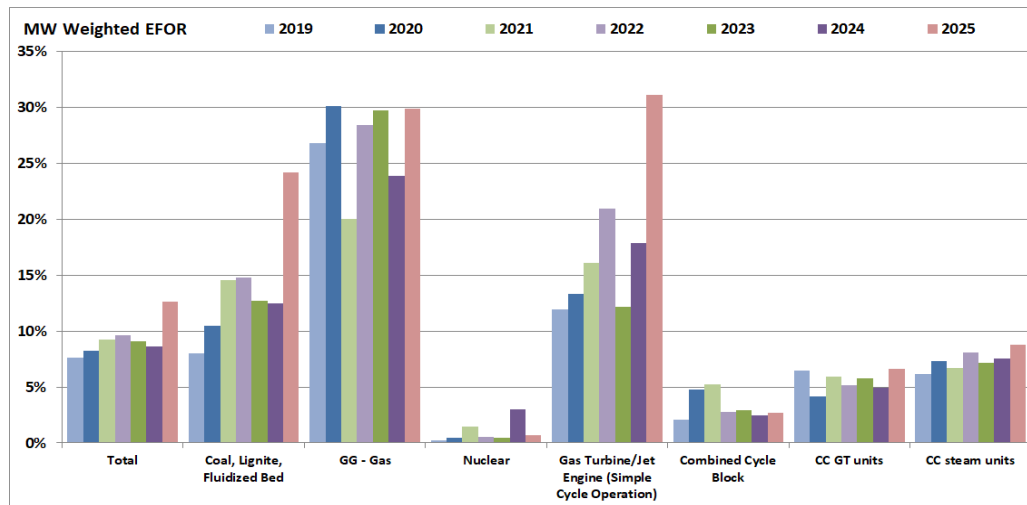
Base-Case Summary of Results			
	2026*	2027	2029
EUE (MWh)	11,090	5,864	17,053
NEUE (ppm)	18.95	8.70	18.84
LOLH (hours per Year)	1.57	0.94	3.64
* Provides the 2024 ProbA Results for Comparison			

New Resources Approved for Commercial Operation in 2025

Fuel Type	Total MW	Average # Days to Connect (from FIS to COD)	Median # Days to Connect	Minimum # Days to Connect	Maximum # Days to Connect
Battery	6,291	625	479	200	1,535
Solar	5,998	845	714	330	1,829
Fuel Oil	439	75	75	34	115
Wind	1,463	1,119	844	692	2,858



- NERC Wide Area Energy Assessment Studies
- NERC Probabilistic Assessment Studies
- Risk Mitigation Measures
 - BAL-007 Implementation: plan to address forecasted Energy Emergencies in the near-term time horizon
 - TEF Projects
 - Proposed Standards and ERCOT Rules:
 - Project 2025-03 Operational Studies
 - Project 2025-04 Planning Studies
 - Project 2024-02 Planning Energy Assurance
 - NPRR1320 Reserve Margin Reporting and Miscellaneous Changes for the Report on Capacity, Demand, and Reserves in the ERCOT Region (CDR)
 - NPRR1328 Establishment of Generation Firming Program



- Persistent supply chain and workforce challenges are impacting risk mitigation and response capabilities
 - Extended outages on two coal units, one for 14 consecutive months and another for 18 months (ongoing)
 - A single fire-related substation equipment failure, Circuit and associated 345 kV auto remain out ~ 18 months)
- Software supply chain cyber security challenges
- Risk Mitigation Measures
 - Standards related to:
 - Implementation of Supply Chain policies and procedures
 - Transmission planning criteria for extended facility outages > one year
 - Proposed Standards and ERCOT Rules:
 - Project 2025-06 Supply Chain Risk Management
 - Project 2022-05 CIP-008 Reporting Threshold

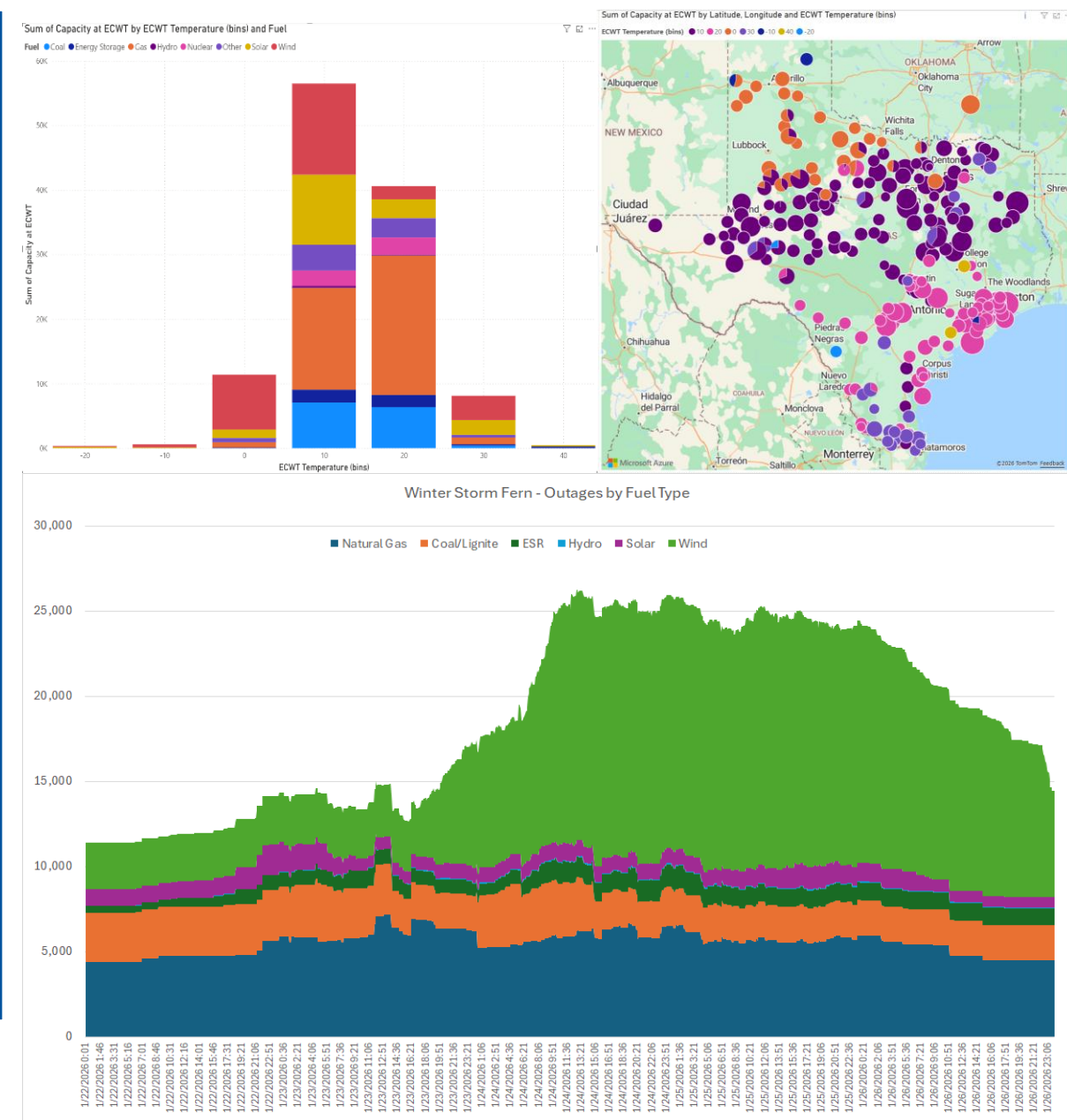


Extreme Weather Response Risks

Likelihood: Unlikely
Impact: Major

Public

- ECWT data collection
- EOP-012 constraint declarations
 - Wind blade/solar panel icing
 - Wind cold weather packages
 - CT inlet air icing
- Risk mitigation measures
 - Standards related to:
 - TOP and BA emergency operating plans
 - GOP cold weather plans
 - Proposed Standards:
 - Project 2023-07 Transmission System Planning Performance Requirements for Extreme Weather





Report is on track to be published November 2026

These risks will guide our future outreach

These risks will be reviewed in next years ARP



Questions?