Summer Outlook

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May 21, 2024

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Upcoming Texas RE Events

May 22, 2024

IBR Registration

May 30, 2024

2023 Assessment of Reliability Performance

June 3 - 25, 2024

Reliability 101 & 201 Webinar Series

Upcoming ERO Enterprise Events

May 29 - 30, 2024

FERC Order 896 Workshop

May - July, 2024

GADS Wind & Solar Template and Application Training

June 10, 2024

Technical Talk with RF

Sli.do

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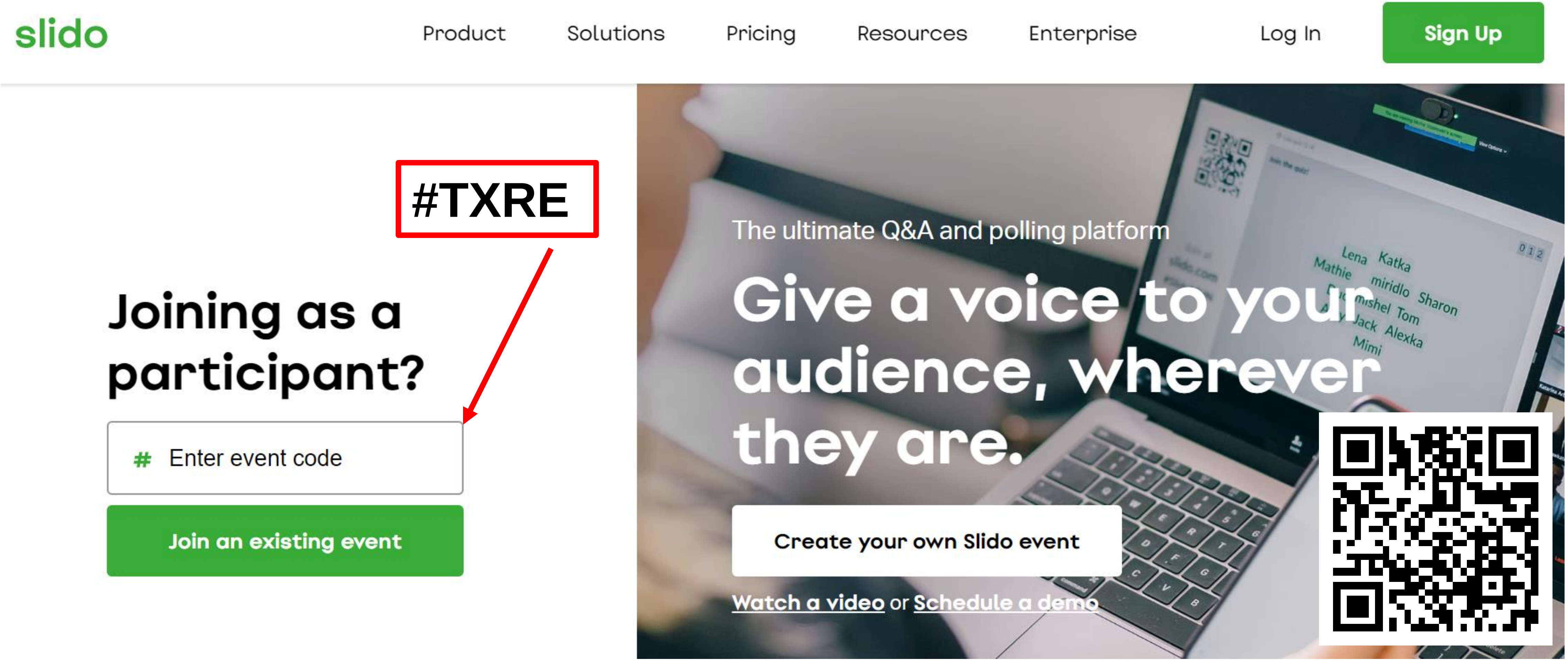
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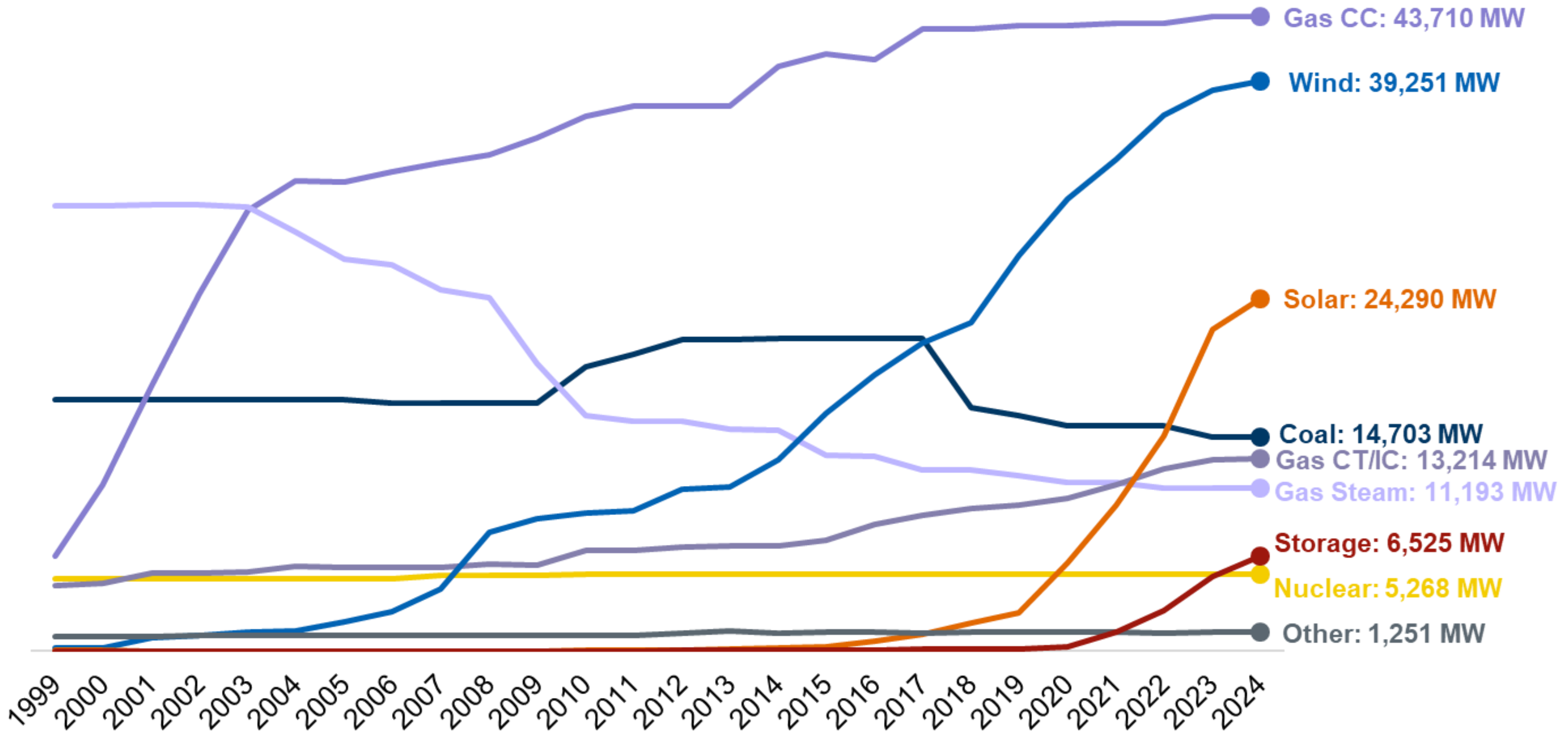
Texas Reliability Entity
“Talk with Texas RE”
ERCOT Resource Adequacy Reports Overview

Pete Warnken
ERCOT Resource Adequacy Manager

May 21, 2024

Installed Capacity Mix Trends as of May 6, 2024



Notes: Capacity totals are based on the Installed Capacity Ratings for generating units. "Other" comprises of Biomass, Hydro, and Diesel.
- Planned generation projects are added to installed capacity after approval for synchronization to ERCOT Grid.
- Totals include Private-Use Network generators that export to the ERCOT grid, Distribution Generation Resources (DGRs), Settlement-Only Distribution Generators (SODGs), Unavailable Switchable Capacity, Extended Outage Units, and Mothballed Units.

June and July MORA Probabilistic Results

Riskiest hour for experiencing emergency conditions is Hour Ending 9 p.m. (CDT) for both months, driven by the loss of solar generation and continued elevated loads.

JUNE

	EMERGENCY LEVEL		
	Chance of Normal System Conditions	Chance of an Energy Emergency Alert	Chance of Ordering Controlled Outages
Hour Ending (CDT)	Probability of CAFOR being above 3,000 MW	Probability of CAFOR being less than 2,500 MW	Probability of CAFOR being less than 1,500 MW
1 a.m.	100.00%	0.00%	0.00%
2 a.m.	100.00%	0.00%	0.00%
3 a.m.	100.00%	0.00%	0.00%
4 a.m.	100.00%	0.00%	0.00%
5 a.m.	100.00%	0.00%	0.00%
6 a.m.	100.00%	0.00%	0.00%
7 a.m.	100.00%	0.00%	0.00%
8 a.m.	100.00%	0.00%	0.00%
9 a.m.	100.00%	0.00%	0.00%
10 a.m.	100.00%	0.00%	0.00%
11 a.m.	100.00%	0.00%	0.00%
12 p.m.	100.00%	0.00%	0.00%
1 p.m.	100.00%	0.00%	0.00%
2 p.m.	100.00%	0.00%	0.00%
3 p.m.	100.00%	0.00%	0.00%
4 p.m.	100.00%	0.00%	0.00%
5 p.m.	99.99%	0.00%	0.00%
6 p.m.	99.98%	0.00%	0.00%
7 p.m.	99.99%	0.00%	0.00%
8 p.m.	99.89%	0.02%	0.00%
9 p.m.	99.35%	0.18%	0.04%
10 p.m.	99.68%	0.02%	0.00%
11 p.m.	100.00%	0.00%	0.00%
12 a.m.	100.00%	0.00%	0.00%

Note: Probabilities are not additive.

JULY

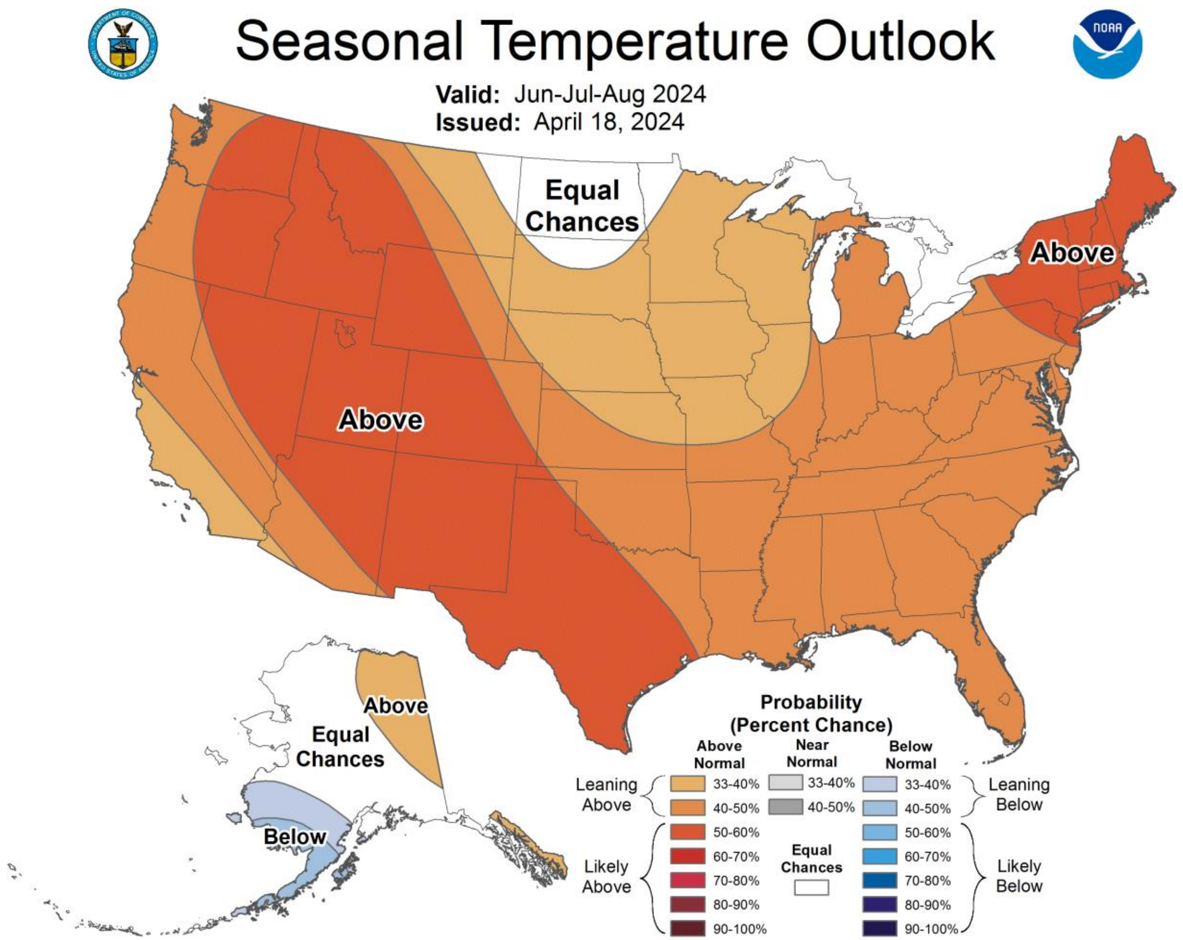
	EMERGENCY LEVEL		
	Chance of Normal System Conditions	Chance of an Energy Emergency Alert	Chance of Ordering Controlled Outages
Hour Ending (CDT)	Probability of CAFOR being above 3,000 MW	Probability of CAFOR being less than 2,500 MW	Probability of CAFOR being less than 1,500 MW
1 a.m.	100.00%	0.00%	0.00%
2 a.m.	100.00%	0.00%	0.00%
3 a.m.	100.00%	0.00%	0.00%
4 a.m.	100.00%	0.00%	0.00%
5 a.m.	100.00%	0.00%	0.00%
6 a.m.	100.00%	0.00%	0.00%
7 a.m.	100.00%	0.00%	0.00%
8 a.m.	100.00%	0.00%	0.00%
9 a.m.	100.00%	0.00%	0.00%
10 a.m.	100.00%	0.00%	0.00%
11 a.m.	100.00%	0.00%	0.00%
12 p.m.	100.00%	0.00%	0.00%
1 p.m.	100.00%	0.00%	0.00%
2 p.m.	100.00%	0.00%	0.00%
3 p.m.	100.00%	0.00%	0.00%
4 p.m.	100.00%	0.00%	0.00%
5 p.m.	100.00%	0.00%	0.00%
6 p.m.	100.00%	0.00%	0.00%
7 p.m.	100.00%	0.00%	0.00%
8 p.m.	99.83%	0.02%	0.00%
9 p.m.	98.33%	0.48%	0.27%
10 p.m.	99.54%	0.12%	0.03%
11 p.m.	99.99%	0.00%	0.00%
12 a.m.	100.00%	0.00%	0.00%

Note: Probabilities are not additive.

Summer 2024 Resource Adequacy Risk Profile

- Ramp-down of solar generation during Hours Ending 8-10 p.m. CDT, is the main risk factor for the likelihood of declaring an Energy Emergency Alert (EEA) during the monthly peak load days.
- Significantly higher EEA risk in August relative to June and July is due to:
  - Much higher loads. August peak load forecast is more than 12 GW higher than July's.
  - Less wind and solar generation. Typical wind generation for August is lower by over 1.5 GW relative to July, and solar is also lower, particularly for the late afternoon and early evening hours.
- Extremely high net loads in the early evening hours may necessitate curtailing generation exported from South Texas into the San Antonio region to avoid line overloads.
  - This risk is accounted for in the July MORA and NERC Summer Resource Adequacy (SRA) reports.

Summer Seasonal Temperature Outlook



Expecting above normal temperatures

Peak electricity demand in most areas is directly influenced by temperature

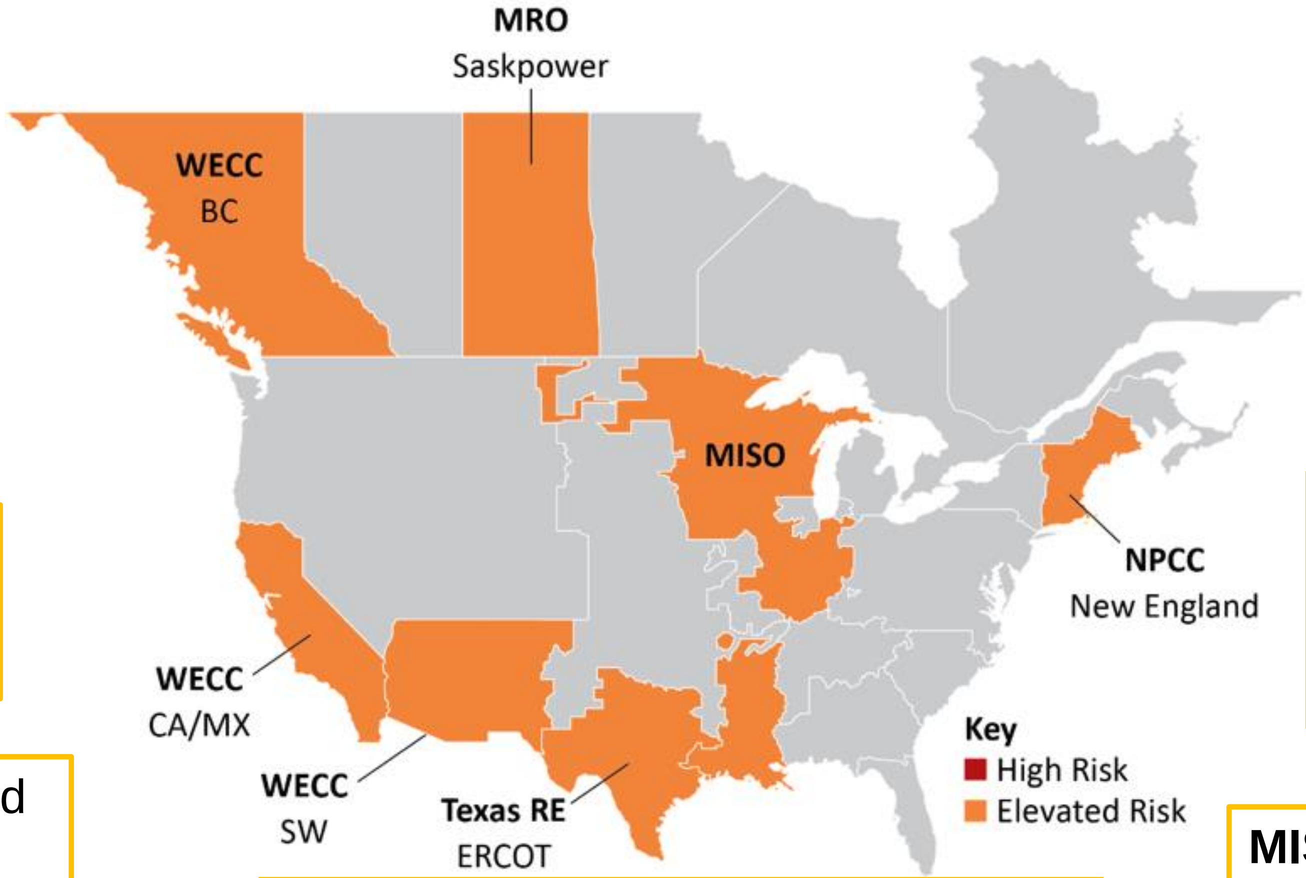
Drought conditions continue across much of U.S. Southwest

Summer Reliability Risk Area Summary

WECC BC: Above normal demand and low-resource conditions due to drought conditions

WECC CA/MX: PV ramp down and high demand can result in EEAs

WECC SW: High demand during wide-area heat event and low-resource conditions due to drought conditions



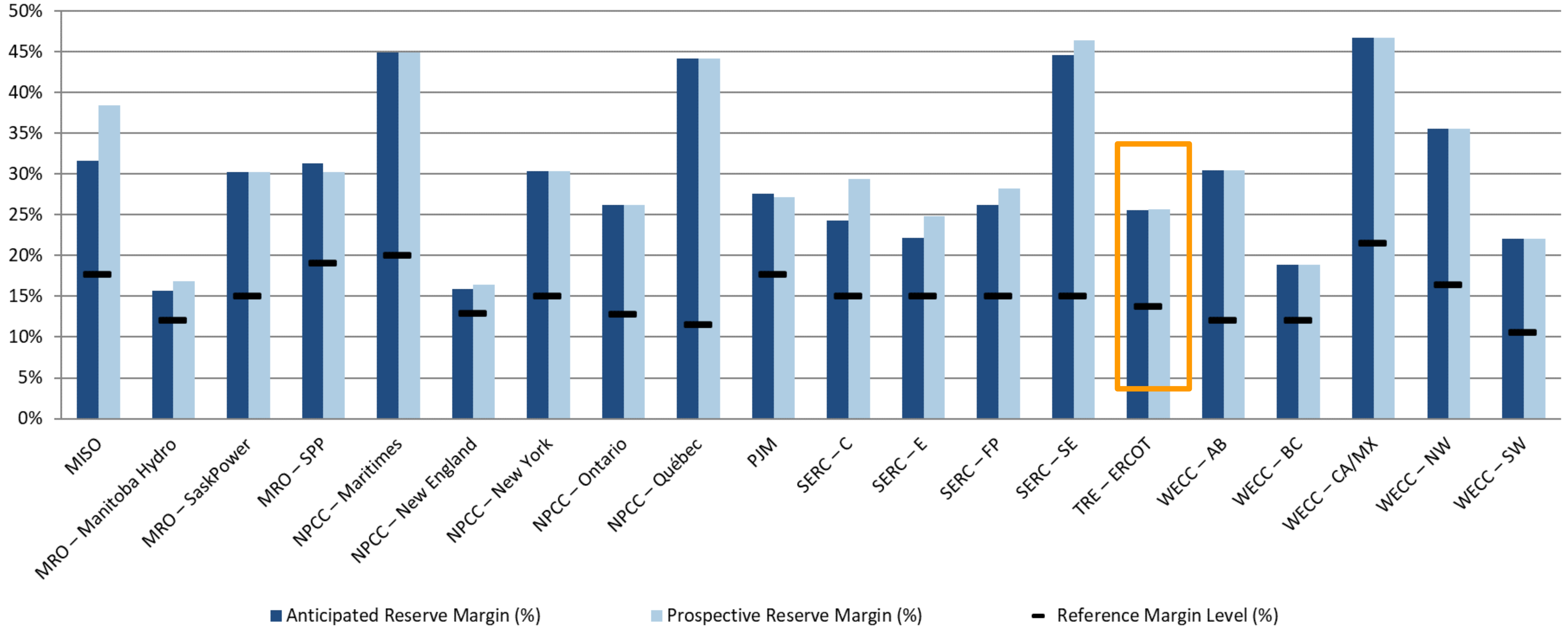
MRO SaskPower: Unanticipated generator outages coincide with peak demand can result in insufficient reserves

NPCC: Reserve margins lower due to gas-fired generation retirements

MISO: Lower than expected wind and solar output during high demand

Texas ERCOT: Risk of dispatchable generation being insufficient for high demand and diminished PV output levels

NERC Assessment Area Summer 2024 Reserve Margins



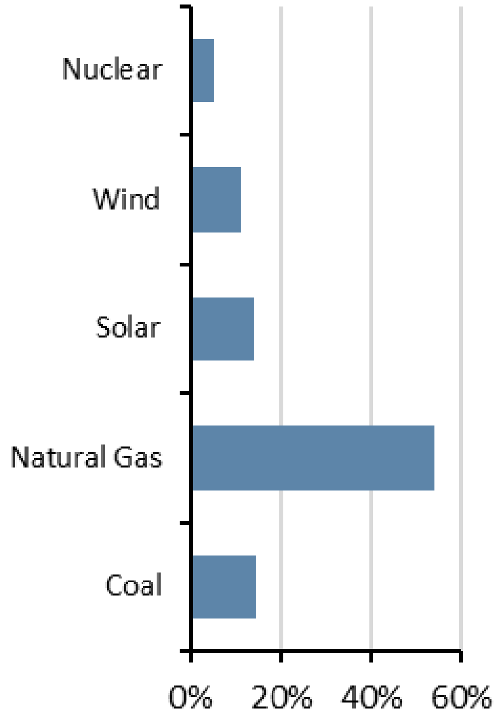
Seasonal Risk Scenario On-Peak Reserve Margins

Assessment Area	Anticipated Reserve Margin	Anticipated Reserve Margin with Typical Outages	Anticipated Reserve Margin with Higher Demand, Outages, Derates in Extreme Conditions
MISO	26.1%	8.7%	-6.3%
MRO-Manitoba	15.7%	11.7%	5.1%
MRO-SaskPower	30.3%	26.5%	10.3%
MRO-SPP	27.8%	17.6%	-2.5%
NPCC-Maritimes	44.9%	34.5%	6.0%
NPCC-New England	15.9%	6.3%	3.3%
NPCC-New York	30.4%	11.4%	4.0%
UNPCC-Ontario	26.2%	26.2%	19.8%
NPCC-Québec	44.1%	23.8%	18.2%
PJM	27.6%	17.9%	9.0%
SERC-C	24.3%	14.9%	14.7%
SERC-E	22.2%	16.3%	10.8%
SERC-FP	26.3%	19.3%	12.3%
SERC-SE	44.6%	41.1%	34.9%
TRE-ERCOT	25.6%	19.2%	11.5%
WECC-AB	30.5%	28.1%	8.6%
WECC-BC	18.8%	18.7%	-5.6%
WECC-CA/MX	46.7%	40.8%	5.4%
WECC-NW	35.5%	29.7%	1.1%
WECC-SW	22.0%	12.9%	-10.8%

2023 – 2024 Summer Demand and Resource Comparison

Texas RE-ERCOT			
Demand, Resource, and Reserve Margins	**2023 SRA**	**2024 SRA**	**2023 vs. 2024 SRA**
Demand Projections	**MW**	**MW**	**Net Change (%)**
Total Internal Demand (50/50)	82,307	84,818	3.1%
Demand Response: Available	3,380	3,496	3.4%
Net Internal Demand	78,927	81,323	3.0%
Resource Projections	**MW**	**MW**	**Net Change (%)**
Existing-Certain Capacity	94,580	99,541	5.2%
Tier 1 Planned Capacity	2,445	2,578	5.4%
Net Firm Capacity Transfers	20	20	0.0%
Anticipated Resources	97,045	102,139	5.2%
Existing-Other Capacity	0	0	-
Prospective Resources	97,073	102,167	5.2%
Reserve Margins	**Percent (%)**	**Percent (%)**	**Annual Difference**
Anticipated Reserve Margin	23.0%	25.6%	2.6
Prospective Reserve Margin	23.0%	25.6%	2.6
Reference Margin Level	13.75%	13.75%	0.0

On-Peak Fuel Mix



NERC Summer Reliability Assessment – Texas Highlights

Given an Anticipated Reserve Margin of 25.6% and Reference Reserve Margin of 13.75%, ERCOT expects to have sufficient operating reserves in expected normal summer system conditions.

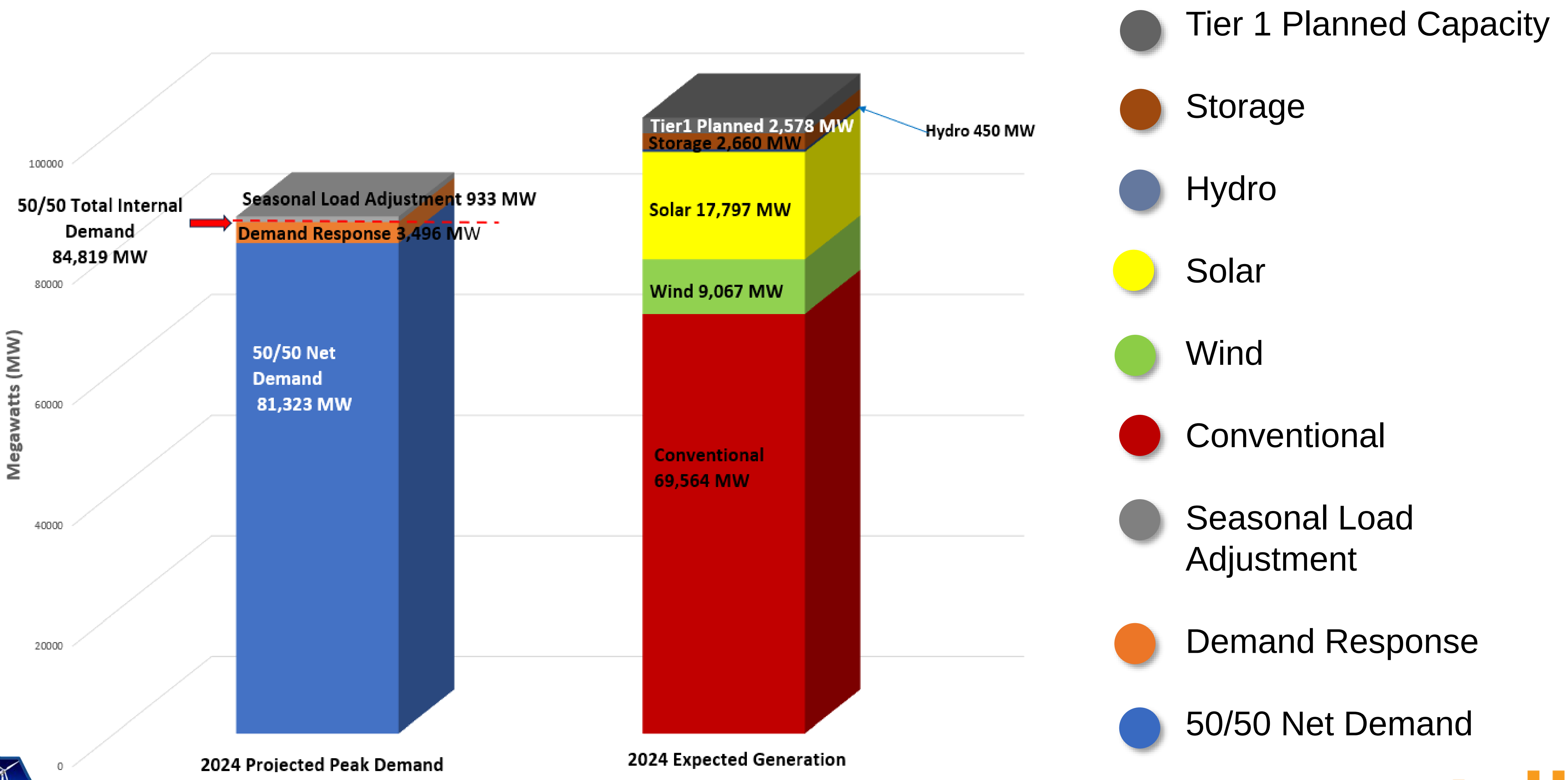
Solar PV and battery storage nameplate capacity has grown by 4,500 MW and 1,600 MW, respectively, for the 2024 summer season.

ERCOT's probabilistic risk assessment indicates a low probability of energy emergency conditions (EEAs) during the summer peak load period, but the risk increases into the early evening hours due to solar PV generation reductions.

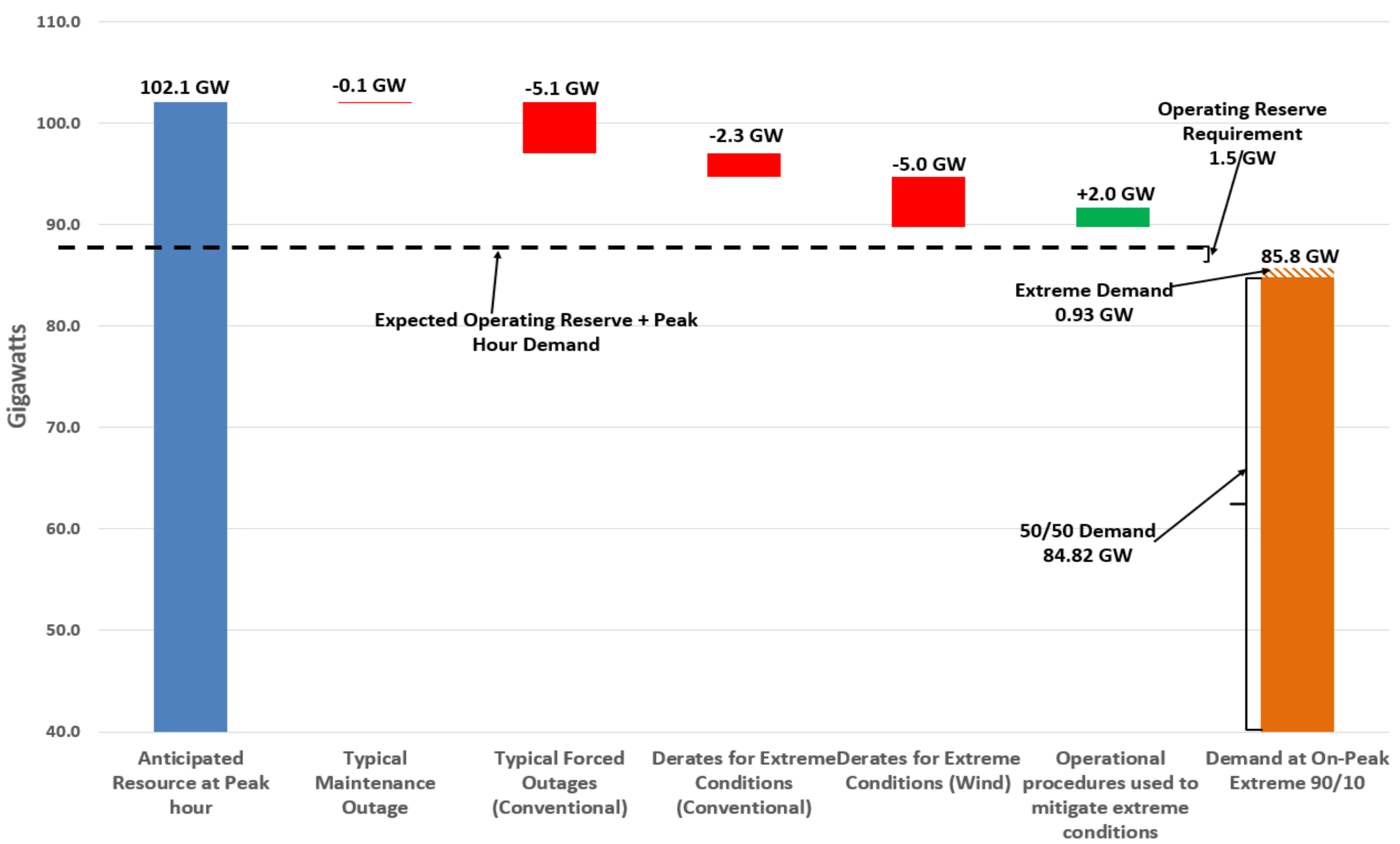
Under certain grid conditions, power transfers from South Texas to San Antonio is limited due to transmission constraints. South Texas export and import interface limits are implemented to avoid cascading outages.

System stability and strength remains a concern due to the growth of IBRs.

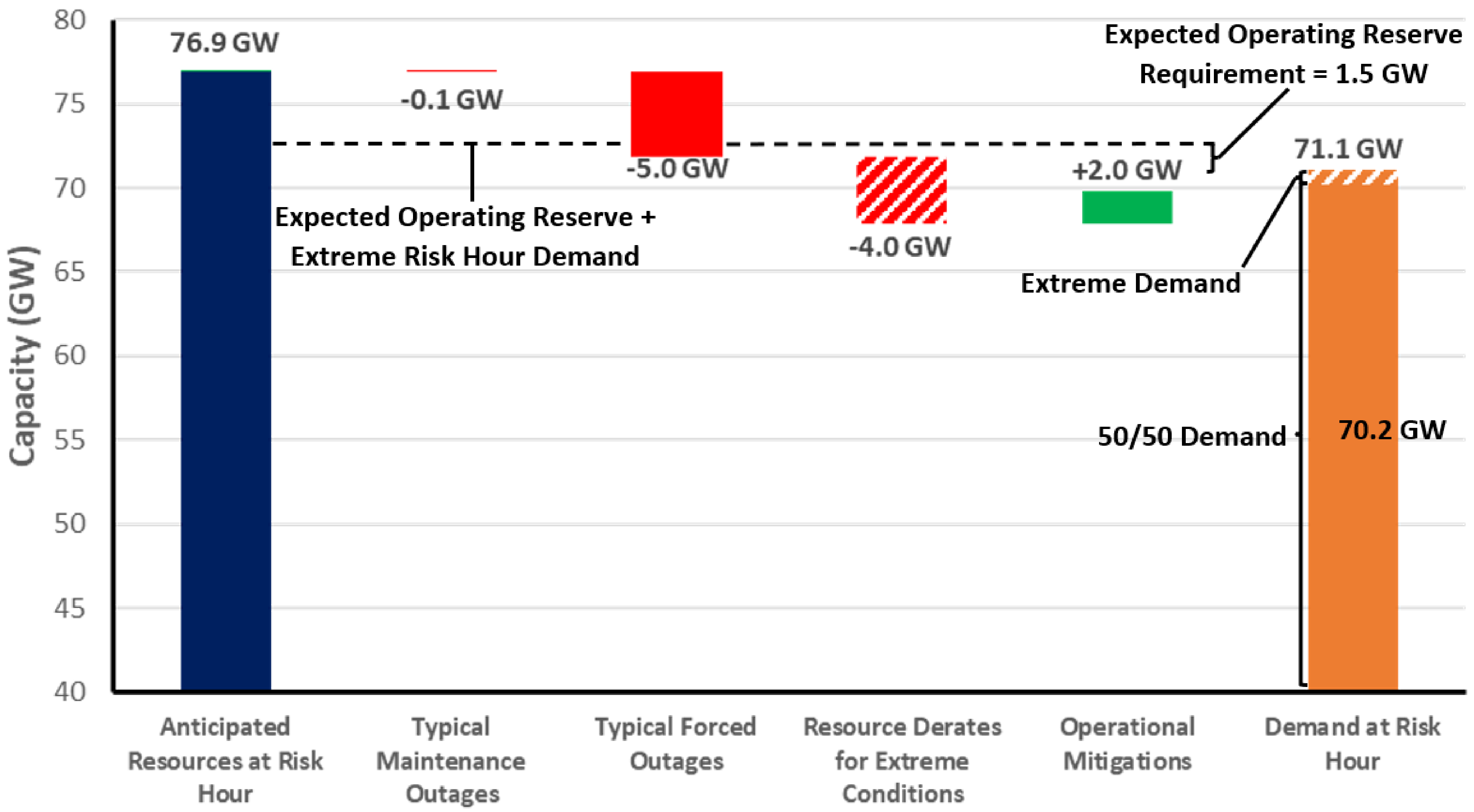
Projected Peak Demand and Generation



Summer Peak Hour Scenario

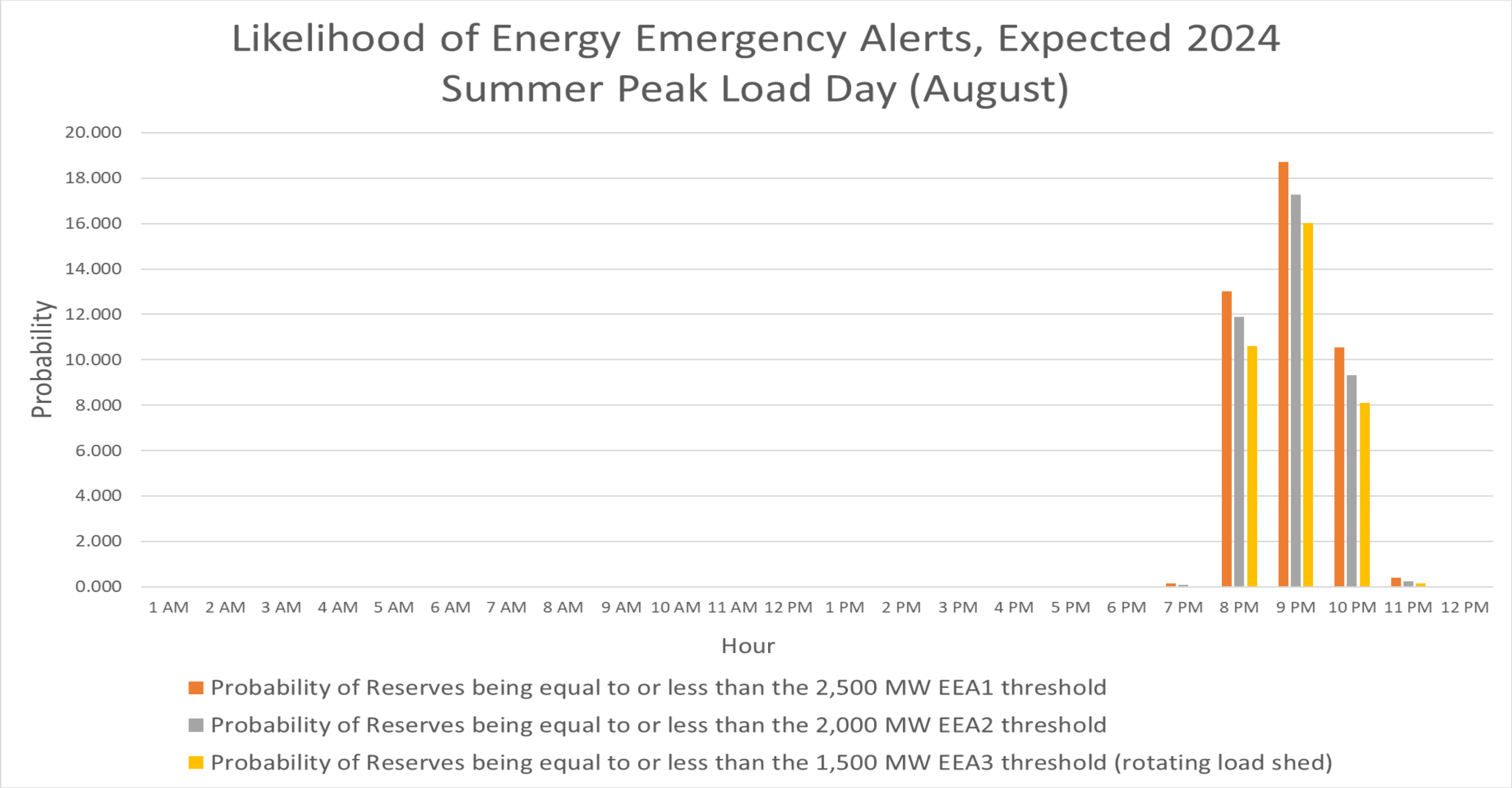


Summer Risk Hour (8:00 p.m. – 9:00 p.m.) Scenario



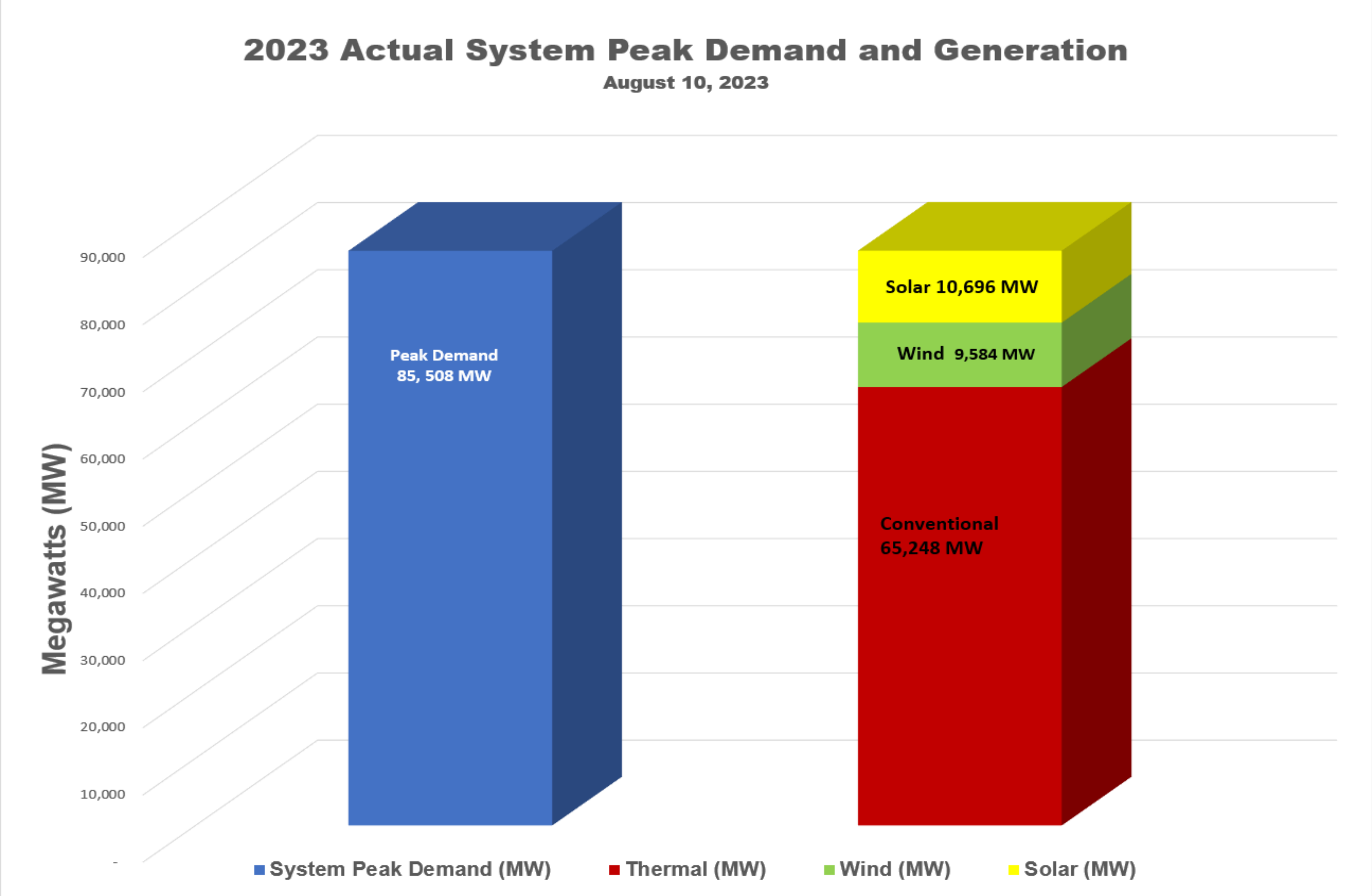
Courtesy: NERC 2024 SRA

ERCOT EEA / Rotating Load Shed Probabilities by Hour



Courtesy: ERCOT Presentation

2023 System Peak Demand



Questions?

TEXAS RE
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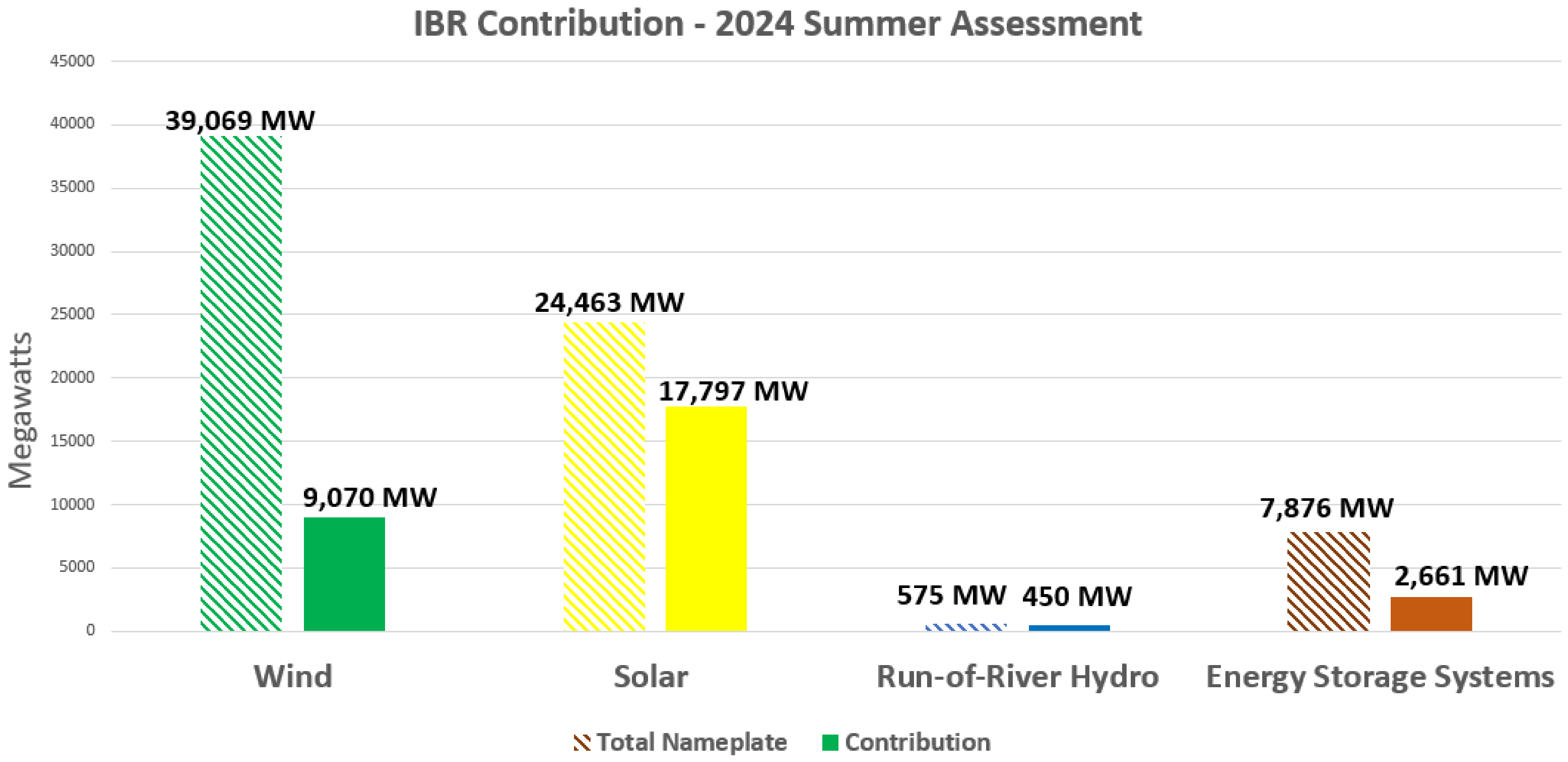
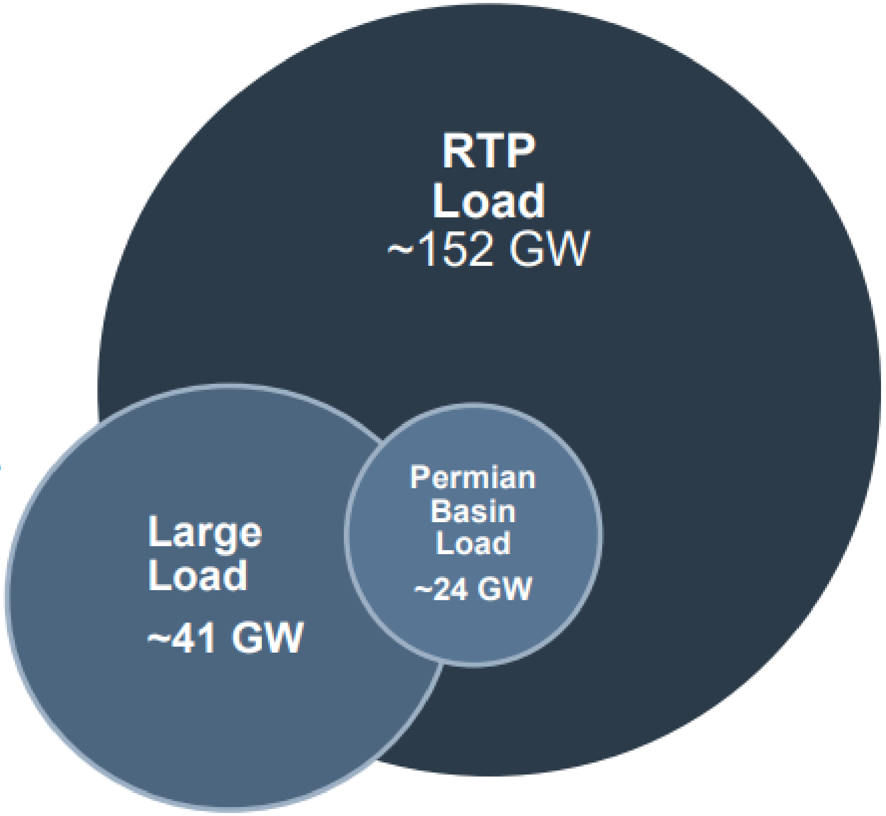
ERCOT Generation Variable Resource Contribution



Courtesy: NERC SRA Data

ERCOT System – New View of Load Growth

- Previous Regional Transmission Plan (RTP) rules did not allow ERCOT to factor in unsigned load.
- House Bill (HB) 5066 (88th Legislative Session) required ERCOT to include prospective load identified by Transmission Service Providers (TSPs).
- This led to significant increases in large loads considered in studies (*i.e.*, crypto mining, hydrogen and hydrogen-related manufacturing, data centers, and electrification).



Key Takeaway: This new view shows unprecedented and rapid load growth (approximately 40 GW greater than last year's forecast), which is creating new challenges and opportunities for the ERCOT System.

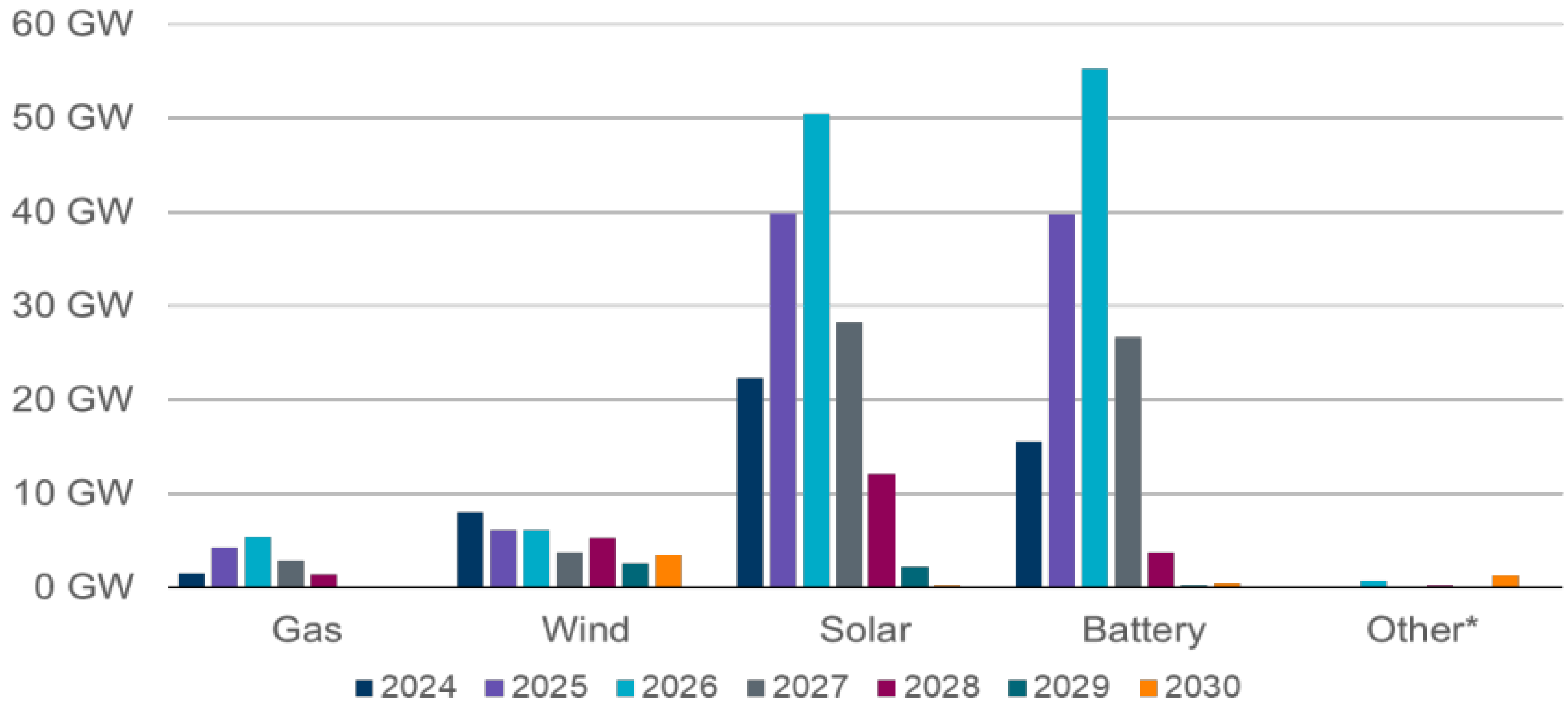
Courtesy: ERCOT Presentation

ERCOT Generation Interconnection Queue

Generation Interconnection Queue

1,775 active generation interconnection requests totaling 346 GW as of March 31, 2024 (Solar 155 GW, Wind 35 GW, Gas 15 GW, and Battery 141 GW)

(Excludes capacity associated with projects designated as Inactive per Planning Guide Section 5.7.6)



Courtesy: ERCOT Presentation