NEW BRAUNFELS UTILITIES

Weather Outlook Winter 2023/2024

Robert Figuly – Director of Power Supply

El Nino Outlook

With El Nino being present this winter for the first time in four years, outlooks are trending on the warmer side with higher chances of precipitation.

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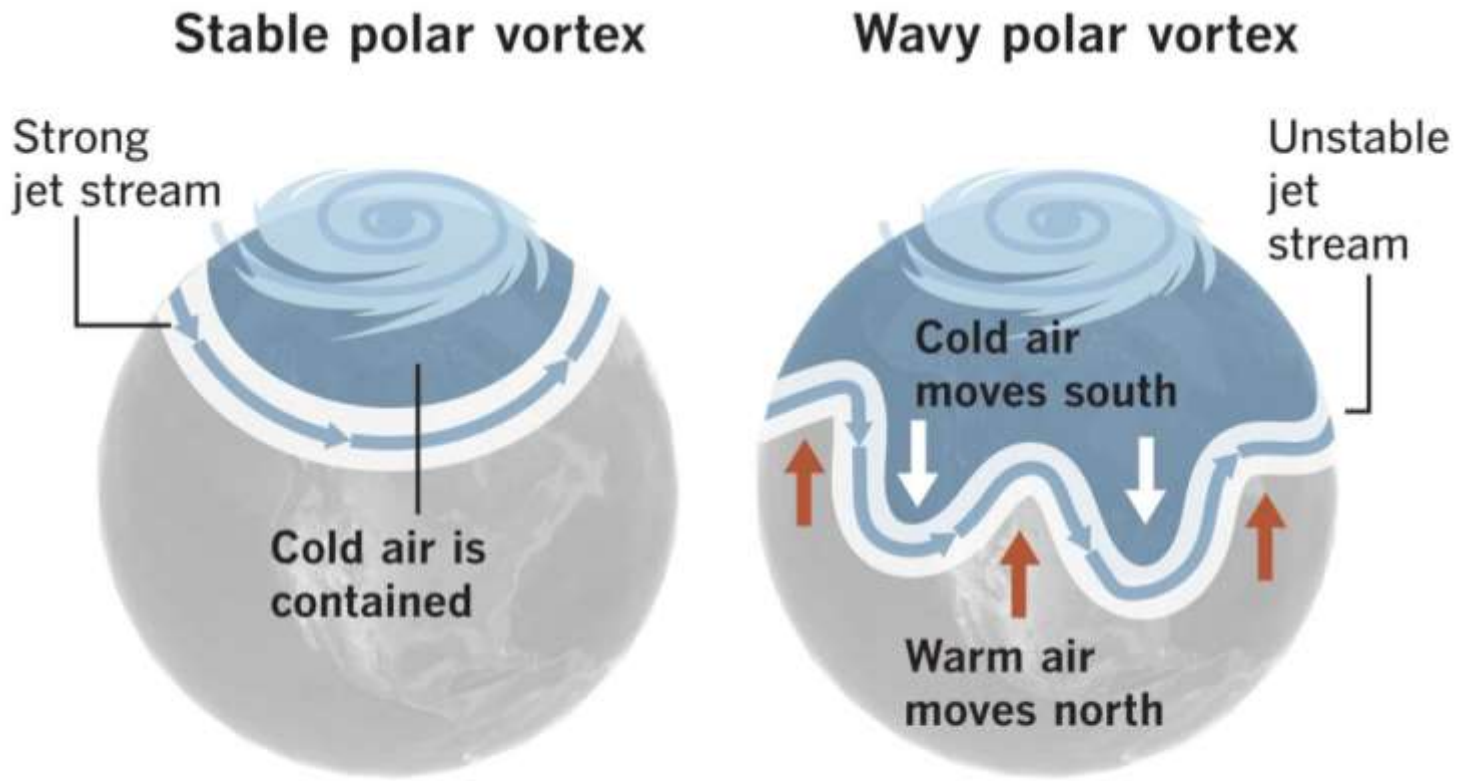
Polar Vortex

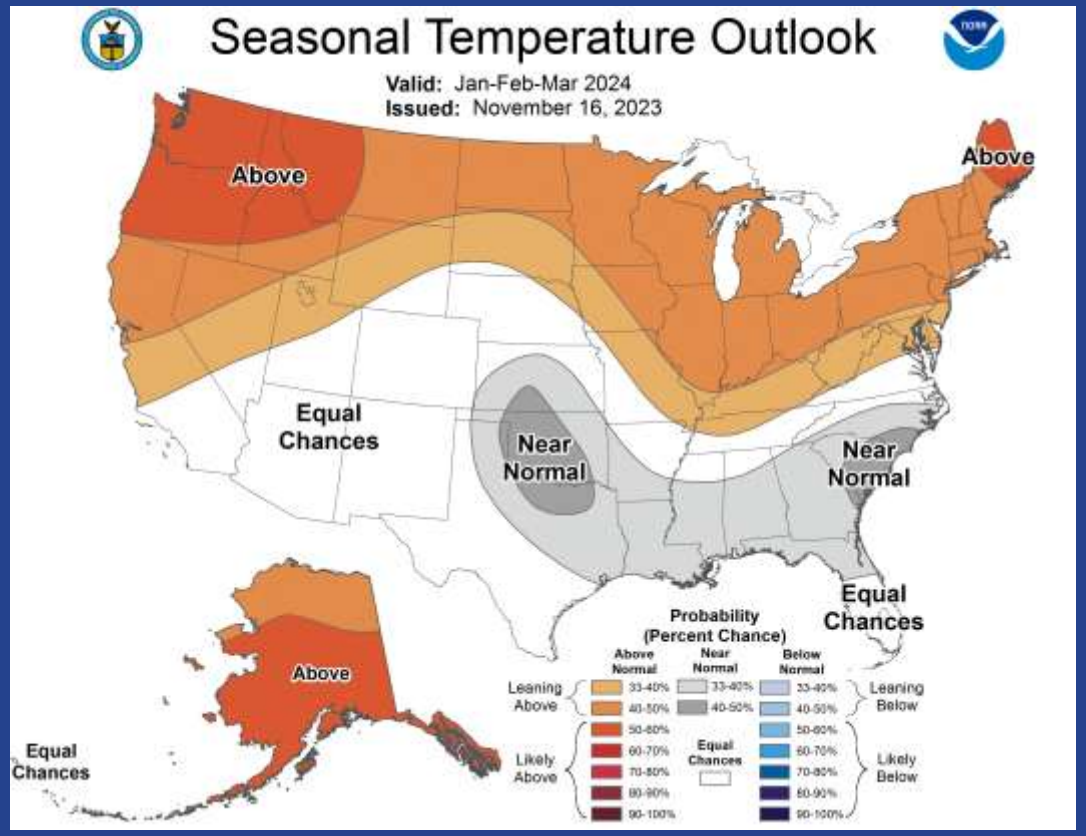
A new Polar Vortex is forming in the Stratosphere over the North Pole.

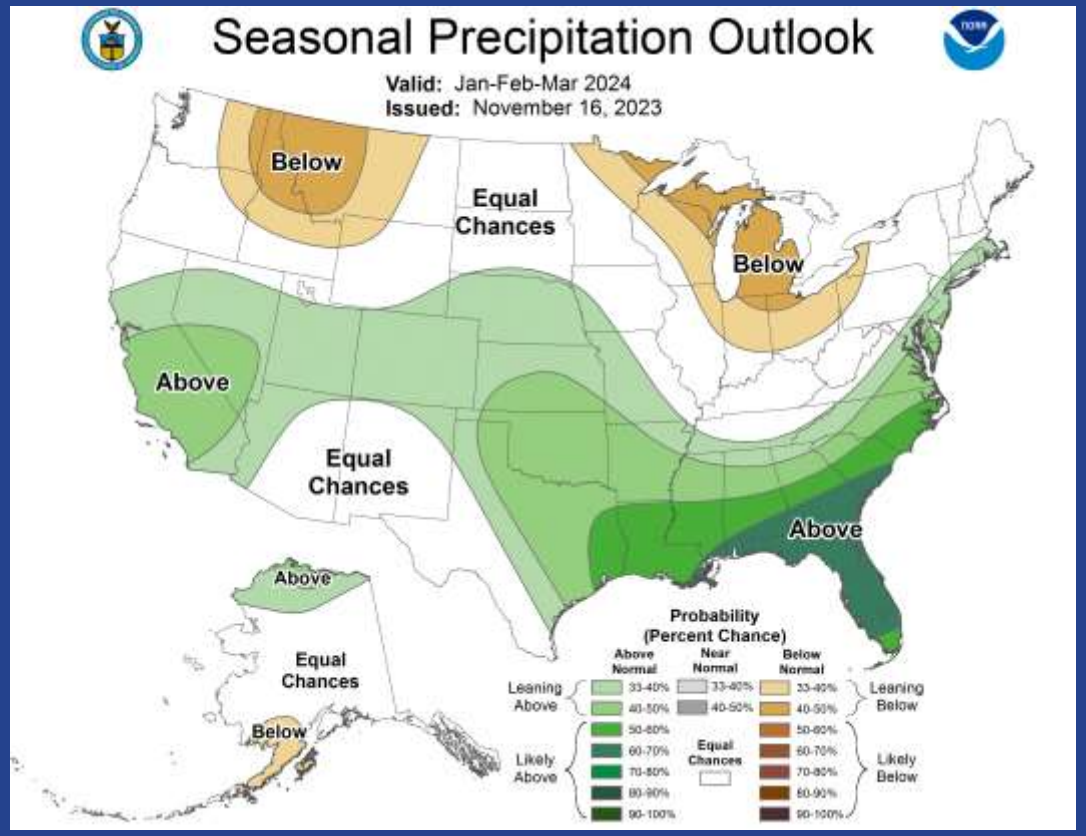
It is strengthening rapidly and will continue to strengthen towards the Winter of 2023/2024.

The Polar Vortex has a long and strong history of Winter weather impacts over the United States, Canada, and Europe, especially if it starts to collapse.



January to March Outlook





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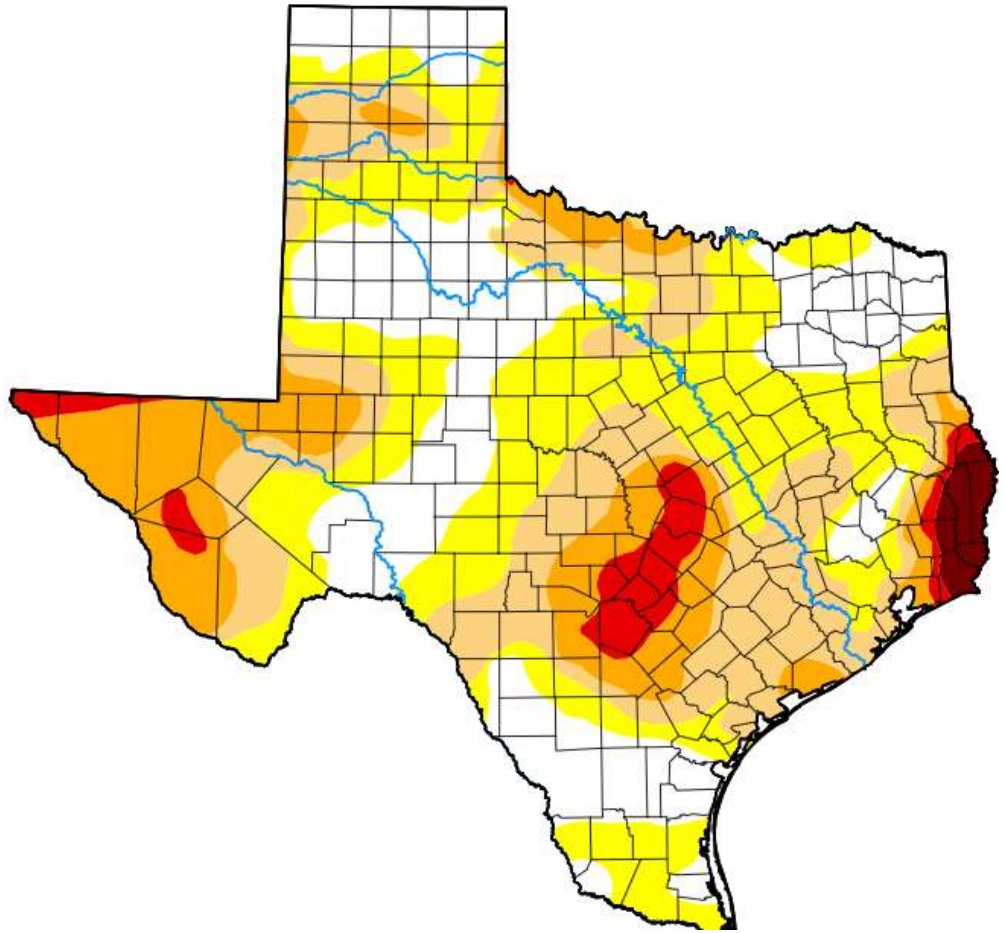
Drought Monitor as of 11/28

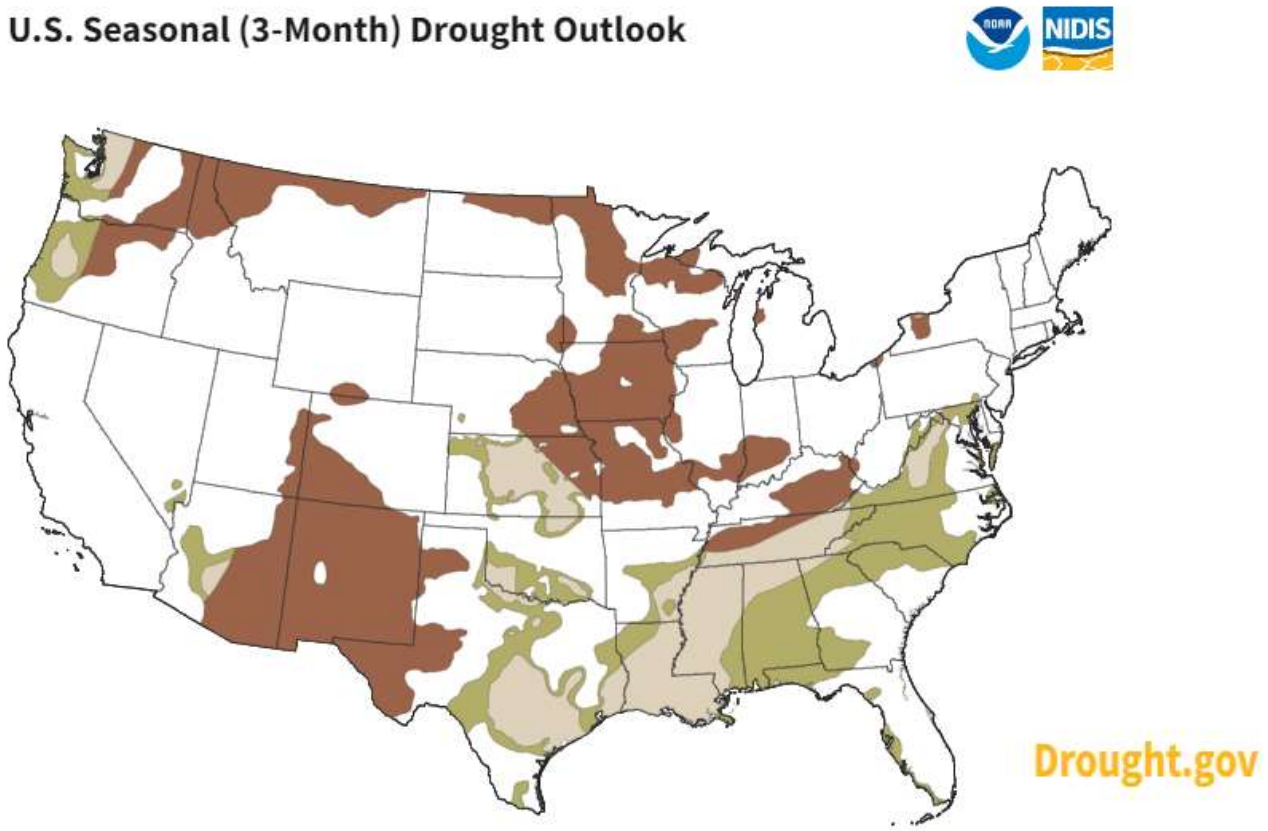
New Braunfels in Stage 2 Restrictions



Drought Outlook as of 11/16

Drought persists
Drought remains but improves
Drought removal likely
Drought development likely
No drought predicted

Source(s): Climate Prediction Center
Updates Monthly: 10/31/23



NERC Winter Assessment

Highlights

- Reserve shortages during high load hours
- ERCOT trying to procure more dispatchable generation to serve load
- Fuel supply issues still possible if the state experiences a winter storm

Risk Scenario Summary

- Expected resources meet operating reserve requirements under normal peak-demand scenarios. Above-normal winter peak load and outage conditions could result in EEAs. Load shedding is unlikely but may be needed under wide-area cold weather events.

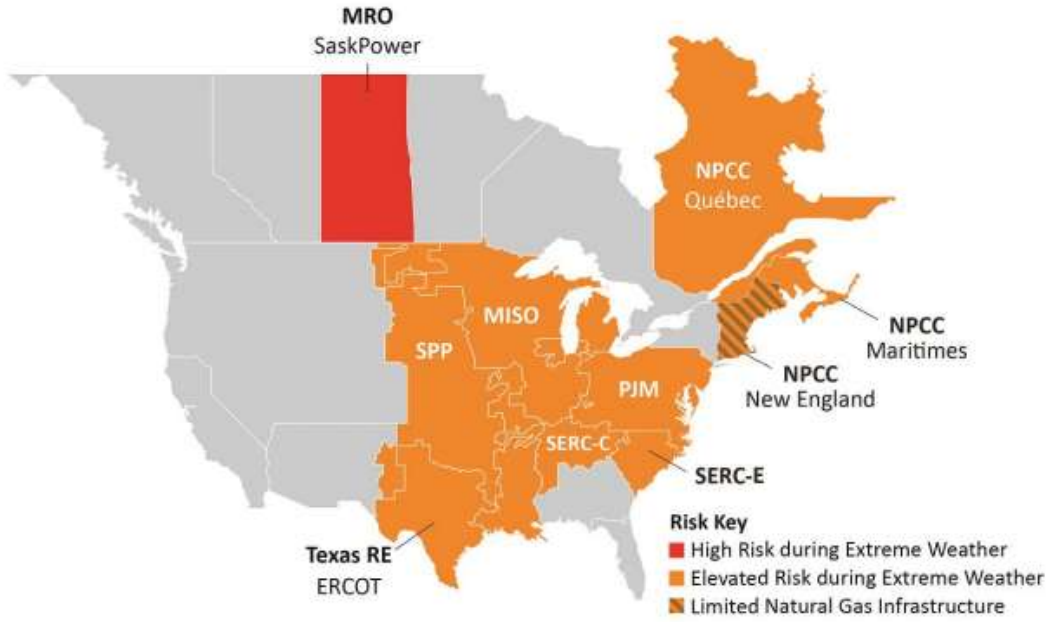


Figure 1: Winter Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Low	Sufficient operating reserves expected

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Winter SARA

- **Awaiting Final Release**

January Monthly Outlook for Resource Adequacy (MORA)

- Expected Peak Load for January is ~72,000MWs
- Total Available Resources is estimated ~ 87,200.
- ERCOT issued RFP for 3000MW from current mothballed dispatchable generation resources and recently decommissioned dispatchable resources since December 1, 2020

	EMERGENCY LEVEL		
	Chance of Normal System Conditions	Chance of an Energy Emergency Alert	Chance of Ordering Controlled Outages
Hour Ending	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.	98.53%	1.23%	1.10%
2 a.m.	98.67%	1.12%	1.02%
3 a.m.	98.73%	1.03%	0.97%
4 a.m.	98.67%	1.05%	1.00%
5 a.m.	98.54%	1.15%	1.04%
6 a.m.	97.79%	1.59%	1.38%
7 a.m.	94.43%	3.95%	3.35%
8 a.m.	89.54%	7.55%	6.70%
9 a.m.	93.26%	4.97%	4.29%
10 a.m.	97.11%	2.00%	1.77%
11 a.m.	98.53%	1.02%	0.90%
12 p.m.	99.15%	0.58%	0.47%
1 p.m.	99.55%	0.26%	0.23%
2 p.m.	99.74%	0.16%	0.14%
3 p.m.	99.84%	0.08%	0.07%
4 p.m.	99.79%	0.11%	0.10%
5 p.m.	99.47%	0.27%	0.20%
6 p.m.	97.82%	1.43%	1.27%
7 p.m.	96.33%	2.52%	2.14%
8 p.m.	96.18%	2.62%	2.19%
9 p.m.	97.93%	1.47%	1.19%
10 p.m.	98.33%	1.15%	0.97%
11 p.m.	98.91%	0.74%	0.67%
12 a.m.	99.16%	0.59%	0.53%

Note: Probabilities are not additive.

Storm Scenario Based on Winter Storm Elliott

	EMERGENCY LEVEL		
	Chance of Normal System Conditions	Chance of an Energy Emergency Alert	Chance of Ordering Controlled Outages
Hour Ending	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.	99.59%	0.27%	0.23%
2 a.m.	99.66%	0.20%	0.14%
3 a.m.	99.67%	0.16%	0.13%
4 a.m.	99.68%	0.22%	0.12%
5 a.m.	99.67%	0.24%	0.16%
6 a.m.	99.53%	0.26%	0.18%
7 a.m.	87.64%	5.70%	3.36%
8 a.m.	70.15%	20.56%	16.77%
9 a.m.	84.25%	7.49%	4.93%
10 a.m.	97.80%	0.65%	0.36%
11 a.m.	99.81%	0.06%	0.03%
12 p.m.	99.98%	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.	99.77%	0.09%	0.04%
7 p.m.	96.97%	0.35%	0.21%
8 p.m.	95.56%	0.94%	0.41%
9 p.m.	99.77%	0.06%	0.03%
10 p.m.	99.86%	0.06%	0.02%
11 p.m.	99.94%	0.01%	0.00%
12 a.m.	99.98%	0.00%	0.00%

Note: Probabilities are not additive.

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EEA Level Changes

Effective 11/1/2023 ERCOT updated the Grid Condition Levels

- **EEA 1** will occur if reserves reach 2,500 MW (*previously 2,300 MW*) and are not expected to recover within 30 minutes.
- **EEA 2** will occur if reserves reach 2,000 MW (*previously 1,750 MW*) and are not expected to recover within 30 minutes, or if frequency has dropped below 59.91 Hz for 15 minutes (*previously 30 minutes*).
- **EEA 3** will occur if reserves drop below 1,500 MW (*previously 1,000 MW*) and are not expected to recover within 30 minutes, or if the frequency drops below 59.8 Hz for any period of time.
  - If either situation occurs, ERCOT would require Transmission and Distribution Service Providers (TDSPs) to implement controlled outages, which impact residential, commercial, and industrial users.

“Earlier and Faster”

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Questions?

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