



KENTUCKY MUNICIPAL ENERGY AGENCY



KYMEA President & CEO Report

Doug Buresh

February 25, 2021

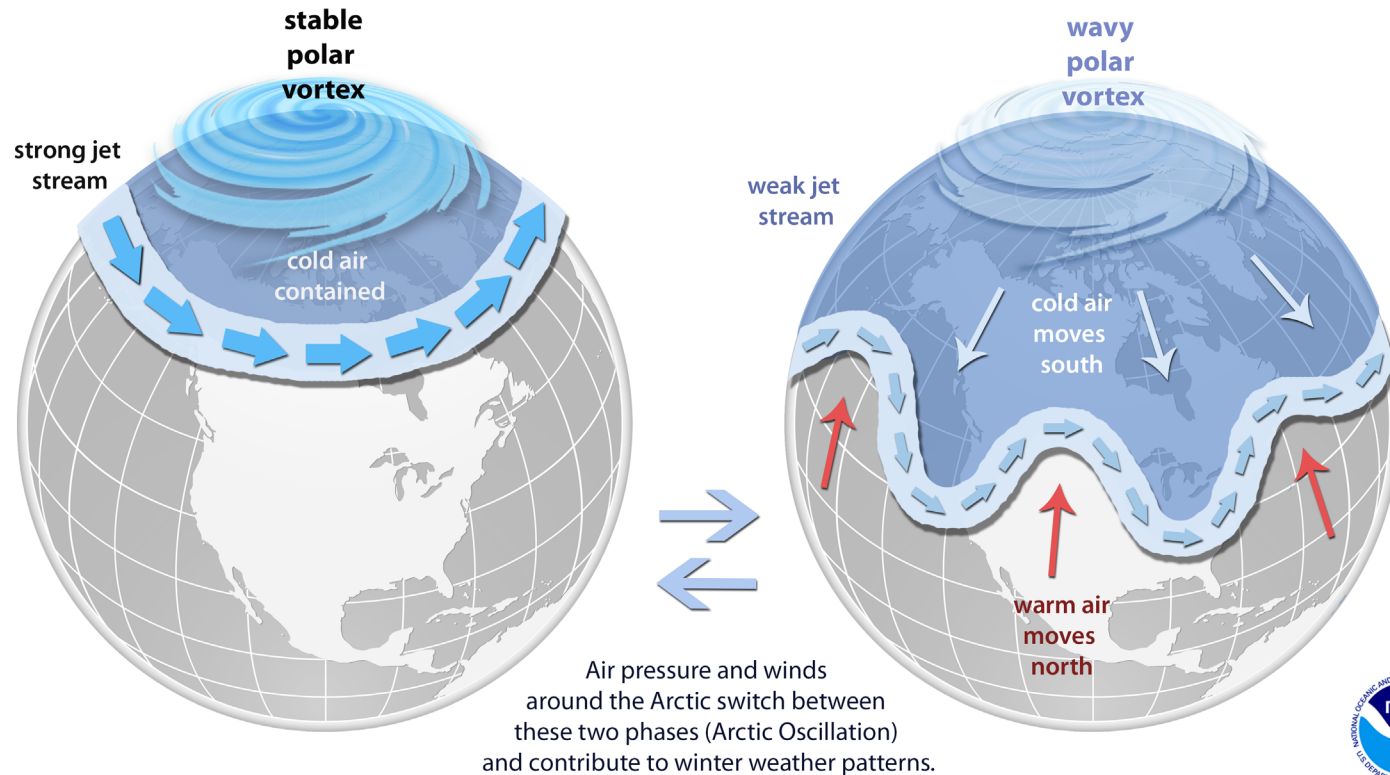
- Polar Vortex Impact
 - Overview
 - ERCOT
 - SPP
 - MISO
 - Past 4 Polar Vortex
- Power Conservation Alert Program

Polar Vortex Overview

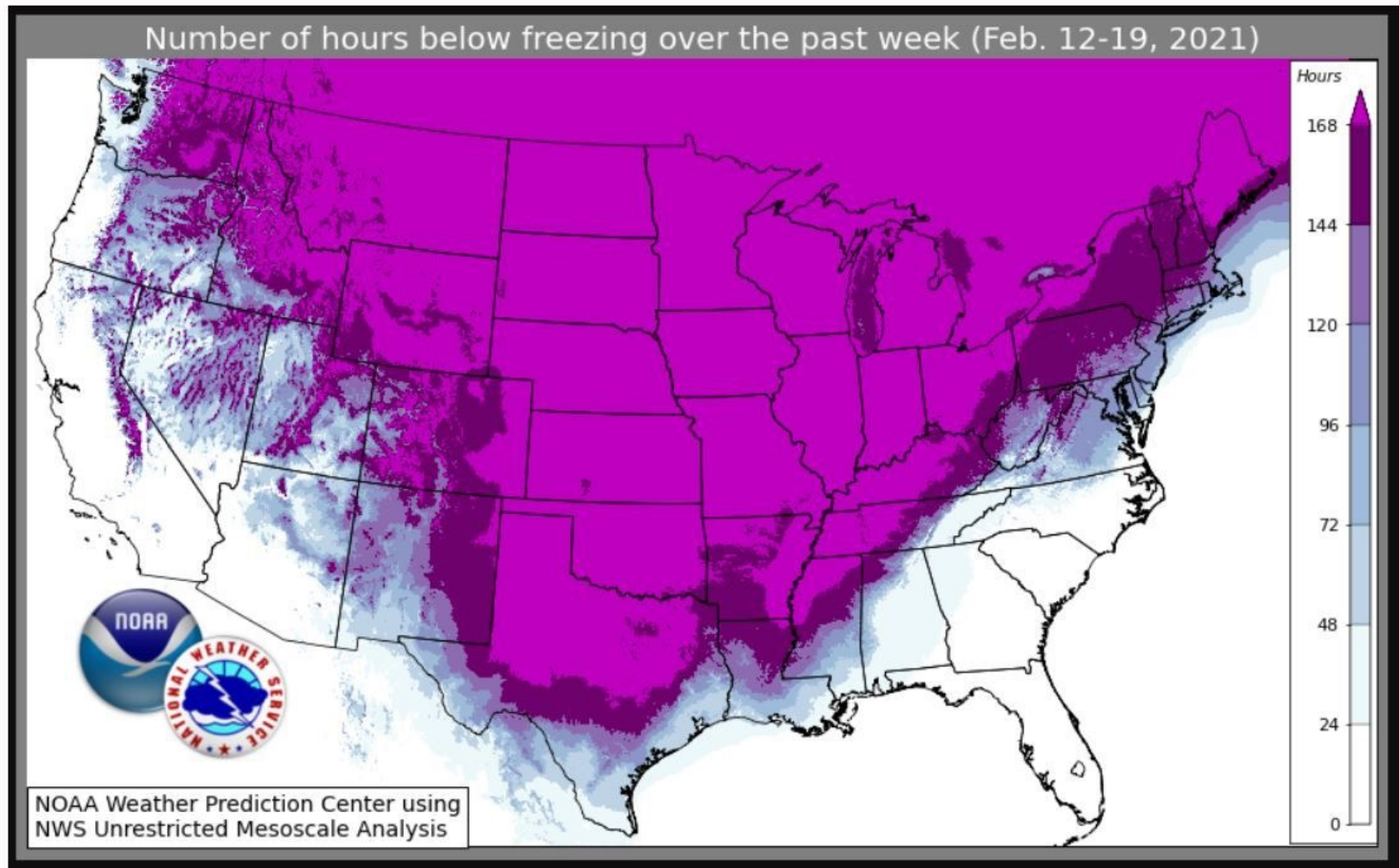
The Science Behind the Polar Vortex

The polar vortex is a large area of low pressure and cold air surrounding the Earth's North and South poles. The term vortex refers to the counterclockwise flow of air that helps keep the colder air close to the poles (left globe). Often during winter in the Northern Hemisphere, the polar vortex will become less stable and expand, sending cold Arctic air southward over the United States with the jet stream (right globe).

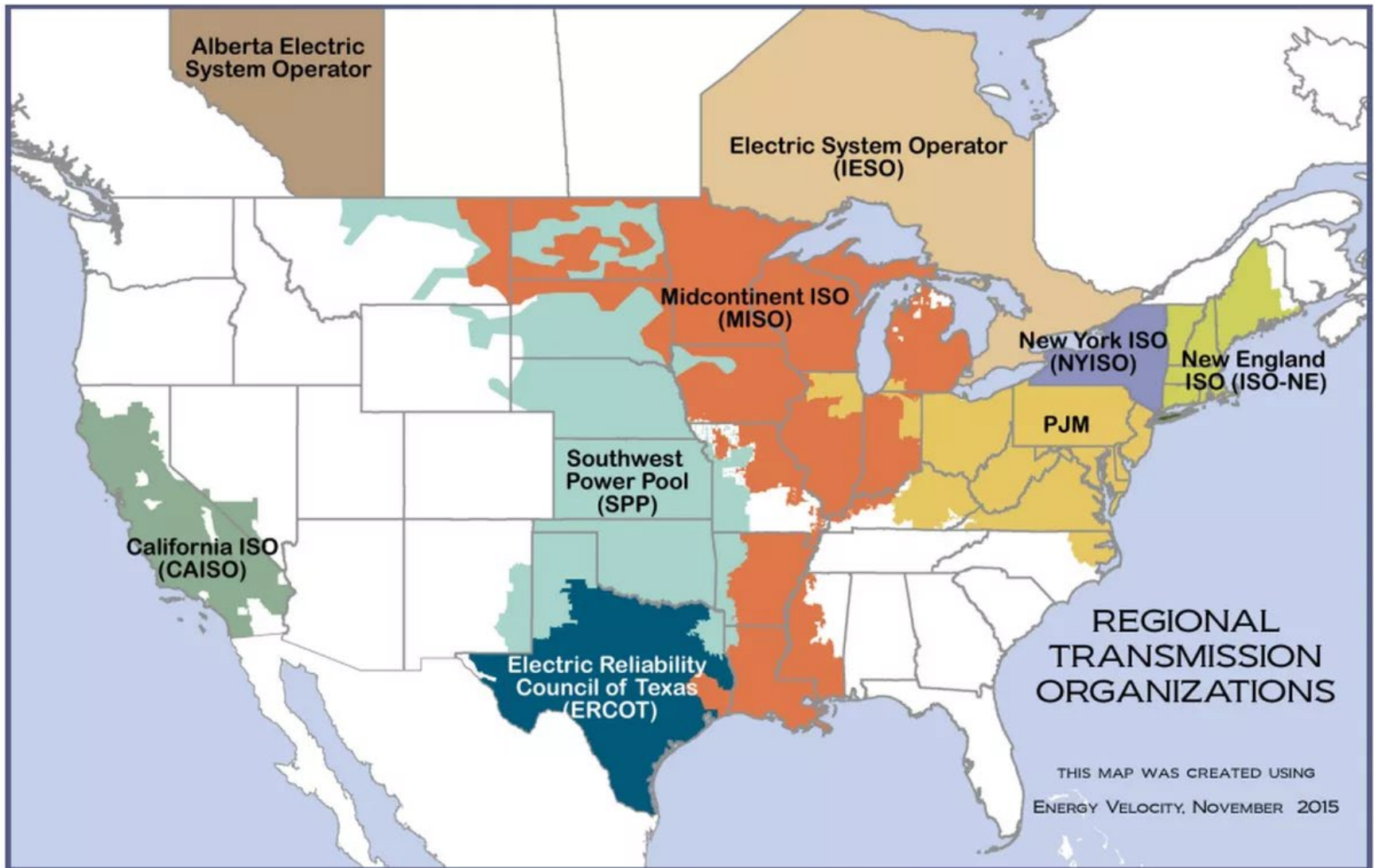
The polar vortex is nothing new — in fact, it's thought that the term first appeared in an 1853 issue of E. Littell's *Living Age*.



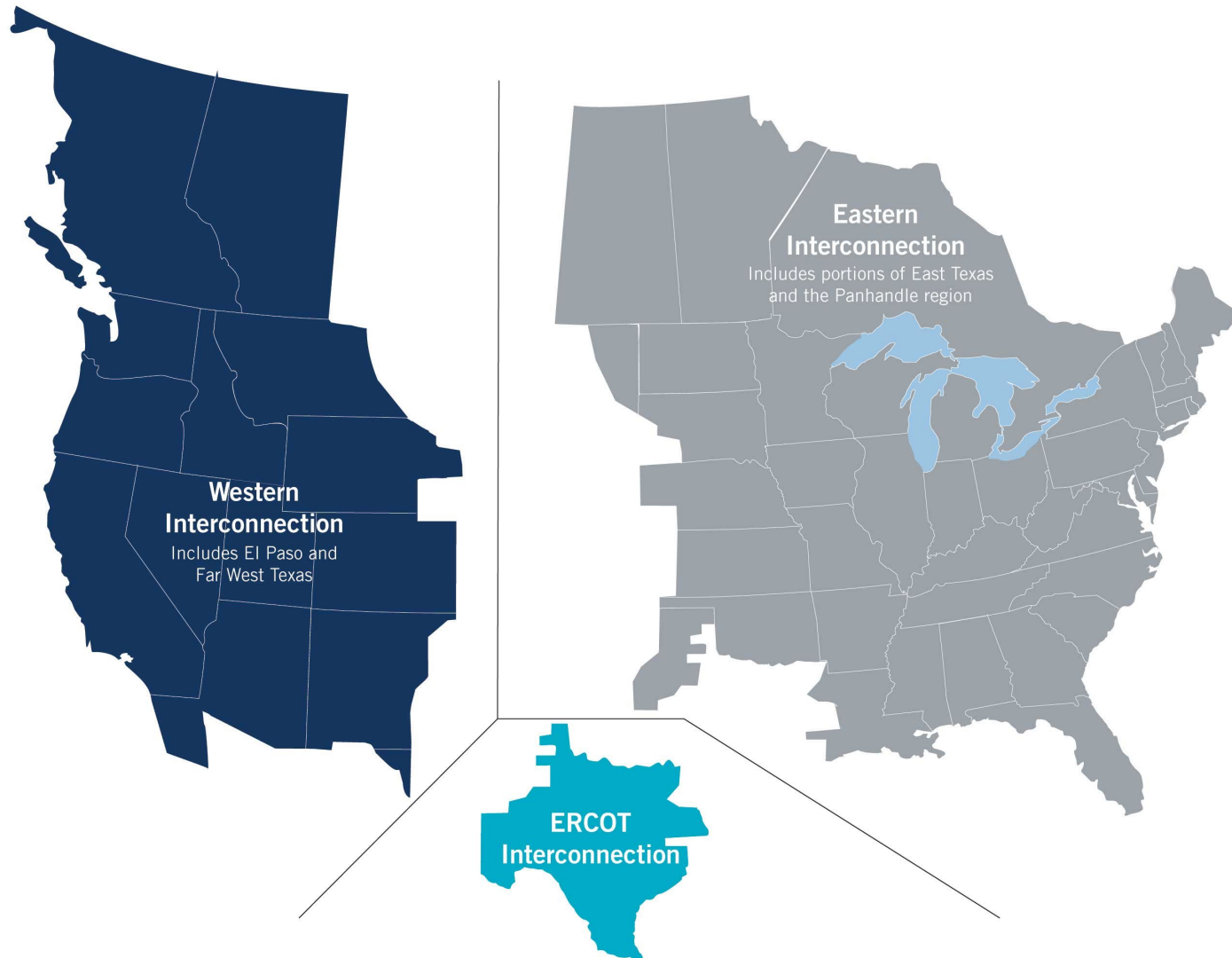
Feb. 12-19, 2021 Polar Vortex



RTO Map



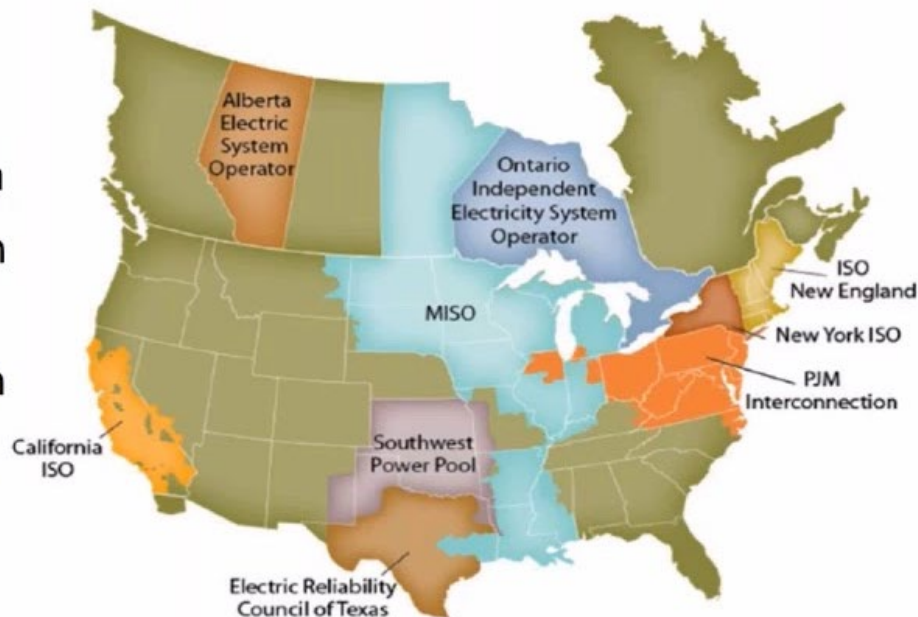
Three Synchronous Grids





FERC and Wholesale Electricity Markets

- Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission and wholesale sales of electricity
- ISOs and RTOs cover two-thirds of North America
 - Grid operation
 - Market administration
 - Power system planning

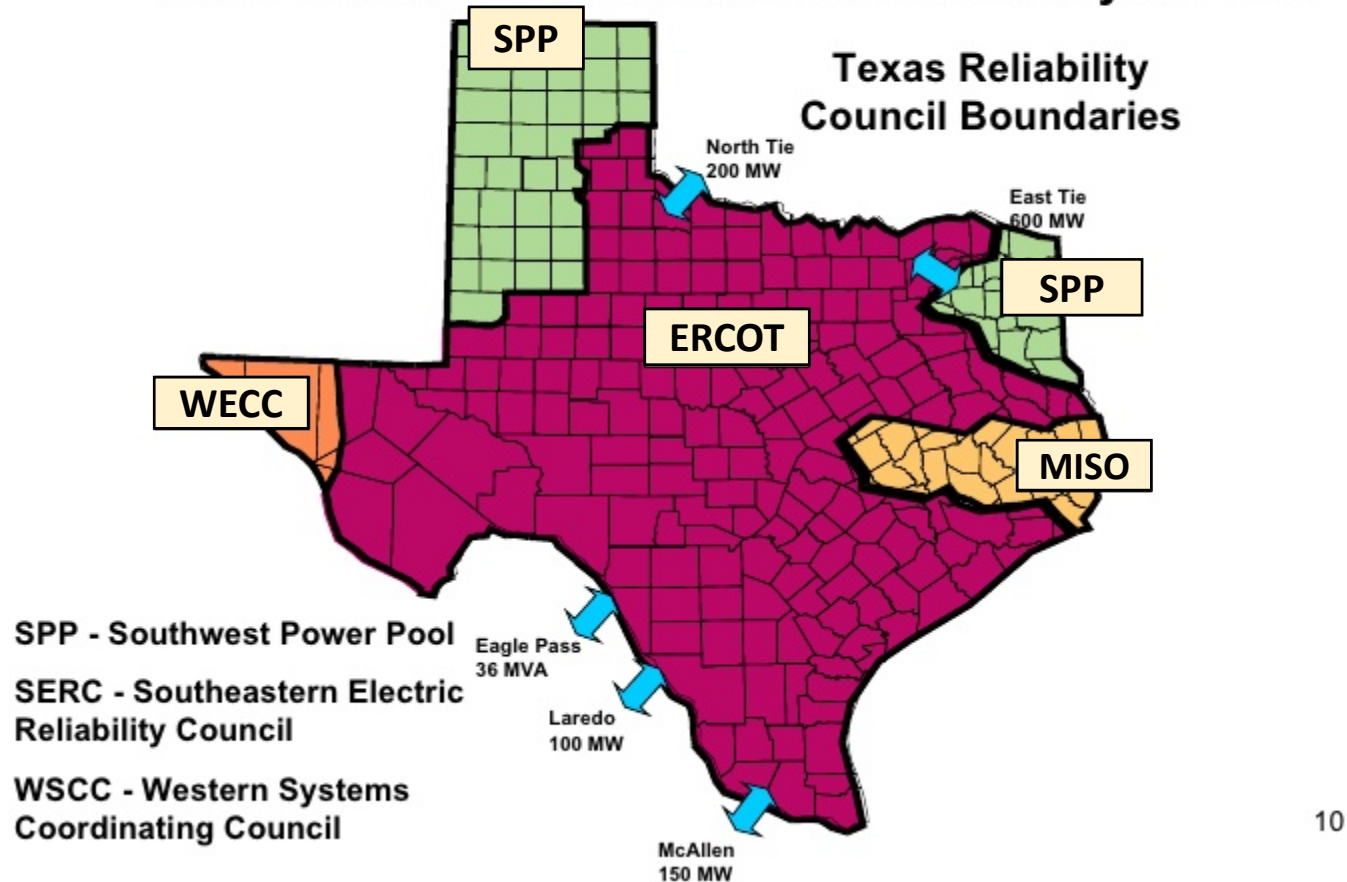


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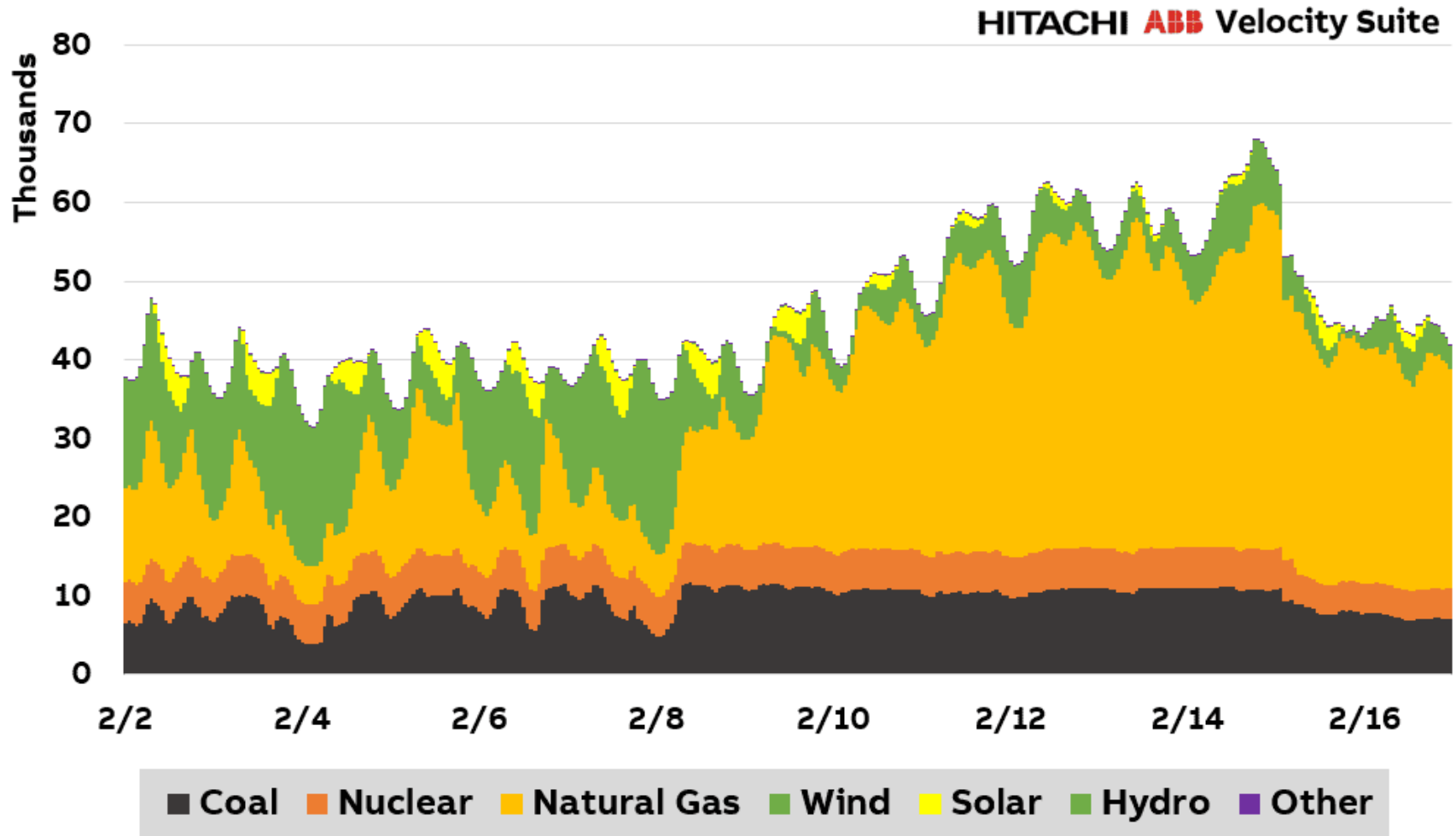
ERCOT is an Island (Limited DC Ties)

Within Texas, the ERCOT grid serves 85% of the electric load, and covers 75% of the land. ERCOT is connected to the Eastern Interconnect and Mexico by DC ties.



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ERCOT Resource Mix (2021 Polar Vortex)



ERCOT Rolling Blackouts

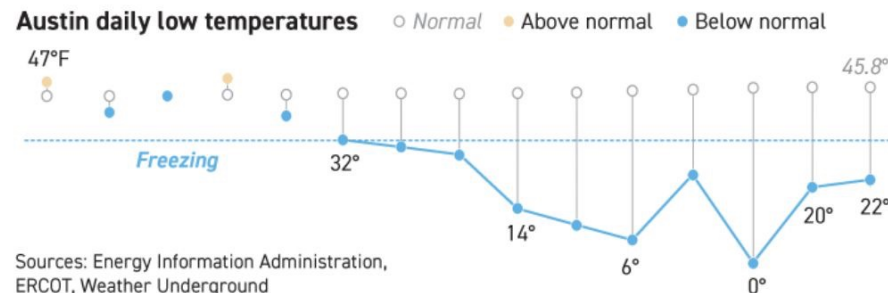
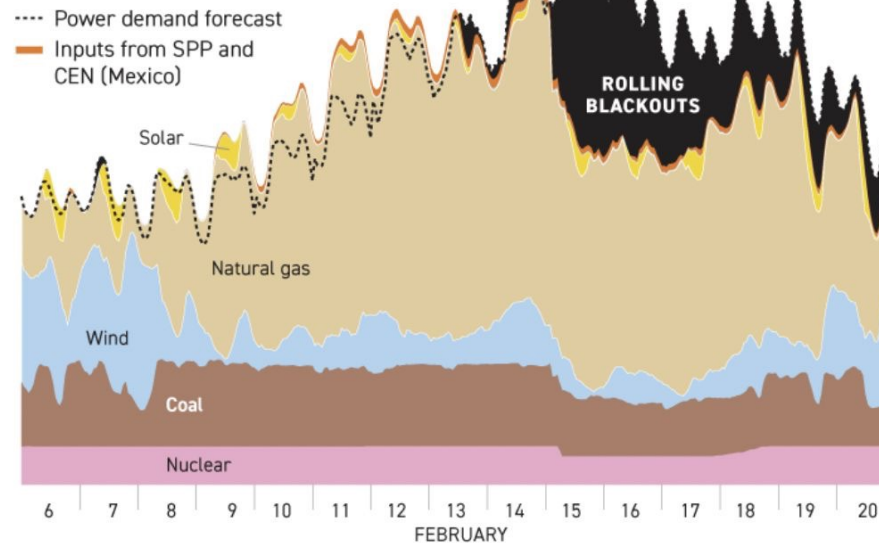
A cold knockout to the Electric Reliability Council of Texas

NET GENERATION AND FORECAST DEMAND, IN MEGAWATT-HOURS

In November, ERCOT's worst-case scenario for extreme winter weather: **67,208 MWh**.

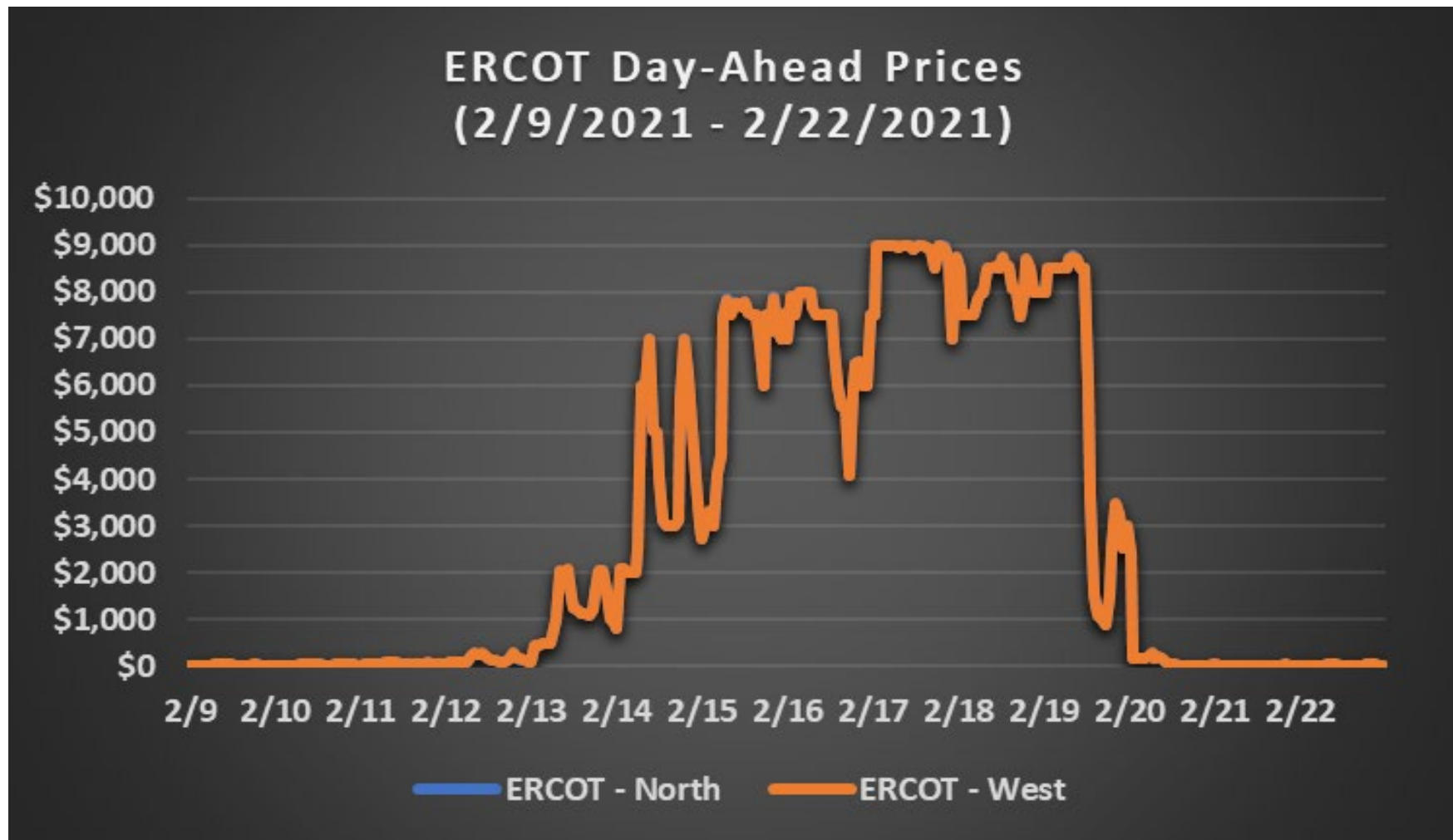
Peak net generation, Feb 14: **68,834 MWh**

Peak forecast demand: **76,783 MWh**

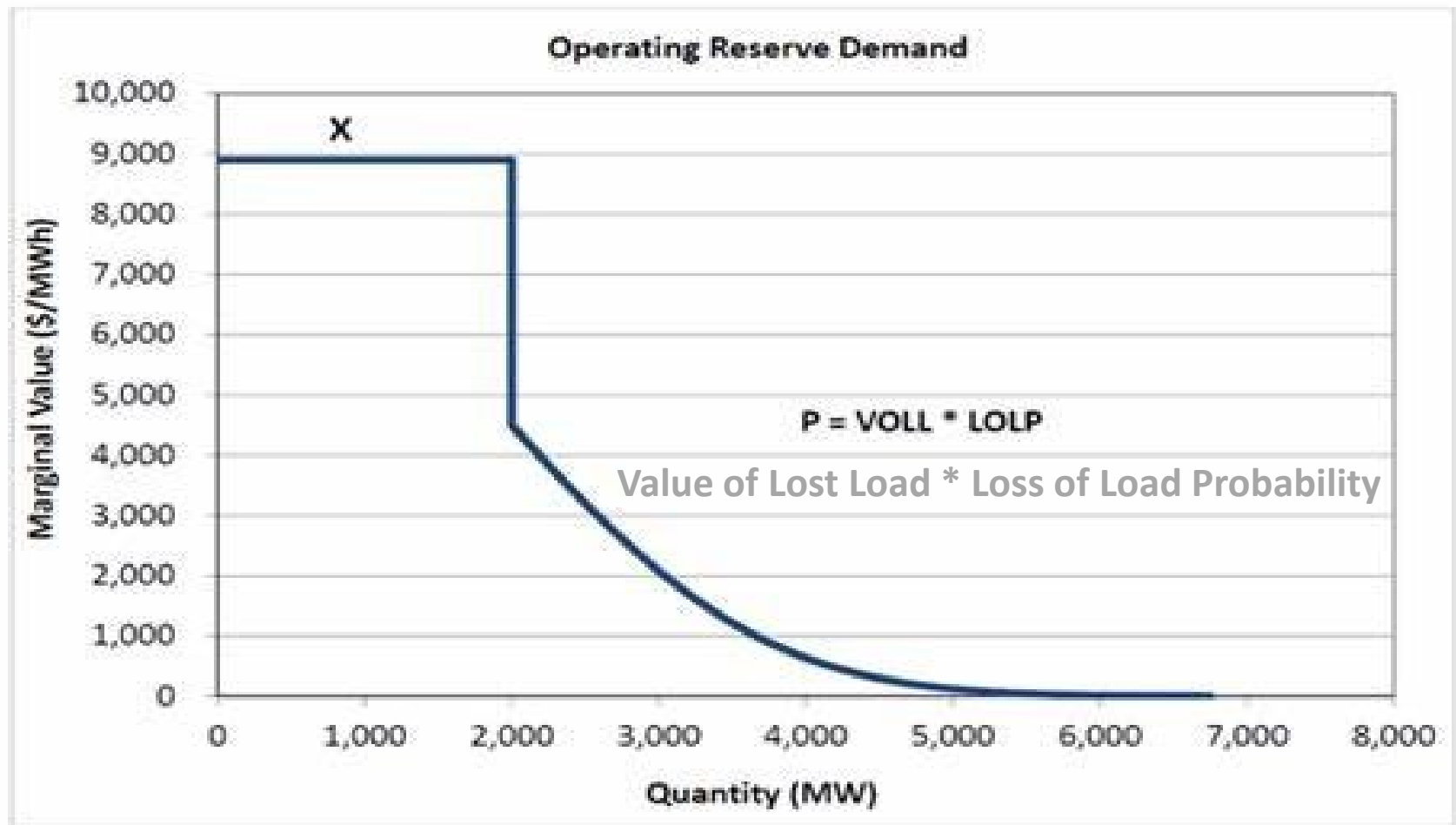


Sources: Energy Information Administration, ERCOT, Weather Underground

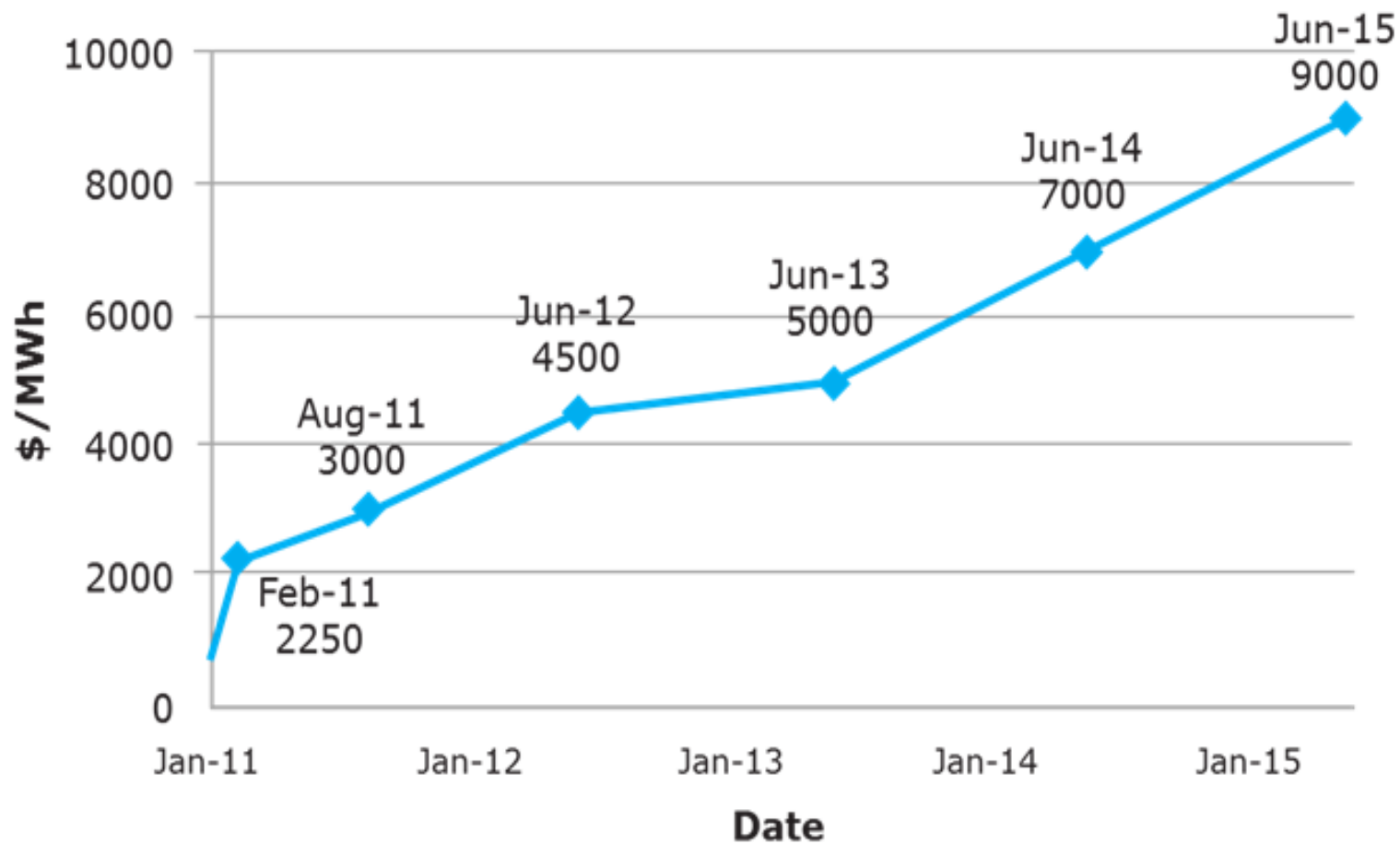
ERCOT Prices (2021 Polar Vortex)



ERCOT Operating Reserve Demand Curve (ORDC)

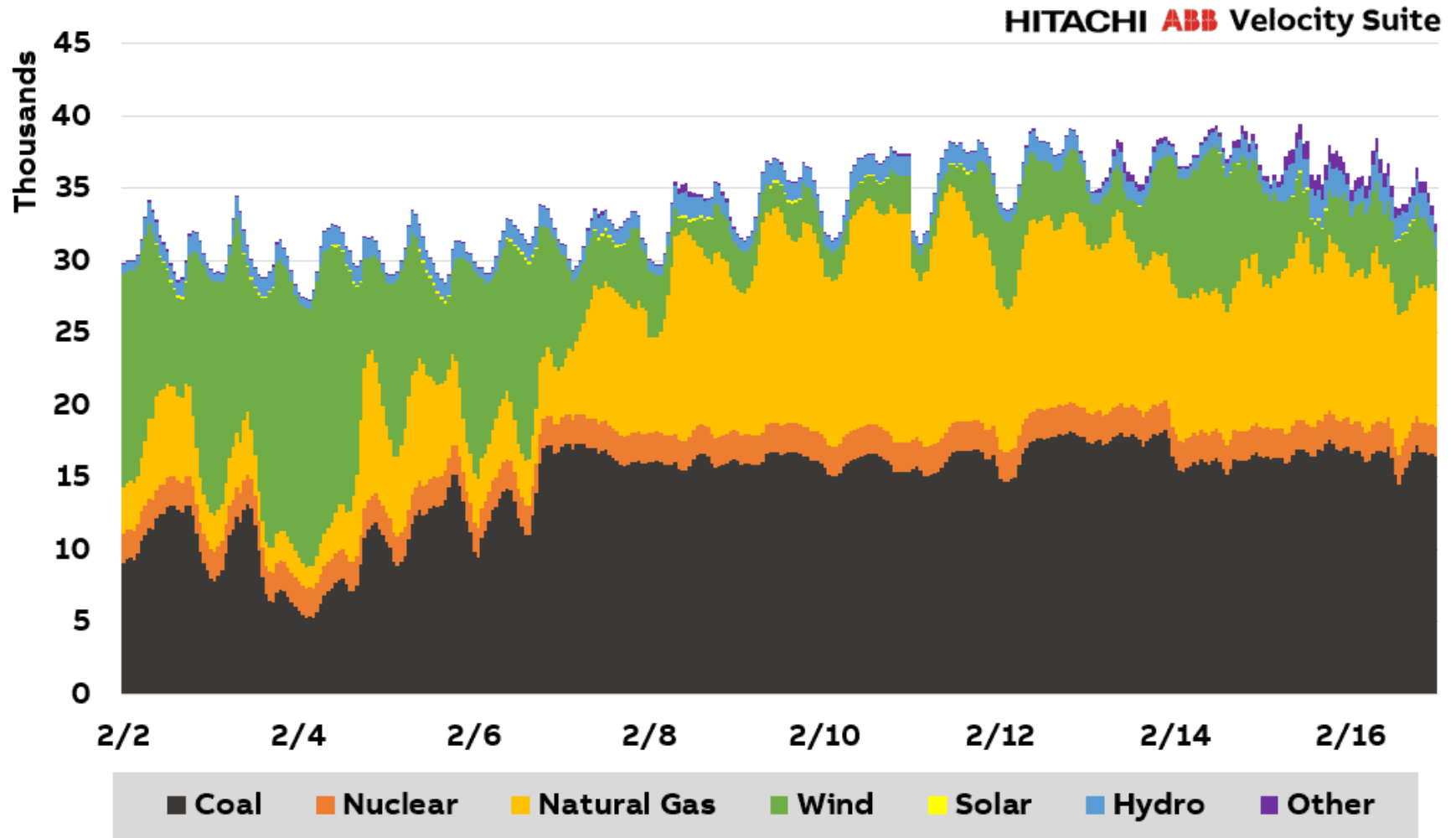


ERCOT VOLL History

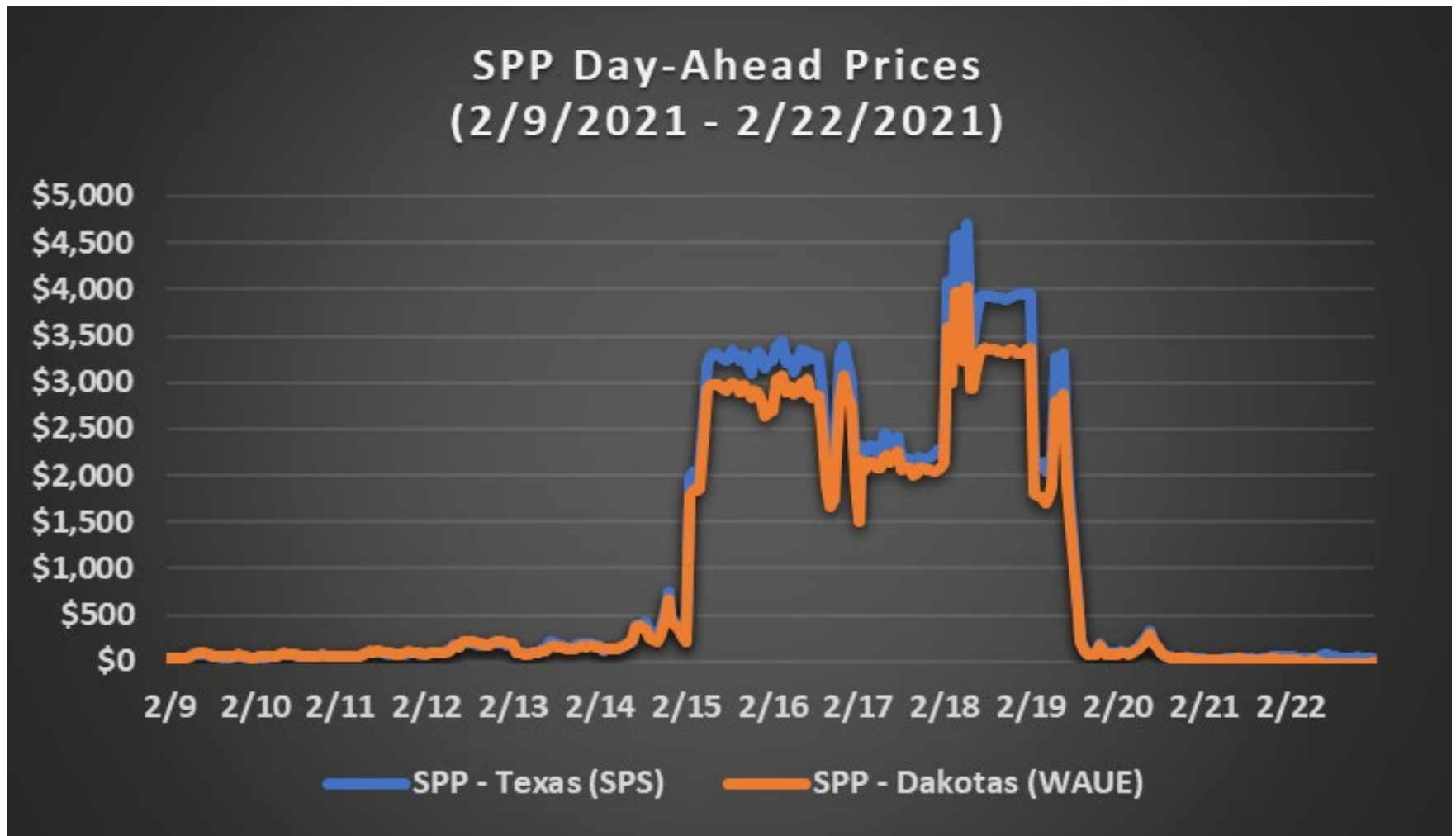


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SPP Resource Mix (2021 Polar Vortex)

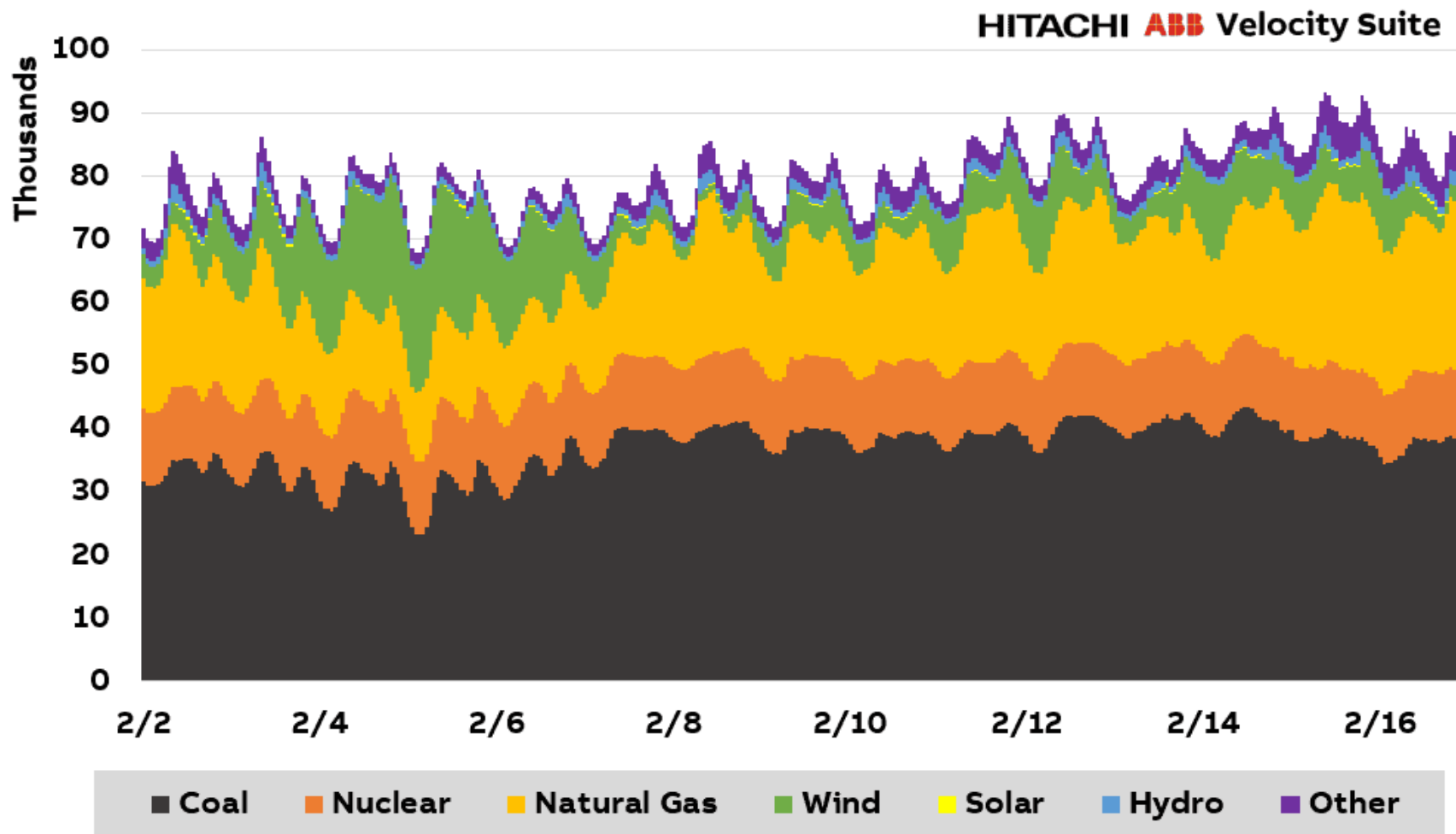


SPP Prices (2021 Polar Vortex)

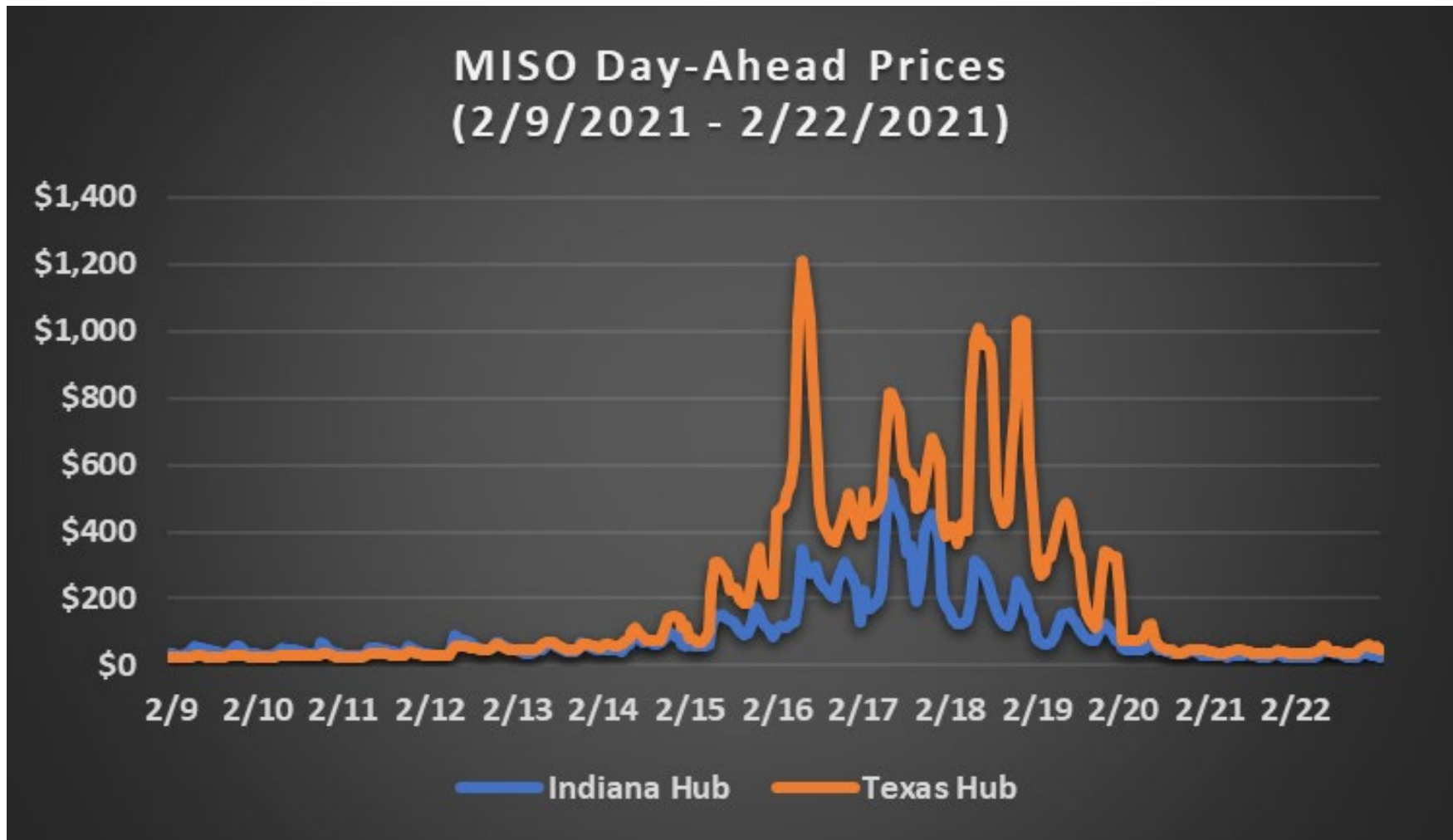


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MISO Resource Mix (2021 Polar Vortex)

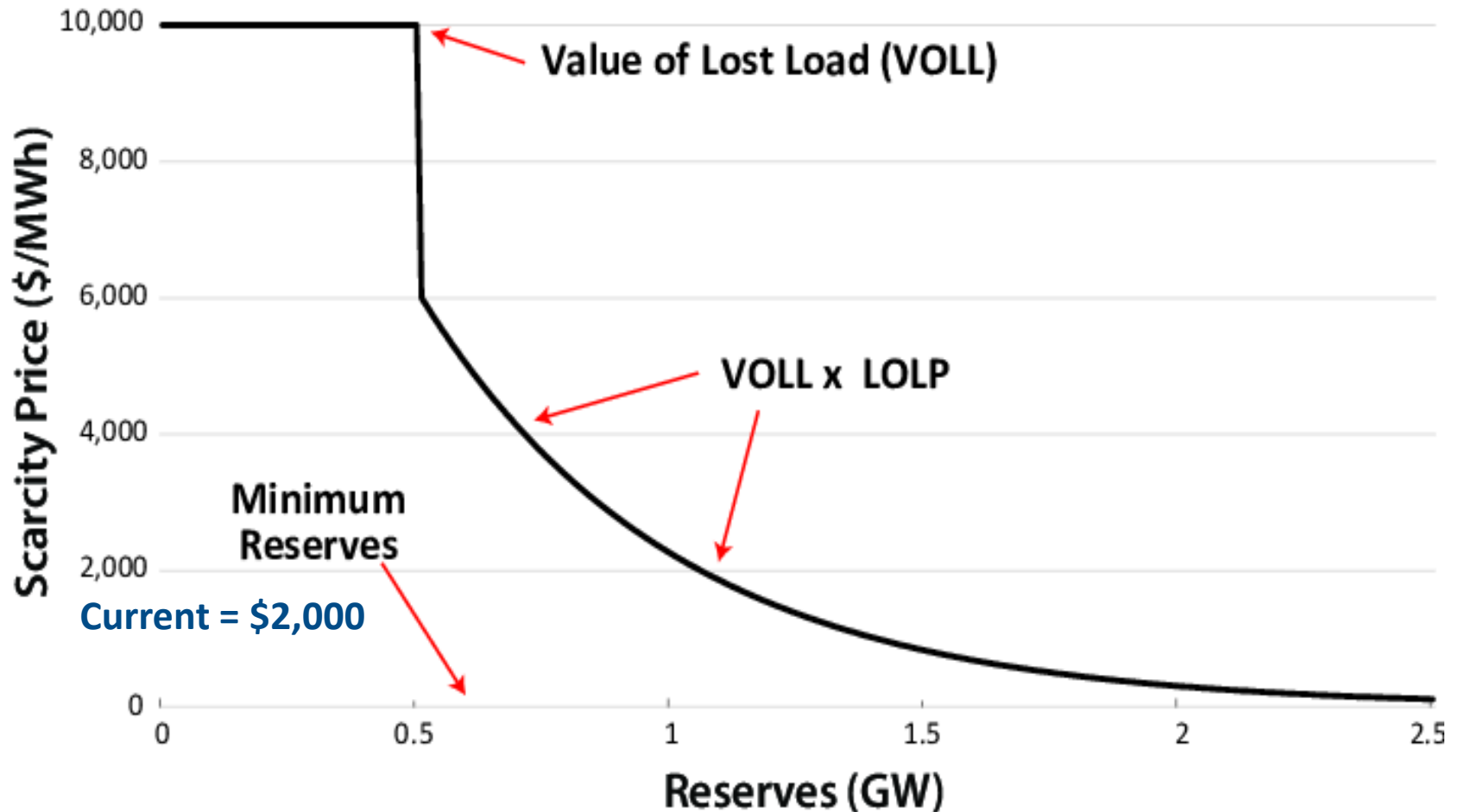


MISO Prices (2021 Polar Vortex)



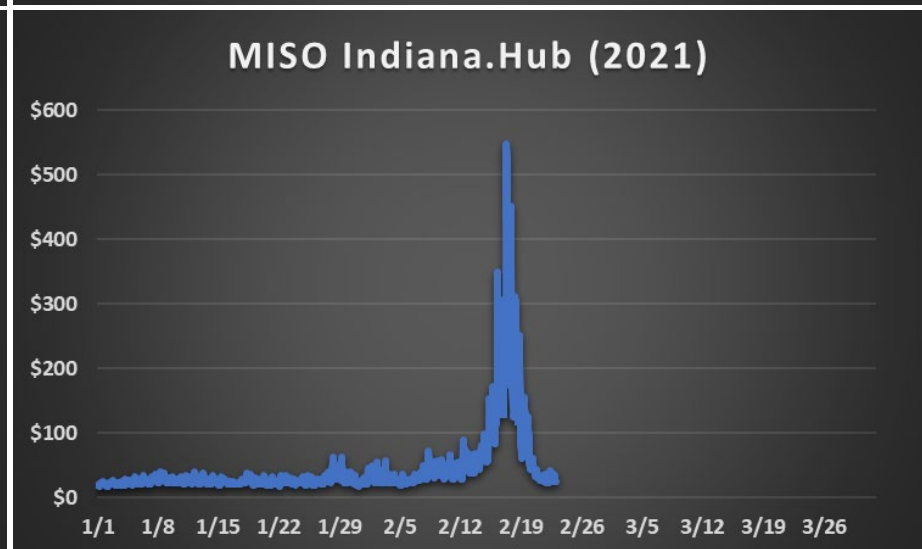
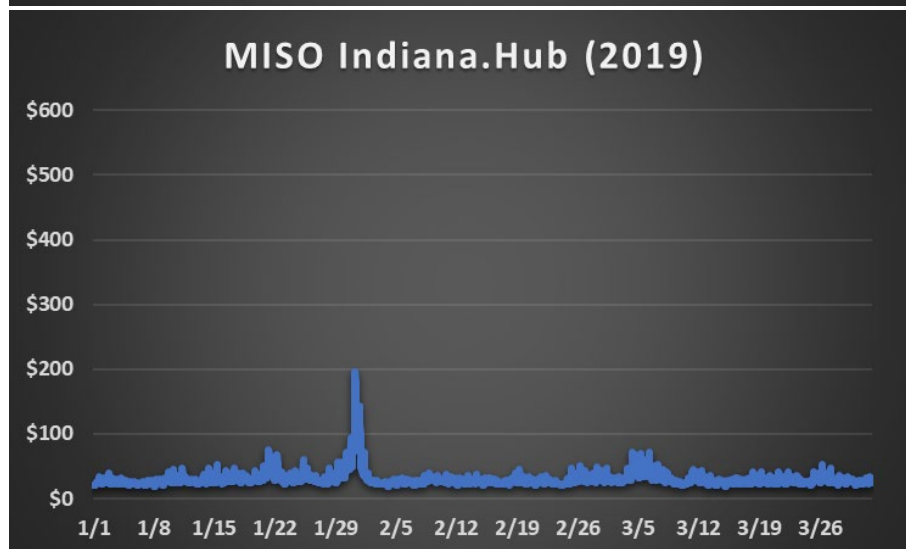
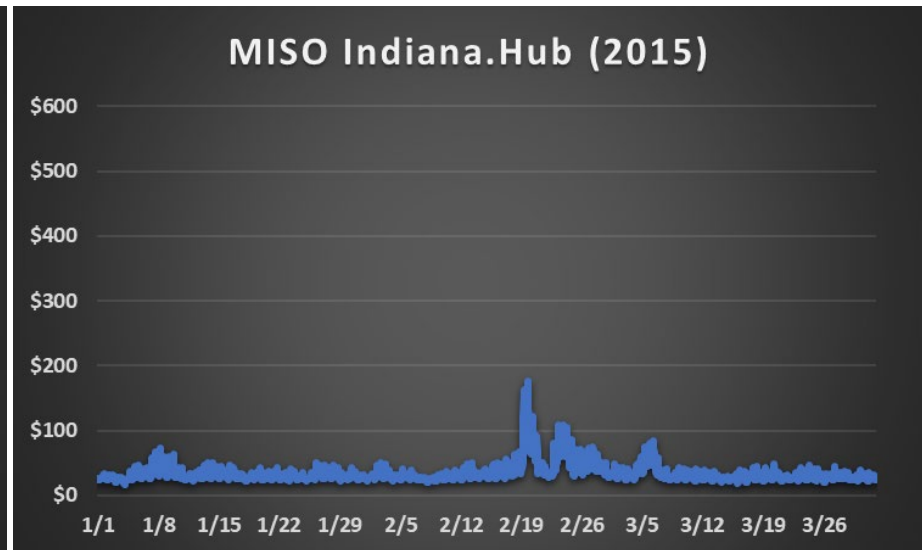
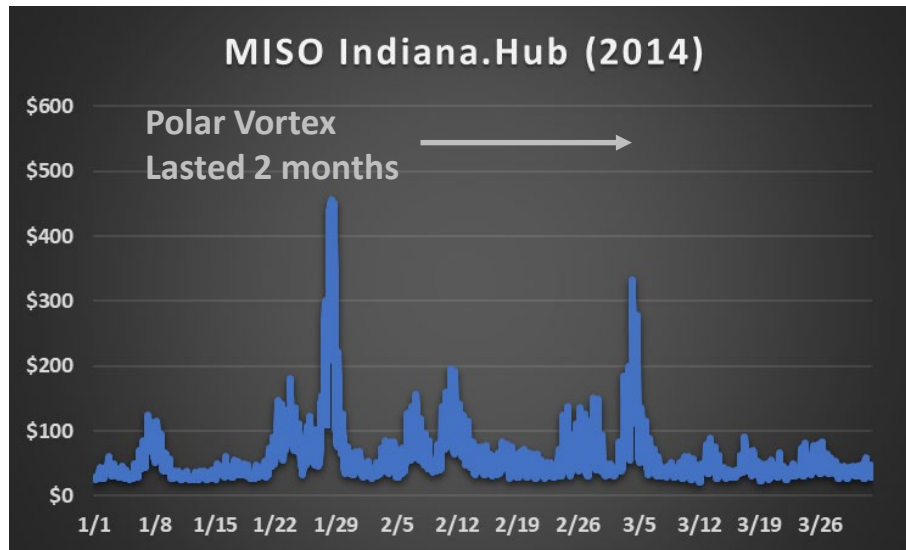
MISO IMM Proposed Operating Reserve Demand Curve (ORDC)

IMM Proposed = \$10,000 (suggested \$23,000 is more appropriate)



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Compare Past 4 Polar Vortex Prices



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New Member Service: Power Conservation Alert (PCA)

2 GROWTH

KYMEA will promote organic growth within our communities and seek mutually beneficial new membership opportunities.

2.1 **Communication & Education:**
Enhance KYMEA's brand by hosting two training and educational events annually, beginning January 1, 2020.

2.2 **Membership Growth:** Seek to grow membership by visiting three potential members annually over the next three years.

2.3 **Member Services:** KYMEA will identify and evaluate a minimum of one new member service annually for the next three years that brings value to the agency and the communities we serve.

The purpose of the PCA is a call to consumers to voluntarily conserve energy. PCA occurs before emergency load shedding and under frequency load shedding (UFLS) to avert potential involuntary customer brownouts and blackouts.

Power Conservation Alert (PCA)

- A call to consumers to voluntarily conserve energy when demand for power could outstrip supply or the power supply costs are exorbitantly high. This generally occurs during a heatwave or polar vortex.
- Proposed program would allow KYMEA to declare a PCA and automatically notify members and their voluntary customers (e-mail and/or text) that a conservation event has occurred.

If the Board is agreeable, the proposed action is for staff to investigate and design a Power Conservation Alert (PCA) program for the Board's review by the end of 2021.