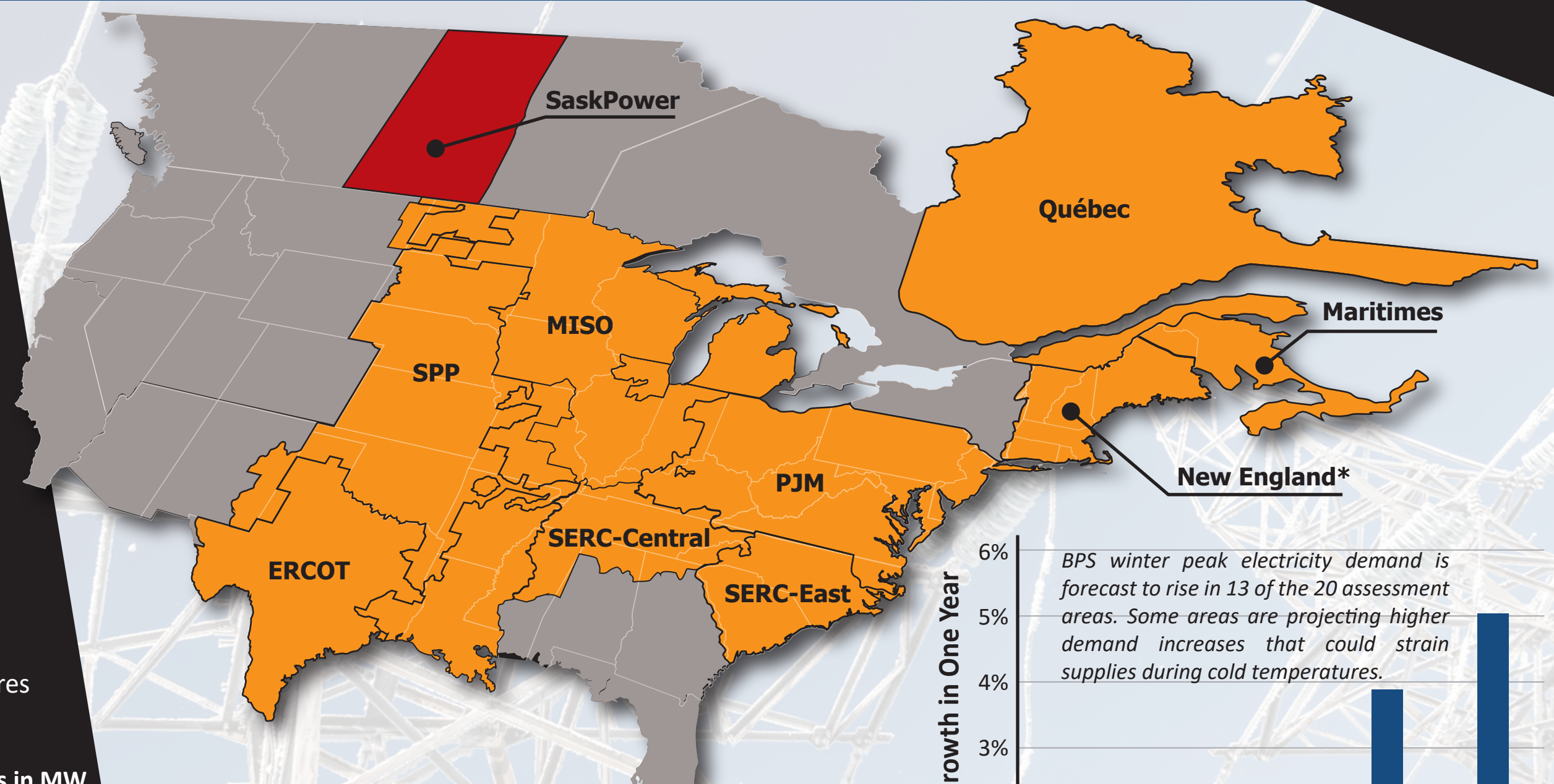


# 2023–2024 Winter Reliability Assessment

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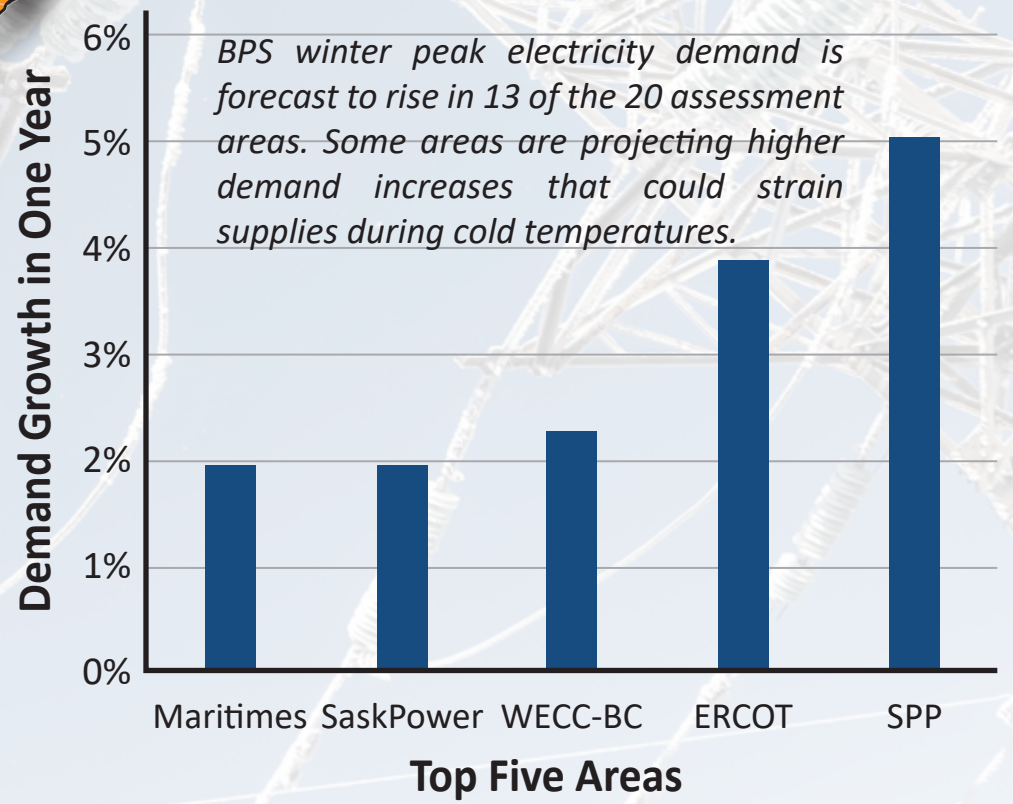
A large portion of the North American bulk power system is at risk of insufficient electricity supply during peak winter conditions. Prolonged, wide-area cold snaps threaten the reliable performance of bulk power system generation and the availability of the natural gas used by many generators. When electricity supply becomes constrained, system operators can face a simultaneous, sharp increase in demand as electric heating systems consume more power in cold temperatures. In some areas not typically exposed to prolonged frigid temperatures, generating capacity can be forced off-line and may require load-shedding procedures to maintain reliability.



**Assessed Capacity Potential Shortfalls in MW**

- SaskPower: 400
- Maritimes: 900
- MISO: 16,000
- PJM: 12,000
- SPP: 8,500
- SERC-Central: 5,700
- Québec: 5,500
- ERCOT: 6,800
- SERC-East: 2,700

Low	Elevated	High
Sufficient operating reserves expected	Potential for insufficient operating reserves in above-normal conditions	Potential for insufficient operating reserves in normal peak conditions
	*Limited Natural Gas Infrastructure	



**Generator fuel supplies remain at risk during extreme, long-duration cold weather events.**

Natural-gas-fired generator availability and output can be threatened when the fuel supply is insufficient or when infrastructure is unable to maintain the flow of fuel. As Winter Storm Elliott demonstrated, the rapid decline in natural gas production during periods of extreme cold weather can have wide-area consequences for the grid.

**Underestimating demand is a reliability risk in extreme cold temperatures.**

Extreme cold temperatures and unfamiliar weather patterns characterized by strong cold fronts, wind, and precipitation can cause electricity demand to deviate significantly from historical forecasts. Heating sector electrification and the growth of solar energy generation increase load forecasting complexity and uncertainty.