

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

2021 Summer Reliability Assessment

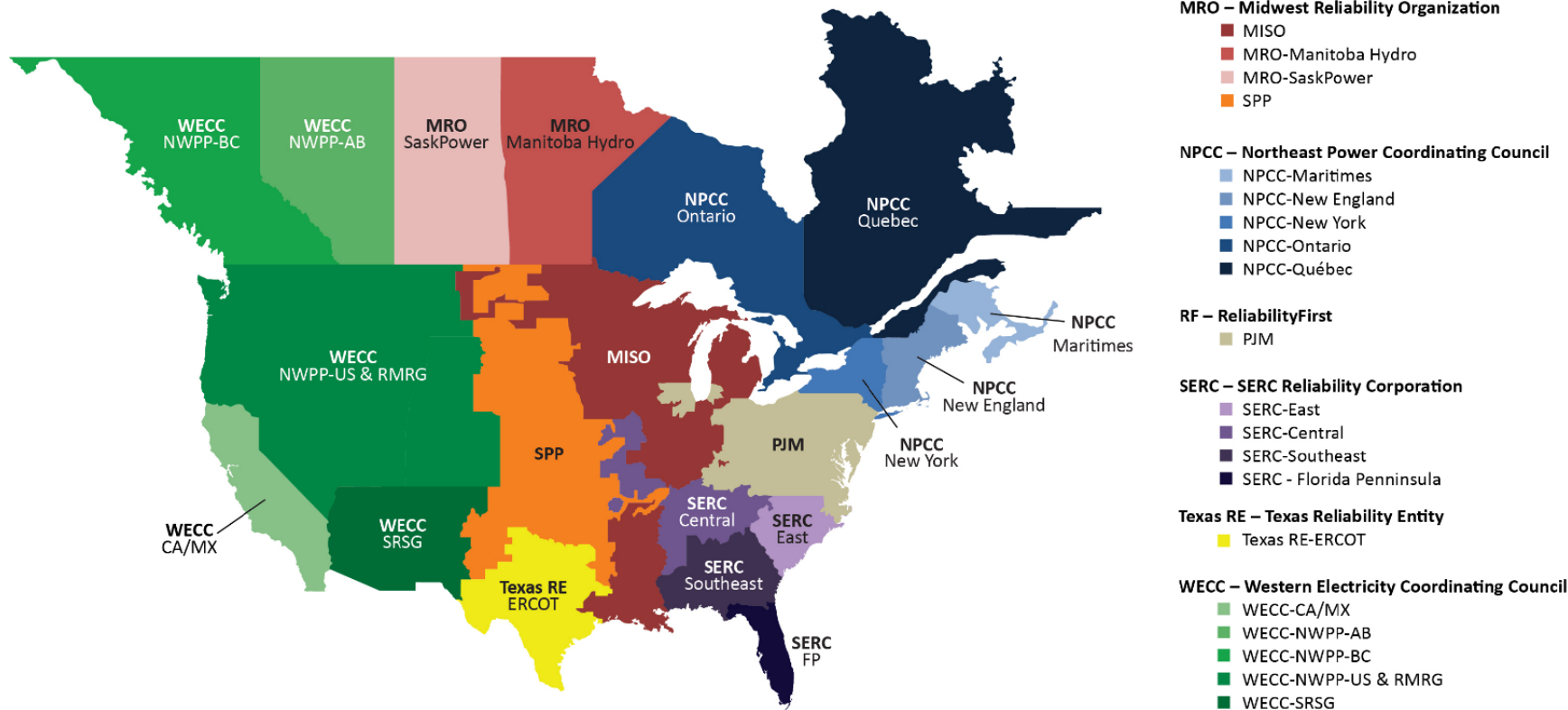
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North American Energy Markets Association Meeting
June 23, 2021

RELIABILITY | RESILIENCE | SECURITY

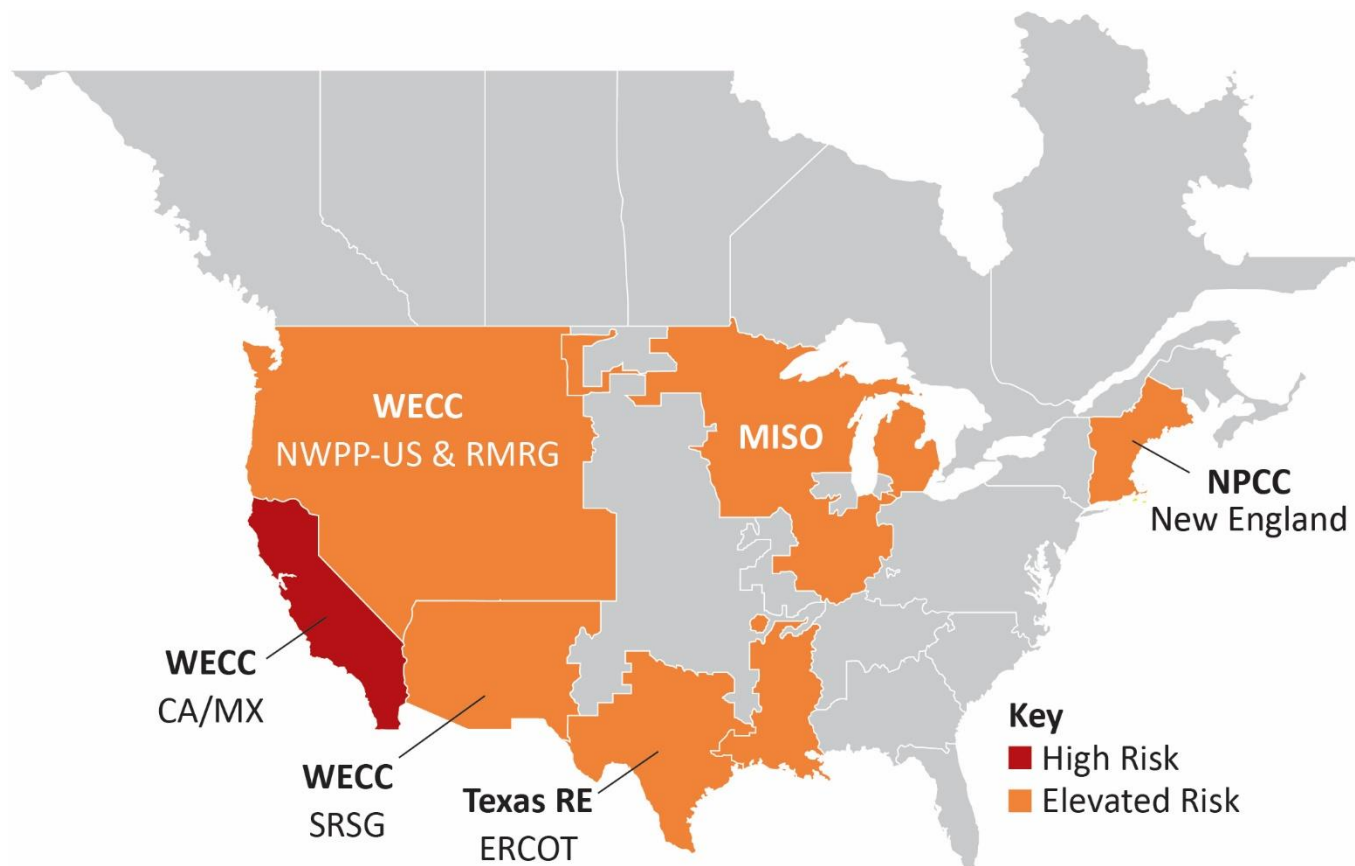
- Examines potential regional resource shortfalls and operating reliability concerns
- Describes industry preparations to manage risks

- Coordination and Review
 - 20 *Assessment Areas*
 - Regional Entities and Region stakeholder groups



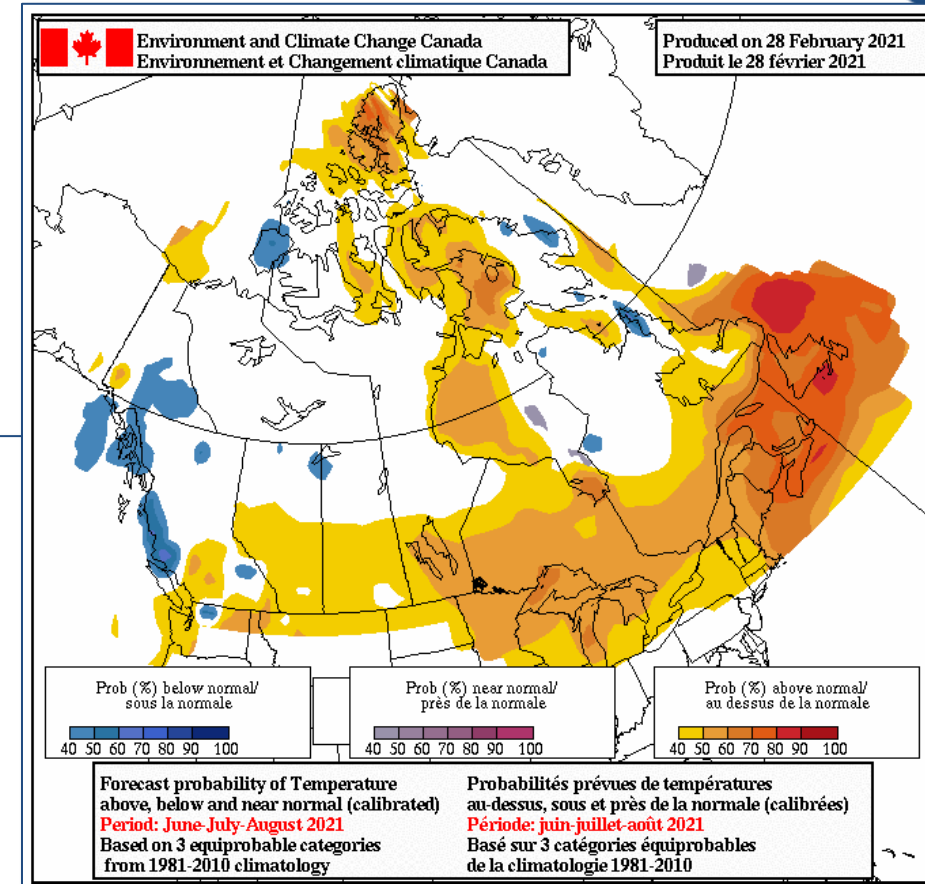
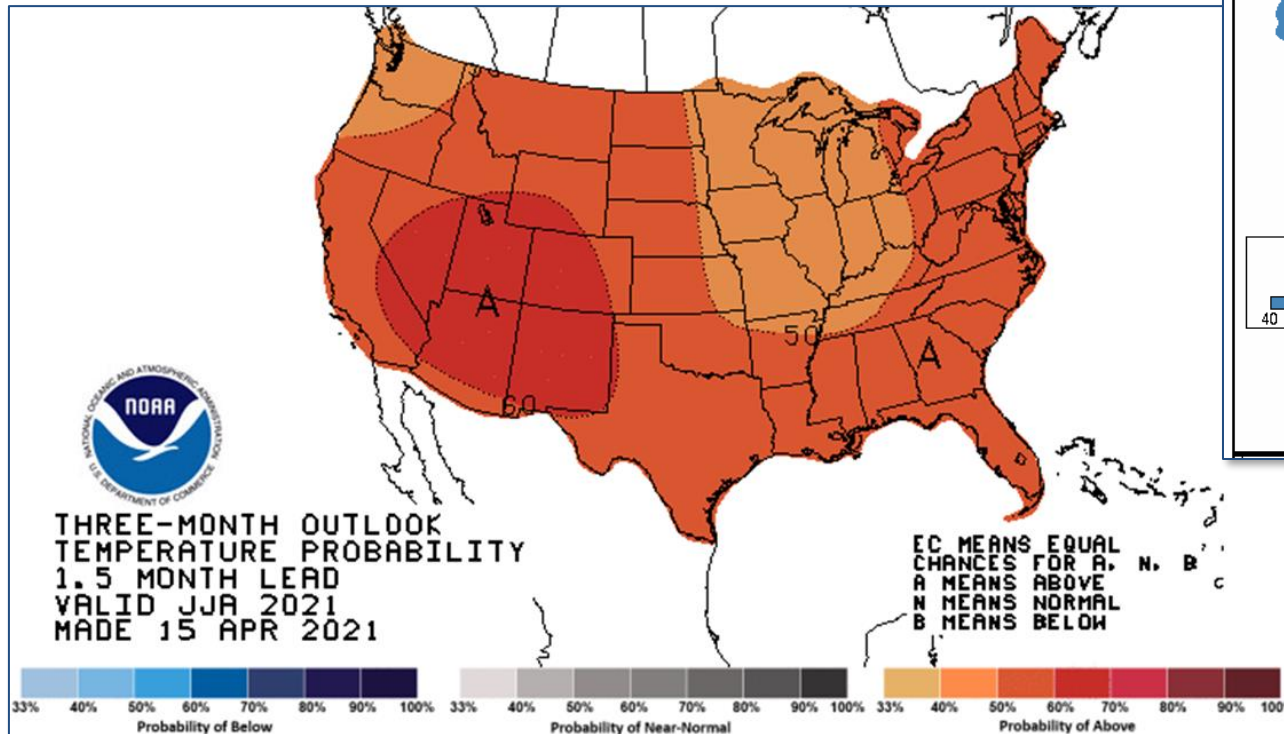
- 2021 Summer Reliability Assessment identifies:
 - High risk for the potential of energy shortfalls in California
 - Elevated risk for the potential of energy shortfalls in MISO, New England, Texas, and the West
- Potential shortfalls created by:
 - Above average seasonal temperatures
 - Grid transformation to more weather dependent generation resources
 - Wildfire-related outages compromising inter-state energy transfers

- Parts of North America are at **elevated** or **high** risk of energy shortfalls during peak summer conditions



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

- Weather officials indicate above-normal temperatures are likely across much of North America
- Temperature is key driver for peak electricity demand in most areas

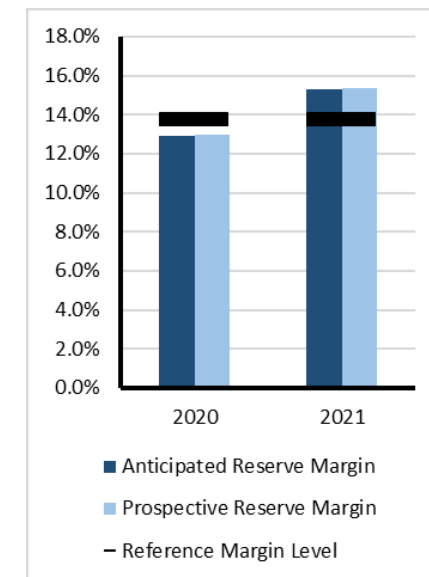
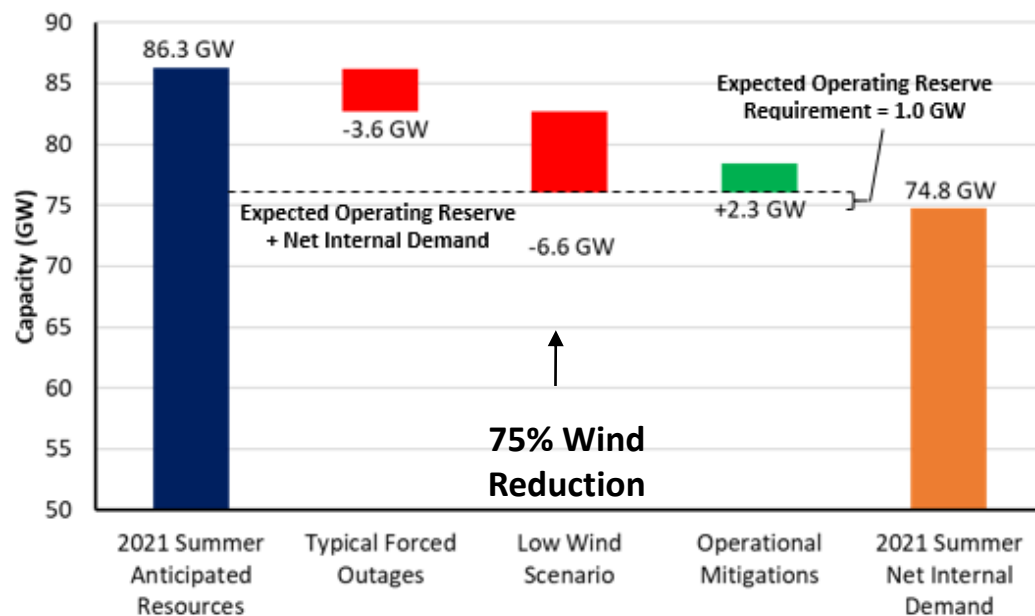


Seasonal Forecast Maps | June - August

Sources: Natural Resources Canada and U.S.
National Weather Service

- Nearly 8 GW of wind, solar, and battery resources added since summer 2020
- Summer Anticipated Reserve Margins above the ERCOT Reference Margin Level

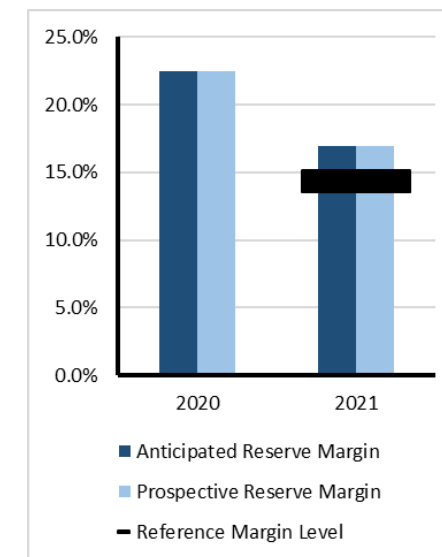
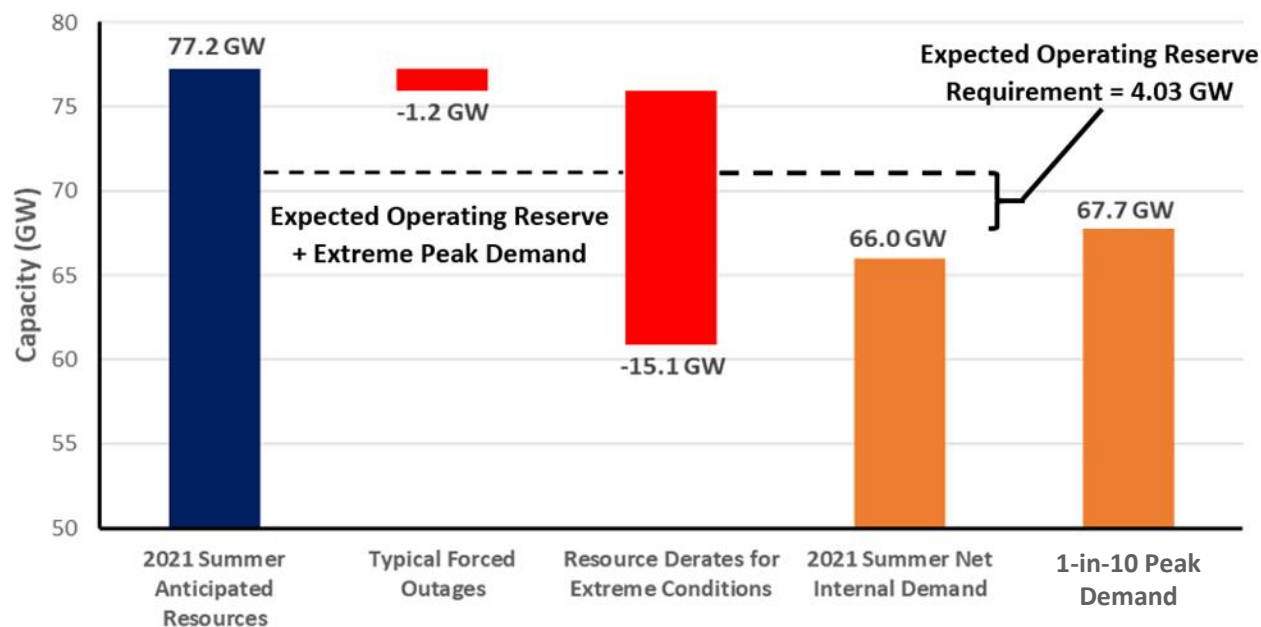
Combination of Low-Wind and Normal Generator Outages



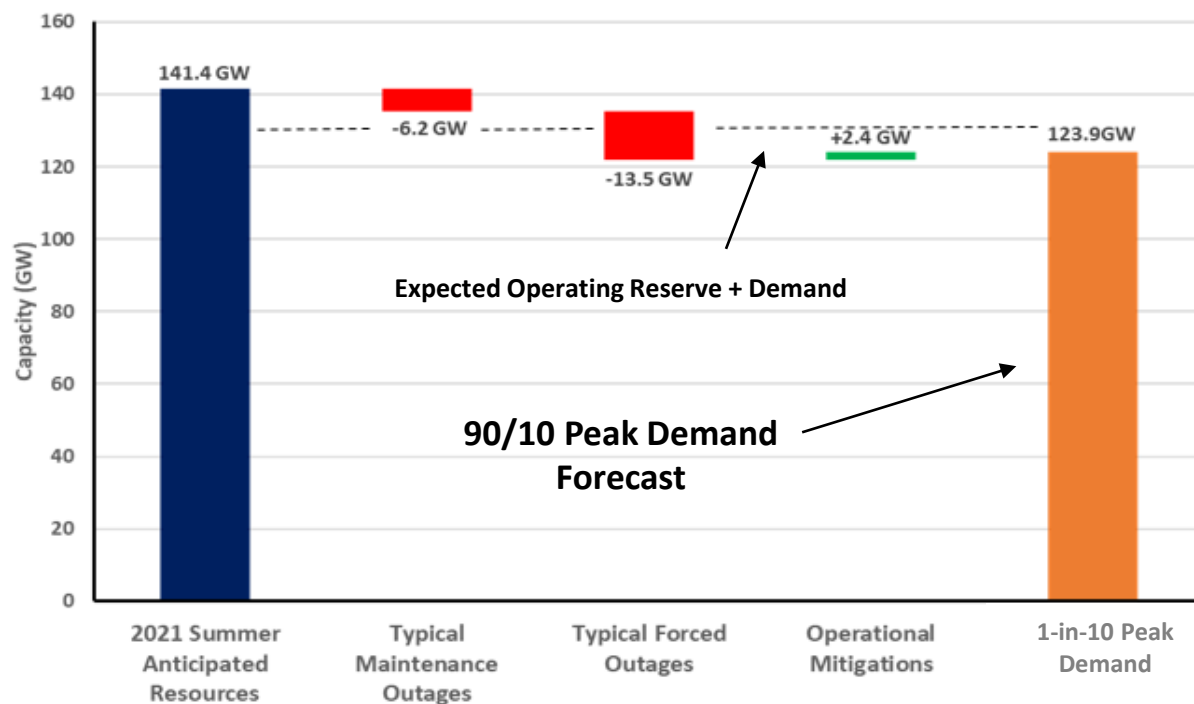
Scenario Analysis:

- Low wind output at peak demand can cause operating reserve shortfall
- Above-normal demand and generator outage scenarios lead to energy emergencies

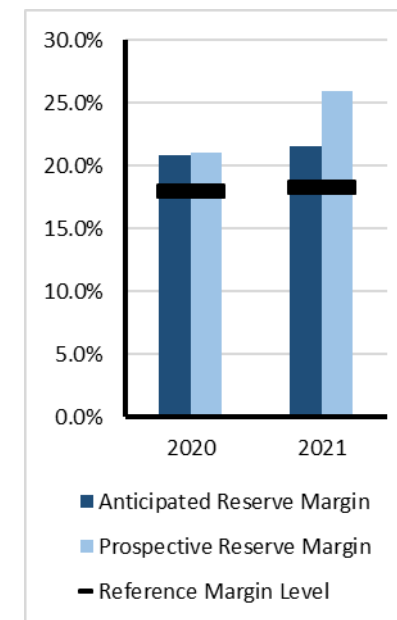
- Sufficient resources to meet summer peak demand forecast
 - 3 GW less on-peak capacity than in 2020
- Scenario Analysis: Low hydro and high thermal outages leads to energy shortfalls



- Summer reserve margin is slightly higher compared to 2020
- Increasing use of load modifying resources (e.g., demand response) and non-firm imports during peak demand

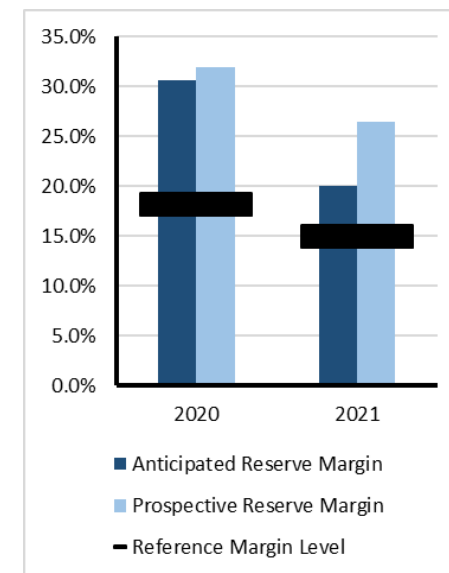
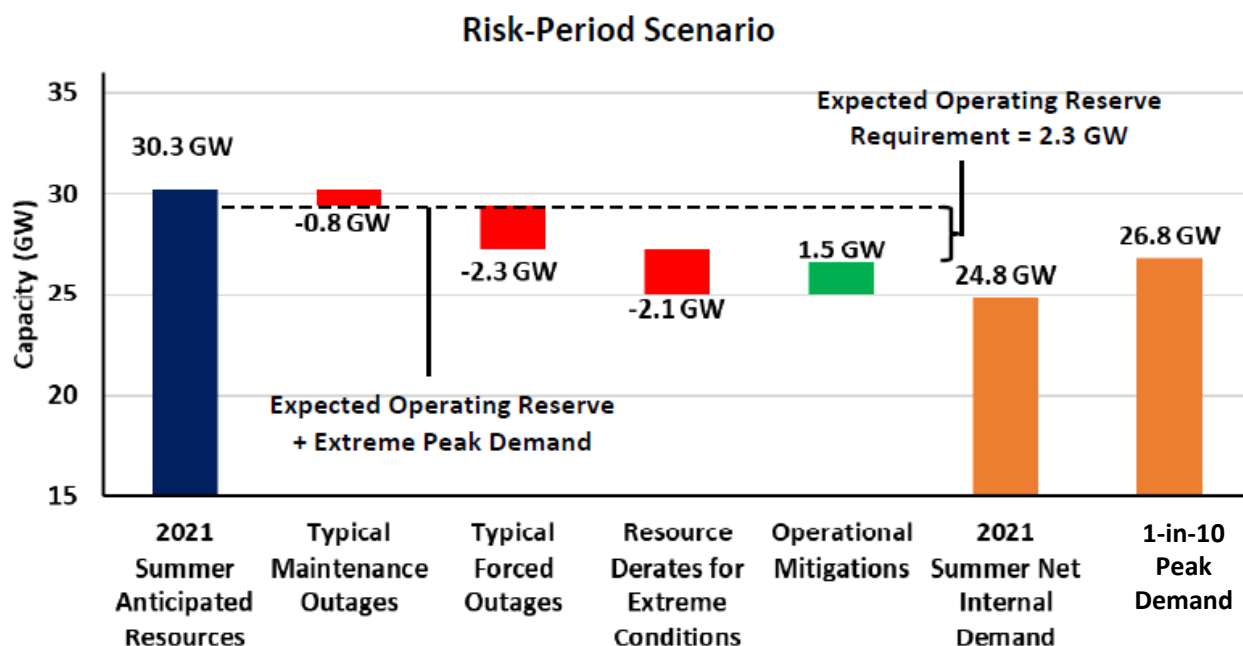


Risk Scenario – 1-in-10 Peak Demand



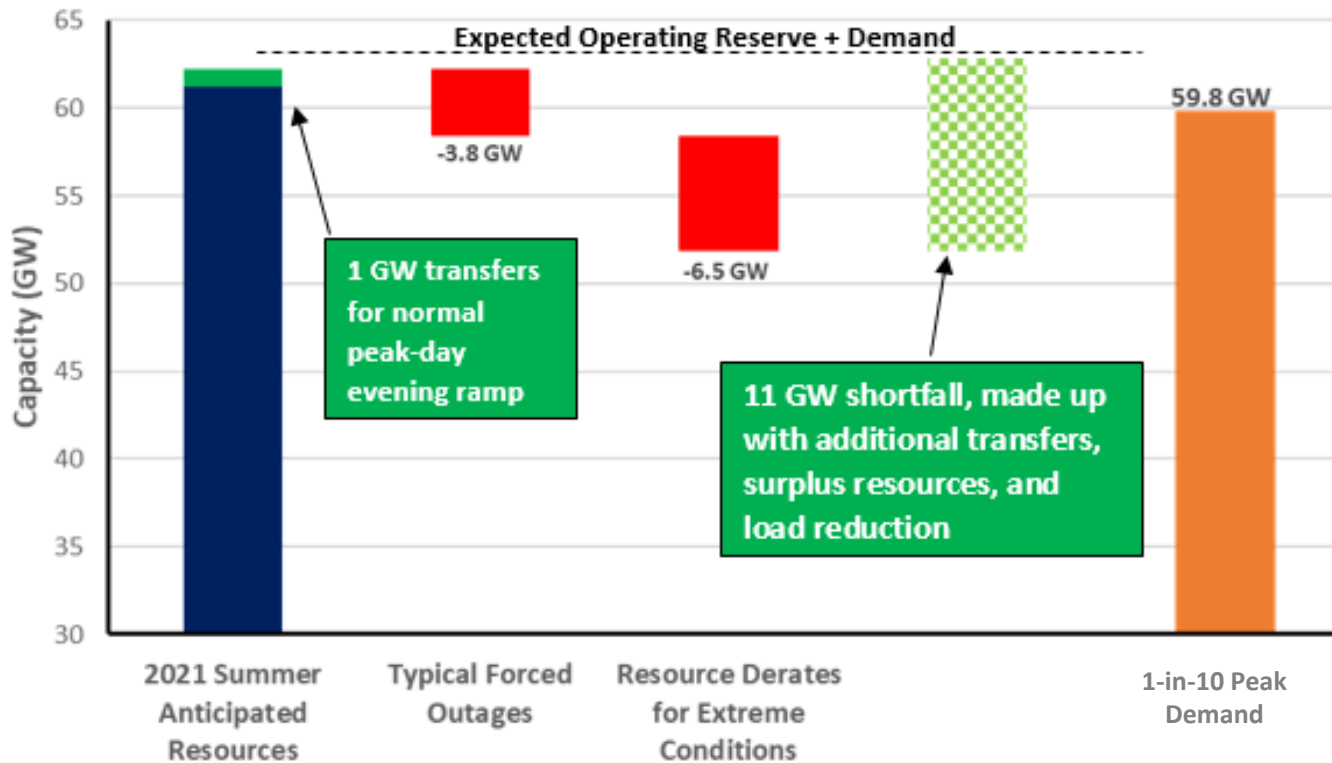
- Scenario Analysis: Above-normal demand or low resource performance scenarios result in energy emergencies

- Sufficient resources to meet summer peak demand forecast
 - Anticipated reserve margin 22% (down from 30.7% in summer 2020)
- Scenario Analysis: Above-normal demand or outages leads to energy shortfalls



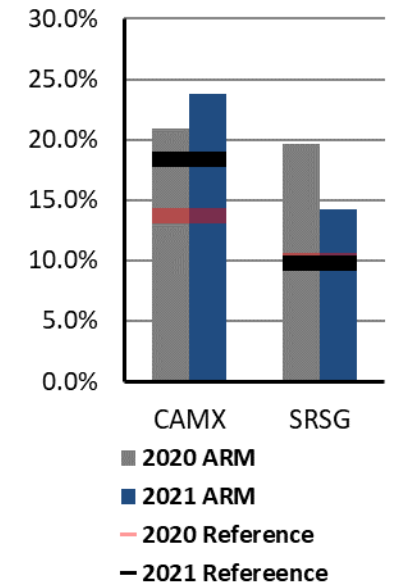
California-Mexico Assessment – High Risk

- Western Interconnection resource levels are similar to 2020
- Transfers into CAMX are needed in late-afternoon to offset reduced solar PV output



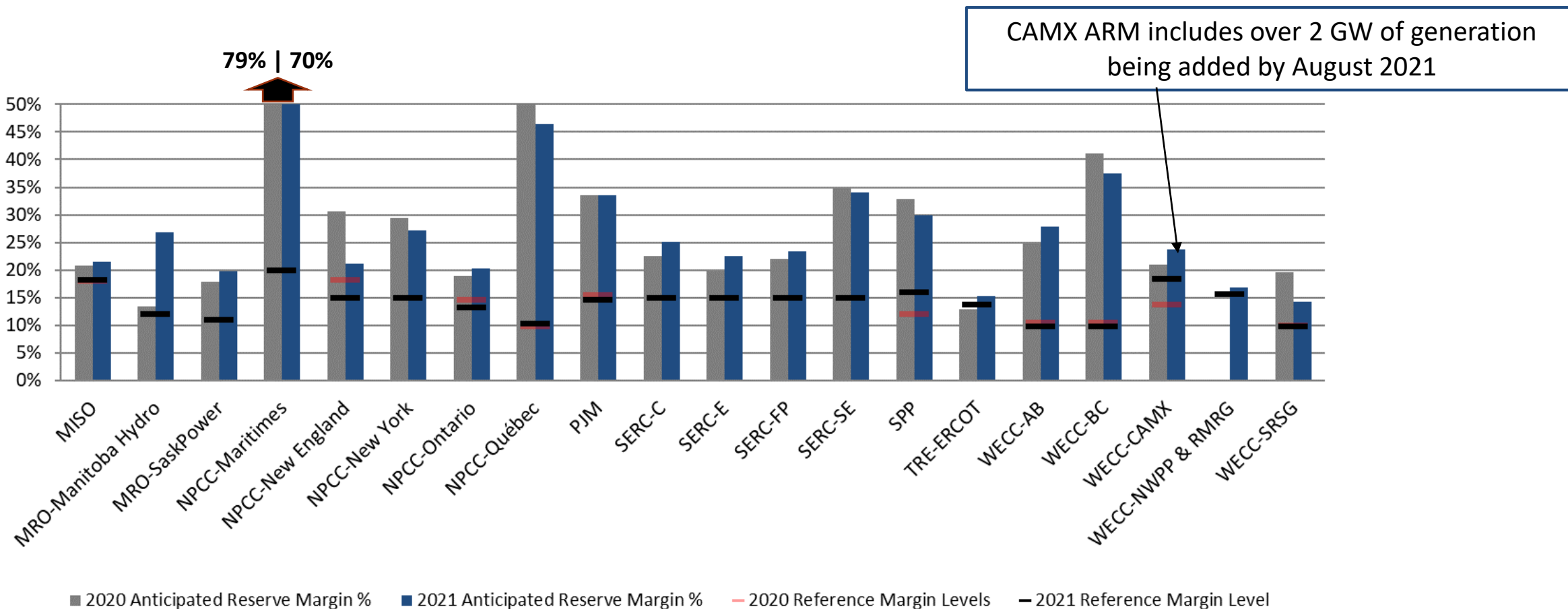
CAMX Highest Risk Hour Scenario – Hour Ending 7 p.m. Pacific Time

CAMX and Southwest Reserve Group – Year-on-Year Reserve Margin Change



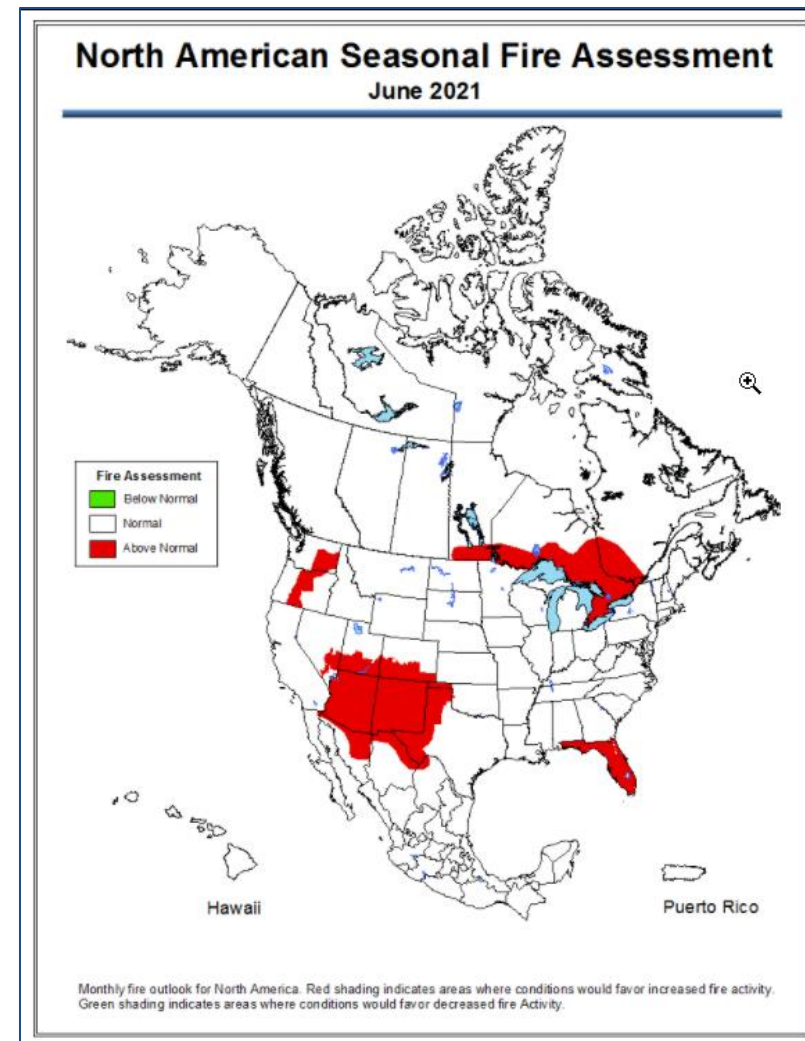
- Scenario Analysis: Above-normal demand or outages leads to energy emergencies

- Anticipated Reserve Margins meet reference levels in all areas



Summer 2020 to Summer 2021 Anticipated Reserve Margins Year-to-Year Change

- North American fire agencies project above-normal risk for wildfires in U.S. Southwest and parts of Canada in early Summer
 - Expect above-normal risk in California and U.S. west coast in late summer
- Operation of the BPS can be impacted in areas where risk of wildfire ignition is present or where wildfires are active



Source: National Interagency Fire Center

- To address Summer 2021 electric reliability challenges:
 - Load-serving entities (LSE), regulators, and Reliability Coordinators (RC) ensure lines of communication are open for periods of system stress
 - System operators conduct drills on alert programs to ensure they are prepared to signal need for conservative operations
 - LSE prepare for demand-side conservation measures and condition customers to their need and efficacy
 - Operators maintain vigilance during peak risk hours and forecasted high-demand periods
 - LSE review non-firm customer inventories and rolling blackout procedures to ensure natural gas and other critical infrastructure loads are not affected
- Regulators, policymakers, and system planners should review findings in NERC's *Long-Term Reliability Assessments* and factor them into resource and system plans

A map of North America, including the United States, Canada, and Mexico, is shown in a light blue-grey color. A horizontal bar with a blue-to-white gradient is superimposed over the center of the map, passing through the United States. The text "Questions and Answers" is written in bold black font on this bar.

Questions and Answers