

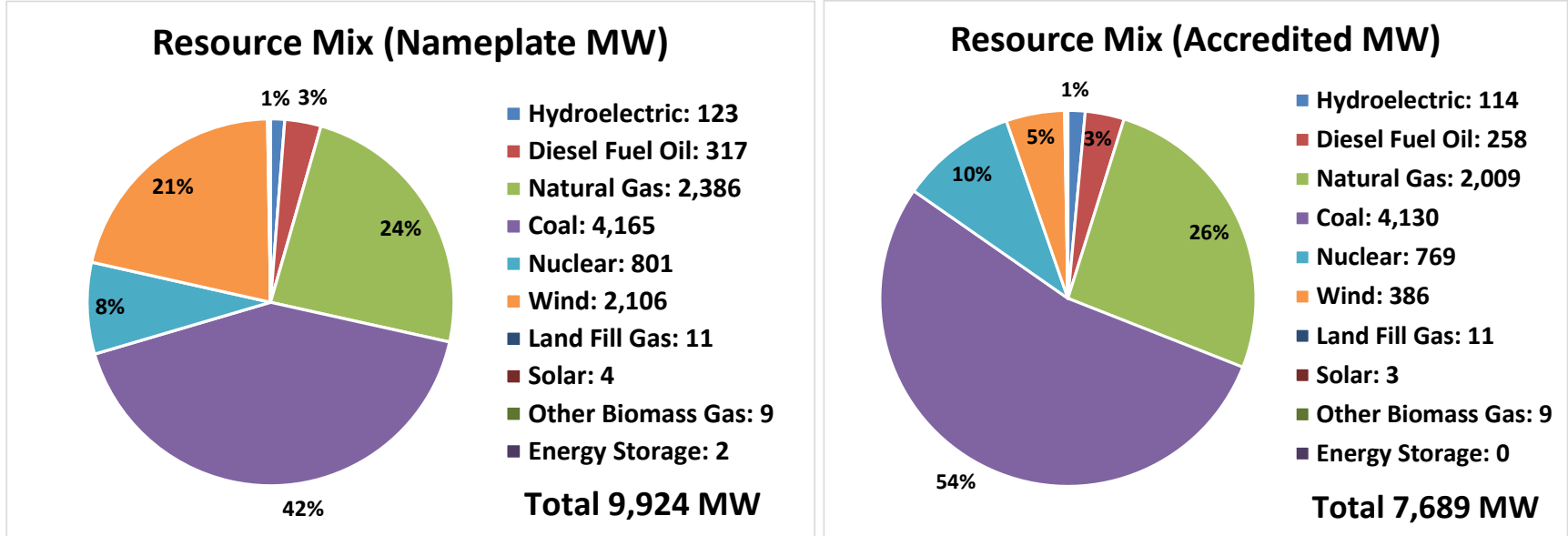
Nebraska Power Association 2023 Load & Capability Report

August 2023

Nebraska's Peak Demand Growth

- **Average annual demand growth rate is 1.5% per year from 2023 through 2042**
 - The utilities are using probability based rankings to determine the loads included
- **This is much higher than the 0.4% growth rate shown in last year's report due to modifications in the methods for including large loads**

Existing Generating Resources*

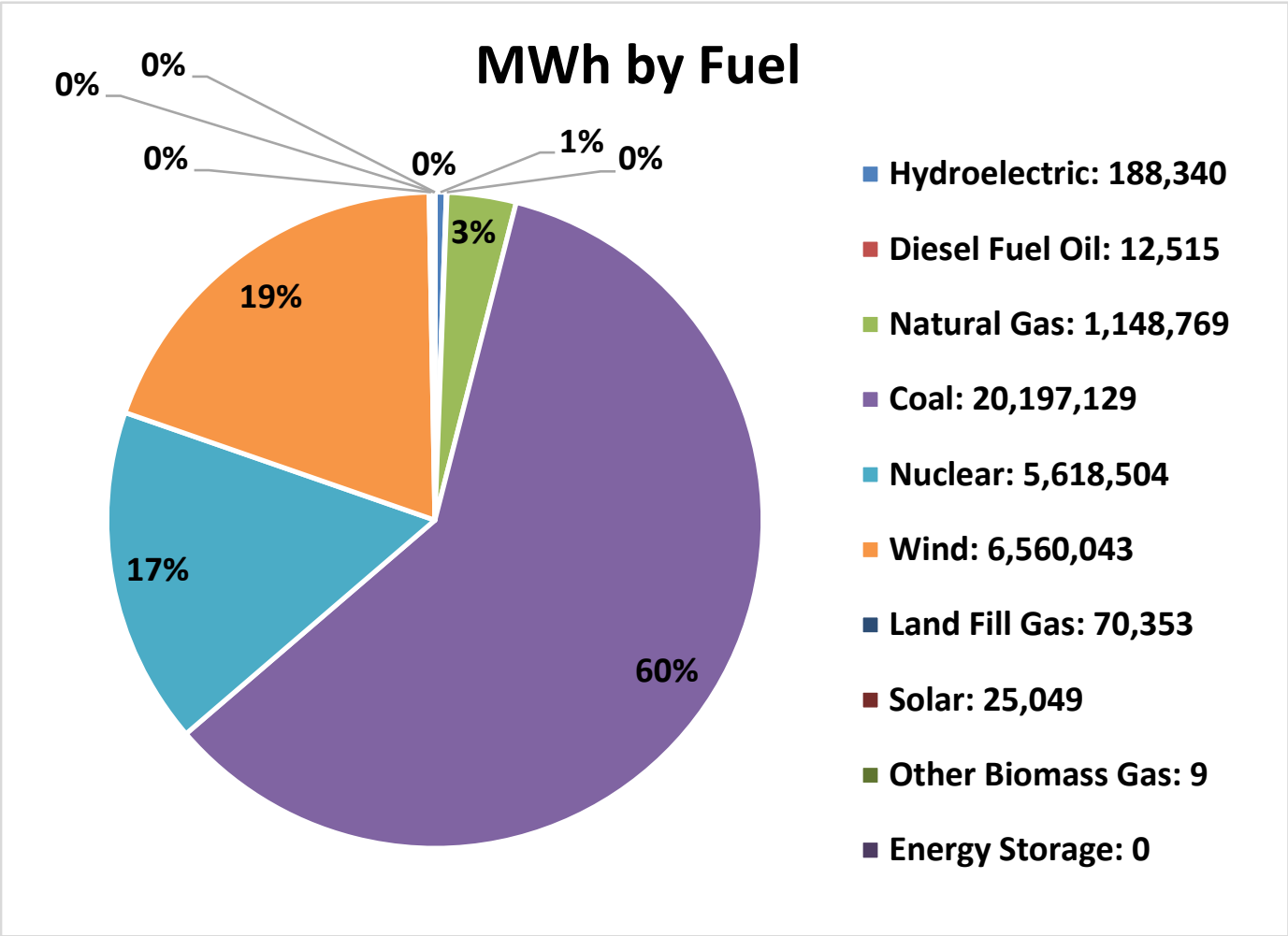


- **1,180 MW of Firm Power Purchases¹**
 - 832 MW Western Area Power Administration (WAPA) Hydro Contracts
 - 348 MW Other Firm Power Contracts
- **124 MW of utility behind the meter nameplate generation (includes solar)**

* Nameplate and Accredited data added per NPRB request. Resources expected to be in service by summer of 2023.

¹ Capacity reserves are provided by the Firm Power provider

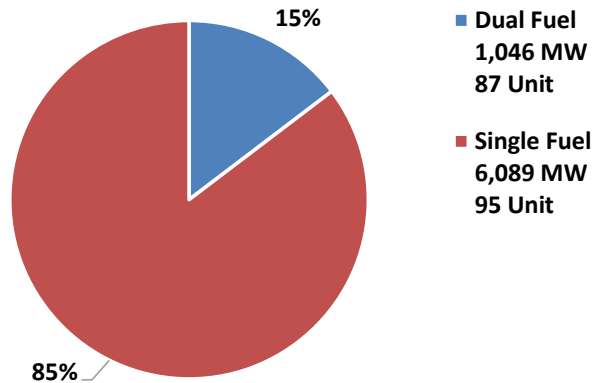
2022 Generation Energy Production By Fuel (MWh)



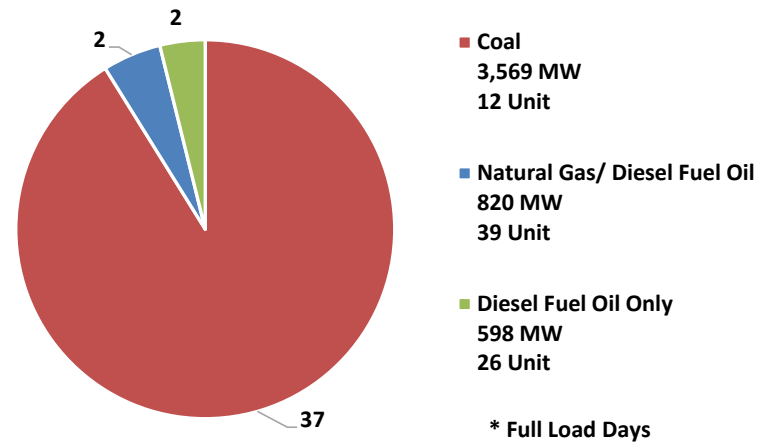
* Data added per NPRB request

Dual Fuel Units and On-Site Fuel Storage (Winter Conditions)

Dual Fuel Resources
(Winter Accredited Capacity)



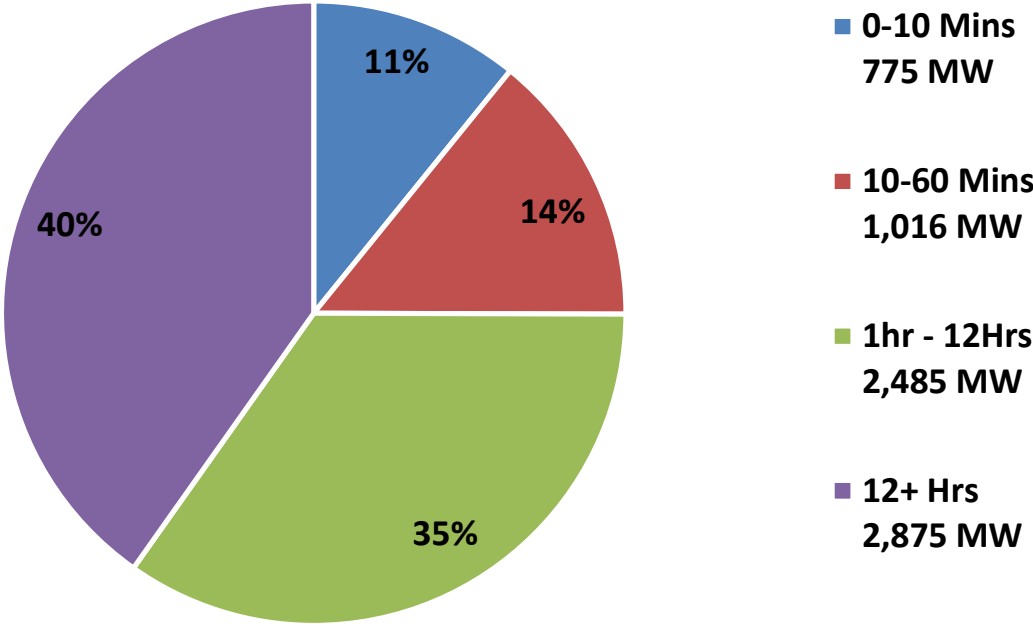
Average Days on Site Fuel by Type
(Winter Accredited Capacity)



* Data added per NPRB request

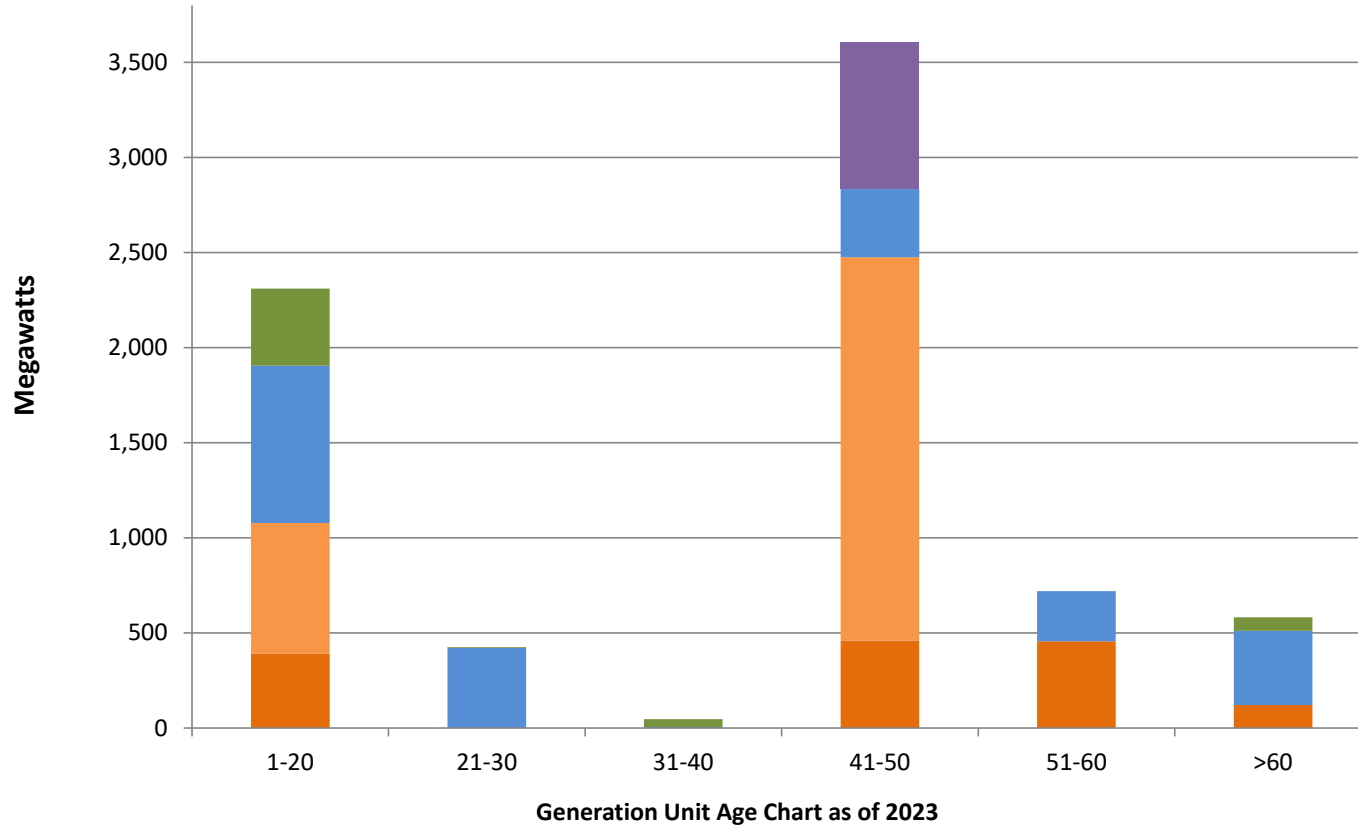
Existing Generating Resource Ramp Rates

Generation Ramp Rate time to Max Capacity (Nameplate)



* Data added per NPRB request

Age of Existing Generating Fleet



■ Small Coal (<250 MW) ■ Large Coal (>250 MW) ■ Oil/ Gas ■ Nuclear ■ Renewable

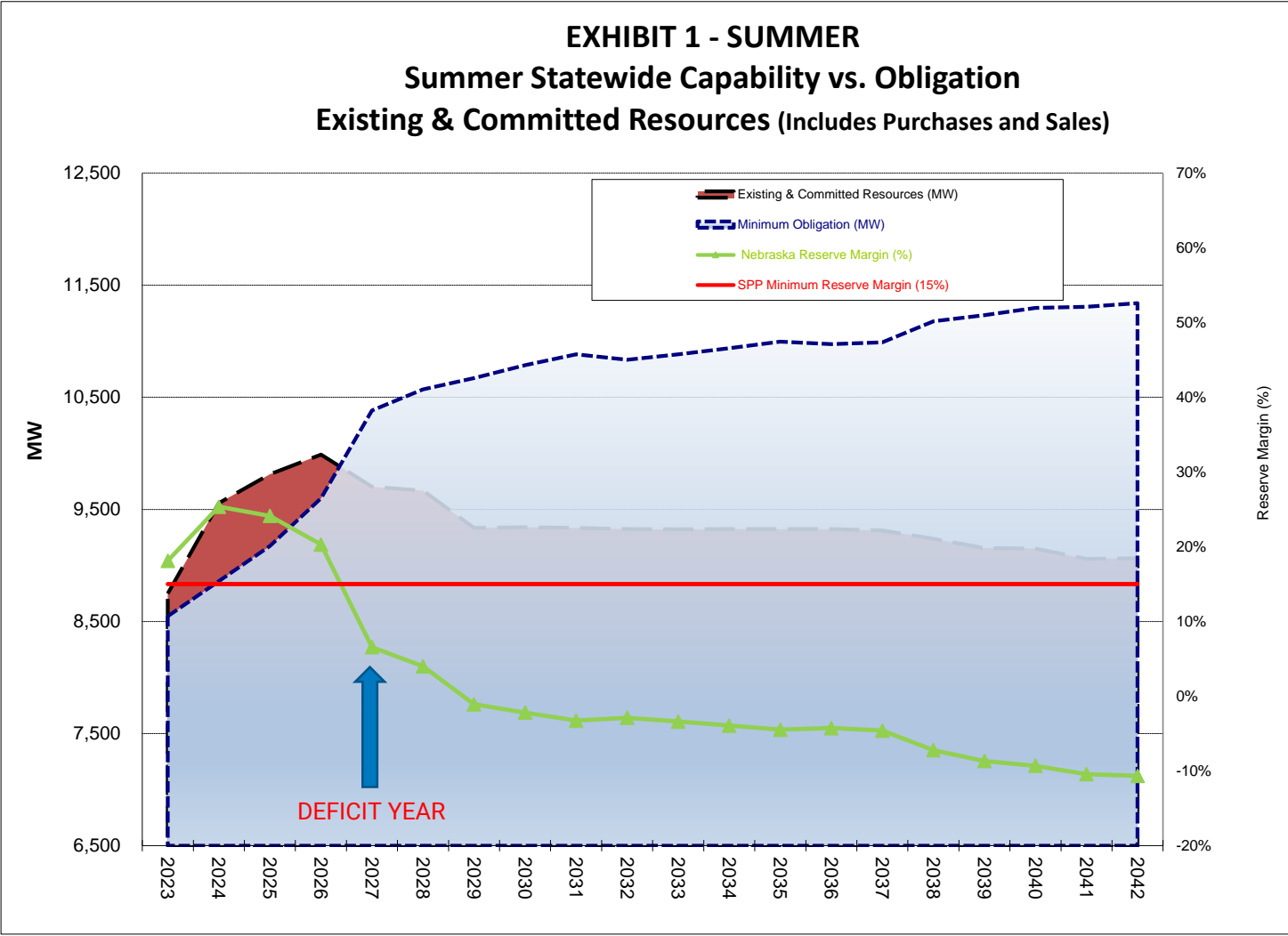
Committed, Planned, and Studied Generating Resources (Accredited)

	Renewable	Conventional	Unspecified	Total
Committed	56 (OPPD Platteview Solar)	593 (OPPD Standing Bear Lake NG) (OPPD Turtle Creek NG)	0	649
Planned	0	0	0	0
Studied	872 (OPPD Solar, Wind, Battery Storage, DR)	750 (OPPD CT)	391 (NPPD)	2,013
Total	928	1,343	391	2,662

SPP Generation Interconnection Queue for Nebraska (Nameplate) as of June 4, 2023

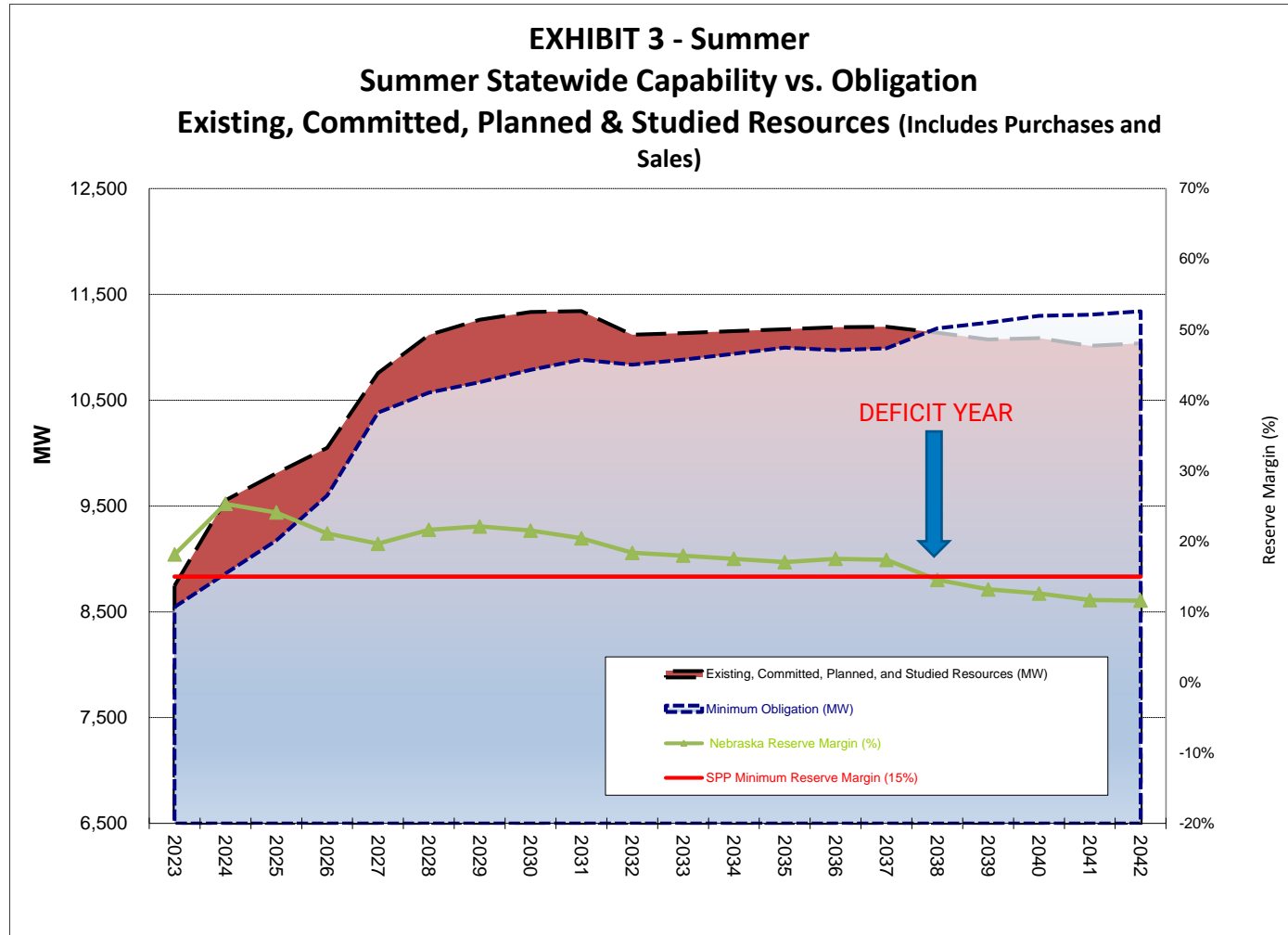
- ≈ 1,830 MW Battery Storage
- ≈ 5,575 MW Solar
- ≈ 4,573 MW Wind
- ≈ 1,952 MW Hybrid (Typically Solar + Storage)
- ≈ 1,286 MW Conventional

Load & Capability with Existing & Committed Resources



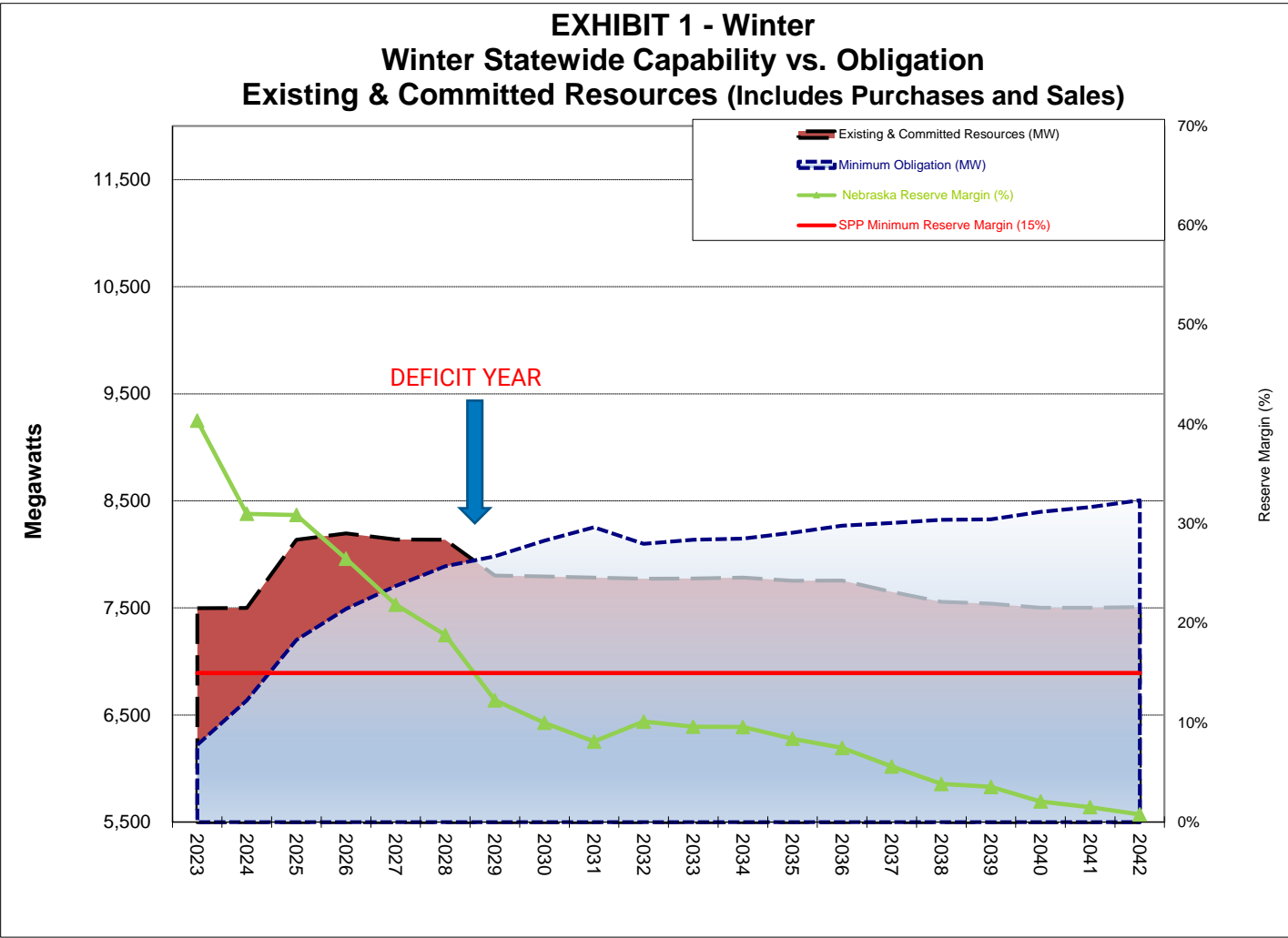
* SPP's Recently Revised 15% Planning Reserve Margin in Use

Load & Capability with Existing, Committed, Planned & Studied Resources



* SPP's Recently Revised 15% Planning Reserve Margin in Use

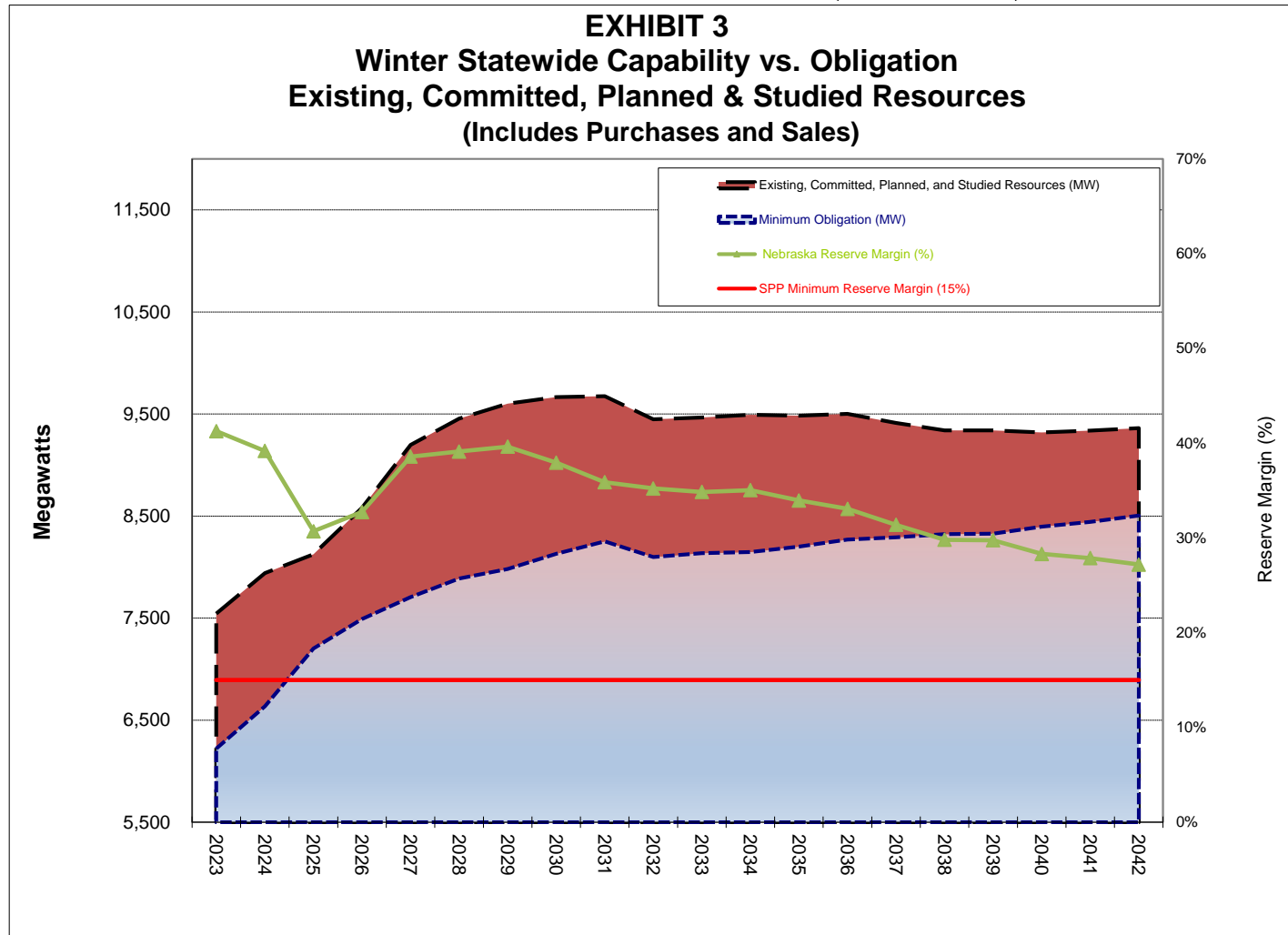
Load & Capability with Existing & Committed Resources (Winter)



* SPP's Recently Revised 15% Planning Reserve Margin in Use

* Data added per NPRB request

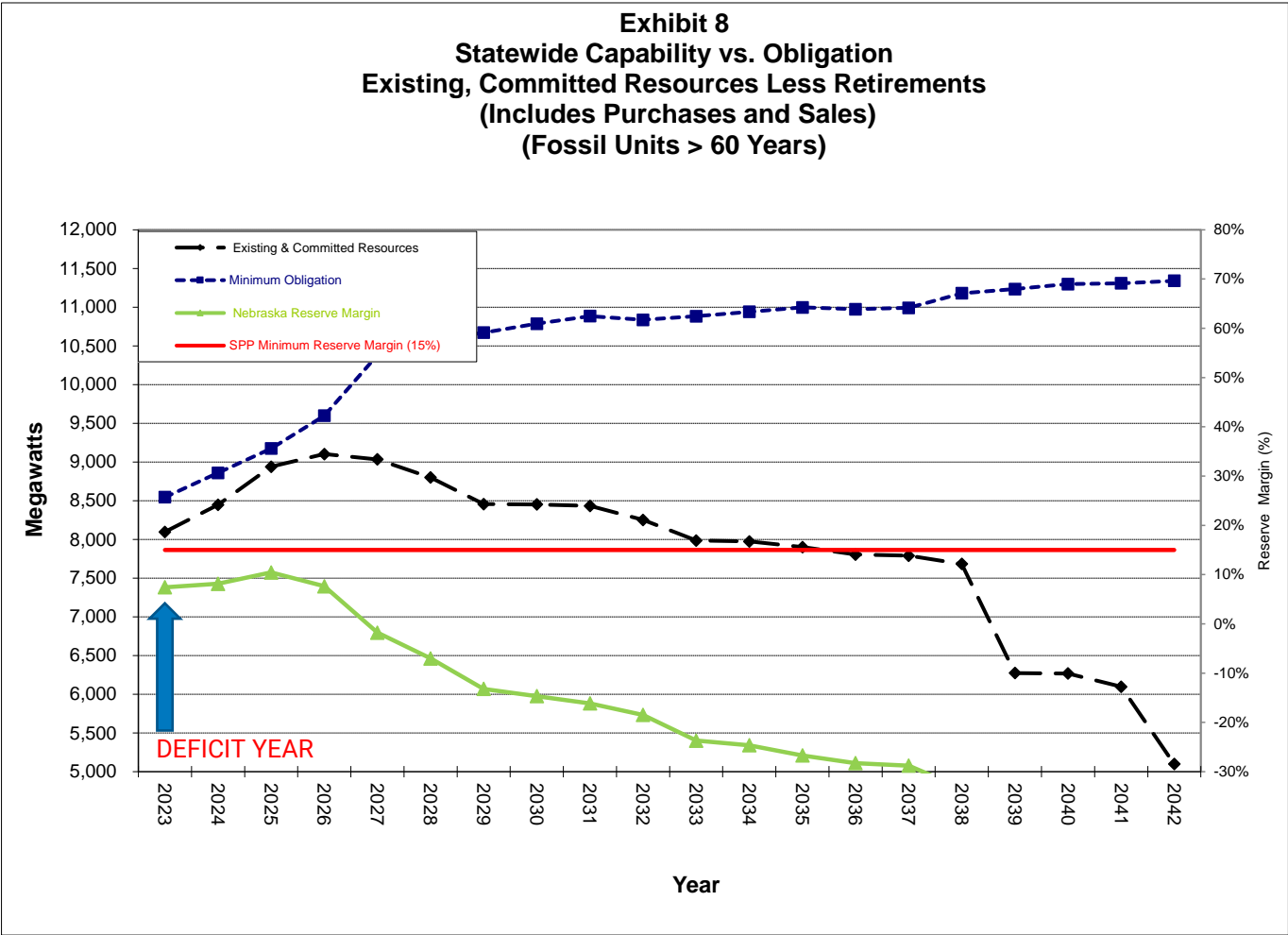
Load & Capability with Existing, Committed, Planned & Studied Resources (Winter)



* SPP's Recently Revised 15% Planning Reserve Margin in Use

* Data added per NPRB request

Load & Capability with Existing & Committed Resources Less 60+ Year Fossil Retirements



* SPP's Recently Revised 15% Planning Reserve Margin in Use

* Data added per NPRB request

Utility Decarbonization Goal Summary

- **NPPD's** Board of Directors established a strategic directive (SD-05) in 2021 to achieve net-zero carbon emissions from generation resources by 2050. This will be achieved by continuing the use of proven, reliable generation until alternative, reliable sources of generation are developed and by using certified offsets, energy efficiency projects, lower or zero carbon emission generation resources, beneficial electrification projects, or other economic and practical technologies that help NPPD meet the adopted goal at costs that are equal to, or lower than, then current resources. The SD-05 goal was one of the CO2 scenarios used in the 2023 Integrated Resource Plan.
- **OPPD's** Board of Directors adopted a goal in its Strategic Directives of achieving net-zero carbon production by 2050 while balancing affordability and reliability. As part of developing plans to meet this goal, OPPD conducted its Pathways to Decarbonization study in 2021, focused on identifying potential future resource changes within this framework. OPPD incorporated the information resulting from its Pathways to Decarbonization study into its 2021 Integrated Resource Plan. OPPD continued these planning efforts with the Near Term Generation study to identify optimal opportunities for resource expansion prior to 2032.

* Additional decarbonization explanatory materials added per NPRB request

Utility Decarbonization Goal Summary (continued)

In late 2020, the **LES** Administrative Board adopted a corporate goal of net-zero carbon dioxide production from its generation portfolio by 2040. As part of its latest Integrated Resource Plan (IRP) developed in 2022, LES then laid out the following initial blueprint for achieving this goal:

- Maintain LES' allotment of Tier I wind – currently just exceeding the SPP Tier I priority limit – and seek to develop its allowed amount of Tier I solar resources.
- Continue providing a range of energy efficiency and demand response programs that represent a cost-effective alternative to building new generation.
- Seek to maintain LES' existing fleet of natural gas resources, forming a low-cost and relatively low-emissions foundation for its future portfolio.
- Continually watch for the right time to either retire or upgrade its existing coal resources with carbon capture technology.

Based on future load projections, this preliminary plan would bring LES within approximately 200 MW of meeting its resource adequacy requirements in 2041. As of right now, LES intends to leave this gap unprescribed, looking to identify the best choices in the future as more information becomes available.

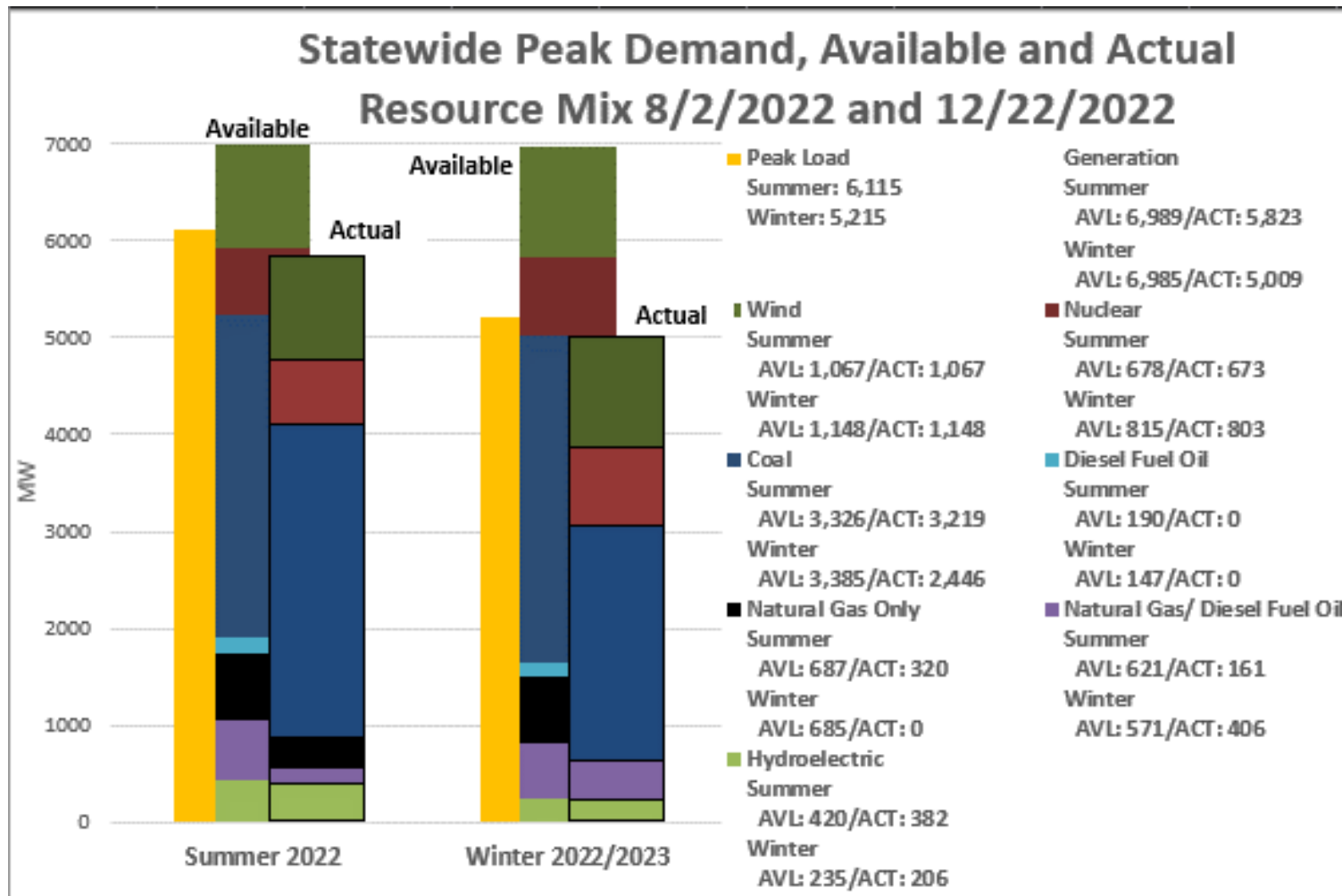
* Additional decarbonization explanatory materials added per NPRB request

Utility Decarbonization Goal Summary (continued)

The **MEAN** Board of Directors in early 2020 approved a resolution laying out a vision for a carbon neutral power resource portfolio by 2050. The resolution authorizes MEAN's staff to collaboratively work with the MEAN Power Supply Committee to construct policies around resource planning, portfolio optimization and emissions reduction to support future actions to achieve the 2050 carbon neutral goal. MEAN's 2022 Integrated Resource Plan resulted in Board recommendations for additions of carbon free resources to fulfill future needs as resource contracts expire. To comply with this directive, MEAN continues to identify reliable, affordable renewable generation while researching new emerging technologies. MEAN's current resource portfolio generated approximately half of its energy carbon free in FY2022, reflecting a diverse portfolio to maintain reliability during the transition to 2050.

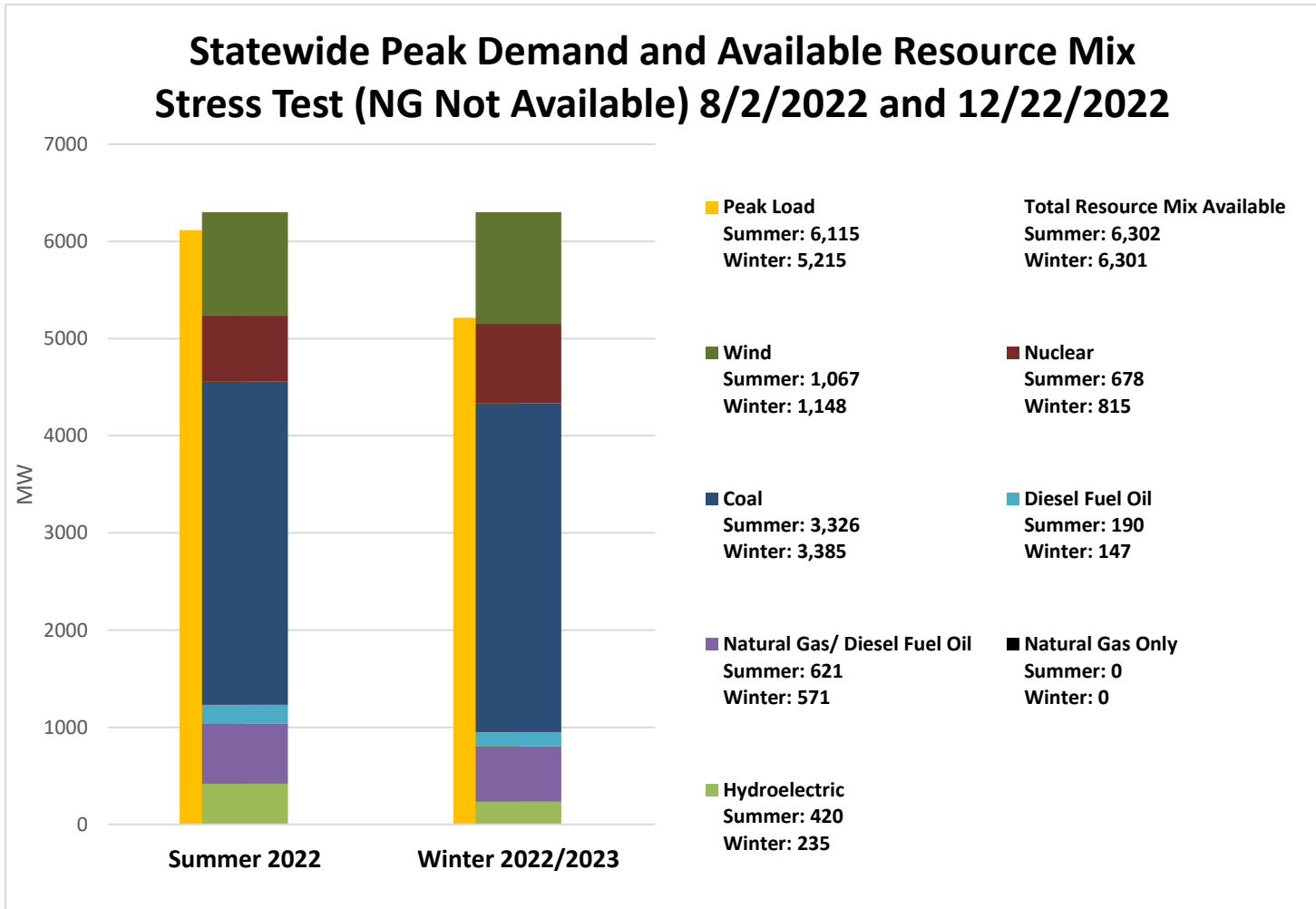
* Additional decarbonization explanatory materials added per NPRB request

System Stress Periods



* Data added per NPRB request

System Stress Periods Sensitivity Case



* Data added per NPRB Request

Summary

- Demand growth of 1.5% per year is higher than the 0.4% shown in last year's report due to modifications in the methods for including large loads in each utility's forecast.
- Nebraska meets its SPP Reserve Margin requirements with existing and committed resources through 2026.
- Each utility that has set decarbonization goals will continue to evaluate their options in the coming years.

Questions