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Item 15.3: Dispatchable Reliability Reserve Service (DRRS) Study

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Board of Directors Meeting

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- **Purpose**

  This presentation summarizes the Aurora Energy Research report on the Impact of Market Design Changes on Resource Adequacy in ERCOT.

- **For Information Only**

  This is an informational item, highlighting resource adequacy challenges and market design options in the ERCOT market.

Key Takeaways

- The status quo market design will lead to reliability challenges under both moderate and high load growth scenarios.
- The DRRS Ancillary Service Plus case provides the most reliability benefit at the least cost as compared to other market design options.
- Together, large electronic load curtailment and DRRS Ancillary Service Plus can significantly address future resource adequacy needs.

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Conclusions from the Aurora Report

Neither load solutions (i.e., large electronic load curtailment), nor generation market design solutions by themselves will fully address the range of potential future resource adequacy needs.

Individually, both large electronic load curtailments and the DRRS Ancillary Service Plus design can significantly improve future resource adequacy conditions under a range of extreme weather and load growth scenarios.

Compared to alternative market designs (status quo, DRRS Ancillary Service design, and ORDC/ASDC modifications), the DRRS Ancillary Service Plus design adds more dispatchable capacity at lower cost and provides greater resource adequacy benefits in different load and extreme weather conditions.

In combination, large electronic load curtailment under Senate Bill 6 and NPPR 1238 and increases in dispatchable generation through the DRRS Ancillary Service Plus design can sharply if not completely address potential future involuntary load shedding scenarios.

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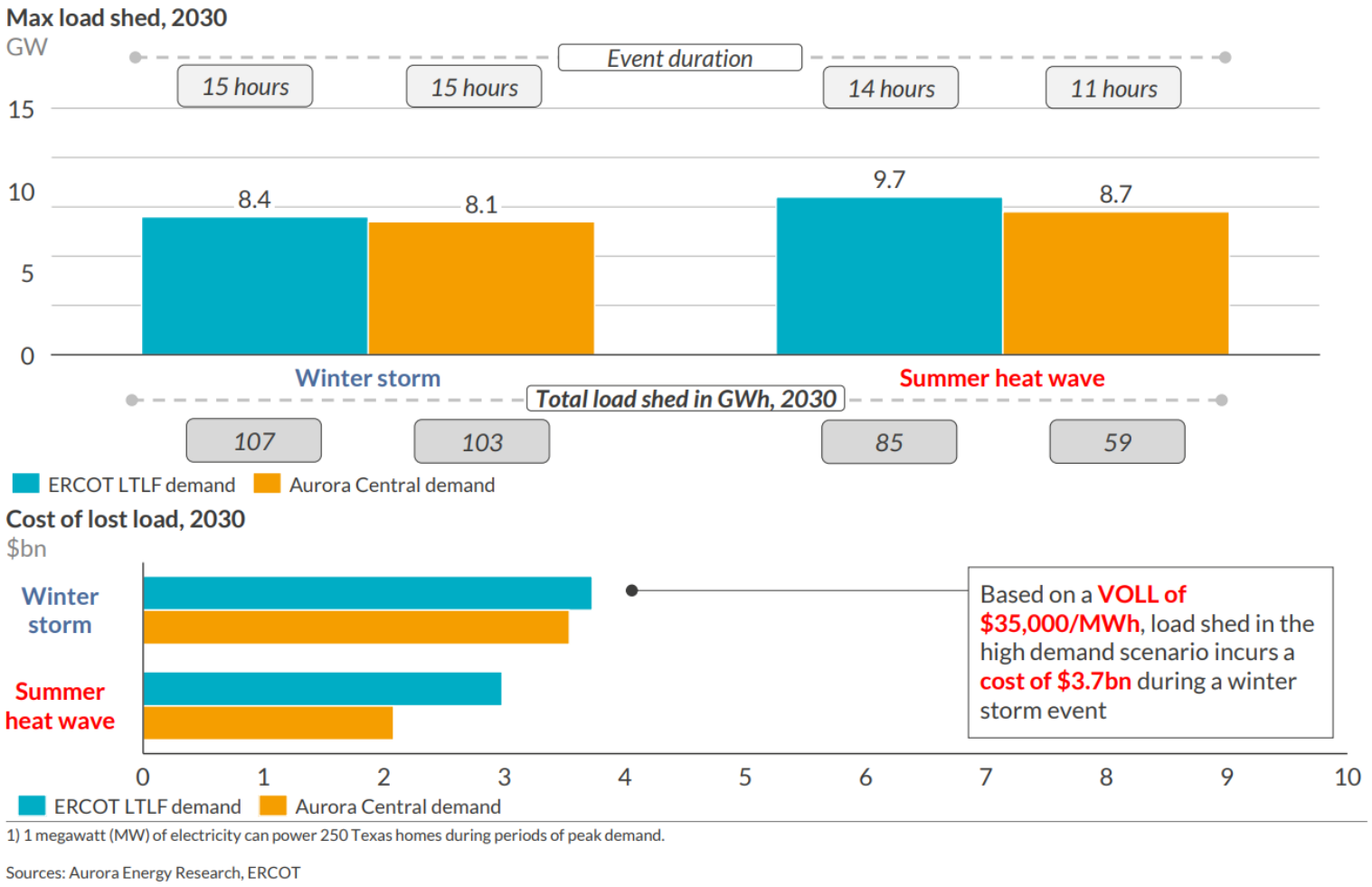
Estimated future outages and costs under status quo market design



1) 1 megawatt (MW) of electricity can power 250 Texas homes during periods of peak demand.

Sources: Aurora Energy Research, ERCOT

Key Takeaway: Under both moderate and high load growth scenarios, Aurora estimates that extreme weather in both summer and winter results in significant outages and costs under the status quo design.

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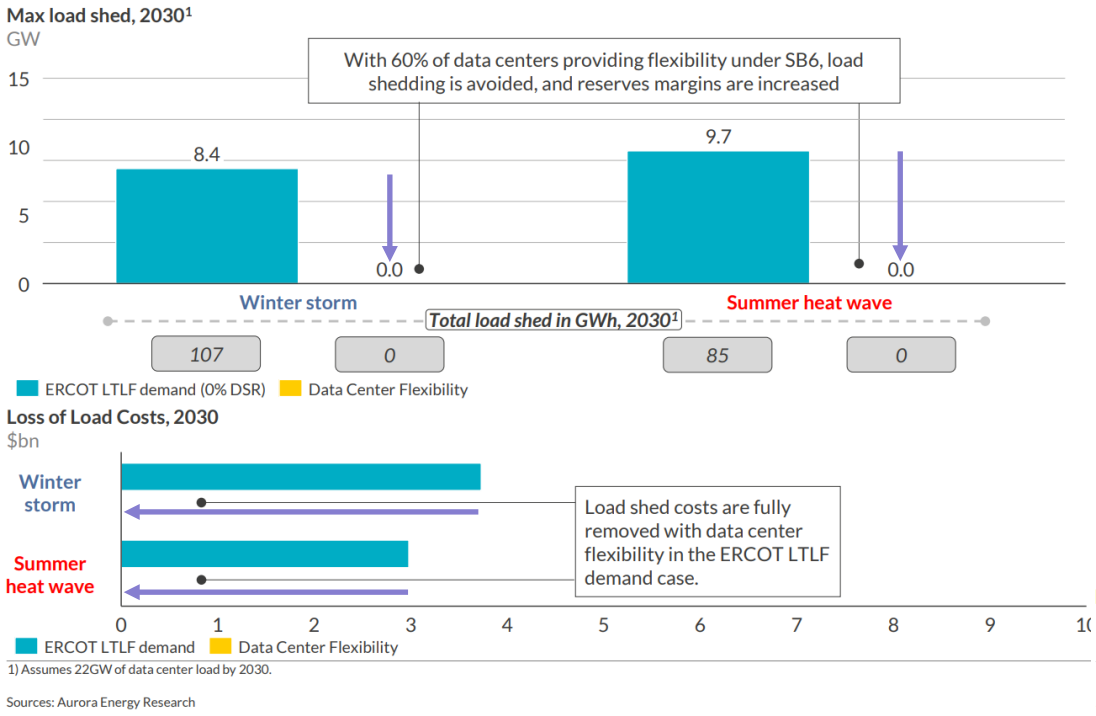
Large electronic load curtailment can help partially alleviate potential future outages and costs

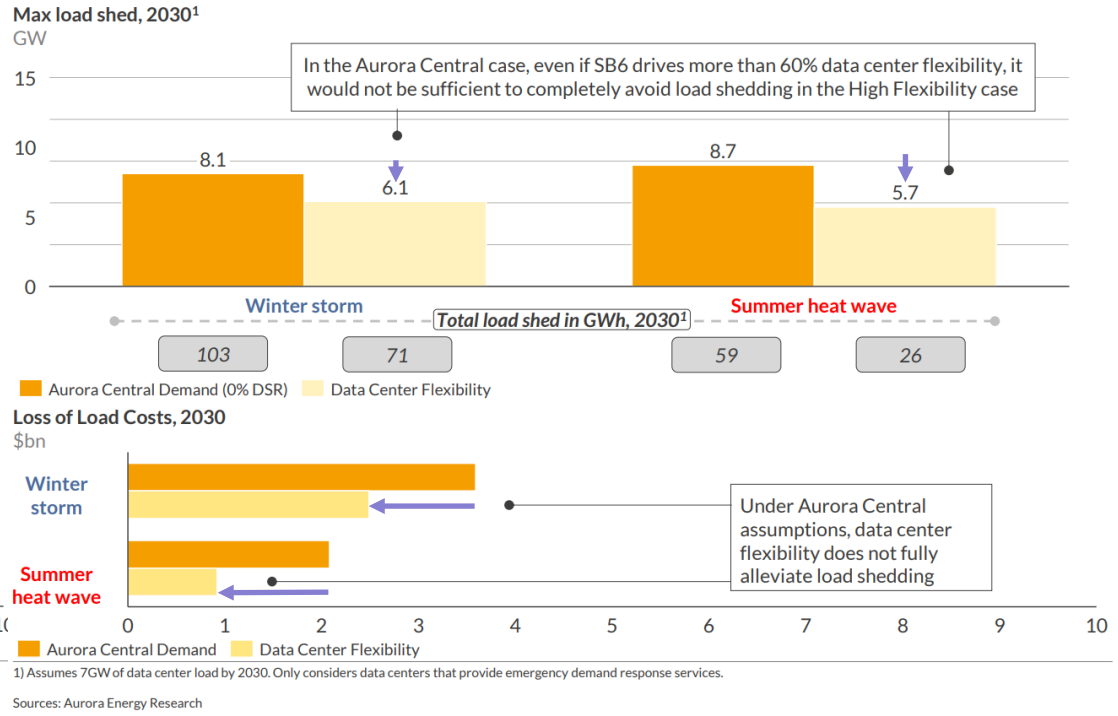
High load growth



1) Assumes 22GW of data center load by 2030.

Sources: Aurora Energy Research

Moderate load growth



1) Assumes 7GW of data center load by 2030. Only considers data centers that provide emergency demand response services.

Sources: Aurora Energy Research

Key Takeaway: Large electronic load curtailment has the potential to partially mitigate future outages and costs. However, only under a scenario with high demand growth would data center flexibility fully alleviate potential reliability concerns. Under a moderate load growth scenario, data center flexibility would only partially mitigate load sheds. This is because under the high load growth scenario there are more large electronic loads to curtail as compared to the moderate load growth scenario.

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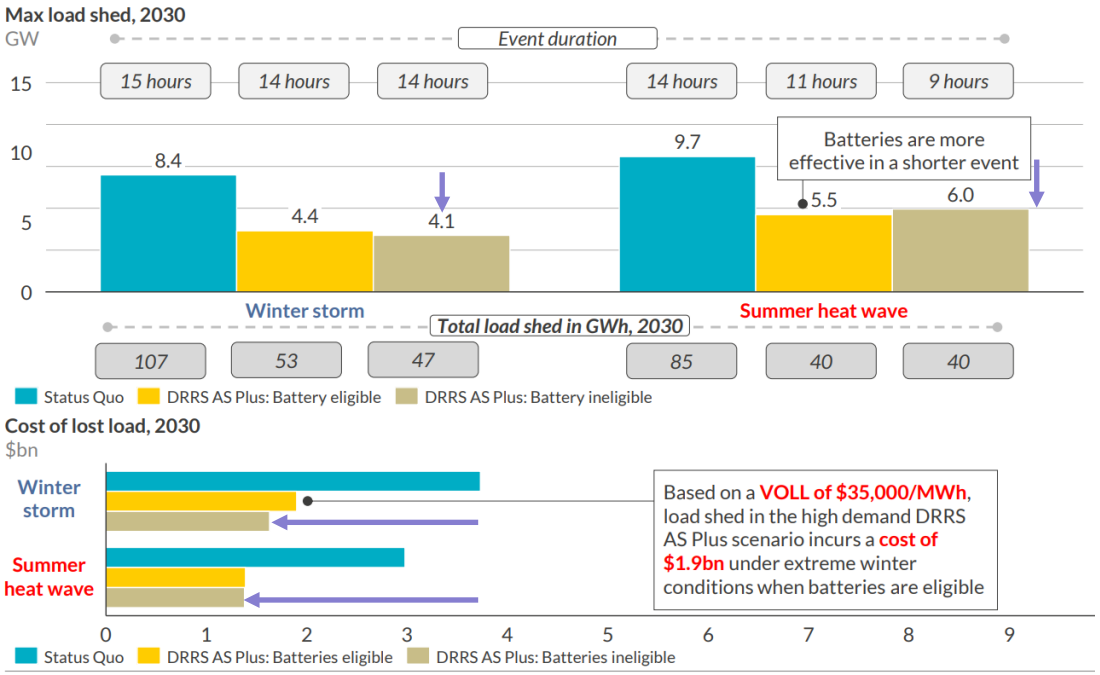
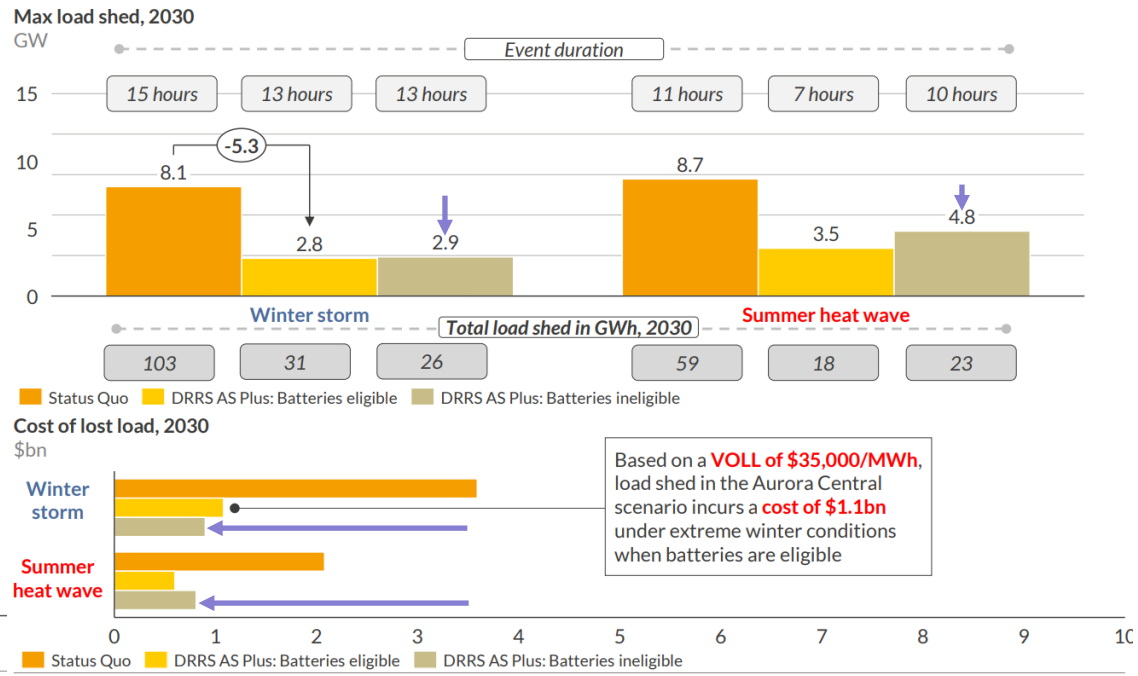
DRRS Ancillary Service Plus can partially alleviate potential future outages and costs

High load growth



Sources: Aurora Energy Research

Moderate load growth



Sources: Aurora Energy Research

Key Takeaway: DRRS Ancillary Service Plus can reduce outages and costs in both high load and moderate growth scenarios during both extreme winter and summer conditions.

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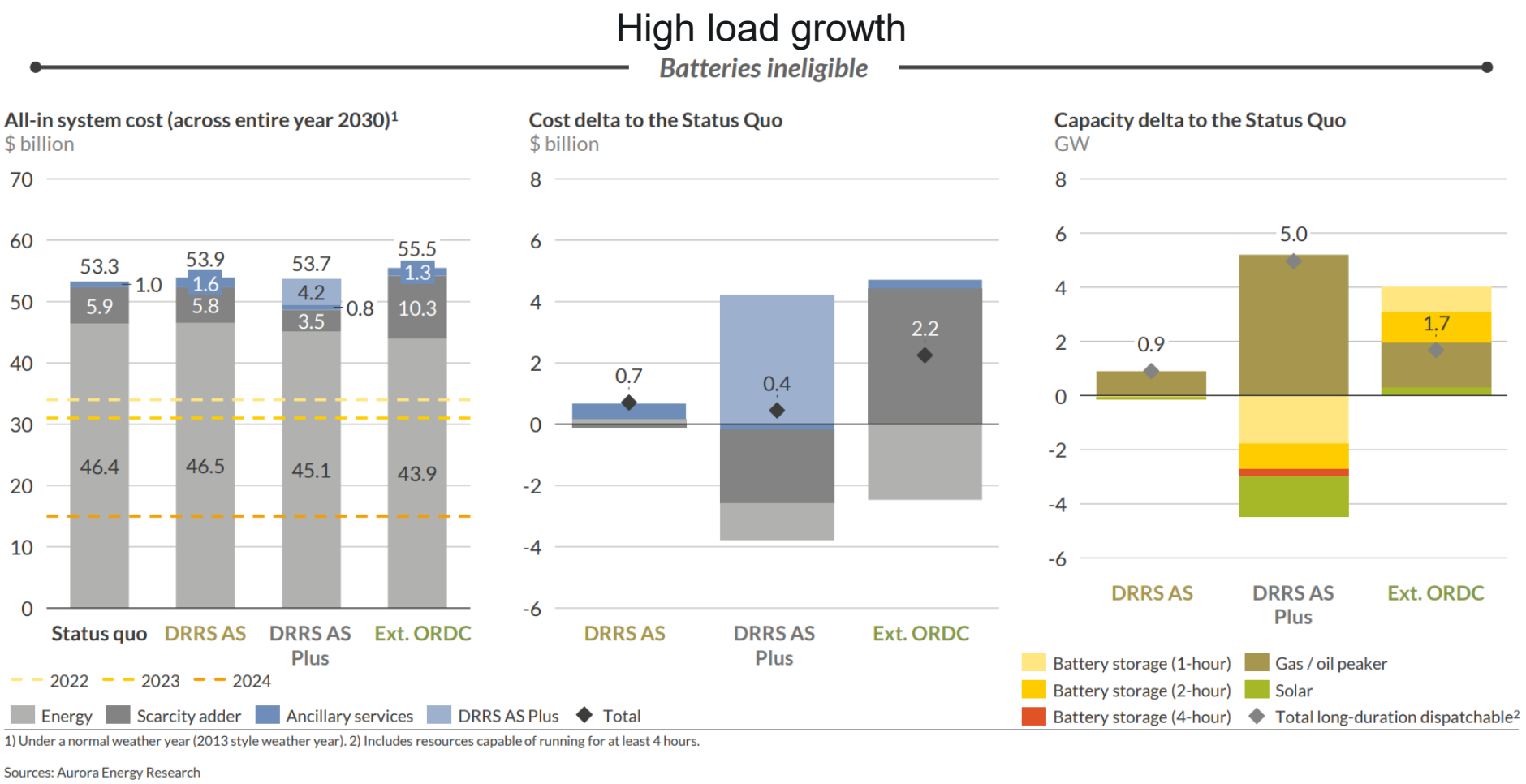
DRRS Ancillary Service Plus compared to alternatives



1) Under a normal weather year (2013 style weather year). 2) Includes resources capable of running for at least 4 hours.

Sources: Aurora Energy Research

Key Takeaway: Under normal weather conditions and high load growth, DRRS Ancillary Service Plus incentivizes more long-duration dispatchable generation than both the DRRS Ancillary Service and Extended ORDC cases at a net cost lower than both alternatives, and at a lower gross cost relative to the Extended ORDC case.

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Next Steps

ERCOT staff has submitted two NPRRs in the ERCOT stakeholder process.

- The first NPRR develops DRRS consistent with House Bill 1500 requirements. This NPRR does not address resource adequacy, and energy storage resources will not be allowed to participate under this NPRR.
- The second NPRR creates a Release Factor to allow DRRS to target further ancillary service reserves for available dispatchable resources and includes a mechanism to allow energy storage resource participation.

ERCOT will only turn on the Release Factor of DRRS if/when directed by the PUCT after consideration of factors including the reliability standard and load growth.

ERCOT will only allow energy storage resources to participate if/when directed by the PUCT.

ERCOT along with Aurora Energy Research will host a workshop on December 17 to discuss the report with stakeholders.