

National Evaluation of BESS Reliability

Energy Storage Systems
Safer & Reliability Forum

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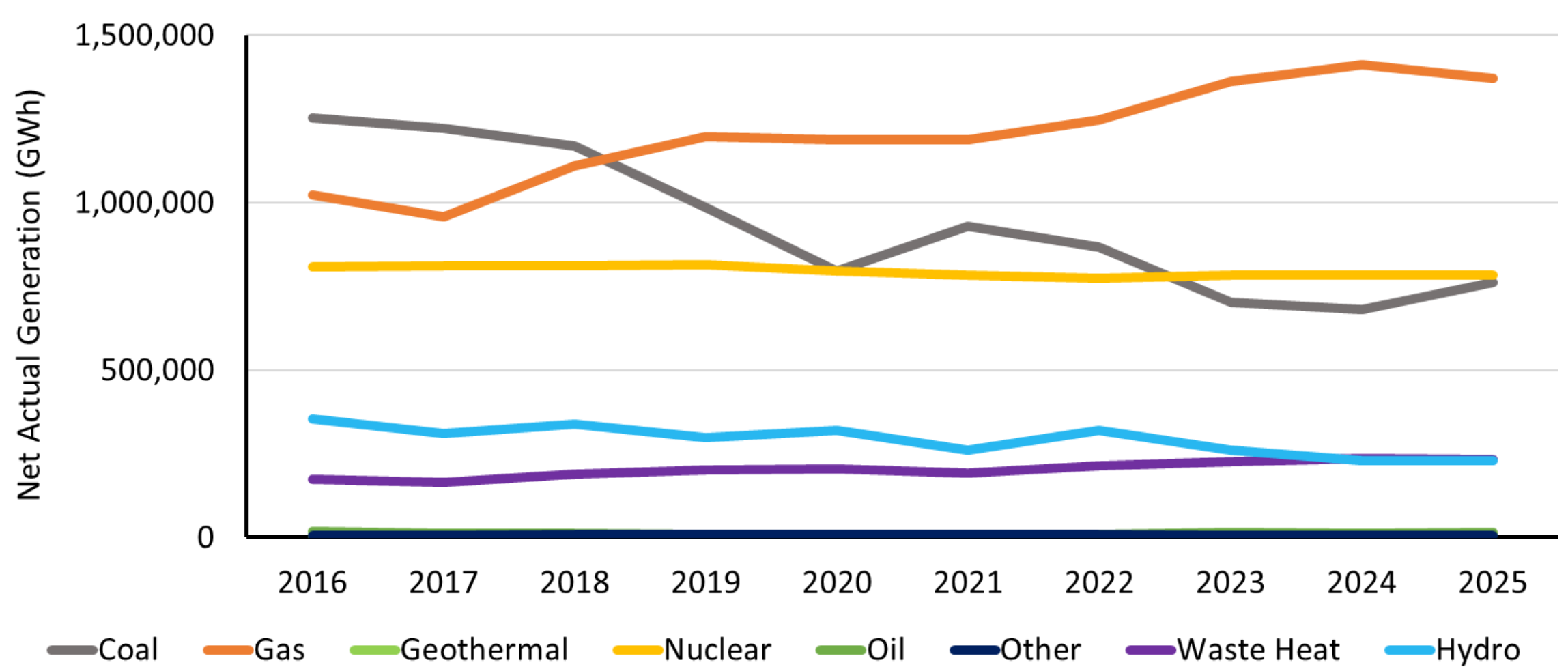
What is NERC?

The North American Electric Reliability Corporation (NERC) is a not-for-profit, international regulatory authority dedicated to effectively and efficiently reducing risks to the reliability and security of the bulk power system. To accomplish that, we work with owners, operators, consumers as well as federal state and provincial regulators across North America to develop and enforce mandatory Reliability Standards, monitor the grid, train personnel, and assess risks to ensure that the grid remains reliable and secure today and in the future.

Why BESS Reliability Matters to NERC

- Changing resources mix challenges
- Rapid utility-scale BESS capacity expansion
- Increasing participation in essential reliability services
- Rapidly increasing large electrical loads

Changing resources mix challenges



Increased Participation in Essential Reliability Services (ERS)

Generator Fleet

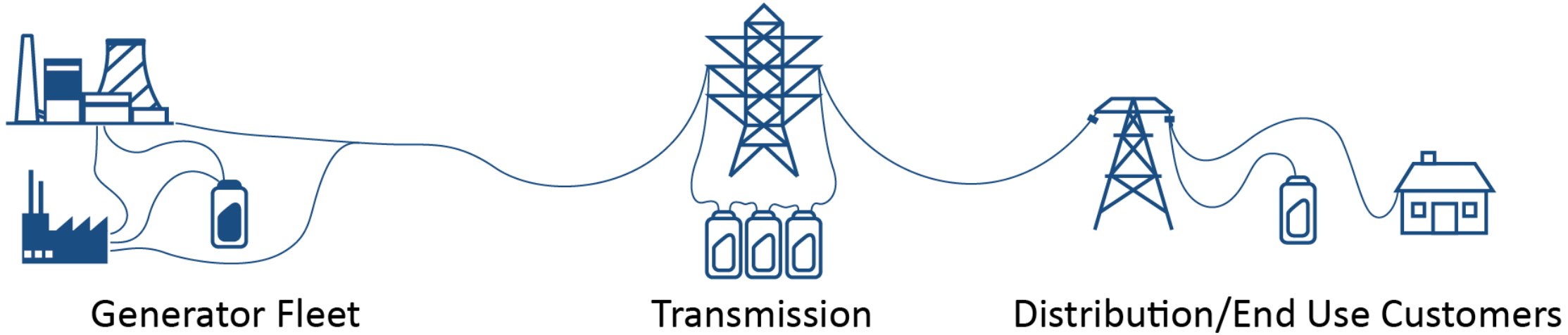
- Operating Reserves
- IBR Energy Capacity Firming
- Peaking Capacity
- Black Start Capability

Transmission

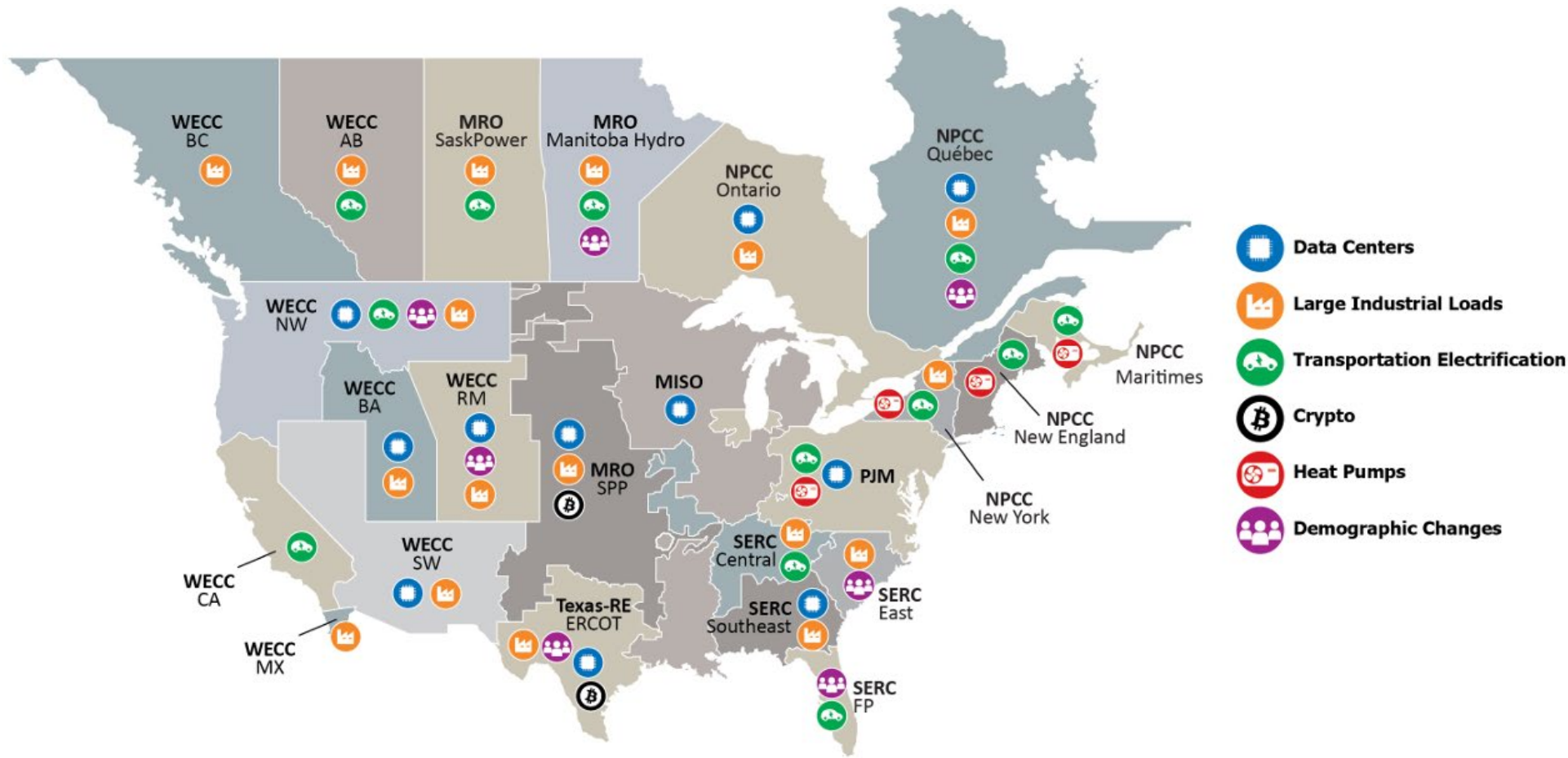
- Frequency Regulation
- Voltage Support
- Energy Arbitrage¹
- Upgrade Deferrals

Distribution/End Use Customers

- Voltage Support²
- Upgrade Deferrals

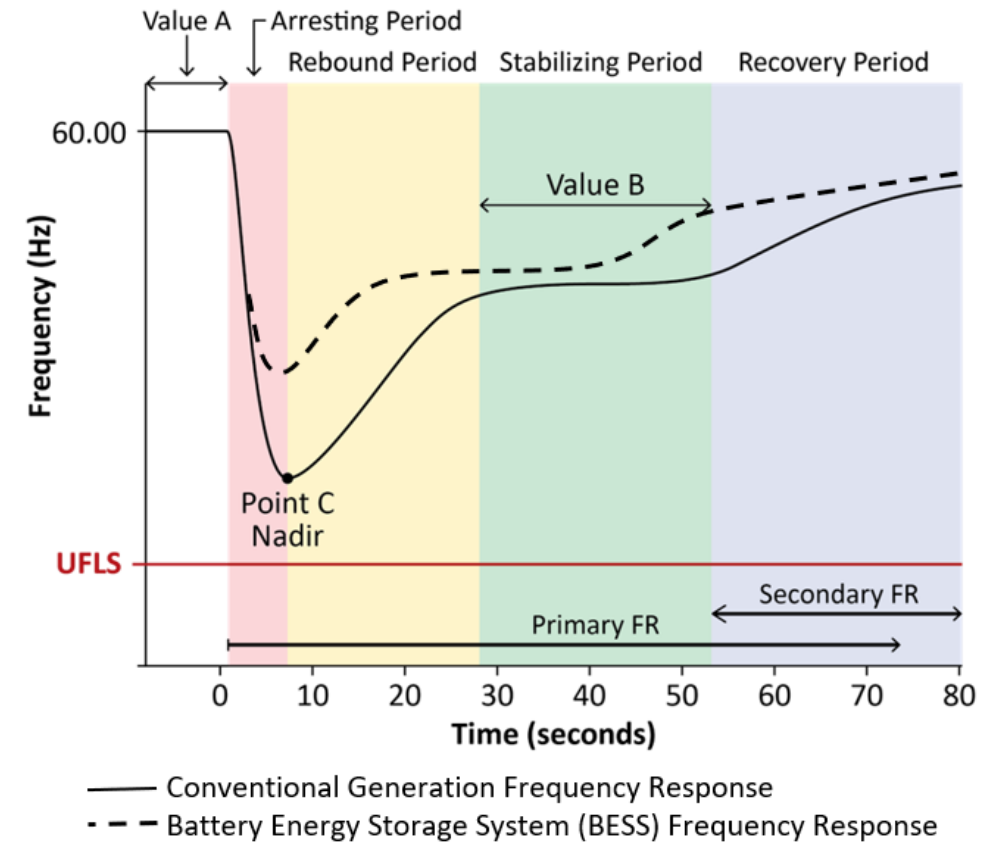


Increasing Demand in Large Loads & Electrification



System Level Challenges & Reliability Concerns

- Inverter Based Resource (IBR) ride-through capabilities
- Behind the meter coordination challenges
- Unique complete failure conditions
- Security concerns
- Frequency response limitations
- Data inconsistencies



Immediate Actions to Consider

- Examine incentives or opportunities for incentives for BESS to provide ERS
- Review recommended performance characteristics
- Verify capabilities
 - Ensure models match capabilities
 - Communicate capabilities and limitations with system operators
- Failure contingency preparation
 - Ensure sites are up to most recent fire codes
 - Consider reviewing best practices in other areas for cost-effective mitigation opportunities
 - Communicate plans with local fire departments in case of emergencies



NERC

Discussion