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FERC-NERC Blackstart Report

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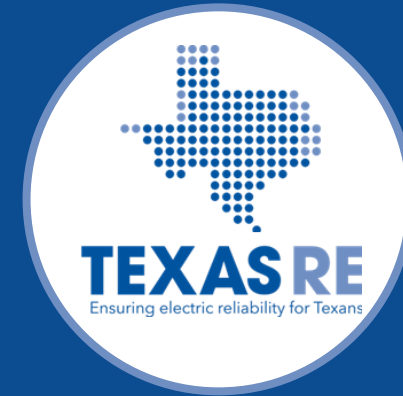
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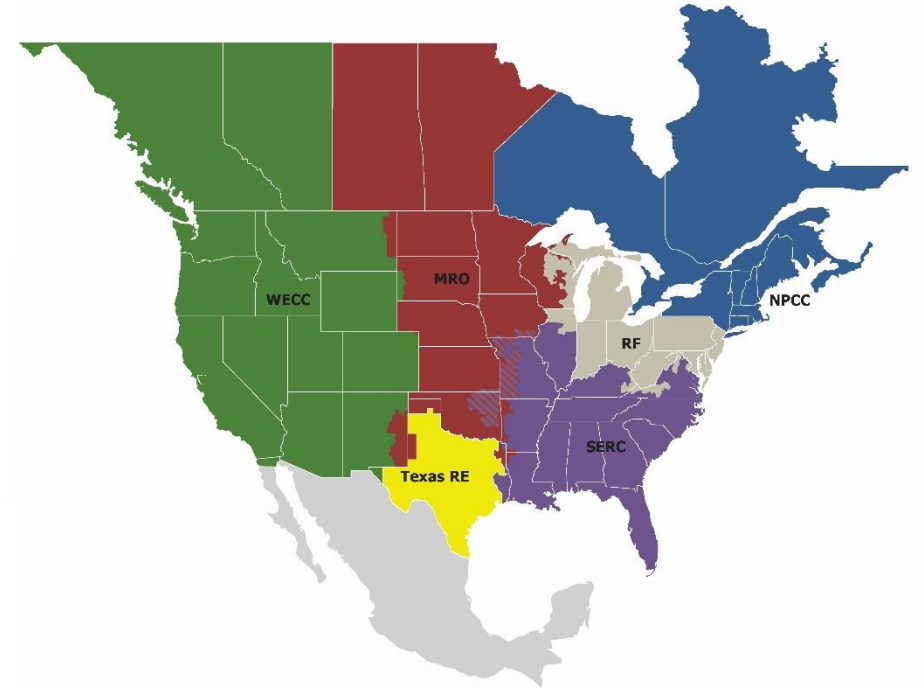
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Blackstart and Next-Start Resource Availability in the Texas Interconnection

FERC, NERC, and Regional Entity Study

Texas RE Webinar: January 30, 2024



This presentation and its contents were prepared by the staff of the Federal Energy Regulatory Commission (FERC) in consultation with staff from the North American Electric Reliability Corporation (NERC) and its Regional Entities. The presentation and its contents do not necessarily reflect the views of FERC, NERC, or any of its Regional Entities.



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Background

- Past Studies:
 - January 2016 Joint [Review](#) of Restoration and Recovery Plans
 - May 2018 Joint Blackstart Resources Availability (BRAv) [Study](#)
 - November 2021 Winter Storm Uri [Report](#)
- The December 2023 blackstart study came out of Recommendation 26 from the November 2021 Winter Storm Uri Report:
 - A joint FERC-NERC-Regional Entity team should study blackstart and next-start resource availability in the ERCOT footprint during extreme cold weather.
 - 82% of the region's blackstart and next-start resources were unavailable during Winter Storm Uri.
 - Had a total blackout of the system occurred, the unavailability of blackstart and next-start resource would have hampered ERCOT's ability to promptly restore the system.



Study Process

- Creating the Joint Team:
 - Reaching out to subject matter experts from FERC, NERC, and Regional Entities with the necessary planning and operations expertise to conduct the study.
- Entity Mapping:
 - Natural Gas Production → Natural Gas Processing → Natural Gas Transportation → Generation → Transmission
- Participant Outreach:
 - Electric entities: generator owners, generator operators, transmission owners, and transmission operators
 - Gas entities: production and processing entities
- Assessing participants' practices and procedures via on-site and virtual visits:
 - To develop observed practices for consideration and recommendations.



Observed Beneficial Practices for Consideration

- Installing permanent winterization measures, where possible, to minimize the use of temporary measures (such as portable space heaters) at generating resources.
- Maintaining a list of blackstart-capable resources not identified in blackstart system restoration plans that could be used during a blackout if other blackstart resources become unavailable.
- Performing expanded testing, where feasible, to confirm the viability of blackstart capability through coordination between blackstart resources and transmission entities.
- Considering the impacts of extreme cold weather on the operability and performance of backup batteries located on key communication paths and at critical transmission substations, and how battery life is impacted by cold weather.

Please note: Additional beneficial practices are discussed in greater detail in the December 2023 blackstart report.



Blackstart Study Recommendations



Recommendations Regarding Blackstart System Restoration Planning and Testing

1. Entities responsible for developing and implementing a blackstart system restoration plan should:
 - a. Examine the diversity of fuel, single points of failure, fuel arrangements, and other limitations of each blackstart resource.
 - b. Evaluate and incorporate, where feasible, a wide variety of options into their blackstart system restoration plans.
 - c. Incorporate off-site natural gas storage in blackstart system restoration plans.
 - d. Implement a testing requirement for blackstart resources to perform alternate fuel startup tests completely on alternate fuel.



Recommendations Regarding an Assessment of Natural Gas Availability and Improved Electric and Natural Gas Coordination

2. The appropriate state and other authorities with jurisdiction should facilitate and moderate engagement among the entities responsible for developing and implementing a blackstart system restoration plan, including but not limited to, electric generation owners and operators, electric transmission owners and operators, electric distribution owners and operators, and natural gas supply chain owners and operators to:
 - a. Assess the impact of a blackout on the natural gas supply chain with a focus on natural gas availability to blackstart and next-start resources.
 - b. Develop a coordinated blackstart system restoration plan that incorporates the needs of both the electric and natural gas industries.



Recommendation Regarding the Prioritization of Natural Gas Supply and Transportation

3. The appropriate state and other authorities with jurisdiction over developing and defining natural gas curtailment plans and standards should evaluate *elevating* the priority of natural gas supply and transportation to blackstart and next-start resources.



Recommendations for Future Studies

- October 2023 Winter Storm Elliott [Report](#):
 - 155 blackstart-designated generating units experienced 248 discrete forced outages, derates, or failures to start during Winter Storm Elliott.
 - Of these, 29% reported *multiple* outages and 23% were start-up failures.
 - Recommendation 3: A joint NERC-Regional Entity team, collaborating with FERC staff, should study the overall availability and readiness of blackstart and next-start resources during extreme cold weather conditions.
 - The study should cover the Eastern and the Western Interconnection.
 - Different characteristics than Texas Interconnection.



The background of the slide features a blurred Texas state flag on the left and a target with several darts on the right. The darts are clustered in the center of the target, suggesting a focus on a specific point.

Questions?



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