Chase Smith, ROS Chair

Katie Rich, ROS Vice Chair

**TAC Request: List of ROS Related Items from February 2021 Weather Event**

1. High-level issues or issues not specific to ROS
	1. Overall Assessment and Root Cause Analysis: Perform an independent overall assessment of the February 2021 Winter Weather Event, including root cause analysis, with recommendations for future market and reliability enhancements in advance of summer 2021 and winter 2021-2022 to the extent feasible
	2. Emergency Preparedness and Response: Review ERCOT’s emergency response plan and ERCOT’s role in emergency preparedness and response leading up to, during, and after the February 2021 winter weather event and consider process improvements and enhanced coordination among market participants and State and local emergency preparedness and response organizations.
	3. Governance: Review ERCOT’s governance structure and identify potential process improvements in the ERCOT Bylaws and ERCOT stakeholder processes.
	4. ERCOT Communications: Review ERCOT communications to the public and market participants before, during, and after the event and identify potential process improvements and recommendations for ERCOT and market participant communications plans for future ERCOT emergency events, including extreme load shed scenarios.
	5. Benchmarking: Conduct benchmarking with other regional transmission organizations (RTOs) and independent system operators (ISO) in North America to identify best practices and opportunities for improvement in topics to be reviewed in the post February 2021 winter weather event assessment including policies, requirements, and processes related to communications, emergency preparedness and response, winter weatherization, wholesale market design to ensure resource adequacy during winter months and extreme winter weather events, load shed protocols and obligations, electric-gas coordination, and training.
2. ROS: General Items
	1. ERCOT Training Program: Review existing ERCOT training program, including system operator and communications training relevant to ERCOT emergency events and identify opportunities for enhancements to existing training and development of new training modules to consider load shed events of various levels of magnitude.
	2. DC Ties: Review performance of DC ties during the event and consideration of how this impacts planning assumptions and other policies related to DC ties.
	3. Procedures during Natural Gas Supply Emergency: Review current procedures and communication requirements between ERCOT, TOs, QSEs, and REs during a natural gas supply failure and assess if changes are warranted.
	4. Emergency Response Service (ERS) Program: Review performance of ERCOT’s ERS Program during the February 2021 Winter Weather Event and determine if any adjustments to the program is needed based on those findings.
	5. Energy Emergency Alert: Review EEA rules and assess if any changes are warranted.
3. ROS: Load-Related Items
	1. Load Shed Practices: Coordinate with Transmission Operators to understand the practical and operational limitations of Transmission Operators and related Distribution Service Providers to facilitate rotating Load shed practices when faced with an extreme magnitude of firm Load shed instructions. The extraordinary amount of Load shed, which resulted in outages that could not rotate from one area to another, was an extremely difficult issue during February 15-19. Upon feedback, consider adjusting operational practices between ERCOT and Transmission Operators to achieve effective rotating Load shed objectives. This objective will likely require industry-wide commitment to develop solutions, but after what occurred here, that effort must begin immediately.\*
	2. Load Shed Table: Review the methodology currently used for determining load shed obligations for each Transmission Operator and consider modifications to ensure fair and equitable allocation that prioritizes maintaining service for critical load circuits and enables the ability to rotate outages in future extreme weather events. This review should consider constraints created by requirements for under-frequency relaying.
	3. Load Impact to GTCs: Determine the impact of load shed on generation curtailments for generation tied to a GTC.
	4. Modify under-frequency relay (UFR) process to understand whether they can be used in smaller areas. Create a comparison among Transmission Operators and related Distribution Service Providers with how the UFRs performed with different types of load.
	5. Demand Response: Review demand response performance during the event.
4. ROS: Generation-Related Items
	1. Outage Scheduler: Explore overall reporting and timing requirement changes to the ERCOT Outage Scheduler to ensure more specific, complete, and accurate information for Forced Outages of Resources during Real-Time operational conditions. Make appropriate system changes to the ERCOT Outage Scheduler to achieve enhanced situational awareness objective.\*
	2. Resource Telemetry: Ensure accurate exchange of Resource telemetry information related to Physical Responsive Capability (available operating reserves in real time) to enhance situational awareness during EEA events.\*
	3. DER Registration: Expand registration and Real-Time data requirements for all types of resources beyond current modeling requirements (e.g., distribution-level resources) to enhance situational awareness for planning and operational purposes.\*
	4. Winter Weatherization Preparations: Review existing ERCOT requirements, including Section 3.21 of the ERCOT Protocols, and associated processes related to winter weatherization preparations, findings from ERCOT’s review of the most recent submissions of Emergency Operations Plan, Weatherization Plans, and Declarations of Summer and Winter Weather Preparedness, and identify potential gaps and process improvements, including consideration of standardized requirements.
	5. Resource Outage Information during Event: Review units that were unavailable or did not bid into market by county and assess potential regional weatherization standards.
	6. Reliability Studies for Proposed Resource Retirements: Review existing reliability must run (RMR) and must-run alternative (MRA) study and processes and determine if any changes to study parameters are needed, including winter peak and planned and forced outage scenarios and generation resource dispatch. Consider extension of RMR process to units proposed for seasonal mothball.
	7. Ancillary Service Products: Review existing ancillary service products and determine if existing suite of products and amounts is adequate based on lessons learned from the February 2021 winter weather event.
	8. Blackstart: Review availability of blackstart units during February 2021 winter weather event and potential process improvements, including priority for non-curtailment of gas supply, to ensure availability during extreme weather events.
	9. Frequency Relay Points: Analyze load shed responsibilities related to frequencies for generation and load and ensure alignment
	10. Frequency: Analyze system frequency leading up to Energy Emergency Alert conditions and determine impact of low frequency on generation and load tripping.
	11. Station Service: Consider rule changes for turning off station service load at resources that are unavailable during EEA conditions.
5. ROS: Transmission-Related Items
	1. Transmission Planning Studies: Review existing transmission planning study assumptions and processes and determine if any adjustments are needed to adequately prepare for future extreme weather events including changes in assumptions for demand, generation, dispatch, and system constraints.
	2. Review GTC Management Process during EEA3: Analyze how much generation was curtailed behind GTCs during EEA3 and assess if changes are warranted around GTC management during emergency conditions.

\*ERCOT recommended priorities