

March 18, 2021

The Honorable Frank Pallone, Jr.  
Chairman, Committee on Energy &  
Commerce  
United States House of Representatives  
Washington, DC 20515

The Honorable Diana DeGette  
Chairwoman, Subcommittee on Oversight  
and Investigations  
United States House of Representatives  
Washington, DC 20515

The Honorable Bobby L. Rush  
Chairman, Subcommittee on Energy  
United States House of Representatives  
Washington, DC 20515

The Honorable Lizzie Fletcher  
United States House of Representatives  
Washington, DC 20515

The Honorable Marc A. Veasey  
United States House of Representatives  
Washington, DC 20515

Re: March 4, 2021 Request for Information

Dear Chairman Pallone, Chairwoman DeGette, Chairman Rush, Congresswoman Fletcher, and Congressman Veasey:

Electric Reliability Council of Texas, Inc. (ERCOT) shares the concern of the House Committee on Energy and Commerce regarding the catastrophic impacts of the February 2021 winter storm on the Texas power grid. The extended disruption of electric service to millions of Texans during this severe cold weather event and the attendant suffering and loss of human life demand that we take a hard look at the causes of this event and consider all available options for ensuring grid reliability going forward. ERCOT is fully engaged with policymakers at the state and federal level to provide information and analysis in an effort to identify solutions to these problems. To that end, ERCOT provides the following responses to your questions, which I have reproduced here for ease of reference:

- 1. Please summarize the extent of any winterization or other preparation efforts made in advance of the extreme weather event that began on February 14, including but not limited to, whether any recommendations of the 2011 report by FERC and NERC noted above were implemented.**

Following the 2011 extreme winter weather event, which involved substantial load curtailments in the ERCOT region due to cold-weather impacts on generators and natural gas supply infrastructure, ERCOT and Texas generation owners jointly identified a need for improvements to generator weatherization practices. ERCOT, as a grid operator, does not own or operate any generation assets; however, ERCOT works daily with power generators who supply the ERCOT grid with electricity. While policymakers chose not to mandate specific weatherization measures or performance standards, the Public Utility Commission of Texas

(PUCT) authorized ERCOT to conduct generator site visits to review winter weather preparations and to evaluate each generator's compliance with its site-specific weatherization plan. ERCOT conducted its first generator site visits in 2012.<sup>1</sup> Since 2012, ERCOT personnel have visited approximately 40-50 generation sites (encompassing approximately 80-100 units) before and during each winter season, giving priority to any sites that experienced any cold-weather-related outages during the prior winter season or that had made, or committed to make, weatherization improvements or changes during the previous year. In 2013, ERCOT began hosting winter weatherization workshops each fall to discuss best practices for generator weatherization. These workshops—which have been well-attended—have provided a forum for sharing and discussing weatherization practices.<sup>2</sup> These workshops are co-hosted by ERCOT and Texas Reliability Entity, Inc. (Texas RE), which is the Regional Entity designated by the North American Electric Reliability Corporation (NERC) for the region served by ERCOT.

Over the years, when ERCOT has identified recommended improvements during its site visits, generation owners have adopted the vast majority of these recommendations. ERCOT's recommendations reflect best practices identified by ERCOT and generators, including those described in the *Report on Outages and Curtailments During the Southwest Cold Weather Event of February 5-11, 2011* issued by the Federal Energy Regulatory Commission (FERC) and NERC in August 2011 (2011 FERC/NERC Report). Some of the more important of these practices are the following:

- Installation of temporary wind breaks, including tarps or enclosures
- Installation and maintenance of heat tracing and insulation on exposed elements
- Use of portable heaters or heat lamps in instrument cabinets
- Testing of fuel-switching capability for dual-fuel-capable generators
- Training for personnel in implementing weatherization procedures before each winter season
- Use of a checklist for winter weather preparations
- Incorporation of lessons learned from previous cold weather events into checklist

This focus on generator weatherization appeared to have resulted in improvements in generator cold-weather performance, as demonstrated during subsequent cold-weather events. For example, on January 17, 2018, the ERCOT region experienced severe cold weather conditions that were very similar to those experienced in the 2011 event. Whereas ERCOT had lost 29,729 MW due to freezing weather conditions in 2011, ERCOT lost only 1,523 MW during that 2018 event and was able to serve system demand of 65,750 MW, which was, until recently, ERCOT's winter demand record, exceeding the next-

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<sup>1</sup> See CEO Update to ERCOT Board of Directors (Nov. 13, 2012), slide 5, available at [http://www.ercot.com/content/meetings/board/keydocs/2012/1113/4\\_CEO\\_Update\\_Nov\\_2012.ppt](http://www.ercot.com/content/meetings/board/keydocs/2012/1113/4_CEO_Update_Nov_2012.ppt). In 2014, ERCOT's authority to conduct site visits was formalized in the rules of the Public Utility Commission of Texas. See 16 Tex. Admin. Code § 25.362(i)(2)(H) (assigning ERCOT “the right, upon reasonable notice, to conduct generator site visits to review compliance with weatherization plans . . .”).

<sup>2</sup>The agenda and presentations for the 2020 winter weatherization workshop are available at <http://www.ercot.com/calendar/2020/9/3/210162>. Agendas for other winter weatherization workshops (starting with the 2015 workshop) can be found at <http://www.ercot.com/committees/workshops>.

highest winter peak by over 6,000 MW.<sup>3</sup> During this same event, areas outside of ERCOT in the South Central U.S., experienced outages to 183 generating units representing approximately 30,000 MW. This resulted in a separate inquiry into the cause for the outages and a 2019 report by FERC and NERC.<sup>4</sup>

The 2021 storm, however, was substantially more severe than these more recent severe events. Whereas during the 2011 event, low temperatures in the major load centers of Dallas, Houston, San Antonio, and Austin were 13 degrees, 21 degrees, 19 degrees, and 18 degrees, respectively, low temperatures for those same cities during the 2021 event were much colder: -2 degrees, 13 degrees, 12 degrees, and 6 degrees, respectively. As with the 2011 event, the ERCOT region also experienced high winds, ice, and freezing rain in 2021. Unlike the 2011 event, ERCOT also saw significant snowfall of several inches or more across most of the state in 2021. And the period below freezing during the 2021 event lasted much longer in most areas of the state in 2021 than in 2011. The strain on the ERCOT grid due to the combination of these conditions in February 2021 therefore far exceeded what ERCOT had experienced in 2011. While ERCOT had valid reasons to believe that its fleet was more capable of withstanding extreme conditions such as those in 2011, the 2021 event was far more severe, and the impact on generator availability was clearly that much more significant.

Apart from its efforts to encourage generator owners to adopt recommended weatherization practices, ERCOT has also implemented dozens of other changes based on the recommendations in the 2011 FERC/NERC Report. Among the more significant of these changes were the following:

- In 2012, ERCOT began publishing a Seasonal Assessment of Resource Adequacy (SARA) report that includes an analysis for extreme winter and summer weather.<sup>5</sup> The extreme winter scenario is based on 2011 winter weather conditions. (See Recommendation 2 from the 2011 FERC/NERC Report)
- In 2011 and 2012, ERCOT modified its operating procedures to clarify that ERCOT will direct generators to take the following measures as cold weather approaches (these procedures were followed ahead of the February 2021 storm event) (See Recommendations 5, 9, and 11):<sup>6</sup>
  - review fuel supplies
  - notify ERCOT of any known or anticipated fuel restrictions
  - review planned generator outages

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<sup>3</sup> See CEO Update to ERCOT Board of Directors (Feb. 20, 2018), slide 4, available at [http://www.ercot.com/content/wcm/key\\_documents\\_lists/137957/8.1\\_CEO\\_Update.pdf](http://www.ercot.com/content/wcm/key_documents_lists/137957/8.1_CEO_Update.pdf).

<sup>4</sup> 2019 FERC and NERC Staff Report: The South Central United States Cold Weather Bulk Electric System Event of January 17, 2018 (July 18, 2019), available at [https://www.nerc.com/pa/rrm/ea/Documents/South\\_Central\\_Cold\\_Weather\\_Event\\_FERC-NERC-Report\\_20190718.pdf](https://www.nerc.com/pa/rrm/ea/Documents/South_Central_Cold_Weather_Event_FERC-NERC-Report_20190718.pdf).

<sup>5</sup> ERCOT's Winter 2020/2021 SARA is available at <http://www.ercot.com/content/wcm/lists/197378/SARA-FinalWinter2020-2021.pdf>.

<sup>6</sup> See ERCOT Real-Time Desk Operating Procedure Section 6.2, available at [http://www.ercot.com/content/wcm/key\\_documents\\_lists/90055/Real\\_Time\\_Desk\\_Operating\\_Procedure.docx](http://www.ercot.com/content/wcm/key_documents_lists/90055/Real_Time_Desk_Operating_Procedure.docx).

- delay maintenance outages and request availability to return from outages early
  - review and implement weatherization procedures
  - implement pre-warming techniques and emergency operating procedures
  - notify ERCOT ISO of any changes or conditions that could affect system reliability
  - make available any Resources that can be returned to service
  - keep telemetered capability and availability values updated and prepare for higher than usual loads and the possible need for additional ancillary services
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- In 2012, ERCOT revised its Protocols to require generator owners to submit a notarized attestation before each summer and winter season confirming that the generator owner has completed the weatherization steps appropriate for that season, in accordance with the facility-specific weatherization plan.<sup>7</sup> Delinquent generator owners are reported to the Public Utility Commission of Texas (PUCT).<sup>8</sup> (See Recommendation 1)
  
  - In 2011, ERCOT modified its ancillary services procurement processes to enable the procurement of additional responsive reserve service in anticipation of severe weather.<sup>9</sup> (See Recommendation 5)
  
  - In 2011, ERCOT modified its Protocols to increase generator outage approval time from eight days to 45 days and the ability to withdraw approvals of previously approved or accepted outages.<sup>10</sup> (See Recommendation 4)
  
  - In 2017, ERCOT added a new Reliability Risk Desk operator and a shift engineer in its control room.<sup>11</sup> The Reliability Risk Desk operator has the ability to focus on severe weather impacts to wind resources due to freezing weather and can trigger additional engineering studies as necessary. The shift engineer has been allocated the responsibility for activating the Emergency Notification System. (See Recommendation 24);
  
  - In 2018, ERCOT worked with the Texas Commission on Environmental Quality (TCEQ) to formalize a procedure under which TCEQ will provide enforcement discretion to

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<sup>7</sup> See ERCOT Protocols § 3.21(3), available at

[http://www.ercot.com/content/wcm/libraries/227367/March\\_15\\_2021\\_Nodal\\_Protocols.pdf](http://www.ercot.com/content/wcm/libraries/227367/March_15_2021_Nodal_Protocols.pdf).

<sup>8</sup> See, e.g., ERCOT's 2021 Report Concerning Resource Entity Non-Compliance with the Requirement to Submit Winter Weatherization Declarations (Jan. 15, 2021), available at

[https://interchange.puc.texas.gov/Documents/51878\\_6\\_1115948.PDF](https://interchange.puc.texas.gov/Documents/51878_6_1115948.PDF).

<sup>9</sup> See ERCOT Reliability Unit Commitment Desk Operating Procedure, Section 2.3, available at

[http://www.ercot.com/content/wcm/key\\_documents\\_lists/90055/Reliability\\_Unit\\_Commitment\\_Desk\\_Operating\\_Procedure.docx](http://www.ercot.com/content/wcm/key_documents_lists/90055/Reliability_Unit_Commitment_Desk_Operating_Procedure.docx); ERCOT Resource Desk Operating Procedure, Section 5.1, available at

[http://www.ercot.com/content/wcm/key\\_documents\\_lists/90055/Resource\\_Desk\\_Operating\\_Procedure.docx](http://www.ercot.com/content/wcm/key_documents_lists/90055/Resource_Desk_Operating_Procedure.docx).

<sup>10</sup> See ERCOT Protocols §§ 3.1.6.6, 3.1.6.8, 3.1.6.9, available at

[http://www.ercot.com/content/wcm/libraries/227367/March\\_15\\_2021\\_Nodal\\_Protocols.pdf](http://www.ercot.com/content/wcm/libraries/227367/March_15_2021_Nodal_Protocols.pdf).

<sup>11</sup> See ERCOT Reliability Risk Operating Procedure, available at

[http://www.ercot.com/content/wcm/key\\_documents\\_lists/90055/Reliability\\_Risk\\_Desk\\_Operating\\_Procedure.docx](http://www.ercot.com/content/wcm/key_documents_lists/90055/Reliability_Risk_Desk_Operating_Procedure.docx).

generation owners with respect to air permit exceedances during certain limited emergency conditions.<sup>12</sup> (See Recommendation 10)

- ERCOT has adopted operating procedures to further ensure that ancillary services are usable and deliverable during contingency events.<sup>13</sup> (See Recommendation 3)
- ERCOT sends annual surveys to natural gas generators with fuel-switching capability to verify capability and includes dual-fuel units in its site visits if they fail to demonstrate switching capability during cold weather events. (See Recommendation 6)

ERCOT has also reviewed the recommendations in the 2019 report by NERC and FERC regarding the January 17, 2018 South Central United States cold-weather event mentioned above. As noted in an October 2019 report to the ERCOT Board of Directors, the recommendations in the 2019 FERC/NERC report had been largely in place in ERCOT for years since the 2011 event.<sup>14</sup> The evidence of improved generator performance and other enhancements implemented since the 2011 event will have to be reconsidered based on the tremendous losses of generation capacity during the February 2021 event.

**2. What protocols did ERCOT have in place to notify the public of the extreme weather event and associated power disruptions? Please explain in detail and describe any methods and technologies used to communicate with the public and the effectiveness of these systems.**

ERCOT maintains a “Crisis Communications Procedure” that details ERCOT’s methods for communicating information about actual and potential grid emergency conditions to a variety of audiences, including government officials, media, market participants, and the public.<sup>15</sup> Notifications to the public are provided through updates to the ERCOT website, push notifications over the ERCOT mobile app, postings on ERCOT’s Twitter and Facebook accounts, and emails to subscribers of ERCOT’s Emergency Alerts electronic mailing list. When broader public notification is necessary, ERCOT issues a news release. ERCOT also maintains an Emergency Notification System that sends automated notices to state government officials (including many PUCT employees and executive and legislative officials) when ERCOT approaches and enters emergency operating conditions.

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<sup>12</sup> The current TCEQ Enforcement Discretion Procedure is posted at <https://www.tceq.texas.gov/assets/public/response/power-emergency/enforcement-discretion.pdf>.

<sup>13</sup> See ERCOT Resource Desk Operating Procedure, Section 5.1, available at [http://www.ercot.com/content/wcm/key\\_documents\\_lists/90055/Resource\\_Desk\\_Operating\\_Procedure.docx](http://www.ercot.com/content/wcm/key_documents_lists/90055/Resource_Desk_Operating_Procedure.docx).

<sup>14</sup> ERCOT Board of Directors, Agenda Item 11: South Central Cold Weather Event – ERCOT Assessment of FERC/NERC Recommendations, October 8, 2019, available at [http://www.ercot.com/content/wcm/key\\_documents\\_lists/161478/11\\_South\\_Central\\_Cold\\_Weather\\_Event\\_ERCOT\\_Assessment\\_of\\_FERC\\_NERC\\_Recommendations.pdf](http://www.ercot.com/content/wcm/key_documents_lists/161478/11_South_Central_Cold_Weather_Event_ERCOT_Assessment_of_FERC_NERC_Recommendations.pdf).

<sup>15</sup> See Attachment G to ERCOT’s 2020 Annual Operations Report, filed with the PUCT on January 15, 2021, available at [https://interchange.puc.texas.gov/Documents/51878\\_7\\_1105996.ZIP](https://interchange.puc.texas.gov/Documents/51878_7_1105996.ZIP).

Prior to and during the February 2021 winter weather event, and in accordance with its communications procedure, ERCOT provided two notices that extreme weather conditions were expected. On Thursday, February 11, 2021, at 2:11 p.m.—almost four days before load curtailment began—ERCOT issued a news release warning that it was “expecting record electric use” due to “extreme cold temperatures,” which were expected to be “the coldest weather we’ve experienced in decades.”<sup>16</sup> The release noted that “[g]enerators have been asked to take necessary steps to prepare their facilities for the expected cold weather, which includes reviewing fuel supplies and planned outages and implementing winter weatherization procedures.” The notice also stated that ERCOT was “working with transmission operators to minimize transmission outages that could reduce the availability of generation or otherwise impact the ability of the system to serve demand.” At the time, ERCOT’s forecast still showed that ERCOT’s generation supply would be sufficient to serve demand and maintain sufficient reserves, although cold weather had already outaged some generators.

On Saturday, February 13, 2021, ERCOT CEO Bill Magness participated in a briefing at the Texas Department of Emergency Management’s State Operations Center (SOC). The SOC was activated based on a winter weather disaster declaration issued by Governor Greg Abbott on February 12, 2021.<sup>17</sup> After a briefing with the Governor and other state leaders, Mr. Magness participated in a press conference with the Governor, Chair of the PUCT, Chair of the Texas Railroad Commission, and the Director of the SOC. In his remarks, Mr. Magness highlighted the risks of electric demand exceeding supply, and urged Texans to conserve energy to help avoid outages.

ERCOT issued a second news release on Sunday, February 14, 2021 at 8:35 a.m. By this time, ERCOT’s forecasts showed that, with no reduction in demand due to conservation or other efforts, available generation would not be sufficient to satisfy demand and maintain adequate reserves. The release was captioned “Grid operator requests energy conservation for system reliability.” It mentioned that ERCOT had experienced “higher-than-normal generation outages due to frozen wind turbines and limited natural gas supplies available to generating units.” The release then identified various steps consumers could take to conserve energy. It also noted the possibility that an Energy Emergency Alert (EEA) would need to be declared and that rotating outages might be necessary as a last resort to maintain reliability. Following the news release, ERCOT held a media call and responded to a number of questions.

These news releases were pushed to users of the ERCOT mobile app and were posted to ERCOT’s social media accounts and its website. They were also distributed by a variety of media outlets.

ERCOT’s notifications ahead of the February winter weather event were based on its expectation that the amount of available generation to serve load might be deficient by a few thousand MW at most—not that the majority of the generation fleet would succumb to cold-weather outages. At the time of those notifications, data on forecasted availability that each

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<sup>16</sup> <http://www.ercot.com/news/releases/show/224996>

<sup>17</sup> <https://gov.texas.gov/news/post/governor-abbott-issues-disaster-declaration-in-response-to-severe-winter-weather-in-texas>

generator is required to provide ERCOT each hour for operations planning purposes did not show a reduction in capacity anywhere near the magnitude that was ultimately experienced. Had ERCOT expected that amount of generation loss, ERCOT certainly would have provided even more severe warnings, even if it could have done nothing to stop those generator outages from occurring.

Early the morning of Monday, February 15, 2021, as temperatures plummeted and a number of generators began tripping offline, ERCOT declared EEA conditions in accordance with its Protocols and began to direct transmission utilities to initiate load curtailment after the EEA Level 3 declaration. ERCOT promptly issued notifications of these EEA declarations and the load curtailment directive on its website, its social media accounts, and its mobile app. At 4:37 that morning, ERCOT issued a news release announcing that it had initiated rotating outages and that about 10,500 MW of load had been curtailed.<sup>18</sup> The release stated that the outages “will likely last throughout the morning” but “could be initiated until this weather emergency ends.”

Later that day, about 4:46 p.m. ERCOT issued another news release indicating that it had been able to restore approximately 2,500 MW of the 16,500 MW that was ultimately curtailed that day, but also warning consumers that “severe weather, mainly frigid temperatures, is expected to continue, so we’re not out of the woods.”<sup>19</sup> The release explained that “[c]ontrolled outages are occurring to protect the electric grid from uncontrolled, cascading outages.”

ERCOT issued several other news releases during the course of the event, acknowledging the hardship imposed by the outages and explaining that the lack of generation limited the amount of demand that could be served during the extremely cold conditions.<sup>20</sup> Finally, on Friday, February 19, 2021, at 8:36 a.m., after temperatures had increased, which allowed more generation to become available, ERCOT issued a news release stating that it expected to come out of emergency conditions later that morning, even with approximately 34,000 MW of generation still outaged.

Each of these news releases was pushed to ERCOT’s mobile app and posted to ERCOT’s social media accounts and its website. In addition, all news releases were shared with the State SOC, regulators, and public officials.

In addition to written releases, ERCOT conducted several briefings for the media and public officials during the February 15-19 emergency. These included:

- February 16: briefing via WebEx with Texas legislators and staff (attended by approximately 300 people)
- February 17: briefing via WebEx for the Texas Congressional delegation and staff (attended by approximately 70 people)

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<sup>18</sup> <http://www.ercot.com/news/releases/show/225210>.

<sup>19</sup> <http://www.ercot.com/news/releases/show/225244>.

<sup>20</sup> See <http://www.ercot.com/news/releases/show/225369>; <http://www.ercot.com/news/releases/show/225696>; <http://www.ercot.com/news/releases/show/225742>; <http://www.ercot.com/news/releases/show/225922>.

- February 17-19: The ERCOT CEO and Senior Director of System Operations appeared for an hour each day on WebEx (several Texas media outlets broadcast these WebEx sessions live). They presented an update on grid and outage conditions and answered media questions.

February 17-19: The ERCOT CEO was interviewed by numerous local and national media outlets, updating the public on outages and answering questions.

Gauging the effectiveness of ERCOT's communications presents some difficulty because it is unclear how many people viewed or heard these messages, and of those, how many changed their behavior because of them. ERCOT's Twitter account presently has approximately 100,000 followers, and its Facebook account has approximately 27,000 followers, and these amounts are likely substantially higher than they were before the emergency. Even these current figures represent only a small number of the 26 million consumers who live in the ERCOT region. However, ERCOT understands that a large number of media outlets carried its news releases throughout the week. In addition, ERCOT's briefings were carried live, or reported later, by local and national media outlets throughout the week of the emergency.

ERCOT is aware that a significant amount of misinformation had been circulating on social media about the reason for the load curtailments and ERCOT's role in the outages. ERCOT believes that much of this can be attributed to a lack of understanding of ERCOT's role, which is not surprising given the complexity of the electric power industry and the operation of the ERCOT wholesale market.

**3. Are there any existing protocols in place to ensure communication regarding natural gas/electric supply coordination, particularly among ERCOT, the Texas Railroad Commission, and the Texas Public Utility Commission? In your response, describe how regularly ERCOT communicated with these entities leading up to and during this event, the type of information shared, and your review of the effectiveness of these communications efforts.**

ERCOT is regulated by the PUCT. The PUCT and ERCOT communicate daily on a range of issues of mutual concern, from simple "heads-up" calls and meetings on emerging issues, to detailed collaboration on changes to PUCT rules affecting ERCOT and its market participants. These contacts include regularly scheduled update calls with senior PUC staff and ERCOT subject matter experts and government relations staff. In addition, the ERCOT Chief Executive Officer (CEO) frequently talks with the PUCT Commissioners on issues of mutual concern. Under Texas law, the PUCT Chair is an *ex officio*, non-voting member of ERCOT's Board of Directors, and Board meetings are typically attended by all three PUCT Commissioners.

The PUCT serves as ERCOT's primary liaison with other agencies of the Texas state government. When ERCOT works with other agencies (e.g., the emergency enforcement forbearance process developed with the Texas Commission on Environmental Quality) the PUCT is either included in the process or briefed on the issues involved. Similarly, as emergency or disaster conditions emerge, ERCOT's interface with agencies such as the Texas Department of Emergency Management is generally through PUCT representatives.



The PUCT plays such a liaison role in ERCOT's communications with the Texas Railroad Commission (TRC). The PUCT has jurisdiction over electric service issues, and the interactions it has with the TRC that involve ERCOT have typically involved situations where natural gas supply to electric generators is at issue. For example, in the Summer of 2018, the PUCT and TRC Chairmen worked together to address inter-industry issues that threatened to impact natural gas supplies during the peak Summer season for electricity service. ERCOT supplied information and expertise to assist in those interagency efforts.

Gas-electric coordination is also the focus of the Texas Energy Reliability Council (TERC), which is made up of leaders from the TRC, the PUCT, ERCOT, and representatives of the natural gas industry. The purpose of TERC is to ensure high priority, human needs are met in the event of necessary curtailment of gas distribution or supplies. Under the TRC's Curtailment Plan, gas utilities place the highest priority for gas availability and delivery on residences, hospital, schools, churches and other human needs customers. TERC members meet regularly to foster communication and planning to ensure preparedness should natural gas curtailment be necessary. Before the February 2021 weather event, ERCOT coordinated with the PUCT, TRC, and TERC to assist the TRC in development of an emergency order. The order, issued February 12, 2021, temporarily adjusted the priority that electric generation has in the order of natural gas supply. The TRC order was supported by an affidavit executed by ERCOT's CEO.

TERC met by conference call daily for 11 days prior to and during the February 2021 event (February 10-21, 2021). The calls often included over 100 people, lasted more than an hour, and covered several issues. The calls always started with a status report from participants that covered issues from the well head to gas generation. ERCOT provided a grid update and forecast of what would likely happen the next day. One of the first major topics discussed by the group was getting gas generation moved up the priority list (equating it with human needs), which was completed with the TRC's February 12, 2021 Order. A second topic was exporting natural gas to Mexico, and natural gas usage by LNG facilities during the emergency. The TERC calls also focused on the identification of critical loads that had failed to be reported to TSPs for incorporation in their load shed plans. In the final days of the emergency, TERC participants discussed the challenges associated with bringing industrial load back online.

In addition to TERC, the ERCOT Gas Electric Working Group is an voluntary forum, chaired by ERCOT staff, where natural gas suppliers, generation owners, and transmission service providers (TSPs) engage in open dialogue on issues pertaining to both electric generation and natural gas pipeline operations. Much of that group's focus has been on identifying critical gas infrastructure for TSPs to consider in their black start and load shed plans. Recently, the GEWG posted an application for "critical load" designation for electric generation and co-generation. This form is to be submitted to TSPs for use in their load shed plans. Since the February event, there have been reports that some entities who thought they should be critical load had not sought that designation with their local TSP. A second focus of GEWG has been on coordinating gas pipeline maintenance during summer electric peaks. Much of the gas restriction information ERCOT receives, on a voluntary basis from gas companies, is a result of the working group's efforts.

The ERCOT Protocols do not explicitly address inter-agency communications between ERCOT, the PUCT, and the TRC. The PUCT does not regulate natural gas, generally, or as a fuel source for gas-fired generation. There are thus not PUCT rules that specifically address the relationships between electric generators (which are deregulated for most purposes) and their natural gas fuel suppliers. Similarly, there are not specific PUCT regulations that address provision of other fuel types, such as coal or uranium.

**4. Please describe the process for implementing outages. In your response, please also address reports indicating that the loss of power to gas production facilities in the Permian Basin was a major problem that contributed to the broad and long-lasting blackout throughout much of Texas.**

Upon direction from ERCOT, load curtailment is implemented by local transmission and distribution utilities. The process for directing the curtailment of customer load is described in ERCOT's rules. Load curtailment is directly linked to the amount of remaining generation reserves that can respond quickly to a change in frequency—called “Physical Responsive Capability,” or PRC. ERCOT's rules provide that “[w]hen PRC falls below 1000 MW and is not projected to be recovered above 1,000 MW within 30 minutes, . . . ERCOT shall direct [transmission utilities and distribution utilities] to shed firm load.”<sup>21</sup>

ERCOT rules allocate the total required load shed amount among all ERCOT transmission utilities according to each utility's percentage of the total peak load during the previous summer. That percentage is posted in a “load-shed table” published in ERCOT's rules.<sup>22</sup> The table shows, for example, that CenterPoint Energy Houston Electric LLC has a 24.94% share of the curtailment responsibility, while South Texas Electric Cooperative, Inc. (STEC) has a 2.39% share. Thus, if ERCOT directs curtailment of 1,000 MW of customer load, CenterPoint must curtail at least 249.4 MW and STEC must curtail at least 23.9 MW. ERCOT rules do not govern curtailment of customer load beyond requiring curtailment of the percentages reflected in the load-shed table.

Transmission and distribution utilities curtail load by disconnecting distribution circuits from the grid—typically using remotely controllable switches, but sometimes by sending workers to manually open breakers at switching stations. In order to distribute the burden of load curtailment among consumers, these utilities generally prefer to “rotate” outages among circuits. ERCOT understands that these utilities typically have established plans for rotating outages and in some cases have systems that determine which circuits are disconnected and for how long, based on the magnitude of the ERCOT-directed load curtailment.

Even so, the equitable distribution of outages can be complicated by other factors. For one, circuits that serve critical loads such as hospitals and police stations are generally exempted from rotating outages, or at least given a higher priority. Another factor is that 25% of the customer load

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<sup>21</sup> ERCOT Protocols § 6.5.9.4.2(3)(a), available at [http://www.ercot.com/content/wem/libraries/227367/March\\_15\\_2021\\_Nodal\\_Protocols.pdf](http://www.ercot.com/content/wem/libraries/227367/March_15_2021_Nodal_Protocols.pdf). This provision also requires ERCOT to direct curtailment when frequency calls below 59.91 Hz for 25 consecutive minutes.

<sup>22</sup> ERCOT Operating Guide § 4.5.3.4, available at [http://www.ercot.com/content/wem/libraries/226349/March\\_1\\_2021\\_Nodal\\_Operating\\_Guide.pdf](http://www.ercot.com/content/wem/libraries/226349/March_1_2021_Nodal_Operating_Guide.pdf).

in the ERCOT System must be reserved for automatic under-frequency load shedding (UFLS), which is a further reliability backstop mechanism designed to ensure that significant losses of generation do not cause the system to cascade into a blackout.<sup>23</sup> Circuits that are designated as part of the UFLS program cannot be manually disconnected as part of ERCOT-directed load curtailment because that would render them unable to provide UFLS if necessary. Based on discussions with transmission utilities during the emergency, ERCOT understands that some utilities were unable to rotate outages among circuits because of these critical-load and UFLS constraints on available circuits. Customers on circuits that were not able to be placed back into service during the event were unfortunately subjected to extended outages and greater exposure to cold weather.

ERCOT is aware of reports that some critical gas infrastructure in the Permian Basin may have been disconnected by a transmission utility during the ERCOT-mandated load curtailment event. ERCOT does not have any direct relationship with customers and has no information about the magnitude of the impact that this issue may have had on gas availability. ERCOT understands that the problem may have been a failure of one or more customers to have designated certain gas facilities as critical loads, as required by PUCT rules,<sup>24</sup> and that this was promptly remedied for at least some gas infrastructure facilities during the event. In any case, ERCOT agrees that any such curtailment should not have happened and that greater coordination between the gas and electric industries is needed to ensure gas facilities are designated as critical loads for transmission utilities.

**5. Please explain whether increased connection with the Eastern and Western Interconnections in the United States would have allowed Texas to import more power to alleviate the electricity shortages experienced within the State.**

It is at least theoretically possible that additional transmission connections between the ERCOT Interconnection and the Eastern or Western Interconnections might have facilitated some additional power imports to the ERCOT grid during at least some parts of the event. In practice, however, this may have been more challenging under the conditions of the winter storm event. For at least the earlier part of the week of February 15-19, the Southwest Power Pool (SPP) and Midcontinent Independent System Operator (MISO) regions both experienced operator-directed load curtailment events of their own due to cold-weather generation impacts, with SPP issuing its first-ever curtailment directive. At least for the periods of these outages—which coincided with some of the most severe load curtailment in ERCOT—these regions would have had no power to lend to ERCOT, even if sufficient transmission capacity existed between the regions.

Also, fully addressing the generation deficiency in the ERCOT region during the event would have required transmission lines capable of carrying as much as 20,000 MW of generation. Setting aside the supply deficiencies in SPP and MISO during the time in question, whether this substantial amount of transmission capacity could feasibly be connected to SPP and MISO or to one or more utilities in the Western Interconnection would require extensive engineering studies.

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<sup>23</sup> See ERCOT Operating Guide § 2.6.1 (describing UFLS program), available at [http://www.ercot.com/content/wcm/libraries/226349/March\\_1\\_2021\\_Nodal\\_Operating\\_Guide.pdf](http://www.ercot.com/content/wcm/libraries/226349/March_1_2021_Nodal_Operating_Guide.pdf).

<sup>24</sup> See 16 Tex. Admin. Code § 25.497(b)(2) (“To be designated as a Critical Load Public Safety Customer or a Critical Load Industrial Customer, the customer must notify the TDU.”)

ERCOT notes that one project that would connect ERCOT to the Eastern Interconnection is already planned and well along the path to development. The Southern Cross High Voltage Direct Current (HVDC) transmission line is proposed to connect ERCOT to the southeastern United States, providing 2,000 MW of bi-directional flow capability.<sup>25</sup> ERCOT understands that construction on the project is currently scheduled to begin in 2022.

**6. Please explain if scarcity pricing worked as intended during this extreme weather event. Please also explain why, in many cases, generators were physically unable to provide power, but customers ended up with utility bills in the thousands of dollars.**

The scarcity pricing mechanisms approved by the PUCT are administered in ERCOT’s hardware and software systems. From a systems perspective, the mechanisms functioned as designed, based on the detailed requirements delineated in the ERCOT Protocols. As is often the case, the PUCT’s rules are developed through the ERCOT stakeholder process into detailed requirements for ERCOT systems, and those Protocols are then approved by ERCOT’s Board of Directors before being incorporated in ERCOT systems.

The extreme conditions on the grid, which included up to 20,000 MW of load shed during the week of February 14, led the PUCT to issue emergency orders that impacted the scarcity pricing mechanisms. The PUCT’s orders are summarized below:

Feb. 15, 2021	Order Directing ERCOT to Take Action and Granting Exception to Commission Rules	<p>Directed ERCOT “to ensure that firm load that is being shed in EEA3 is accounted for in ERCOT’s scarcity pricing signals.”</p> <p>Directed ERCOT “to correct any past prices such that firm load that is being shed in EEA3 is accounted for in ERCOT’s scarcity pricing signals.”</p> <p>Ordered ERCOT to “suspend any use of the Low System-Wide Offer Cap (LCAP) until the Commission’s regularly-scheduled next open meeting, and that ERCOT shall continue to use the as the High System-Wide Offer Cap (HCAP) until that time.”</p>
Feb. 16, 2021	Second Order Directing ERCOT to Take Action and Granting Exception to Commission Rules	<p>Directed ERCOT “to ensure that firm load that is being shed in EEA3 is accounted for in ERCOT’s scarcity pricing signals.”</p> <p>Rescinded Commission’s directive to ERCOT in the 02/15 order “to correct any past prices such that firm</p>

<sup>25</sup>[http://www.ercot.com/content/wcm/key\\_documents\\_lists/131886/02\\_SCT\\_Project\\_Overview\\_2017\\_09\\_07update\\_d.pdf](http://www.ercot.com/content/wcm/key_documents_lists/131886/02_SCT_Project_Overview_2017_09_07update_d.pdf).

		<p>load that is being shed in EEA3 is accounted for in ERCOT’s scarcity pricing signals” and directed ERCOT “to not correct any such past <i>practices</i>.”</p> <p>Again ordered ERCOT to “suspend any use of the LCAP until the Commission’s regularly scheduled next open meeting, and that ERCOT shall continue to use the HCAP as the system-wide offer cap until that time.”</p>
Feb. 21, 2021	Order Directing ERCOT to Take Action and Granting Exception to ERCOT Protocols	<p>Ordered ERCOT to “exercise its sole discretion to resolve financial obligations between a market participant and ERCOT” as provided by the order.</p> <p>Waived any/all provisions of the Protocols “to the degree necessary to allow ERCOT to take actions” under the order.</p> <p>Ordered ERCOT to provide the Commission with a report twice/day on actions taken in response to the order.</p> <p>Ordered ERCOT to “direct any questions regarding its obligations” under the order to the PUCT Executive Director or his designee.</p>
March 3, 2021	Order Addressing Ancillary Services	Ordered ERCOT to “claw back all payments for Ancillary Services (AS) that were made to an entity that did not provide its required AS during real time on ERCOT operating days starting [02/14] and ending [02/19].”
March 3, 2021	Order Reinstating LCAP	<p>Terminated “the suspension of the use of the LCAP.”</p> <p>Ordered ERCOT to “resume application of the LCAP when administering the scarcity pricing mechanism as provided by Commission rule.”</p>

The overall purposes of the scarcity pricing mechanism are to provide strong financial incentives for performance by generators and for price-responsive demand by load. During the February 2021 event, there were strong financial incentives for generation to be online and remain online through emergency conditions. Likewise, there were substantial financial costs for those generators that had bilateral or other obligations and did not perform. On the load side, while ERCOT does not have specific data on load response, ERCOT and other market participants observed significant voluntary load shed by large industrial users while real-time prices were at their peak.

The high electric prices associated with scarcity pricing during the several days of the February event have had (and continue to have) significant financial ramifications on ERCOT market participants. Many members of the Texas Legislature have expressed interest in reviewing the market outcomes in detail, and considering whether the current working of the scarcity pricing mechanism in ERCOT market systems should be revised. ERCOT expects those discussions will continue throughout the 2021 session of the Texas Legislature.

In the ERCOT competitive market, there is not a direct correlation between a generator's physical inability to provide power and the amount of customer bills. Unlike in a traditional vertically integrated utility structure, specific generation units are not tied to the service of specific groups of customers. A generation owner's failure to perform could cause it to have to procure power at high replacement costs during times of scarcity, which could have long-term negative consequences for that entity. Moreover, the failure of large amounts of generation led to high wholesale scarcity prices during the February event, but those wholesale power prices are typically not passed on directly to consumers because most retail service agreements do not expose consumers to this risk.

Consumer prices are established by contracts between competitive retail electric providers (REPs) and customers for the ~75% of customers in ERCOT who reside in competitive areas. If the customer has a flat rate contract, his or her rate will not vary during the contract period, regardless of the outcomes for the REP who procured power for those customers on the wholesale market. In the ~25% of customers in non-competitive areas (i.e., served by municipally-owned utilities and co-operatives), customer rates are established by the public power provider.

In some less common cases, competitive REPs offered consumer contracts that were pegged to wholesale rates, or were otherwise variable in ways that benefited customers when wholesale power prices were low, and subjected customers to the risk of spikes in wholesale power prices. Customers who had opted for those much riskier service offerings did report extremely high bills during the February event. The PUCT and the Legislature are considering measures that may restrict those competitive offerings in the future, based on outcomes affecting customers who exposed themselves to wholesale power price risk during the February event.

- 7. Please provide a detailed description of the reliability framework in Texas, including but not limited to the roles of NERC, ERCOT, the Texas Reliability Entity, the Texas Public Utility Commission, and the Texas Railroad Commission. In your response, please also explain which entities have the authority to develop, implement, and enforce mandatory reliability standards in Texas, including for natural gas infrastructure.**

The electric reliability framework in Texas consists of federal and state components. The federal component involves NERC and Texas RE. The state component involves the PUCT and ERCOT. NERC, Texas RE, PUCT, and ERCOT do not have jurisdiction over natural gas infrastructure, and do not have authority to develop, implement, or enforce reliability standards for natural gas infrastructure.

## **NERC**

Section 215 of the Federal Power Act (FPA) grants the Federal Energy Regulatory Commission (FERC) jurisdiction over “all users, owners and operators of the bulk-power system” for purposes of approving and enforcing reliability standards.<sup>26</sup> The “bulk-power system” consists of the “facilities and control systems necessary for operating an interconnected electric energy transmission network . . . and [] electric energy from generation facilities needed to maintain transmission system reliability.”<sup>27</sup> The bulk-power system “does not include facilities used in the local distribution of electric energy.”<sup>28</sup> FERC’s broad reliability jurisdiction applies to all users, owners, and operators of the bulk-power system in the contiguous United States, including those in Texas. Section 215 mandates they comply with all reliability standards.<sup>29</sup>

FERC is authorized under Section 215 of the FPA to certify an Electric Reliability Organization (ERO) to establish and enforce reliability standards for the bulk-power system.<sup>30</sup> NERC is FERC’s certified ERO. The role of NERC, as the ERO certified by FERC, is to establish and enforce reliability standards for the bulk-power system, subject to FERC’s review. Accordingly, all Texas users, owners, and operators of the bulk-power system are required to comply with the reliability standards developed and implemented by NERC, and are subject to NERC’s enforcement authority with respect to those reliability standards.

## **Texas RE**

Section 215 of the Federal Power Act, as well as applicable FERC regulations, authorize NERC, as the FERC-certified ERO, to enter agreements delegating authority to propose and enforce federal reliability standards to regional entities.<sup>31</sup> Pursuant to a delegation agreement between NERC and Texas RE, Texas RE is the delegated regional entity for the ERCOT region, which comprises approximately 90 percent of the electric load in Texas. As the delegated regional entity for the ERCOT region, Texas RE’s role is to enforce federal reliability standards in the ERCOT region. Texas users, owners, and operators of the bulk-power system in the ERCOT region are subject to Texas RE’s enforcement authority. Areas of Texas that are outside the ERCOT region are subject to the enforcement authority of NERC-delegated regional entities other than Texas RE.

## **PUCT**

Section 39.151 of the Texas Public Utility Regulatory Act (PURA)<sup>32</sup> mandates that the PUCT certify an independent organization to perform statutorily prescribed functions, including ensuring the reliability and adequacy of the regional electric network.<sup>33</sup> In addition, PURA

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<sup>26</sup> 16 U.S.C. § 824o(b)(1)

<sup>27</sup> 16 U.S.C. § 824o(a)(1)

<sup>28</sup> 16 U.S.C. § 824o(a)(1)

<sup>29</sup> 16 U.S.C. § 824o(b)(1)

<sup>30</sup> 16 U.S.C. § 824o(c)

<sup>31</sup> 16 U.S.C. § 824o(e)(4)

<sup>32</sup> Tex. Util. Code §§ 11.001 – 66.016

<sup>33</sup> PURA § 39.151(c).

requires the PUCT “adopt and enforce rules relating to the reliability of the regional electrical network and accounting for the production and delivery of electricity among generators and all other market participants, or may delegate to an independent organization responsibilities for establishing or enforcing such rules.”<sup>34</sup>

In the event the PUCT delegates statutory responsibilities to an independent organization, rules adopted by the independent organization and enforcement actions taken by the independent organization remain subject to PUCT oversight and review.<sup>35</sup> The independent organization is “directly responsible and accountable” to the PUCT, and the PUCT has complete authority over the independent organization’s finances, budget, and operations in order to ensure the independent organization adequately performs its duties, including efforts to ensure reliability.<sup>36</sup> Accordingly, regardless of whether the PUCT delegates rule making or enforcement of such rules, PURA provides that the PUCT retains oversight and review authority. Accordingly, the PUCT has broad authority to develop, implement, and enforce state reliability standards.

## **ERCOT**

ERCOT is the certified independent organization for the ERCOT region.<sup>37</sup> In connection with its role as the independent organization, ERCOT adopts rules that are intended to ensure grid reliability.<sup>38</sup> These rules—known as Protocols—are developed by ERCOT’s market participants through a collaborative process. The Protocols are themselves legally binding, and the PUC has plenary authority to approve, reject, or modify them.<sup>39</sup> PUCT holds the enforcement power for violations of these rules.

## **Texas Railroad Commission**

In Texas, the TRC has broad jurisdiction over the rates and services of natural gas utilities.<sup>40</sup> NERC, Texas RE, PUCT, and ERCOT do not have jurisdiction or authority over natural gas infrastructure in Texas. Nor do they have authority to develop, implement, or enforce reliability standards for natural gas infrastructure in Texas.

I hope that you and other members of the Committee find the above information responsive to your questions. Please do not hesitate to contact me if you have additional questions or require

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<sup>34</sup> PURA § 39.151(d).

<sup>35</sup> PURA § 39.151(d).

<sup>36</sup> PURA § 39.151(d).

<sup>37</sup> 16 Tex. Admin. Code § 25.361(a).

<sup>38</sup> ERCOT’s rules (known as protocols) “have the force and effect of statutes.” *PUC v. Constellation Energy Commodities Grp.*, 351 S.W.3d 588, 595 (Tex. App.—Austin 2011, pet. denied).

<sup>39</sup> PURA § 39.151(d), (i).

<sup>40</sup> Tex. Util. Code § 102.001. With limited exceptions, “gas utility” under the Texas Gas Utility Regulatory Act “includes a person or river authority that owns or operates for compensation in this state equipment or facilities to transmit or distribute combustible hydrocarbon natural gas or synthetic natural gas for sale or resale in a manner not subject to the jurisdiction of the Federal Energy Regulatory Commission under the Natural Gas Act (15 U.S.C. Section 717 et seq.) . . . .” Tex. Util. Code § 101.003(7).



Hon. Frank Pallone, Jr., et al.

March 18, 2021

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additional information. I will do my best to promptly respond to any further inquiries under the circumstances.

Respectfully,

/s/ Bill Magness

Bill Magness

President and Chief Executive Officer

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