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RULEMAKING TO ESTABLISH WEATHERIZATION STANDARDS	**§ §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

NRG ENERGY, INC.'S COMMENTS ON THE COMMISSION STAFF'S DISCUSSION DRAFT AND QUESTIONS FOR COMMENT

NRG Energy, Inc. ("NRG") appreciates the opportunity to provide feedback to the Public Utility Commission of Texas ("Commission") on Staff's discussion draft of new 16 Texas Administrative Code ("TAC") § 25.55 to implement weather emergency preparedness measures for generation entities and transmission service providers in the Electric Reliability Council of Texas ("ERCOT") power region, as required by Senate Bill 3, 87th Legislature Session ("Regular Session"). Commission Staff also requested comments on two questions to inform the rulemaking process. NRG responds to these questions as well.

I. EXECUTIVE SUMMARY

NRG is committed to establishing improved weatherization requirements for electric generation and appreciates the deliberate approach by the Commission during the rulemaking process to gather information and feedback from stakeholders. As requested by Commission Staff, a bullet-point summary of NRG's responses to Commission Staff's questions are as follows:

- Regarding Question 1, NRG shares two sources of statistically reliable weather information: (1) American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE") and (2) the National Oceanic and Atmospheric Administration ("NOAA"). NRG prefers ASHRAE because ASHRAE provides an engineering methodology that allows for heat tracing design.
- Regarding Question 2, NRG submits that existing market-based mechanisms do not provide sufficient opportunity for cost recovery to meet the weather reliability standards proposed in the discussion draft.
    - The ability of market-based mechanisms to cover weatherization costs will be highly dependent on where the standards are set, the methodology adopted in the weather study, and the data set used in the weather study.

- NRG proposes that the "basic weather reliability standard" be set at the 90th percentile to be more consistent with the historical standards.
- NRG supports Staff's proposal to establish a two-tier standard for weatherization preparation and to include financial incentives to achieve that higher standard.
- NRG strongly encourages the Commission to create separate products for weatherization and winter fuel resiliency since the requirements differ so dramatically.

In addition, NRG provides comments and suggested edits for various portions of the discussion draft of the rule. NRG's comments and edits address a variety of issues including market functionality, consistency with the statute, and clarity.

- Section 25.55(b): strike "fuel security" from the definition of "weather preparation measures";
- Section 25.55(c)(1): provide a more complete view of the specific weather conditions and strike "in" the "95th" and "98th" and change to "between" the "85th" and "99th" percentile probabilities;
- Section 25.55(d)(1): for the basic reliability standard, change "95th" to "90th";
- Section 25.55(d)(2): strike "service" from the definition of enhanced weather reliability standard;
- Section 25.55(d)(3): strike "99.7th" and replace with "99th" percentile for the weatherization standard for Black Start Service;
- Section 25.55(e): clarify that the megawatt thresholds apply to each specific generation unit rather than the entire resource or plant site;
- Section 25.55(f): allow either an internal or external professional engineer be permitted to conduct the annual compliance study;
- Section 25.55(f)(1)(B): clarify that "significant change" means the same trigger for significant change that ERCOT uses when determining whether the resource has changed enough to require another interconnection study;

- Section 25.55(h)(1): strike "a reasonable period of time" and change to allowing six months from the date of the violation occurred to cure, with the potential for a reasonable extension of time; and
- Section 25.55(h)(3): clarify that repeated deficiencies should only be considered once the rule has been adopted; delete maintenance outages from the type of outages that trigger third party audits; and establish that the look back period of a generation's history of operations and violations is no more than 10 years from the date this rule is adopted.

II. RESPONSE TO COMMISSION STAFF QUESTIONS

Commission Staff posed two questions, reprinted below. NRG's response follows each question.

1. *What is the availability of statistically reliable weather information from, e.g. the American Society of Heating, Refrigeration and Air Conditioning Engineers; National Weather Service; or other sources for the ERCOT power region? Please share the source of that information.*

Two sources of statistically reliable weather data that are available for the ERCOT region are the ASHRAE and the federal weather agency, NOAA. NRG provides information about each source below. NRG prefers the use of AHSRAE over NOAA because ASHRAE provides a means to calculate against a specific extreme weather condition and also provides an engineering methodology that allows for heat tracing design while NOAA only provides climatology data.

- ASHRAE
    - Climatic Design Conditions for the United States can be found here: http://ashrae-meteo.info/v2.0/places.php?continent=North%20America
    - This resource provides for extreme annual design conditions.
    - Architecture and Engineering firms use this database for design parameters.
    - ASHRAE is particularly well regarded because the organization develops and publishes national standards for the HVAC industry.
    - However, the information that is publicly available is somewhat dated. They publish their climatic design conditions data once every 4 years.

- Therefore, the information found on ASHRAE may need to be supplemented by a more current database, like NOAA.

- NOAA
  - Relevant information on the NOAA website can be found here: https://www.ncei.noaa.gov/
  - NOAA provides climatological data summaries, information on extreme events, and statistical weather and climate information.

2. *Do existing market-based mechanisms provide sufficient opportunity for cost recovery to meet the weather reliability standards proposed in the discussion draft?* No. *If not, what cost recovery mechanisms should be included in the proposed rule?*

As mentioned in NRG's initial comments,[1] the level of weatherization conducted at generation resources in ERCOT is reflective of market forces and the potential impact of weather on operations. Market participants budget and plan for maintenance and weatherization of generation resources based on a multitude of factors, which include historical market outcomes, machinery and equipment health, future revenue expectations, and forward price signals. Existing market-based mechanisms include the ancillary services and energy markets which produce fluctuating and uncertain financial outcomes. The current set of ancillary service products procure capacity to fulfill operating reserve requirements and do not specifically target weatherization or winter resiliency. Generation resources operating in the energy market rely on infra-marginal rents (the difference between a plant's costs and the costs of the generation source setting the price) and scarcity pricing to recover fixed costs such as maintenance and weatherization. The ERCOT energy market has historically experienced extended periods of low prices that reduced revenues available for maintenance and weatherization. Despite persistently low prices, market-based revenues have typically been sufficient to consistently fund a risk-based level of weatherization for thermal generation.

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[1] *Rulemaking to Establish Electric Weatherization Standards,* Project No 51840, NRG Energy, Inc 's Comments on the PUCT Public Notice of Request for Comments (June 23, 2021) (Item No 8), *available at* https //interchange puc texas gov/Documents/51840_8_1135429 PDF

The stringency of the standard, and the costs that result from it, may be as much a function of the weather study the Commission approves in a future proceeding as it is the percentile the Commission elects in this proceeding. The ability of market-based mechanisms to cover weatherization costs will depend on the weather study's data set and methodology. Historical market outcomes likely would not be sufficient to consistently fund the weatherization required to meet the "basic weather reliability standard" of the 95th percentile proposed by Staff if historical ASHRAE data were used as a basis for the calculation. Based on historic ASHRAE extreme data design that was available, plant and equipment design standards were set at around the 90th percentile. However, this is not indicative of the extreme design conditions for the time periods in which some of these plants were built (i.e., year of construction ASHRAE data would most likely result in a lower percentile given warming trends).

As NRG understands Staff's proposal, it would set the "basic weather reliability standard" that all generation entities must meet at the "95th percentile of *each of the extreme weather scenarios*" specified in the weather study that would be submitted by ERCOT in 2022 for approval by the Commission.[2] A 90th-percentile standard relying on the weather study in the Staff proposal is likely more stringent than a 90th-percentile standard using a long-run historical data set. Consequently, we suggest using a 90th-percentile standard as the "basic weather reliability standard" proposed at §25.55(d)(1) while retaining the higher bar, the 98th percentile, associated with an enhanced standard in (d)(2). Even with that change, recovery of fixed costs from the existing market-based mechanisms will be uncertain and may not sufficiently fund a base weatherization standard along with a full maintenance program.

NRG supports Staff's proposal to establish a two-tier standard for weatherization preparation and to include financial incentives to achieve that higher standard. To achieve a more reliable system, stronger financial incentives must be present to support more maintenance and weatherization preparations. The draft rule defines the additional, higher weatherization standard as an "enhanced weather reliability service standard" and states that once this higher preparedness standard has been proven to be met, the resource may then qualify to provide an "enhanced weather

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[2] Section 25 55(d)(1) (emphasis added)

reliability service" procured by ERCOT. Since weatherization preparedness and the corresponding system upgrades are primarily fixed costs, and those investments must be complete (and costs incurred) prior to qualification (i.e. sunk costs), a compensation mechanism to reimburse those costs after the fact is appropriate. Therefore, the "enhanced weather reliability service" procured by ERCOT could be an as-bid service where ERCOT verifies the "enhanced weather reliability service standard" has been met in order to qualify generation resources prior to awarding compensation. Allocation of weatherization costs could be based on load ratio share weighted for the winter months or a winter peak load ratio share. The Commission could also require qualification for "enhanced weather reliability service" as a pre-condition necessary to participate in the winter fuel resiliency product prescribed by Section 18 of Senate Bill 3, which is expected to be developed as part of the market design reforms at the Commission in the coming months. NRG strongly encourages the Commission to create separate products for weatherization and winter fuel resiliency since the requirements differ so dramatically.

III. COMMENTS AND PROPOSED REVISIONS ON DISCUSSION DRAFT

NRG appreciates the opportunity to provide comments on the proposed rule discussion draft filed by Commission Staff. NRG's comments are organized around the section headings in the discussion draft.

a. Section 25.55(b) – Definitions

NRG recommends "fuel security" be struck from the definition of "weather preparation measures". Fuel procurement is not typically related to weatherization preparations. Weatherization preparations are actions taken to ensure a plant can function during extreme weather conditions while fuel security deals with making sure that fuel is on-site or on hand when needed and not hindered by any transportation constraints. Weatherization and fuel security, therefore, should be treated differently. Moreover, fuel security is expected to be a focus of the SB3 market reforms creating a new reliability service to provide incentives for winter fuel resiliency. Accordingly, NRG recommends striking "fuel security" from the definition of "weather preparation measures."

(4) **Weather preparation measures** – Measures that a generation entity or transmission service provider may take to improve the function of a facility in extreme weather conditions, including weatherization, ~~fuel security,~~ staffing plans, operational readiness, and structural preparations.

b. Section 25.55(c) – Weather Study

NRG agrees an important initial step in the development of weatherization standards is to conduct weather studies to determine specific temperature, wind chill, and duration requirements. NRG recommends the Commission widen the range of percentile scenarios to provide a more complete view of the specific weather conditions being covered by the standard.

(c) Weather study. ERCOT, in consultation with the Office of the Texas State Climatologist, must prepare a weather study that includes statistical probabilities of a range of extreme weather scenarios for the weather zones that ERCOT establishes for this study.

(1) Weather study criteria. The weather study must include statistical probabilities for a range of weather scenarios ~~in~~ between the 8~~9~~5th~~, 98th,~~ and 99th percentile probabilities for the established weather zones. The weather study must address a comprehensive range of weather event scenarios that may impact transmission and generation performance in the ERCOT power region. These scenarios must include, at a minimum, parameters for high and low temperatures, wind, humidity, precipitation, and duration.

c. Section 25.55(d) – Weather reliability standard for a resource

NRG recommends that the Commission set the "basic weather reliability standard" at the 90th percentile to align with historical and reasonable design standards of existing equipment and to accommodate variations in the data set selection. Based on NRG's review of weather data, the 95th percentile could require substantial retrofits, the costs of which would significantly burden

existing resources economically. NRG also recommends the Commission make it clear in the rule that employee safety is a priority over operation during weather preparations for extreme weather.

(d) Weather reliability standard for a resource. A generation entity must comply with the following standards.

(1) Basic weather reliability standard. A generation entity must maintain weather preparation measures that reasonably ensure that its resource can provide service at the resource's applicable rated capability as defined by ERCOT under the 90th ~~95th~~ percentile of each of the extreme weather scenarios specified in the weather study approved by the commission under subsection (c) of this section. A generation entity is not required to maintain weather preparation measures for extreme weather scenarios that endanger human safety.

To prevent any confusion between the enhanced weather reliability standard and the enhanced weather reliability service procured by ERCOT, NRG recommends a clarifying edit to delete "service" from the definition of enhanced weather reliability standard.

(2) Enhanced weather reliability ~~service~~ standard. A generation entity may elect to maintain weather preparation measures that reasonably ensure its resource can provide service at the resource's applicable rated capability as defined by ERCOT under the 98th percentile of each of the extreme weather scenarios specified in the weather study approved by the commission under subsection (c) of this section. A resource that meets this standard may qualify to provide an enhanced weather reliability service procured by ERCOT.

Generators providing Black Start Service ("BSS") are essential to enable the grid to re-establish service after a cascading, system-wide blackout so requiring them to meet a higher standard of weatherization preparation is appropriate. NRG recommends the standard for BSS be

set at the 99th percentile to help moderate cost increases necessary to meet near-perfect performance at the 99.7th percentile. It is expected BSS resources will recover their weatherization costs through the bidding process at ERCOT and compensation for BSS contracts.

(3) Black Start Service (BSS) weather reliability standard. For a resource that provides BSS, a generation entity must maintain weather preparation measures that reasonably ensure the resource can provide service at the resource's applicable rated capability under the 99~~.7~~th percentile of the extreme weather scenarios specified in the weather study approved by the commission under subsection (c) of this section.

d. Section 25.55(e) – Implementation of weather reliability standards for a generation entity

NRG supports the proposed implementation schedule that prioritizes larger generation resources. NRG recommends the Commission clarify that the megawatt thresholds apply to each specific generation unit rather than the entire resource or plant site. For example, a generation site with three 200MW generation units should have to comply by November 30, 2024, rather than November 30, 2023.

(1) Implementation of basic weather reliability standard. A generation entity must meet the basic weather reliability standard under subsection (d) of this section by the following deadlines:

(A) For each unit ~~resource~~ with more than 650 megawatts (MW) of nameplate capacity in operation on January 1, 2022, no later than November 30, 2022;

(B) For each unit ~~resource~~ with at least 250 MW and no more than 650 MW of nameplate capacity in operation on January 1, 2022, no later than November 30, 2023; and

(C) For each unit ~~resource~~ with less than 250 of nameplate capacity in operation on January 1, 2022, no later than November 30, 2024.

e. Section 25.55(f) – Compliance with weather reliability standards for a generation entity

NRG recommends that either an internal or external professional engineer be permitted to conduct the annual compliance study. A stamped professional engineer has met the same qualifications regardless of whether they work for the generation entity or a consulting firm. Allowing generation entities to use internal personnel for the compliance study will help save costs. If ERCOT's inspections reveal deficiencies in the preparations, then requiring a third party is appropriate.

(1) Compliance study. Each generation entity must submit to ERCOT a study that confirms compliance with the applicable weather reliability standard in subsection (d) for each resource in its control. The study must be conducted by a qualified professional engineer who may be ~~is not~~ an employee of the generation entity or affiliate.

Section 25.55 (f) (1) (B) requires a generation entity to submit a new analysis within 60 days after any "significant change" occurs that impacts the resource's ability to meet the applicable weather standards. Significant change is not defined and leads to ambiguity in the rule. NRG recommends the Commission adopt the same trigger for significant change that ERCOT uses when determining whether the resource has changed enough to require another interconnection study. Those triggering requirements are in section 5 of the ERCOT Planning Guides.

(B) A generation entity must submit a new analysis no later than 60 days after any significant change to~~affecting the ability of~~ a resource that requires ERCOT to perform another interconnection study~~ to meet the applicable weather reliability standard in subsection (d) of this section~~.

f. Section 25.55(h) – Violations of weather reliability standards by a generation entity

Section 25.55 (h) (1) specifies that the Commission will impose administrative penalties if the generation entity does not cure the violation "within a reasonable time." A reasonable time

period to cure a deficiency is not defined and leads to ambiguity in the rule. NRG recommends that a generation entity be allowed six months to cure a violation. Six months is appropriate for most instances given the potential lead time to order new parts or equipment along with installation and testing. Regarding testing, some of these fixes may require an ERCOT approved planned outage. If so, the Commission should include language that ERCOT will work with the market participant and grant an outage within the cure period so that the market participant can timely cure the violation. However, NRG also believes it is appropriate to provide for a reasonable extension to this time if needed, such as if that generator faces unavoidable delays.

(h) Violations of weather reliability standards by a generation entity.

(1) Administrative penalty. The commission will impose an administrative penalty on a generation entity that has violated subsection (d) of this section and does not cure the violation within six months of the date the violation occurred. A reasonable extension to this time period may be permitted upon the generation entity showing a need for the extension. ~~a reasonable period of time~~.

NRG provides the recommended edits below to section 25.55 (h) (3). NRG recommends the rule clarify that repeated deficiencies should only be considered once the rule has been adopted and to delete maintenance outages from the type of outages that trigger third party audits. Maintenance outages are preventative measures to improve operations and generation entities should not be punished for taking them. Only repeated forced outages or forced derates related to extreme weather events should result in a weatherization plan audit. In addition, since this rule sets a preparedness standard and not an operational standard, the occurrence of forced outages should not immediately presume a failure to comply.

(3) Weather-related failures to provide service. For a resource that experiences repeated, ~~or~~ extreme ~~major~~ weather-related forced interruptions of service following the adoption of this rule, including forced outages~~,~~ or derates, ~~or maintenance related outages that result in a failure to comply with subsection (d) of this section~~, the generation entity

must contract with a qualified professional engineer who is not an employee of the generation entity or its affiliate to assess its weather preparation measures, plans, procedures, and operations and submit the assessment to the commission and ERCOT. ERCOT must adopt rules that specify the circumstances for which this requirement applies and specify the scope and contents of the assessment. A generation entity may be subject to additional inspections by ERCOT and referral to the commission for enforcement of any violation of the commission's rules for failure to cure the identified deficiencies that occur after the adoption of this rule within a reasonable period of time. The commission can look back at a generation's history of operations and violations no more than 10 years from the date this rule is adopted.

V. CONCLUSION

NRG appreciates the Commission's thoughtful approach to gather stakeholder feedback during the development of weatherization requirements. NRG looks forward to continued participation and opportunities to develop these new rules to better prevent future reliability events related to extreme weather.

Respectfully submitted,

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