

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Climate Change, Extreme Weather, and Electric System  
Reliability

Docket No. AD21-13-000

COMMENTS OF THE NEBRASKA POWER REVIEW BOARD IN RESPONSE TO THE  
SUPPLEMENTAL NOTICE OF TECHNICAL CONFERENCE INVITING COMMENTS

The Nebraska Power Review Board (NPRB) is the agency of the State of Nebraska with primary jurisdiction over electric suppliers operating in Nebraska. The Board appreciates the opportunity to submit these comments on the important topics of extreme weather and electric system reliability. As allowed in the Notice, the NPRB will provide comments on some of the Commission's questions, but not all. For purposes of convenience and clarity, the NPRB will restate each numbered question it will address, followed by the NPRB's comment in response to that question.

**2. With respect to extreme weather events (e.g. hurricanes, extreme heat, extreme cold, drought, storm surges and other flooding events, or wildfires), have these issues impacted the electric system, either directly or indirectly, more frequently or seriously than in the past, and if so, how? Will extreme weather events require changes to the way generation, transmission, substation, or other facilities are designed, built, sited and operated?**

**NPRB Comment:** Extreme weather events are certainly not a new phenomenon in Nebraska. Electric power suppliers operating in Nebraska have had to deal with blizzards, extreme cold, extreme heat, ice storms, flooding and tornados throughout their history. The NPRB has no specific data upon which to determine if these weather events have occurred with more or less frequency in recent years than in the past. The NPRB would characterize the situation as a need to evaluate whether Nebraska's utilities have adequately taken into account the aforementioned extreme weather

events when designing, building, siting and operating generation and transmission facilities. Likewise, the NPRB needs to determine if it has adequately reviewed the ability of generation facilities to withstand those extreme weather events when the NPRB approves new generation facilities. Based on historical events, as well as the recent polar vortex event in the Midwest on February 13-19, 2021 (sometimes referred to as Winter Storm Uri), it appears that overall, Nebraska's utilities have done a good job positioning their generation and transmission facilities to withstand extreme weather events. It also appears that may not be the case for some utilities in other states. During the February 2021 polar vortex event Nebraska's largest utilities with generation assets were producing more electricity than was being used by their customers. As the Commission is aware, Nebraska's largest transmission and generation owning utilities are members of the Southwest Power Pool (SPP). It appears the generation facilities of utilities in the SPP's operating area, particularly in the southern part of the SPP, may not have been adequately prepared to operate during extreme weather conditions. This takes on additional importance in the SPP footprint because the SPP member utilities operate in a market that affects all other utilities in that market. This event demonstrates the importance of having generation assets that can withstand extreme weather events. The additional cost to harden generation and transmission assets can place the utilities that do incur such expenses at a competitive disadvantage in a market that incentivizes only low cost. Even though events similar to the February 2021 polar vortex event that affected the entire SPP footprint may be extremely rare, the results show that failure to expend the funds necessary to adequately weatherize generation and transmission facilities can have serious, even life-threatening, consequences.

**4. What are the electric system reliability challenges associated with “common mode failures” where, due to a climate change or extreme weather event, a large number of facilities critical to electric reliability (e.g., generation resources, transmission lines, substations, and natural gas pipelines) experience outages or significant operational limitations, either simultaneously or in close succession? How do these challenges differ across types of generation resources (e.g., natural gas, coal, hydro, nuclear, solar, wind)? To what extent does geographic diversity (i.e., sharing capacity from many resources across a large footprint) mitigate the risk of common mode failures?**

**NPRB Comment:** The reliability challenges during a common mode failure obviously depend on how widespread the problem is, both in terms of geographic scope, types of infrastructure, and fuel sources. During common mode failures transmission and

natural gas pipeline congestion can become an issue, particularly if wind and solar generation facilities are simultaneously experiencing low production. Fuel supply and cost could become an issue for natural gas facilities. If an event is widespread geographically, it would seem likely to be related to an extreme weather event. The advent of energy storage resources may help deal with short-term losses of load, such as low production of wind and solar facilities, but those resources are not at this time a viable answer to events that last for days. Generation facilities that have a fuel supply on-site (i.e., coal, nuclear, fuel oil and hydro) are far less susceptible to outages during extreme weather events (other than flooding) or fuel supply disruptions. The NPRB believes geographic diversity can be a major factor to mitigate the risk of common mode failure. Nebraska's largest utilities, both in terms of generation and transmission, are members of the Southwest Power Pool (SPP). With a footprint that extends from the Canadian border to northern Texas, such geographic diversity can provide a backstop to localized extreme weather events, be it extreme cold or heat, ice storm, flooding, or tornado. Generation assets from other areas of an RTO/ISO footprint can provide the necessary electricity when local assets experience failure, regardless of the reason. It is highly unusual for wind and solar assets to experience the same extreme weather conditions across a footprint as large as the SPP's. However, as demonstrated by the recent polar vortex event in the Midwest during February 2021, it is not just theoretical that extreme weather events can be experienced across even a very large RTO/ISO footprint. The NPRB believes that the polar vortex event demonstrates the need for not only geographic diversity, but also the critical importance that a robust diversity of fuel supply and generation types (e.g., boilers, combustion turbines, combined cycle; small or large capacity) play in a highly reliable electric system. It also demonstrates the importance of creating market mechanisms that ensure the continued availability of dispatchable resources. The existence of a diversified generation portfolio, as well as geographic diversity, both serve to mitigate the risks associated with emergencies such as extreme weather events. A robust diversity of generation assets, including all fuel sources (natural gas, wind, solar, coal, nuclear, hydro, and even small peaking diesel units) is needed to ensure that if one source is compromised, it will not jeopardize overall system reliability. The February 2021 polar vortex event also demonstrates the need for generation assets susceptible to weather to be built in a manner that will hold up during extreme weather events. The NPRB acknowledges this will add cost to generation facilities, but the price of not doing so could be not only economic disruption, but loss of life. Reliability must be the highest priority.

**6. How are relevant regulatory authorities (e.g., federal, state, and local regulators), individual utilities (including federal power marketing agencies), and regional planning authorities (e.g., RTOs/ISOs) evaluating and addressing challenges posed to electric system reliability due to climate change and extreme weather events and what potential future actions are they considering? What additional steps should be considered to ensure electric system reliability?**

**NPRB Comment:** The NPRB is not aware what actions federal regulatory entities may be taking to evaluate and address challenges created by extreme weather events, or what actions they might be considering. The Southwest Power Pool (SPP) is studying the issue, particularly events leading up to the polar vortex event in February 2021. It is too soon to know what corrective actions the SPP might take. The NPRB plans to evaluate whether, and to what extent, it can require utilities to ensure that new generation facilities withstand extreme weather events as part of its approval process. The NPRB believes it will help ensure system reliability for generation facilities that are capable of using multiple fuel sources to consider that factor when determining what fuel sources should be used for a facility. Likewise, the NPRB plans to inquire about this issue when acting on applications to approve generation facilities that can use alternate fuel sources. The NPRB believes that a robust transmission system, with geographic separation between major bulk transmission lines, will help alleviate localized disruption events caused by extreme weather events such as ice storms, tornados and flooding. The NPRB cannot direct that transmission assets be built, and lacks authority to require a specific route be followed for transmission assets, but the NPRB plans to take into account the need for geographic separation and weatherization for bulk transmission lines. The NPRB has considered those factors when approving transmission lines in the past. The NPRB also plans to inquire about a utility's fuel diversity as part of the NPRB's approval process for generation assets within its authority. The NPRB believes that to the extent it is within their authority, SPP and FERC should take steps to ensure that markets compensate generation owners for the availability of dispatchable resources. The availability of tax credits for wind and solar resources puts financial pressure to decommission coal and nuclear facilities, as has been seen by the number of closures of those facilities in recent years. Yet in emergencies such as extreme weather events, highly reliable dispatchable resources, particularly coal and nuclear, are essential to avoid cascading outages. As can be seen by the polar vortex event in February 2021, such events, although quite rare, are extremely disruptive and threaten public health and welfare. Without coal and nuclear assets in the SPP footprint, instead of limited

short-term rolling blackouts it is likely the system would have experienced a catastrophic failure. Markets today fail to acknowledge the crucial role dispatchable generation assets play, especially during situations such as extreme weather events. The Board also believes that there needs to be a stronger verification process for capacity ratings to assure that generation facilities are actually able to provide electricity when needed. Finally, utilities and entities like SPP that oversee resource adequacy and reserve sharing programs should have a process to ensure the firmness of generator fuel supply and transportation contracts. This is particularly true for natural gas facilities. Very few natural gas generation facilities have on-site fuel storage, making them susceptible to shortages due to physical supply disruptions, extreme price escalations or lack of pipeline capacity.

**8. Are relevant regulatory authorities, individual utilities, or regional planning authorities considering measures to harden facilities against extreme weather events (e.g., winterization requirements for generator, substations, transmission circuits, and interstate natural gas pipelines)? If so, what measures? Should additional measures be considered?**

**NPRB Comment:** As mentioned in the NPRB's comment to question 6, the NPRB plans to take into the account the need for weatherization of generation and transmission assets when acting on applications to construct those facilities. Although the Board does not have authority to require specific measures to harden facilities against extreme weather events, the NPRB plans to inquire about this subject when acting on applications. The NPRB acknowledges that Nebraska's generation assets performed well during the recent polar vortex event in February 2021. Nebraska utilities were net exporters of electricity, helping to ensure that the grid system did not collapse during that event. Generation assets that are rarely used, some of which have not been used for many years, were called into service and performed admirably. Nebraska's generating units performed as well as they did because they were designed based on extreme ambient weather conditions which are considered "normal" based on historical data. Although it appears that generation assets in other areas of the SPP footprint and other areas of the country, particularly in the southern states, have a greater need to weatherize their assets, the NPRB believes there is always room for improvement.

**12. Mass public notification systems (e.g., cellphone texts, emails, smart thermostat notifications) are sometimes used in emergencies to solicit voluntary reductions in the demand for electricity. To what extent are such measures used when faced with**

**emergencies related to climate change or extreme weather events, have they been effective in helping to address emergencies, and is there room for improvement?**

One of the topics both the SPP and its member utilities plan to assess are issues related to communication. This can be communication from the RTO to its member utilities, wholesale providers to their customers, or a utility to its retail customers. Social media, emails, texts, radio and television should all be used to communicate with the public during an emergency. It helps to alleviate confusion, anger and economic disruption if the public can be provided advance warning of impending rolling blackouts, disruptions, and the need to voluntarily reduce demand. Voluntary reductions are one tool at a utility's disposal in the early stages of an emergency. By itself, it may not produce sufficient demand reduction to eliminate an emergency situation, but if the communication is effective it can provide some measure of immediate relief.

Businesses and individual citizens can take steps to mitigate health, safety or economic risks if they can be provided advance warning of the need to conserve, or that a blackout is possible. The importance of communication with the public during an emergency can hardly be overstated.

**15. What actions should the Commission consider to help achieve an electric system that can better withstand, respond to, and recover from climate change and extreme weather events? In particular, are there changes to ratemaking practices or market design that the Commission should consider?**

**NPRB Comment:** The NPRB believes that a diverse generation portfolio is essential to provide the most reliable and resilient electric system possible. Overreliance on any one or two fuel sources, or any type of generation (e.g., simple cycle combustion turbines) places the public in danger during extreme weather events. In recent years, the vast majority of new generation assets brought online have been intermittent resources (i.e., wind and solar) and natural gas. As the situation during the polar vortex event in February 2021 demonstrated, this made the electric system vulnerable to outages, and risked a collapse of the entire system in some areas. Without the availability of dispatchable assets, especially coal and nuclear facilities, it seems likely the SPP region would have been facing a collapse and certainly would have seen more interruption of service, both in terms of magnitude and duration. The NPRB believes the February 2021 event demonstrates the need to ensure that dispatchable generating assets remain available in the market. Currently, the SPP market does nothing to compensate highly reliable dispatchable assets for their availability during extreme events. Further, the market does not compensate generators that make investments to ensure reliability,

such as weatherization, any differently than less reliable dispatchable generation. Due to federal and state subsidies available to intermittent assets (particularly wind and solar) the market sends signals that these assets are valued over dispatchable assets. The NPRB believes that, to the extent possible, the Commission and SPP should ensure that markets are designed in a way to ensure the continued availability and viability of dispatchable assets well into the future. It may also be necessary to have market features that incent utilities to winterize assets, particularly in geographic areas where severe cold is a rare event. For utilities and states in an RTO or ISO, the decision not to weatherize generation and transmission assets can have a direct impact on utilities, and ultimately consumers, in other areas of the RTO or ISO footprint.

**17. Where climate change and extreme weather events may implicate both federal and state issues, should the Commission consider conferring with the states, as permitted under the FPA section 209(b), to collaborate on such issues?**

**NPRB Comment:** The NPRB encourages the Commission to consider conferring with state regulatory authorities in its efforts to address climate change and extreme weather events. Unfortunately, under the definitions provided in the Federal Power Act Nebraska is the only state in the United States that would not have a state commission able to participate in such a conference. Under the Federal Power Act the term “State Commission” is defined to mean “the regulatory body of the State or municipality having jurisdiction to regulate rates and charges for the sale of electric energy to consumers within the State or municipality.” Due to the fact that all Nebraska retail electric utilities are consumer-owned (also referred to as “public power”) entities, the governing body for each Nebraska electric utility is allowed to establish its own rates. Nebraska has no state agency with authority to approve or regulate electric rates. The NPRB is the State agency with primary authority over electric utilities. The NPRB must approve new generation facilities constructed by Nebraska’s consumer-owned electric power suppliers. Similarly, the NPRB must approve transmission facilities to be built outside a power supplier’s retail service area. The NPRB is the approval authority for the creation of public power districts, and all amendments to public power district charters. The NPRB also is the repository for the retail service area records, and must approve all amendments to retail service area boundaries. However, because the NPRB does not regulate rates, it is not considered a “State Commission” under the Federal Power Act. If the Commission determines it will confer with the States under FPA section 209(b), the NPRB requests that, to the extent possible, the Commission seek a

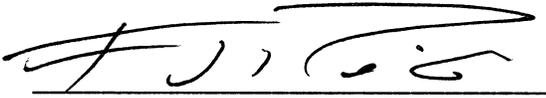
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mechanism to take into account the views of the State of Nebraska so that the citizens of Nebraska are not excluded from representation at any such conference.

For the Board,

A handwritten signature in black ink, appearing to read 'Frank Reida', written over a horizontal line.

Frank Reida

Chairman

Nebraska Power Review Board

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