Filing Receipt

Received - 2023-04-05 11:50:14 AM
Control Number - 54584
ItemNumber - 29

PROJECT NO. 54584

ELECTRIC RELIABILITY STANDARD	**§**	**PUBLIC UTILITY COMMISSION OF TEXAS**

REPLY COMMENTS OF ENVIRONMENTAL DEFENSE FUND, TEXAS CONSUMER ASSOCIATION & ALISON SILVERSTEIN CONSULTING

COMES NOW the Environmental Defense Fund, a non-profit, non-partisan, non-governmental environmental organization, the Texas Consumer Association, a non-profit advocate representing small business and individual Texas customers on pocketbook issues, and Alison Silverstein, an independent energy consultant, to offer these joint-filed Reply Comments responding to stakeholder comments on an ERCOT electric reliability standard.

Introduction

Pursuant to Commission Staff's memo of March 7, 2023, in this Project, many parties submitted comments on how to design an electric reliability standard for ERCOT. After reviewing these stakeholders' comments, we offer recommendations from the particular perspective of Texas electric customers' needs. Those needs include clean and reliable electricity at reasonable prices with a growing opportunity for customers to actively participate in energy management and production.

We must not view the electric reliability standard as an abstract concept that only reflects the math of balancing supply and demand. Rather, if the ERCOT reliability standard is very high it will certainly drive the up the cost of electricity supply as the standard forces us to invest in more supply resources (and possibly more demand-side and efficiency resources). A very high reliability standard may be practically unachievable and collect our cash without improving our welfare. On the other hand, a low reliability standard could increase the number and hours of

outages, depending on future uncertainties such as weather, extreme events and fossil plant fuel deliveries and outage rates.

Most Texas electricity customers have tight budgets and the cost of electricity represents a significant household expenditure. Over a quarter of Texans are energy insecure – unable to pay energy bills without reducing payments for other household necessities such as medicine and food, or setting their thermostats at unsafe levels in order lower electricity charges. As the Commission and parties weigh the design and target levels for the ERCOT reliability standard, we must never forget that customers will always pay the reliability bills, whether in the currency of money for electricity or the currency of time and discomfort suffering electric service outages. The Commission must craft a reliability standard that is centered around and balances customer consequences for cost as well as outage risk, and set policies that direct ERCOT and stakeholders to find creative reliability solutions and leverage every supply and demand resource available to reduce our risk as well as our costs.

Recommended reliability metrics

We concur with ERCOT and many other commenters that use of Loss of Load Probability or reserve margin-based metrics are no longer sufficient metrics to characterize reliability in a faster-moving, energy-dominated power system facing more frequent threats. Rather, we recommend the use of reliability metrics based on the magnitude, frequency and duration of loss of load events, since these are the factors that matter to end use customers. These can be combined into the single metric Expected Unserved Energy (EUE), but as ERCOT notes we can set individually tailored maximum goals for the dimensions of outage magnitude, outage duration and outage frequency.

In addition, because the consequences and costs of extreme event risks can be so harmful, we recommend the use of Conditional Value at Risk (CVaR), as outlined in London Economics

International's comments. LEI, Vistra and other commenters accurately note that it is appropriate to be more risk-averse about extremely damaging events such as Winter Storm Uri and other "fat-tail risks". Modern reliability analyses use Monte Carlo techniques of many different events and resource combinations to identify the average reliability metric, so that the metrics are risk-neutral. However, adding in a CVaR measure allows the policy-maker to place a greater weight on the risks associated with the most drastic outages, since those are the ones that customers and policy-makers most want to avoid.

Reliability analysis recommendations

1) Since we know that extreme weather events pose the greatest immediate challenge to ERCOT reliability, reliability analysis must use scenarios that include forward-looking extreme weather conditions, not merely historical weather.
2) Reliability scenarios must incorporate the reality of correlated outages and common mode failures, as with the extensive level of fuel delivery failures and generation equipment failures during Winter Storm Uri. Correlated failures and complications will also occur due to cyber-security attacks, wildfires, drought and heat waves, and so on.
3) There is no perfect capacity. All resources have limitations relating to weather, including fossil plants, and despite improvements such as Firm Fuel Service we cannot assume that Texas' natural gas delivery system will always be dependable.
4) Load participation (demand response, energy efficiency, distributed energy resources and manageable loads such as electric vehicles) fundamentally change the resource adequacy construct. As more customers can shift portions of their loads, supply-side resources have a different obligation to meet total customer demand in every hour.
5) Use accurate resource accreditation assumptions that reflect recent historical performance of each plant rather than generic asset averages.
6) Resource analyses must be conducted in transparent fashion using stakeholder-reviewed assumptions and parameters.
7) Reliability analysis scenario construction and the process of reliability analysis are very important – if we don't use a sound set of scenarios and Monte Carlo methods, the resulting reliability standard may offer little value. Building on ESIG's "Redefining Resource Adequacy for Modern Power Systems," the "Pacific Northwest Power Supply Adequacy Assessment for 2027" considers a wide-ranging and well-documented set of market and resource uncertainties and threats, with metrics that include Loss of Load Event frequency, Duration Value at risk and Peak and Energy Value at Risk (magnitude). This analytical methodology offers good models for use in ERCOT.
8) In several recent events when available generation fell well below customer demand, that shortfall occurred because ERCOT failed to accurately predict high customer demands and therefore under-scheduled generation. Since ERCOT's load forecasts have under-forecast by as much as 10 and 22% of late, ERCOT must begin incorporating load forecast variances as another source of uncertainty in reliability standard forecasting.

The Commission and ERCOT must put more emphasis on improving ERCOT's forecast accuracy.

Responses to Commission Staff questions

Reliability metrics – Use outage magnitude, frequency and duration, all of which are captured in EUE. Use CVaR to indicate the greater import of extremely long and widespread outages. Do not use LOLP or LOLE, which treat minor outages as equally consequential with major outage events.

Deliverability – Both fuel deliverability and transmission deliverability matter. Ignoring transmission deliverability essentially means that no resources or loads are limited by transmission constraints, which is provably false given the level and costs of congestion and curtailments across ERCOT today. Several commenters observe that we should evaluate ERCOT reliability across the entire interconnection, and address deliverability problems through the transmission planning process. However, outages and EUE occur to specific customers, and more often than not those customers take service within a load pocket (such as Houston or the Lower Rio Grande Valley) that cannot be served by resources that are being curtailed behind a transmission constraint in West Texas or elsewhere. Therefore, we recommend that ERCOT reliability analyses should track deliverability impacts with some load zone specificity if possible, to help inform and prioritize transmission planning, new resource siting and the focused application of demand-side relief measures such as energy efficiency, distributed resources and demand response. However, the Commission need not set specific reliability standard requirements for transmission deliverability or locational requirements at this time.

Locational requirements – Although we recommend tracking deliverability impacts on reliability, we do not recommend setting specific standards for reliability within transmission-constrained regions. It will be particularly valuable to understand whether, how and how often

reliability is compromised by transmission constraints within the load pockets where many Texans live – this should inform ERCOT and Commission policies on where additional transmission is needed, and where more aggressive investments in energy efficiency, distributed energy resources, generation and energy storage would enhance both reliability and cost mitigation.

Seasonal requirements – The ERCOT reliability standard should not include any season-specific requirements. If the analysis prepared for the reliability standard incorporates EUE measures and CVaR with credible forward-looking extreme weather events, then the results will tell us what seasons and times of day are likely to pose the greatest risk to power supply reliability. ERCOT and the Commission can then design mitigation measures such as energy efficiency, demand response and supply-side flexibility incentives accordingly.

Extreme events – As noted above, extreme events and associated very high demand and correlated supply resource failure levels should be handled both through scenarios used in the reliability standard analysis and through the use of CVaR to over-weight tail risk events relative to smaller, shorter outage events.

Distributed resources – Energy efficiency should be modeled as a decrement from load, and demand response and aggregated distributed energy resources should be handled as dispatchable, accredited resources. But we need to develop more sophisticated tools for analyzing and managing behind the meter assets.

As the current Aggregated Distributed Energy Resources effort and recent demand response events have shown, customer load and behind-the-meter resources can be made highly manageable. We can use them to complement and balance generation and storage assets to enhance grid operational speed and flexibility, rather than counting only on gas peaker plants and batteries to fill in ancillary service and capacity gaps. Customers are adopting behind-the-meter

resources for their own benefit and protection from grid failures and costs, not for the grid's benefit. Therefore we must invest in and deploy policies, technologies and programs and compensation incentives that respectfully encourage customers to contribute to grid reliability and portfolio cost management. With such policies in place, we can stop treating load as a fixed target for reliability assurance (particularly in the case of large loads such as crypto mining, which should be subtracted from total peak load in reliability analyses and viewed as outside ERCOT's collective reliability obligation to other customers) and begin treating load as a goal or parameter that can be managed in concert with supply-side resources.

Energy efficiency is the single most important distributed asset available to protect and improve grid reliability. Efficiency is needed now more than ever to slow the growth of ERCOT load and reduce load variability and vulnerability to extreme weather events and demand spikes. Strategic, aggressive energy efficiency deployment will reduce supply side risk, lower supply portfolio costs and volatility, protect customers from grid failure (whether at the bulk power or distribution level), and protect customers' wallets. ERCOT's reliability standards and Commission policies need to recognize and leverage energy efficiency as a valid and valuable strategic resource, not just as a decrement to load.

Update schedule – Regulatory certainty and predictability are important. The reliability standard should be updated no more than every three years unless there is some drastic change to the resources, load or operations of the ERCOT system. But calculation of the ERCOT reliability status and forecast can be conducted at least bi-annually.

How to treat out-of-market gas generators in the reliability standard – This is the question that Staff didn't ask, even as the Texas Legislature takes up bills that would mandate construction of highly subsidized gas generators that bear no merchant risk and do not compete or show up day to day in ERCOT's competitive energy market. If Texas customers are forced to

spend billions of additional dollars each year on power plants that only show up under emergency shortfall conditions, then the existence of those plants will distort the meaning of the calculated reality metrics under the chosen reliability standard and the outage risks we face. Mandated out-of-market generators will also change the willingness of ERCOT's merchant generators to invest new resources in ERCOT if they have to compete against fully subsidized cost-of-service plants; thus ERCOT would need to construct additional reliability scenarios in which these invisible out-of-market generators (which are expressly directed to be excluded from reliability calculations) exert such a gravitational pull in the market that they create a black hole that sucks merchant generation out of the market and effectively raises our costs for lower reliability over time.

Closing thoughts

The reality of electric power systems is that the customer always pays. If we attempt to set supply-side reliability goals too high, the cost of the additional resources, fuels and operations needed to meet those standards will raise customers' electricity bills even higher relative to currently high levels. But if we do not act to improve reliability, we could experience another extended winter outage or short summer outage, which will cost customers in different ways. We cannot treat the reliability standard as an absolute mandate, but must treat it as a goal. One of the most important questions the Commission must consider is not, "what is the right reliability standard for ERCOT?", but, "how do we use a reliability standard to protect customers by balancing between reliability and cost?" A well-designed standard, combined with sound analysis clearly presented, can deliver insights and reveal many options for how to improve reliability without overly compromising affordability.

Respectfully submitted,

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EXECUTIVE SUMMARY, REPLY COMMENTS OF ENVIRONMENTAL DEFENSE FUND, TEXAS CONSUMER ASSOCIATION & ALISON SILVERSTEIN CONSULTING

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Texas electric customers need clean and reliable electricity at reasonable prices. We must not view the electric reliability standard as an abstract concept that only reflects the math of balancing supply and demand. A high reliability standard and goal may set unachievable levels of reliability at high cost without ever reducing our outage risk in a meaningful way. As the Commission and parties weigh the design and target levels for the ERCOT reliability standard, we must never forget that customers will always pay the reliability bills, whether in the currency of money for electricity or the currency of time and discomfort suffering electric service outages. The Commission must craft a reliability standard that is centered around and balances customer consequences for cost as well as outage risk, and must adopt policies that direct ERCOT and stakeholders to find creative reliability solutions and leverage every supply and demand resource available to reduce our costs risk as well as our risks.

Reliability metrics – Use outage magnitude, frequency and duration, all of which are captured in EUE. Use CVaR to indicate the greater import of extremely long and widespread outages. Do not use LOLP or LOLE, which treat minor outages as equally consequential with major outage events and ignore the reality of correlated outages and common failure modes.

Deliverability – Both fuel deliverability and transmission deliverability matter. Ignoring transmission deliverability essentially means that no resources or loads are limited by transmission constraints, which is provably false given the level and costs of congestion and curtailments across ERCOT today. But the Commission need not set specific reliability standard requirements for transmission deliverability or locational requirements at this time.

Seasonal requirements – The ERCOT reliability standard need not include any season-specific requirements; a CVaR metric can handle this.

Distributed resources – Energy efficiency should be modeled as a decrement from load, and demand response and aggregated distributed energy resources should be handled as dispatchable, accredited resources. Energy efficiency is the single most effective and cost-effective resource available to reduce reliability risks while simultaneously reducing customer and system costs. Strategic, aggressive energy efficiency deployment will reduce supply side risk, lower supply portfolio costs and volatility, protect customers from grid failure (whether at the bulk power or distribution level), and protect customers' wallets. Customer load and behind-the-meter resources can be made highly manageable and used to complement and balance generation and storage assets to enhance grid operational speed and flexibility if we make the policy and investment commitments to support them.