PROJECT NO. 51603

REVIEW OF DISTRIBUTED ENERGY RESOURCES	**§ §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

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 Comments responding to the Commission's request for comments in Project 51603.

INTRODUCTION AND PRINCIPLES

We applaud the Commission's efforts to increase the deployment and use of distributed energy resources (DERs) to enhance grid reliability, resilience, economic efficiency and cost savings within ERCOT and statewide.

We offer six principles to guide this effort with speed, scale, efficacy, and fairness:

1) Demand resources that enhance reliability require investment and incentives, just like supply resources. Texas places a very high value on grid reliability and resilience. ERCOT is spending at least $1 billion per year on higher RUC and non-spinning reserve volumes and $2 billion on congestion costs serving high demand, and recovering additional billions from ratepayers for Winter Storm Uri losses. The Commission is now considering costly proposals to pay for new generation reserves. If we are already paying billions more for generation and transmission in the name of reliability improvement, we should be investing equally in distributed resources such as energy efficiency (EE), demand response and backup power for critical facilities, all of which will directly reduce the above costs and are more cost-effective and dependable than new fossil generation.

2) DERs should be defined as clearly as possible and regulated as lightly as possible to maximize customer and aggregator opportunities. Customers invest in behind-the-meter resources and undertake energy efficient and energy conserving behaviors for individual motivations that do not always align with power system operational needs. Therefore, if

we want DERs to act in ways that support grid reliability, Texas DER rules should facilitate DER development and operation to serve both customer and grid needs.

3) Unlike large generators, DERs offer value to the distribution system as well as to the bulk power system.[1] These values include reducing line losses, managing voltage, mitigating congestion, delaying some capital upgrades, and improving feeder resilience. The Commission should require TDUs to recognize and compensate distribution-connected DERs for this value. DERs also offer customer and community protection and resilience,[2] which is easy to recognize and reflect in DER policies but hard to reflect in market prices. These community and customer well-being benefits justify direct payments and subsidies (as through the Texas energy efficiency program and state loans and grants) for DERs whose value greatly exceeds their wholesale market-measured impacts.

4) Controllable resources aren't the only way to support grid reliability. Power system reliability and affordability require a diverse portfolio of demand-side measures as well as diverse supply-side resources. It is valuable and reassuring for grid operators to be able to turn a virtual knob to dispatch generation, storage or real-time demand response. But power system defense-in-depth requires diverse layers of demand-side resources – structural and behavioral energy efficiency and conservation, automated load control and storage measures, distributed generation, electric vehicles and price-responsive demand. DER resources create customer satisfaction and bill control, enable customer- and portfolio-serving load-shaping and demand flexibility, and reduce the consequences of supply resource failures every day, even before they meet grid operational needs for peak-shaving or emergency response. Every behind-the-meter (BTM) resource action affects aggregate and localized customer demand and ERCOT's supply-to-demand balance and therefore affect reliability. They also affect market prices within ERCOT, regardless of whether that resource is incorporated into a market bid.

5) Customers should be compensated for supporting grid reliability. Rather than ERCOT asking customers to voluntarily conserve in growing numbers of emergency events, the Commission should be investing customer dollars to help Texans use less energy more efficiently every day, with commensurate benefits to household budgets, job creation and public health. And the same value ERCOT assigns to generation and storage that show up in emergency need should be available to DERs that provably respond to that need, without market and participation rules that favor supply and disadvantage demand resources. Compensation to distributed energy resources should match supply resource compensation for equal services delivered.

---

[1] See Frick et al., "Locational Value of Distributed Energy Resources," (February 2021); Lazar & Baldwin, "Valuing the Contribution of Energy Efficiency to Avoided Marginal Line Losses and Reserve Requirements," Regulatory Assistance Project (August 2011); Joint Utilities of New York, "Value of Distributed Energy Resources"; and McPhail, "Maximizing Value from DERs Through Value Stacking." (Dec. 19, 2019).

[2] See for instance, Rickerson et al., "Valuing Resilience for Microgrids: Challenges, Innovative Approaches and State Needs," NARUC (February 2022); Pecan Street, "Untapped in Texas: How Solar, EVs and Demand Response Could Fortify the Grid," (February 2022); and Zitelman, "Advancing Electric System Resilience with Distributed Energy Resources: A Review of State Policies," NARUC (April 2020).

6) It will be easier, faster and more economical for customers and DER aggregators to deploy and leverage DERs if the Commission builds a regulatory foundation of consistency, speed, interoperability and transparency. This entails creating consistency between supply and demand resources, consistent rules that reflects assets' functional capabilities rather than their ownership or technology, and consistency of process and processing across all TDUs. It entails encouraging use of nationally recognized interoperability standards (e.g., IEEE 1547-2018, ANSI SCTE 2671, OpenADR) and best practices (e.g., the IPMVP Protocol) for the engineering, relationships, behavior and evaluation of DERs. Unlike Texas-specific, market-restricting rules and solutions, use of widely accepted standards will reduce transactional costs and vendor lock-in created by proprietary standards. And market participant access to fast, transparent, accessible information (including clear market prices, functionally defined market products and volumes, publicly available information on DER hosting capacity on every feeder,[3] and easy customer and aggregator access to energy use data) will let customers and vendors respond quickly and appropriately to market and reliability needs. Last, since many of the classic regulatory tools to grow DERs (opt-out time-of-use or real-time pricing, Integrated Resource Planning, and utility resource procurement standards) are incompatible with ERCOT's competitive retail market, the Commission should establish conditions and rules that facilitate and expand all demand-side opportunities, particularly to maximize peak reductions[4] and flexible load capability from resources such as EV charging.[5]

Texas has an urgent need to add resources of every kind to improve Texas power system reliability while protecting customers and energy affordability. The above principles offer a path to grow and integrate these valuable resources effectively by leveraging and integrating the capabilities, interests and needs of Texas customers, DER developers and aggregators, and the ERCOT market and grid.

COMMISSION QUESTIONS

[3] See NREL, "Advanced Hosting Capacity Analysis"; Rylander, "Feeder Hosting Capacity and Impacts of Distribution Connected Generation Tutorial," EPRI (October 22, 2017); IREC, "Optimizing the Grid: Regulator's Guide to Hosting Capacity Analyses" (2017); and IREC, "The Evolution of Hosting Capacity Analysis as a Grid Modernization Tool".

[4] See Frick et al., "Peak Demand Impacts from Electricity Efficiency Programs," LBNL (Nov. 2019); Specian et al., "Demand-Side Solutions to Winter Peaks and Constraints," ACEEE (April 15, 2021); and Nadel & Amman, "Energy Efficiency and Demand Response: Tools to Address Texas' Reliability Challenges," ACEEE (October 13, 2021.

[5] See Linvill, "A Strategic Clean Flexible Load Reserve," Regulatory Assistance Program, (May 25, 2022); Frick, "Demand Flexibility as a Utility System Resource: Grid-interactive Efficient Buildings," (March 2020); Hledik et al.; "The National Potential for Load Flexibility," Brattle Group (June 2019); Lawrence Berkeley National Laboratory, "State Indicators of Demand Flexibility and Energy Efficiency,"; and FLO, "How smart chargers coupled with utility demand response can improve grid reliability and stability," (Jan. 24, 2022).

Question 1 — Planning and control processes and practices – To increase the availability and participation rates of distributed energy resources to advance ERCOT power system reliability and resilience, the Commission will have to remove multiple DER barriers, including:

- Require every Texas utility to use a common interconnection application and process it using consistent engineering requirements, including a standard hosting capacity analysis.[6] Require every utility to process non-complex DER applications within 30 days of receiving the completed submission.
- Require ERCOT to speed and maximize DER recognition and participation in existing and new ancillary services markets, without limiting this to only large customers.
- Require that REPs, LSEs and aggregators recruit and compensate customers for using their DER assets and actions in reliability-supporting ways.

Question 2 – Transmission and distribution modifications – T&D modifications that will enhance DER adoption and use include widespread adoption of interval meters, SCADA and micro-PMUs at distribution feeder-heads for visibility into real-time distribution conditions, and regular data analytics into distribution system conditions to identify distribution and transmission reliability and stability challenges that DERs might solve.

Question 3 – Cost quantification and allocation – There are few instances in Texas to date where a TDU has had to make substantial transmission or distribution upgrades solely to accommodate new distributed resources. Rather than considering the possibility of T&D asset upgrades and cost allocation in the abstract, we recommend that the Commission consider specific cases before developing a cost allocation policy. Direct the TDUs to provide specific examples and case studies that illustrate and explain any distribution and transmission upgrades needed to reliably incorporate new DERs and consumer choices (e.g., electrification of vehicle fleets or commercial customer PV & battery adoption), and explain which upgrades are required

[6] See footnote 3 above.

exclusively for DERs and whether they could also benefit T&D operations and reliability and meet other utility goals (e.g., SAIDI, SAIFI and CAIDI requirements).[7]

The Commission should also consider how other states with high levels of DER assets manage interconnection or other upgrade requirements and cost allocation for those upgrades. In the meantime, the routine cost allocation method for most customer-associated T&D expansions and upgrades is that the TDU plans and implements the upgrade expeditiously for system use and benefit, puts the capital cost into ratebase, and recovers that cost from all ratepayers. There is no reason to change that approach for DERs until Texas has more experience with successful, fast interconnection of many DER assets and when and how T&D upgrades benefit both DERs and the T&D system overall.

Question 4 – Data accessibility – Many users need better data access to expand DER development and use. These data access needs include:

- Customers and developers wanting to deploy DERs need regular access to public maps that show available hosting capacity by feeder.[8]
- ISO planners and grid managers don't need data on individual or aggregated DERs so much as information about the services each DER can provide within specific performance parameters, its proven performance records, and whether it responds to controls or requests from the grid dispatcher, aggregator, or prices. This will allow the grid planner to predict how, when and where individual and collective DERs will respond in different circumstances.
- DER planners and forecasters, including ERCOT, need big data analysis on Smart Meter Texas data, updated at least quarterly, to identify patterns in meter data that could reveal behind-the-meter patterns such as PV or battery use, significant load growth, and smart thermostat use. This information should be aggregated by transmission feeder and within load zones and nodes to improve forecasting of load and embedded BTM resource patterns and reveal new DER needs and opportunities.
- DER aggregators need full, frequent access to customer meter data, forecast and real-time prices, and T&D system topology, conditions and needs for operational and revenue use.

[7] See for example, NCSL's "Modernizing the Electric Grid: State Role and Policy Options."
[8] See e.g. Hawaii's Locational Value Maps and footnote 3 on feeder hosting capacity.

Question 5.i. – Classification of DERs – It is unwise and counter-productive for Texas to adopt different definitions and classifications for DERs than those used elsewhere in the nation. The Commission should migrate toward the DER definitions and functionalities used by FERC in Order 2222, but postpone any formal actions (other than those that remove specific barriers to DER participation in ERCOT-managed markets or utility DER interconnection) until completion of the current North American Energy Standards Board effort to "harmonize grid service terminology and definitions" to enable integration of DERs into organized markets.[9] In the meantime, DER classifications should focus primarily on the services each individual or aggregated DER can provide, whether and how DER is activated or controlled, and where (by feeder or node) it affects the power system and customers.

Question 5.ii – Segmentation, islanding and critical facilities – Given the high numbers of critical facilities (CFs) identified on so many TDU circuits, the Commission should direct the TDUs to conduct and submit studies that answer several questions:

1) How many CFs, of what types, are on each transmission and distribution circuit?
2) Which circuits would the TDU drop under alternate controlled load-shed scenarios from 2 to 30% of load, which circuits (number and types of customers, which towns, how much load on each circuit) would be outaged and rotated at each load-shed level, and which circuits and loads would be prioritized and protected because they serve CFs?
3) How could the utility use strategically placed circuit automated sectionalization equipment to proactively break up its CF-serving circuits into smaller segments that could enable more granular and flexible outage management, to serve more customers more fairly during deep load-shed and service restoration events?[10]
4) If more of the high-priority CFs were able to island from the grid and use on-site or nearby backup power for several hours or days, how would that change the TDU's ability to manage its circuits and protect communities under extreme conditions (hurricanes, tornadoes, floods) and emergency load-shed and black-start events?

[9] See Walton, "North American Energy Standards Board to work with DOE, national labs on distributed resource definitions," Utility Dive (May 20, 2022) and NAESB (May 19, 2022).

[10] Utilities historically use automated sectionalization to isolate faults and transfer loads from one circuit to another. But with the increase in climate-driven extreme threats such as wildfires, utilities are beginning to design, install and use automated sectionalization and islanding for proactive grid management as well as for classic system protection purposes.

Given the growing number of extreme weather events and tight supply conditions ahead, the Commission should use these studies to initiate new efforts to modify and adapt transmission and distribution systems for better, proactive grid resilience and customer protection.

In the meantime, the Commission should increase energy efficiency program funding and direct the TDUs to prioritize commercial EE program funding for critical facilities that funds Texas CFs to become part of the reliability and resilience solution, not part of the problem. The EE program should fund Texas CFs to improve facility energy efficiency, install energy management systems for demand response program participation, and install backup power systems with islanding capability to assure that these facilities help to support grid reliability and remain able to serve Texas communities when energy emergencies happen.

Question 5.iii – Consistency in interconnection agreements – The Commission should order all Texas TDUs to develop a consistent DER interconnection agreement within 6 months, put that proposed agreement out for public review and comment, and mandate use of the standard application immediately upon its approval. That new agreement should reflect the latest engineering and permitting best practices[11] (such as IEEE 1547-2018 inverters with islanding settings), not just compile current application provisions. The Commission should also require standard TDU application processing requirements, ideally requiring an approval decision for small and/or uncomplicated DER projects within 30 days of submittal of a completed application and resolution of more complex applications within 4 months of receipt.

New York has adopted uniform registration forms, DG customer disclosure forms and uniform marketing and contracting practices for DERs to prevent exploitive pricing and deceptive marketing practices for small customers and provide oversight as DER use grows.

[11] See, for instance, IREC, "Toolkit & Guidance for the Interconnection of Energy Storage & Solar-plus-Storage," (March 2022) and IREC, "Model Interconnection Procedures 2019."

Texas should emulate these measures and supplement them with customer and vendor education before the DER market expands significantly and more customers are harmed by deceptive promises and practices.[12]

Hawaii is using distributed generation, storage, demand response and energy efficiency aggressively to achieve clean energy and reliability goals. Hawaii offers clear customer interconnection tools including standard application forms and locational value maps that show where new DG can connect quickly without distribution upgrades, and paying a bonus for new batteries added to existing or new PV systems to strengthen system stability and reduce the need for distribution and transmission upgrades.

The Commission should also work with the Governor, Texas State Energy Conservation Office, and Texas utilities to encourage city and county adoption of measures to increase solar and DER access and reduce permitting time, including use of the U.S. DOE Solar Automated Permit Processing tool.[13]

Question 5.iv. – Consistency between Texas and other states' DER policies – The Commission should pay close attention to the DER policy directives issued by FERC in Order 2222 and adopt all the policy elements that are feasible for an energy-only market. Additionally, the Commission should consider and adopt many of the DER-related model rules and best practices identified by organizations such as IREC, NARUC and IPMVP.

At the ERCOT level, if the Commission seeks consistency with FERC Order 2222 mandating better treatment and inclusion of distributed energy resources and storage, then the Commission and ERCOT should pay close attention to the RTO and ISO submittals and

[12] E.g., many Texas customers are buying rooftop systems in the hope of having stable backup power in a summer or winter generation shortfall, but many of those systems are being sold with inverters that don't meet IEEE 1547-2018 islanding requirements and will therefore not keep the host powered when an outage occurs.
[13] See DOE's "Solar Power in your Community" guidebook (2022) and DOE's SolarApp+ tool.

approvals in compliance with Order 2222. But note the DER offerors' criticisms of those orders,[14] since those highlight potential ways to improve treatment of DERs without compromising market effectiveness.

Question 5.v – Successes in other states relevant to Texas – California, Hawaii and New York have the most ambitious DER integration efforts. California has a DER Action Plan[15] with provisions for rates and load flexibility grid infrastructure, market integration and DER customer programs; their grid infrastructure and market integration measures may be most relevant for Texas. In late 2021, California adopted emergency measures and programs[16] to expedite energy efficiency, demand response, distributed generation and storage to relieve electricity demand expected under extreme summer weather in 2022 and 2023.

New York's 2017 DER Roadmap laid a clear, early path to grow and integrate DERs into the state's electricity system and market. The NYISO is using sophisticated monitoring and forecasting to forecast near- and long-term BTM solar capacity and generation and storage impacts on demands. New York offers a wide variety of energy efficiency and clean energy programs and subsidies to advance equity, reliability and lower environmental impacts.

Question 5.vi. – What can reasonably be done with DERs within a five-year time frame? There are numerous ways to increase accessible DER capacity in Texas quickly:

- ACEEE found that if Texas acts with purpose, speed and $1 billion per year (about what we're spending now on RUCs and non-spinning reserve), we can use several specific energy efficiency and demand response measures to reduce summer peak demand by 7,650 MW and winter peak by 11,400 MW within 5 years of program initiation. This would require a major increase in EECRS program funding and TDU EECRS delivery

[14] See, for instance, Howland, "PJM's Plan to open markets to aggregated distributed energy resources seen as 'good first step'", Utility Dive (Feb. 3, 2022).
[15] Austin, "Briefing on Proposal for Distributed Energy Resources Action Plan 2.0," CPUC (Sept. 17, 2021) and CPUC, "Distributed Energy Resources Action Plan," (April 21, 2022).
[16] See July 2021 Emergency Proclamation and CPUC December 2, 2021 Statement on three decisions including DER, DR and energy efficiency measures.

obligations but would substantially reduce stress on ERCOT's slower-evolving transmission and generation assets and market mechanisms.

- Raise energy efficiency avoided costs immediately to reflect the current value of peak capacity given the amount being spent on RUCs and non-spinning reserves and the impact of higher natural gas costs on avoided energy costs.
- Change rules to facilitate DER aggregation, to unleash significant flexible demand under both price-responsive and event-responsive models.
- Better distributed PV and storage interconnection methods would facilitate more customer investment in both resources, with additional benefits realized if the Commission requires use of some EECRS funds to replace or reset non-1547-2018-compliant inverters on older PV and battery systems.
- Immediately expand the budget for the SECO Loan Star loan program and grants to invest in backup power systems, energy efficiency and demand response capabilities for every state- and public entity-owned critical facility, and give those facilities access to preferred providers capable of installing high quality energy upgrades quickly at reasonable costs.
- The State should lead by example on energy conservation and efficiency. Ask the Governor and Legislature to immediately authorize additional funding for the Texas Facilities Commission to immediately begin installing addressable smart thermostats and sophisticated building controls in every state-owned facility. Every state facility should be required to set its thermostats no lower than 76°F in summer months and no higher than 70° in winter months, and to change those settings remotely by no less than 3°F whenever ERCOT asks for emergency conservation measures. The same policies should be requested or required for all county and municipal buildings across Texas and encouraged for all companies doing business with the State.
- ERCOT should be ordered to remove all DER barriers identified in this proceeding no later than nine months of Commission ruling.

Respectfully submitted,

Colin Leyden, Environmental Defense Fund

Sandie Haverlah, Texas Consumer Assn

Alison Silverstein, Alison Silverstein Consulting

PROJECT NO. 51603

REVIEW OF DISTRIBUTED ENERGY RESOURCES	**§ §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

EXECUTIVE SUMMARY
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 Comments responding to the Commission's invitation for market design proposals in Project No. 51603, the Review of Distributed Energy Resources.

We applaud the Commission's desire to increase the deployment and use of distributed energy resources (DERs) to enhance grid reliability, resilience, economic efficiency and cost savings within ERCOT and statewide. We offer six principles to guide this effort with speed, scale, efficacy, and fairness:

1) Demand resources that enhance reliability merit investment and incentives, just like supply resources. Texas values grid reliability and resilience highly. Since we are already paying billions more for generation and transmission in the name of reliability improvement, we should be investing equally in distributed energy resources such as energy efficiency, demand response and backup power for critical facilities, all of which will directly reduce costly transmission and generation bills and are often more cost-effective and dependable than new fossil generation.
2) DERs should be defined as clearly as possible and regulated as lightly as possible to maximize customer and aggregator opportunities.
3) Unlike large generators, DERs offer value to the distribution system as well as to the bulk power system. The Commission should require TDUs to recognize and compensate distribution-connected DERs for this value.
4) Controllable resources aren't the only way to support grid reliability. Every behind-the-meter resource choice affects aggregate and localized customer demand and overall supply-to-demand balance and reliability. DER actions also affect market prices within ERCOT regardless of whether that DER resource is incorporated into a market bid.
5) Customers should be compensated for supporting grid reliability. Compensation to distributed energy resources should match supply resource compensation for equal services delivered.
6) It will be easier, faster and more economical for customers and DER aggregators to deploy and leverage DERs if the Commission builds a regulatory foundation of consistency, speed, interoperability and transparency.