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PROJECT NO. 51603

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

STEM, INC.'s COMMENTS ON COMMISSION STAFF'S QUESTIONS

Stem, Inc. (Stem)[1] hereby submits these comments on Commission Staff's questions filed in this project on May 1, 2022. Stem appreciates the opportunity to comment on the questions posed by Commission Staff in this proceeding. Stem is a member of Texas Advanced Energy Business Alliance (TAEBA), and supports the comments submitted by TAEBA.

Stem's solutions help corporate, commercial and industrial, municipal and utility customers benefit from an adaptive energy infrastructure and achieve a wide variety of goals, including expense reduction, resilience, sustainability, corporate responsibility, and innovation. By combining advanced energy storage solutions with Athena®, a world-class artificial intelligence (AI)-powered software-as-a-service (SaaS) analytics platform, Stem enables customers and partners to optimize energy use by automatically switching between battery power, onsite generation, and grid power. Stem also offers full support for solar partners interested in adding storage to standalone, community or commercial solar projects – both behind-the-meter (BTM) and in front-of-the-meter (FTM). Additionally, Stem is a leader in the solar asset management space, bringing project developers, asset owners, and commercial customers an integrated solution for solar and energy storage management and optimization.

On February 24, 2022, Stem announced an agreement to provide smart energy storage solutions in Texas to Available Power (AP), a developer that designs, develops, and deploys distributed energy resources and microgrid systems for commercial and industrial real estate. This strategic partnership gives Stem exclusive rights to provide its proprietary Athena® smart energy storage software to energy storage systems at 100 FTM sites throughout the state of Texas. The entire portfolio project value is expected to exceed $500 million and will be completed in phases, beginning with deployment of the

[1] www.stem.com

first 20 systems by early 2023. Together, Stem and AP will be providing the Electric Reliability Council of Texas (ERCOT) grid with an additional one gigawatt (GW), or two gigawatt-hours (GWh), of flexible electric power for 20 years. Stem is also working with other partners developing projects in ERCOT.[2] Given the strategic importance of ERCOT as a market for continued Stem investment, Stem has established an office in Austin and has 35 employees located in the State.

A Texas DER Policy Roadmap Should Prioritize Electricity Grid Resilience[3]

The technology for a resilient, 21st Century electricity system is here today. Stand-alone storage and storage plus solar solutions have many advantages over traditional resilience resources such as diesel backup generators or peaker plants to support and stabilize the grid. For example, they can provide valuable energy and resilience to the system with lower fuel supply risk, provide year-round cost savings for end users, and provide reliability services to the grid, while avoiding additional regulatory hurdles such as environmental permits. Extreme weather events such as Winter Storm Uri and Hurricane Harvey, among other natural disasters in Texas, have made Texans keenly aware of what it means to be without power for multiple days. As a result, we believe that customer demand will continue to drive investment in distributed energy resources (DERs). As DERs proliferate in ERCOT, it is critical that the Commission develop a policy roadmap to guide the integration of DERs, remove market and regulatory barriers, and ensure energy users of all customer classes equitable access to DERs.

Stem recommends that a Texas policy roadmap for DERs should consider how different policies meet resilience needs for various market segments, because "resilience" can differ depending on the context. For example, policy could address these four types of resilience:[4]

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[2] www.stem.com/solutions/wholesale-energy-markets/ercot/

[3] Stem issued a white paper in December 2020 laying out a proposed framework to help guide policy makers in setting policy to promote a resilient grid. The paper is available for download at: www.stem.com/designing-policy-roadmap-to-clean-resilient-grid/

[4] Ibid at 15.

- **Residential Resilience:** Designed to support the health and safety of residents less likely to benefit from community-level resilience.
- **Commercial and Industrial Resilience:** Designed to support commercial and industrial economic vitality.
- **Core Infrastructure Resilience:** Designed to ensure the functionality of critical service providers and disaster response.
- **Community-Level Resilience:** Designed to establish large pockets of publicly accessible resilience across facility types and multiple owners while supporting the goals of the three other policy areas.

The roadmap should involve multiple stages of policy development, from initial policy phases that provide the foundation for economic, market-driven DER integration, to final phases where markets are fully competitive and self-sustaining.

Comments on Specific Questions Posed By Commission Staff

1. **Distribution planning and control: What planning and control processes and practices should the Commission consider for greater DER participation and grid resilience? Which entities should be involved in planning and control processes and practices?**
    i. **What are the different utilization and participation formats for existing DERs on distribution networks?**
    ii. **Should the current size limit on unregistered distributed resources be reconsidered?**

Although the technology needed for a resilient, reliable electric grid is available today, the transformation to a high-performing, resilient grid requires a fundamental shift in Texas energy policy. It is not enough to operate the grid as it has always been operated. Successful DER integration will require greater coordination among distribution utilities, ERCOT, and DER providers. Recognizing that the 21st-century electric grid is becoming more decentralized, the critical attributes of this system will be *fast* and *flexible*. At the heart of the system will be greater automation through software, including machine learning AI. The grid is transforming into an intelligent "system of systems" that produces optimized outcomes through every moment of the day, and DERs combined with AI are critical to optimizing this fast and flexible grid. In addition to selling energy into markets as has been traditionally done, AI is the link between flexible loads and the grid, to automate optimized, real-time transactions even down to the

specific device level. Electrified transportation, energy storage, and even buildings will become integrated, dynamic resources on the grid.

Stem recommends the Commission develop more transparent processes regarding utility distribution system planning to enhance coordination so that DERs are deployed where they bring the most value to the system. Additionally, SB 415, legislation passed in 2021 allowing utilities to use battery storage as non-wires solutions, should be implemented. However, we note that the legislation caps this market opportunity to only 100 MW of non-wires solutions,[5] a fraction of the potential opportunity for this policy mechanism which is designed to reduce costs for consumers. We recommend that the Commission ask the Legislature to remove this cap in its policy recommendations for the 2023 legislative session.

Requirements related to communication, control, and telemetry may vary based on factors such as whether the DER is FTM or BTM, and whether the resource is reducing load or injecting power. However, we urge the Commission to consider opportunities to maximize flexibility of storage resources such that BTM systems can participate in the same markets as FTM resources. We further suggest avoiding establishing resource size limitations, where possible, to maximize market innovation and flexibility.

2. Transmission and distribution modification: What equipment, processes, and standards need to be implemented to allow for further DER participation?

Stem supports the comments filed by Hunt Energy Network *et al* (Joint Petitioners) on March 3, 2022, in Project No. 52373, related to *Review of Wholesale Market Design*. The Joint Petitioners identify several barriers to distribution connected battery storage related to interconnection agreements and timelines.[6] Stem agrees that the issues listed in the March 3 filing provide a good starting point for Commission

[5] See PURA §35.153(j)
[6] Project No. 52373, Review of Wholesale Market Design, "Request for Project Initiation Related to Battery Energy Storage Systems at Distribution Voltage," (Mar. 3, 2022) at 5-6.

review. See also our response to Question 1.

3. Cost quantification: How much transmission and distribution investment will be necessary and what methods would be available to recuperate costs? And should the Commission consider new methods of cost allocation and recovery for DER-related infrastructure enhancements? i. What market signals, if any, should be considered related to DERs aimed at providing grid services?

In their March 3 filing, Joint Petitioners also identified several utility cost recovery issues in tariff dockets currently pending.[7] As noted by the Joint Petitioners, "These new monthly charges, in combination with the various, sometimes opaque, up-front interconnection costs charged to BESS, create uncertainty, have a chilling effect on investment, and threaten the viability of these resources."[8] Because the interconnection of DERs brings additional value shared among system users, it is appropriate to reevaluate cost-sharing practices so that the DER providing that value does not disproportionally bear costs when benefits accrue to the entire system.

Stem further recommends that the Commission explore how to appropriately compensate DERs for the value they bring to the electricity system as a whole. DERs operating in a market structure allowing their full participation in all wholesale market products can support system-wide reliability; however, DERs can also bring value to local distribution systems in ways that they are currently uncompensated for in ERCOT. One example is distribution-level infrastructure investment deferral.

The Commission can address the lack of distribution pricing signals with new market mechanisms, such as developing utility "resilience tariffs" that reward customers that deliver services to the distribution utility with compensation for those services. As noted previously, the Commission should also implement legislation already passed in 2021 that would allow utilities to use lower cost non-wires solutions contracts in lieu of more costly infrastructure build.

[7] Ibid., at 2-4.
[8] Ibid., at 2.

Finally, when reviewing utility rates, Stem recommends that the Commission evaluate rate structures such as time-of-use (TOU) demand rates to provide incentives to customers to shift usage patterns and support grid availability.

4. Data accessibility: What data would improve supply side dynamics and encourage targeted development? What information would be useful to establish a current baseline and assess future market potential? What accessibility and information security concerns should be considered?

i. What level of information should entities responsible for planning and control of DERs have access to for long-term planning purposes?

Stem supports utilities designing distribution systems to incorporate the effects of DERs as part of their resilience planning processes. Further, utilities should provide hosting capacity information to DER providers and customers desiring to interconnect.

Further, we note that with BTM DERs, particularly with smaller customers such as residential and small commercial customers, data access can be a challenge. The business requirements for Smart Meter Texas (SMT), the utility portal that allows third-party access to customer data, should be evaluated in the context of new DER use cases to ensure that SMT can continue to meet utility, customer, and DER provider needs for data sharing.

5. Other related questions

i. Should the Commission consider classifying various DER types? If so, on what basis should DERs be classified? For example, size, performance, characteristics, or some other attribute? (E.g., rooftop solar PV, distribution connected energy storage, microgrids)

The context for classifying different DER types will be important to answering this question as rules are developed. Stem anticipates that there will be reasons to classify different DER types, or, as noted previously, different resilience objectives. For example, residential rooftop solar, even when aggregated, would be distinct from FTM battery energy storage systems. Classifying DER types is a foundational element to defining how these resources can participate in various demand response, load shaping, wholesale markets, and rate-based incentives to benefit the grid.

ii. What issues should be considered for segmentation and islanding? Should there be consideration related to DERs associated with critical facilities and entities?

The Commission should encourage the opportunity to segment and island facilities. As noted previously, a resilience-based policy approach would provide for policies that focus on different varieties of resilience, including what Stem refers to as "core infrastructure resilience," which is designed to ensure the functionality of critical service providers and disaster response.

iii. What should be done to encourage consistency in interconnection agreements between the various interconnecting entities?

See response to question 2.

iv. What can the Commission do to promote consistency in its DER policy between the ERCOT and non-ERCOT markets?

There is no one-size-fits-all set of policies to facilitate DER integration in every market, but Stem encourages the Commission, where possible, to pursue market-based approaches, consistent with the Texas ethos of preferring markets to regulation. Implementation details may vary between ERCOT and non-ERCOT regions, just as ERCOT implementation details may differ from PJM or other organized wholesale markets. Nevertheless, Stem also recommends that where best practices from other markets are identified, Texas should consider how to apply those practices. Lessons learned from the implementation of FERC Order 2222 in markets outside of Texas could be valuable for ERCOT.

v. What successes have been seen in other states that could be implemented in Texas?

Massachusetts has implemented several policies to promote the development of DERs. The Solar Massachusetts Renewable Target (SMART) program,[9] a declining block program that gives projects a fixed 20 year $/kWh rate on all solar production, has

[9] www.mass.gov/info-details/solar-massachusetts-renewable-target-smart-program

incentivized solar and solar plus storage solutions throughout the state. The Clean Peak Energy Standard, which provides credits for qualified resources that can generate energy or reduce load during certain seasonal peak periods, provides an additional value stream that resources can rely on. The state has also implemented ConnectedSolutions, a demand response program that offers performance incentives for load reductions during periods of high energy demand. These programs, along with ISO New England rules that allow participation in both the wholesale markets and state programs, have boosted growth in DERs providing critical grid services.

In Texas, municipally-owned utilities such as CPS Energy[10] and Austin Energy[11] have implemented policies to better integrate and reap the value of DERs, including distributed generation, storage, and electric vehicles. In many ways, these utilities are ahead of the rest of the state in integrating DERs and have aggregated learnings about the benefits of grid-connected DERs as a result of these policies that we urge the Commission to investigate further for potential broader application.

vi. What can reasonably and economically be done within a 5-year timeframe?

Policy development is often an iterative process, with new markets typically developing in phases, including market creation, market support, market refinement, and finally market self-sustainment. Stem anticipates that five years is a reasonable time frame to expect that DER markets can be developed and reach at least the market refinement stage, with the understanding that "tweaks" may still be needed to continue improving the market rules and adjust to any market changes that cannot be anticipated at this time.

Stem recommends that the Commission prioritize the policy issues that will have the greatest effect on promoting reliability and resilience and facilitating new markets, such as streamlining interconnection policies, developing price signals to appropriately

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[10] See CPS Energy's Flexible Path website at www.cpsenergy.com/flexiblepath

[11] Stem was an active participant in Austin Energy's SHINES demonstration program. See www.austinenergy.com/ae/green-power/austin-shines/austin-shines-innovations-energy-storage

value DERs' contributions to reliability and resilience, and creating additional transparency in system planning.

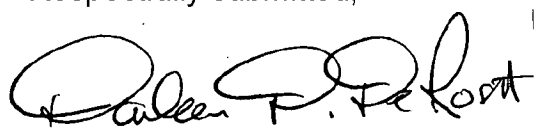
vii. What other issues, if any, should the Commission consider and address while developing rules related to DERs?

Stem suggests the Commission consider how software technology can be applied as a cost-effective tool to efficiently and dynamically optimize the energy market, foster competition and support the grid for reliable service to customers. While traditional utility infrastructure has its place, layering in newer, more advanced technologies can provide added value and benefits for all stakeholders. Stem also suggests that the Commission addresses interconnection queues and policies to ensure that DER projects slated for construction can come online as quickly as possible to begin adding value.

Conclusion

Stem appreciates the Commission Staff's consideration of these comments. DER implementation is critical to addressing Texas customers' energy resilience needs, and Stem stands ready to work with the Commission and stakeholders to support the evolution of the ERCOT market.

Respectfully submitted,



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EXECUTIVE SUMMARY

General Comments

A Texas DER policy roadmap should prioritize four types of electricity system resilience: 1) residential, 2) commercial and industrial, 3) core infrastructure, and 4) community-level resilience. The roadmap should involve multiple stages of policy development from an initial phase to establish new markets, to a final phase where markets are fully competitive and self-sustaining.

Responses to Questions

1. DERs combined with artificial intelligence (AI) are the key to a fast and flexible grid where electrified transportation, storage, and buildings are integrated, dynamic resources on the grid.
    - Stem recommends developing more transparent distribution system planning processes, including implementation of SB 415 relating to non-wires solutions.
    - The Commission should maximize flexibility for resources to participate in markets, and should avoid resource size limitations where possible.
2. Stem supports the Hunt Energy Network et al filing on March 3, 2022, as an initial list of issues to be reviewed to encourage additional DER participation.
3. Stem supports review of current utility charges to DERs as well as identifying how to appropriately compensate DERs for value they bring to the system. The Commission should explore development of resilience tariffs, implement non-wires solutions legislation, and evaluate how to modify utility rate structures to provide incentives to shift usage patterns and support grid resilience.

4. Utilities should design systems in a way that explicitly considers DERs as resilience solutions, and should provide hosting capacity information to DER providers and customers desiring to interconnect. Smart Meter Texas (SMT) should be evaluated to ensure that it can meet market needs for data sharing in the context of DER integration.
5. There may be reasons to classify different DER types or resilience objectives depending on the situation.
    - The Commission should encourage segmentation and islanding for critical facilities to promote core infrastructure resilience.
    - The Commission should review current utility interconnection processes to streamline and promote consistency.
    - Market-based approaches should be pursued both within and outside of ERCOT. Implementation of FERC Order 2222 in other organized regional markets can provide valuable lessons learned.
    - Massachusetts has implemented policies including the SMART program and Clean Peak Standard that should be reviewed. Additionally, Texas municipally-owned utilities CPS Energy and Austin Energy are ahead of other regions of the state in integrating DERs and should be reviewed for lessons learned.
    - Five years is a reasonable time frame to implement market changes, recognizing that policy making is iterative and market modifications may still be needed at the end of that period. The Commission should prioritize policy issues that will have the greatest effect on promoting reliability and resilience, and creating new markets.
    - Stem recommends considering how software technology can be applied as a cost-effective tool to optimize markets, foster competition, and support reliable service to customers. Stem recommends that the Commission address interconnection policies to ensure that DER projects can come online as quickly as possible to begin adding value.