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PROJECT NO. 52373

REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN	§ §	PUBLIC UTILITY COMMISSION OF TEXAS

COMMENTS OF AMERICAN COUNCIL FOR AN ENERGY EFFICIENT ECONOMY

Comes now the American Council for an Energy-Efficient Economy (ACEEE) and files these Comments in response to the Commission's Questions for Comment filed in this proceeding on September 1, 2021. ACEEE is a nonprofit research organization based in Washington, D.C. that conducts research and analysis on energy efficiency, and is one of the leading groups working on energy efficiency issues in the United States at the national, state, and local levels.

Executive Summary

- Energy efficiency can provide reliability services by saving energy at peak times in the summer and winter, especially for particular measures, like heating, ventilation and air conditioning improvements, insulation, and other measures to improve building envelopes.
- Compared to supply-side options, energy efficiency is one of the least-cost options to deliver reliability at peak times in Texas.
- ACEEE is now conducting an analysis on summer and winter peak demand reductions available in Texas homes. We will provide results in the October stage of this docket but early results indicate many thousands of MW of available peak reductions.
- There are opportunities to co-deploy energy efficiency and demand response in utility customer-facing offerings, thus capturing the benefits of these complementary technologies in each customer transaction.
- Policy changes are needed to deliver on the promise of energy efficiency and demand response as resources on Texas' grid.

Introduction

Demand-side resources are indispensable for improving the reliability and resilience of the ERCOT grid, supporting market operations through lower-cost resources that directly boost customer bill affordability. These include energy efficiency, which reduces electric loads while providing the same services to the economy, as well as demand response or demand flexibility, which shifts load away from peak times, and sometimes into particular times of day. ACEEE commends the Commission on its focus on demand response, and offers this set of comments to consider how energy efficiency can complement demand response.

Energy efficiency can provide reliability services by saving energy at peak times in the summer and winter, especially for particular measures, like heating, ventilation and air conditioning improvements, insulation, and other measures to improve building envelopes. Earlier this year, ACEEE modeled the impacts of both energy efficiency and demand response measures to reduce electricity demand in the New England states during a simulated four-day polar vortex in 2040. We examined this region because it faces cold temperatures and is expected to see a significant shift toward electrified heating and vehicles. Our research found that better-sealed and insulated buildings and replacing electric resistance heat with heat pumps were the two most important measures to address winter peaks. High-efficiency grid-connected water heating, managed charging and behind- the-meter battery systems can also all contribute to dramatic reductions in winter peak demand.[1]

In general, energy efficiency is one of the least-cost options to deliver reliability at peak times in Texas compared to supply side options. Analysis from ACEEE and Lawrence Berkeley National Laboratory (LBL) finds that energy efficiency remains one of the lowest-cost resources on average

[1] M. Specian, C. Cohn, and D. York, *Demand Side Solutions for Winter Peaks and Constraints* (Washington, DC: ACEEE, 2021). aceee.org/research-report/u2101.

across the country compared with unsubsidized supply- side resources. [2] ACEEE found an average levelized cost of energy of $24/MWh for efficiency compared with Lazard's estimates for fossil fuels, where the least cost fossil resource is a gas combined cycle plant, which ranges from $44-68/MWh.

The opportunity for low-cost demand side resources in Texas is large. The U.S. Department of Energy recently found that there is enormous potential for demand-side resources to save money, with possible savings of $100–200 billion in buildings between 2021 and 2040, and over $1 billion of that potential in Texas alone.[3] In their analysis, HVAC (heating, ventilation and cooling) and envelope measures offer the best ratio of peak to average savings, with 70% of the potential savings across all buildings from HVAC, envelope, water heating, and lighting.

There are opportunities to co-deploy energy efficiency and demand response in customer-facing offerings, capturing the benefits of these complementary technologies in each customer transaction. Examples of programs that do this have been summarized by LBL and ACEEE, and include examples across residential, small business, and large commercial and industrial applications.[4] In addition, research from LBL and ACEEE that utilities implementing combined programs see these technologies as complementary in a few ways. By sharing costs, the cost per kW saved can be lowered. Combined programs can often reduce peak demand and customer bill savings beyond what either type of program can deliver alone; they can increase customer participation, and can better address locational

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[2] Lazard, "Levelized Cost of Energy – Historical Utility-Scale Generation Comparison," *Lazard's Levelized Cost Of Energy Analysis – Version 13.0* (New York: Lazard, 2019). https://www.lazard.com/media/451086/lazards-levelized-cost-of-energy-version-130-vf.pdf and. C. Cohn, *The Cost of Saving Electricity for the Largest U.S. Utilities: Ratepayer-Funded Efficiency Programs in 2018* (Washington, DC: ACEEE, 2021). aceee.org/topic-brief/2021/06/cost-saving-electricity-largest-us-utilities-ratepayer-funded-efficiency.

[3] DOE (Department of Energy) Building Technologies Office, *A National Roadmap for Grid-Interactive Efficient Buildings* (Washington, DC: DOE, 2021). gebroadmap.lbl.gov/A%20National%20Roadmap%20for%20GEBs%20-%20Final_20210517.pdf

[4] Potter, J., E. Stuart, and P. Cappers. 2018. *Barriers and Opportunities to Broader Adoption of Integrated Demand Side Management at Electric Utilities: A Scoping Study.* Berkeley Lab. eta-publications.lbl.gov/sites/default/files/barriers_and_opps_idsm_final_03222108.pdf and York, et al. 2019. *Integrated Energy Efficiency and Demand Response Programs.* https://www.aceee.org/research-report/u1906

or temporal needs. Finally, energy efficiency complements demand response by helping to ensure that all of the benefits of flexible technologies are captured, and not lost in leaky buildings.

ACEEE is now preparing an analysis of the potential summer and winter peak demand reductions available in Texas homes and the cost of programs to capture these savings. This analysis covers demand response as well as efficiency measures with large impacts on peak demand. We plan to publish our results in October, 2021 and to summarize our findings in future stages of this docket. Early results indicate many thousands of MW of available peak reductions.

Comments

3. How should utilities' existing programs, such as those designed pursuant to 16 TAC §25.181, be modified to provide additional reliability benefits?

Presently, as best we can tell, there are very few residential demand response programs in Texas. In order to address peak demand issues (summer and winter), utilities should be directed to dramatically expand their program offerings, considering demand response programs for air conditioners, water heaters, pool pumps, and in the future, for EV charging and residential battery systems. In addition, there are opportunities to expand energy efficiency programs focusing on programs that can have a large impact on peak demand such as attic insulation and sealing and replacing electric furnaces and water heaters with heat pumps. As noted above, ACEEE is now researching the peak reductions and costs of specific programs for Texas and will have specific recommendations in the next stage of this docket.

PUCT should also study the possibility of establishing peak demand reduction targets as some states with EERS policies have. For example, Michigan, New York, and Massachusetts, among others, all set peak demand reduction requirements; such targets are also tied to performance-based

compensation mechanisms.[5] Some include separate seasonal targets, or separate targets for "passive" and "active" demand reduction to ensure procurement that meets a variety of system needs.

We also note that there is a lot that can be done to build complementary between demand response and energy efficiency programs as discussed in our 2019 research report.[6] There, we recommend pursuing integrated programs to capture benefits - fully capturing the resources' value streams, more efficient administration, and a streamlined customer experience. Reducing silos within utilities can support implementation of integrated programs. Key examples of integrated programs include smart thermostats, which can be used to control efficient heat pumps, grid interactive efficient water heaters, and efficient and controllable equipment for commercial and industrial customers

3a. What current impediments or obstacles prevent these programs from reaching their full potential?

Policy changes for investor-owned utility programs are needed to deliver on the promise of energy efficiency and demand response as resources on Texas' grid. Texas had the first EERS in the country, signed into law by then-Governor Bush in 1999. Since then, Texas has been leapfrogged by 26 other states, and has the opportunity to rachet up the ambition of this policy. Our research finds that states with these standards deliver an average of four times the level of electricity savings (1.2% new savings per year) relative to states without an EERS (0.3%), according to the most recent utility data, from 2019. Savings from states with an EERS also account for 80% (22 million MWh) of nationwide utility program electricity savings.[7] In 2019, TX utilities saved 0.19% of sales. 21 states have EERS or 1% or greater, more than five times TX's savings. Research from the National Renewable Energy

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[5] Gold, R., A. Myers, M. O'Boyle, and G.Relf. 2020. *Performance Incentive Mechanisms for Strategic Demand Reduction*. ACEEE and Energy Innovation. https://www.aceee.org/research-report/u2003

[6] York, D., G. Relf, and C. Waters. 2019. *Integrated Energy Efficiency and Demand Response Programs.* https://www.aceee.org/research-report/u1906

[7] W. Berg, S. Vaidyanathan, B. Jennings, E. Cooper, C. Perry, M. DiMascio, and J. Singletary, *The 2020 State Energy Efficiency Scorecard* (Washington, DC: ACEEE, 2020). aceee.org/research-report/u2011.

Laboratory (NREL) and Electric Power Research Institute (EPRI) demonstrate the potential for savings beyond 1% per year.[8]

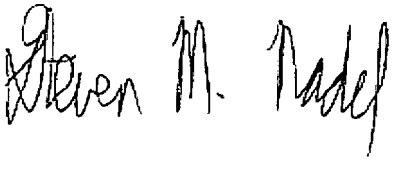
5. What changes should be made to non-residential load-side products, programs, or what programs should be developed to support reliability in the future?

Given time and page constraints we are not able to fully answer this question. But briefly, we recommend consideration of grid-interactive efficient building (GEB) measures as elaborated on in a recent DOE GEB Roadmap. In this report, DOE outlines key actions for enhancing the value of GEBs to consumers and utilities. Findings and recommendations include designing market demand flexibility programs with a focus on consumer preferences, considering additional value streams in incentive-based demand flexibility program compensation, reviewing existing demand response programs for opportunities to modernize, and developing partnerships between utilities and aggregators. For instance, Austin Energy's Load Cooperative serves as a strong example of a program that offers customers flexibility in how to participate in demand response events.

Conclusion

ACEEE appreciates the opportunity to provide these Comments and looks forward to working with the Commission and other interested parties on these issues.

Sincerely,



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[8] NREL. Texas Residential Energy Efficiency Potential. 2017 https://www.nrel.gov/docs/fy18osti/68838.pdf and EPRI as cited in SPEER Review of the Texas IOU Energy Efficiency Programs. 2018. https://eepartnership.org/wp-content/uploads/2019/02/IOU-Program-Review-SPEER-Report-2.13.19-final.pdf