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PUC PROJECT NO. 57743

REVIEW OF ENERGY EFFICIENCY SUBSTANTIVE RULES	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS OF ALISON SILVERSTEIN CONSULTING ON COMMISSION STAFF'S FEBRUARY 24, 2025 REQUEST FOR COMMENTS

Comes now Alison Silverstein Consulting, an independent energy consultancy, to respond to the Staff questions for comment on the energy efficiency rule definitions of low income and hard-to-reach customers, how to calculate cost-effectiveness, and whether to compare costs to benefits by customer sector. Because these issues are closely interrelated, and relate to the goals for providing energy efficiency, these comments will address more topics than those covered in Staff's Request.

The high-level issue that must guide these considerations is why Texas should invest in utility energy efficiency programs. Our state faces two important challenges – very fast-growing electricity demand with a limited ability to grow supply at equal speed, and an electricity affordability problem at a time when over a third of Texans can't afford to pay for basic necessities like food, rent, medicine and energy bills. Aggressive, well-targeted energy efficiency programs can help address both problems. Energy efficiency, demand response and load management measures targeted to reduce summer and winter peak and net peak loads will help slow the rate of demand growth and peakiness and buy us more time to build supply-side resources. Such programs will lower electricity costs for all customers by reducing grid stress and associated high energy costs, and can over time reduce transmission and distribution capital costs. And aggressive energy efficiency programs that serve low income and hard-to-reach customers can directly lower those customers' energy usage and bills while indirectly moderating everyone else's electric bills as well.

Recent ACEEE and Texas A&M energy efficiency and demand response studies established that Texas has huge energy efficiency and demand response potential. These studies document that peak period-focused efficiency and demand response programs – particularly leveraging heat pump replacements for winter resistance heat and inefficient summer air conditioning, managing electric vehicle charging, and using smart thermostat HVAC management – could deliver 15 GW of summer and 25 GW of winter peak load reductions at costs much lower than building new gas turbines. Texas should implement these low-cost reliability improvements as a way to protect our economy and keep energy costs low for everyone's benefit.

Defining Low Income customers

Staff proposes to define Low Income customers as those residential households with income levels at or under 80% of the calculated area median income (AMI). This definition is appropriate because it is consistent with federal low-income program definitions and practices, and does not require the Commission and utilities to develop and implement a different definition. Additionally, using this U.S. Department of Housing and Urban Development definition and datasets will enable several of the Texas utilities to continue using the efficient, economical TEPRI E4-TX low income customer qualification tool to support their low income energy efficiency programs.

It is worth noting, however, that the federal government might gut funding and staff of the federal Department of Housing and Urban Development, including potentially eliminating the HUD Low- and Moderate-Income Summary database (LMISD) and the American Community Surveys program that feeds the database. If this occurs, the HUD data and Texas Low Income numbers will become stale over time and we will need to identify an alternative Low Income definition, data source and methodology.

Defining and funding Hard-to-Reach customers

Staff proposes to define Hard-to-Reach customers as those in rural areas where the utility is unable to administer energy efficiency programs in a manner similar to other areas served. It is appropriate to include rural customers in the definition of Hard-to-Reach (although it is more accurate to call them Harder-to-Serve than Hard-to-Reach).

But the Hard-to-Reach category should also include renters, who are underserved with energy efficiency because the landlord gains no benefit from investing in efficiency measures that lower renters' energy costs. Similarly, renters under-invest in energy efficiency because many effective efficiency measures modify the landlord's premises and do not remain the property of the renter. These adverse incentives affect renters in both single-family homes and multi-family housing. Both classes of renters should be included in the Hard-to-Reach program category.

Customers lacking strong English language proficiency should also be included in the Hard-to-Reach category because those customers are also more challenging to serve.

Because it costs more to deliver energy efficiency measures to rural, renter and non-English-speaking customers, the Commission should add a cost premium onto utility contractor budgets for Hard-to-Reach programs and expand the program budgets accordingly.

Cost-effectiveness standard

Current Substantive Rules say, "An energy efficiency program is deemed to be cost-effective if the cost of the program to the utility is less than or equal to the benefits of the program." There is nothing wrong with this statement, as long as all of the elements relating to cost-effectiveness are parsed and designed to work collectively to meet Texas' needs and goals.

Individual v. portfolio evaluation

The Texas investor-owned utilities have many energy efficiency programs that are clearly cost-effective on a program-by-program basis. But in Texas and industry-wide, Low Income (LI) and Hard-to-Reach (HTR) energy efficiency programs are consistently more costly per kWh saved than other programs, which makes them less cost-effective. Since over 30% of Texans are low-income, and those customers use a lot of electricity, as a policy matter we should be spending more on LI and HTR energy efficiency programs to help more households and save more electricity. Rather than evaluating LI and HTR program cost-effectiveness on a program-by-program basis, we should evaluate the effectiveness of those programs by performing cost-effectiveness evaluation upon the utility's entire energy efficiency portfolio, including all of the LI and HTR programs impacts and costs, rather than by individual programs.

Current utility energy efficiency programs are already cost-effective on a program-by-program basis, but many offerings are interdependent – for instance, smart thermostat-based demand response and heat pumps have a greater demand and energy reduction impact when they are combined with home insulation than when offered individually. Yet home insulation programs are more costly and less cost-effective than complementary measures. In order to expand quickly, we should evaluate the cost-effectiveness of entire portfolios rather than trying to identify and perfect the cost-effectiveness of individual programs and measures.

Energy efficiency program costs

Current Texas Substantive Rules say, the "costs of a[n energy efficiency] program includes the cost of incentives, FM&V contractor costs, any shareholder bonus awarded to the utility, and actual or allocated research and development and administrative costs."

All of the costs listed above are appropriate for inclusion in a cost-benefit test, with one qualification – the utilities' shareholder bonus should be calculated based solely on the results they achieve for energy efficiency programs, and no shareholder bonus should be awarded for utility load management programs as presently structured. The utilities' load management programs are disproportionately cheap to run because they sign up the same customers over and over, the utilities rarely operate and realize the load management demand savings, and yet the load management MWs earn a sizeable portion of the utilities' shareholder bonus. If Texas wants to improve its energy efficiency programs, we should reward utility managers and shareholders only for the energy and demand saved by true energy efficiency programs.

Energy efficiency program benefits

Current Texas Substantive Rules say, "The benefits of the [energy efficiency] program consist of the value of the demand reductions and energy savings, measured in accordance with the avoided costs prescribed in this section. The present value of the program benefits shall be calculated over the projected life of the measures installed or implemented under the program." We cannot determine the appropriate cost-effectiveness standard and methodology without first clarifying energy efficiency program goals and benefits.

Texas energy efficiency programs today serve the general purpose of reducing energy and demand usage on a generic, non-time-differentiated basis. This is clear because we value that usage using avoided costs equal to average, non-time-differentiated seasonal avoided energy costs (presently set at an average of $114.73/MWh ERCOT-wide) and generic simple cycle combustion turbine costs (presently set at $100/kW-year ERCOT-wide).

But Texas doesn't need to use less energy or less capacity on generic or average bases – ERCOT's pressing reliability needs are to use less energy during summer and winter peak and net peak periods (and increasingly during shoulder month maintenance periods) since supply and storage reserves over demand are getting tighter during those periods. Energy efficiency-caused energy and capacity reductions are much more valuable during those periods; thus they should be valued for cost-benefit purposes according to their real values in those times, rather than at some average seasonal or generic capital cost. If Texas were to target its energy efficiency programs specifically toward saving energy and capacity for reliability improvement, rather than for generic energy and demand reductions, every kWh and kW saved would be more valuable and we would use these ratepayers' funds to improve reliability and lower electricity costs for all ERCOT customers.

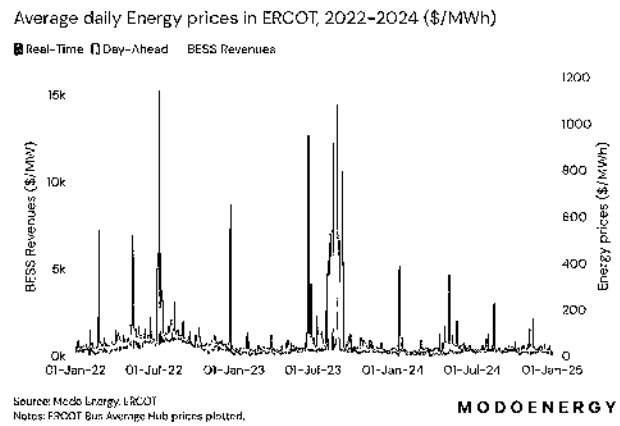
Recent Texas proceedings indicate that the actual costs and feasibility of building new gas turbines are much higher than the EIA combustion turbine value now adopted. The Commission's Texas Energy Fund proceeding, to award low-interest rate loans for construction of new gas turbines, has seen two applicants withdraw already due to turbine procurement constraints. Turbine manufacturers say that if you need a new gas turbine, you should be ordering it seven or eight years ahead.[1] NextEra says the cost of a new gas turbine has increased three-fold in the last few years.[2] The costs of transformers, switchgear, and other capital equipment have also increased in cost and face longer times from order to delivery. In other words, the actual costs of a gas turbine today wildly exceed the values that the Commission has adopted for energy efficiency cost-effectiveness. These factors render the Commission's current avoided cost methodology, based on historic overnight gas plant costs, obsolete and its resulting avoided costs too low.

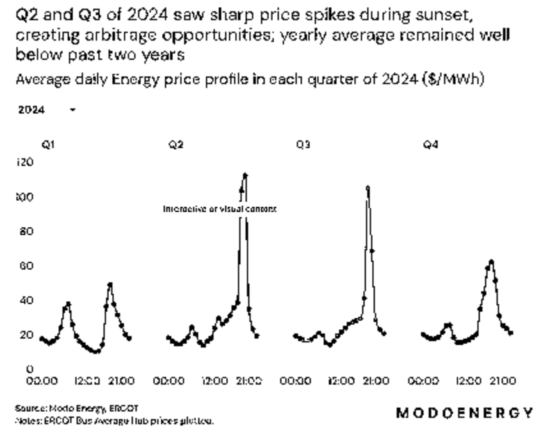
Fortunately, we have at least two sources for estimating how ERCOT customers value reliability. First, the Brattle Group's 2024 "Value of Lost Load" report, prepared for the Commission, finds that in 2024 ERCOT residential customers valued an hour of unserved energy at $3,964/MWh and small commercial customers valued an hour of unserved energy at $666,907/MWh. Using this study, the Commission set the official ERCOT VOLL at $35,000/MWh. These values are many orders of magnitude higher than the average avoided cost of $114.73/MWh presently adopted by the Commission. The PUC and ERCOT use these VOLLs to determine the estimated value of electric reliability within ERCOT and as the basis for evaluating the cost-effectiveness of new transmission and generation intended to improve grid reliability. If VOLL is the appropriate cost-effectiveness value for evaluating new supply-side capacity additions, then it is also the appropriate avoided cost value for evaluating the cost-effectiveness of new demand-side capacity reductions.

Second, on the energy side, we can look at the actual prices that ERCOT customers paid for wholesale energy in ERCOT. As this graph shows, actual average daily energy prices in ERCOT between 2022 and 2024 ranged as high as $1,136.88 (July 13, 2022) (although daily average prices mask the value of much higher prices during the hours of maximum grid stress),

[1] Kevin Clark, "Long lead times are dooming some proposed gas plant projects," February 25, 2025.
[2] Tim McDonnell, "Big gas turbine manufacturers aren't ready to bet on the AI boom," https://www.semafor.com/article/03/17/2025/gas-turbine-manufacturers-bet-ai-boom-trump, March 18, 2025.

as illustrated in the second graph below. (Source: MODO Energy, https://modoenergy.com/research/ercot-power-prices-2024-energy-arbitrage-ancillary-services-hub-load-zone-west-north-south-houston-panhandle) When energy efficiency programs are targeted to reduce peak hour energy use – as for summer air conditioning or winter heating – the energy saved in those periods should be valued at the wholesale Locational Marginal Prices plus congestion and ORDC adders that customers would otherwise have paid to consume that energy.





Energy avoided costs should reflect time-differentiated values. We can estimate the impact of different energy efficiency measures on energy use in different time periods and value those savings using actual recent time-differentiated avoided costs.

Utility load management and demand response programs

Utility demand response programs should be significantly modified to target both summer and winter peak reduction measures and distribution capital deferral costs. At present the utilities sign up customers for these programs but rarely exercise the actual operational requirements to support ERCOT grid needs (even as they earn the bulk of their shareholder bonuses from these programs). But all of the utilities face significant transmission and distribution capital requirements to support growing population and economic expansion needs. If the utilities refocused their load management and some energy efficiency programs to defer distribution capital investments (which many other utilities call "non-wires alternatives"), this would rationalize capital spending and lower costs for all customers. Under such circumstances, the value of capital deferral should be included in the utility program benefits for cost-effectiveness calculations.

What is the right level to compare costs to benefits? Is it by sector?

As indicated above, when Texas needs as much energy efficiency as we can get to support reliability and resource adequacy, we should conduct cost-effectiveness analysis on entire portfolios of programs and measures rather than dividing them up by program or customer sector. Demand savings realized from energy efficiency and load management offer externality benefits in that every MW saved by a residential customer expands the operating reserve margin across all of ERCOT, thus benefiting every customer in every sector. Similarly, if the utilities used energy efficiency specifically to defer new transmission and distribution capital investments, the capital deferral savings would lower bills for every customer that utility serves, not just the residential or commercial customers who saved that energy.

Risk reduction and the time to impact

One of the most significant benefits of energy efficiency and demand response is that these measures deliver proven and provable benefits, as evidenced at customer meters and on transmission and distribution monitoring devices. Efficiency investments and well-designed demand response measures work immediately and their waste-reducing, cost-reducing impacts last for many years. Investments in energy efficiency, load management and demand response have two important advantages over supply-side investments alone.

First, demand-side investments make a difference slowly but steadily. They do not happen overnight nor in big chunks, but the ACEEE study and Texas' own efficiency history show that steady investments in demand-side improvements yield significant levels of demand reduction over time. ACEEE estimates that if Texas aggressively invested $13 billion per year in ten efficiency and demand response programs over seven years, we could reduce winter peak load by 25 GW and summer peak load by almost 15 GW. Given the supply chain problems and high costs of new gas turbines and transmission investments, we could use energy efficiency and demand response to improve reliability, accommodate some new load additions, and buy time during the three to seven years before many new gas plants can come online.

Second, demand-side investments reduce risk for ERCOT and Texans as a whole. There are many ways for supply side resources to fail – transmission lines break or are curtailed, power plants freeze up, gas production and pipelines cut deliveries, and so on. But demand-side measures have many fewer and at least different failure modes than supply-side resources. Attic insulation doesn't stop working, an entire fleet of heat pumps is unlikely to fail due to a common cause, and out of a million customers on thermostat-based demand response programs a statistically large number will deliver a collectively large load reduction. Resource adequacy is the degree to which supply exceeds demand; the collective impact of many energy efficiency and demand response investments across the state will enhance resource adequacy by reducing the magnitude and slowing the growth of load. Large investments in Texas' demand-side resources are as essential as supply-side resource investments for diversification and risk reduction.

It is difficult to quantify these benefits to include them into a cost-effectiveness analysis, but that difficulty doesn't diminish their importance.

Conclusion

Energy efficiency and demand response are the most cost-effective, immediately available measures to protect grid reliability and accommodate growing customer demand. We must expand and accelerate Texas' investments in these tools. To do so, the Commission should refocus utility energy efficiency and load management programs to target peak and net peak load reductions and transmission and distribution deferral, modify the current cost-effectiveness standard by using more realistic avoided costs for energy and capacity, and evaluate the cost-effectiveness of entire portfolios rather than individual programs.

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COMMENTS OF ALISON SILVERSTEIN CONSULTING
EXECUTIVE SUMMARY

Our state faces two important challenges – very fast-growing electricity demand with a limited ability to grow supply at equal speed, and an electricity affordability problem at a time when over a third of Texans can't afford to pay for basic necessities like food, rent, medicine and energy bills. Aggressive, well-targeted energy efficiency programs can help solve both problems. Energy efficiency, demand response and load management investments should be expanded and accelerated. They should be targeted to reduce summer and winter peak and net peak loads, to slow the rate of demand growth and peakiness and buy us more time to build supply-side resources. Such programs will lower electricity costs for all customers by reducing grid stress and associated high energy costs, and can over time reduce transmission and distribution capital costs. And aggressive energy efficiency programs that serve low income and hard-to-reach customers can directly lower those customers' energy usage and bills while saving enough energy to indirectly moderate everyone else's electric bills as well.

- The current Low Income customer definition is appropriate.
- The Hard-to-Reach customer definition should include those in rural areas, renters, and those lacking strong English language communications, because all are hard to reach and cost more to serve. Utilities should receive more funds per customer and bigger budgets to serve HTR customers.
- The current cost-effectiveness standard of comparing benefits to costs is appropriate, but all of the benefits and avoided cost methodologies must change.
- If energy efficiency are refocused to enhance reliability and resource adequacy by reducing peak and net peak loads, then avoided energy costs should reflect the recent market values of electricity during peak and net peak periods, not the average cost of electricity.
- Utility load management programs should be targeted to specific feeders and circuits to defer new distribution and transmission investments. Utilities should not receive a shareholder bonus, nor count that bonus in program costs, for generic load management.
- Since gas turbine costs have increased three-fold in the last few years and a turbine ordered today won't be delivered until 2028 or later, it is inappropriate to set the avoided cost of capacity at $100/kW-year that is based on outdated "overnight build" gas turbine costs. Instead, the avoided cost of capacity should reflect the customer Value of Lost Load, which the Commission set at $35,000/MWh for use in evaluating generation and transmission reliability investment options.
- Energy efficiency program cost-effectiveness should be evaluated within portfolios rather than individually.