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REVIEW OF ENERGY EFFICIENCY RULES AND COST-EFFECTIVENESS STANDARD	§ § §	**BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS OF DOUG LEWIN

Executive Summary

There are many gigawatts of cost-effective energy waste reduction available today. With focus and prioritization, energy waste reduction efforts can home in on what remains the area of highest vulnerability for Texans and the grid that serves us: winter nights and mornings. The biggest limitation of the Commission's current approach is that it is effectively a levelized cost of energy (LCOE) approach that doesn't recognize the time-value of energy resources.

Recent studies by the Texas A&M Energy Institute (commissioned by ERCOT)[1] and the American Council for an Energy Efficient Economy (ACEEE)[2] have concluded that the achievable potential capacity savings from replacing resistance heat within ERCOT is at least 12 gigawatts. A&M's study showed potential savings in the range of 13GW for heat pump-only retrofits and 23.66 gigawatts for heat pumps plus insulation.

ACEEE provided a more granular analysis. They showed Texas could get a 12 gigawatt demand reduction over 15 years at an annual cost of $100 million but with a savings of nearly $1 billion a year. The simple benefit-to-cost ratio is 9.6-to-1. That is, for every dollar spent, Texas consumers collectively would save $9.60.

Peak load reduction is 4.4 kilowatts per home. Those savings occur during the hours when the savings are needed most: winter nights and mornings.

New capacity to serve that load in the form of gas turbines costs $2,200-$2,400 per kilowatt today — *if you can get them.*[3] We could reduce the cost of new generation capacity needed by about $10,000 on average *with every heat pump that replaces resistance heat*. ACEEE calculates the average incentive cost for replacing resistance heat is $590 per home.

It is *highly cost-effective* to reduce the need for that new generation capacity. In the short term, the Commission should change the cost-effectiveness metric to reflect the reality of gas turbine costs (the current avoided cost of $863 per kilowatt is inadequate and completely unrealistic), and it should direct utilities to focus their programs on the biggest driver of risk on the system: inefficient heat in poorly insulated homes.

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[1] Demand Response and Energy Efficiency in ERCOT
[2] Transforming Texas: How Heat Pumps Can Replace Electric Resistance Heat
[3] The Natural Gas Turbine Crisis

Longer term, the Commission should move to technology-neutral, competitive demand-side markets, with savings measured at the meter. In addition to the avoided cost of capacity, there are large benefits for the avoided cost of energy and distribution infrastructure. Contractors and aggregators that deliver those benefits should also be compensated based on the financial value they deliver.

The key to unlocking all of these benefits is standardization. Texas should use meter data to measure savings and pay for performance in transparent, open, competitive demand-side markets. Texas is at or near the bottom on utility energy efficiency scorecard metrics, but utility programs lack market dynamism and competition. We are leaving massive opportunities to increase grid reliability and lower costs on the table.

Other states don't want competition. Texas does. We can and should do this differently — and better — than other states.

Start simple

The Commission should pay close attention to the studies, particularly ACEEE's, that show all of their math regarding demand-side savings. As soon as possible, the Commission should direct utilities to ramp up efforts to replace resistance heat in existing homes and buildings and prevent resistance heat in new construction. This is highly cost-effective *now,* without any further changes needed in cost-effectiveness calculations.

The risk of winter outages is sufficiently high — more than 80% in Winter Storm Uri-like conditions, according to ERCOT[4] — and the consequences are severe enough that a ramp-up of programs focused on inefficient heat should begin as soon as possible. If the utilities do not include such targeted programs in their Energy Efficiency Plans and Reports (EEPRs) for 2026 (to be filed on April 1), the Commission should require them to revise those plans.

There is no other measure that can come close to the impact of replacing resistance heat; it amounts to 4.4 kilowatts per home. Further, there is absolutely nothing preventing the Commission from ramping up these programs *in advance of next winter.* Texas will not be able to add new generation to the grid in such short order, but the Commission can immediately reduce the need for generation, and increase reliability of the grid as a result, by focusing on this solution. The longer term recommendations here and in the comments of other parties should not be used as a reason to delay the Commission from acting quickly and boldly to reduce the threat of winter outages.

I commend the Commission for its rule to weatherize power plants; it has led to demonstrable reductions in power plant outages during winter cold snaps. This is the next largest, possibly larger, opportunity to reduce risk on the system.

The Problem and the opportunity

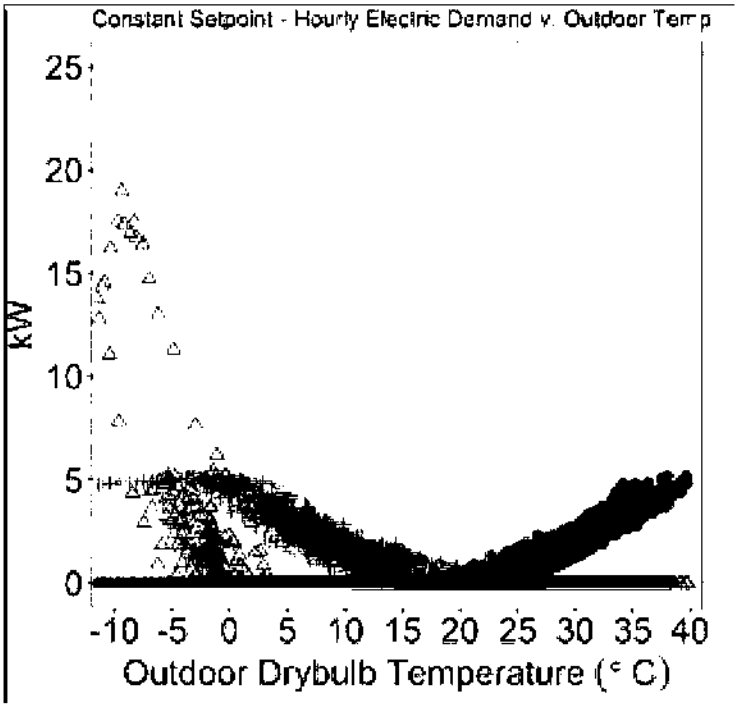
Texas' reliability problems are concentrated in a small number of hours per year. ERCOT published a report estimating that in Winter Storm Uri-like conditions, the agency would need to serve 97

[4] ERCOT: Monthly Outlook for Resource Adequacy for January 2025

gigawatts of demand.[5] The all-time peak demand record, outside of Winter Storm Uri, is 85.5 gigawatts.

Winter peaks are driven by inefficient heat in poorly insulated homes. Texas has around 3 million homes that rely on resistance heat, the most inefficient kind of heat on the market. It's the same technology as a toaster oven but sized for a home. Apartments often have resistance heat as the *only* kind of heat, exacerbating not only reliability problems but also an affordability crisis.

An 800 square-foot apartment with resistance heat uses the same amount of power (5-10 kilowatts) on a 15 degree day as a 3,000 square-foot home uses on a 100 degree day. That resistance heat costs the builder only a few hundred dollars. It costs Texans $10,000-20,000 for the generation, fuel, and distribution infrastructure to meet that demand. Some homes use as much as 15-20 kilowatts, up to four times as much as they use on a hot summer day. The following graph was in FERC and NERC's Winter Storm Uri report — along with a recommendation to increase energy efficiency programs, which has not been implemented in Texas.[6]



A focused effort to reduce inefficient heat could significantly reduce the risk of winter outages and lower costs. Because the solution is often a high-efficiency, all-climate heat pump, there will be reliability benefits in the summertime, too; the Texas A&M Energy Institute estimated summer demand savings as high as 16.95 gigawatts.[7]

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[5] ERCOT: 2024 Long-Term Hourly Peak Demand and Energy Forecast

[6] Final Report on February 2021 Freeze Underscores Winterization Recommendations

[7] Demand Response and Energy Efficiency in ERCOT

Further, we are now in an era of high load growth, and that trend is accelerating as manufacturers and data centers look to locate in Texas. ERCOT estimates demand of approximately 150 gigawatts by 2030.

Energy efficiency, by reducing demand at the times of highest risk, can unlock massive economic growth, increase good-paying jobs, and protect human health and lives. Those benefits don't need to be factored into the cost-effectiveness calculation — the avoided costs are enough to justify more energy efficiency — but the enablement of large loads to come onto the system should be part of the rationale for accelerating investment in energy efficiency without delay.

Cost-effectiveness

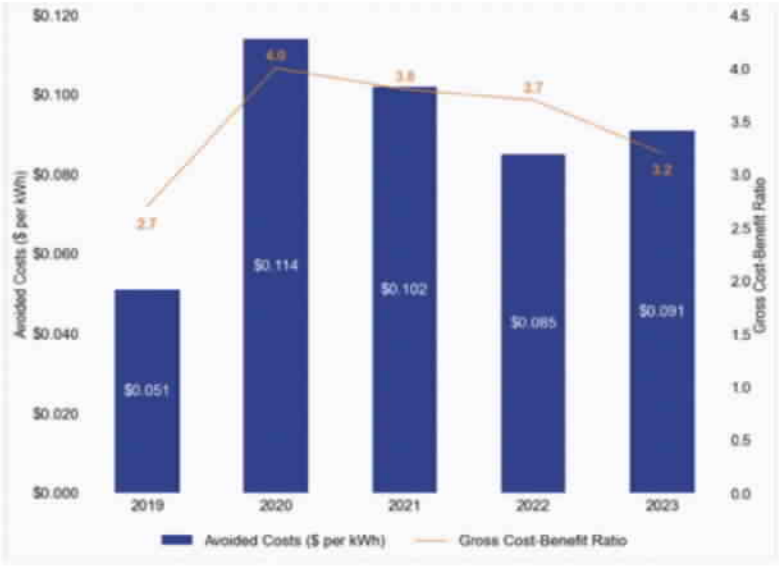
The Commission asked:

a. What changes should be considered when calculating cost-effectiveness?

i. Discuss changes, if any, that may be warranted to elements of the cost calculation, including measurement and allocation of costs.

ii. Discuss changes, if any, that may be warranted to elements of the benefits determination, including measurement and avoided costs.

Current energy efficiency programs are highly cost-effective. According to the PUC's independent evaluation contractor, energy efficiency programs have returned more than three dollars for every dollar spent for many years.[8]



[8] Investor Owned Utilities Energy Efficiency Report, Program Year 2023

But the way cost-effectiveness is measured today is extremely narrow. The Commission should measure cost-effectiveness at the portfolio level rather than by program, allowing utilities to try different approaches without fear of penalty.

Even more critically, the current avoided cost is based *solely* on the cost of a new gas turbine in 2023. In a filing last November, ERCOT calculated the avoided cost of capacity, upon which efficiency programs are based, at $863 per kilowatt.

There are no gas turbines available for $863 per kilowatt anymore. They are 2-3 times more expensive now, typically going for $2,200-$2,400 per kilowatt *if you can get them at all*. There is a gas turbine supply chain crisis happening right now, in addition to a supply chain crisis for other equipment necessary to interconnect those turbines, and it will not be resolved for several years at best.

The calculation of avoided cost should be changed:

- In extraordinary circumstances, the PUC should more rapidly update the avoided cost of capacity to account for the tremendous need for demand-side energy waste reduction when the cost of capacity escalates quickly, as it has done in the past two years.
- Avoided cost should be a combination of the values of capacity, energy, line losses, and distribution. *If efficiency programs were designed thoughtfully,* avoided distribution costs could be as large as, or larger than, avoided generation costs.
- Over time, the PUC should move to a *market-based approach to demand side savings* so that the most cost-effective products, services, and service providers would be compensated for the value they bring — and the least would not be. I believe replacing resistance heat with high-efficiency, all-climate heat pumps will be the most cost-effective solution, but that should be *measured at the meter*. If other measures are more cost-effective at reducing demand during times of scarcity, then those measures should win out. Markets are better at allocating resources than central planners.

What has been missing from the state's energy efficiency efforts is a market, and if any place knows how to establish competitive energy markets, it's Texas.

The market-based approach, with cost-effectiveness based on avoided capacity, energy, and distribution costs, could apply to all demand-side resources.

<u>The PUC also should clearly define the highest needs of the system and focus energy waste reduction efforts on them</u>. It's time for energy efficiency programs to be focused on and deliver value at the times and places of highest system stress.

I propose the new avoided-cost should be a combination of capacity costs, the cost of net peak power, and a value for avoided distribution system costs. *Energy efficiency programs are administered by distribution utilities, but there is currently no value whatsoever given to distribution*

system savings. That should change. According to ACEEE, more than 80% of states include an avoided transmission and distribution cost in their cost-benefit calculations.[9]

Pay for performance

To determine the value that will be paid to demand-side resources, the Commission first should clearly define its goals for the demand side, then structure technology-neutral, demand-side markets to match. The values can be stacked and are not mutually exclusive, though the Commission may choose to prioritize one or the other of the benefits and require demand-side companies to choose the market in which they compete.

For example, if the Commission's priority goal is resource adequacy — that is, to ensure there's enough supply to meet demand — the Commission should pay energy efficiency providers for reducing peak and net peak demand. That would improve resource adequacy by increasing the reserve margin, particularly in times of greatest system stress (winter nights/mornings and summer evenings). The Commission should calculate the impact that energy efficiency would have on the reliability standard by reducing frequency, duration, and magnitude of rolling outages.

If the Commission's priority goal is affordability and it wants to lower costs throughout the year, the Commission should pay for avoided energy commensurate with payments in the energy market. A real-time demand response market would increase competition in ERCOT's already competitive market, while also adding dispatchable resources to the market. This is where aggregations of distributed batteries and thermostats would likely most want to compete — but other companies could compete here as well. Of course, there also are ancillary benefits: while focusing on demand side resources in the real-time energy market would lower costs, it would also improve resource adequacy.

If the Commission aims to reduce distribution costs, then market-based payments should be made for *that* avoided cost. In a recent EEIP meeting, El Paso Electric said the utility is analyzing congested feeders and focusing energy efficiency efforts on them.[10] This is smart and should be a common practice for all distribution utilities. Providers should compete to deliver measures that reduce the need for distribution infrastructure, and those that deliver the most value should be paid accordingly.

There should be a value paid for all of these avoided costs.

Value can best be discovered, delivered, and compensated through a market — that's why markets exist. The PUC and ERCOT should administer a demand-side market that measures value at the meter, leveraging Texas' highly competitive retail market.

The best way to calculate costs and benefits is to actually measure performance at the meter and *pay incentives based on performance*. This is the point of all regulation: to incent performance toward a stated aim.

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[9] Database of State Efficiency Screening Practices (DSP)

[10] https://www.adminmonitor.com/tx/puct/workshop/20250226/ at 1:17:40

Low income and hard-to-reach programs
The Commission proposed the following definitions and asked for comment:

> *a. Low Income: Residential households with income levels at or under 80% of the calculated area median income.*
> *b. Hard-to-Reach: Rural area where the utility is unable to administer energy efficiency programs in a manner similar to other areas served.*

I support defining low income as 80% of AMI and recommend increasing it to 90 or 100%. Low-income programs are the hardest to achieve cost-effectiveness. Increasing the threshold so that anyone below the median income can participate would help to expand the base of customers who can be served.

Even more importantly, the PUC should increase the 10% requirement for lo- income programs set by the Legislature to at least 20%. The statute spells out the Commission's powers using a "not less than" clause, meaning the PUC has the authority to do more to help Texans who need it the most.

Given that 40% of Texans self-report choosing between food, medicine, and energy,[11] it makes sense to do more to ensure that all Texans have access to energy.

"Hard-to-Reach" should include, but not be limited to, rural areas. I recommend including areas with high percentages of non-English speakers and areas of persistent poverty. Contractors, aggregators, and load-serving entities that serve low-income and hard-to-reach customers should generally get a significant adder (e.g. 50%) within pay-for-performance constructs that incentivizes them to seek out low-income and hard-to-reach customers.

Note that successfully scaling up energy efficiency, demand response, and distributed energy resources — measuring results at the meter and paying for performance — will lower energy bills for all customers, whether they participate or not. There are potentially large benefits to low-income and hard-to-reach customers beyond direct participation.

R&D should not be included in cost-effectiveness; utilities should spend more on R&D
Texas utilities are allowed to spend up to 10% of their program budgets on research and development (R&D), but none of them spend more than 2-3% today. R&D should not be included in cost-effectiveness calculations, and utilities should be encouraged to spend *at least* 10% of energy efficiency budgets on R&D, particularly to reduce or obviate the need for distribution investments by employing demand side strategies.

Utilities should particularly research the permanent demand reduction created by heat pump deployment *and* their demand flexibility potential. Utilities should also research the potential for

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[11] 40% of low-to-moderate income households in Texas find their energy bills unaffordable, report finds

distributed batteries at customer premises to reduce the cost for distribution system upgrades and to help critical care customers who need power to stay alive.[12] The cost of batteries dropped 20% in 2024. If cost declines continue, we should expect a proliferation of distributed batteries that could transform the distribution grid in ways that are hard to imagine today. Utilities will need to improve distribution system planning to integrate batteries, which can reduce system peak and infrastructure costs, while also adding load when charging.

The grid is dynamic — utilities must maximize the research, development, and deployment opportunities they have.

Conclusion

This Commission has established an Energy Efficiency Division for the first time in its 50-year history. This is a big step, but it is only the first step. It is time now to take the next step: increase energy efficiency programs with a laser focus on the most cost-effective measures that reduce Texas' biggest risk hours: winter nights and mornings. That means focusing on replacing existing, and preventing future installations of, resistance heat.

Longer term, Texas can apply its competitive ethos to demand-side resources. Create a market that pays contractors and aggregators for performance: the higher the savings, the higher the payment. Successful participants will stay in the market and ramp up; ineffective participants (those who don't produce savings) will leave the program.

Set these initiatives up for both permanent demand reductions (e.g. HVAC equipment and insulation) and demand response programs (e.g., thermostats and batteries), but keep them technology neutral.

Texas is #1 in solar, #1 in wind, #1 in oil, and #1 in gas. But we're #36 in energy efficiency. We can change that by prioritizing and leveraging what we do well: competitive markets and technology innovation. We can and should be the best by increasing energy efficiency the Texas way — with markets.

Short term, because there's tan emergency (97 gigawatts of demand this winter in Uri-like temperatures) direct increased utility spending. Longer term, create markets and enable competition on the demand side. If the Commission embarks on this, I'm confident we'll be #1 on demand side resources within five years. But it will take bold leadership, prioritization, and focus. If the Commission pursues this, customers will benefit with lower bills and higher grid reliability.

Thank you for requesting these comments and for your service to our great state.

[12] Comments and Request for Action from AARP

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