SPEER

The South-central Partnership for Energy Efficiency as a Resource

SPEER Review of the Texas IOU Energy Efficiency Programs

Summary Report

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About the South-central Partnership for Energy Efficiency as a Resource (SPEER)

SPEER is a regional non-profit organization dedicated to increasing and accelerating the adoption of energy efficient products, technologies, and services in Texas and Oklahoma. Much of SPEER's work focuses on finding the best market-based approaches to increase energy efficiency and overcoming persistent market barriers. The views expressed in this paper do not necessarily reflect the views of all of SPEER's members, funders, or supporters. For more information about SPEER, please visit: www.eepartnership.org

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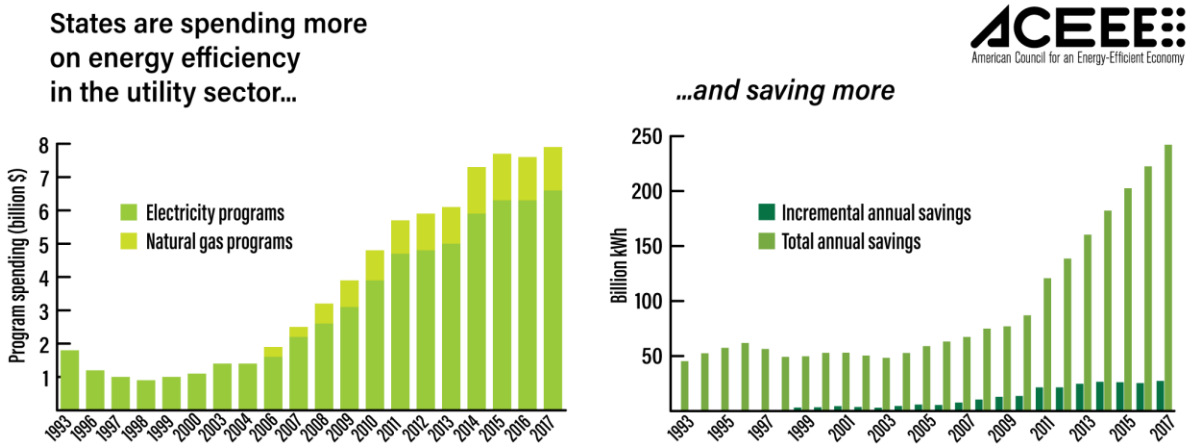
INTRODUCTION:

Texas is approaching the 20th anniversary of the restructuring of the retail electric market in the state. In 2017, SPEER set about reviewing the history of the Investor Owned Utilities (IOU) Energy Efficiency programs. The series of brief reports[1] summarize the impacts of energy efficiency programs, the regulations and rules shaping those programs, and the effects of changes made to the programs over the years. This series offers policymakers, academics, and other energy efficiency stakeholders with a clear, objective look at significant aspects of IOU energy efficiency programs in Texas.

Texas was the first state to establish an Energy Efficiency Resource Standard (EERS), and since then 26 other states have adopted an EERS for reducing energy use. The Alliance for an Energy Efficient Economy (ACEEE) reported[2] that EERS policies, which set specific energy-saving goals, are the most successful way to drive large energy efficiency gains, especially when aligned with utility business models to support efficiency. Several states, many in the Northeast, are now meeting targets of 1.5% - 3% of new electricity savings each year (as the savings last over 10 years on average, over time such savings would accumulate to 15% - 30% of consumption). Texas IOU utilities energy savings reached about .2% of sales in 2017, which is the lowest achieved savings of the 27 states with an EERS goal.

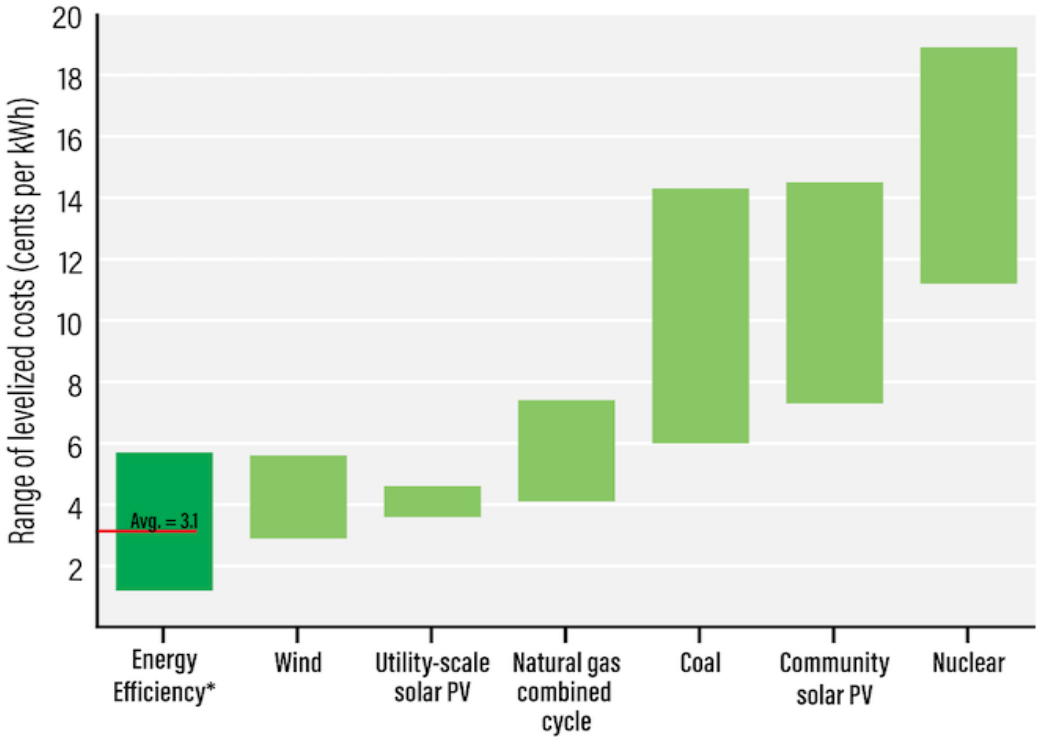


While the Texas IOUs are exceeding their goals, there is much more potential energy efficiency that could be contributing to the reduction in peak demands and growing consumption that is a result of our growing population. A number of potential studies have identified that there is significantly more cost-effective efficiency in Texas. Utility ratepayer's contributions to energy

[1] https://eepartnership.org/program-areas/policy/history-of-energy-efficiency-programs/
[2] https://aceee.org/policies-matter-creating-foundation-energy

efficiency will improve grid reliability, reduce peak prices for all customers, and reduce air emissions from existing or new energy generation.

In spite of the continued reduction in cost of clean energy generation sources like solar and wind, energy efficiency remains the most economic energy resource.



*Notes: Energy efficiency program portfolio data from Molina and Relf 2018. Represents costs to utilities or program administrators only, including shareholder performance incentives if applicable. All other data from Lazard 2018 Unsubsidized Levelized Cost of Energy Comparison.

In 2018, SPEER convened meetings with a number of stakeholders to review the historical performance and spending by the IOUs, including IOUs, Retail Electric Providers (REPs), consumer advocates, energy service companies, product manufacturers, research organizations, consultants, program implementers, and energy efficiency advocates. We met with an interest in identifying both the barriers and the potential to increase the utilities' energy efficiency goals. This report is a summary of the issues discussed, and recommendations we propose the Public Utility Commission of Texas (PUCT) consider through future stakeholder workshops and rulemaking.

ENERGY EFFICIENCY POTENTIAL

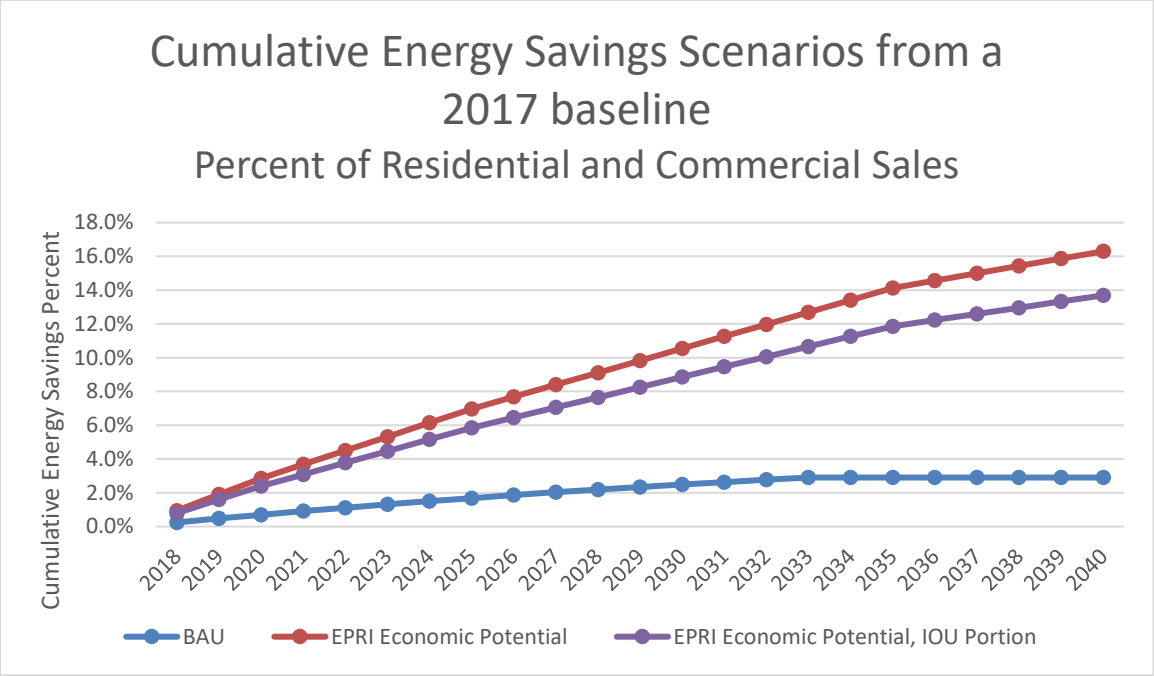
Several potential studies have been published like one commissioned by the PUCT in 2008, where Itron[3] evaluated the Texas IOUs energy efficiency potential from 2008 through 2018. ACEEE[4] reviewed 45 various potential studies in 2014 to evaluate the remaining energy efficiency potential available after a decade of utility programs. Most recently in 2017, the Electric Power Research Institute (EPRI) produced a national potential study[5]. EPRI was invited to address the Texas specific potential for cost effective energy efficiency at the October 2018 EEIP meeting. Their data identified approximately 1% of energy sales as an annual achievable cost-effective potential for Texas[6] in the residential and commercial sectors.

This EPRI potential study identified the efficiency potential using a Total Resource Cost test (TRC) to determine what cost effective efficiency is available. They applied existing technologies, existing building codes, and any installed efficiency that was in use at the time as their baseline. This reflects current demand and consumption.

The TRC test compares the total cost of a measure (including customer cost and/or any utility incentive) with the savings over the useful life of the measure. The TRC test further provides a way to estimate the market potential for energy efficiency unrelated to program goals. The EPRI study identifies 14 states currently targeting 100% of their economic potential through energy efficiency programs.

The chart below demonstrates the cumulative savings that would be achieved at the EPRI identified statewide potential, and the portion of that potential that the IOUs could contribute[7] and the savings realized from the IOU Energy Efficiency Programs continuing at the same level.

[3] http://www1.itron.com/PublishedContent/101324WP-01%20Texas%20EE%20Potential%20Study.pdf
[4] https://aceee.org/blog/2014/08/it-s-been-decade-we-last-looked-energ
[5] https://www.epri.com/#/pages/product/000000003002009988/?lang=en-US
[6] https://www.energy.gov/sites/prod/files/2017/05/f34/epri_state_level_electric_energy_efficiency_potential_estimates_0.pdf
[7] EPRI reported on the statewide economic potential. The IOUs service approximately 84% of the state's residential and commercial sectors (IOU Portion).



Texas IOUs use a Utility Cost Test (UCT), also known as Utility/Program Administrator Cost Test (PACT), that evaluates the cost effectiveness of utility program spending based on present value of the lifetime avoided cost benefit (avoided cost) delivered by the programs. Tetratech, the PUCTs EM&V contractor, presented in the same EEIP meeting that the 2017 IOU programs had a 1:2.2 cost effectiveness ratio using the UTC[8]. This means the avoided energy and demand was valued at more than twice the program cost to the utility (including incentives, administration, and bonus). This demonstrates the low cost of energy efficiency available in the region.

The National Efficiency Screening Project (NESP)[9] provides a resource database, that shows that a number of states use multiple cost tests, because each test reflects very different values.[10] The TRCT identifies the potential for cost effective market penetration, not necessarily how much the utilities should contribute.

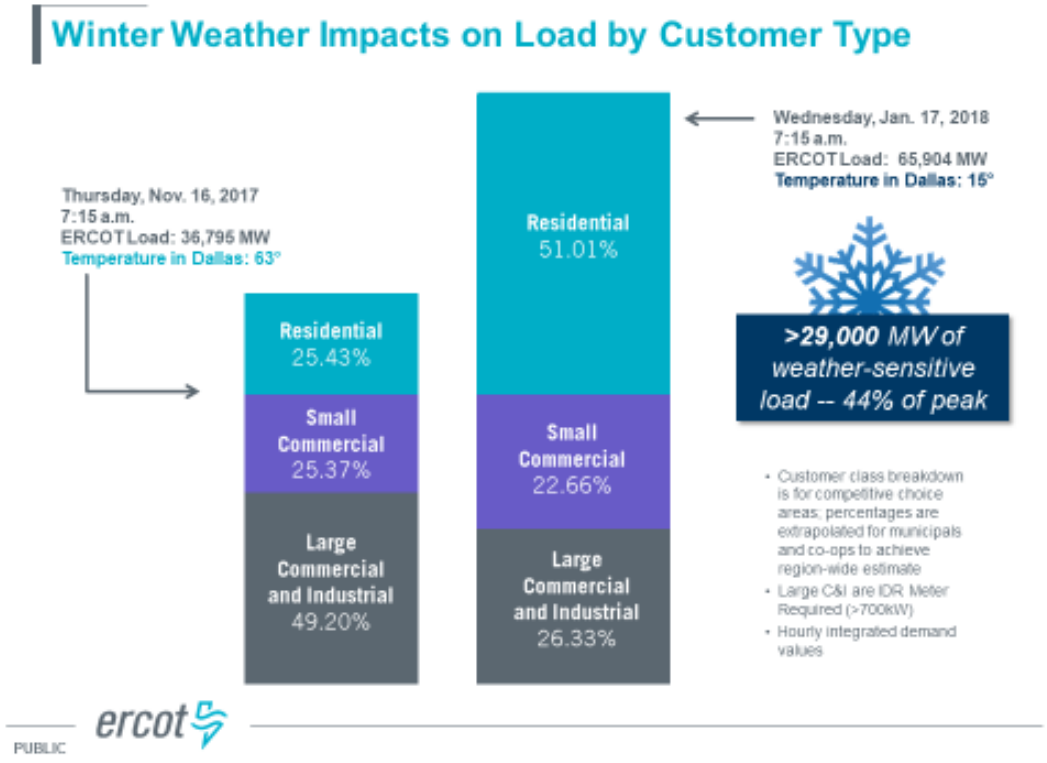
ACEEE's report "Cracking the Teapot" [11] provides a good reference for the various cost effectiveness tests that utilities rely upon to evaluate energy efficiency programs.

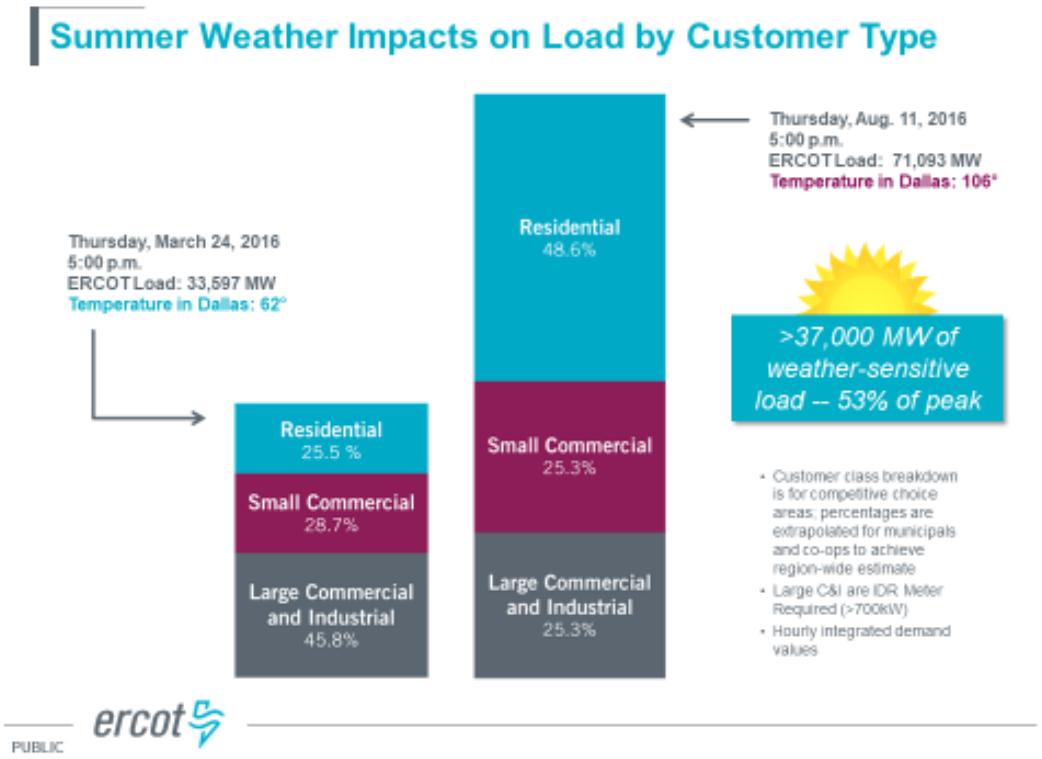
[8] Evaluation Measurement and Verification Contractor Results EEIP Oct. 2018
[9] https://nationalefficiencyscreening.org/
[10] https://nationalefficiencyscreening.org/state-database-dsesp/
[11] ACEEE - Cracking the Teapot: Technical, Economic, and Achievable Energy Efficiency Potential Studies https://aceee.org/research-report/u1407

CONTRIBUTION TO GRID RELIABILITY

Limited reserves continue to be a concern in Texas, but the competitive market has responded to keep the lights on in ways that we could have previously only imagined. SPEER sees energy efficiency as not only a way to reduce customer energy costs; it also represents load reduction for the transmission and distribution system. By targeting both peak hours of summer and winter months and geo-targeted constrained infrastructure needs, these programs can also reduce or defer infrastructure expenditures, which can help to stabilize customer rates.

ERCOT reported that weather impacts on energy demand come from residential and small commercial customers – specifically a result of heating and cooling. This sector is, and should be, the target audience for efficiency incentives and improvements.

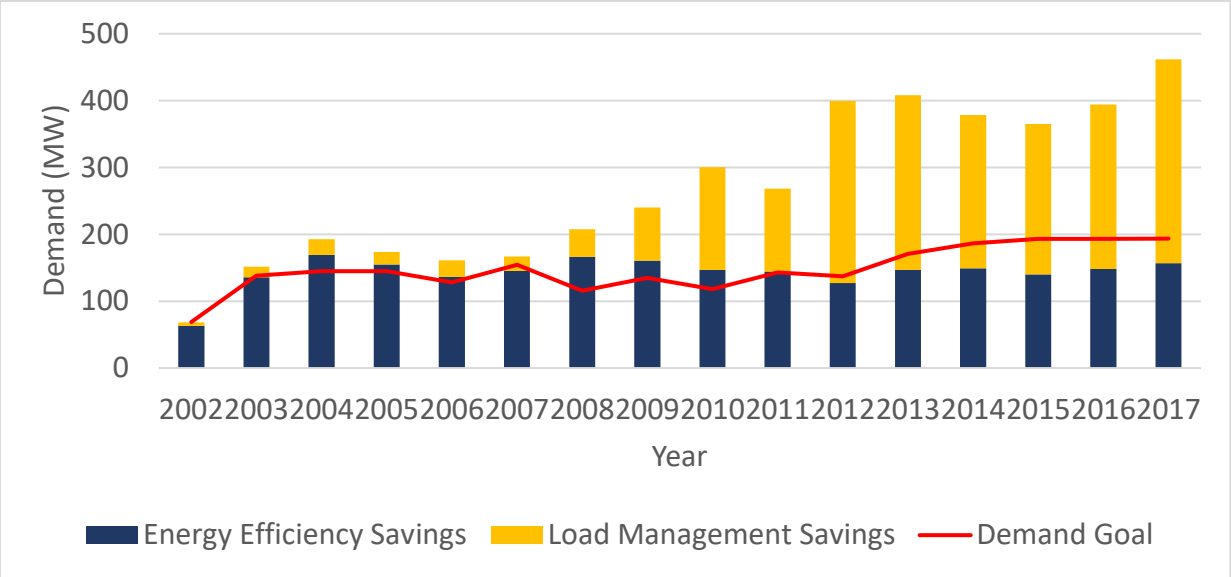




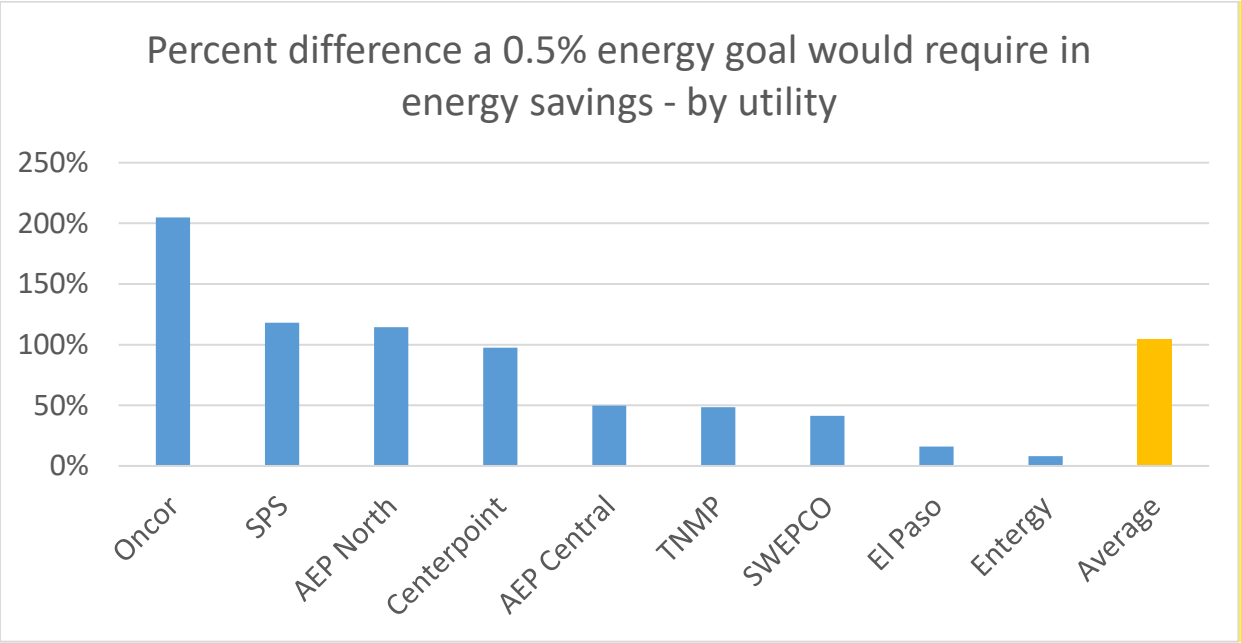
GOAL

The EERS goal was first established in 1999 through Senate Bill 7 at 10% of load growth, to address forecasted demand growth in the early years of deregulation. In 2007, the energy goal was increased by the legislature to reach .4% of summer peak demand. However, some of the IOUs have not reached that trigger due to lower than expected load growth. We do not recommend a change to this statutory energy (MW) goal.

The energy efficiency (MWh) goal was established in rule by the PUCT in 2008, based on a 20% load factor, to set the bar for a performance bonus. We find that this load factor aligned goal has not created the desired increase in energy efficiency savings, even though the load management programs have increased significantly. The IOU load management programs identify emergency load that can be called upon in an ERCOT emergency, but participating loads have not been called upon since the summer of 2011. By design, the utility load management programs avoid any effect on market prices. The programs have become a very cost-effective way for the IOUs to meet their demand goals and increase their bonus, but because they are limited to respond only to a grid emergency, they deliver no impact on peak demand or peak pricing, no customer savings, and no environmental contribution.



In our review of other states' goals, we find that most state's energy efficiency goals are based on a percent of electricity sales, which allows for market demand or population changes to be appropriately assigned to the service territory. When we examine the current IOU programs achieved savings to determine a percent of sales, we found that this change affects the smaller IOUs less than the larger ones. This suggests that the current goal reflects a disproportionate impact on the smaller IOUs.



In SPEER evaluated a short-range annual savings goal of 0.5% of energy sales ramping up to allow for program growth over time, as a reasonably achievable goal. We recognize that this is approximately double the reported achieved savings of the IOU programs in 2017. Increasing the goal would not necessarily increase the spending to savings ratio under the UTC.

SPEER proposes that the PUCT establish through rule a new energy efficiency goal of 0.5% of energy sales for each IOU to be achieved by 2022, and ramped up to achieve 1% of energy sales by 2030.

LOAD MANAGEMENT

We recognize that the limitation to call the load of current demand response or load management program participants is directly related to protecting the price formation in the deregulated market. Active load management is being encouraged by REPs and ESCOs to affect the peak prices and demand charges of customers. Active load management solutions include cycling controllable thermostats, on-site energy storage, or other commercial load curtailment.

However, when ERCOT reports record low market reserves, we need to find new ways to engage with both residential and commercial customers to participate in peak load reduction. The PUCT has discussed changes proposed to the ORDC that would cost as much as $4 billion a year, and would not address any near-term adequacy. We find that expansion or enhancements to the IOU load management programs would be a quick solution to meet the near-term resource adequacy challenge.

ERCOTs ERS program has identified 2500 MW or more of excess load that exceeds their program budget, which demonstrates an affordable and readily available resource. It will require a larger discussion to determine how much additional reserve load is needed in the short-term, which could be achieved by increasing the IOU load management programs. It will have to be determined whether this resource is best managed in the long-term by the IOUs, REPs, or ERCOT[12].

EEIP WORKSHOPS

SPEER requested additional EEIP workshops – suggesting that at least two per year are needed to allow for more stakeholder engagement in the utility program planning and performance;

[12] More details on energy pricing and reliability efforts can be found in ERCOTs 2017 State of the Market Report https://www.potomaceconomics.com/wp-content/uploads/2018/05/2017-State-of-the-Market-Report.pdf

and to encourage and support new program development. We are pleased that the PUCT has decided to plan an additional EEIP meeting for this winter.

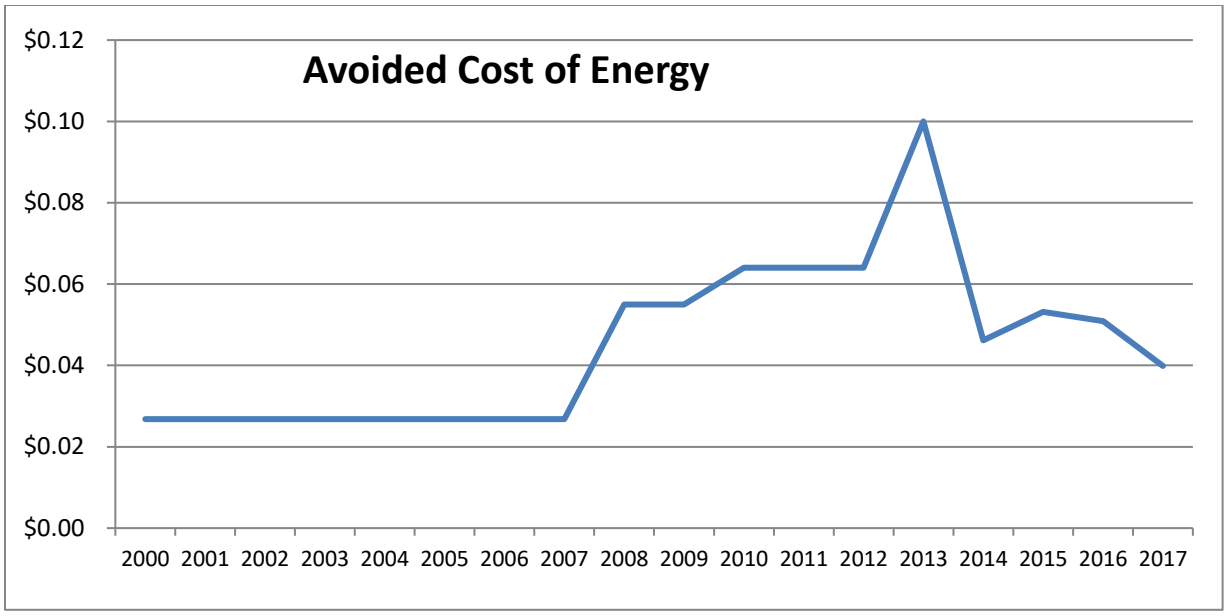
COST EFFECTIVENESS

SPEER proposes a change in the approach to the cost-effectiveness evaluation, to move from individual programs being cost-effective, to each utility achieving cost-effectiveness over their whole portfolio of residential and commercial programs. Applying cost-effectiveness tests at the portfolio level allows some less cost-effective measures or programs to be implemented, as long as their shortfall is more than offset by more cost-effective measures. This would also allow for more flexibility of incentives for measures within the portfolio, allow for higher incentives where there is a higher incremental first cost, allow introduction of new technologies, and support hard to reach sectors.

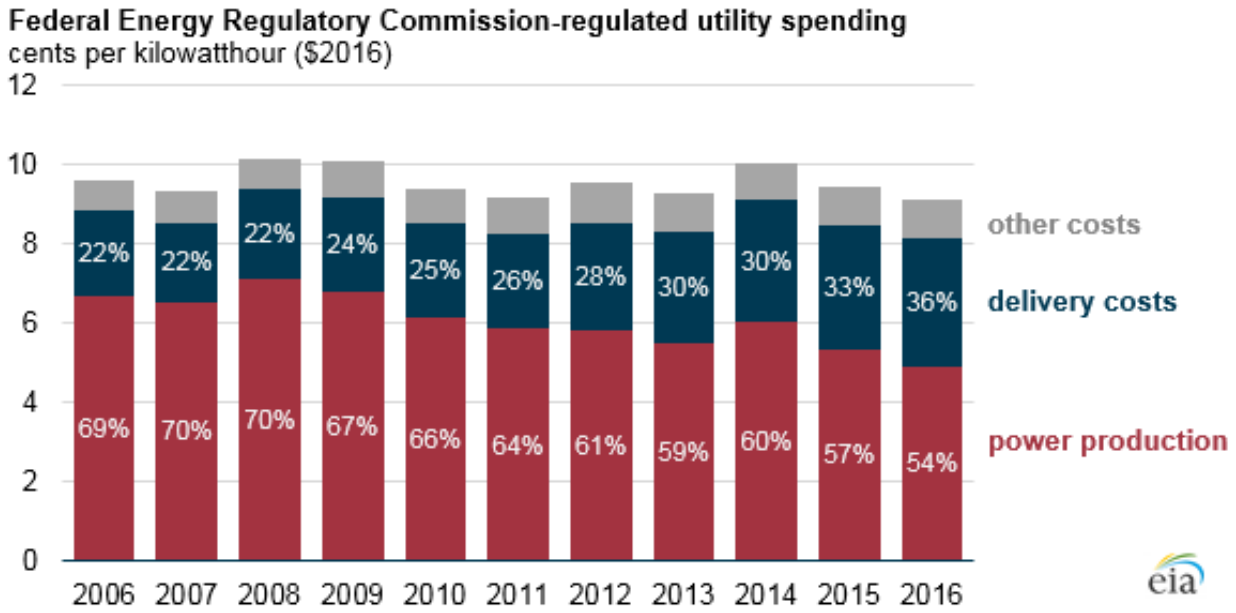
AVOIDED COSTS

The benefit or value of investing ratepayer fees toward efficiency to reduce peak demand is known as “avoided cost”, which was first established by SB7 in 1999. Currently, avoided cost is based on (1) the EIA base overnight cost of a new conventional or advanced combustion turbine, whichever cost is lower and (2) the load-weighted average of the competitive load zone settlement price for the peak periods of the two previous winters and summers.

SPEER recommends establishing these values well in advance of the utilities program and budget planning. The timing of the PUCT establishing the annual avoided cost values creates problems for program planning, budgeting, marketing, and implementation. Currently, the avoided cost for demand and energy are published in November for programs that are to be launched the following January. SPEER proposes that the Commission determine and announce the avoided cost values at least one year in advance to allow for planning of programs and budgets.



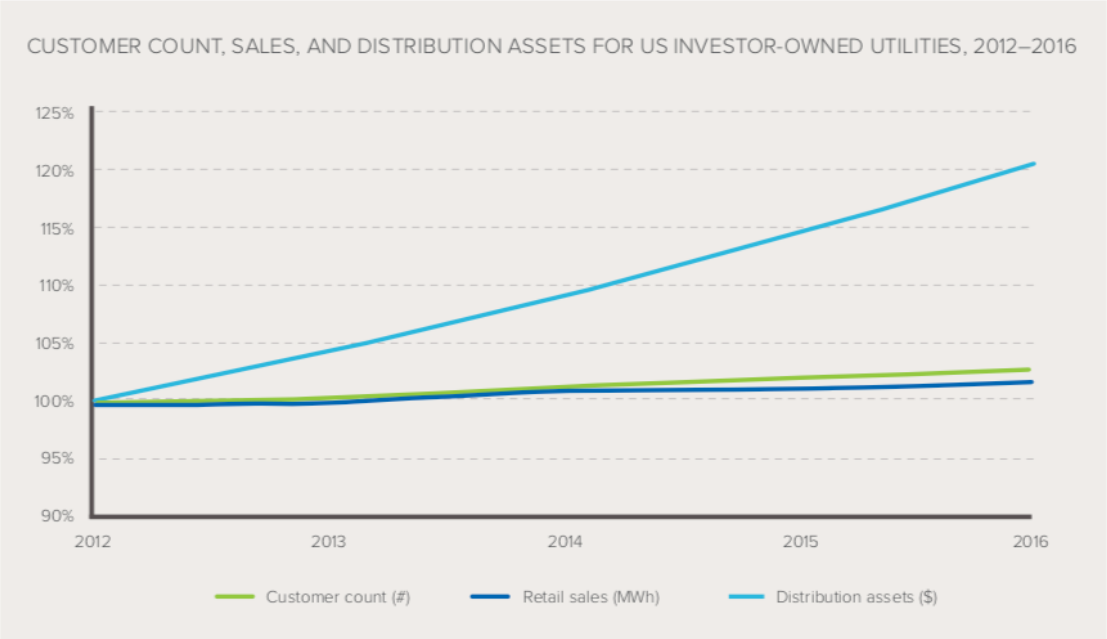
SPEER further suggests that the PUCT compare the value of energy efficiency with the total cost of supply, including at least the transmission and distribution costs. Changes to the avoided cost calculation were considered in 2008 by the PUCT, and should be considered again. FERC reports that transmission and distribution costs are making up more of the customers' costs, expanding from 22 percent of overall costs to 36 percent in just the last 10 years. We expect that it was close to 40 percent in 2018.



Good Company Associates commented and provided a whitepaper[13] in the 2008 PUCT rulemaking (Project 33487) showing demand reduction can substantially reduce the need for new transmission and distribution infrastructure. At the retail level, this can cost as much as $200-$600 per additional kW. High rates of growth require substantial investments in new facilities, and deferral of such investments provide all Texas consumers with financial benefits from reductions in TCOS and distribution rates.

Rocky Mountain Institute demonstrates the growing investment in distribution assets by IOUs in their recent report[14].

INVESTOR-OWNED UTILITY DISTRIBUTION ASSETS PER CUSTOMER ARE INCREASING DESPITE STAGNATING ELECTRICITY CONSUMPTION (DATA NORMALIZED SO 2012=100)



Source: RMI analysis of S&P global data

In the ACEEE 2015 Report - Everyone Benefits: Practices and Recommendations for Utility System Benefits of Energy Efficiency[15] they report that avoided transmission and distribution is a significant benefit of implementing energy efficiency and should always be considered. They found that only 6 of 45 program administrators in the jurisdictions reviewed did not include avoided cost of transmission and distribution.

[13] https://interchange.puc.texas.gov/Search/Documents?controlNumber=33487&itemNumber=25)
[14] https://www.rmi.org/insight/non-wires-solutions-playbook
[15] https://aceee.org/sites/default/files/publications/researchreports/u1505.pdf

Energy Trust of Oregon adds transmission and distribution savings and a "Risk Reduction Value" to avoided energy and demand values because they recognize that saving energy defers or eliminates capital expenses to expand and/or maintain transmission and distribution infrastructure, and EE Protects the grid from price risk/volatility[16]. The New England states produced the 2018 Avoided Energy Supply Component (AESC) Study[17], which similarly recommends a risk reduction value as well as a 55% load factor and other environmental values of energy efficiency.

SPEER recommends that the PUCT include transmission and distribution avoided costs, in addition to generation and fuel costs, when calculating energy efficiency programs avoided cost. SPEER further recommends the PUCT consider adding a reliability factor for peak demand reductions.

MULTI-YEAR PLANNING

Programs are currently planned, budgeted and implemented on an annual basis creating start/stop issues that likely impede customer participation. We find that a multi-year plan and program implementation would provide reasonably stable multiyear budgets and planning cycles that allow for mid-course modifications or adjusting programs to reach goals.

- Multi-year plans – reach annual goal by third year - with annual cost recovery and reporting, allowing for modification or true up. Rhode Island, Massachusetts, New Hampshire and Vermont use 3 year planning, and in some cases, for both electric and gas reductions.[18]
- Multi-year cost-effectiveness would allow new programs to ramp up and be evaluated on a longer-term basis.

MODIFICATIONS TO INCREASE REP PARTICIPATION

Retail Electric Providers (REPs) can play a limited role in providing energy efficiency solutions to their customers due to the length of energy contract agreements (1-2 years) with their

[16] https://www.energytrust.org/wp-content/uploads/2018/01/Electric-Avoided-Cost-Meeting-Presentation.pdf

[17] http://www.synapse-energy.com/sites/default/files/AESC-2018-17-080-Oct-ReRelease.pdf

[18] http://ma-eeac.org/plans-updates/ Massachusetts Department of Public Utilities uses three year planning. In addition to the three-year plans, mid-term modifications and annual implementation updates are also put in place to ensure program success. Other similar programs listed below
http://www.ripuc.org/eventsactions/docket/4684-NGrid-3YP-2018-2020-Presentation(10-25-17).pdf
Rhode Island is using three year planning.
https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/INITIAL%20FILING%20-%20PETITION/17-136_2017-09-01_NHUTILITIES_EE_PLAN.PDF New Hampshire is using three year planning.
https://puc.vermont.gov/energy-efficiency-utility-program/eeu-budgets-performance-goals-and-annual-plans
Vermont is using three year planning.

customers. This tends to limit REP participation to measures or programs with short return on investment or that add value in customer acquisition and retention at a reasonable cost.

Most REPs have customers in multiple IOU service territories, so they find an increased administrative burden of implementing programs with multiple IOUs. There is interest in developing simplified, statewide programs that could increase participation of the REPs and reduce the administrative burden.

With increased goals and greater avoided cost values, there will be larger program budgets that would help them expand programs to a larger customer base. If there are three-year plans, with some assurance of program continuation and funding, we may see an increase in participation by the REPs.

EXPAND PROGRAMS TO INCREASE CUSTOMER PARTICIPATION

SPEER recognizes that increased participation would be needed to reach higher goals, and possibly new measures, or new program design. For example, there may be an opportunity to develop future energy management programs by leveraging the third-party access to energy data through Smart Meter Texas. SPEER proposes the utilities be encouraged to use Requests for Information (using R&D funding) to seek opportunities to enhance or expand their existing programs.

PERFORMANCE BONUS

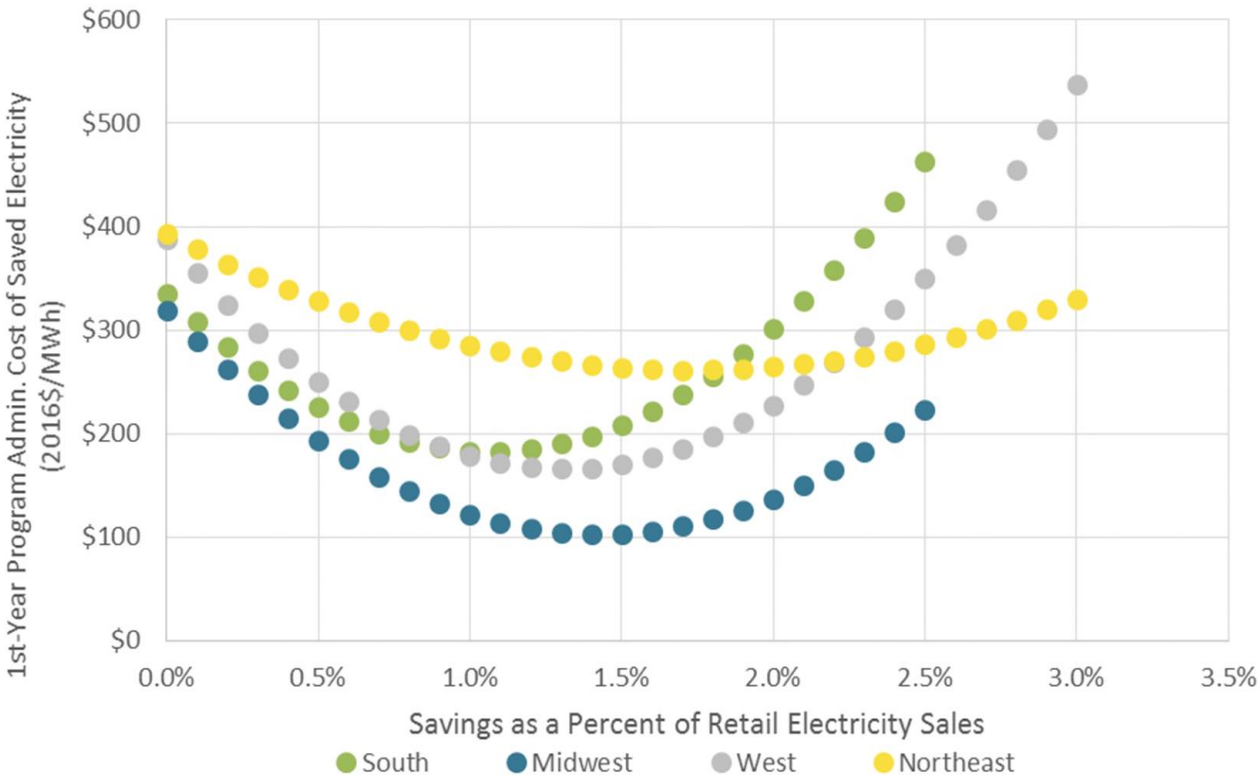
Bonus Calculation – Utilities are currently incented to achieve more than the required savings of their energy and demand goals through a performance bonus. The performance bonus, modified in rule in 2010, and again in 2012, is now based on a percent of net benefits. Net benefits is calculated as the sum of the avoided cost associated with the programs, minus the sum of all program costs. Utilities may receive 1% of net benefits for every 2% the demand goal is exceeded, up to a maximum of 10% of the utility's total net benefit. Basing the bonus on the demand goal has supported the increase in load management programs and encouraged cost effectively meeting both goals, but done little to encourage more energy efficiency investment.

The current bonus structure will need to be evaluated in reference to the increased goals, any change in avoided cost calculations, and the impact on the cost cap. Twenty-nine states now provide a performance incentive to utilities to encourage investment in energy efficiency programs, which supports the continued practice in Texas.

COST CAPS

There is a desire by all involved to keep customer charges as low as possible, but there is significant opportunity to reduce system costs, peak costs, reduce emissions, and provide reliable power at the lowest cost. To increase the goal, change the avoided cost calculation, or bonus structure will require an increase in cost cap, but because several of the utilities are not currently spending to the cost cap, we believe that it will not have to be doubled to achieve the increased savings recommended.

Below is a chart from a recent LBNL study demonstrating the regional cost curves for programs related to the amount of electricity saved. They report that 23 states saved 1% or more of their retail electric sales, from 2009 – 2015, and you can see that the cost goes down in every region until they have reached 1% - 1.5% of their retail energy. LBNL used regression analysis results by census region for first-year cost of savings vs. first-year savings as a % of retail sales based on data for 115 program administrators between 2009- 2015.[19] This research supports that the proposed change in the goal to .5% of energy sales (MWh) is very conservative and the future goal of 1% is still on the curve where costs are declining.



[19] https://emp.lbl.gov/publications/future-us-electricity-efficiency

There are efficiencies of scale that can provide for greater participation and multi-year planning and implementing of programs will address some of the market segments who have not participated in the past (e.g. commercial new construction, large ESCOs, and school districts).

MARKETING

More marketing will be needed to drive greater participation, both to encourage customers to seek incentives, and to recruit additional energy service providers (sponsors). This idea was considered by the PUCT in 2008 (Project #33487) and addressed in various comments. SPEER suggests there are two options:

- IOUs could be provided greater administrative budgets and authority through rule to market to a broader audience, or
- A third party marketing firm could be funded through the programs to reach customers and sponsors. The benefit to using a third-party marketing program is that it could be launched across the various service areas with singular messaging, eliminating confusion in the market between IOUs and REPs with customers.

CONCLUSION

There is currently a need for all potential resources to be expanded to meet the demand of our growing population. Energy Efficiency is the most cost-effective resource available and can be quickly ramped up to meet growing needs of the energy market. This can be done through rule by the PUCT, with several adjustments to improve the current programs and encourage greater participation in them. Rate-payers contributions to energy efficiency will improve grid reliability, reduce peak prices for all customers, and reduce air emissions from energy generation.

SPEER RECOMMENDATIONS

1. Adopt a new goal for energy efficiency programs to deliver savings of 0.5% of energy sales, with a plan to ramp up to 1% of energy sales by no later than 2030.
2. Evaluate the impact and contribution of the load management programs, and ways to engage these customers to meet our near-term resource adequacy challenge.
3. Allow cost-effectiveness to be evaluated at the portfolio level, rather than each individual program.
4. Consider a three-year planning, budget, and implementation cycle for programs.
5. Add the cost of transmission and distribution to the avoided cost calculation, and consider adding a reliability factor for peak energy savings. Provide utilities with the avoided cost a year ahead of program planning.
6. Develop new programs and outreach or marketing to increase awareness and participation.
7. Evaluate the bonus calculation to ensure the utilities are encouraged to exceed both demand and energy goals.
8. Adjust cost caps to allow for successfully meeting the new goal cost-effectively.