SPEER Review of the Texas IOU Energy Efficiency Programs 2005-2022

August 2022

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SPEER
The South-central Partnership for Energy Efficiency as a Resource

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:

The South-central Partnership for Energy Efficiency as a Resource (SPEER) has undertaken an historical review and examination of the utility energy efficiency programs since 1999 in Texas. This report will review recent history and policy actions stemming from Winter Storm Uri in 2021, determine the potential of energy efficiency programs broadly, and lastly dive into the current goals, achievements, and programs of Investor Owned Utilities (IOU) that operate in Texas. The intent of this report is to offer policymakers, academics, and other energy efficiency stakeholders with a clear, objective look at significant aspects of IOU energy efficiency programs and provide considerations for future policy decisions.

In 1999, Texas was the first state to establish an Energy Efficiency Resource Standard (EERS).[1] The EERS is designed to encourage states to achieve energy savings based on the amount of electricity and natural gas sold. Since then, 30 states have adopted an EERS goal for reducing energy consumption.[2] States that enacted energy efficiency programs are seeing the benefits. The Alliance for an Energy Efficient Economy (ACEEE) 2021 State Progress Report shows that in 2020 alone, the impact for state energy efficiency programs had a nationwide accumulated savings of 286 million MWh: 26.6 million MWh of incremental savings, equivilant to 7.69% of electricity consumption in 2020.[3] While Texas was the first state to implement such a goal, it has seen its state ranking fall to 29th according to the ACEEE annual report card.[4] By allowing other states to lead, Texas is losing not just ranking position, but more importantly missing out on substantive energy savings.

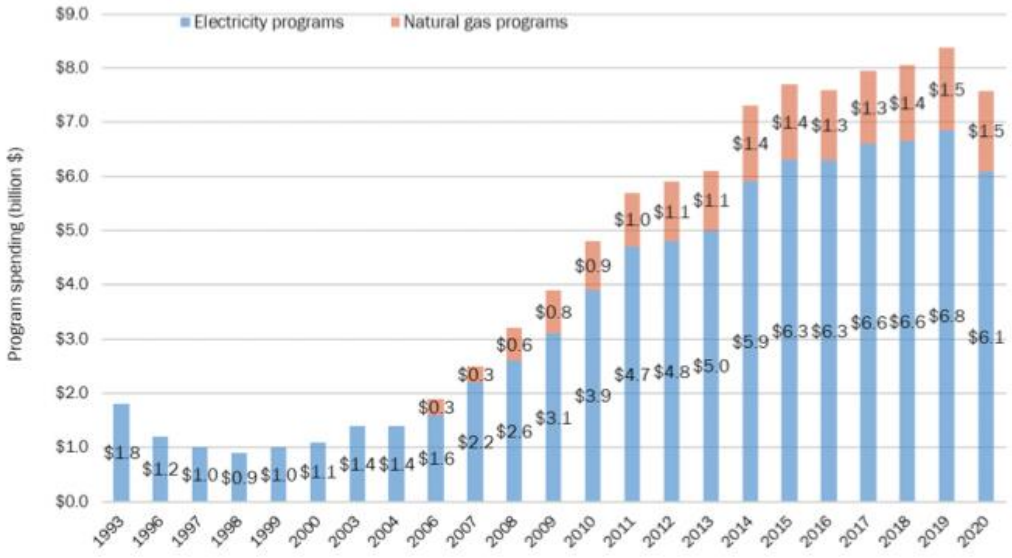

Figure 1: Annual electric and natural gas energy efficiency program spending[5]

[1] Laura Shields, G. D. B. (n.d.). Energy Efficiency Resource Standards (EERS). Retrieved May 9, 2022, from https://www.ncsl.org/research/energy/energy-efficiency-resource-standards-eers.aspx
[2] Ibid.
[3] Berg, W., E. Cooper, and M. DiMascio. 2022. State Energy Efficiency Scorecard: 2021 Progress Report. Washington, DC: ACEEE. Aceee.org/research-report/u2201.
[4] *Texas*. ACEEE. (n.d.). Retrieved May 9, 2022, from https://database.aceee.org/state/texas
[5] Ibid.

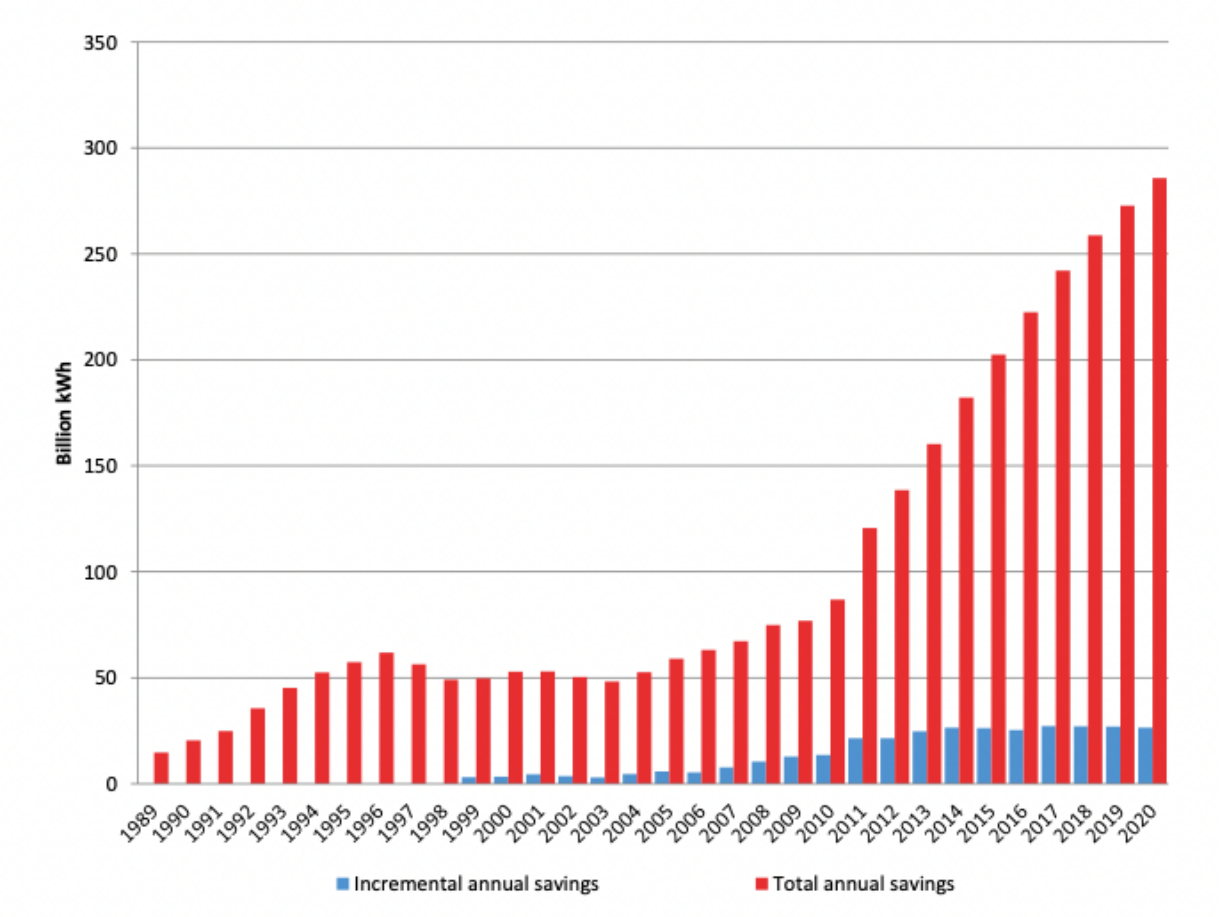

Figure 2: US electric savings from utility-sector energy efficiency programs, by year[6]

Though Texas policy makers did increase the savings goal in the early stages of the EERS program, since 2012 the statewide energy savings goals has not been changed. [7] In the last decade, energy efficiency solutions have made strides while the need for energy savings in the state has increased dramatically. The Texas population continues to grow with current census data showing the population in 2020 as 29.5 million people, a 16% increase since the 2010 census.[8] In addition to increased demand, Texas faces both extreme weather events in summer and winter peaks as well as general climate change effects annually. The Public Utility Commission of Texas (PUCT) has described the need for increased reliability as paramount in their efforts to fix the Texas grid in the aftermath to Winter Storm Uri.

[6] Berg, W., E. Cooper, and M. DiMascio. 2022. State Energy Efficiency Scorecard: 2021 Progress Report. Washington, DC: ACEEE. Aceee.org/research-report/u2201.
[7] https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.181/39674adt.pdf
[8] U.S. Census Bureau 2020. Quick Facts Texas. Retrieved from https://www.census.gov/quickfacts/TX

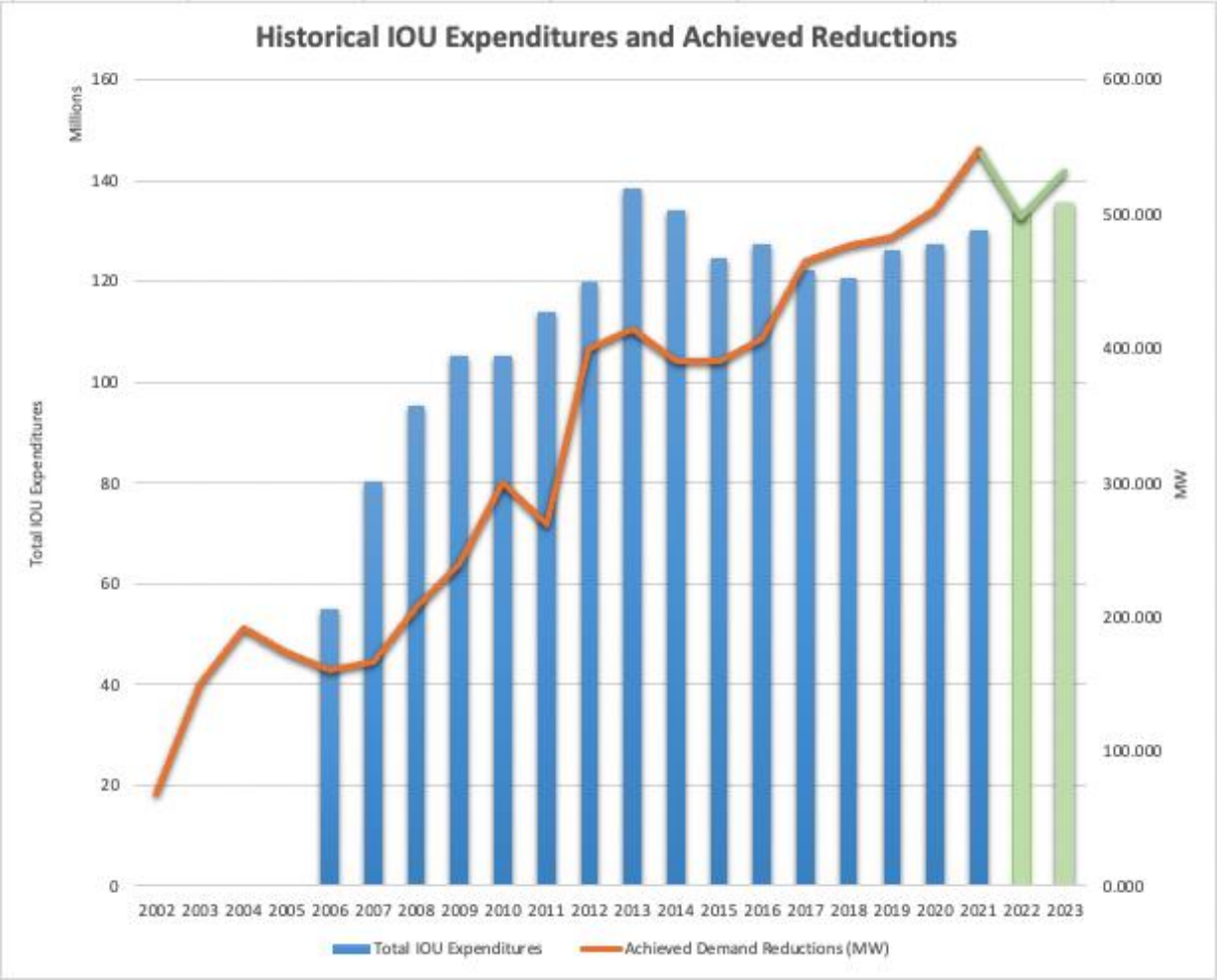

Figure 3: Texas IOUs Reported Total Expenditures and Achieved Demand Reductions from PUCT Filings; totals for 2022-2023 are projected.

Since 2012, Texas IOU expenditures have remained relatively flat, while achieved demand reductions continue to increase. Although Texas IOUs have exceeded their goals, there is significant untapped potential in energy efficiency than is currently being utilized. Potential increases in energy efficiency program spending could yield significant demand reductions for the state and a fraction of the costs of other generation sources. **The PUCTs EM&V contractor, reported the most recent cost effectiveness ratio to be 1:4. This means the avoided energy and demand was valued at more than four times the program cost to the utility (including incentives, administration, and bonus)**.

Over the past few years SPEER has engaged with stakeholders at all levels, including IOUs, Retail Electric providers (REPs), consumer advocates, energy service companies, product manufacturers, research organizations, consultants, program implementers, and energy efficiency advocates to identify areas of consensus, issues that may warrant additional discussion, and propose considerations to PUCT and lawmakers in future workshops, rulemakings, and the 88th Texas Legislative Session.

RECENT EVENTS:

COVID-19 Pandemic

The COVID-19 pandemic impacted the globe in ways in which we are still learning. In 2020 energy reduction reported savings nationally dropped 1.1% from 2019 levels. The pandemic also impacted workers, with over 600,000 in clean energy positions losing their jobs nationally.[9] Even with a decrease in reported savings, many states across the country used the pandemic to refocus efforts on clean energy policies. These efforts included passing legislation to decarbonize, reform home heating through fuel switching, or adopting updated energy codes among other considerations.[10] Federally, Congress passed the American Rescue Plan Act of and a $1 trillion infrastructure package (Infrastructure Investment and Jobs Act) which included provisions like $7.5 billion for electric vehicle charging infrastructure, $3.5 billion for weatherizing assistance programs for homes of low-income households, and $550 million for the Energy Efficiency and Conservation Block Grant Program.[11] The State of Texas stands to gain billions of dollars in federal funding for energy efficiency and associated programs as well as increased job opportunities for Texans.

Winter Storm Uri

Extreme weather events and increased climate change impacts are also affecting Texas' grid reliability. In February 2021 Winter Storm Uri left four million Texans without power services and more without water. The state's most recent estimate is that 246 people died due to the event.[12] As a direct result of the storm, Texas officials committed to increasing the reliability of the grid through several legislative and regulatory actions. The Legislature passed Senate Bill 3 which established an energy emergency alert system, formalized Texas energy reliability council, required weatherization for facilities, among several other items. Additional bills were passed aimed to increase the amount of appointed PUCT commissioners from three to five members, require independent audits for ERCOT, and addresses financing the cost of Uri.

The PUCT is responsible for the implementation of the above actions from the Legislature. The PUCT opened a Docket 52373 for their review of the wholesale electricity market. In December 2021, the Commissioners formally approved their two phased proposal to enhance reliability in the grid. Phase I focuses on provisions such as a firm fuel product, operating reserve demand curve, and demand response, which notably states the intention to set higher performance standards for energy efficiency programs. Phase II is a longer-term proposal reviewing market design options that are still currently being developed at the PUCT.[13] Changes to both Phases I and II are on-going as of the publication of this report.

Extreme Weather and Climate Trends

Texas is not immune to global trends and while the pandemic appears to be subsiding, extreme weather events will continue to test the Texas electric grid. In 2021, the state was subjected to 20 events including

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[9] Jordan, P. 2020. *Memorandum: Clean Energy Employment Initial Impacts from the COVID-19 Economic Crisis, April 2020*. Wrentham, MA: BW Research Partnership. e2.org/wp- content/uploads/2020/05/Clean-Energy-Jobs-April-COVID-19-Memo-FINAL.pdf.

[10] Berg, W., E. Cooper, and M. DiMascio. 2022. State Energy Efficiency Scorecard: 2021 Progress Report. Washington, DC: ACEEE. Aceee.org/research-report/u2201.

[11] Infrastructure Investment and Jobs Act, 2021

[12] Hellerstedt, John, M.D., Commissioner. 2021. *February 2021 Winter Storm-Related Deaths – Texas*. Retrieved May 10, 2022, from https://www.dshs.texas.gov/news/updates/SMOC_FebWinterStorm_MortalitySurvReport_12-30-21.pdf.

[13] http://interchange.puc.texas.gov/Documents/52373_268_1172004.PDF

flooding, hurricanes, tropical storms, wildfires, and Winter Storm Uri.[14] While these extreme events make headlines and bring hefty price tags, it must also be noted that the average temperatures continue to rise across the state. Temperatures have risen 0.6°F per decade. According to estimates from the Office of the Texas State Climatologists, by 2036 the average Texas temperature could be 1.8°F warmer than the averages from 1991-2020 and warmer than almost every year the state has experienced.[15] The State Climatologist also predicts double the amount of 100°F days in 2036. With higher temperatures, extreme weather events, and increased population the demand-side mechanics of the grid must be addressed.

ENERGY EFFICIENCY POTENTIAL:

The PUCT commissioned its last energy efficiency potential study in 2008, where Itron evaluated the Texas IOUs energy efficiency potential from 2008-2018.[16] Several other energy efficiency potential studies have been published from other organizations as well. ACEEE reviewed 45 various potential studies in 2014 to evaluate the remaining energy efficiency potential available after a decade of utility programs.[17] Most recently in 2017, the Electric Power Research Institute (EPRI) produced a national potential study.[18] 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 in the residential and commercial sectors.[19]

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. For background, 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.

The TRC test EPRI used 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, and the savings realized from the IOU Energy Efficiency Programs continuing at the same level.[20]

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[14] National Oceanic and Atmospheric Administration. 2021. *February 2021 Winter Storm-Related Deaths – Texas*. Retrieved May 10, 2022, from https://www.dshs.texas.gov/news/updates/SMOC_FebWinterStorm_MortalitySurvReport_12-30-21.pdf.

[15] (2021). (publication). *February 2021 Winter Storm-Related Deaths – Texas*. Retrieved May 10, 2022, from https://www.dshs.texas.gov/news/updates/SMOC_FebWinterStorm_MortalitySurvReport_12-30-21.pdf.

[16] http://www1.itron.com/PublishedContent/101324WP-01%20Texas%20EE%20Potential%20Study.pdf

[17] https://aceee.org/blog/2014/08/it-s-been-decade-we-last-looked-energ

[18] https://www.epri.com/#/pages/product/000000003002009988/?lang=en-US

[19] https://www.energy.gov/sites/prod/files/2017/05/f34/epri_state_level_electric_energy_efficiency_potential_estimates_0.pdf

[20] EPRI reported on the statewide economic potential. The IOUs service approximately 84% of the state's residential and commercial sectors (IOU Portion).

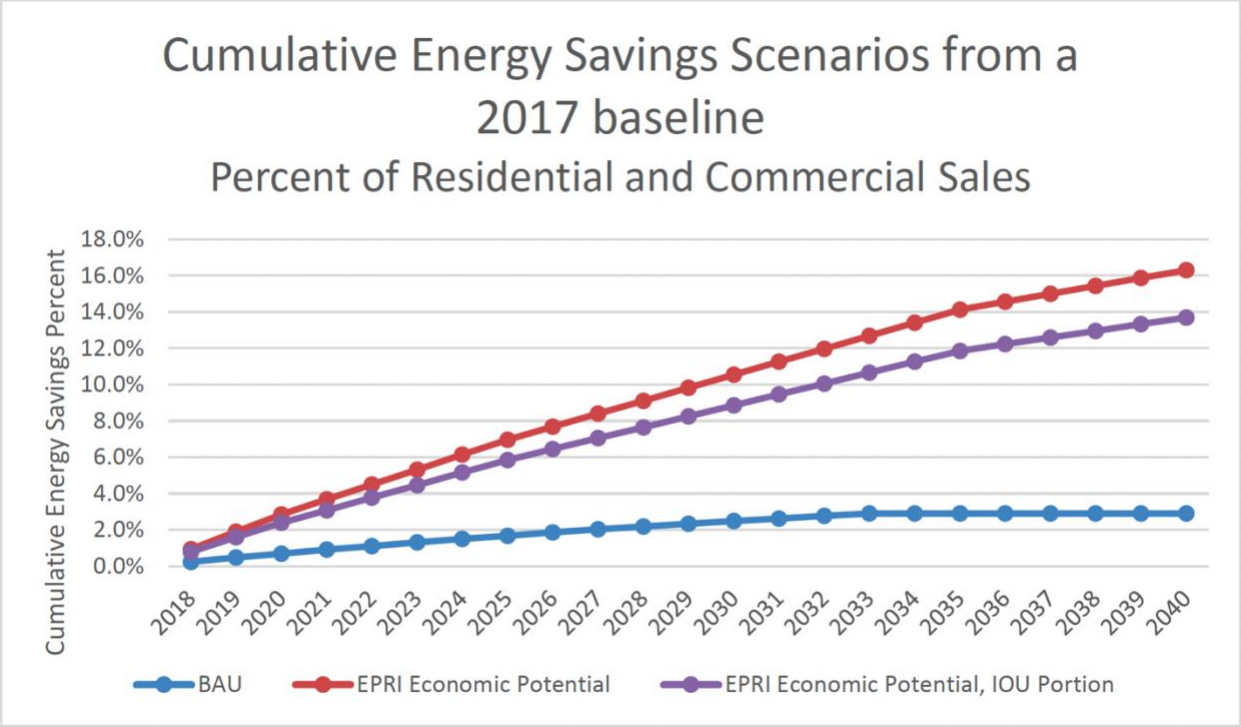

Figure 4: Cumulative energy savings scenarios

The National Efficiency Screening Project (NESP) provides a resource database, that shows that a number of states use multiple cost tests, because each test reflects very different values.[21] The TRCT identifies the potential for cost effective market penetration, not necessarily how much the utilities should contribute.

ACEEE's report "Cracking the Teapot" provides a good reference for the various cost effectiveness tests that utilities rely upon to evaluate energy efficiency programs.[22] This review goes into the details of the methodological approaches and assumptions of roughly 45 publicly available energy efficiency potential studies. It also notes some of the concerns found in the development of these studies, namely the need for more transparency. As a result, any future energy efficiency potential study commissioned by the PUCT or other stakeholders for Texas IOU programs should review previous studies and methodologies to ensure transparent and accurate information is utilized.

JOB GROWTH AND ECONOMIC OPPORTUNITY:

While energy efficiency offers a variety of benefits to Texas such as energy savings as mentioned above, it's also important to review the economic opportunities and job growth potential for the industry. The US Department of Energy (DOE) reported in the 2022 United States Energy and Employment Report (USEER) that energy sector employment growth in 2021 outpaced the US workforce growth rate year over year. Energy efficiency jobs specifically grew nationally by 2.7% or 57,741 jobs from 2020 to 2021.

[21] https://nationalefficiencyscreening.org/state-database-dsesp/

[23] United States Department of Energy. (2022). United States Energy & Employment Report 2022. Retrieved July 29, 2022, from https://www.energy.gov/sites/default/files/2022-06/USEER%202022%20National%20Report_1.pdf.

Texas added 6,771, or 11.7% of new jobs nationally in energy efficiency the last year.[23] This represents a 4.5% increase in Texas energy efficiency job growth from last year. For context, Texas currently has over 158,000 jobs in the sector.

As federal funds become available to states and localities, it is incredibly important for Texas to position itself to leverage these dollars where applicable. Increased efficiency will enhance grid stability and facilitate continued job creation. However, with job growth opportunities also comes challenges. Most notably, the challenge to find and hire qualified employees. The USEER 2022 showed on average 80% to 91% of employers reported it to be "very difficult" or "somewhat difficult" to hire qualified workers. There are specific grant funding opportunities providing training and education set to begin accepting applications by the end of 2022 at DOE. By building out energy efficiency programming now, Texas may be able to better capitalize on federal dollars intended for investing in efficiency over the next few years.

CONTRIBUTION TO GRID RELIABILITY:

Reliability has been identified by the PUCT as a key component to addressing Texas grid needs moving forward. When extreme weather events occur in both summer and winter, as well as increased average temperatures, limited reserves will continue to be a concern. As the PUCT reforms the competitive market, 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. Identifying geo-targeting constrained infrastructure needs combined with targeting both summer and winter peak hours, energy efficiency programs can reduce or defer infrastructure expenditures, which can help stabilize customer rates.

The Federal Energy Regulatory Commission (FERC) and North American Electric Reliability Corporation (NERC) confirmed this belief in their regional entity staff report on Winter Storm Uri. A recommendation made in the report is to develop retail-level incentives for energy efficiency improvements through regulatory or legislative action.[24] Addressing low-income and multi-family homes heating and cooling needs with energy efficiency retrofits of HVACs, heat pumps, smart thermostats, and/or insulation could significantly reduce demand from populations that disproportionately shoulder the burden of energy consumption. **Focusing on residential and small commercial loads in both summer and winter peaks through these energy efficiency solutions will have a direct impact on peak load reduction as those are the two customer types that contribute most of the peak demand according to ERCOT.** Supporting this recommendation, EPRI's energy efficiency potential study identified space cooling to have the most potential to lower demand through increased efficiency, as seen in Figure 5 below. Addressing these needs will substantially benefit Texas in the future by reducing peak demand in both winter and summer peaks while also reducing demand.

[23] United States Department of Energy. (2022). United States Energy & Employment Report 2022. Retrieved July 29, 2022, from https://www.energy.gov/sites/default/files/2022-06/USEER%202022%20National%20Report_1.pdf.

24 (2021). (rep.). The February 2021 Cold Weather Outages in Texas and the South Central United States. Retrieved May 10, 2022, from https://www.ferc.gov/media/february-2021-cold-weather-outages-texas-and-south-central-united-states-ferc-nerc-and.

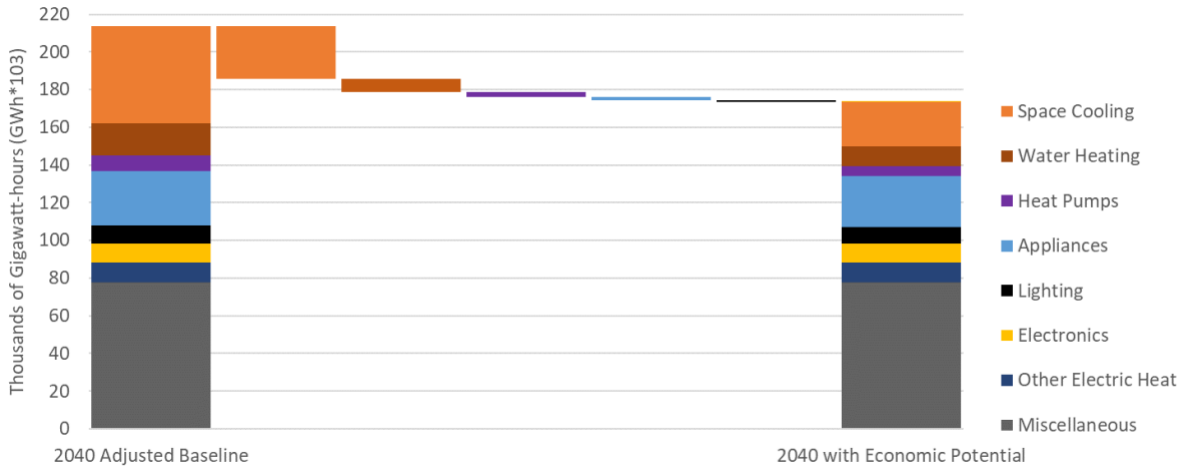

Figure 5: Texas Residential Economic Potential End-Use Summary Relative to the Adjusted Baseline[25]

CURRENT RULES AND GOALS:

The initial EERS goal established in 1999 was 10% of load growth, to address forecasted demand growth in the early years of the deregulated market. By 2007, the goal has been raised to 20% of load growth and raised again three years later by the PUCT to 30%. The state legislature took the additional step of adding a trigger mechanism the following year, 2011, so that once IOUs 30% load growth goal was equivalent to 0.4% of peak summer demand the new goal would then be 0.4% of summer peak demand. The goal in Texas has not been amended in statute or rule since 2012. To date, the IOUs have exceeded their MW goal every year, however not all IOUs have reached the trigger due to lower than expected load growth in their respective service territories.

[25] https://www.epri.com/#/pages/product/000000003002009988/?lang=en-US

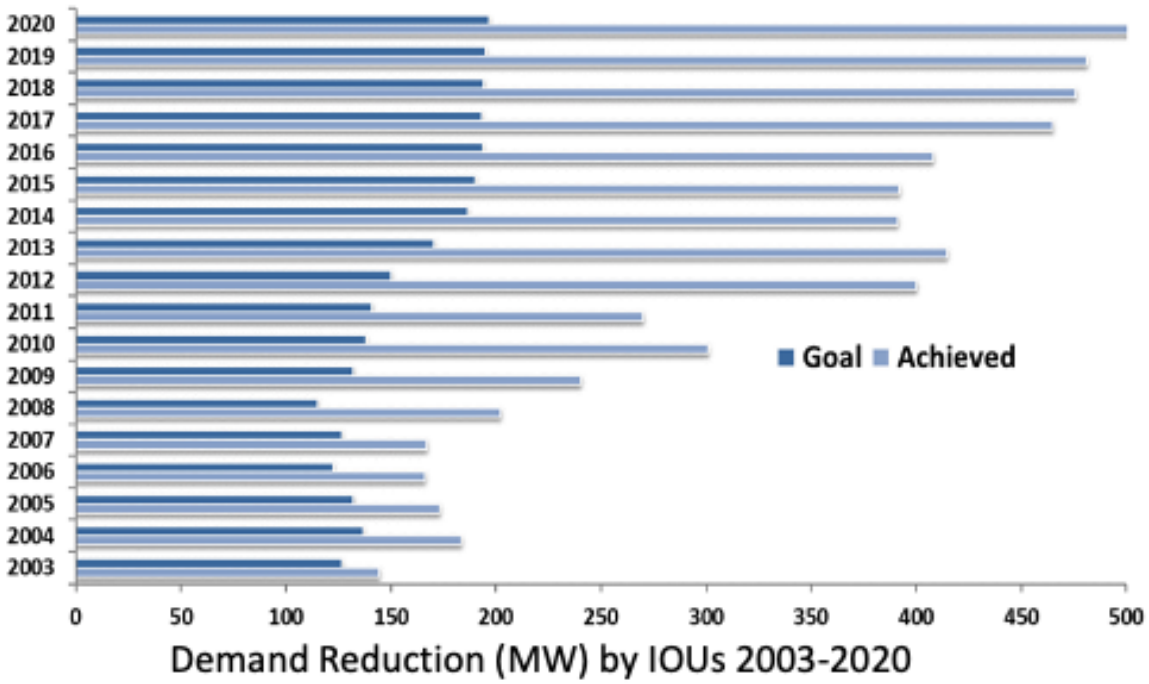

Figure 6: EM&V Reported Demand Reduction[26]

When the energy efficiency (MWh) goal was established in 2008, it was based on a 20% load factor, to set the bar for utilities to earn 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. 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 contributions.***

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. As of 2020, Texas' electric savings by percent of 2020 retail sales was 0.21% which is consistent with previous years savings.[27] Texas trails neighboring and nearby states like Arkansas, Iowa, New Mexico, and Arizona in addition to more traditionally aggressive energy saving states in the northeast and western United States.

[26] http://www.texasefficiency.com/images/documents/Publications/Reports/EnergyEfficiencyAccomplishments/EEPR2020.pdf

[27] *State Energy Efficiency Scorecard: 2021 Progress Report - Aceee.org*. (n.d.). Retrieved May 12, 2022, from https://www.aceee.org/sites/default/files/pdfs/u2201.pdf

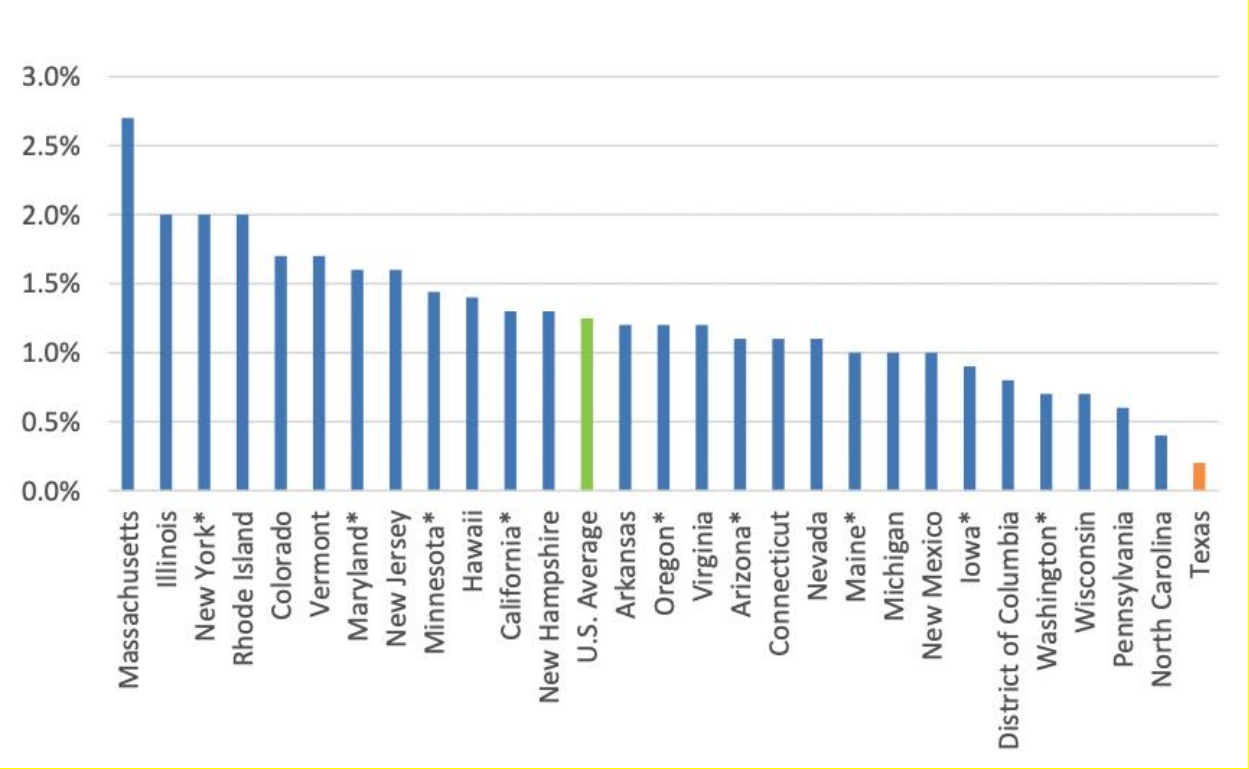

Figure 7. Annual electricity savings as a percent of state energy MWh sales per state EERS policies[28]

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 2020, however still less than the U.S. average. Increasing the goal would not necessarily increase the spending to savings ratio under the UTC. SPEER also analyzed the impacts of a savings goal of 1% of energy sales for the state. This additional analysis determined that by 2025, the state could save over 1,800 MW, which is equivalent to approximately 829,840 homes.[29] Legislation has been filed in previous years to increase the goal but has not been passed. In 2021, SB 243 gained some traction and received a committee hearing, this bill would have raised the goal to 1% of total sales by 2025 through incremental increases. However, it was left pending in committee.

The PUCT is reviewing options in Docket 52373 for the wholesale electric market redesign. As previously mentioned under the Phase I proposal, energy efficiency programs will be included in this redesign. The language in the approved proposal is ambiguous to stakeholders. Commissioners have signaled their interest in opening a rulemaking process to review the energy efficiency rules to "set higher performance standards" for these programs. The appetite for increasing the goals may be limited currently, however there are still impactful changes that can be made without necessarily increasing the goal.

[28] Nadel, S., Gerbode, C., & Amann, J. (2021, October). *Energy efficiency and demand response: Tools to address Texas's* ...Retrieved May 12, 2022, from https://www.aceee.org/sites/default/files/pdfs/energy_efficiency_and_demand_response_for_texas_10-13-21_final_0.pdf

[29] https://eepartnership.org/wp-content/uploads/2021/03/Fact-sheet_-Raise-Energy-Efficiency-Goals-in-Texas.pdf

POTENTIAL AREAS OF IMPACT:

LOW-INCOME AND HARD-TO-REACH CUSTOMERS

The Texas energy efficiency goal includes provisions requiring expenditures for low-income customers to be no less than 10% of the IOUs energy efficiency budget for the program year.[30] Currently, 13.4% of Texans are considered low-income while some estimates have the number north of 15%. The burden of energy costs disproportionately impacts median to low-income individuals as much as three times more than those considered non-low-income.[31] This is a result of older home stock with few efficiency improvements driving up energy consumption.

With a potential influx of federal funds stemming from the American Rescue Plan Act and Infrastructure Investment and Jobs Act, Texas has the opportunity to utilize targeted efforts to retrofit and/or weatherize existing low-income and multifamily housing across the state. Utility administered energy efficient retrofits and weatherization of low-income homes are used on approximately 19,000 Texans homes annually.[32] Like Texas, many states have implemented funding requirements to target low-income and hard-to-reach customers for energy efficiency programs. Some of these states have developed cost effectiveness rules that are proportional to the added benefits associated with low-income programs as they recognize that low-cost solutions reduce energy waste and burden while increasing resiliency.[33]

BUILDING CODE UPDATES:

In 2014 nearly two-thirds of Texas homes were at least 20 years old. As a result, this older building stock was much less resilient, reliable, and efficient as new builds are today. The large number of inefficient buildings across the state play a key role in making Texas the nation's leader in energy consumption. According to the State Energy Conservation Office, buildings account for 40% of the state's total energy use and 70% of electric usage. When buildings are not up to code there are issues like heated or cooled air leaking out of the home forcing HVAC systems to work harder for longer.

Upgraded codes offer consumers more efficient products and homes, and lower energy bills. Even the lowest-cost EE programs can provide huge benefits such as all-LED lighting, weatherization, increased insulation, and much more. Ensuring adequate building envelopes will also aid in administering energy efficiency program dollars so that low-income households will not be turned away for non-energy efficiency compliance reasons. Recognizing Texas as a home rule state, SPEER recommends encouraging municipalities to consider updating their building codes and to enforce building codes already on the books is essential for Texas to implement efficiency measures that provide significant savings.

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[30] TAC Title 16, Part II, Electric Substantive Rules §25.181

[31] Drehobl, A., Ayala, R., & Ross, L. (n.d.). *September 2020 how high are household energy burdens? - ACEEE*. Retrieved May 13, 2022, from https://www.aceee.org/sites/default/files/pdfs/u2006.pdf

[32] Wood, P., Gee, R. W., Walsh, J., Perlman, B., Klein, B., & Silverstein, A. (2021). (rep.). *Never Again: How to prevent another major Texas electricity failure*. Retrieved May 12, 2022, from https://cgmf.org/blog-entry/435/REPORT-%7C-Never-Again-How-to-prevent-another-major-Texas-electricity-failure.html.

[33] *Supporting low-income energy efficiency: A guide for utility regulator*. ACEEE. (2021, April 28). Retrieved May 13, 2022, from https://www.aceee.org/toolkit/2021/04/supporting-low-income-energy-efficiency-guide-utility-regulators

DEMAND RESPONSE AND 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.

Several Texas IOUs currently offer demand response and load management programs through both their standard offer and market transformation programs and SB 3 allows for utilities to develop load management programs for emergency situations. However, we believe more can be done. Several stakeholders and advocates have pushed the idea for residential and small commercial customers compensation for additional demand response needs.[34] Under current rules, industrial customers who participate in DR programs are compensated for reducing their consumption. However, the largest portion of both summer and winter peak loads, over 70%, come from the residential and small commercial customer classes. This is a result of poorly insulated and inefficient older buildings usage in these customer classes. Incentivizing all customer class participation to reduce load through compensation should yield significant results to the demand response and load management programs.

Additional program enhancements were identified by ACEEE that could net the state thousands of MW in summer peak conditions and almost one thousand MW in winter peak over the next five years such as Central AC demand response, water heater demand response, and electric vehicle managed charging.[35] They noted that expanded and new demand response programs tend to have high retention rates and even longer-term retention with strong communication efforts by providers. Coordination with REPs to refine existing programs, developing new ones, and increasing customer engagement may alleviate some adequacy concerns. Programs like those discussed in the ACEEE report cost more than 50% less than the funds needed for new gas plants, with peak reduction for 10-20 year measure lives.[36]

EEIP WORKSHOPS:

SPEER appreciates the opportunity to participate with the Energy Efficiency Implementation Project working group in biannual meetings which allows for increased stakeholder engagement in the utility program planning and performance. SPEER continues to encourage and support new program development as well as increased participation from external stakeholders in the development of the updated Technical Reference Manual.

COST EFFECTIVENESS:

Consider 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

[34] Wood, P., et al.
[35] Nadel, S., Gerbode, C., & Amann, J. (2021, October). *Energy efficiency and demand response: Tools to address Texas's* ...Retrieved May 12, 2022, from
[36] Nadel, S., Gerbode, C., & Amann, J. (2021, October). *Energy efficiency and demand response: Tools to address Texas's* ...Retrieved May 12, 2022, from

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 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.

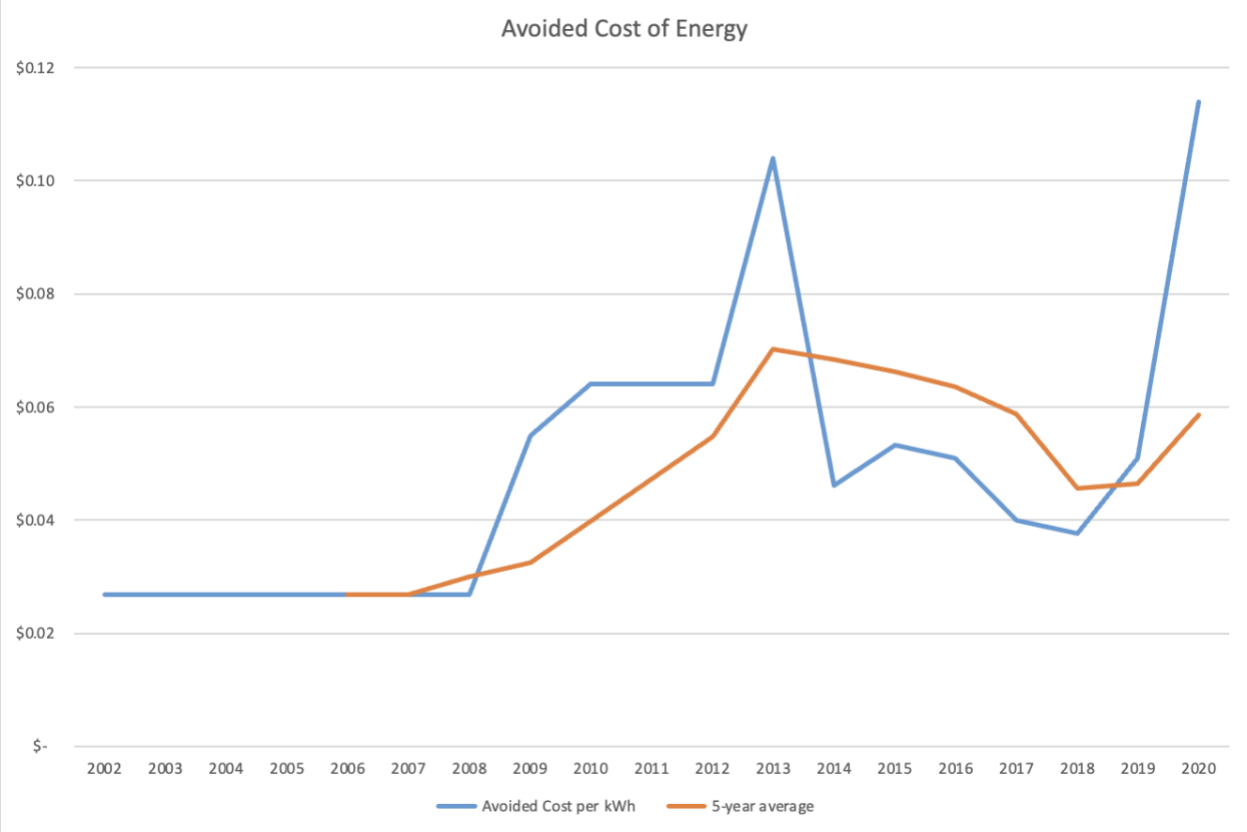


Figure 8: Historical avoided cost of energy for Texas and 5 year average from PUCT filings

SPEER further suggests that the PUCT compare the value of energy efficiency with the total cost of supply, including at minimum 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, with a 65% increase in 2020 over that of 2010.[37]

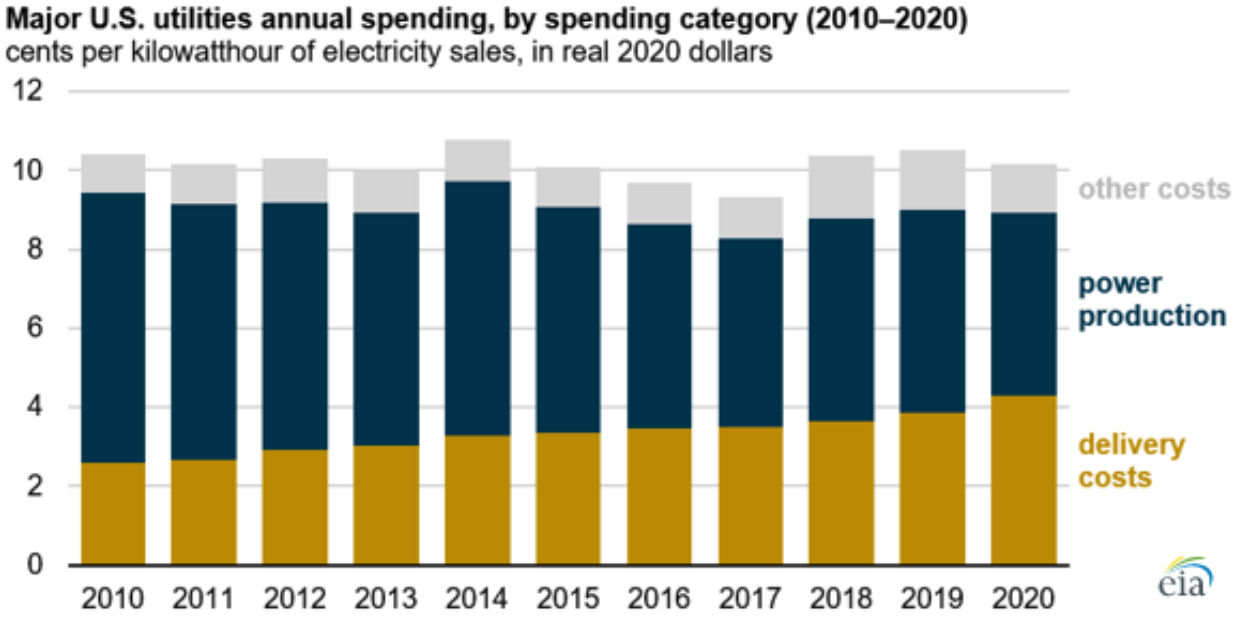


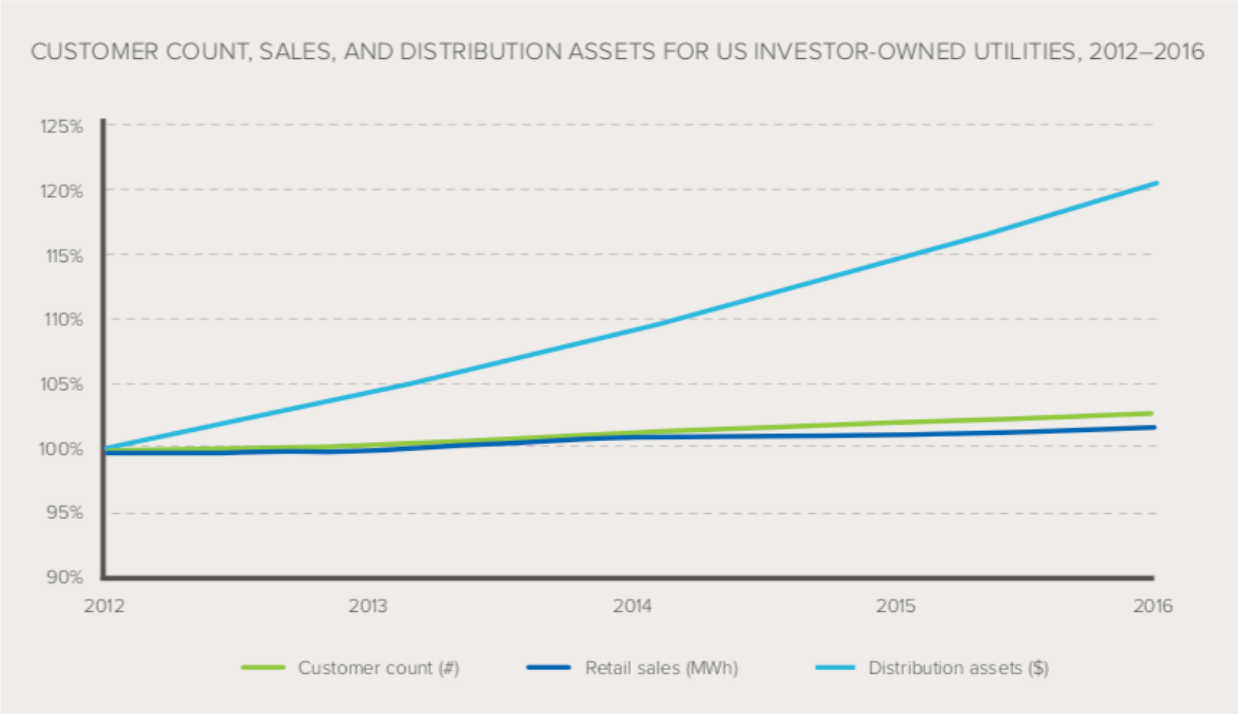
Figure 9: U.S. Energy Information Administration, based on data from Federal Energy Regulatory Commission (FERC) Financial Reports

Good Company Associates commented and provided a whitepaper in the 2008 PUCT rulemaking (Project 33487) showing demand reduction can substantially reduce the need for new transmission and distribution infrastructure.[38] **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.[39]

[37] https://www.eia.gov/todayinenergy/detail.php?id=50456
[38] https://interchange.puc.texas.gov/Search/Documents?controlNumber=33487&itemNumber=25
[39] https://www.rmi.org/insight/non-wires-solutions-playbook

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

Figure 10: Rocky Mountain Institute IOU distribution assets owned vs customer and retail sales

In the ACEEE 2015 Report - Everyone Benefits: Practices and Recommendations for Utility System Benefits of Energy Efficiency they report that avoided transmission and distribution is a significant benefit of implementing energy efficiency and should always be considered.[40] They found that only 6 of 45 program administrators in the jurisdictions reviewed did not include avoided cost of transmission and distribution.

Some states add 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.[41] Synapse Energy Economics, Inc. produced the 2018 Avoided Energy Supply Component (AESC) Study, which similarly recommends a risk reduction value as well as a 55% load factor and other environmental values of energy efficiency.[42]

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.

[40] https://aceee.org/sites/default/files/publications/researchreports/u1505.pdf
[41] https://www.energytrust.org/wp-content/uploads/2018/01/Electric-Avoided-Cost-Meeting-Presentation.pdf
[42] http://www.synapse-energy.com/sites/default/files/AESC-2018-17-080-Oct-ReRelease.pdf

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 multi-year 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. Multi-year planning is similar to other states that have implemented three-year planning cycles.[43]
- 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 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. Additional opportunities as mentioned in the section on demand response and load management to provide compensation for customer participation. 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.

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[43] 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.

PERFORMANCE BONUS:

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 by rule in 2010, and again in 2012, is now based on a percent of net benefits. Net benefits are 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 in the long-term.

The current bonus structure will need to be evaluated in reference to the Phase I performance standard review of energy efficiency programs or for any change in avoided cost calculations. Twenty-nine states now provide a performance incentive to utilities to encourage investment in energy efficiency programs, which supports the continued practice in Texas.

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.

UPSTREAM AND MIDSTREAM PROGRAMS:

Incentive structures for energy efficiency programs on the recipient is in regard to the supply chain. Upstream incentives are provided to manufactures, downstream incentives are provided to end users, and midstream incentives are provided to distributors and contractors who operate between the manufacture and end users. The change from downstream incentives to midstream has seen increases in sales of energy efficient LED lighting by 150%.[44] These programs have shown to be effective by incentivizing manufactures and contractors to sell more efficient solutions that customers do not know about. States like Connecticut and Vermont have been utilizing these models to great success which reduced administrative burden on end users and removed all need for paperwork altogether.[45] Meanwhile California, Massachusetts, New York and others have implemented HVAC upstream programs in recent years.[46] Several IOU's in Texas has also embraced the upstream/midstream incentives as well as seen in Figure 11 below.

[44] Buege, A., L. Scheidler, K. Grabner, Itron, and Navigant. Row, Row, Row Your Commercial Lighting Program Simply Down the (Mid)-Stream? Proceedings of 2014 ACEEE Summer Study on Energy Efficiency in Buildings.
[45] https://www.aceee.org/files/proceedings/2016/data/papers/7_888.pdf
[46] https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9407366

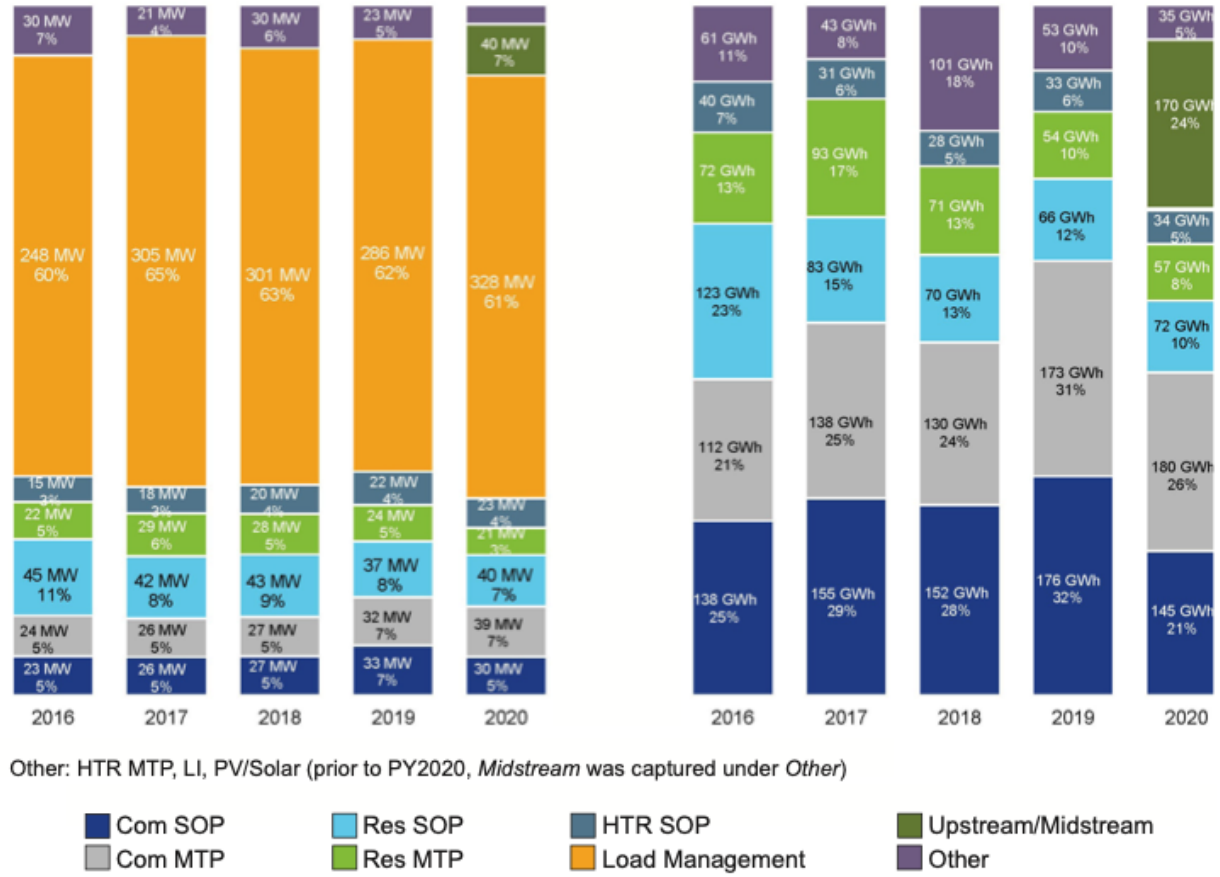

Figure 11: Evaluated Gross Demand Reduction and Energy Savings by Program Type[47]

As of 2020 upstream/midstream programs account for 7% of gross demand reduction and 24% of energy savings. This increase is enough to be the second largest contributor to energy savings behind only commercial market transformation programs.

SPEER recommends further usage and evaluation of upstream/midstream programs. Furthermore, aligning marketing strategies with higher performing energy efficiency improvements like variable speed heat pumps may yield greater returns in energy savings in future years.

CONCLUSION:

There is currently a need for all potential resources to be expanded to meet the demand of our growing population and increase the reliability of our grid in the wake of rising temperatures and extreme weather in all seasons. 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.

[47] http://www.texasefficiency.com/images/documents/RegulatoryFilings/DeemedSavings/py2020summary.pdf

RECOMMENDATIONS:

1. Allow cost-effectiveness to be evaluated at the portfolio level, rather than each individual program.
2. Consider a three-year planning, budget, and implementation cycle for programs.
3. 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.
4. Review statewide building codes and encourage adoption of newer standards.
5. Evaluate and expand upstream and midstream incentive programs in accordance with higher performing energy efficiency improvements.
6. Consider commissioning an updated energy efficiency potential study to review the merits of possible incremental increase to goals from 0.4% to 0.8%.
7. Review low-income and hard-to-reach goals to maximize added benefit for energy efficiency while reducing energy burden on the most vulnerable.
8. Evaluate the impact and contribution of the load management programs, and ways to engage these customers to meet our near-term resource adequacy challenge. Consider residential and small commercial compensation for participation.
9. Evaluate the bonus calculation to ensure the utilities are encouraged to exceed both demand and energy goals.
10. Develop new programs and outreach or marketing to increase awareness and participation.