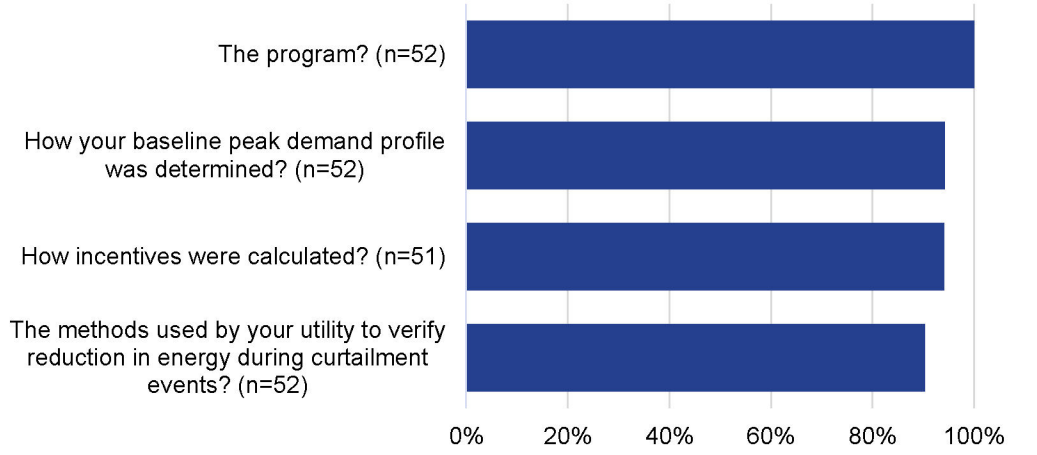
Familiarity with the program and program components is high. Surveyed respondents were asked to rate their familiarity with the program and program components using *very familiar*, *somewhat familiar*, or *not at all familiar*. All respondents expressed some level of familiarity with load management programs. Respondents were slightly less knowledgeable in their understanding of other program details. Specifically, a portion of respondents said they were *not at all familiar* with the calculation of incentives (six percent), determination of baselines (six percent), and verification of demand reduction during curtailment events (ten percent). Figure 33 shows the percentage of respondents who were either *very* or *somewhat familiar* with the program and program components.

Figure 33. Percentage of Respondents Who Were *Very* or *Somewhat Familiar* with the Program and Program Components



Source: Questions A2, A3, A3a, and A4. *Don't know* and *refused* are excluded.

When asked what they wish they understood better about the program, 32 respondents said *nothing*. Among the remaining 20 participants, the top four answers included how savings and incentives are calculated (n=8), how the utility determines to call a curtailment event (n=4), more information about winter load management (n=3), and how the program can align with ERCOT events (n=2).

The Curtailment Process

Respondents were asked how they were notified of curtailment events in PY2022 (they could provide answers for more than one notice method). Forty-eight percent of respondents said they received program emails, 25 percent received texts, and 35 percent received phone calls. All 47 respondents who could recall the event notifications said the communications were *very* or *somewhat effective*.

Fifty percent of respondents said that they were able to reduce their energy usage for all program events. The actual amount of curtailable load reported by respondents varied and ranged anywhere from 0 to 99 percent of peak load. Table 22 displays the range of answers presented by the surveyed respondents. Just over one-third of respondents (36 percent) who could recall the amount of load shed during PY2022 events indicated they shed between 26−50 percent of their load.

Table 22. Average Percentage of Peak Energy Demand Load Shed During PY2022 Curtailment Events

Average percentage shed	Percentage of respondents
0%	5%
1 to 10%	5%
11 to 25%	18%
26 to 50%	36%
51 to 75%	9%
76 to 99%	5%
100%	0%
Respondents (n)	**17**

Source: Question PA0. Only respondents who were able to curtail load were included in this table. *Don't know* and *refused* responses are excluded.

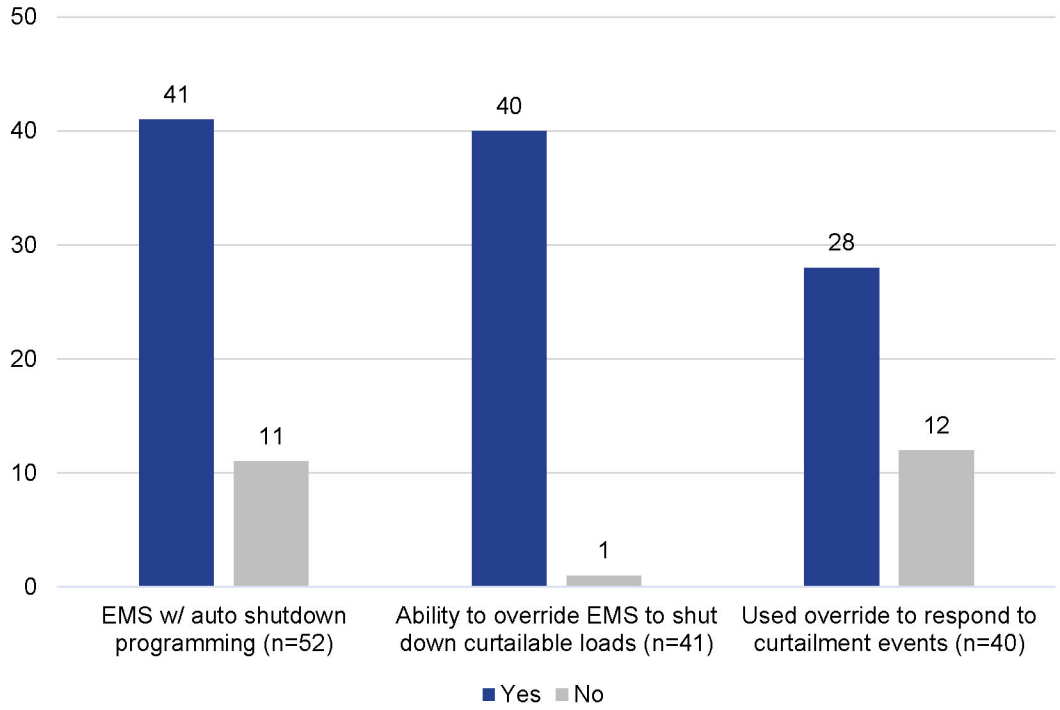
Nearly one-third of respondents (32 percent) who curtailed load indicated that demand reductions were manually operated; others indicated that such reductions were either fully automated (27 percent) or partially automated (41 percent). Seventy-nine percent of respondents who participated in PY2022 curtailment events reported no loss in *personal comfort or productivity* for themselves or the building occupants because of demand reduction actions. In comparison, 12 percent confirmed they did experience some loss or discomfort due to program participation. When probed to understand the program impacts, three respondents who confirmed some loss or discomfort due to program participation categorized it as feeling warm and/or uncomfortable; one respondent indicated a loss in production.

Most respondents (70 percent) recalled experiencing one to three curtailment events during the season. More than one-half of respondents (60 percent) reported that the number of events met expectations, 37 percent indicated there were fewer events than expected, and 3 percent of respondents reported that the number of events was more than expected.

Energy Management Systems

The EM&V team included several questions to understand if program participants have energy management systems (EMS) and how they are used during curtailment events. Figure 34 illustrates the respondents' capabilities using their EMS during curtailment events. Seventy-nine percent of respondents indicated that their facility has an EMS that can be programmed to automatically shut down certain operations during scheduled times. Of those respondents with EMS systems, 98 percent had the ability to override their EMS to shut down curtailable loads for the events called by the utility program. Seventy percent of respondents with override capability indicated they used override during an event. Although 70 percent (28 respondents) indicated they used the override function, only 7 respondents were able to remember how many events they used override to curtail. Six respondents indicated they used the override function for all events, and one indicated using it for only one event.

Figure 34. Participant Energy Management System (EMS) Capabilities



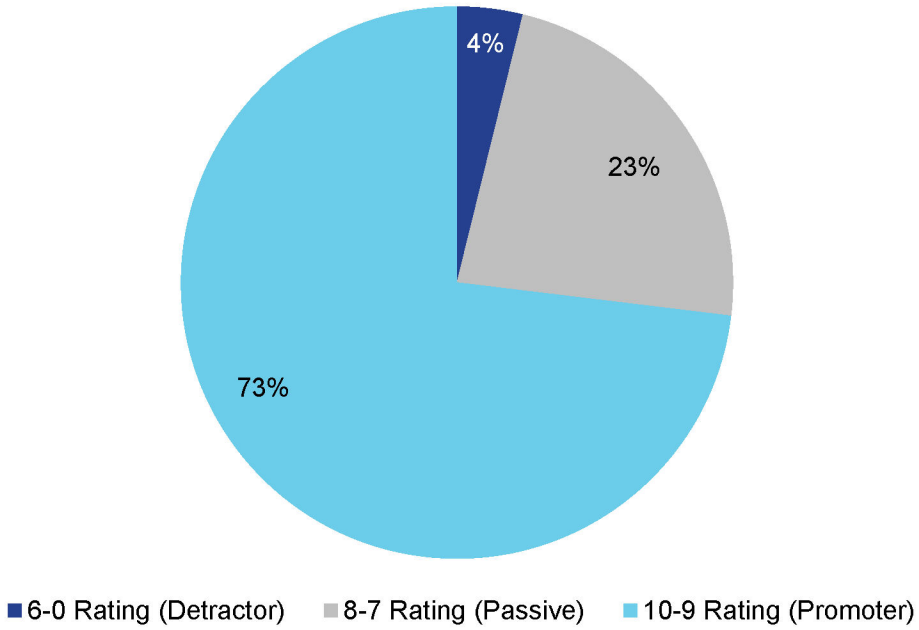
Source: Questions EM1, EM2, and EM3. *Don't know*, *refused*, and *not applicable* responses are excluded.

Customer Satisfaction

Satisfaction with the electric utility as an energy provider is high. Respondents were asked to rate their overall experience and satisfaction with their electric utility (not just with the program) on a scale of 0 to 10, where 0 was *very dissatisfied*, and 10 was *very satisfied*. Seventy-six percent of the respondents rated their overall experience and satisfaction with their utility a 9 or more. The overall mean satisfaction score with the utility was 9.3 on the 10-point scale. The lowest score (a score of 5) was provided by one respondent. When asked to provide a reason for the low score, the respondent mentioned that they lost their point of contact and that power is still out in certain areas.

Surveyed respondents were also pleased with the commercial load management program, and overall program satisfaction was high. Seventy-three percent rated their overall program satisfaction a 9 or more, resulting in an overall mean satisfaction score of 9.2 on a scale of 0 to 10, where 0 was *very dissatisfied,* and 10 was *very satisfied*. Figure 35 provides an overview of program satisfaction. The lowest score (a score of 5) was provided by one respondent. When asked to provide a reason for the low score, the respondent did not provide an answer.

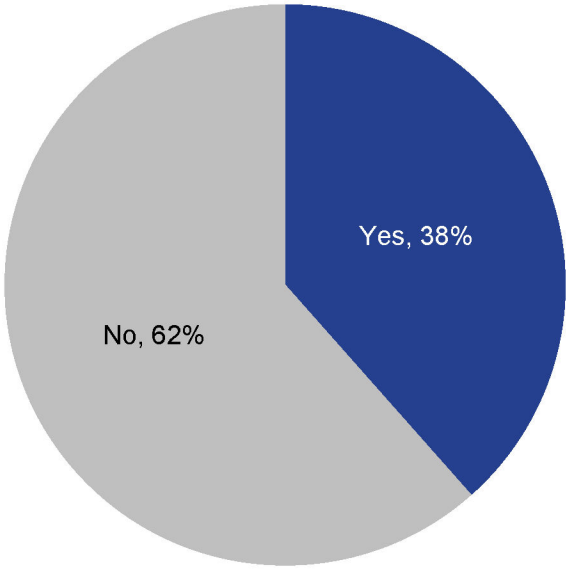
Figure 35. Overall Program Satisfaction (n=52)



Source: Question SAT2.

While there was high utility and program satisfaction, less than one-half (38 percent) of respondents have recommended the program to others, as presented in Figure 36.

Figure 36. Percentage of Respondents that Recommended Program to Others (n=52)



Source: Question SAT5.

Suggestions for Improvement

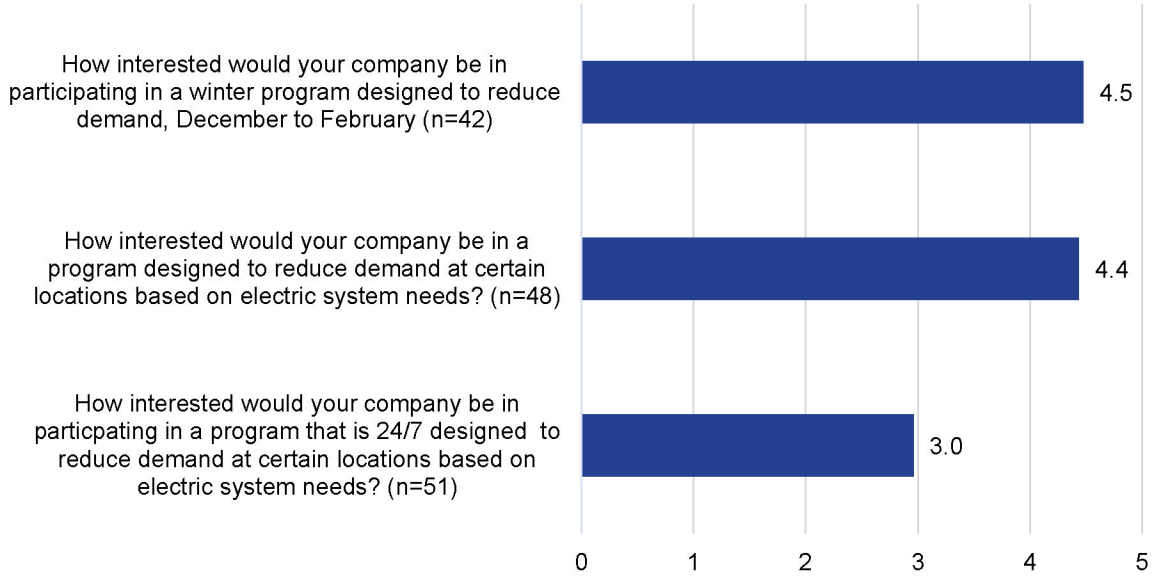
Surveyed respondents were asked for suggestions on how to improve the program. Sixty-five percent of respondents indicated that they did not have program feedback for change. One-third (33 percent) of respondents offered constructive feedback (multiple responses were allowed); their comments are summarized in the paragraphs below. These suggestions reflect the statements from respondents surveyed and are not necessarily endorsed by the EM&V team.

- *Program Communication.* When asked about the aspects of the program that should be changed, communication around events and enrollment was mentioned by six respondents. Two provided clarifications explaining they would like more advanced notification of events. Additionally, three comments centered on better communication on the timing of enrollment for the program and how the program aligns with "other" programs. One respondent complemented the communication, "*Please keep up the great work.*"
- *Change to Curtailment Events.* Curtailment events may last up to four hours, and start and stop times can vary. Two respondents indicated they would like changes to the events themselves. Among those who expanded on their sentiment, one respondent would like events to have shorter duration but happen more frequently. The other comment indicated they would like events called "*more spread out*" versus clustered in one or two weeks of each other.
- *Increased Incentives/Expand the Program.* Six respondents provided comments that were themed around increased incentives and program expansion. One respondent specifically suggested paying more money per event and expanding the program to include more buildings.
- *Post-Event Follow-Up.* With interest in expanding programs and offering new load management program types, the EM&V team would like to highlight the requests from several participants in past surveys, including the Oncor Winter Load Management Pilot program customer interviews, analysis, and write-up that indicated customers would like post-event follow-up. Event feedback could be helpful to both the program—by helping to educate their participants on how to get the most out of each event—and to participants, as they gain the satisfaction of curtailing to the maximum amount possible for them and collecting the highest incentive amounts for their efforts.

Interest in Other Types of Load Management Programs

Survey respondents were asked a series of questions about their interest in participating in other load management programs (Figure 37). Respondents were asked to use a 1 to 5 scale, where 1 was *not at all interested*, and 5 was *very interested* in participating. Overall, interest is high in expanding load management program types. Interest in a winter load management program scored highest, with a mean score of 4.5. Interest in programs designed to reduce demand at certain locations based on electric system needs resulted in a mean score of 4.4. There was less interest in participating in a program that is 24/7, designed to reduce demand at certain locations based on electric system needs, with a mean score of 3.0.

Figure 37. Interest in Participating in Other Types of Load Management Programs



Source: Question SAT6, SAT7, and SAT8. *Don't know*, *refused,* and *not applicable* responses are excluded.

Respondents were asked to expand on why they were or were not interested in participating in each program type. Their responses were analyzed for common themes and categorized; Table 23 below outlines the top three categorized responses for each program type.

Table 23. Interest in Participating in Other Types of Load Management Programs (High/Low) and Reason

Program type	Three most frequent responses	Number of respondents
Winter program designed to reduce demand from December to February	High–no significant impacts on business	18
	High–positive financial impacts	9
	Low–uncertain about the ability to reduce demand	3
A program designed to reduce demand at certain locations based on electric system needs	High–no significant impacts on business	19
	High–positive financial impacts	11
	Low–need to evaluate impacts	3
24/7 program designed to reduce demand at certain locations based on electric system needs	Low–not a 24/7 operation	24
	Low–negative financial/business impacts	9
	High–positive financial impacts	5

Source: Question SAT6a, SAT7a, and SAT8a.

6.3 RESIDENTIAL LOAD MANAGEMENT

This section summarizes the key findings and recommendations from the PY2022 evaluation of three Texas utilities' residential load management programs (Oncor, CenterPoint Energy, and El Paso Electric). Entergy is piloting a residential load management program in 2023, and TNMP, AEP, and SWEPCO are considering a 2024 pilot. Xcel offers a residential demand response program but not as part of its energy efficiency portfolio.

Two utilities calculated savings using interval meter data following the *high 3 of 5* method; the third utility used the *deemed savings* method from PY2022 TRM 9.0.

6.3.1 Program Overviews

Residential load management programs are designed to manage kilowatt usage during summer peak demand periods. Three of the eight Texas utilities offer their customers a residential load management program. Of the three, two programs utilize a smart thermostat control strategy, and the other program utilizes direct load control devices. Incentives for these programs differ by whether or not the utility's service territory is part of the Electric Reliability Council of Texas (ERCOT) market. Utilities in the ERCOT market receive an incentive based on the kilowatt savings achieved during the load control season; in contrast, non-ERCOT utilities pay a flat enrollment incentive and a flat incentive per program year. Participants are allowed to opt out of a load control event.

Participants in two of the three residential programs are evaluated individually using the *high 3 of 5* method described in PY2022 TRM 9.0. In contrast, the other residential program is evaluated using the deemed savings value measured specifically for the utility (see TRM 9.0, Volume 2, Smart Thermostat Load Management). The availability of advanced metering infrastructure meters dictates a utility's methodology to calculate savings.

All utilities define their control seasons as June 1 to September 30, with possible load control events happening within the window of 1:00 p.m. to 7:00 p.m. on non-holiday weekdays for ERCOT utilities and 2:00 p.m. to 8:00 p.m. on non-holiday weekdays for non-ERCOT utilities.

6.3.2 Key Findings and Recommendations

Key Finding #1: The three residential load management programs had seen significant increases in participation. Due to budget and participation limits in utilities' PY2022 plans, savings and participation slightly decreased. However, if needed, the potential for growth appears to be available. About two-thirds of the surveyed participants who recall participating indicated that they plan to continue to participate in the program, and over one-half would also participate if the program were to expand to winter months or year-round.

About two-thirds (62 percent) of respondents plan to continue participating in the residential load management programs in 2023. Twenty-two percent of participants indicated they would not be participating, while 16 percent did not know. Respondents who answered *no* or *don't know* (n=28) were asked to clarify their answers. The most frequently mentioned reasons for not wanting to participate were wanting to have control over their thermostat (n=7) and moving or switching energy providers (n=5).

When asked if they would participate if the program was to expand to the winter months or year-round, 39 of the 75 respondents (52 percent) said *yes*, while only three said *no*, three did not know, and 30 did not provide an answer.

Recommendation #1: Continue to explore cost-effective ways to increase participation and savings for the residential load management programs if needed in the portfolios, including expanding into underserved segments such as multifamily homes, additional devices beyond smart thermostats such as water heaters, and expanded control periods beyond summer as needed for grid or system reliability.

Key Finding #2: Due to the unique aspect of the *deemed savings* method (using runtime data and a deemed savings value instead of interval meter data), the approach used to identify participating thermostat devices is critical. TRM language related to the *deemed savings* method has been improved in the past few years, and there is now a mutual understanding of the approach. The utility, implementer, and EM&V team agreed on a final demand savings calculation. In PY2022, documentation for participating thermostat devices has been improved, resulting in only minor savings adjustments. Given the amount of prior program year data available for the ERCOT utilities using census interval meter calculations, a deemed value could also be developed to streamline residential participation for additional utilities, employing the same participation documentation requirements established for the non-ERCOT utility.

Recommendation #2: Explore the development of a residential demand response value beyond the one utility, given the prior program year participation data available for the other two utilities. If additional utilities employ a *deemed savings* method, participation documentation and a clear definition of each data field will still be needed for EM&V reviews.

Key Finding #3: Program tracking data tended to lack complete participation information when assembled by a third-party implementation contractor.

Recommendation #3: Work with third-party program implementation contractor to improve participant tracking data.

Key Finding #4: Participants' program awareness and understanding is low. Many respondents were uncertain how they heard about the program or were not aware that they were even participating. Of those who remember events were called, about 85 percent did not know the actual number of events that occurred in summer 2022.

Recommendation #4: Assess communication with program participants and the benefits of additional communication and education through multiple channels (text, email, phone calls, mailers) outside of called events. Communication could enhance program awareness, participation, and overall program satisfaction and should occur at least annually during re-enrollment.

Key Finding #5: Overall, the most frequently mentioned motivation for program participation was supporting the grid and/or doing the right thing.

For those participants who rated their overall program satisfaction scores as the lowest, most claimed that the program was marketed to them as saving energy and money, but those results were not always realized.

For participating customers, understanding the incentives they would receive proved to be the most confusing part of the program. In some cases, customers claim they never received an incentive.

While one-quarter of participants rated their home as the highest efficiency level, of the other respondents, 60 percent were interested in additional energy efficiency offerings through a utility program.

Recommendation #5: Leveraging the marketing messages of supporting the grid and being upfront on expected incentives—coupled with additional education on energy efficiency tips to save money—may support a more positive customer experience and long-term participation. There is also an opportunity to cross-market energy efficiency programs with demand response participants.

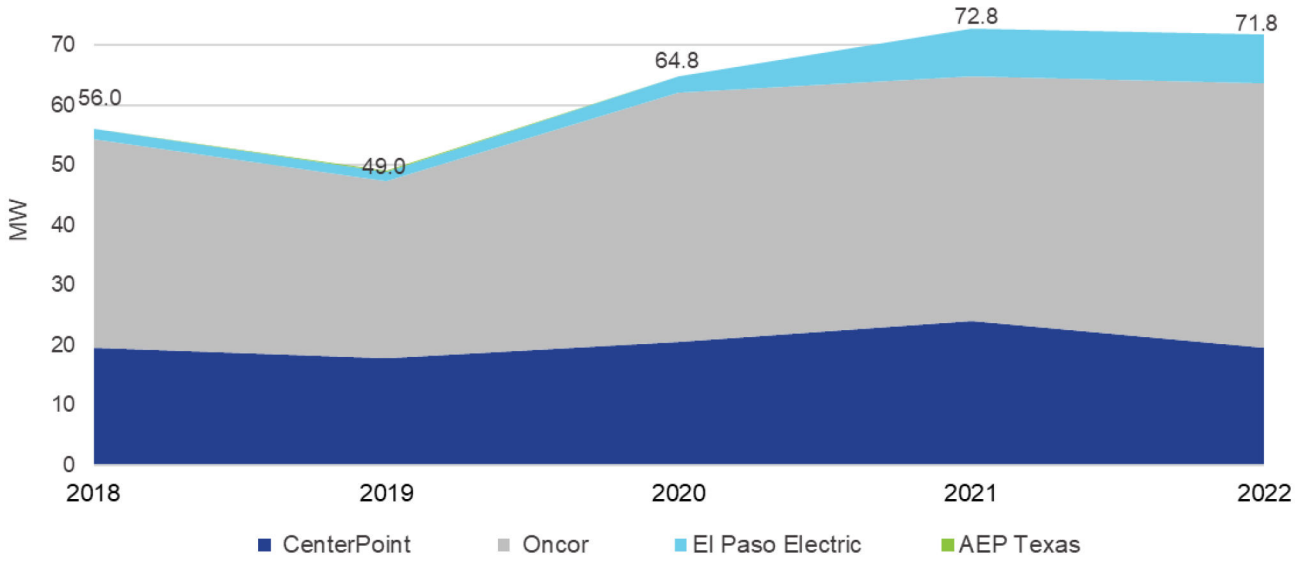
6.3.3 Impact Results

The total PY2022 savings for the four utilities (CenterPoint, Oncor, El Paso Electric, and AEP Texas) were:

- 71,750 kW (demand reduction), and
- 683,779 kWh (energy savings).

After the continued increase since PY2019, the PY2022 savings show a slight decrease from PY2021 by roughly 1 MW. Figure 38 shows total megawatt savings from residential load management programs by program year (note that AEP Texas discontinued its residential load management program after 2017). Since PY2018, Oncor has had the most significant savings amongst the utilities' residential programs, followed by CenterPoint.

Figure 38. Demand Savings of Residential Load Management Programs PY2018–2022



6.3.4 Participant Survey Results

The EM&V team completed a telephone survey with residential load management program participants to provide process insights for these programs. This section summarizes the survey findings from this survey effort. Below, we describe the study objectives, methodology, and detailed findings.

Study Methodology

This process study assessed program participants' experiences with the program. Specifically, the evaluation aimed to characterize the customer experience in the following areas:

- program awareness and motivation,
- participation process,
- program experience,
- customer satisfaction,
- suggestions for improvement, and
- future program interest.

The sample for the telephone survey was drawn from the list of customers in the PY2022 tracking databases. Texas utilities were responsive to the EM&V team's data request for this customer survey; however, the contact information was limited: about one-third of CenterPoint and Oncor's sampled participants and less than 15 percent of El Paso Electric's sampled participants did not have telephone contact information.

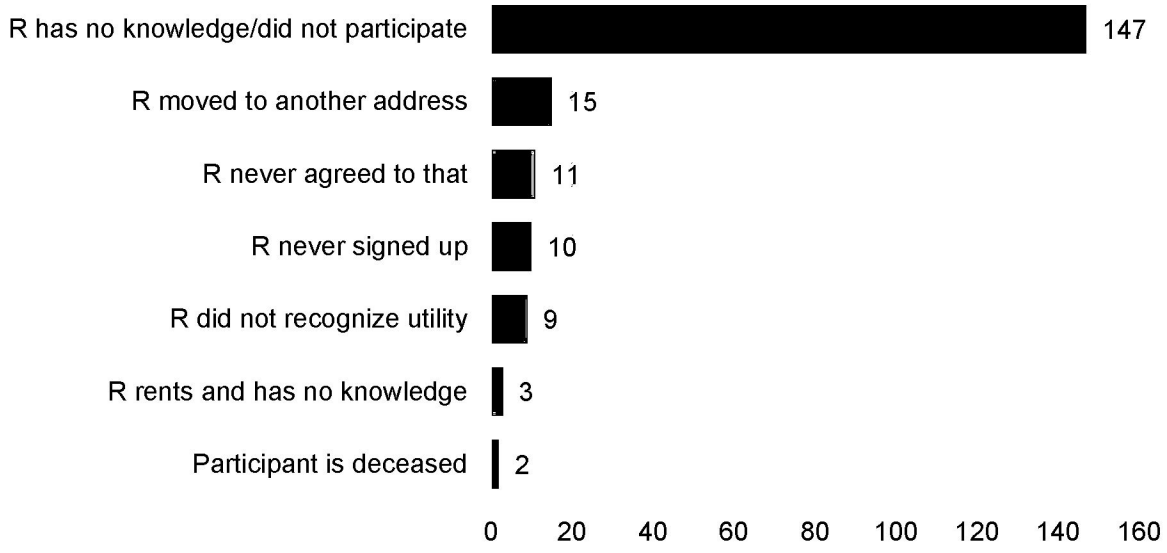
The EM&V team completed telephone surveys with a total of 275 residential load management participants. The survey was conducted from June 7 through June 28, 2023, at Tetra Tech's in-house SRC in its Madison, Wisconsin office. Emails and letters were sent the week of June 5, 2023, to provide advance communication regarding the survey. Reminder emails were sent the following week. Table 24 documents the number of completed surveys by utility.

Table 24. Number of Surveys Completed

Utility	Number of respondents who recalled participating in the program	Number of respondents who did not recall participating in the program	Total number of respondents
CenterPoint	28	64	92
El Paso Electric	5	4	9
Oncor	42	132	174
Total	**75**	**200**	**275**

The evaluation revealed several positive findings, such as high satisfaction with the utilities. However, a relatively large number of respondents (almost three-quarters) did not recall participating in the program (n=200), indicating low program awareness. Survey respondents were asked additional open-ended probing questions to ascertain the reasons for not remembering the program. Figure 39 illustrates themes from the open-ended responses, with the most common theme being that the respondent (R) had no knowledge of the program and reported not participating (n=147).

Figure 39. Explanation for Not Recalling Program Participation (n=197)



Source: Question INTRO and call notes. *Refused* responses are excluded.

The following sections illustrate survey results from customers who recalled participating in the program (n=75).

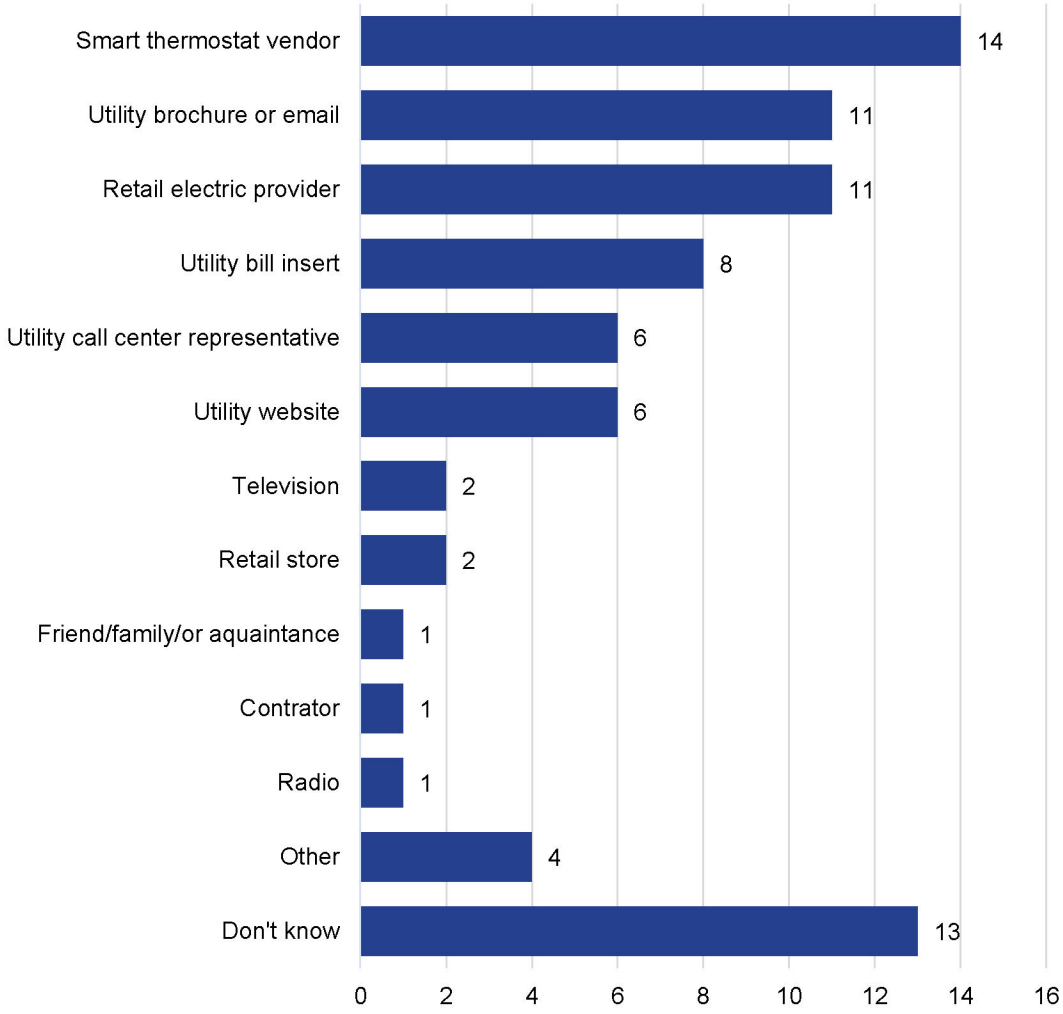
Participant Description

The telephone survey respondent data were composed mostly of homeowners, with 93 percent of the survey respondents saying they owned their home and 7 percent saying they rented. Most respondents (93 percent) lived in single-family, detached homes; roughly half of the homes were built before or in 1995 and are 2,000 square feet or less. Over one-third of the survey respondents reported using electricity as the primary fuel for heating and water heating. Over two-thirds live in homes. Nearly half (46 percent) of the respondents have lived in their homes for five years or less.

Program Awareness and Motivation

The survey gathered information about program awareness, motivation to participate, and interest in other energy efficiency programs. Survey respondents were asked how they learned about the program (Figure 40). The top three sources to which respondents attributed their program awareness were (1) their smart thermostat vendors, such as Nest and Ecobee (14 of 75 respondents); (2) a utility brochure or email (n=11); and (3) their retail electric provider, such as Reliant and Chariot Energy (n=11).

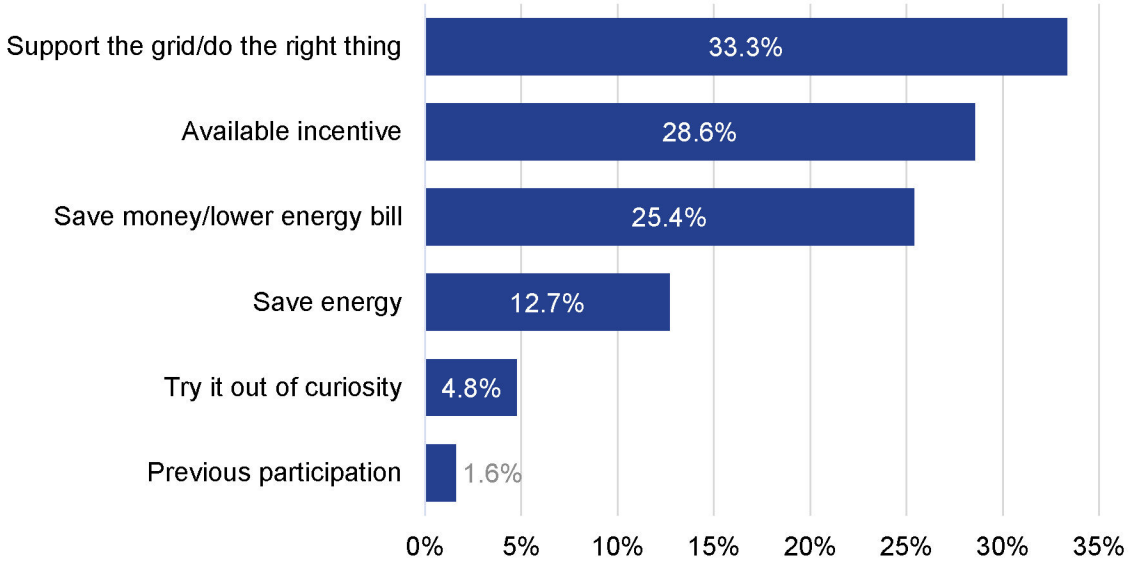
Figure 40. Sources of Awareness (n=75)



Source: Question PA1. Multiple responses were allowed.

When asked to share their main reason for participating in the program, respondents' reasons for participation varied (Figure 41). Supporting the grid and/or doing the right thing was named by one-third of the respondents as their main reason for participating in the program, followed by the available incentive (29 percent). Respondents also named saving money or lowering their energy bill (25 percent), saving energy (13 percent), or trying the program out of curiosity (4 percent) as key motivators for participating.

Figure 41. Main Motivation to Participate (n=63)

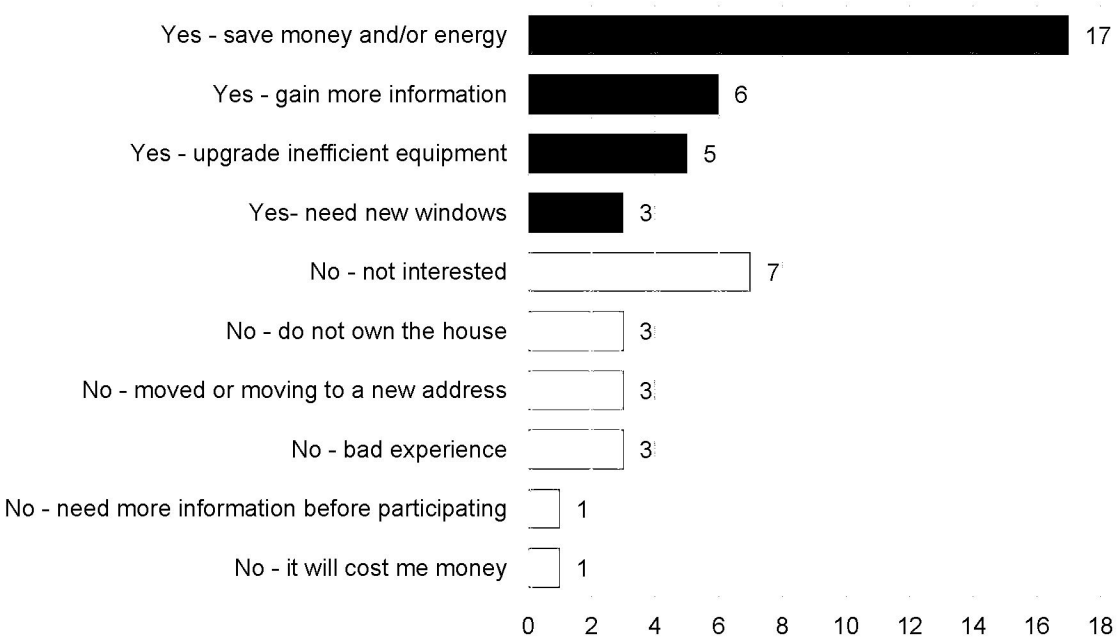


Source: Question PA2. Multiple responses were allowed. *Don't know* responses are excluded.

Customers were asked additional questions to assess their interest in other energy efficiency programs. When asked to rate the efficiency of their home on a scale of 1 to 5, where 1 is *not at all energy efficient*, and 5 is *very energy efficient*, 28 percent rated their home efficiency a 5, two-thirds rated their home efficiency a 4 or 3, and the remaining 5 percent rated their home efficiency less than 3. Survey respondents who provided a home efficiency rating of 4 or less (n=53) were asked if they would be interested in participating in a program sponsored by their utility that would provide financial incentives and technical assistance to improve the efficiency of their home, 31 respondents said *yes* (60 percent), 18 respondents said *no* (35 percent), and three respondents did not know.

When asked to expand as to why they would (*yes*) or would not participate (*no*) in a program sponsored by their utility, responses varied. Figure 42 details the themes that emerged from categorizing respondents' answers (n=49). The most common reason for participating was saving money and energy and/or improving comfort in their homes (n=17). The most common reasons for not participating were not being interested (n=7) or needing more information (n=7).

Figure 42. Interest in Participating in Other Programs Sponsored by Utility (Yes/No) and Reason (n=49)



Source: Questions D9 and D10.

Participation Process

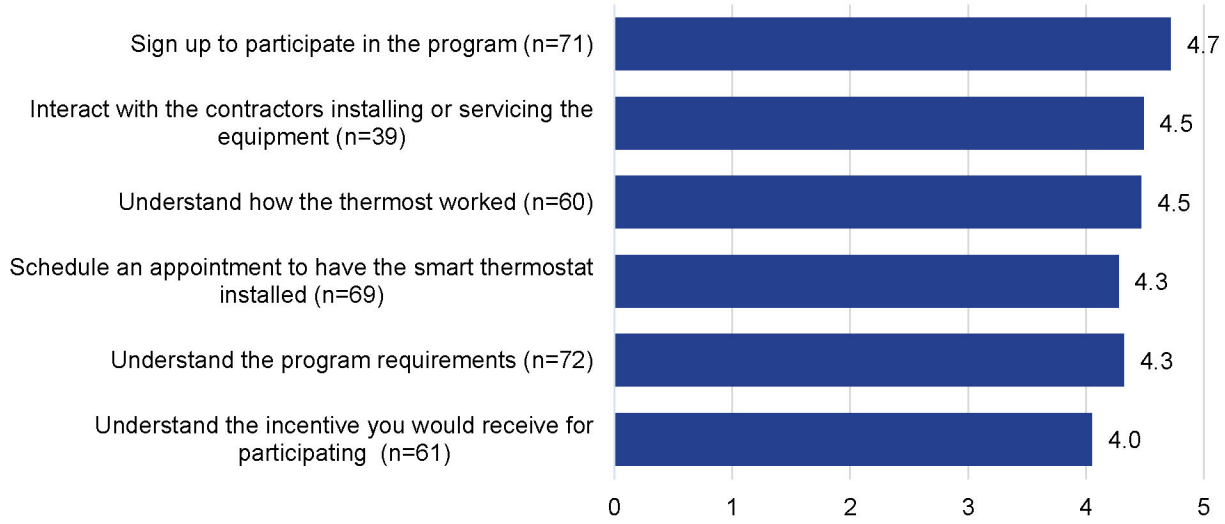
The survey asked customers to rate the ease with various aspects of the residential load management programs. Figure 43 details respondents' ease with various program components. Respondents were asked to use a 1 to 5 scale, where 1 was *very difficult*, and 5 was *very easy* program interaction. All program components scored an average mean of 4 or above.

Overall, respondents found it *very easy* (n=55) or *easy* (n=12) to sign up to participate in the program. Of those respondents who interacted with contractors to install or service the equipment, 62 percent indicated it was *very easy* (n=24). Ninety-one percent of respondents found it *very* easy (n=34) or *easy* (n=21) to understand how the thermostat works. When scheduling an appointment to install the smart thermostat, 91 percent of respondents indicated it was *very easy* (n=27) or *easy* (n=36). Seventy-nine percent of respondents found the program requirements *very easy* (n=40) or *easy* (n=17) to understand, while 21 percent were *neutral* (n=11) or found the program requirements *difficult* (n=2) or *very difficult* (n=2) to understand.

Based on survey results, the most difficult experience in the program was understanding the incentives received for participating, with 41 percent of respondents indicating it was *very easy* (n=25) and 15 percent indicating it was *very difficult* (n=9).

Although signing up for the program is viewed as simple, understanding and/or remembering the requirements, incentives, and benefits will help encourage ongoing participation. Utilities may consider ongoing education to remind customers of the program requirements, incentives, and benefits to Texas.

Figure 43. Ease with Various Aspects of the Residential Load Management Programs—Mean Scores



Source: Questions P1A through P1F. *Don't know*, *refused*, and *not applicable* responses are excluded.

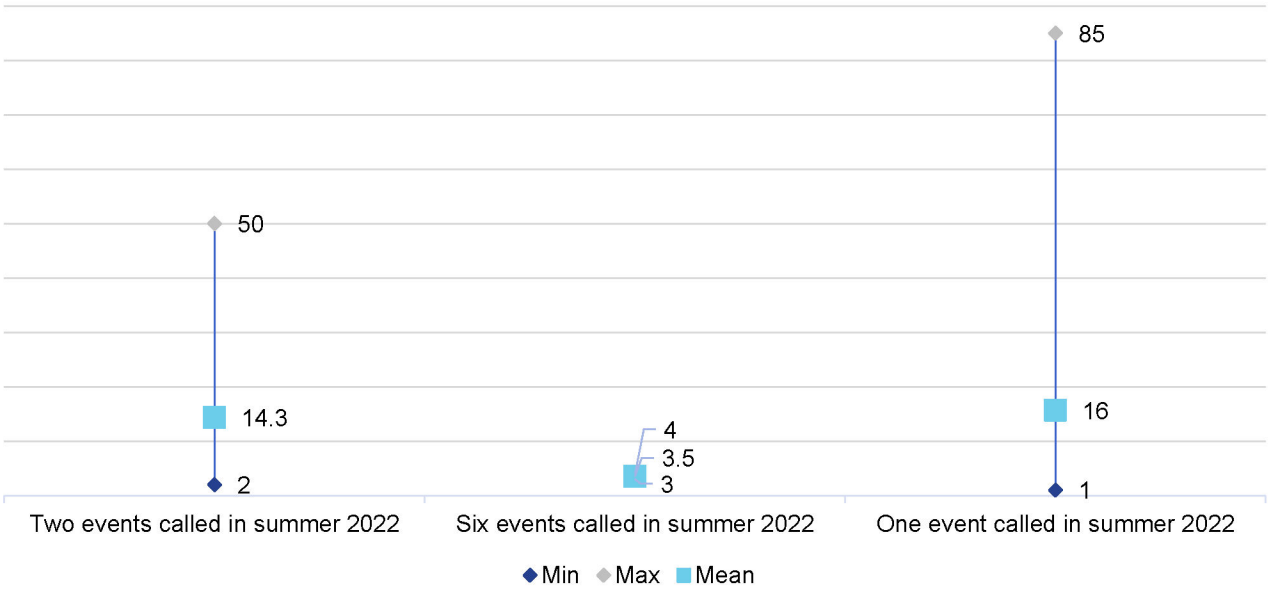
Eighty-eight percent of survey respondents said they had no initial concerns about participating in the program. Among those who did (n=12), five expressed concerns about allowing the utility control of their home's energy systems during program events, three said that they thought the temperature increase would be uncomfortable during events, two indicated that they had an installation concern, and in particular, was worried the program wasn't legit, or they would not be able to change if they didn't like participating. One participant was concerned about understanding the equipment, and one participant was worried it would damage their central cooling system.

Program Experience

To help understand the perceptions of program events, survey respondents were asked to quantify how many cycling events they thought were called during the PY2022 summer season (between 0 and 85). About one-half of the respondents answered *don't know* (n=34), and three indicated there were no events. Responses from the remaining customers (n=38) varied, as outlined in Figure 44. Customers of utilities that scheduled one or two events consistently reported a value much higher than the actual number of cycling events for their utility territory. Overall, about 85 percent (n=33) did not report the actual number of events that were called in the summer months of 2022.

Regardless of the respondent's perceptions about the number of events, the overall program experience appears to have a limited impact on the customers. That is, when respondents who could recall events were asked to report how a cycling event impacted them, 38 percent said the event had no effect. Among survey respondents who did say cycling events impacted them, the most mentioned response was that the temperature of their residence increased (36 percent). Other responses included *"we had to adjust the temperature setting"* (14 percent) and *"we used fans"* (2 percent) or *"we left the house"* (2 percent).

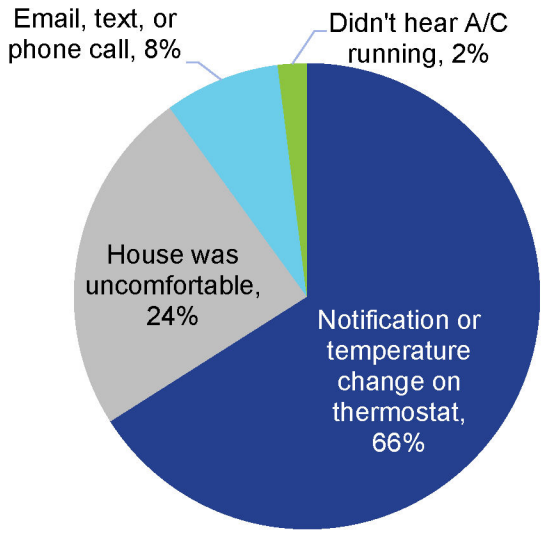
Figure 44. Perception of Number of Events Called (n=38)



Source: Question PE1. *Don't know* and *zero event responses* are excluded.

The 38 respondents who could recall an event being called were asked how they knew an event was taking place. They were not limited to one answer. As shown in Figure 45, 66 percent of respondents learned of the event from their thermostats, whether they noticed the temperature had increased or there was a notification directly on the thermostat.

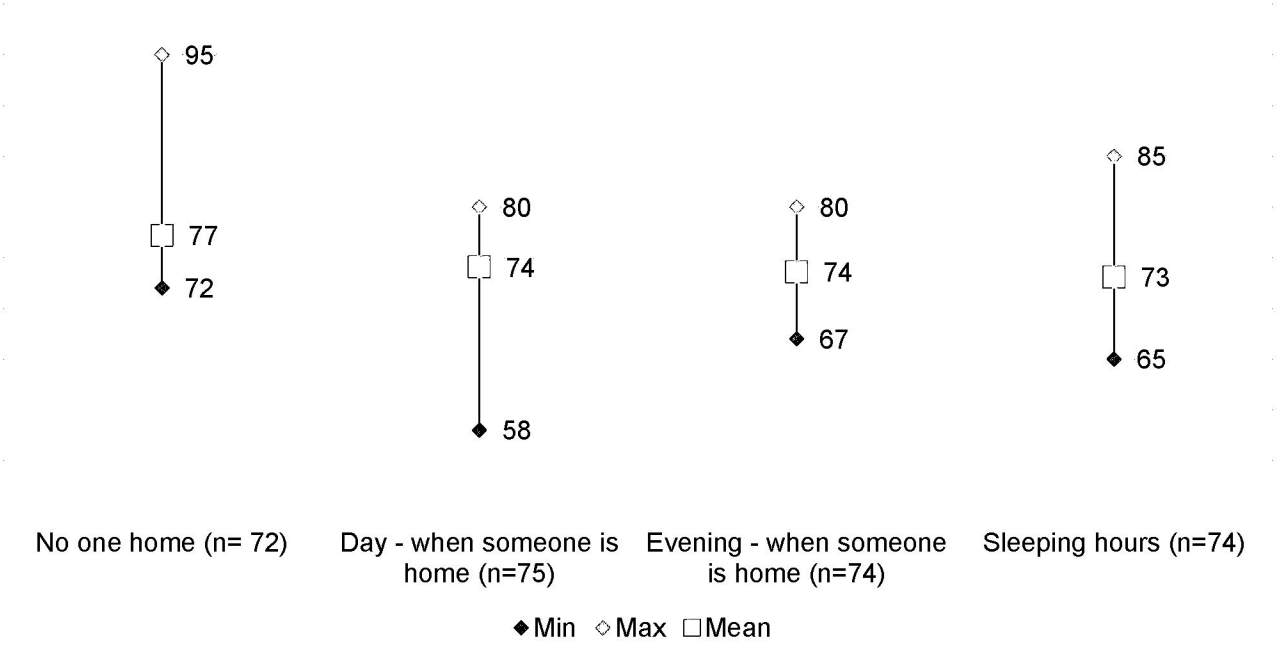
Figure 45. Knowledge of Event (n=50)



Source: Question PE2. *Don't know* responses are excluded.

Respondents were asked at what temperature they usually set their air conditioner in the summer. Figure 46 represents the minimum, maximum, and mean temperatures provided for each time-of-day category. On average, program participants set their thermostats to 77 degrees when they are not at home, 74 degrees when they are at home, and 73 degrees during sleeping hours.

Figure 46. Minimum, Maximum, and Mean Temperature Settings



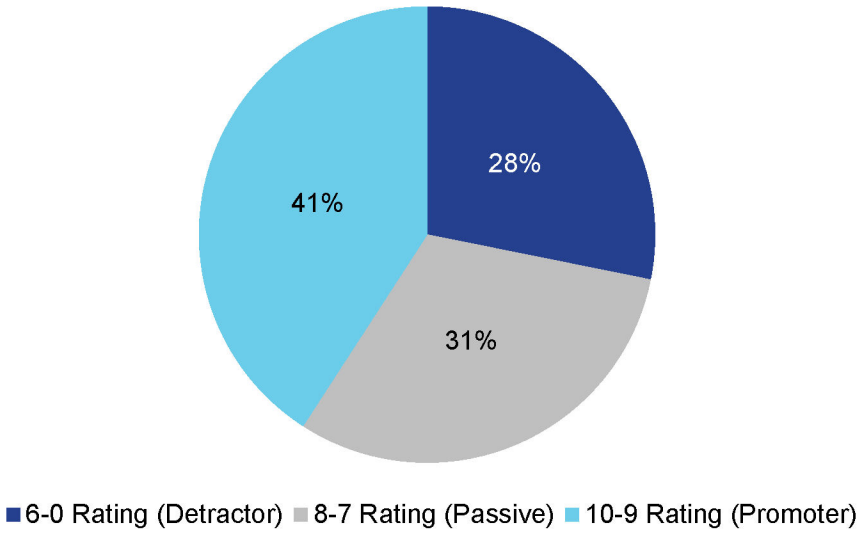
Source: Question P16 through P16D. *Don't know* or *turn off* responses are excluded.

When asked if they contacted their utility company about the program in 2022, only 2 out of 75 respondents indicated they had called the utility. One respondent indicated they called because their air conditioning was not cooling their home, and they wanted to know if it was because of the program. They also indicated they would like to have someone come out to their house to check the equipment as their bill was higher than normal. The other respondent called to cancel participation in the program. These two respondents also indicated they were *very dissatisfied* or *somewhat dissatisfied* with the response from the utility to their inquiry.

Customer Satisfaction

Satisfaction with the electric utility as an energy provider is high. Respondents were asked to rate their overall satisfaction with their electric utility in general (not just with the program) on a scale of 0 to 10, where 0 was *very dissatisfied*, and 10 was *very satisfied*. Twenty-nine respondents rated their experience a 9 or higher (41 percent), 22 respondents rated their satisfaction between a 7 and 8 (31 percent), and 20 respondents rated their satisfaction a 6 or less (28 percent), resulting in an overall mean satisfaction score of 7.3 on the 10-point scale, as shown in Figure 47.

Figure 47. Overall Utility Service Provider Satisfaction (n=71)

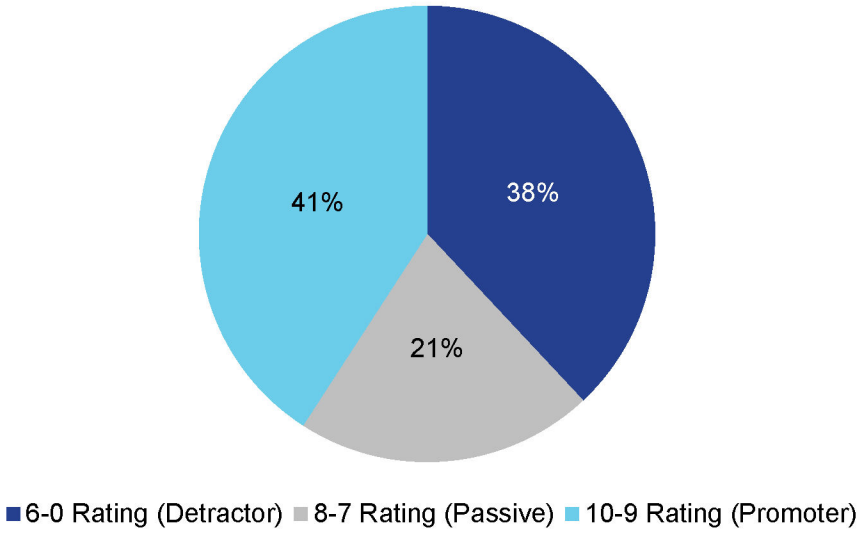


If respondents provided a score of 5 or less (n=17), they were asked to provide a reason as to why they rated their overall satisfaction that way. The most common reasons included power outages and high bills. For example:

> *"Lots of power outages in the neighborhood."*
>
> *"Because they raise the price [of] energy too high, and I don't use but very little energy. Now [I] pay over 200 dollars on my bill."*

Respondents were also asked to rate their satisfaction with their overall experience with the residential load management programs on a scale of 0 to 10, where 0 was *very dissatisfied,* and 10 was *very satisfied*. Twenty-nine respondents rated their experience a 9 or higher (41 percent), 15 respondents rated their experience between a 7 and 8 (21 percent), and 27 respondents rated their overall program satisfaction a 6 or less (38 percent), resulting in an overall mean satisfaction score of 7 on the 10-point scale, as shown in Figure 48.

Figure 48. Overall Program Satisfaction (n=71)



Source: Question SAT1. *Don't know* responses are excluded.

If respondents provided a score of 5 or less (n=23), they were asked to provide a reason as to why they rated their overall satisfaction that way. The most common responses included the house becoming too uncomfortable (n=6) and not seeing a benefit from the program and/or experiencing higher electricity bills (n=5). Other respondents claimed to have never received the rebate or incentives (n=3), while others were looking for more support from the program.

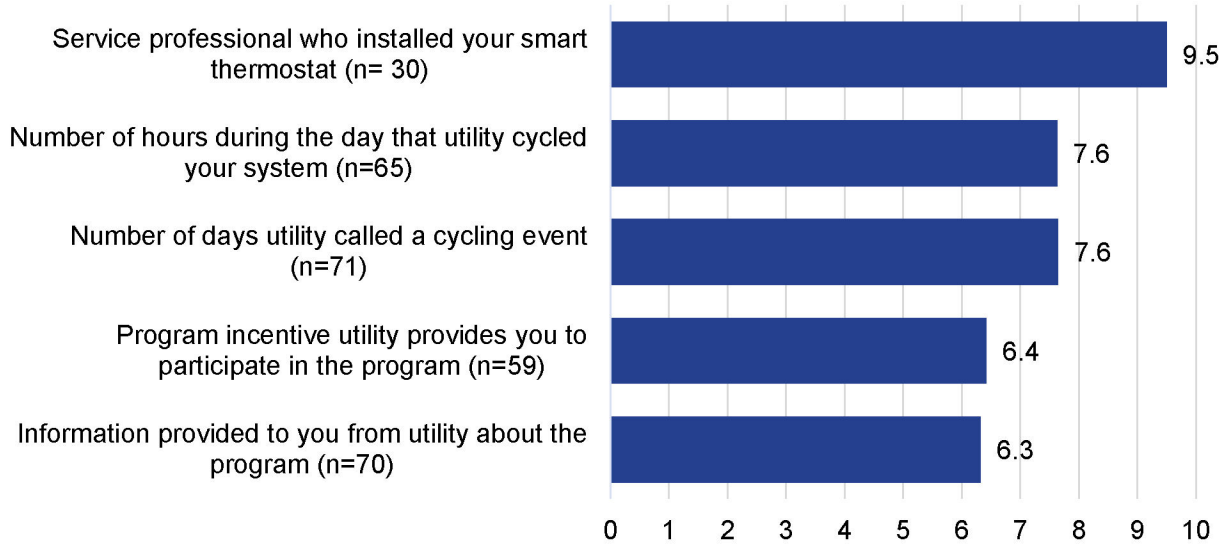
Comments from customers who rate overall program satisfaction a 5 or less included the following:

> *"It's inconvenient when you work from home. I could see the benefit if you worked outside the home during the day."*
>
> *"First, I did not receive the incentive promised. Second, I haven't been able to un-enroll myself from the program because they make it too hard to understand."*
>
> *"My main interest [was] to see a slight decrease in my bill, and I haven't been seeing that lately."*

When asked to rate their satisfaction with various aspects of the residential load management programs on a scale of 0 to 10, where 0 was *very dissatisfied*, and 10 was *very satisfied*, satisfaction with the service of professionals installing their thermostats received the highest score (mean score of 9.5), as illustrated in Figure 49. Areas of passive scores (scores between 8−7) include hours during the day the program cycles their air conditioning system and the number of events called, which received a mean score of 7.6. Areas with the lowest mean scores include the incentives provided by the utility (mean score of 6.4) and information about the program provided by the utility (mean score of 6.3).

Respondents were also asked if they had recommended the program to others. Only 13 percent of respondents (n=11) said they had recommended the program to others, while 85 percent (n=62) indicated they had not recommended the program to others.

Figure 49. Satisfaction with Residential Load Management Programs Components—Mean Scores



Source: Questions SAT3A through SAT3E. *Don't know*, *refused*, and *not applicable* responses are excluded.

Future Program Interest

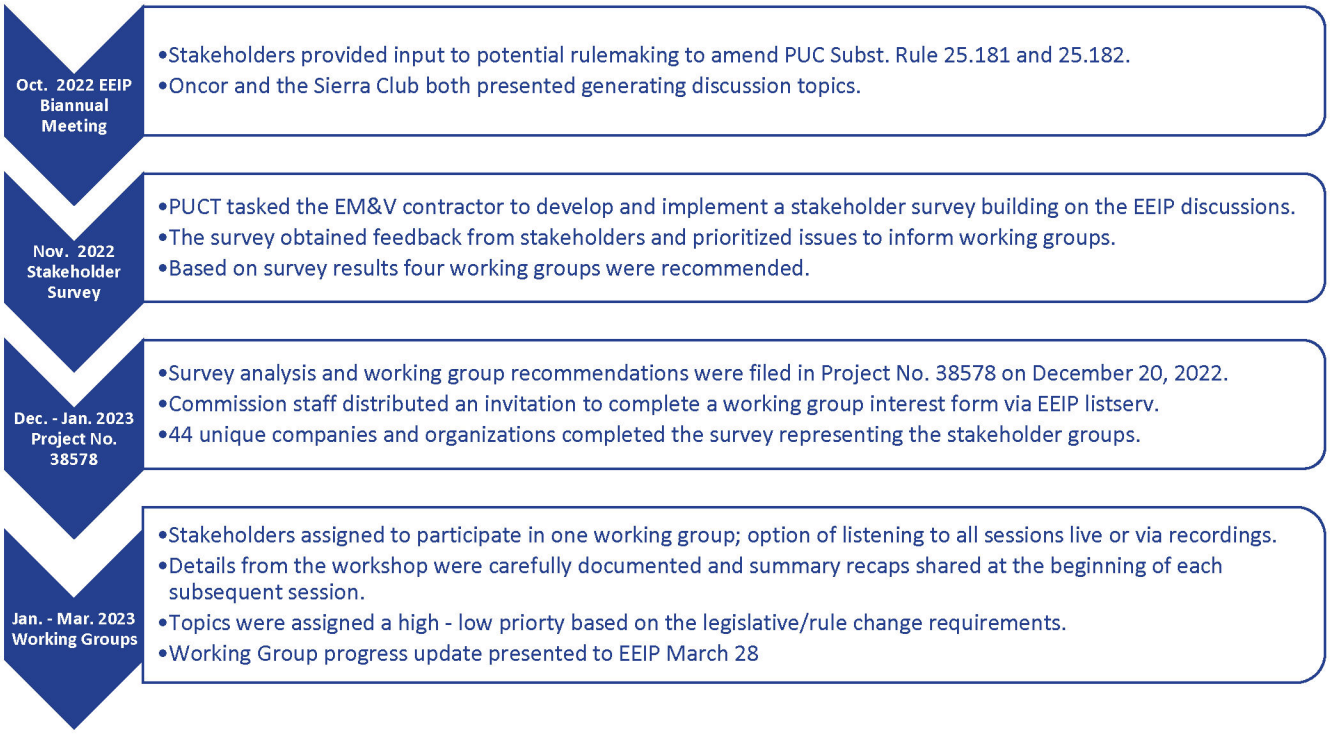
Survey respondents were asked a series of questions about future program participation interest. Over one-half (62 percent) of respondents plan to continue their participation in the residential load management programs in 2023. Twenty-two percent of participants indicated they would not be participating, while 16 percent did not know. Respondents that answered *no* or *don't know* (n=28) were asked to clarify their answer. The most frequently mentioned reasons for not wanting to participate were wanting to have control over their thermostat (n=7) or moving or switching energy providers (n=5).

When asked if they would participate if the program was to expand to winter months or year-round, 39 of the 75 respondents (52 percent) said yes, while only 3 said *no*, 3 did not know, and 30 did not provide an answer.

APPENDIX A: EEIP STAKEHOLDER INPUT DETAILS

This appendix provides detailed results on the EEIP Stakeholder Input Process summarized in Section 2. The figure below provides the timeline of Stakeholder Input activities that occurred from October 2022 through March 2023.

Figure. Stakeholder Input Activities to Date[25]



The workshop objectives were to identify salient issues for investor-owned utility (IOU) energy efficiency programs and organize stakeholder feedback for the Commission's consideration in a future rulemaking. The EM&V team served as facilitators keeping discussions on track, on time and enabling active dialogue and listening to understand, capture and document different viewpoints of energy efficiency in Texas.

Next, we provide detailed summary tables for each Working Group. The EM&V team prepared summary tables and gave all Working Group participants 10 days to review the summaries and provide edits and feedback.

[25] In response to concerns of limiting participation to one working group for those who preferred to participate in two or more working groups, a listen-in only option was made available upon request (as a muted live attendee or via recording). Those requesting a listen only option were able to send additional ideas separately to the working group facilitator.

6.4 PROGRAM GOALS

6.4.1 Session 1 January 23rd, 2023—Peak Demand Reduction (kW) Goals Discussion

The table below summarizes the key issues identified and places a priority/level of effort for addressing this issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Level of goals	PURA first established long-term goals in 1999 for the IOUs. Since 2013, "floor" of 30% of demand growth or 4/10 of 1% of summer peak. "Floor" means that goals cannot be less than prior year goals even if demand growth becomes negative. Larger utilities are tracking to 4/10 of 1% summer peak and others are tracking at 30% demand growth.	**High Priority:** Many stakeholders believe the goals are outdated and too low as all utilities are meeting, even exceeding, the set goals. For example, Sierra Club and Texas Consumer Advocacy suggested increasing the peak demand goal and requiring utilities to meet both a winter and summer peak. Utilities voiced some concern about increasing goals without understanding how Load Management programs will be tracked as they are not meeting current peak kW goals excluding load management. Utilities also note increased codes and standards that just came into effect.
Peak kW Definition	16 TAC §25.181 defines Winter (Dec – Feb) and Summer (May – Sept) Peak periods and that utilities can only claim winter or summer peak for each measure.	**High Priority:** Many different ideas on how to define a kW to capture the value in measures with additive savings for both a summer and winter peak reduction along with the duration of the benefit.
Claiming/valuing savings	In 16 TAC §25.181 kW Peak Demand definition a measure can only claim winter or summer peak savings but not both.	**High Priority:** All stakeholders seem to agree that there is value in both winter and summer kW peak savings.
Geotargeting	Geotargeting energy efficiency and demand response programs trending nationwide to address issues of: T&D congestion, energy equality, and capacity shortages. Some utilities are already doing some geotargeting in their territories, specific examples are reaching rural territories.	**Medium Priority:** Stakeholders both utility and others agree that Geo Targeting is worthwhile and valuable to consumers and the Texas grid. Many agree they are already using these methods and are looking to advance them.
Calculation of goals	Currently goals are calculated using the past five-year average load growth or the five-year average peak to calculate kW Peak Demand goal. 16 TAC §25.181(e)(1)-(3).	**Medium Priority:** Stakeholders seemed to agree that averaging was right. More discussion on whether the average or trending over a certain number of years was most appropriate.

Issue	Summary	Working Group priority and why
Priority of kW demand goal	In Texas the focus is on reduction of kW peak demand with kWh as a secondary goal set in relation to kW goal.	**Low Priority:** All stakeholders in the working group indicated that the focus on peak kW brings the most value to Texas grid and consumers though it is important to deliver kWh savings, in particular to low-income and hard-to-reach sectors. There is more interest in how peak kW is calculated seasonally and setting the right goals. Many stakeholders expressed support for including a specific energy savings goal, particularly for residential consumers.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Level of goals	Need to understand where Load Management Programs[26] will reside and be "claimed" to determine feasible kW goals	Perspective 1: Goals are set too low – Need to set "stretch goals"[27] to foster innovation. Perspective 2: With rising baselines due to codes and standard changes and load growth, current goals are stretch goals. Perspective 3: Need to consider measure cost effectiveness when setting goals – with code changes, measures will be more expensive with less savings. Perspective 4: There are more benefits to rate payers due to grid reliability and resiliency with increased goals whether they participate or not.	Yes, 16 TAC §25.181(e)(1)(A)(B)(C)(D) Since 2013, "floor"* of 30% of demand growth or 4/10 of 1% of summer peak. Larger utilities are tracking to 4/10 of 1% summer peak and others are tracking at 30% of demand growth. *floor=a program year's goals cannot be lower than previous years	

[26] At the time of the working groups, the legislature is in session. Therefore, participants do not know if legislation will require any changes to PURA § 39.905 that would effect load management.

[27] Stretch goals are understood to be a deliberately challenging or ambitious aim or objective.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Peak kW definition	Understanding where load management programs will be "claimed" is crucial to the conversation. Winter and Summer Peak both provide intrinsic value.	Perspective 1: Would like to define energy efficiency kW separately from demand response kW. Perspective 2: There are program costs savings with program administration synergies to running EE and DR programs together. If siloed opportunities and innovation may be hindered. Perspective 3: Defining the value of a kW (annual, winter, summer, additive) is important and needs to be considered.	Yes, 16 TAC §25.181(c)(44)(45)(46) and (e)(3)(G) Changing definition will impact: Peak Demand, Peak Demand Reduction, Peak Period definitions.	The complexity of achieving different goals was discussed and a possible solution may be reporting, performance metrics or "stretch goals". One discussed example was to leave one peak kW goal, but track and report both summer and winter peak contributions or limit percent of load management in peak kW goal. This applied and was discussed across each definition, claiming/valuing savings and geotargeting issues.
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	
Claiming/ valuing savings	Winter and summer peak kW are both important and should be tracked and claimed, there may be better methods to recognize this value	Perspective 1: Include separate summer and winter peak goals Perspective 2: increased total kW goals, still flexibility in how met through summer and winter Perspective 3: adding Both a Winter and Summer Peak goal adds complexity Perspective 4: Annual valuing could re-design peak kW value/savings	Yes. Current rule limits claimed savings to winter **or** summer. 16 TAC §25.181(c)(44) and (e)(3)(G)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	
Geotargeting	Geotargeting is a nationwide trend and valuable program strategy for grid resiliency	Perspective 1: Potentially add a goal around Geo Targeting – perhaps for Low-Income and/or Grid Resilience Perspective 2: Additional complexity if geotarget goals are added and utilities are already doing some of this Perspective 3: More transparency is needed in metrics on who is served.	Current rule does not address Geotargeting.	
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Calculation of goals	All agreed on a multi-year basis for program stability.	Perspective 1: Using the 5 years past average provides enough lead time for utilities to ramp up new programs and adjust programs as needed. Perspective 2: Using the 5 years past average may not accurately capture load growth – discuss pros/cons of trend analysis vs. averaging Perspective 3: A 3-year period for averaging or trending may be more accurate than 5-year average	Yes, 16 TAC §25.181(e)(3)(A)(B)(D) (3)(A) "The Utility Shall calculate the average growth rate for the prior five years." Or under (3)(B), apply "the percentage goal to the utility's summer weather-adjusted five-year average peak demand."	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Priority of kW demand goal	kW Peak Demand Goal is the priority of Texas and makes sense for the Texas grid	Perspective 1: Peak kW is a hard concept for consumers/public to understand. Perspective 2: By focusing on peak kW demand from energy efficiency, you will also receive the value of kWh. Perspective 3: While peak demand goal is the priority, having separate energy savings goals -- or increasing the current load factor from 20 percent to a higher amount - assures that the savings will be enjoyed throughout the year, which is especially important for residential consumers.	Yes, PURA and 16 TAC §25.181(e)(1)(A)(B)(C)(D) 16 TAC §25.181s is focused on peak kW demand	

6.4.2 Session 2 February 6th, 2023-Energy savings (kWh) goals discussion

Session 2 discussion on kWh savings. The table below summarizes the key issues identified and places a priority/level of effort for addressing this issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Level of kWh goals	PURA first established long-term goals in 1999 for the IOUs. Since 2013, "floor" of 30% of demand growth or 4/10 of 1% of summer peak. PURA does not have energy savings (kWh) goals.	**High Priority:** Some Stakeholders voiced that the kWh goal is set too low. However, this may not require setting a new separate goal, rather adjusting the Energy Conservation Load Factor (ECLF). Others discussed that if the peak kW goal is increased or if the percentage of peak kW from load management contributions is limited, this would also result in increased kWh savings.
How kWh savings are defined	16 TAC §25.181 includes energy savings (kWh) goals in relation to demand savings (kW) goals through a "conservation load factor," which is currently set at .2.	**High Priority:** Stakeholders voiced the need to understand where the .2 conservation load factor originally came from in 2012 to determine if it is in fact the "right factor." Follow up was posted in chat as it was a compromise. Sierra Club, Public Citizen and SEED Coalition opined that .2 was too low and suggested .25 or .3 and that it is applied to the entire program demand savings and not just the

Issue	Summary	Working Group priority and why
		minimum peak demand goal. The Cities Serving Oncor recommended proscribing actual energy savings for each program if not costly to do rather than the conservation load factor.
Geotargeting	Same as discussed for peak kW.	
Calculation of kWh goal.	The conservation load factor is used to determine a utility's energy savings (kWh) goal for the year. To calculate the utility's energy savings goal, a utility's demand goal (kW) is first multiplied by the number of hours in the year (8760) and then multiplied by the conservation load factor.	**Medium Priority: Stakeholders** voiced the need to not add complexity while also recognizing energy savings impacts residential, low Income and HTR customer in a unique way. An out of the box new concept was introduced that piqued interest from many stakeholders, "assigning value to each hour of the year."
Priority of kWh Savings	In Texas the focus is on reduction of kW peak demand with kWh as a secondary goal set in relation to kW goal.	**Low Priority:** Stakeholders voiced agreement that kW Demand savings is a priority in Texas however utilities are providing kWh savings programs and recognize it as a combined effort.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Level of kWh Goals	Stakeholders agree that there are many interrelated moving parts. The Group must understand how kW Demand Definitions and Demand Response programs will be "claimed" before revising kWh goals.	Perspective 1: kWh goals are set too low. Getting 1% energy savings over several years would put Texas in the middle of the "pack" compared to other states. SPEER has a report that shows the percent saved of annual savings for Texas IOUs. Perspective 2: Residential home energy bills are based on kWhs not kW demand. Most customers don't understand the demand for savings. We need to set goals/targets to help them realize savings and understand the benefits to them.	No legislative changes – the legislation does not address kWh so this can be addressed in a rulemaking.	Stakeholders seem to agree that there may be other options than creating a new kWh goal such as increasing the conservation load factor or assuring energy savings through other goals (i.e., low-income and hard-to-reach or load management caps).

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		Perspective 3: Targeting kWh savings to low income, small businesses, hard to reach customers should be the "deliberate" focus of the kWh goal. Perspective 4: Rising program costs (due to code changes affecting lighting and HVAC measures) will have an impact on traditional customers and HTR segments – achieving kWh savings will become more expensive and harder to achieve. Perspective 5: If options are implemented to recognize changes in efficiency standards, it is important to keep in mind that these changes will be felt over time rather than all at once, so program changes can likewise be made incrementally over time rather than all at once.		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 2: Energy Conservation Load Factor (ECLF)	The ECLF concept is to measure kWh achievement relative to kW demand achievement. Stakeholders agree the .2 used in the ECLF should be reconsidered.	Perspective 1: Per Commission (Summarized Response) in Project No. 39674 keeping .2 tied to Peak Demand Goal: 1. The ECLF establishes the minimum kWh savings a utility must acquire. 2. Utilities are "awarded" a performance bonus for exceeding the minimum while staying below cost caps.	16 TAC §25.181(c)(6) definition of Conservation Load Factor History: Oncor counsel & Sierra Club provided Project No. 39674 Amendment to	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		3. Increasing the ECLF will increase program costs. .2 balances the benefits of energy savings with the costs of the program. Perspective 2: The ECLF should be increased as .2 is just too low. (Suggestions have ranged from 25%-40%) Perspective 3: The ECLF should be applied to the peak demand achieved rather than the peak demand goal. Perspective 4: Given changing baselines .2 and applying it to the Peak Demand Goal seems to be the right level. Changing this may have unintended consequences. We really need to do more analysis if we are going to adjust it. Perspective 5: This is a unique way of setting an energy savings goal. In some ways it really streamlines the process avoiding a costly potential/goal study that can falsely overstate how one technology will achieve those goals.	16 TAC §25.181(2012) PG 81 of 283 Discusses *subsection (e)(4) Conservation Load Factor*	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 3: Priority of kWh Savings	Stakeholders agree that kW demand reductions are the most important goal and agree	Perspective 1: If there was a transition to focus on kWh savings it is important to recognize that program costs will go up. Prior program years had the		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
	that there are kWh savings that follow Peak demand reductions, but that kWh savings are most important to customer	benefit of lighting and HVAC measures that will be harder with code/baseline changes. Perspective 2: If the goal goes up it will be even more important that cost effectiveness is looked at "program vs. portfolio, "so those higher cost measures/offerings can be included.		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 4: Calculation of kWh goal.	Several stakeholders voiced interest in the concept of "assigning a value to every hour of the year." This was a new concept that piqued interest (showcased in Perspectives 2-4)	Perspective 1: kW is the most important goal for the grid: Cost, reliability, resiliency. kWhs are an equity issue and saving kWhs has a bigger impact on affordability for low-income populations. This relates to how kWhs are calculated not a goal. Perspective 2: Rather than use an ECLF, you could assign a value for every hour of the year so you can amplify the value in those peak savings periods. In addition, you can also assign appropriate value to the rest of the hours of the year so you can capture those energy savings (kWh) impacts. Using this method, you can capture interventions that drive peak savings but also achieve energy savings the other times of year, so you balance and value both. Perspective 3: *Out of the Box Thinking* Perhaps the	16 TAC §25.181(c)(6) definition of Conservation Load Factor 16 TAC §25.181(e)(4) Annual EE goals.	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		"savings goals" are transitioned to "budget goals" in that You may have a fixed amount of budget to go get the value that was defined in Perspective 2 above. This perspective is about establishing a budget to achieve the demand reductions at the time of the year you want them. Perspective 4: *Related to Out of the Box Thinking:* Take the Value stream and calibrate how much budget to achieve the statutory goal and potentially layer an energy savings goal that is aligned with different seasons or include an adder for capturing different parts of the market that otherwise wouldn't have been served.		

6.4.3 Session 3 and 4 February 24th and March 6th, 2023: Goals Considerations

Session 3 and Session 4 discussion on Goal Considerations. The table below summarizes the key issues identified and places a priority/level of effort for addressing this issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Cost Caps – Administrative, R&D and EECRFs	16 TAC §25.181(1) cost of administration not to exceed 15% of a utility's total program costs. The cost of R&D not to exceed 10% of a utility's total program costs for costs. The total of both cannot exceed 20%. 16 TAC §25.181(f) Energy Efficiency Cost Recovery Factor (EECRF) (f)(2) Costs directly assigned to each rate class that receives services and combine smaller and similar rate classes through good cause exception. 25.182 (d)(7) Cost Caps for 2019 and after increases by CPI. 2018 base is $0.001263 per kWh; for commercial $0.000790 per kWh. PURA Sec. 39.905 Goals for Energy Efficiency (e) An electric utility may use money approved by the commission for energy efficiency programs to perform	**High Priority:** Stakeholders voiced that many of the smaller IOUs are limited by the Cost Caps and have even requested a "good cause exception." With the increased cost of electricity and the rising costs of measures, cost caps should be reviewed.

Issue	Summary	Working Group priority and why
	necessary energy efficiency research and development to foster continuous improvement and innovation in the application of energy efficiency technology and energy efficiency program design and implementation. Money the utility uses under this subsection may not exceed 10 percent of the greater of: (1) the amount the commission approved for EE programs in the utility's most recent full rate proceedings or (2) the commission-approved expenditure by the utility for EE in the previous year.	
Issue 2: Specific program types of contributions to goals	The percentage of kW reduction from load management programs varies by utility, but over 60% of statewide energy efficiency portfolio kW reductions are typically from LM programs each year. 5% of the total demand reduction goal must come from the HTR sector and is 25.181. 10% of ERCOT budgets to LI and is in PURA	**High Priority:** Stakeholders voiced the need to review and potentially expand the HTR definition. Understanding where load management will be captured is required to understand how these goals should be adjusted.
Issue	**Summary**	**Working Group priority and why**
Issue 3: Cost Effectiveness	The cost-effectiveness standard is the Utility Cost Test (UCT) and is conducted at the program-level except for ERCOT LI which is the savings-to-investment ratio (SIR).	**High Priority**: A program is deemed cost effective if the cost of the program to the utility is less than or equal to the benefits of the program. Stakeholders voiced the need to review portfolio cost effectiveness vs. program cost effectiveness or quantifiable additional benefits
Issue	**Summary**	**Working Group priority and why**
Issue 4: Opt Outs	16 TAC §25.181(w) allow industrial customers to opt out of energy efficiency program cost recovery.	**Low Priority:** Stakeholders voiced agreement that if industrial customers opt out, it would be beneficial if they reported energy efficiency savings to the State Energy Conservation Office (SECO) or the PUC as this value is not being captured in Texas.
Issue	**Summary**	**Working Group priority and why**
Issue 5: Marketing/ What roles can REPS Play	PURA and 16 TAC §25.181 require ERCOT utilities to use its best efforts to encourage and facilitate	**Low Priority:** Stakeholders agree there is an opportunity for better

Issue	Summary	Working Group priority and why
	involvement of retail electric providers (REPs) in delivery of EE and DR programs.	communication, however barriers exist given budget constraints. (i.e., REPs may want to work with larger TDUs). No rule change is needed for increased REP coordination
Issue 6: Performance Bonus	PURA section 39.905 (b)(2) requires Commission to establish performance bonuses for utilities that exceed the minimum goals. Section 25.18 (e) Utility that exceeds 100% of its demand and energy reduction goals receive a bonus equal to 1% of net benefits for every 2% that the demand reduction goal has been exceeded – capped at 10% of utility's total net benefits. Performance bonuses are included in program costs when calculating Net Benefits.	**Medium Priority:** Stakeholders voiced agreement that performance bonus or revenue recovery is needed to support EE programs. A future rule change may be more around the calculation of the performance bonus.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Cost Caps – Administrative, R&D and EECRFs	IOUs shouldn't have to bump up against the cost cap every year – if this is the case they need to be adjusted. (Example discussed was SWEPCO as the smallest IOU that has submitted a "Good Cause Exception" for the cost caps.)	<u>Perspective 1:</u> In Sierra Clubs filing they requested cost caps be raised from $1.20-$1.40 per customer to $2.50 as their basis for residential and proposed nearly doubling it for commercial as well. This reflects the level of spending at Austin Energy and CPS Energy. <u>Perspective 2:</u> $1.25 to $1.50 is probably the right place for us to have those costs. But maybe they are adjusted for the smaller IOUs who bump up against them every year. <u>Perspective 3:</u> The cost of electricity has increased significantly so the value of EE has risen significantly. The IOUs indicated that the cost of measures/programs will be increasing with "Low-hanging fruit" already being captured. Increasing the cost cap is	PURA Sec. 39.905 Goals for Energy Efficiency (e) 25.182 (d)(7) Cost Caps for 2019 and after increases by CPI. 2018 base is $0.001263 per kWh; for commercial $0.000790 per kWh.	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		necessary. Let's not treat the cost cap as a limit. Perspective 4 RE- Admin/R&D Caps: Is it necessary to increase the R&D Cap when many other states and EE labs, etc. can provide solid real-life examples through their testing etc.? Also – why does Texas put this burden on IOUs when many other states have regional collaborative organizations to do this (i.e., NEEA/SPEER). Are we requiring them to conduct duplicative efforts? Perspective 5 RE- Admin/R&D Caps: IOUs may use that R&D money to research those solid real-life examples from other states to determine if they are viable options in Texas. It takes resources to research, vet and prioritize new measures to bring into Texas. Some R&D money currently does fund organizations like SPEER. There is a need to vet measures to individual climate zones. What works in Dallas may not work in Houston or El Paso. Perspective 6 – Admin/R&D Caps: If R&D is capped at 10% in PURA then adding combined cap really isn't assuring it will be spent on R&D. you may just be increasing the admin budgets. Perspective 7 – Admin/R&D Caps: We need to take a long-term view; we need to provide flexibility in the Caps for utilities as we only get a rule making change once in a 10-year span. Perspective 8: Section 25.182(7)(c) sets a base cost cap and allows for escalation of the cost caps every year based		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		on inflation adjustments. It is, therefore, important to note that the cost caps are not a static number.		
Issue 2: Specific program types of contributions to goals	Stakeholders agreed that reviewing and potentially expanding the HTR definition makes sense. Perhaps LI may become a subset of HTR customers.	Perspective 1: Our focus should be on expanding our existing programs and creating new programs to increase energy efficiency. Focusing on that versus trying to adjust goals, we will be in a better spot at the end of the day. Perspective 2: We would like the definition of HTR expanded (right now it basically means LI). We believe it should be expanded to include geography, socioeconomics, or other barriers to participation. Perspective 3: The energy efficiency goals should be separate from load management goals for LI and the HTR community. Peak demand reduction should be the primary goal for all other programs and reporting the energy efficiency that is obtained through those measures.		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 3: Cost Effectiveness		Perspective 1: Cost effectiveness should be at the portfolio level vs. program level. Perspective 2: Programs should stand on their own and cost effectiveness calculated at the program level.		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		Perspective 3: Pilots should be given a longer period to achieve cost effectiveness and show progress. HTR and LI should be calculated differently given they are bound to be more expensive.		
Issue 4: Opt-Outs	Stakeholders agree that Industrial Opt-outs reporting their energy efficiency efforts is worthwhile for Texas, but it would require a legislative change and that would be difficult.	Perspective 1: If the industrial customers opt out, they should be reporting their EE to SECO so the state can capture the EE they are contributing to the State. Perspective 2: A This was introduced by Sierra Club for Austin Energy and received pushback from the industrials. So, while it is a good idea, it may not happen.		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 5: Marketing / What roles can REPS Play		Perspective 1: Hitting the admin cost cap can cause barriers to market or including REPs as the budget just isn't available. Perspective 2: REPs may not want to get involved with some of the smaller utility programs as the budget isn't worth their time getting involved. Perspective 3: More consistent, streamlined programs ERCOT-wide would help REPs get more involved.		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 6: Performance Bonuses		Perspective 1: We support the performance bonus for utilities that exceed their goals; however, take issue with the way it is calculated and rolled into future program year budgets. Perhaps the performance bonus should be calculated as a maximum percent of the program spend. (i.e., 10%-15%)		
Issue 7: Program Barriers		Perspective 1: We must streamline program delivery. Contractors are not willing to complicate their processes to participate in the programs when they can stay busy without us. Perspective 2: Perhaps we set up a focus group to discuss how EEPRs can be improved to make them easier to understand and provide more transparent reporting. Information may be in there, but we can't find it. Perspective 3: Innovation will be on the EE programs but will be more expensive with HVAC and lighting baseline changes.		

6.5 LOW-INCOME AND UNDERSERVED SEGMENTS

Session 1 January 24, 2023: Low-Income and Hard-to-Reach Programs

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Definition Low-Income and Hard-to-Reach (HTR)	16 TAC §25.181 defines low-income and hard-to-reach annual household income as at or below 200% of the Federal Poverty guideline	High Priority: All stakeholders supported expanding or broadening the definition of Low-Income and HRT customers. Doing so has the potential to expand/streamline program delivery options and provide services to a broad group of LI and/or HTR customers, such as moderate-income customers and serving rural areas.
Issue 2: Low–Income and HTR Programs Level of Goals	PURA requires the Commission to ensure not less than 10% of ERCOT utility's EE budget is utilized by targeted low-income programs. 16 TAC §25.181 requires at least 5% of each utility's total demand reduction comes from HTR customers	Medium Priority: If the definition of Low-Income and HTR customers changes, goals must also be reviewed and potentially adjusted as appropriate. Stakeholders voiced that aligning goals with population, geographic location, standard data set, and workforce availability is important.
Issue	**Summary**	**Working Group priority and why**
Issue 3: Low-Income and HTR Program Cost-effectiveness Standard	Savings-to-Investment Ratio (SIR) is used for targeted low-income programs, while Utility Cost Test (UCT) used for hard-to-reach programs	High Priority: Stakeholders voiced adjusting the cost-effectiveness standards from program to portfolio will promote program innovation, expand measures, and streamline overall program delivery.
Issue	**Summary**	**Working Group priority and why**
Issue 4: Low-Income and HTR Program Design	PURA requires coordination between targeted low-income and federal weatherization programs. Targeted low-income programs must comply with the same audit requirements as federal programs	Medium Priority: Stakeholders voiced adjusting program design requirements could positively impact access to programs, streamline validation processes and improve communication between stakeholder groups (County, City, REPS, Implementors, Advocacy Groups, and Utilities)

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Definition Low - Income and Hard-to-Reach (HTR)	Expanding the definition will have a positive impact on Texas in both rural and urban	<u>Perspective 1:</u> Combine Low-Income and HTR definitions. (Low-income defined in statute and HTR defined in Rule)	16 TAC §25.181(c)(27) PURA 39.905 (f)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
	populations and allow for a greater number of program opportunities	Perspective 2: Combining Low-Income and HTR definitions may be more difficult for the ERCOT utilities vs. the non-ERCOT utilities. (Due to PURA low-income specifics) Perspective 3: Broaden the "200% at or below Federal Poverty" guideline to include the moderate-income group. Perspective 4: Use a percentage based on a calculated area Average Median Income (AMI). AMI will also account for the difference in cost of living within the eight utilities' service territories and each utility's service territory		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 2: Low–Income and HTR Programs Level of Goals	Stakeholders voiced the importance of understanding if/how the definition of Low-Income or HRT may change to ensure the goal is set at an appropriate level	Perspective 1: If the definition has no expansion, the goal is appropriate. Perspective 2: More research into the Texas population and demographics is needed to appropriately set goals by utility service territory. Perspective 3: Using a standardized shared data set to identify Low-Income / HTR customers would help utilities validate and achieve goals. (i.e., census data, list of qualified customers from agencies, such as TDHCA	PURA 39.905(f) 16 TAC §25.181(p)(1) and (e)(3)(F)	Additional information was provided and available in the Materials Provided folder on Teams

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 3: Low-Income and HTR Program Cost-effectiveness Standard	Stakeholders voiced transitioning from program-level cost-effectiveness to portfolio cost-effectiveness would have a positive impact on Low-Income and HTR programs Non-ERCOT Stakeholders voiced the importance of having the option to use their own T&D avoided costs I the future, even if the option is not being used today.	Perspective 1: Moving to portfolio cost-effectiveness may allow a greater number of innovation/pilots, increased measure bundling and cross-program delivery mechanisms, enhanced incentives (kicker for low-income participants), staffing/contractor stabilization, and improve customer access. Perspective 2: If portfolio cost-effectiveness is not an option, would ratepayer segmentation (residential and commercial portfolios) be an alternative? Stakeholders voiced any flexibility would be welcomed over stand-alone program cost-effectiveness. Perspective 3: Incorporating additional benefits beyond electricity savings (NEBs - carbon, water) into the program cost-effectiveness calculations will more accurately reflect the program's impact on Low-Income and HTR customers. Perspective 4: Different Cost-effectiveness calculations for different low-income programs and measures allow for trade-offs between the number of participants served and the depth of services provided. A good option for when you have a larger set of the populations trying to be several by the programs. Perspective 5: (Received via email after the call - discussed in	16 TAC §25.181(p)(2)	EM&V Process change could address and possibly documented in TRM guidance

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		Workshop #2) Create a methodology for determining the retail energy cost before starting a program year to be used by all utilities and EM&V in SIR calculations.		
Issue 4: Low-Income and HTR Program Design	Stakeholders agree serving rural communities is a challenge. Stakeholders agree that streamlining the validation process will improve program delivery, and having a standardized data set provided to utilities may help reduce the documentation requirements	Perspective 1: Coordination and collaboration among community agencies have proven difficult. There are competing priorities and "pools" of money. Perspective 2: More coordination and communication with REPs, who have access to Low-Income and HTR customers, is an untapped asset. Perspective 3: The large REP population impedes comprehensive and fair communication and coordination. Perspective 4: Being able to validate program eligibility based on geographic location (Geotargeting), such as zip code, would help streamline delivery. Perspective 5: Some participants may not qualify who receive benefits under the current definition if just using geotargeting. Perspective 6: For new construction – better coordination between county/city permitting agencies will help developers improve awareness of utility programs and the efficiency of homes and buildings.	PURA 39.905(f)	Consider setting up formal committees or communication channels for interested stakeholders to improve collaboration and coordination between groups with the same interests.

Session 2 February 7, 2023: Identification of underserved segments

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group Priority and Why
Issue 1: Definition of Underserved Segments	16 TAC §25.181 defines HTR annual household income as at or below 200% of Federal Poverty guidelines, and savings from HTR customers shall be at least 5% of each utility's demand reduction goal.	**High Priority:** Stakeholders voiced a definition may be necessary, but taking into consideration how rigid the definition is also important to not exclude those that will benefit from these programs.
Issue	**Summary**	**Working Group Priority and Why**
Issue 2: Identifying Underserved Segments	16 TAC §25.181 requires each utility's energy efficiency plan and report (EEPR) to include a list of counties that were underserved in the prior year by the energy efficiency program.	**Low Priority:** This issue seemed to overlap with defining underserved segments.
Issue	**Summary**	**Working Group Priority and Why**
Issue 3: Program Design	Stakeholders agree a consistent method should be used to calculate the Avoided Retail Energy Value used in the SIR calculation to avoid confusion and timing issues with a fluctuating market.	**High Priority:** Stakeholders voiced that aligning the timing or discussing a consistent method to be used will help eliminate confusion and discrepancies
Issue	**Summary**	**Working Group Priority and Why**
Issue 4: Cost - Effectiveness Standard	Since 2010, the cost-effectiveness standard, UCT, has evolved around avoided costs of capacity and avoided costs of energy for HTR programs. The SIR is used for Targeted Low-Income Programs. Cost-effectiveness is conducted at the program-level	**High Priority:** Stakeholders voiced that with rising baselines come rising costs. Discussing options to calculate cost-effectiveness will spur innovation and increase the reach of HTR, Underserved, and Low-Income Programs.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Definition of Underserved Segments	Stakeholders agree expanding the definition of HTR and *maybe* creating or combining the definition to include the underserved is appropriate as there are many customers on the "fringes" that the programs cannot help.	Perspective 1: If the definition changes (or is created), we must review the goals for serving underserved / HTR segments. Perspective 2: Including a range in the definition may provide the flexibility the programs require to help those that need it most and may be on the "fringe." Perspective 3: Expanding the HTR definition to include moderate-income or underserved customers is important; however, we also need to understand how that may cannibalize the budget for truly low-income customers. (Concern that combining budgets will not be used across all sectors included in the definition)	Currently, there is no definition of "underserved"; there is only a definition for 16 TAC §25.181(c)(27) HTR.	
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 2: Identifying Underserved Segments	Stakeholders agree serving rural communities is a challenge and is often identified as "underserved."	Perspective 1: Adding a definition may help provide "parameters" for what should be included in the EEPR. As programs mature, it is important that we track underserved customers/communities/segments. Perspective 3: Regarding serving rural communities – providing a travel stipend to motivate project sponsors to go to rural areas is something that is being explored.	16 TAC §25.181(l)EEPR Reporting 16 TAC §25.181(f) Incentive Payments may be different for "areas that have historically be underserved" ….	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 3: Program Design	Stakeholders agree to discuss the Avoided Retail energy value in Program Design. Stakeholders agree that a consistent method should be used to calculate Avoided Retail Energy Value used in the SIR calculation to avoid confusion and timing issues with a fluctuating market.	Perspective 1: Using public sources to inform the avoided retail energy value used in the SIR calculation may help, but the timing may still produce discrepancies. Perspective 2: Having a shared avoided retail energy value would provide value to eliminate confusion Perspective 3: Documentation and the lack of standardization of documentation requirements across service territories is a burden. Figuring out how to streamline that to alleviate the distrust and burden.	16 TAC §25.181(c)(50) SIR Definition 16 TAC §25.181(p)(2) Targeted Low-Income EE Program 16 TAC §25.181(f) Incentive Payments may be different for "areas that have historically be underserved by the utilities EE programs or for other appropriate reasons."	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 4: Cost Effectiveness Standard	General agreement that the UCT at the program level provides less flexibility regarding measures for underserved segments.	Perspective 1: HTR/Low-Income/Underserved communities, often the burden is getting the home/business to a health and safety standard baseline so home/building can "accept" an energy efficiency intervention. It is hard to help these customers due to the current design and cost-effectiveness requirements. Perspective 2: Perhaps adding a benefit or value for reducing energy burden to those in the most vulnerable populations for these programs. Perspective 3: Are we appropriately valuing peak reduction related to the	16 TAC §25.181(d) Cost-effectiveness standard	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		low-income housing stock – appropriate valuing EE?		

Session 3 February 21, 2023: Cross-collaboration of funding sources discussion

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Identification of other funding Sources	Section 39.911 regards the State Energy Conservation Office (SECO) to solicit gifts, grants, and other financial resources available to fund energy efficiency improvements and renewable energy systems for public and private facilities in the state.	**Low Priority:** The group identified the importance of leveraging funds through other sources. No rule change would be required, just cross-collaboration between organizations.
Issue 2: Utilization of other funding sources	See above Section 39.911 – SECO is the likely source of how IRA funds will be distributed in Texas. SECO, Texas Department of Housing and Community Affairs (TDHCA), Community Action Agencies (CAAs), Non-Profit organizations, and DOE have programs supporting EE for Low-Income and Underserved communities.	**Medium Priority:** The group agrees leveraging and utilizing funds from other sources is important; however, barriers do exist, such as the one-year planning/reporting program cycle.
Issue 3: Partnerships and program development	Section 39.905 (f) requires coordination between targeted low-income and federal weatherization programs. It also requires targeted low-income programs to comply with the same audit requirements that apply to federal weatherization programs.	**Low Priority:** The group agrees partnerships and collaboration in program development is important; however, barriers exist, such as staffing, competing priorities, and timing.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Identification of other	Stakeholders identified there is additional funding for low-income weatherization.	Perspective 1: IRA funding is capturing attention right now; however, a lateral alignment	No Changes	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
funding sources	Stakeholders identified potential funding sources for both low-income and underserved segments: Inflation Reduction Act (IRA), Infrastructure Investment and Jobs Act (IIJA), Property Assessed Clean Energy Program (PACE), Housing and Economic Recovery Act (HERA), and HOME program, 25c Tax Credits.	may negatively impact low-income programs as there are requirements that may create barriers to participation. Perspective 2: Some organizations have utilized community service block grants to conduct baseline repairs to ready low-income homes for weatherization.		
Issue 2: Utilization of other funding sources	Partnerships/collaborations with other organizations exist now (i.e., Utilities partnering with organizations like Habitat for Humanity).	Perspective 1 (More Around Program Design Collaboration): One utility has the option of a Low-Income qualifier that eliminates the "basic customer charge" from their monthly utility bill. This data is being considered a potential screening tool to identify low-income participants in their Marketplace EE program to eliminate the taboo income questions and claim these savings through low-income programs. Perspective 2: Project Bravo (Community Action Agency) for El Paso County, Large-Scale Low-Income Project example. Non-profits and CAAs are not held to the same regulatory requirements and planning cycles as utilities create a challenging collaborative environment. Utilities are unable to rely on annual savings to achieve goals. Perspective 3: Utilizing 25c Tax Credits requires a tax liability which many low-income households do not have.	25.182 (d) Reporting – Each electric utility shall file by April 1st of each program year an annual energy efficiency plan and report.	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 3: Partnerships and program development	Stakeholders voiced that many of the "new" SECO funding sources, such as IRA, do not yet have defined requirements and/or rules.	Perspective 1: Given each funding source's rules and/or constraints, Collaborative customer education will be important to help them navigate programs. Perspective 2: For new construction, targeting the HERA and HOME program by working with developers to incentivize new equipment installation may be a low-barrier (easier) route for partnerships and collaboration. Perspective 3: There is an opportunity for third-party organizations to collaborate with other organizations (Municipal utilities, water, natural gas) to find additional funding and bring program benefits to other utilities vs. focusing all the burden on electric utilities.		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issues 2 – 3 Specific to Underserved (Not Income Qualified)	Stakeholders indicated a big challenge to partnerships is the timing of project completion. Participating in community events, such as school or small business association events, are excellent communication and engagement channels for program education.	Perspective 1: There are opportunities for the Utilities to cross-collaborate with other organizations/programs such as Better Building Initiative, Green Building Grants, PACE, TDHCA, etc. Perspective 2: Past experiences of committing significant resources to apply for grants and collaborating with outside organizations with unsuccessful results cause hesitancy to move forward. Perspective 3: Due to a lack of response and staffing, some seek third-party implementors to act as an agency for underserved rural communities.		

Session 4 March 8th, 2023, Low Income and Underserved Segments Working Group

The Low Income and Underserved Segments working group discussed the Best Practices and Overarching Themes that emerged during all the workshops, including any wordsmithing and/or comments gathered for each presented. In addition, the facilitator discussed the session summary tables and review process for the EEIP progress update.

6.6 DEMAND RESPONSE/LOAD MANAGEMENT

6.6.1 Session 1 January 25, 2023, Role of Demand Response in Energy Efficiency Portfolios

The table below summarizes the key issues identified and places a priority for addressing this issue in a rulemaking or other avenue.

Issue	Summary	Working Group priority and why
Load Management (LM) Program Purpose in Energy Efficiency Portfolio	Senate Bill 3, PURA § 39.905(a)(2): "goal of legislature that all customers, in all customer classes, will have a choice of and access to energy efficiency alternatives and other choices from the market that allow each customer to reduce energy consumption, summer and winter peak demand, or energy costs." All eight IOUs have commercial summer load management programs; Oncor added a winter load management (WLM) program in 2022; the other ERCOT utilities are piloting WLM programs in 2023. These WLM programs include 24/7 options. Oncor, CenterPoint and El Paso also offer residential LM programs. These residential programs have been growing; with participation often capped below customer interest.	**High Priority:** Stakeholders voiced the importance of LM in meeting peak kW goals, others discussed the original purpose of energy efficiency was to address market failures, incentivize behaviors and equipment that would not otherwise move forward at the individual level for a public benefit. Another viewpoint was the program should complement the competitive market in ERCOT.
Issue	**Summary**	**Working Group priority and why**
Demand Response Coordination	PURA and 16 TAC §25.181 require ERCOT utilities to use its best efforts to encourage and facilitate involvement of retail electric providers (REPs) in delivery of EE and DR programs.	**Low Priority:** Stakeholders discussed an opportunity for more coordination with changes to the ERCOT ERS program, more coordination with REPs, coordination at the state level with the inflation reduction act and infrastructure bills in particular to do more integrated Energy Efficiency/Demand Response.
Issue	**Summary**	**Working Group priority and why**
LM Goal Contribution	The percentage of kW reductions from load management programs varies by utility, but over 60% of statewide energy efficiency portfolio kW reductions are typically from LM programs each year.	**Medium Priority:** Stakeholders voiced if load management goals are changed whether adding a summer and winter peak, or separating them out from EE programs all together, goals will need to be adjusted.

Issue	Summary	Working Group priority and why
Use of LM Programs	16 TAC § 16 TAC §25.181(c)(36) "load control activities that result in a reduction in peak demand, or a shifting of energy usage from a peak to an off-peak period or from high-price periods to lower price periods. "Load management is used synonymously with demand response (DR) as DR is not defined in 25.181. Can be called for grid emergency or system reliability	**Medium Priority:** Demand response provides benefits beyond energy efficiency including grid resiliency and flexibility.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Load Management (LM) Program Purpose	The original purpose of Energy efficiency programs was to incentivize behaviors and equipment that would not otherwise move forward at the individual level for a public benefit.	Perspective 1: The purpose of DR programs is to add resiliency to the grid and help ERCOT out with load management. Bundled utilities also use for these needs. Perspective 2: Some Commercial customers have been participating in the utility load management programs for a decade, they know the drill and should be moving over to the ERS program whereas new participants could be introduced to LM through the utility programs. Perspective 3: There should be consistency between utility programs so one residential customer isn't at a disadvantage based on which service territory they live in. Perspective 4: It is important to tie the incentive for the device and taking the behavioral step to install the device and participate in the program together.	§16 TAC §25.181(a)(1)(2)(3)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Demand Response Coordination	There are opportunities for more coordination between stakeholders: IOUs, Reps, ERCOT, Implementors and Advocacy groups, energy efficiency programs.	Perspective 1: More coordination can be done with REPs. Perspective 2: Messaging demand response to Texans hasn't been done well. People outside the industry do not understand what DR is and why it's important. A Statewide campaign may be needed. Perspective 3: Incentives work the best to motivate behavior change, marketing doesn't. Perspective 4: You must partner EE and DR. You cannot install a smart thermostat and expect demand reductions if their house/building isn't energy efficient.	§ 16 TAC §25.181(g)(5)(A)(B)(C)	
Goal Contribution	Demand Response programs play an important role in reducing both Winter and Summer peak demand.	Perspective 1: Cost Caps can be a hindrance in increasing or decreasing demand response programs through energy efficiency portfolios. Perspective 2: Any changes in goals need to carefully consider the role DR has historically played in meeting goals. Perspective 3: A separate DR goal would add complexity for administration. A single peak kW goal makes it easier. Perspective 4: Putting a Cap on how much of the total EE savings goal can come from DR may be preferable than a separate goal. Perspective 5: We need to establish goals that are right for the service territory. We need a series of goals that sets a high standard but doesn't put an unnecessary burden on some utilities given a certain service territory. This is supported by §16 TAC §25.181(e)(2)	§16 TAC §25.181(e)(1)(3)4)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Use of LM Programs	Load Management programs offer flexibility to a stressed grid. Demand Response provides non-wire alternatives to the grid. More integration with DERs is needed	Perspective 1: Using these programs to address congested feeders is an option, incorporating more Geo-targeting. Perspective 2: Electric vehicles may end up being extremely beneficial to DR programs. We need to keep this on the radar as the technology is developed and deployed as this can provide flexibility to the grid. Perspective 3: There is potential to incentivize back up services like battery storage etc. to help provide even more grid flexibility for longer durations. Perspective 4: Limit the years a commercial customer can participate in the EE demand response programs to encourage the experienced participants move to the ERS program.	§ 16 TAC §25.181(e)(5)	

6.6.2 Session 2 February 8th, 2023—Best Practices Discussion

The table below summarizes the best practices identified for demand response programs and the various perspectives expressed.

Best practice	Perspectives/ideas captured
Focus on the customer by providing tangible value and multiple paths to participation for a "Big tent" approach	Perspective 1: Stakeholders voiced it was important to note the original intent and purpose of these programs were to develop energy efficiency options for customers that were not yet readily available in the market or for which additional financial assistance (e.g., low-income programs) was needed. Perspective 2 Keep participation path simple: Example given of utility has an EE rebate for smart thermostats, a DR enrollment incentive along with a bring your own thermostat program. They market the program on their utility marketplace where a customer can get both incentives at the same time. Perspective 3: Build on smart thermostats while exploring other technologies. Simplistic program design examples are plentiful for smart thermostats, but other technologies like smart water heaters are a bit behind and it may be harder to market these technologies over a utility marketplace.

Best practice	Perspectives/ideas captured
	Perspective 4: Coordinating programs through REPs, customers who sign up get a free or reduced-price thermostat. The customer does not even need to know the money came from the IOU program. This may broaden the reach to customers that are not just early adopters. Perspective 5: Emerging Theme –consistency and flexibility in program designs to meet the needs of customers and evaluations. Perspective 6: Adding clarity around customer types would be helpful. For example, large commercial, industrial, mid commercial can benefit on their own, while aggregating residential and small business efforts there is untapped potential, but the economics are not as clear. Targeting these customers using rate payer funds seems appropriate.
Best practice	**Perspectives/ideas captured**
Integrates EE and DR when feasible	Perspective 1: For residential customers, understanding the readiness of the customer's home to install a smart device and participate in a DR program is important. Some homes will need an audit, weatherization, or other EE upgrades before DR is beneficial to them and the grid. Perspective 2: For Commercial Customers, using controls and software programs through Strategic Energy Management (SEM) programs should be explored. It was discussed that one can work with Vendors to integrate DR as they are automating responses to shave peaks daily in some cases. Bringing DR and EE program staff together to discuss how each program can contribute to help incentivize those controls/software measures is important. Perspective 3: Keeping programs simple is most important for adoption. This viewpoint cautions against requiring weatherization as it could crush the program participation unless budgets are drastically increased.
Best practice	**Perspectives/ideas captured**
Complements other DR offerings and the competitive market (i.e., ERCOT programs, REP coordination)	Perspective 1: Partner with REPs. REP can partner with a smart thermostat provider and TDUs can allocate a percentage of their EE program budgets to deployment of the thermostats to customers recruited by REPs who agree to install the thermostat and enroll in the DR program. Perspective 2: Prescreen and refer customers. The IOU could pre-screen the customer to ensure their home is smart thermostat ready through an audit or weatherization program or based on new construction. Perspective 3: Explore processes to support coordination even if Rule language does not need to change. Including a performance metric to promote coordination through tracking and reporting could be an option. Perspective 4: Coordination is of supreme importance between stakeholders. To be effective, the programs need the IOUs with the smart meters and site stability to measure and manage parity between smart devices (heat pumps, water heaters, electric resistance, smart thermostats, etc.). The REPs have direct customer interaction, but it may not be as permanent with customer choice. Keeping that customer engaged in DR activities.

Best practice	Perspectives/ideas captured
	Perspective 5: Coordination to bridge the gap to access data. Can make it simple to evaluate and be broad in solicitation of DR programs. Right now, this requires a contract with the customers.
Improves grid resiliency (i.e., geotargeting, DER integration, seasonal needs)	Perspective 1: Understanding the problem we are trying to solve is important. Historically it has been summertime afternoon system demands. But the problems are changing and different for each utility service territory, whether bulk system issues, market issues, or distribution level, having the flexibility of geotargeting is important. Perspective 2: Texas should glean best practices. We should be looking at other states who have implemented successful programs or are ranking high on the list for Energy Efficiency programs, for instance New York's Reforming the Energy Vision (REV) program. There is an excellent opportunity for each IOU to study their local distribution and transmission related needs and assign a value to them. Perspective 3: The T&D utilities need to proactively think about managing distributed resources. With solar systems, EV's, storage, and other emerging technologies, they need to determine how to build out this system, manage and interact with customers and/or their retailers in a way that turns these innovative technologies into a resource for them.
Best practice	**Perspectives/ideas captured**
Taps into potential across all eligible customer segments	Perspective 1: For commercial customers, it's important to have a range of participation options. Choices should consider their risk/reward tolerance, load shedding commitment, and flexibility needs and design the program with a range of options for customers. Perspective 2: For residential customers, look at simple demand response programs and technologies that will attract customers into the program. Having goals combined (DR and EE) simplifies this process. Example: you can install a smart thermostat and capture energy efficiency saving, but the utility also has a new smart device resource in the home that can be engaged on the DR side and enrolled even easier, even if down the road and vice versa. If you enroll the customer first in DR, it will be easier to engage them for other EE measures later. (Weatherization, etc.)
Employs consistency with flexibility to adapt to different markets and local system needs	Perspective 1: Rules to evaluate cost effectiveness of energy efficiency products. Historically funded demand response products through those plans and proceedings, but as portfolios evolve and get away from just peak shedding products into more flexible "DR 3.0" products, there's the need for tools and 16 TAC §25.181s to give us runway to implement these best practices because we know the value is there. Perspective 2: Consistency across utility territories can improve. There is an opportunity to have consistency in program offerings across utility territories that would increase efficiency of service providers coordination but recognize there are different needs across territories.

Best practice	Perspectives/ideas captured
Accurately reflects the value of the demand response to the grid	Perspective 1: Geotargeting can be used to value DR. Con Ed has a great program example where they have analyzed every subsystem peak and assigned a value in their distribution network, so they know what curtailment is worth during those peaks and can target efforts and budget where needed most. Perspective 2: Understanding what other states are doing with regards to intelligent rates is an opportunity. For instance, designing intelligent rate structures that reflect the cost of delivering energy to the customer, at the time it is being delivered to a particular location, while also making those price signals available to customers. Service providers will be encouraged to serve those customers, customers will better understand the value and a "clunky" separate market may not be needed for it. Perspective 3: Budgets will matter. Do not assume the commission is not willing to increase budgets. It is up to stakeholders to present options that will increase reliability in the market, safety, and other issues while also providing a significant benefit to Texans. Perspective 4: Revise avoided costs. It is important to remember the value these programs can provide to the T&D providers. We should be calculating the avoided cost of T&D for these programs not just the avoided costs of DR and EE savings. Going through the effort to track the benefits will be educational.

6.6.3 Session 3 February 22, 2023-- Considerations for Demand Response Best Practices

Session 3 discussion on Considerations to implement Demand Response Best Practices. The table below summarizes the key issues identified and places a priority/level of effort for addressing this issue in a rulemaking.

Issue	Summary	Working Group priority and why
Issue 1: Peak Definitions	Winter and Summer Peak demand periods are defined in 16 TAC §25.181(a)(45): 1-7 PM June – September 6-10 PM December -February, excluding weekends and Federal holidays, can be called for grid emergency or system reliability.	**High Priority:** Stakeholders voiced the need to look at future problems and align flexibility in definitions that will support Texas future grid needs.
Issue	**Summary**	**Working Group priority and why**
Issue 2: Cost-effectiveness of programs	Load management programs must pass the utility cost test, which does not include T&D from DR	**High Priority:** Stakeholders agree the value of demand response to the grid is not adequately recognized

Issue	Summary	Working Group priority and why
Issue 2: Cost of programs	25.182 (d)(7) Cost Caps for 2019 and after increases by CPI. 2018 base is $0.001263 per kWh; for commercial $0.000790 per kWh. 16 TAC §25.181(i) cost of administration not to exceed 15% of a utility's total program costs. The cost of R&D not to exceed 10% of a utility's total program costs. The total of both cannot exceed 20%. 16 TAC §25.181(f) Energy Efficiency Cost Recovery Factor (EECRF) (f)(2) Costs directly assigned to each rate class that receives services, can combine smaller and similar rate classes through good cause exception.	**High Priority:** Stakeholders agree that cost caps pose barriers to bringing new innovative programs to market. In addition, they voiced the need to include additional benefits in cost effectiveness calculations and considerations. Xcel cannot run a residential demand response program in their EE portfolio due to the cost cap.
Issue	**Summary**	**Working Group priority and why**
Issue 3: Process to coordinate and innovate	PURA and 16 TAC §25.181require ERCOT utilities to use their best efforts to encourage and facilitate involvement of retail electric providers (REPs) in delivery of EE and DR programs.	**Low Priority:** Stakeholders voiced the need for consistency in programs while also ensuring that customers bearing the costs of the program have access to the benefits as well. While it is important, it is noted as low as it was agreed 16 TAC §25.181 itself does not change, but this can be addressed through another process.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Peak Definitions	Narrowly defining peak inhibits innovation and problems not yet identified in a dynamic environment. Stakeholders documented that there is PUC effort to determine the	<u>Perspective 1:</u> The current definition allows for peak shedding programs but limits the ability for load shifting programs and innovation for solving future grid problems with innovative technologies. (EVs, DERs, etc.). <u>Perspective 2:</u> With innovative technologies, peak hours are shifting, and the current definitions may be out of date. This can be associated with the defined period but also excluding weekends and	16 TAC §25.181(a)(45): 1-7 PM June – September 6-10 PM December - February, excluding weekends and Federal holidays, can be called for grid emergency or system reliability.	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
	most high-risk days utility DR programs could be designed to align with the market redesign.	certain holidays. (i.e., expanded work shifts to weekends and working from home culture shifts). Perspective 3: The current definition is more aligned with "bulk system level", not specific distribution level challenges. Perspective 4: The TDU DR programs should align with their distribution systems and solve their feeder/capacity challenges with a caveat incorporated such as when ERCOT calls an emergency "all hands are on deck". In other words, a definition that complements ERCOT programs, not competing with it.		
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 2: Cost-effectiveness of programs	Stakeholders agree we need to look at the true benefits DR programs offer and include them in the cost effectiveness calculations.	Perspective 1: The name Demand Response deters from its value. DR is more than just turning things down for a second. Maybe we change the name to Demand Management vs. Load Management Perspective 2: Including a T&D cost avoidance figure along with the avoided cost of capacity. Perspective 3: The cost of carbon should be included in the cost effectiveness calculations.	16 TAC §25.181(d) Cost-effectiveness standard defines benefits as energy savings and demand reductions as calculated with the avoided costs.	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 2: Cost of programs	Stakeholders agree customer cost caps are limiting program innovations and offerings.	Perspective 1: At least one utility is running DR programs outside of their EE programs due to Customer Cost Caps. Perspective 2: With the Admin Cost Caps it causes a barrier to program innovation as there are significant startup costs associated with new programs.	16 TAC §25.182 (d)(7) Cost Caps for 2019 and after increases by CPI. 2018 base is $0.001263 per kWh; for commercial $0.000790 per kWh. 16 TAC §25.181(i) cost of administration not to exceed 15% of a utility's total program costs. The cost of R&D not to exceed 10% of a utility's total program costs. The total of both cannot exceed 20%.	
Issue 3: Process to coordinate and innovate	Stakeholders agree more can be done to educate/market demand response programs to customers.	Perspective 1: All customers are bearing the costs of these programs but not benefiting from them. Perspective 2: DR programs are complex – we are asking customers to change their behavior not just install a new piece of equipment and forget about it. Perspective 3: These programs require a strong relationship to educate the customer on what they are signing up for. Perspective 4: Consider a metric that captures the value of DR and EE measure integration and coordination with other parties. (i.e., a programmable thermostat provides both DR and EE benefits,		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		thermostats delivered through REPs).		

6.6.4 Session 4 March 8, 2023

The Demand Response working group focused on discussing a recap of Best Practices with word smithing and sharing Overarching Themes that emerged during all the workshops. In addition, the facilitator discussed the session summary tables and review process for the EEIP progress update.

6.7 PROGRAM PLANNING

Session 1 January 26, 2023: Planning Cycle

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Planning Cycle	PURA and 16 TAC §25.181 require an annual energy efficiency plan and report (EEPR) to be filed on or before April 1 of each year.	**High Priority:** Stakeholders identified the need to review the planning cycle voicing the following reasons: • reduce administrative burden, • encourage forward-thinking and align timeline with published avoided cost calculations.
Issue	**Summary**	**Working Group priority and why**
Issue 2: EM&V Cycle	16 TAC §25.181(o) defines the EM&V framework, which ensures that the programs are evaluated, measured, and verified using a consistent process that accurately estimates energy savings.	**Low Priority:** Stakeholders identified the need to review the frequency of the EM&V cycle to lower administrative burden.
Issue	**Summary**	**Working Group priority and why**
Issue 3: TRM Update Cycle	16 TAC §25.181 requires the EM&V contractor to review the TRM annually for updates. PUCT staff has approval responsibility for the TRM (16 TAC § 25.181(q) (6)(c). To facilitate proper vetting and collaborative input into the TRM, PUCT staff distributes the TRM to the Energy Efficiency Implementation Project (EEIP) and hosts an annual EEIP meeting to review the TRM.	**Low Priority:** Stakeholders identified a desire to review the TRM update cycle, voicing it may help reduce risk in their program delivery
Issue	**Summary**	**Working Group priority and why**
Issue 4: Stakeholder	PURA and 16 TAC §25.181 require ERCOT utilities to use their best efforts to encourage	**High Priority:** Stakeholders voiced a gap in knowledge surrounding the

Issue	Summary	Working Group priority and why
Engagement in Planning Cycle	and facilitate the involvement of retail electric providers (REPs) in the delivery of EE and DR programs. 16 TAC §25.181 also includes collaboration with the Energy Efficiency Implementation Project (EEIP).	planning cycle, manner of participation, and process, which may result in missed EE program opportunities.
Issue 5: Program Options: Standard Offer, Market Transformation, and Self-delivered Programs	Standard Offer Program (SOP): A program under which a utility administers standard offer contracts between the utility and energy efficiency service providers. Market Transformation Programs (MTPs): Strategic programs intended to induce lasting structural or behavioral changes in the market that result in increased adoption of energy efficiency technologies, services, and practices. Pilot programs typically fall under this definition. Self-Delivered Programs: a program developed by a utility in an area where customer choice is not offered that provides incentives directly to customers. The utility may design and administer the program using internal or external resources.	**Low Priority:** Overall, stakeholders agreed that the definitions of the program offerings provided enough flexibility. However, providing longer durations for pilots to run was overall the most commonly voiced theme from stakeholders.
Issue 6: Method of Avoided Costs Calculation Energy	Energy avoided costs are calculated from the load-weighted average of wholesale prices for the peak periods from the two previous winter and summer peaks.	**High Priority:** Stakeholders voiced a desire to review the calculation method to help level the volatility in energy prices.
Issue 7: Method of Avoided Costs Calculation Capacity	As reported by EIA, Capacity avoided costs are calculated from the base overnight cost using the lower of a new conventional or new advanced combustion turbine.	**High Priority:** Stakeholders identified that the avoided capacity cost had been the same at $80 per kW for over a decade. The calculation may not accurately capture the full value of EE programs.
Issue 8: Timeline of Avoided Cost Calculation Energy & Capacity	Each November avoided costs are calculated and published; Capacity by Commission and energy by ERCOT.	**High Priority:** The timing of November published avoided costs does not align with the April 1 EPPR filings. In other words, programs are filed before updated avoided costs; this can cause conflict with program filings and cost-effectiveness calculations.

For the first five identified key issues above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed. The remaining three issues were not discussed until session two. Please see Session two summaries for discussion of issues six through eight.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Planning Cycle	Streamlining the planning cycle in a way that optimizes EE Program value is the goal. Understanding that the comprehensive planning cycle (EPPR, TRM, EM&V, avoided costs, etc.) is interdependent and will require a holistic view when making any adjustments.	Perspective 1: Moving to a 2- or 3-year EE program planning cycle will encourage forward thinking and flexibility regarding measures, program design, and budgets. Perspective 2: Moving to a 2– or 3-year EE program planning cycle may limit flexibility because the plans are locked in and should be a consideration should any adjustments be made. Perspective 3: A one-year filing is simple and provides the ability to update goals and create them in a timely manner each year. Perspective 4: Transitioning EEPR and EECRF from two filings to one filing will reduce the administrative burden.	16 TAC §25.181 (d)	
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 2: TRM Update Cycle	Some form of review must occur annually due to federal code standards and new measures. Understanding that the comprehensive planning cycle (EPPR, TRM, EM&V, avoided costs, etc.) is all interdependent and will	Perspective 1: Move to a 2-year cycle with a light review in Year 1 to add new technologies and updated standards and a full update in year two to manage the risk of measures being eliminated. Perspective 2: The Texas TRM is mature, so the annual reviews are not as heavy of a	16 TAC § 25.181(o)(6)(B)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
	require a holistic view when making any adjustments.	lift and typically focus on federal standards and new measures.		
Issue 3: EM&V Cycle	Understanding that the comprehensive planning cycle (EPPR, TRM, EM&V, avoided costs, etc.) is all interdependent and will require a holistic view when making any adjustments.	Perspective 1: Adjust the EM&V cycle to reduce the burden or expand the timeline to 2 years to allow more opportunity for programs to achieve savings and bring the most value	16 TAC §25.181(o) § 25.182 (e)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 4: Stakeholder Engagement in Planning Cycle	Collaboration opportunities exist between IOUs, REPs, Implementors, and Advocacy groups.	Perspective 1: Stakeholders voiced the need to involve and educate REPS on the program planning process. When is the right time to introduce new ideas, and what is the most effective channel for coordination and inclusion? Perspective 2: Including REPs in the design phase of a program versus just the implementation would also be beneficial to overall program delivery. Perspective 3: Traditionally, the EEIP process has been the forum for that engagement		Representation and inclusion in all EEIP meetings

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 5: Program Options: Standard Offer Programs (SOP), Market Transformation Programs (MTP), and Self-delivered.	SOP and MTP seem to be offering the right flexibility in program offerings for utilities. Having only 1 Year to run a pilot is not enough time. Pilot programs need more time to stand up, learn, and adjust the program to realize the full benefits.	Perspective 1: Adding a Pilot Program classification to accommodate a longer program duration. Perspective 2: Through self-delivered programs, utilities should be able to provide incentives directly to customers more easily without approval from the PUC. Perspective 3: Given the Texas market's competitive nature, some approval from the PUC is needed for that self-delivered classification.	§16 TAC §25.181(h)(i)(j)(k) §16 TAC §25.181 (l)(2)(V) Defining a pilot may need to be added to 16 TAC §25.181, clearly allowing longer than a year if the planning cycle remains annual.	

Session 2 February 9th, 2023: Avoided Costs and Cost-effectiveness standard:

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Method of Avoided Costs Calculation Capacity	Since 2010, the cost-effectiveness standard has evolved around avoided cost of capacity and avoided cost of energy. Capacity is calculated by the commission from the base overnight cost using the lower of a new conventional or a new advanced combustion turbine as reported by EIA. Non-ERCOT utilities have the option to use their own avoided costs	High Priority: Stakeholders identified that the avoided cost of capacity had been the same at $80 per kW for over a decade. The calculation may not accurately capture the full value of EE programs.
Issue	**Summary**	**Working Group priority and why**
Issue 2: Method of Avoided Costs Calculation Energy	Since 2010, the cost-effectiveness standard has evolved around avoided cost of capacity and avoided cost of energy. ERCOT calculates avoided cost of energy from the load-weighted average of wholesale prices for the peak periods from the two previous winter and summer peaks. Non-ERCOT utilities have the option to use their own avoided costs.	High Priority: Stakeholders voiced requests to review the calculation method to help level the volatility in energy prices used in Workshop 1.

Issue	Summary	Working Group priority and why
Issue 3: Methodology of calculation Avoided Retail Energy (kWh) value used in SIR	The SIR is used for Targeted Low-Income Programs. Savings-to-Investment Ration (SIR) is the ratio of the present value of a customer's estimated lifetime electricity cost savings from EE measures to the present value of the installation costs, inclusive of any incidental repairs, of those EE measures. This is forecasted during the planning stage and finalized at the end of the program year.	Low Priority: – may not require a rule change - Stakeholders voiced a consistent method should be agreed to calculate Avoided Retail energy Value used in the SIR calculation to avoid confusion and timing issues with a fluctuating market
Issue	**Summary**	**Working Group priority and why**
Issue 4: Timeline of Avoided Cost Calculation Energy & Capacity	Each November avoided costs are calculated.	High Priority: The timing of November published avoided costs does not align with the April 1st EPPR filings. In other words, programs are filed before updated avoided costs. This can cause conflict with program filings and cost-effectiveness calculations. This was discussed in workshop 1.
Issue	**Summary**	**Working Group priority and why**
Issue 5: Cost-effectiveness Standards	The cost-effectiveness standard is the Utility Cost Test (UCT).	Medium Priority: An EE program is deemed cost-effective if the program's cost to the utility is less than or equal to the program's benefits. UCT is not called out specifically.
Issue	**Summary**	**Working Group priority and why**
Issue 6: Cost-effectiveness calculated at the program level	The cost-effectiveness standard is the Utility Cost Test (UCT), conducted at the program level.	High Priority: An EE program is deemed cost-effective if the program's cost to the utility is less than or equal to the program's benefits.
Issue	**Summary**	**Working Group priority and why**
Issue 7: Calculation of program benefits	The program's benefits consist of the value of the demand reductions and energy savings, measured in accordance with the prescribed avoided costs prescribed….	High Priority: The present value of the program benefits shall be calculated over the projected life of the measure installed or implemented under the program.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed.

Key Issue	Areas of Agreement	Areas of Debate	Would this require Legislation or Rulemaking? If so, what?	Could another process address?
Issue 1: Method of Avoided Costs Calculation Capacity	Stakeholders voiced agreement that more discussion around the 2% escalation rate is needed.	Perspective 1: Providing enough incentive for measures like HVAC and Heat Pumps in residential programs is tough, especially with HTR and/or Low-Income customers with the "incentives for customer classes can't be over 100% of the avoided costs." Perspective 2: For rural areas, some utilities face issues raising incentive levels to attract contractors to work in those areas, especially with changes in the TRM and inflation. Perspective 3: The current calculation has an escalator of 2%. For measures with long EULs, we're applying a discount rate of 8%, but we're escalating the value over time by only 2%.	16 TAC §25.181(d)(2) Cost Effectiveness Standard	
Key Issue	**Areas of Agreement**	**Areas of Debate**	**Would this require Legislation or Rulemaking? If so, what?**	**Could another process address?**
Issue 2: Method of Avoided Costs Calculation Energy	Stakeholders agree that the swing in avoided costs of energy can cause vastly different estimates of the value of 1 measure in a program year to year.	Perspective 1: The swing in avoided costs in energy is disruptive to consistent programs year over year. Whatever the avoided cost of energy is at the time the measure is installed persists through the estimated useful life of the measure. Perspective 2: Ensuring contractors obtain consistency from year to year will encourage them to stay in the programs. We need to focus on their business needs too. Perspective 3: Avoided cost calculations should be forward-looking to reflect our best estimate of the avoided value of saved energy and capacity over the lifetime of the measure.	16 TAC §25.181(d)(3) Cost Effectiveness Standard	

Key Issue	Areas of Agreement	Areas of Debate	Would this require Legislation or Rulemaking? If so, what?	Could another process address?
Issue 3: Methodology of calculation Avoided Retail Energy (kWh) value used in SIR	Stakeholders agree that the SIR method is intended to represent the customer's perspective and quantifies cost-effectiveness /eligibility at the measure level.	Perspective 1: Having a shared avoided retail energy value would provide value to eliminate confusion Perspective 2: For Low Income, specific measures may not need to be cost-effective, or the calculation includes additional benefits not incorporated into other programs.	16 TAC §25.181(c)(50) Definition of SIR & (p)(2) Used in Low Income Programs.	
Key Issue	**Areas of Agreement**	**Areas of Debate**	**Would this require Legislation or Rulemaking? If so, what?**	**Could another process address?**
Issue 4: Timeline of Avoided Cost Calculation Energy & Capacity	Not discussed in Workshop 2.	Perspective 1: Workshop 1 -The timing of November published avoided costs does not align with the April 1st EPPR filings. In other words, programs are filed before updated avoided costs. This can cause conflict with program filings and cost-effectiveness calculations.	16 TAC §25.181(d) Cost Effectiveness Standard (2) & (3) Timing of Avoided Cost Capacity and Energy. 16 TAC §25.181(l) EE plans and reports (EEPR)	
Key Issue	**Areas of Agreement**	**Areas of Debate**	**Would this require Legislation or Rulemaking? If so, what?**	**Could another process address?**
Issue 5: Cost-effectiveness Standards	Stakeholders agree the programs are undervalued using the current cost-effectiveness standard UCT. Stakeholders agree a Texas cost-effectiveness test could be beneficial.	Perspective 1: UCT is clean and simple and works at both the portfolio and program levels. Perspective 2: Texas is a different market with unique goals; why not create a Texas-centric cost-effectiveness test? Perspective 3: Incorporating language in 16 TAC §25.181 that allows for PUC approval if you present a good case for a new program type with a different	16 TAC §25.181(d) Cost Effectiveness Standard (UCT is not called out specifically)	

Key Issue	Areas of Agreement	Areas of Debate	Would this require Legislation or Rulemaking? If so, what?	Could another process address?
		cost-effectiveness standard could work.		
Issue 6: Cost-effectiveness calculated at the program level	Stakeholders agree that cost-effectiveness at the portfolio level will provide more benefits and flexibility to programs.	Perspective 1: Cost-effectiveness at the portfolio level will help include measures for low-income programs that may not be as cost-effective. But overall, ratepayers realize a benefit. Perspective 2: Cost-effectiveness at a portfolio level will allow for higher incentives so we can reach HTR customers. Perspective 3: Cost-effectiveness at the portfolio level will allow more innovations in program design and new measures. Perspective 4: Calculating cost effectiveness at the portfolio level may run the risk of subsidizing programs between rate classes. However, having different cost caps for residential and commercial programs may solve this.	16 TAC §25.181(d)(1) Cost Effectiveness Standard	
Issue 7: Calculation of program benefits	Stakeholders agree that the programs are not capturing all the benefits they provide to ratepayers and Texans.	Perspective 1: We should consider incorporating the avoided transmission and distribution costs associated with EE programs. They are not currently incorporated into the calculation. Perspective 2: Utilities should be able to claim both winter and summer peak savings if the measure achieves savings during both peaks and should be included in the cost-effectiveness calculation. Perspective 3: We should consider capturing the benefits of water, natural gas, and carbon savings.	16 TAC §25.181(d)(1) Cost Effectiveness Standard & Benefits	

Session 3 February 23, 2023: Performance bonus and REP participation in the delivery of programs

The table below summarizes the key issues identified and places a priority/level of effort for addressing the issue in a rulemaking and/or legislative change.

Issue	Summary	Working Group priority and why
Issue 1: Performance Bonus Need	PURA section 39.905 (b)(2) requires Commission to establish performance bonuses for utilities that exceed the minimum goals. 16 TAC §25.182 (e) Utility that exceed 100% of its demand and energy reduction goals receive a bonus equal to 1% of net benefits for every 2% that the demand reduction goal has been exceeded – capped at 10% of the utility's total net benefits. Performance bonuses are included in program costs when calculating Net Benefits.	**Medium Priority:** Stakeholders voiced agreement that the performance bonus or revenue recovery is needed to support programs. 16 TAC §25.182 change requirement may be more around the calculation of the performance bonus.
Issue	**Summary**	**Working Group priority and why**
Issue 2: Modifications to Existing Calculation	16 TAC §25.182 (e)(5), when calculating net benefits to determine performance bonus, a discount rate equal to the utility's weighted average cost of capital of the utility and an escalation rate of 2% shall be used.	**High Priority:** Utility performance bonuses are included as program costs in future years, impacting the cost-effectiveness calculations of programs.
Issue	**Summary**	**Working Group priority and why**
Issue 3: Performance Bonus Best Practices	Performance bonuses were first implemented in 2008 and paid out in 2010 (*fact check needed).* The Texas IOUs performance bonus structure pays less than other utilities in Texas (CPS Energy Municipality)	**Medium Priority:** Stakeholders voiced the need to research other states/regions' performance bonus best practices to understand options better.
Issue	**Summary**	**Working Group priority and why**
Issue 4: Delivery Model	16 TAC §25.181(r) facilitates the involvement of retail electric providers as an energy efficiency service companies in the delivery of efficiency and demand response programs.	**Low Priority:** Stakeholders voiced an opportunity for better communication and coordination surrounding REP/TDU involvement and program design and delivery models.
Issue	**Summary**	**Working Group priority and why**
Issue 5: Collaboration and Communication Best Practices and Strategies	Section 16 TAC §25.181(r) facilitates the involvement of retail electric providers as an energy efficiency service companies in the delivery of efficiency and demand response programs.	**Low Priority:** Stakeholders agree the opportunity exists for better communication and collaboration between IOUs, REPs, and Service Providers.

For each identified key issue above, the following table summarizes areas of agreement, multiple perspectives expressed, and changes that could be needed.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 1: Performance Bonus Need	Stakeholders voiced there is a need for performance bonuses.	Perspective 1: Reviewing the min/max of the performance bonus to ensure it is appropriate and that it promotes energy efficiency in Texas. Perspective 2: The Performance Bonus is a "thank you" that does not entirely make the IOUs whole. Utility as a whole does lose money on EE programs; it's a balance because they answer to investors. Performance bonuses are very much needed. Perspective 3: Performance bonuses must be reviewed with the same rigor as good ratemaking. Making sure they are just and reasonable and lead to the desired outcome. Reviewing to ensure the bonus does not cannibalize good programs in future years is important. Perspective 4: Performance bonuses are a way to encourage utilities to exceed their goals and maximize net benefits while remaining under the cost caps.	PURA 39.905 (b)(2) 16 TAC §25.182 (e)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 2: Modifications to Existing Calculation	Stakeholders voice the need to understand the correlation in changing avoided costs or cost-effectiveness structure will impact the performance bonuses. The bonus collected during the program year is applied to cost-effectiveness, and the bonus calculation is allocated to each program based on a percentage of total program spending. In other words, programs that have a larger budget receive a larger portion of the bonus applied to that program.	Perspective 1: Keeping the calculation related to Net Benefits rather than tying it to a percentage of spend keeps the bonus based on performance. Perspective 2: Incorporating the performance bonus as a program cost ultimately hurts the IOUs in the long term and the benefit these programs can offer to customers.	16 TAC §25.182 (e)(5)	

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
Issue 3: Performance Bonus Best Practices	Stakeholders agreed that the performance bonus model is pretty good; however, it should be reviewed to determine if it should be incorporated into future program costs. Stakeholders also agreed more research is needed to look at cost recovery best practices in other regions.	Perspective 1: The optics of performance bonuses in the media can be challenging and detrimental to the programs. (i.e., x amount of the program budget was a performance bonus). Perspective 2: Other regions in the US use a lost revenue adjustment mechanism to recover lost sales. Perspective 3: Cost Caps for IOUs in Texas are low based on other utilities (i.e., CPS Energy in San Antonio has a cost recovery		

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		mechanism nearly double what the IOUs receive).		
Issue 4: Delivery Model		Perspective 1: A program that works well in Houston may not work well in Dallas. Programs do tend to be regional to meet the needs of the customer. Perspective 2: On the REP side, programs also vary with incentives paid to participate or pricing incentives. REP programs are a powerful retention tool and differentiator among competition.	16 TAC §25.181(r)	
Key issue	**Areas of agreement**	**Areas of debate**	**Would this require legislation or rulemaking? If so, what?**	**Could another process address?**
Issue 5: Collaboration and Communication Best Practices and Strategies	REPs play a significant role in demand response, especially when the grid is stressed in Texas. Utilities currently have a level of engagement with the REPs (i.e., HVAC Tune-Up programs).	Perspective 1: Including REPs in the program design phase will help improve collaboration between REPs and TDUs. Perspective 2: Adding Key Performance Indicators to track TDU/REP collaboration will promote engagement. Perspective 3: Better understanding of the problem and the goals (load shifting, energy efficiency, grid resiliency…) will help design programs and improve collaboration. It may require sculpting consumer behavior to solve Texas's issues, which REPs can provide intrinsic value. Perspective 4: Many REPs with different business models make it challenging to find a program design that works for a large group of REPs. Perspective 5: The EEIP process has been a good way to share	16 TAC §25.181(r)	Engagement with a REP association group may be the best way to enhance collaboration between all parties. Rather than individually reaching out to all REP companies may not be feasible for TDUs with limited resources.

Key issue	Areas of agreement	Areas of debate	Would this require legislation or rulemaking? If so, what?	Could another process address?
		communication and best practices. The mechanism is in place; it just needs to be leveraged by all stakeholders.		

Session 4 March 9th, 2023, EE Program Planning Working Group

The Program Planning working group discussed the Best Practices and Overarching Themes that emerged during all the workshops, including any wordsmithing and/or comments gathered for each presented. In addition, the facilitator discussed the session summary tables and review process for the EEIP progress update.

Public Utility Commission of Texas

Volume 2. Utility-Specific Energy Efficiency Portfolio Report Program Year 2022

TETRA TECH

TEXAS ENERGY ENGINEERING SERVICES, INC. (www.teesi.com)

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TETRA TECH

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GLOSSARY: ACRONYMS/ABBREVIATIONS/DEFINITIONS

Acronym	Description
AC	Air conditioner
AEP Texas	American Electric Power Texas
AHRI	Air Conditioning, Heating, and Refrigeration Institute
CF	Coincidence factor
C&I	Commercial and industrial
CMTP	Commercial market transformation program
CNP	CenterPoint Energy Houston Electric, LLC
CSOP	Commercial standard offer program
DHP	Ductless heat pump
DLC	DesignLights Consortium
DI	Direct install
ECM	Energy conservation measure
EECRF	Energy efficiency cost recovery factor
EEIP	Energy Efficiency Implementation Project
EEPR	Energy Efficiency Plan and Report
EESP	Energy efficiency service provider
EISA	Energy Independence and Security Act of 2007
EM&V	Evaluation, measurement, and verification
Entergy	Entergy Texas, Inc.
EPE	El Paso Electric Company
ER	Early replacement
ERCOT	Electric Reliability Council of Texas
ERS	Emergency Response Service
ESCO	Energy service company
ESIID	Electric service identifier ID
ESNH	ENERGY STAR® New Homes
EUL	Estimated useful life
EUMMOT	Electric Utility Marketing Managers of Texas
GSHP	Ground-source heat pump
HCIF	Heating/cooling interactive factor
HOU	Hours of use

Acronym	Description
HPwES	Home Performance with ENERGY STAR®
HTR	Hard-to-reach
HVAC	Heating, ventilation, and air conditioning
IECC	International Energy Conservation Code
IPMVP	International Performance Measurement and Verification Protocol
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light emitting diode
LI	Low-income
LI/HTR	Low-income/hard-to-reach
LM	Load management
mcf	1,000 cubic feet
MF	Multifamily
MTP	Market transformation program
M&V	Measurement and verification
NTG	Net-to-gross
Oncor	Oncor Electric Delivery Company LLC
PUCT	Public Utility Commission of Texas
PV	Photovoltaics
PY	Program year
QA/QC	Quality assurance/quality control
QPL	Qualified Products List
RCx	Retro-commissioning
RFP	Request for proposal
RMTP	Residential market transformation program
ROB	Replace-on-burnout
RSOP	Residential standard offer program
SIR	Savings-to-investment ratio
SOP	Standard offer program
SRA	Self-report approach
SWEPCO	Southwestern Electric Power Company
TMY	Typical meteorological year
TEESI	Texas Energy Engineering Services, Inc.
TNMP	Texas-New Mexico Power Company

Acronym	Description
TRM	Technical reference manual
WACC	Weighted average cost of capital
Xcel Energy SPS	Xcel Energy Southwest Public Service, Inc.

1.0 INTRODUCTION

This document presents the utility impact evaluation results from the third-party evaluation, measurement, and verification (EM&V) results for energy efficiency portfolios implemented in program year (PY) 2022 (PY2022). It is a companion document to Volume 1 of the Statewide Energy Efficiency Portfolio Report. A summary report, *2022 Energy Efficiency Accomplishments*, is also available at www.puc.texas.gov.

PY2022 is the eleventh program year evaluated as part of the statewide EM&V effort. The PY2022 scope is targeted impact evaluations for the savings areas of the highest uncertainty identified in the prior EM&V results or changes in programs or technologies. The targeted impact evaluations are concentrated on particular commercial and residential programs and end-uses. At the same time, a combination of interval meter data analysis and tracking system reviews provides a due diligence review of claimed savings for each utility portfolio.

The reviews provided an independent assessment of claimed savings and the accuracy of the program data. Documentation reviewed were tracking data, interval meter data, project files, energy savings calculations (including a review of input assumptions and algorithms to verify claimed program savings), and utilities' existing measurement and verification (M&V) information.

The PY2022 EM&V plans[1] are based on the prioritization for the EM&V effort. To briefly summarize, the EM&V team identified program types across utilities that have similar program design, delivery, and target markets. We reviewed each program type and prioritized (*high*, *medium*, *low*) based on the following considerations:

- magnitude of savings—the percentage of contribution to the portfolio of programs' impacts,
- level of relative uncertainty in estimated savings,
- level and quality of existing quality assurance/quality control (QA/QC) and verification data from on-site inspections completed by utilities or their contractors,
- stage of the program or programmatic component (e.g., pilot, early implementation, mature),
- importance to future portfolio performance,
- PUCT and Texas utilities' priorities, prior EM&V results, and
- known and anticipated changes in the markets in which the programs operate.

[1] Public Utility Commission of Texas EM&V Plans for Texas Utilities' Energy Efficiency and Load Management Portfolios—Program Year 2021, June 2021.

1.1 REPORT ORGANIZATION

Section 1.2 summarizes the evaluation approach; Sections 2.0 through 9.0 detail the EM&V results for each utility's portfolio.

This report contains several appendices. A visual representation of the EM&V database import, review, and validation process can be found in Appendix A. The calculations used for the program administrator cost test (PACT) (also known as the utility cost test) cost-effectiveness methodology are in Appendix B. The EM&V team's quality assurance plan for the reported evaluated savings is in Appendix C.

Detailed desk reviews are provided to utilities in separate documents.

1.2 EVALUATION APPROACH

This section discusses the PY2022 EM&V methodology. The foundation of the evaluation process was to create a statewide EM&V database with a streamlined data request process and a secure retrieval system. Complete PY2022 program data were requested from utilities and integrated into the database. A visual representation of the EM&V database import, review, and validation process can be found in Appendix A.

The EM&V database allowed the EM&V team to complete:

- due diligence reviews of claimed savings,
- program tracking system reviews, and
- efficient sampling across utilities and programs.

Next, the impact evaluation approach is summarized.

1.2.1 Implementing Impact Evaluations

The impact evaluations are used to calculate realization rates. The realization rate is determined by dividing the evaluated savings by the utility-claimed savings. Utility-claimed savings are verified in the EM&V database from the tracking systems.

The EM&V team performed a tracking system review and a series of desk reviews for an initial assessment of the reasonableness of the claimed savings. Primary data were then collected for sampled projects to assess the accuracy of the claimed savings further.

Demand-side management (DSM) program evaluations routinely employ 90 percent confidence intervals with ±10 percent precision as the industry standard ("90/10"). A confidence interval is a range of values believed to contain the true population quantity with some stated level of confidence. The confidence level is the probability that the interval includes the target quantity. Precision provides a convenient shorthand for expressing the interval believed to contain the estimator; for example, if the estimate is 530 kWh, and the relative precision level is ten percent, then the interval is 530 ±53 kWh.

It is essential to provide both the precision and corresponding confidence levels in reporting estimates from a sample. In general, high confidence levels can be achieved with wider intervals, while narrower, more precise intervals permit less confidence. In other words, when all else is held constant, there is a trade-off between precision and confidence. As a result, any precision statement without a corresponding confidence level is incomplete and impossible to interpret. For example, assume the average savings among participants in an appliance program is estimated as 1,000 kWh per year. It is determined this estimate has 16 percent relative precision at the 9 percent confidence level. The same dataset and the same formulas may be used to estimate 10 percent relative precision at the 70 percent confidence level. If the confidence level is not reported, the second formulation would appear less uncertain when the two are identical.

The estimators commonly used in DSM evaluations generally have sampling errors that are approximately normal in distribution. In Texas, EM&V activities were designed to achieve 90/10 confidence and relative precision for gross evaluated savings estimates at the utility portfolio level. This level was achieved via the sampling process used to select a random sample of commercial participants that received desk reviews and census reviews of residential deemed savings and load management savings.

1.2.1.1 Tracking System and Desk Reviews

The EM&V team reviewed the program tracking system and its linkage to any deemed savings tools or methods used to estimate savings at the measure and site level for each residential program. Then for each *medium-* or *high*-priority program, the EM&V team reviewed a sample of applications entered into the utilities' tracking systems for accuracy and completeness.

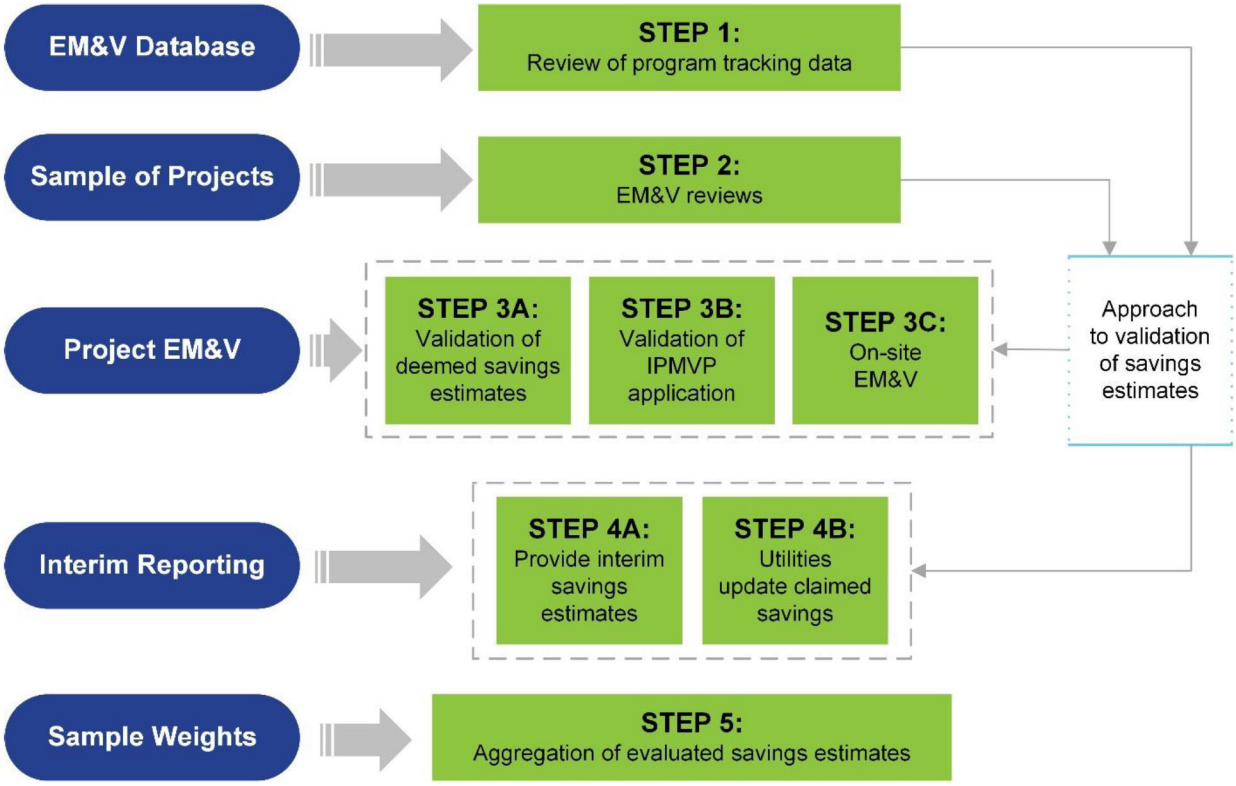
Our review accomplished two primary objectives. First, it ensured that the measures installed were consistent with those listed in the tracking system. Second, the desk reviews verified that the savings estimates in the tracking system were consistent with the savings calculated in the deemed calculation tools, tables, or M&V methods used to estimate project savings.

The desk reviews included a review of the assumptions used for the savings assumptions and, when available, utility M&V reports gathered through the supplemental data request for sampled projects.

1.2.1.2 Realization Rates

The evaluated savings are based on project-level realization rate calculations that are then weighted to represent program-, sector-, and portfolio-level realization rates. These realization rates incorporate any adjustments for incorrect application of deemed savings values, any equipment details determined through the tracking system, desk reviews, and primary data collected by the EM&V team. For example, baseline assumptions or hours of use may be corrected through the evaluation review and thus affect the realization rates. Utilities have the opportunity to adjust claimed savings based on interim findings on their evaluation savings, thereby providing an opportunity for realization rates to be close to 100 percent. A flow chart of the realization rate calculations is provided in Figure 1.

Figure 1. Realization Rate Flowchart



1.2.1.3 Program Documentation Score

The EM&V team assigned a program documentation score of *good*, *fair*, or *limited* based on the level of program documentation provided to complete a third-party due diligence review of claimed savings.

Program documentation scores were assigned as follows:

- **Good:** at least 90 percent of sampled projects have sufficient documentation.
- **Fair:** 70–89 percent of sampled projects have sufficient documentation; the remaining sampled projects had limited or no documentation.
- **Limited:** less than 70 percent of the sampled projects have sufficient documentation.

Sufficient documentation is defined as the necessary information required to verify savings. The documentation included completed savings calculators, customer invoices, pre- and post-inspection reports, and equipment cut sheets for nonresidential programs. The documentation provided all inputs needed to replicate the savings calculations based on the deemed savings manual, the approved calculation method, and supporting materials for programs.

Limited documentation is defined as the documentation provided to verify some, but not all, key inputs to savings calculations.

No documentation is defined as only the savings calculator or measure attributes were provided, with no supporting materials.

1.2.2 Cost-Effectiveness Testing

The EM&V team conducted cost-effectiveness testing using the PACT method using PY2022 actual results, except for low-income programs, as discussed below. Cost-effectiveness tests were run using a uniform model for all utilities. The EM&V team collected required inputs for the model from several sources, including program tracking data, deemed savings, the PUCT, and utilities. Table 1 lists the required inputs to the cost-effectiveness model and the sources of information.

Table 1. Cost-Effectiveness Model Inputs and Sources

Model input	Measurement level	Source
Reported energy and demand savings	Measure type	EM&V database
Summer and winter peak coincidence factors (CF)	Measure type	Deemed savings
Effective useful life	Measure type	Deemed savings
Incentive payments	Program	Energy Efficiency Plan and Report (EEPR)
Administrative and research and development (R&D) costs	Program/portfolio	EEPRs
EM&V costs	Program/portfolio	EM&V team budgets
Performance bonus earned in the program year[2]	Portfolio	Energy efficiency cost recovery factor (EECRF)
Avoided costs	Statewide	PUCT (utilities)
Weighted average cost of capital (WACC)	Utility	Utilities
Line loss factor (non-ERCOT[3] utilities only)	Utility	Utilities
Realization rates	Program	Evaluation results

The EM&V team conducted PY2022 cost-effectiveness tests separately using claimed gross savings and evaluated gross savings. The model produces results at the portfolio, program category[4], and program levels.

All benefits and costs are expressed in program year dollars. Benefits resulting from energy savings occurring in future years are net-to-program-year dollars using the utility's WACC as the discount rate.

[2] Performance bonuses as an input into cost-effectiveness testing came into effect in 2012.
[3] Electric Reliability Council of Texas.
[4] Program categories are currently defined as nonresidential, residential, low-income, load management, and pilot.

When running program-level tests, if only portfolio or other grouped information was available, the EM&V team allocated data proportionate to costs (§ 25.182 (e)(6)). For example, the performance bonus was calculated for the overall portfolio and allocated to individual programs proportionate to the programs' costs associated with meeting demand and energy goals. These program costs include program administrative and incentive costs. Portfolio-level costs include the performance bonus, EM&V, administrative, and R&D costs.

Low-income programs were evaluated using the savings-to-investment ratio (SIR). This model only includes net incentive payments under program costs. The SIR methodology is only used when specifically testing the low-income programs.

Portfolio-level cost-effectiveness analyses are based on the PACT and are shown, including and excluding low-income and low-income/hard-to-reach customers.

The calculations used for the PACT cost-effectiveness methodology are in Appendix B.

Also, the EM&V team reported the cost-per-lifetime kilowatt-hour and kilowatt. Cost per lifetime is calculated by attributing costs to energy savings and avoided demand based on their portion of total benefits and applying that proportion to the total program costs.

1.2.3 Reporting

There are two EM&V report deliverables per PY: (1) impact evaluation reports and (2) the Annual Statewide Portfolio Report. There are also a number of status reports, ad hoc reports, data collection and sampling deliverables, and interim results.

The impact evaluation reports are delivered separately for each utility and discussed with the PUCT and each utility before drafting the Annual Statewide Portfolio Report. The impact reports allow the EM&V team to discuss the impact results with the PUCT and utilities, receive their input, and conduct supplemental analysis if needed prior to the Annual Statewide Portfolio Report. The Annual Statewide Portfolio Report is a comprehensive report across all utility portfolios.

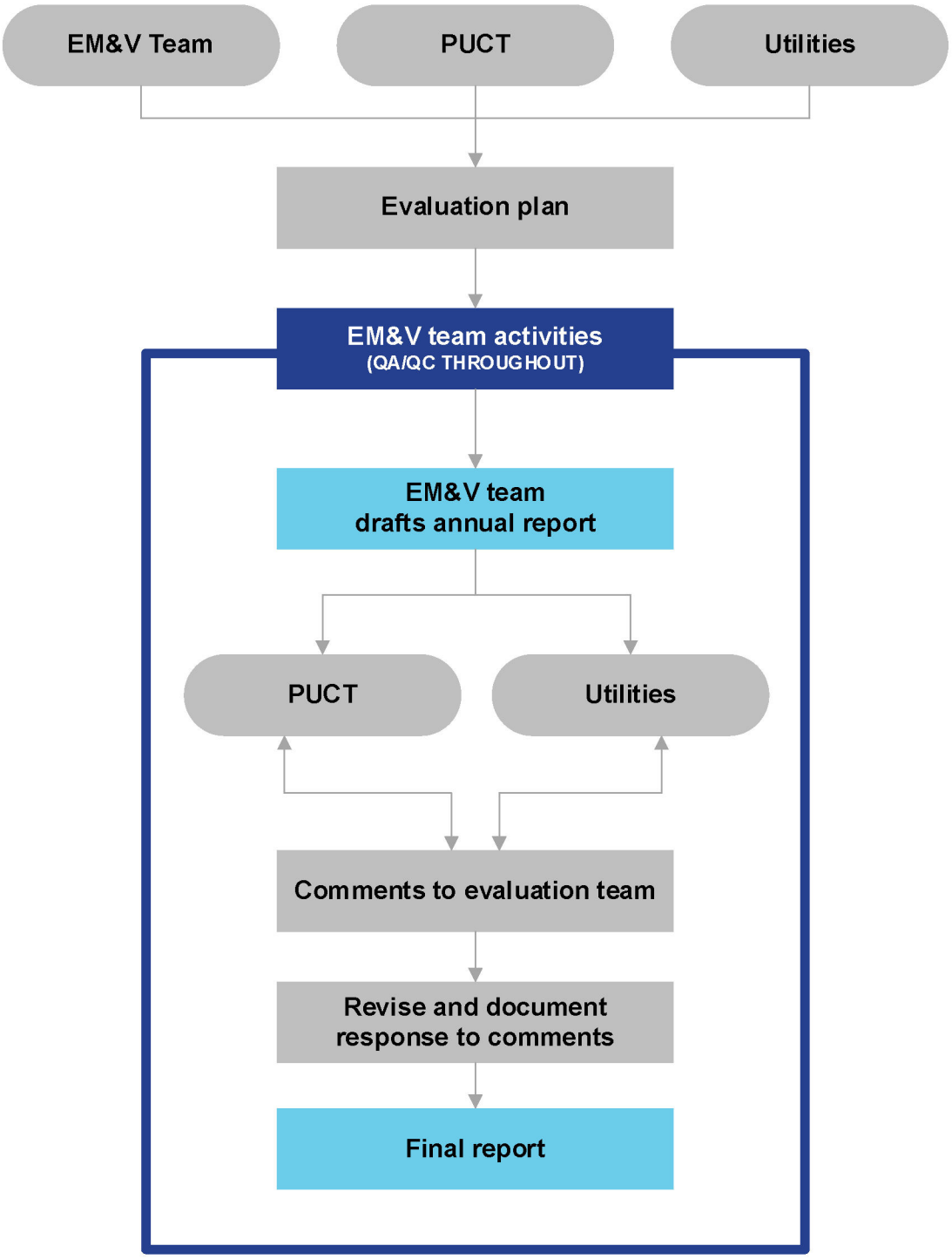
For PY2022, the metrics to be used as the basis for recommendations in the reports are the programs' gross savings realization rate and associated program documentation score; tracking system and interval meter data reviews; desk reviews; on-site M&V findings, including site-specific realization rates; and the programs' cost-effectiveness.

The EM&V database is at the core of reporting results; it houses the claimed and evaluated savings. The database allows structured queries to provide results by utility, program categories and types, measure types, or sectors. QA and QC are conducted to ensure that results entered into and extracted from the database are accurate. The EM&V team's QA/QC plan for the reported evaluated savings is in Appendix C.

The EM&V team encourages feedback and comments on EM&V reports; the EM&V team reviews feedback and documents how it was taken into consideration in finalizing deliverables. While the interim impact reports are distributed and reviewed separately for each utility, the EM&V team seeks input from a larger group of stakeholders on the Annual Statewide Portfolio Report. These are presented and discussed at Energy Efficiency Implementation Project (EEIP) meetings between draft and final versions.

The flow chart in Figure 2 describes the general reporting process flow.

Figure 2. Reporting Flowchart



2.0 AMERICAN ELECTRIC POWER TEXAS IMPACT EVALUATION RESULTS

This section presents the evaluated savings and cost-effectiveness results for American Electric Power Texas's (AEP Texas) energy efficiency portfolio. The key findings are summarized first, followed by details for each portfolio program with a *high* or *medium* evaluation priority. Finally, a list of the *low* evaluation priorities for which claimed savings were verified through the evaluation, measurement, and verification (EM&V) database is included.

2.1 KEY FINDINGS

2.1.1 Evaluated Savings

AEP Texas' evaluated savings for program year (PY) 2022 (PY2022) were 53,403 in demand (kilowatt, kW) and 83,915,064 in energy (kilowatt-hour, kWh) savings. The overall kilowatt and kilowatt-hour portfolio realization rates are approximately 100 percent. AEP Texas was responsive to all EM&V recommendations to adjust claimed savings based on EM&V results (see Table 5), supporting healthy realization rates.

Table 2 shows the claimed and evaluated demand savings for AEP Texas's portfolio and broad customer sector and program categories. Load management results are based on census reviews, and therefore precision calculations are not applicable (N/A).

Table 2. AEP Texas PY2022 Claimed and Evaluated Demand Savings

Level of analysis	Percentage portfolio savings (kW)	Claimed demand savings (kW)	Evaluated demand savings (kW)	Realization rate (kW)	Precision at 90% confidence
Total portfolio	**100.0%**	**53,404**	**53,403**	**100.0%**	**N/A**
Commercial	27.2%	14,499	14,499	100.0%	N/A
Residential	17.4%	9,266	9,266	100.0%	N/A
Low-income	1.2%	671	671	100.0%	N/A
Load management*	54.2%	28,968	28,967	99.9%	N/A

*The review for the load management program included a census review of equations and interval meter data to estimate the baseline usage and the resulting level of load curtailment achieved for each event for all participants.

Table 3 shows the claimed and evaluated energy savings for AEP Texas' portfolio and broad customer sector and program categories for PY2022.

Table 3. AEP Texas PY2022 Claimed and Evaluated Energy Savings

Level of analysis	Percentage portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings(kWh)	Realization rate (kWh)	Precision at 90% confidence
Total portfolio	**100.0%**	**83,915,065**	**83,915,064**	**100.0%**	**N/A**
Commercial	60.6%	51,088,577	51,088,577	100.0%	N/A
Residential	37.6%	31,565,767	31,565,767	100.0%	N/A
Low-income	1.5%	1,231,753	1,231,753	100.0%	N/A
Load management*	0.0%	28,968	28,967	99.9%	N/A

* The review for the load management program included a census review of equations and interval meter data to estimate the baseline usage and the resulting level of load curtailment achieved for each event for all participants.

Program-level realization rates are discussed in the detailed findings subsections. However, it is important to note that these results should only be viewed qualitatively due to the small sample sizes at the utility program level.

A program documentation score of *good*, *fair*, or *limited* is included in program-level realization rates, as discussed in Section 1.2.1.3. For the overall utility program documentation score, the score of *good* was given if 90 percent or more of the evaluated savings estimates received a score of *good* or *fair* due to program documentation received as indicated in detailed program findings. A score of *fair* was given if 70 percent to 89 percent of the evaluated savings estimates received a score of *good* or *fair*. A score of *limited* was given if less than 70 percent of savings received a score of *good* or *fair*. In general, a score of *good* indicates the utility has established processes to collect sufficient documentation to verify savings. A score of *fair* also indicates established processes with some areas of improvement identified. A score of *limited* indicates program documentation improvements across more individual programs or high savings programs have been identified. AEP Texas received *good* documentation scores for all but two evaluated programs. The two programs with opportunities for improvement include the High-Performance Homes MTP and Hard-to-Reach SOP, both of which received a *fair* documentation score.

2.1.2 Cost-Effectiveness Results

AEP Texas' overall portfolio had a cost-effectiveness score of 3.3, or 3.6 excluding low-income programs.

The more cost-effective programs were the SMART Source℠ Solar PV MTP and the Commercial Solutions MTP; the less cost-effective programs were the Load Management SOP and the Targeted Low-Income Weatherization program. All of AEP Texas' programs were cost-effective in 2022.

The lifetime cost of claimed savings was $0.016 per kilowatt-hour and $15.23 per kilowatt.

Table 4. AEP Texas Cost-Effectiveness Results

Level of analysis	Claimed savings results	Evaluated savings results	Net savings results
Total portfolio	**3.28**	**3.28**	**3.06**
Total portfolio excluding low-income programs	**3.61**	**3.61**	**3.35**
Commercial	**4.70**	**4.70**	**4.54**
Commercial Solutions MTP	5.42	5.42	5.42
Commercial SOP	5.25	5.25	5.25
SCORE/CitySmart MTP	5.27	5.27	5.27
CoolSaver℠ A/C Tune-Up MTP	4.54	4.54	3.63
SMART Source℠ Solar PV MTP	5.57	5.57	5.63
Open MTP	2.45	2.45	2.33
Residential	**2.84**	**2.84**	**2.47**
Hard-to-Reach SOP	2.05	2.05	2.05
SMART Source℠ Solar PV MTP	4.86	4.86	4.65
Residential SOP	2.13	2.13	1.94
CoolSaver℠ A/C Tune-Up MTP	2.70	2.70	2.16
High-Performance New Homes MTP	5.37	5.37	3.76
Low-income	**1.18**	**1.18**	**1.18**
Targeted Low-Income Weatherization*	1.18	1.18	1.18
Load management	**1.75**	**1.75**	**1.75**
Load Management SOP	1.75	1.75	1.75

* The low-income program is evaluated using the savings-to-investment ratio (SIR).

2.2 CLAIMED SAVINGS ADJUSTMENTS

As discussed above, utilities are provided the opportunity to adjust savings at the project level based on interim EM&V findings. Table 5 summarizes claimed savings adjustments recommended by the EM&V team. Realization rates assume the following adjustments will be included in AEP Texas' June 1 filing.

Table 5. Evaluation, Measurement, and Verification Claimed Savings Adjustments by Program (Prior to EECRF[5] Filing)

Program	EM&V demand claimed savings adjustments (kW)	EM&V energy claimed savings adjustments (kWh)
Commercial Solutions MTP	-11.62	-45,156.00
Commercial SOP	-0.19	-874.00
SCORE/CitySmart MTP	-38.34	-92,283.00
Hard-to-Reach SOP	-0.146	-422.38
Residential SOP	-19.626	-38,981.40
High-Performance New Homes	196.69	1,124,939
CoolSaver℠ A/C Tune-Up MTP	-3.64	-6,936.00
Commercial SMART Source℠ Solar PV MTP	0.00	-728.87
Total	**123.128**	**939,557.35**

2.3 DETAILED FINDINGS—COMMERCIAL

2.3.1 Commercial Solutions Market Transformation Program (MTP) (Medium Evaluation Priority)

Program contribution to portfolio savings (kW)	Claimed demand savings (kW)	Evaluated demand savings (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
3.1%	1,648	1,648	100.0%	9.5%	7,980,776	7,980,776	100.0%	Good

Completed desk reviews*	On-site M&V visit
8	5

*Confidence intervals are not reported at the utility program level as these results should only be viewed qualitatively due to the small sample sizes.

The PY2022 Commercial Solutions MTP evaluation efforts focused on desk reviews and on-site measurement and verification (M&V) visits. The sample of completed desk reviews and on-site M&V visits for this program is listed above.

[5] Energy efficiency cost recovery factor.

The EM&V team adjusted the claimed savings for seven of the projects. Two projects had adjustments of less than five percent, while five projects had adjustments of greater than five percent compared to the originally claimed savings. AEP Texas accepted the evaluated results and matched the claimed savings to those of the evaluations for the four projects; therefore, the final program realization rate is 100 percent for kilowatt and kilowatt-hour. Further details of the EM&V findings are provided below.

Participant ID 625: A warehouse installed a new *air conditioner* and completed a *lighting* retrofit. During the desk review, the EM&V team adjusted the *air conditioning type* from *air conditioned* to *none* based on the pre- and post-photos. This adjustment decreased peak demand (kilowatt) savings and resulted in a realization rate of 91 percent. The adjustments also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate of 95 percent.

Participant ID 628: A new construction office/warehouse installed *interior and exterior LED lighting*. During the desk review and on-site M&V visit, the EM&V team adjusted the building type from *office* to *warehouse: nonrefrigerated* based on the engineering drawing and the photos. Also, two *fixture types* were removed because they did not qualify. These adjustments decreased peak demand (kilowatt) savings and resulted in a realization rate of 62 percent. The adjustments also decreased energy (kilowatt-hour) savings and resulted in a realization rate of 66 percent.

Participant ID 43361: A complete retrofit of a strip mall retail space installed energy-efficient *lighting*. During the desk review and on-site M&V visit, the EM&V team adjusted the *building type* to *mercantile: strip center and non-enclosed mall* because the building had multiple tenants and was not a "stand-alone retail." This adjustment did not adjust the peak demand (kilowatt) savings and resulted in a realization rate of 100 percent. The adjustment increased the energy (kilowatt-hour) savings and resulted in a realization rate of 108 percent.

Participant ID 43464: An unrefrigerated warehouse completed a *lighting* retrofit. During the desk review, the EM&V team adjusted the *air conditioning type* in the warehouse from *air conditioned* to *none* based on the photos. Also, two LED *fixture wattages* were adjusted to match the DesignLights Consortium (DLC) Qualified Product List (QPL). These adjustments decreased peak demand (kilowatt) savings and resulted in a realization rate of 89 percent. The adjustments also decreased energy (kilowatt-hour) savings and resulted in a realization rate of 96 percent.

Participant ID 43481: An enclosed mall installed *LED interior lighting* replacing *fluorescent fixtures*. During the desk review and on-site M&V visit, the EM&V team adjusted one LED *fixture wattage* based on its DLC QPL. This adjustment slightly decreased peak demand (kilowatt) savings and resulted in a realization rate of 98 percent. The adjustment also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate of 98 percent.

Participant ID 43621: A manufacturing facility installed *LED lighting* to replace *incandescent, halogen, fluorescent,* and *metal halide lighting*. During the desk review and on-site M&V visit, the EM&V team adjusted *wattages* for a couple of fixtures to match the DLC QPL. The on-site visit also adjusted the *facility type* and *identified removed fixtures* instead of *replaced in kind*. These adjustments decreased peak demand (kilowatt) savings and resulted in a realization rate of 95 percent. The adjustments also decreased energy (kilowatt-hour) savings and resulted in a realization rate of 95 percent.

Participant ID 78905: A nonrefrigerated warehouse retrofit *interior and exterior lighting* with *LED lighting*. During the desk review, the EM&V team adjusted a *pre-retrofit fixture type* based on pre-inspection photos. *Post-retrofit fixture quantities* and a *fixture model* were adjusted based on the post-inspection report, and a *fixture wattage* was adjusted to match the DLC listing. These adjustments slightly decreased peak demand (kilowatt) savings and resulted in a realization rate of 99 percent. The adjustments also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate of 99 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions (e.g., equipment quantity, equipment capacity, QPL qualifications) for the eight projects that had desk reviews completed because sufficient documentation was provided for the sites. Most of these were regular *lighting* projects where documentation included invoices, QPL qualifications, equipment specifications, pre- and post-installation inspection notes, project savings calculators, and photographic documentation of existing and new equipment. The M&V project provided sufficient documentation to identify energy savings through alternate methods. Overall, the EM&V team was satisfied with the project documentation provided and assigned a program documentation score of *good*.

2.3.2 Commercial Standard Offer Program (SOP) (Medium Evaluation Priority)

Program contribution to portfolio savings (kW)	Claimed demand savings (kW)	Evaluated demand savings (kW)	Realization rate(kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
5.9%	3,131	3,131	100.0%	19.0%	15,955,810	15,955,810	100.0%	Good

Completed desk reviews*[6]	On-site M&V visit
9	3

*Confidence intervals are not reported at the utility program level as these results should only be viewed qualitatively due to the small sample sizes.

The PY2022 Commercial SOP evaluation efforts focused on desk reviews and on-site M&V visits. The sample of completed desk reviews and on-site M&V visits for this program is listed above.

The EM&V team adjusted the claimed savings for four projects. All four projects had adjustments of less than five percent compared to the originally claimed savings. AEP Texas accepted the evaluated results and matched the claimed savings to those of the evaluations for both projects; therefore, the final program realization rate is 100 percent for kilowatt and kilowatt-hour. Further details of the EM&V findings are provided below.

[6] Two projects were located on the same campus and were sampled separately, although are reported under one EM&V participant.

Participant ID 8229: A shopping center completed an *exterior LED lighting* retrofit. During the desk review and on-site M&V visit, the EM&V team adjusted the *fixture wattage* of one *LED fixture* based on the DLC QPL. This adjustment slightly decreased peak demand (kilowatt) savings, but the realization rate rounded to 100 percent. The adjustment also slightly decreased energy (kilowatt-hour) savings, and the realization rate rounded to 100 percent.

Participant ID 8233: A warehouse completed an *LED lighting* retrofit. During the desk review, the EM&V team adjusted the LED *fixture wattage* of two fixtures to match the DLC QPL. These adjustments slightly increased peak demand (kilowatt) savings and resulted in a realization rate of 101 percent. The adjustments also slightly increased energy (kilowatt-hour) savings and resulted in a realization rate of 101 percent.

Participant ID 8239: A military base completed an *interior and exterior LED lighting* retrofit. During the desk review and on-site M&V visit, the EM&V team identified non-operational fixtures in several areas, adjusted one LED *fixture wattage* to match DLC QPL, and adjusted the *post-retrofit fixture quantities* to match the invoices and pre-retrofit quantities. The *lighting controls* were adjusted based on on-site findings. These adjustments slightly decreased peak demand (kilowatt) savings and resulted in a realization rate that rounded to 100 percent. The adjustments also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate that rounded to 100 percent.

Participant ID 68314: A school replaced *rooftop AC units* with more energy-efficient units. During the desk review, the EM&V team adjusted the *cooling capacity* of the new units from *48,000 BTU/hr* to *49,000 BTU/hr* to match the Air Conditioning, Heating, and Refrigeration Institute (AHRI) tested capacity. The adjustments slightly increased peak demand (kilowatt) savings, and the realization rate rounded to 100 percent. The adjustments also slightly increased energy (kilowatt-hour) savings and resulted in a realization rate of 101 percent.

Documentation Score

The EM&V team verified key inputs and assumptions (e.g., equipment quantity, equipment capacity, QPL qualifications) for both projects that had desk reviews completed because sufficient documentation was provided for the sites. Project documentation at these sites included invoices, QPL qualifications, pre- and post-installation inspection notes, project savings calculators, and photographic documentation of existing and new equipment. Complete documentation enhances the accuracy and transparency of project savings along with ease of evaluation. A couple of projects were missing or did not provide enough information with the inspection documents. Overall, the EM&V team assigned a program documentation score of *good*.

2.3.3 SCORE/CitySmart Market Transformation Program (MTP) (Medium Evaluation Priority)

Program contribution to portfolio savings (kW)	Claimed demand savings (kW)	Evaluated demand savings (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
4.6%	2,437	2,437	100.0%	11.8%	9,927,928	9,927,928	100.0%	Good

Completed desk reviews*	On-site M&V visit
8	8

*Confidence intervals are not reported at the utility program level as these results should only be viewed qualitatively due to the small sample sizes.

The PY2022 SCORE/CitySmart MTP evaluation efforts focused on desk reviews and on-site M&V visits. The sample of completed desk reviews and on-site M&V visits for this program is listed above.

The EM&V team adjusted the claimed savings for six projects. Three projects had an adjustment of less than five percent, while the other three projects had an adjustment of greater than five percent compared to the originally claimed savings. AEP Texas accepted the evaluated results and matched the claimed savings to those of the evaluations for the projects with significant adjustments. Therefore, the final program realization rate is 100 percent for kilowatt and kilowatt-hour. Further details of the EM&V findings are provided below.

Participant ID 1423: An elementary school replaced *commercial air conditioners* with *packaged air conditioning units*. During the desk review, the EM&V team adjusted the *baseline efficiency* for the *single-package vertical air conditioner* to match the federal standards and adjusted the *cooling capacity* for the other *single-package systems* based on the technical specification sheets. These adjustments decreased peak demand (kilowatt) savings and resulted in a realization rate of 11 percent. The adjustments also decreased energy (kilowatt-hour) savings and resulted in a realization rate of 10 percent.

Participant ID 1428: A high school completed an *LED lighting* retrofit. During the desk review, the EM&V team adjusted *pre-retrofit fixture types and quantities* based on the pre-inspection report. These adjustments slightly increased peak demand (kilowatt) savings and resulted in a realization rate of 101 percent. The adjustments also increased energy (kilowatt-hour) savings and resulted in a realization rate of 102 percent.

Participant ID 1430: An elementary school replaced s*plit and packaged air conditioning units* with *new similar units*. During the desk review, the EM&V team adjusted the *unit quantities* based on the post-inspection notes and the *baseline efficiency* of the *single-packaged vertical air conditioning units* to match federal standards. These adjustments decreased the peak demand (kilowatt) savings and resulted in a realization rate of 16 percent. The adjustments also decreased the energy (kilowatt-hour) savings and resulted in a realization rate of 25 percent.

Participant ID 43445: A new construction high school building installed *LED lighting* and energy-efficient *water-cooled chillers*. During the desk review and on-site M&V visit, the EM&V team adjusted the *model number* and associated *AHRI efficiency values* based on the post-inspection nameplate photos. The adjustment slightly decreased peak demand (kilowatt) savings and resulted in a realization rate that rounded to 100 percent. The adjustment also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate of 99 percent.

Participant ID 78892: A newly constructed elementary school installed energy-efficient *chiller and air conditioning units* and *LED lighting*. During the desk review and on-site M&V visit, the EM&V team included an originally non-qualifying fixture after it was determined to be ENERGY STAR®-listed. The *exterior lighting zone type* was adjusted from *Zone 4* to *Zone 2* based on aerial images of the surrounding area. The *capacity of the chiller* was adjusted to meet the AHRI-tested capacity. These adjustments increased peak demand (kilowatt) savings and resulted in a realization rate of 106 percent. The adjustments also slightly increased energy (kilowatt-hour) savings and resulted in a realization rate of 101 percent.

Participant ID 78903: A university campus retrofitted several education and community spaces with *LED lighting*. During the desk review and on-site M&V visit, the EM&V team adjusted the Edinburg University Library *pre-retrofit lighting fixture* to *F42IRLU* from *F42ILU* based on pre-retrofit photos showing 28 W tubes. This adjustment slightly decreased peak demand (kilowatt) savings and resulted in a realization rate of 98 percent. The adjustment also slightly decreased energy (kilowatt-hour) savings and resulted in a realization rate of 98 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions (e.g., equipment quantity, equipment capacity, QPL qualifications, and AHRI certifications) for all the projects that had desk reviews because sufficient documentation was provided for the sites. Project documentation included invoices, QPL qualifications, equipment specifications, pre- and post-installation inspection notes, project savings calculators, and photographic documentation of existing and new equipment, which are significant efforts by the utility to verify equipment conditions and quantities. The M&V data were easily identified and supported with reporting to determine the impact of various activities. Complete documentation enhances the accuracy and transparency of project savings along with ease of evaluation. Overall, the EM&V team assigned a program documentation score of *good*.

2.4 DETAILED FINDINGS—RESIDENTIAL

2.4.1 Residential Standard Offer Program (SOP) (Medium Evaluation Priority)

Program contribution to portfolio savings (kW)	Claimed demand savings (kW)	Evaluated demand savings (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
5.1%	2,720	2,720	100.0%	12.8%	10,761,775	10,761,775	100.0%	Good

Completed desk reviews*	Completed On-site M&V
8	4

*Confidence intervals are not reported at the utility program level as these results should only be viewed qualitatively due to the small sample sizes.

The PY2022 Residential SOP evaluation efforts focused on desk reviews and on-site M&V. The number of sampled and completed desk reviews and on-site M&V projects for this program are listed above.