calculations. The calculations of the program savings were completed by an eTRM and, therefore, are not accessible to the evaluation team, which led to an unknown variation in the evaluated savings. Due to the documentation shortfalls, a program documentation score of *fair* was assigned.

- **Recommendation***:* Provide equipment qualification and the qualification listing for evaluation of the program projects. Providing the calculation code to evaluation teams will support transparency and identify differences in evaluated savings values.

3.7 DETAILED FINDINGS—RESIDENTIAL

3.7.1 Residential and Small Commercial SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
0.2%	502	502	100.0%	1.0%	2,235,111	2,235,111	100.0%	Good

Completed desk reviews*
2

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Residential and Small Commercial SOP evaluation efforts focused on desk reviews. The number of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for one project. The project had adjustments greater than five percent compared to the claimed savings. CenterPoint accepted the evaluated results and matched the claimed savings for the project; therefore, the final program realization rates are 100 percent. Further details of the EM&V findings are provided below.

Participant ID 12935: An apartment complex installed a new *heat pump*. During the desk review, the EM&V team updated the Seasonal Energy Efficiency Ratio 2, Energy Efficiency Ratio 2, and Heating Seasonal Performance Factor 2 (SEER2/EER2/HSPF2) baseline to 13.7 SEER2, 9.8 EER2, and 7.5 HSPF2. The adjustment increased peak demand reduction (kW), but the originally claimed kW savings was zero so a realization rate could not be applied. The adjustment did not affect the energy (kWh) savings; therefore, the realization rate remains at 100 percent.

Documentation Score

The EM&V team was able to verify most of the key inputs and assumptions, including the project scope, baselines, and equipment specifications for most of the measures of the sampled projects that underwent desk reviews. Overall, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

3.7.2 Hard-to-Reach SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
0.4%	834	834	100.0%	0.6%	1,477,980	1,477,980	100.0%	Fair

Completed desk reviews*
2

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Hard-to-Reach SOP evaluation efforts focused on desk reviews. The number of sampled completed desk reviews for this program is listed above.

The EM&V team adjusted savings for one project. The project had adjustments greater than five percent compared to the claimed savings. CenterPoint accepted the evaluated results and matched the claimed savings for the project; therefore, the final program realization rates are 100 percent. Further details of the EM&V findings are provided below.

Participant ID 13096: An apartment complex installed *ceiling insulation* for an apartment unit. During the desk review, the EM&V team added a 75 percent heating adjustment as stipulated in the TRM since the documentation could not confirm the presence of electric resistance heating. Overall, the adjustment decreased peak demand (kW) and energy (kWh) savings, which resulted in realization rates of 78 percent for demand reduction (kW) and 84 percent for energy savings (kWh).

Participant ID 11573: An apartment complex installed *ceiling insulation* for an apartment unit. During the desk review, the EM&V team added a 75 percent heating adjustment since the documentation could not confirm the presence of electric resistance heating. However, after preliminary results discussion with CenterPoint, they provided additional documentation to confirm the electric resistance heating. The EM&V team adjusted the preliminary results, which resulted in realization rates of 100 percent for both demand and energy savings.

Documentation Score

The EM&V team was mostly able to verify key inputs and assumptions, including the project scope, baselines, and equipment specifications for all sampled projects that underwent desk reviews. Projects included a customer acknowledgement form, photos of existing and new insulation, and inspection reports. However, the documentation for one project failed to include a photo of the electric resistance heating unit. Due to the documentation shortfalls, the EM&V team assigned a program documentation score of *fair.*

Recommendation*:* Ensure documentation verifying electric resistance heating is collected and available for evaluation.

3.7.3 Multifamily MTP Hard-to-Reach

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
0.1%	194	194	100.0%	0.4%	876,250	876,250	100.0%	Good

Completed desk reviews*
1

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Multifamily MTP HTR evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team did not adjust the claimed savings for the one project. CenterPoint accepted the evaluated results and matched the claimed savings for all five projects; therefore, the final program realization rates are 100 percent.

Documentation Score

The EM&V team was able to verify most key inputs and assumptions (e.g., equipment quantity, equipment capacity, baseline) for the one project that underwent a desk review based on the provided building plans. However, the documentation was missing proof of purchase such as an invoice. Overall, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

3.8 DETAILED FINDINGS—LOW-INCOME

3.8.1 Targeted Low-Income MTP (Agencies in Action)

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
2.9%	6,766	6,766	100.0%	5.2%	11,792,907	11,792,907	100.0%	Fair

Completed desk reviews*
5

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Targeted Low-Income MTP evaluation efforts focused on desk reviews. The number of sampled and completed desk reviews for this program are listed above. Two of the

five desk reviews were completed for the Agencies in Action subprogram, while three of the five desk reviews were completed for the Multifamily – HP subprogram.

The EM&V team adjusted the claimed savings for all five projects. CenterPoint accepted the evaluated results and matched the claimed savings for the projects with significant adjustments; therefore, the final program realization rate is 100 percent. Further details of the EM&V findings are provided below.

Participant ID 11995: The energy efficiency project included the implementation of *air infiltration*, *duct efficiency*, and *solar screen* measures. During the desk review, the EM&V team adjusted the pre-CFM measurement for the *air infiltration* measure based on the provided photos. Overall, the adjustments resulted in project-level realization rates of 98.5 percent for demand reduction (kW) and 98.6 percent for energy savings (kWh).

Participant ID 12813: The energy efficiency project included the installation of an *advanced power strip (APS)* and *ceiling insulation*. During the desk review, the EM&V found no documentation to verify the installation of an *APS* and removed savings. Overall, the adjustments resulted in project-level realization rates of 96.1 percent for demand reduction (kW) and 77.2 percent for energy savings (kWh).

Participant ID 12236: The energy efficiency project included the installation of a new *heat pump*, *smart thermostat*, and *ceiling insulation*. During the desk review, the EM&V team did not receive photos confirming the existence of electric resistance heating, so a 75 percent factor was applied to the savings calculations. However, after preliminary results discussion with CenterPoint, they provided additional documentation to confirm the electric resistance heating and the EM&V team adjusted accordingly. Also, the EM&V team adjusted the smart thermostat savings using the rated capacity of the new unit. Lastly, the EM&V team applied the default remaining useful life (RUL) of the existing unit to the early retirement calculations. Overall, the adjustments resulted in project-level realization rates that rounded to 100 percent for demand reduction (kW) and 95.9 percent for energy savings (kWh).

Participant ID 12298: The energy efficiency project included the installation of a new *heat pump*, *smart thermostat*, and *ceiling insulation*. During the desk review, the EM&V team did not receive photos confirming the existence of electric resistance heating, so a 75 percent factor was applied to the savings calculations. However, after preliminary results discussion with CenterPoint, they provided additional documentation to confirm the electric resistance heating, and the EM&V team adjusted accordingly. The EM&V team also adjusted the smart thermostat savings using the rated capacity of the new unit. Also, the EM&V team applied the default RUL of the existing unit to the early retirement calculations. Lastly, the EM&V team adjusted the baseline capacity to match the efficient unit capacity. Overall, the adjustments resulted in project-level realization rates of 61.2 percent for demand reduction (kW) and 64.5 percent for energy savings (kWh).

Participant ID 12397: The energy efficiency project included the installation of a new *heat pump* and *smart thermostat*. During the desk review, the EM&V team did not receive photos confirming the existence of electric resistance heating, so a 75 percent factor was applied to the savings calculations. However, after preliminary results discussion with CenterPoint, they provided additional documentation to confirm the electric resistance heating, and the EM&V team adjusted accordingly. The EM&V team also adjusted the smart thermostat savings using the rated capacity of the new unit. Also, the EM&V team applied the default RUL of the existing unit to the early retirement calculations. Lastly, the

EM&V team adjusted the baseline capacity to match the efficient unit capacity. Overall, the adjustments resulted in project-level realization rates of 62.1 percent for demand reduction (kW) and 57.9 percent for energy savings (kWh).

Documentation Score

The EM&V team was able to verify most key inputs and assumptions, including the project scope, baselines, and equipment specifications for some sampled projects that underwent desk reviews. One project was missing key documentation such as invoices and photos showing the proper installation of the *APS* and existing insulation. Also, one project was missing photo documentation to confirm the existence of electric resistance heating. Project documentation typically included customer agreement, photos, and field notes. Documentation also included low-income certification. Due to the documentation shortfalls, the EM&V team assigned a program documentation score of *fair.*

- **Recommendation***:* Ensure documentation verifying electric resistance heating is collected and available for evaluation to avoid the documentation adjustment factor to savings.
- **Recommendation***:* Ensure documentation for all measures as outlined in the Program Tracking Data and Evaluation Requirements section of the TRM for each measure is collected and available for evaluation.

3.9 DETAILED FINDINGS—LOAD MANAGEMENT

3.9.1 Commercial Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
43.9%	103,504	103,504	100.0%	0.1%	310,512	310,512	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the CenterPoint Commercial Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, one load management event occurred on the following date and time:

- September 24, 2024, from 1:00 p.m. to 4:00 p.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received interval meter data and a spreadsheet summarizing the event-level savings for the 40 sponsors across 345 sites.

Seventy-nine sites did not participate in the event. All sponsors except one had at least one site that curtailed during each event.

- The cooperation level was 77 percent.
- **Recommendation**: Investigate ways to increase cooperation to above 90 percent.

After the EM&V team applied the *High 5 of 10* baseline calculation method, it was found that the evaluated savings matched the savings provided for all sites. The kW savings for each participating site corresponded to the kW reductions that occurred during the scheduled event. The kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team's (evaluated) and CenterPoint's (claimed) calculated kW and kWh savings. No adjustments were made to the program savings; however, a negligible difference in kW and kWh was a result of different rounding practices during calculations. The realization rate for both kW and kWh is 100 percent, with a documentation score of *good*.

3.9.2 Commercial Winter Load Management Pilot

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
12.4%	29,211	29,211	100.0%	0.0%	87,633	87,633	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the Commercial Winter Load Management Pilot by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, one load management event occurred on the following date and time:

- January 17, 2024, from 7:00 a.m. to 10:00 a.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received interval meter data and a spreadsheet summarizing the event-level savings for the 24 sponsors across 181 sites. Sixty-five sites did not participate in the event. All sponsors except one had at least one site that curtailed during each event.

- The cooperation level was 64 percent.
- **Recommendation**: Increase cooperation to above 90 percent.

After the EM&V team applied the *High 8 of 10* baseline calculation method optimized for the event across all sites, it was found that the evaluated savings matched the savings provided for

all sites except two, using the ten days prior to the event as the baseline[7]. The differences for the two sites were minor and resulted from using the incorrect timeframe or not addressing missing interval meter data.

The kW savings for each participating site corresponded to the kW reductions that occurred at the scheduled event (no averaging was necessary because each participating site participated in only one event). The kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team's (evaluated) and CenterPoint's (claimed) calculated kW and kWh savings. CenterPoint accepted the evaluated results and matched the claimed savings to those of the evaluated savings; therefore, the final program realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

3.9.3 Residential Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
14.3%	33,706	33,706	100.0%	0.0%	101,117	101,117	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the CenterPoint Residential Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, one load management event occurred on the following date and time:

- September 24, 2024, from 1:00 p.m. to 4:00 p.m. (unscheduled).

The EM&V team received the interval meter data and spreadsheets detailing the CenterPoint calculated baseline load, event load, and savings results for each service provider and meter. The number of participating devices was 27,653, with 4,881 devices not achieving savings during the event (zero or negative kW savings).

- The cooperation level was 82 percent.

After the EM&V team applied the *High 3 of 5* baseline calculation method, it was found that the evaluated kW savings matched the kW savings CenterPoint provided for most participating meters. Minor differences resulted from calculating the kW savings for meters with partial data for one meter (per the TRM, savings may still be calculated for less than two percent of meters that fail to record data sufficient to apply the *High 3 of 5* calculation method) and using different baselines for a few meters. For the latter, a tie occurred between the days used to calculate the

[7] CenterPoint simplified the approach by using the ten days prior to the event as the baseline instead of optimizing for the scenario that yields the highest savings among the days prior and/or after the event.

baseline. In that case, the TRM recommends selecting the five highest loads closest to the event.

The kW savings for each participating meter corresponded to the average of energy reduced during the scheduled event. The kWh savings for each participating meter were calculated by multiplying the kW reductions for each event by the total number of event hours. Program-level savings were calculated by adding all meter-level savings.

The table above shows the EM&V team's (evaluated) and CenterPoint's (claimed) calculated kW and kWh savings. CenterPoint did not make any adjustments. The realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

- **Recommendation**: In case of a tie between the days used to calculate the baseline, follow the TRM guidance of selecting the five highest loads closest to the event.

3.10 SUMMARY OF TRACKING-SYSTEM-ONLY EVALUATED PROGRAMS

Table 14 summarizes claimed savings for CenterPoint's programs in PY2024 that only received a tracking system review for program impacts. The programs' claimed savings were verified against the final PY2024 tracking data provided to the EM&V team for the EM&V database.

Table 14. CenterPoint's PY2024 Claimed Savings (Tracking-System-Only Evaluated Programs)

Program	Contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Retro-Commissioning MTP	0.3%	656	656	100.0%	3.0%	6,970,378	6,970,378	100.0%
Retail Products and Services MTP (Commercial)	3.4%	8,072	8,072	100.00%	5.8%	13,359,980	13,359,980	100.00%
Midstream MTP (HVAC and Pool Pump Distributor)	0.9%	2,182	2,182	100.00%	2.5%	5,754,269	5,754,269	100.00%
Retail Products and Services MTP (Residential)	5.1%	12,040	12,040	100.00%	22.1%	50,599,656	50,599,656	100.00%
Multifamily Market Rate MTP	0.7%	1,562	1,562	100.00%	3.0%	6,806,619	6,806,619	100.00%
High-Efficiency Homes MTP	7.6%	17,928	17,928	100.00%	17.3%	39,679,008	39,679,008	100.00%

4.0 ONCOR ELECTRIC DELIVERY COMPANY, LLC

4.1 KEY FINDINGS AND RECOMMENDATIONS

In addition to Volume 1 recommendations that apply to all IOUs, Table 15 summarizes Volume 3 recommendations specific to Oncor Electric Delivery, LLC (Oncor). Key findings that do not have a recommendation illustrate the type of program information to highlight in future EEPRs.

Table 15. Oncor Key Findings and Recommendations

Report Section	Key finding	Recommendation
4.2.1 Portfolio Key Findings	Oncor has not met its legislated demand reduction goals with energy efficiency since PY2020.	Respond to this report with Oncor's plans to increase the proportion of its demand reduction goal met through energy efficiency.
4.2.2 Commercial Savings	Oncor successfully diversified commercial savings beyond *lighting*—*HVAC* projects are over half of PY2024 commercial program energy savings and over half of demand reductions from energy efficiency.	
	CSOP saw low free-ridership and decreased free-ridership compared to prior years.	
	The SEM program grew demand reductions from energy efficiency and energy savings through *custom* M&V projects.	Share best practices from the SEM program at an EEIP meeting.
4.2.3 Residential Savings	PY2024 saw growth in *water heating* measures and added a *new homes* program, but residential *lighting* savings are still trending low since PY2023.	Respond to this report by identifying barriers to residential energy efficiency and growth opportunities for this sector.
4.2.4 Load Management Savings	Oncor's Commercial Load Management program had decreased demand reduction, but the Residential Load Management program had increased demand reduction.	
4.6 Commercial Impact Evaluation Results	Documentation of the Commercial Food Service MTP projects needs improvement.	Provide equipment qualification and the qualification pathway listing for evaluation of the program projects.
4.8 Load Management Impact Evaluation Results	The cooperation rates for the Summer Commercial Load Management SOP was less than 90 percent. 90 percent or higher has been achieved in the past or by other IOUs for commercial load management. Oncor's Winter Commercial Load Management SOP achieved 95 percent.	Respond to this report with program strategies to increase average cooperation to 90 percent for the Summer Commercial Load Management SOP.

Report Section	Key finding	Recommendation
	Residential Load Management programs (summer and winter) were less than 80 percent. 80 percent or higher has been achieved in the past or by other IOUs for residential load management.	Respond to this report with program strategies to increase average cooperation to 80 percent for the Summer and Winter Residential Load Management SOPs.

Oncor's PY2024 highlights:

- Achieved most energy efficiency demand reductions and energy savings through Commercial SOP followed by HTR/LI programs,
    - Both Commercial SOP and HTR/LI programs had increased demand reductions from energy efficiency and increased energy savings in PY2024.
- Oncor's commercial programs saw improved performance over prior years, but residential energy efficiency programs had decreased performance,
- Oncor saw the lowest performance against its energy savings goal compared to prior years,
- Oncor continues to successfully diversify its measure mix, and
    - Commercial savings saw significant increases in *HVAC* and *custom* projects,
    - Residential programs increased *HVAC* projects to over half of energy efficiency demand reduction and energy savings, and
- Oncor's SEM program, which works with commercial and industrial customers to identify deeper and more comprehensive sources of savings, gained traction in PY2024.

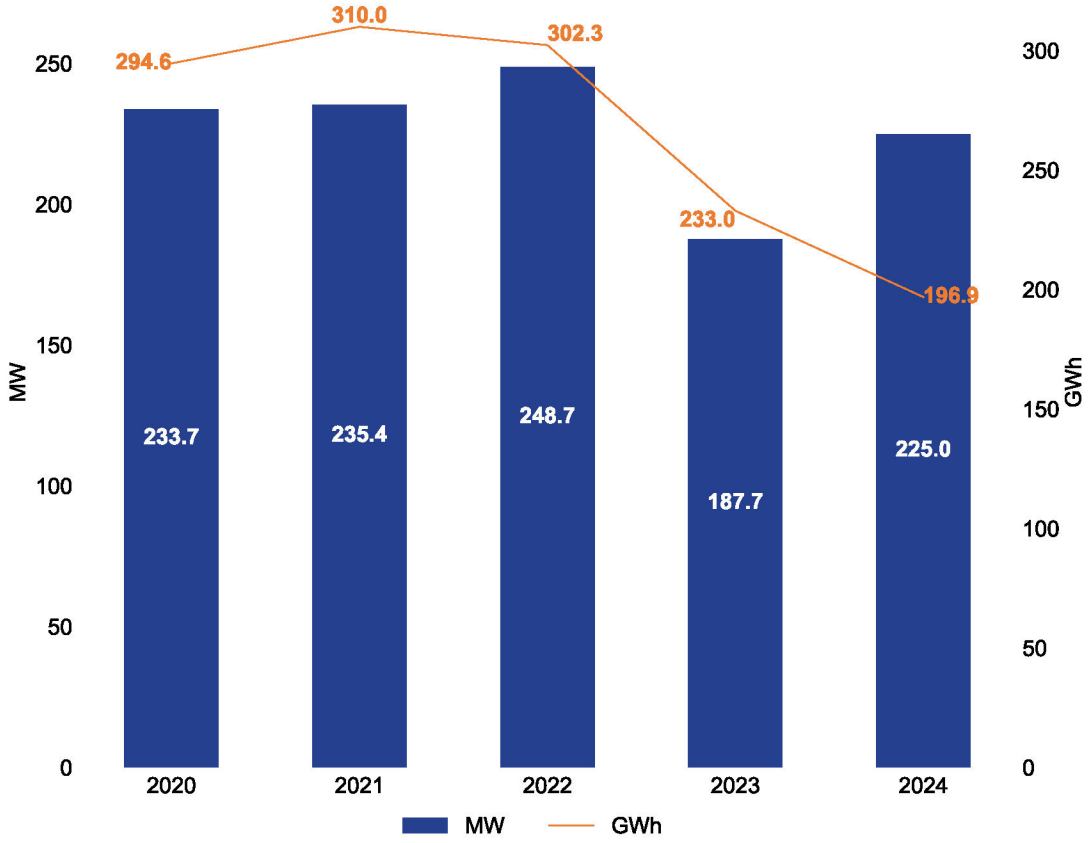
4.2 PY2020 THROUGH PY2024 COMPARISONS

4.2.1 Portfolio Key Findings

PY2024 saw an increase in demand reduction but decreased energy savings across Oncor's portfolio (Figure 21).

- The increase in residential load management primarily accounts for the increased demand reduction.
    - Oncor is the first IOU to add a residential winter load management program to its portfolio and also increased participation in its summer load management program.

Figure 21. Oncor's Demand Reduction (MW) and Energy Savings (GWh) PY2020-PY2024



In PY2024, Oncor's Commercial SOP achieved the most energy savings (Figure 22, right graph), followed by HTR and LI programs. These were also the programs delivering the most demand reduction from energy efficiency (Figure 22, left graph).

Figure 22. Oncor's Demand Reduction (MW) and Energy Savings (GWh) by Program Type PY2020-PY2024

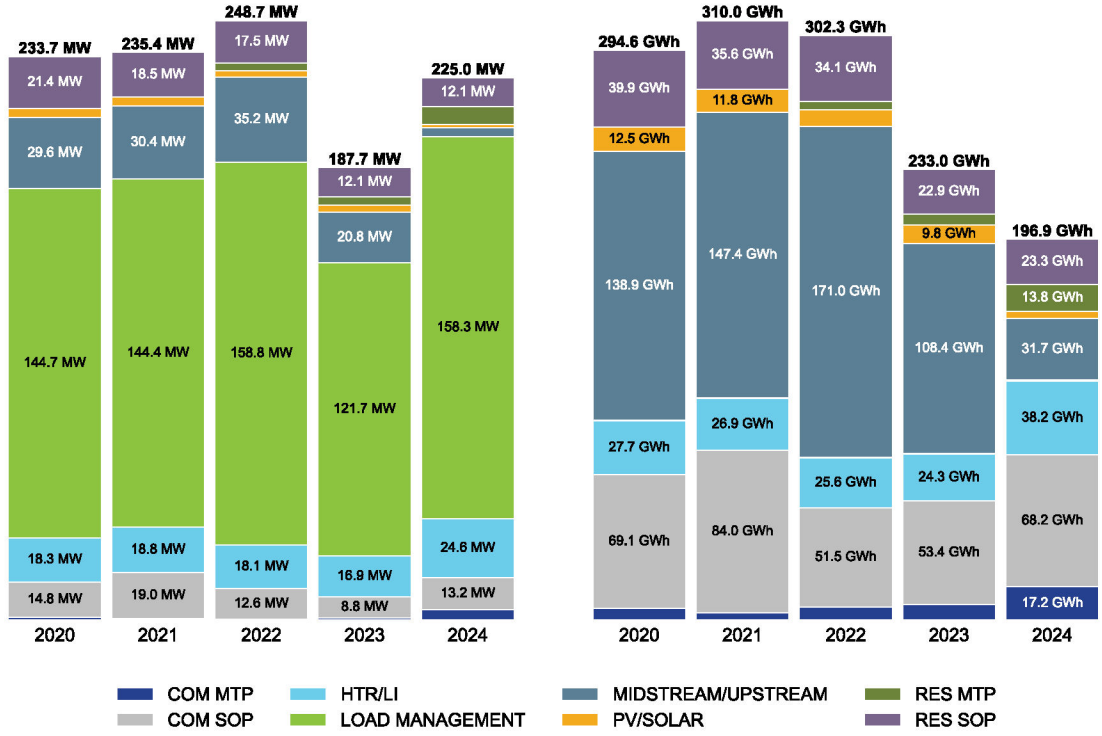
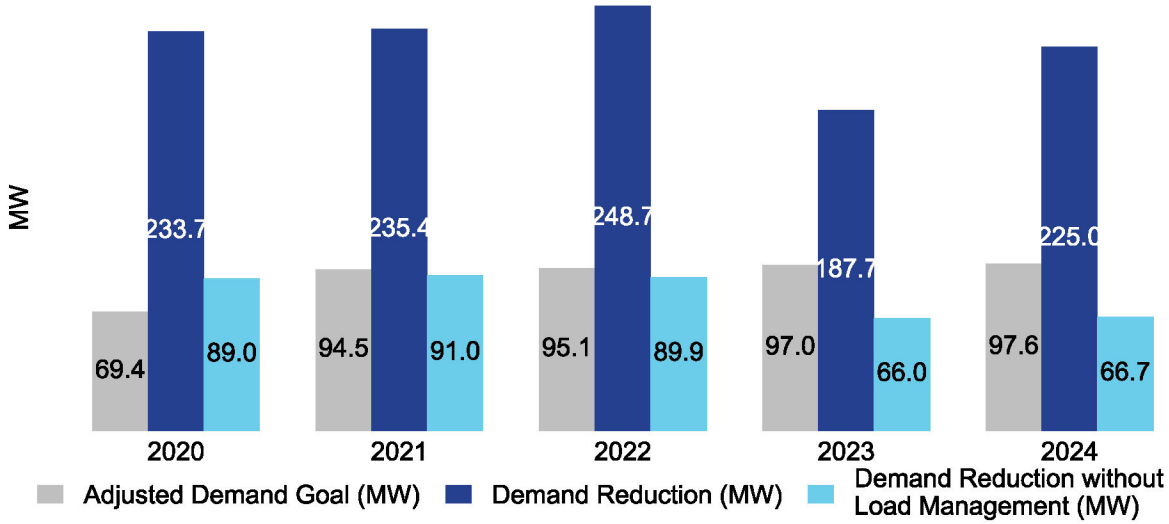


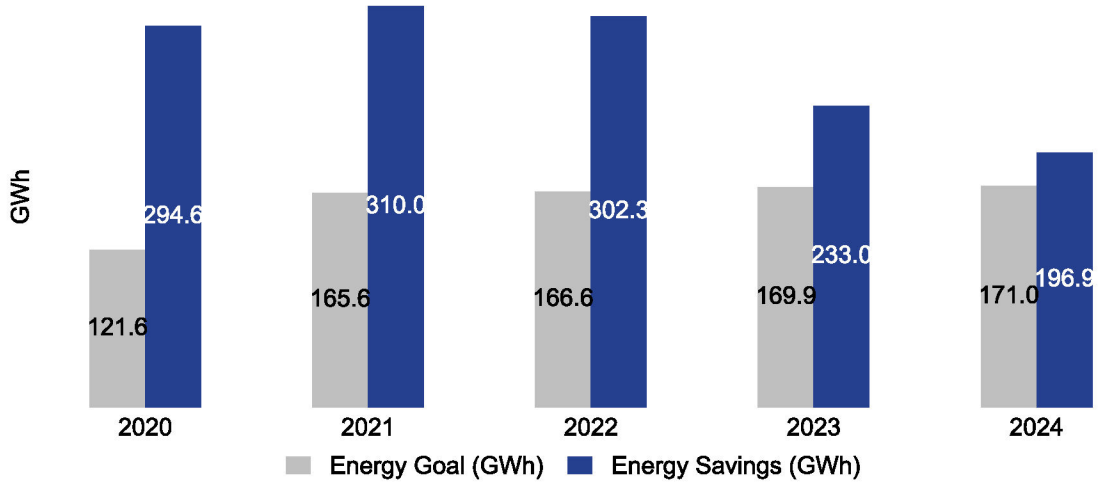
Figure 23 shows Oncor's percentage of legislated goal met through energy efficiency alone has steadily decreased. Starting with PY2022, Oncor moved to the higher demand reduction goal of four-tenths of one percent of summer weather-adjusted peak demand.

Figure 23. Oncor's Legislated Demand Reduction (MW) Goal PY2020–PY2024



Oncor has consistently exceeded its energy goals (Figure 24), but with this decreasing in recent years.

Figure 24. Oncor's Energy Savings (GWh) Goal PY2020–PY2024



4.2.2 Commercial Savings

The PY2024 gross savings from Oncor's commercial sector programs were the following:

- Demand reduction of 17.8 MW, and
- Energy savings of 86.7 GWh.

Figure 25 shows a slight increase in MW from energy efficiency delivered by the commercial programs. This is complemented by an increase in energy savings as well.

Figure 25. Oncor's Demand Reduction (MW) and Energy Savings (GWh) by Program Year—Commercial Programs Excluding Load Management, PY2020–PY2024

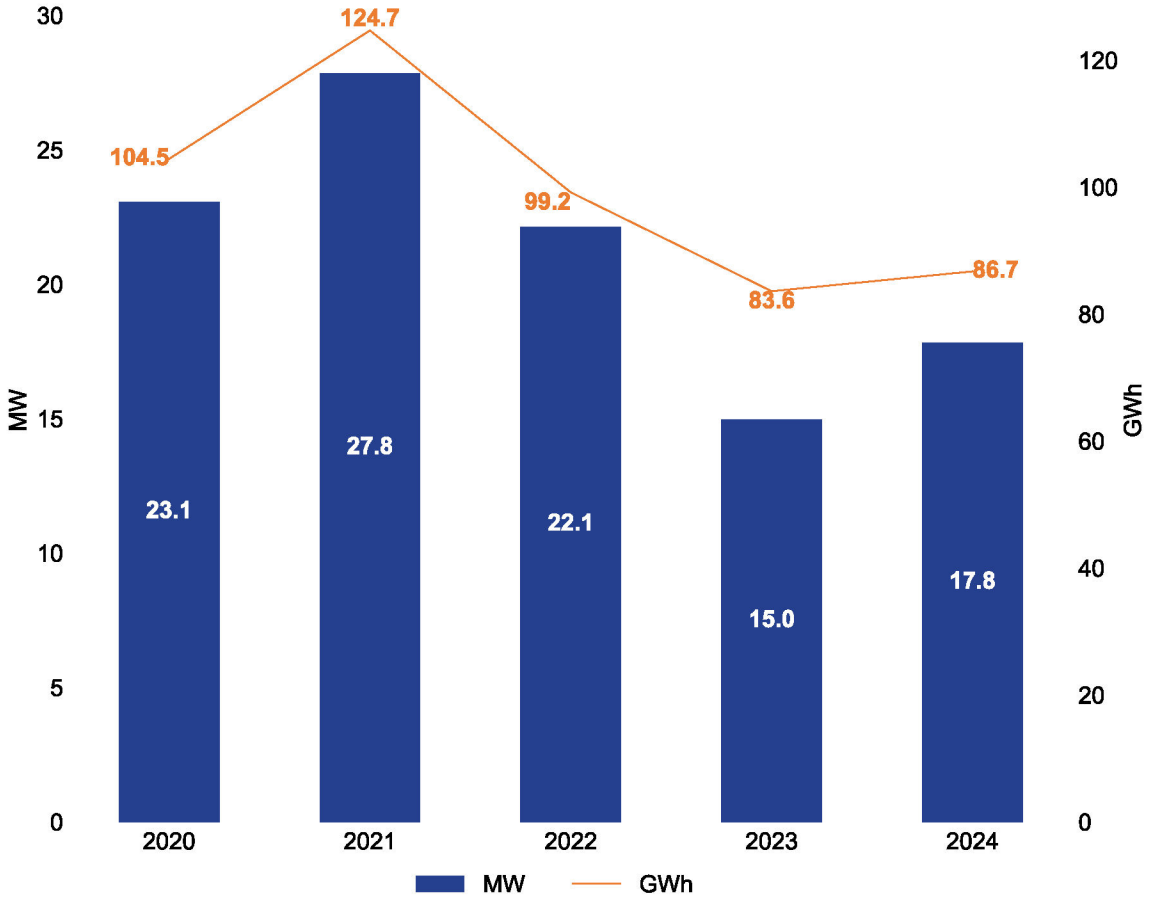
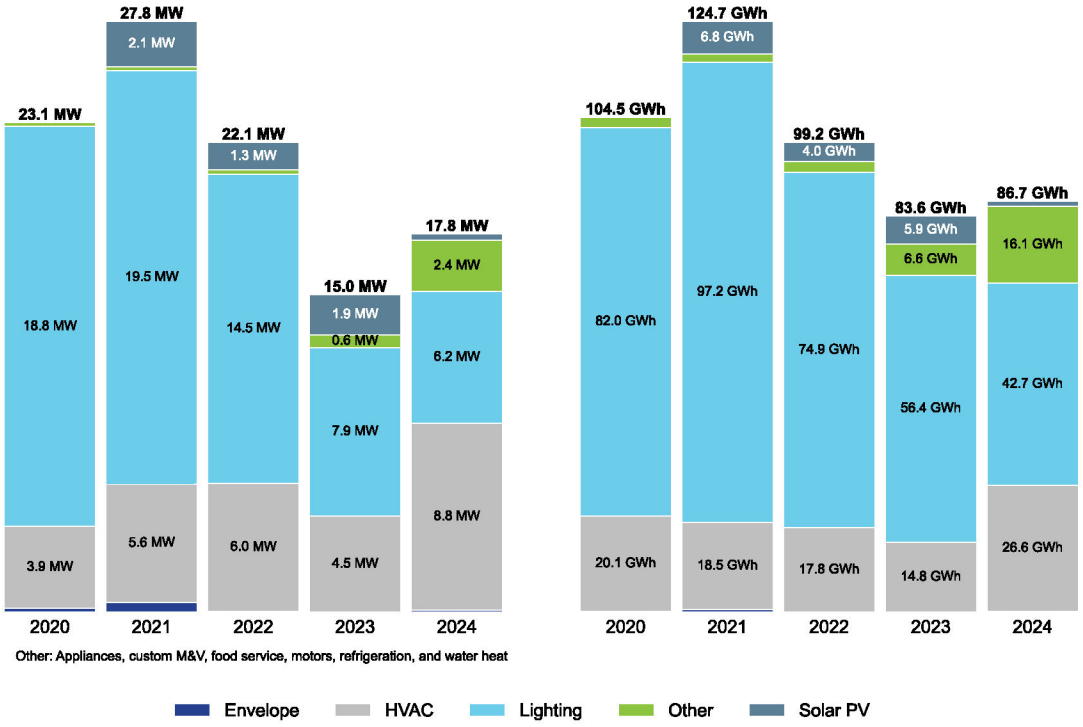


Figure 26 presents the breakdown of commercial demand reduction (Figure 26, left graph) and energy savings (Figure 26, right graph) by measure categories.

- Oncor continues to diversify its measure mix. *HVAC* measures make up the largest percentage of demand reduction at half, and the second-largest of energy savings at just under a third.
- The measure category of most notable growth is *other*, which is largely composed of *custom M&V* projects. Oncor's SEM program gained traction in PY2024, completing projects in this measure category.

Figure 26. Distribution of Oncor's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Commercial Programs Excluding Load Management PY2020–PY2024



4.2.3 Residential Savings

The PY2024 gross savings from Oncor's residential sector programs (excluding load management) were the following:

- Demand reduction of 48.8 MW, and
- Energy savings of 109.7 GWh.

PY2024 saw the lowest residential demand reduction from energy efficiency and energy savings in the last five years (Figure 27).

Figure 27. Oncor's Demand Reduction (MW) and Energy Savings (GWh) by Program Year—Residential Programs PY2020–PY2024

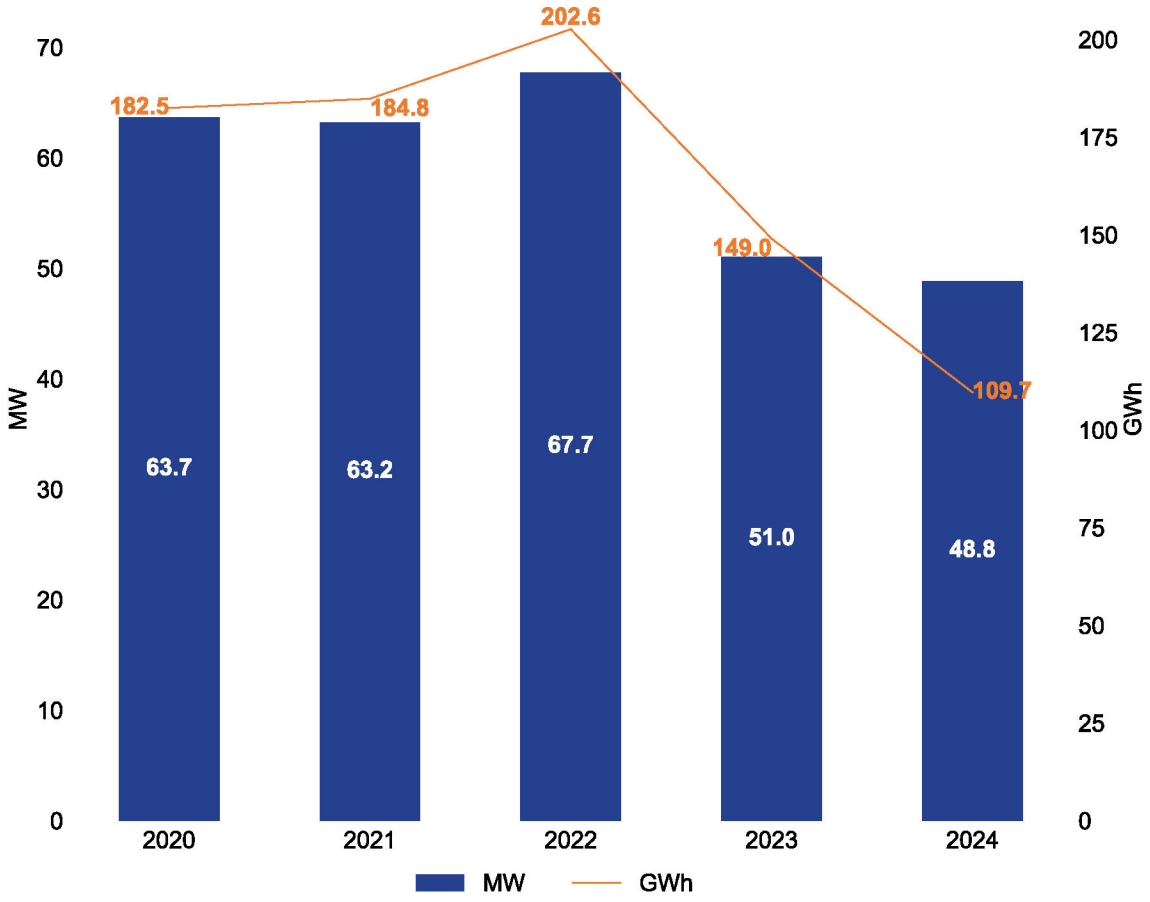
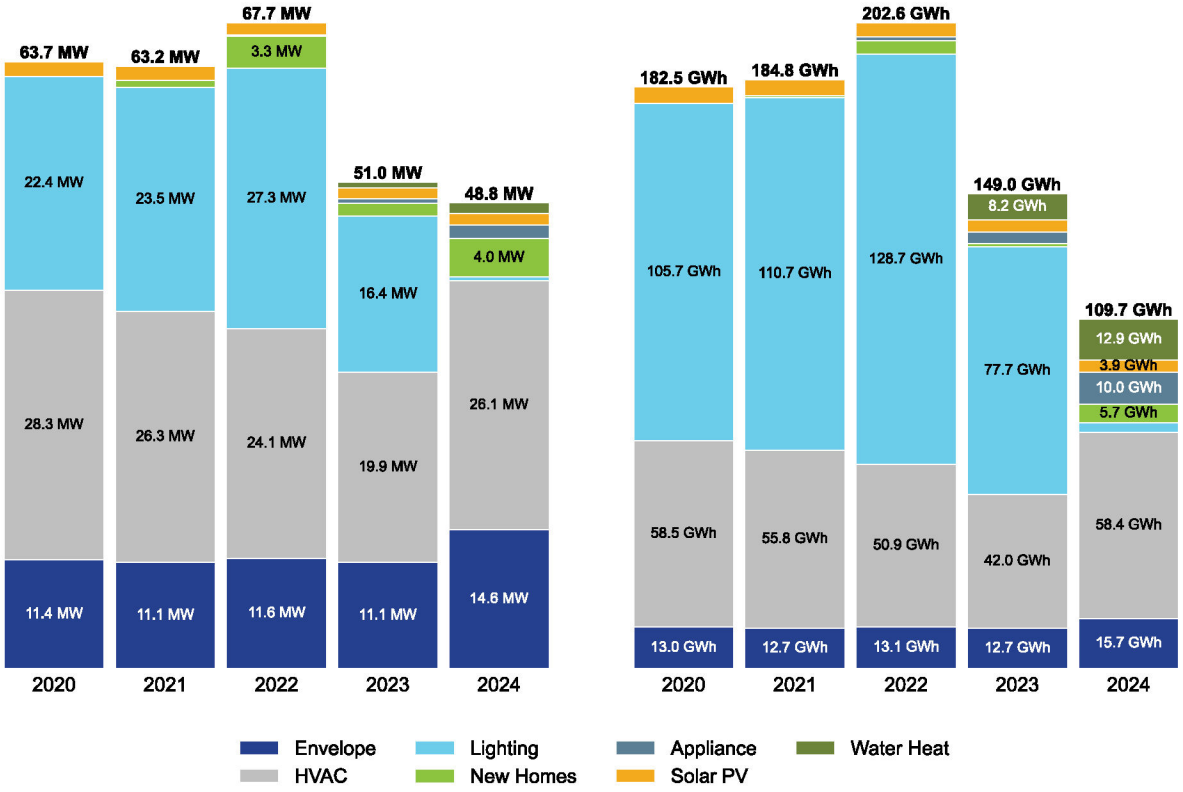


Figure 28 shows the breakdown of residential savings distribution by measure category.

- *HVAC* measures have increased to more than half (53 percent) of energy efficiency demand reduction (Figure 28, left graph) and more than half of energy savings (Figure 28, right graph).
- *Envelope, water heating* and *new home* measures are also promising growth areas in Oncor's residential portfolio.

Figure 28. Distribution of Oncor's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Residential Programs PY2020–PY2024[8]



[8] The gigawatt-hour numbers in Figure 28 include energy savings of 1.9 GWh from the *Multifamily Smart Thermostat Direct Install* pilot.

4.2.4 Load Management Savings

The PY2024 gross savings from Oncor's load management programs were the following:

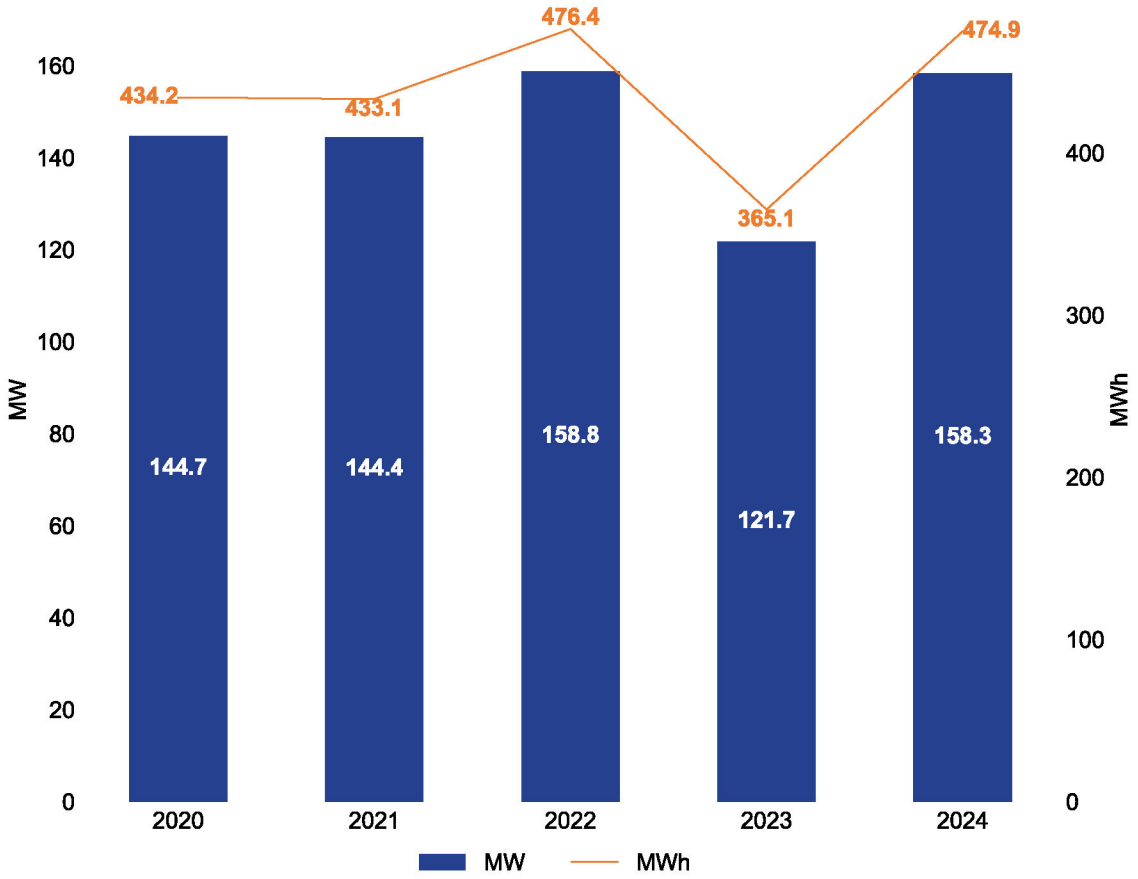
- Demand reduction of 158.3 MW, and
- Energy savings of 474.9 MWh.

Demand reduction from load management of 158.3 MW was more than twice the combined demand reduction from commercial and residential energy efficiency programs (total of 66.6 MW).

Figure 29 summarizes the demand and energy savings for Oncor's load management programs over the past five years, showing an increase in load management demand reduction in PY2024 after a decrease in PY2023.

In PY2024, the main driver of the increase in demand reduction was residential load management, including the addition of a residential winter load management program. Oncor is the only IOU with this offering. Commercial load management decreased in PY2024 as shown in Volume 1. Energy savings depend upon the number of curtailment events called each year and their duration.

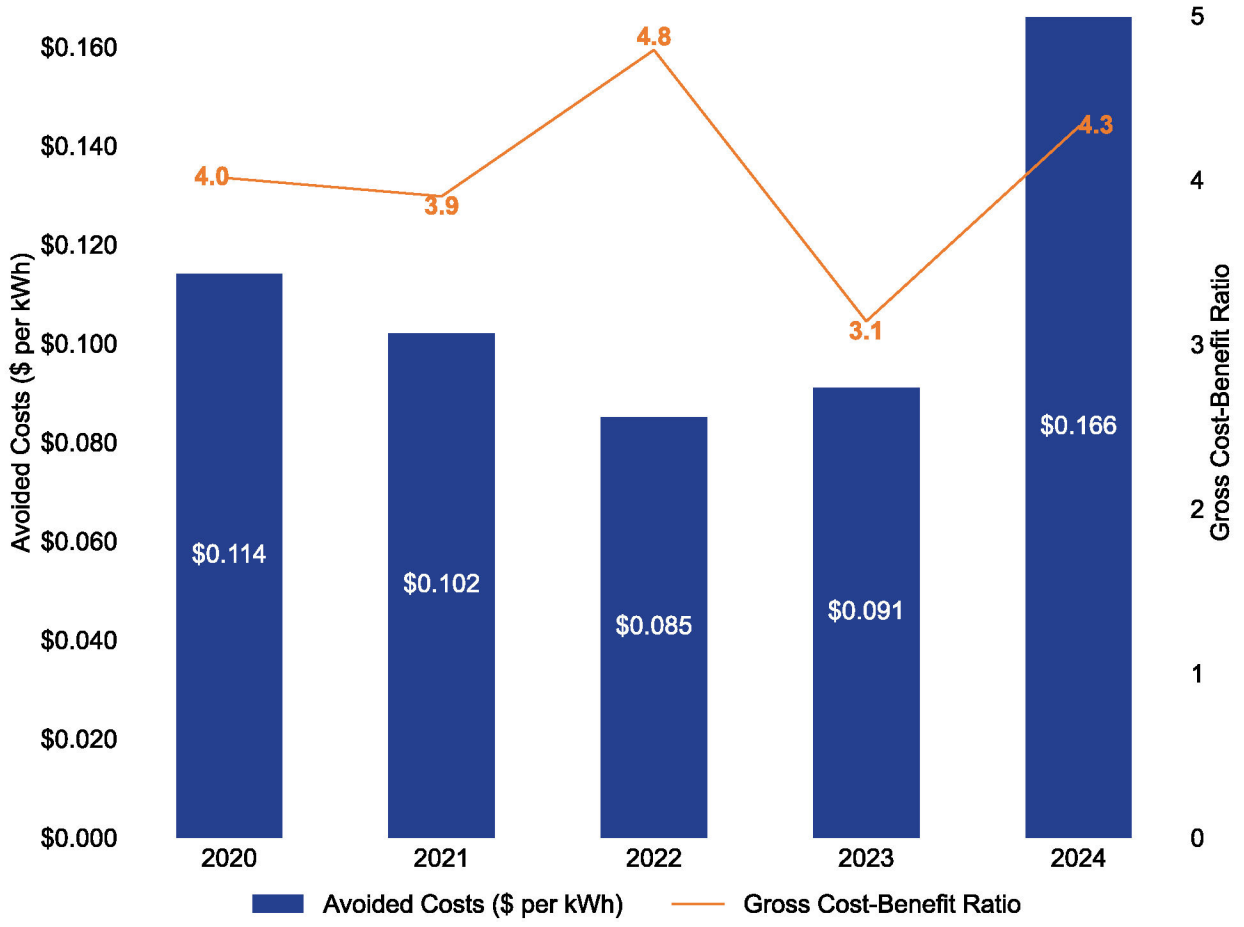
Figure 29. Oncor's Demand Reduction (MW) and Energy Savings (MWh) by Program Year—Load Management Programs PY2020–PY2024



4.3 COST-EFFECTIVENESS

Figure 30 shows the avoided costs for all investor-owned utilities and Oncor's cost-effectiveness ratios over the last five years. The overall cost-effectiveness ratio has consistently remained above 3.0 for Oncor. While PY2022 saw a high of 4.8, the cumulative cost-effectiveness of Oncor's programs was 4.3 in PY2024. The significant increase in cost-benefit ratio from PY2023 to PY2024 is due to increased avoided cost of energy in the ERCOT market.

Figure 30. Oncor's Gross Cost-Benefit Ratio and Avoided Cost by Program Year



4.4 PY2024 IMPACT EVALUATION RESULTS

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

4.4.1 Evaluated Savings

Oncor's evaluated savings for PY2024 were 224,957 kW in demand reduction and 196,859,776 kWh in energy savings. The overall kW and kWh portfolio realization rates are approximately 100 percent. Oncor adjusted claimed savings based on EM&V supporting healthy realization rates (Table 16).

Table 16 shows the claimed and evaluated demand reduction for Oncor's portfolio and broad customer sector and program categories. Table 17 shows the claimed and evaluated energy savings for Oncor's portfolio and broad customer sector and program categories for PY2024. Residential and load management results are based on census reviews, and therefore, precision calculations are not applicable. For both Table 16 and Table 17, the review for the load management program included a census review of equations and interval meter data to estimate the baseline usage and level of load curtailment for each event for all participants.

Table 16. Oncor's PY2024 Claimed and Evaluated Demand Reduction (kW)

Level of analysis	Percentage portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)
Total portfolio	100.0%	224,957	224,957	100.0%
Commercial	7.9%	17,820	17,820	100.0%
Residential	18.3%	41,134	41,134	100.0%
Low-income	3.4%	7,706	7,706	100.0%
Load management	70.4%	158,297	158,297	100.0%

Table 17. Oncor's PY2024 Claimed and Evaluated Energy Savings (kWh)

Level of analysis	Percentage portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Total portfolio	100.0%	196,859,776	196,859,776	100.0%
Commercial	44.1%	86,728,659	86,728,659	100.0%
Residential	46.6%	91,802,798	91,802,798	100.0%
Low-income	9.1%	17,853,428	17,853,428	100.0%
Load management	0.2%	474,891	474,891	100.0%

The detailed findings subsections discuss program-level realization rates. However, due to the small sample sizes at the utility program level, these results should only be viewed qualitatively.

Program-level realization rates also include a qualitative rating of good, fair, and limited associated with the level of program documentation received from the utility.

- Oncor received *good* documentation scores for the Commercial SOP, Commercial Strategic Energy Management MTP, Home Energy Efficiency SOP, Hard-to-Reach SOP, Targeted Weatherization Low-Income SOP, Low-Income HVAC Tune-Up MTP, and load management programs.
- Oncor received a *fair* documentation score for the Commercial Food Service MTP.
    - **Recommendation**: Improve documentation for the one program with a *fair* documentation score. See project and program-specific recommendations in program impact results.

4.4.2 Program Funding and Cost-Effectiveness Results

Oncor's total portfolio funding for PY2024 was $58,199,659, excluding research and development, EM&V, and its performance bonus; its portfolio had a cost-effectiveness score of 4.3, or 4.7, excluding low-income programs based on the PACT.

The most cost-effective programs based on claimed and evaluated savings were the Retail Products and the REP Smart Thermostat Pilot MTP programs; the least cost-effective programs were the Commercial Winter Load Management SOP (Pilot) and the Residential Winter Load Management SOP (Pilot). All of Oncor's programs were cost-effective in 2024.

The lifetime cost of evaluated savings was $0.027 per kWh and $16.79 per kW. 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.

Table 18. Oncor's Cost-Effectiveness Results

Level of analysis	Claimed savings results	Evaluated savings results	Net savings results
Total portfolio	**4.32**	**4.32**	**3.47**
Total portfolio excluding low-income programs	**4.67**	**4.67**	**3.71**
Commercial	**6.70**	**6.70**	**5.60**
Commercial SOP	7.12	7.12	5.93
Commercial Food Service/Midstream MTP	3.19	3.19	2.71
Small Business Direct Install/Tune-Up SOP	3.92	3.92	3.57
Strategic Energy Management MTP (Pilot)	5.62	5.62	4.78
Residential	**4.32**	**4.32**	**3.22**
Home Energy Efficiency SOP	3.19	3.19	2.59
Hard-to-Reach SOP	3.71	3.71	3.71
Retail Products MTP	8.96	8.96	4.48
New Homes Program MTP	4.11	4.11	2.01
Residential Multifamily Smart Thermostat Direct Install MTP (Pilot)	5.72	5.72	4.29
REP Smart Thermostat Pilot MTP	10.49	10.49	7.87

Level of analysis	Claimed savings results	Evaluated savings results	Net savings results
Low-income Multifamily Smart Thermostat Direct Install MTP*	5.46	5.46	5.46
Low-Income HVAC Tune-Up MTP (A/C tune-ups)*	4.09	4.09	4.09
Solar PV SOP	4.82	4.82	4.15
Low-income**	**2.73**	**2.73**	**2.73**
Targeted Weatherization Low-Income SOP	2.73	2.73	2.73
Load management	**1.46**	**1.46**	**1.46**
Commercial Load Management SOP	1.66	1.66	1.66
Commercial Winter Load Management SOP (Pilot)	1.19	1.19	1.19
Residential Load Management SOP	1.54	1.54	1.54
Residential Winter Load Management SOP (Pilot)	1.32	1.32	1.32

* The Low-Income Multifamily Smart Thermostat Direct Install MTP and the Low-Income HVAC Tune-Up MTP serve low-income customers as Hard-to-Reach programs.

** The low-income programs are evaluated using the Savings-to-Investment Ratio (SIR).

4.4.3 Net-to-Gross Results

Oncor's NTG ratio was updated for its CSOP in PY2024 through participant surveys. Oncor's CSOP NTG ratio is 83.3 percent for kWh and 75.7 percent for kW, calculated as 1-free-ridership (excluding spillover).

Oncor's free-ridership rate for CSOP of 16.7 percent for kWh and 24.3 percent for kW, decreased from the PY2021 commercial SOP NTG free-ridership estimate of 23 percent for kWh and slightly increased from 22 percent for kW.

Table 19 shows Oncor's free-ridership results by program and end-use. While the small number of completed surveys for some measure types is qualitative, end-use free-ridership provides useful insight for IOU's program design considerations.

Table 19. Oncor's Free-Ridership by Program and End-Use

Program and end-use	Completed surveys	kWh free-ridership	kW free-ridership
Commercial Solutions SOP			
HVAC equipment	23	20.5%	31.5%
Lighting	23	13.8%	15.0%
Solar	4	17.9%	17.3%
Total	**50**	**16.7%**	**24.3%**

4.5 SAVINGS DIFFERENCES

As discussed above, utilities are provided the opportunity to adjust savings at the project level based on interim EM&V findings. This section summarizes the claimed savings adjustments recommended by the EM&V team. The EM&V team requests that utilities adjust projects when evaluated and claimed savings differ by more than five percent. Oncor adjusted claimed savings for all projects with any differences found by the EM&V team and included these adjustments in its June 1 filing.

- Overall, Oncor's claimed demand reduction (kW) and energy savings (kWh) increased due to recommended evaluation adjustments.

Table 20. Oncor's Claimed Demand Reduction (kW) and Energy Savings (kWh) Adjustments by Program

Program	EM&V demand claimed savings adjustments (kW)	EM&V energy claimed savings adjustments (kWh)
Commercial SOP	18.64	259,890
Commercial Food Service/Midstream MTP Program	2.79	12,227
Home Energy Efficiency SOP	-0.11	-219
Targeted Weatherization Low-Income SOP	-0.11	-176
Commercial Load Management SOP	635.4	1,906
Total	656.57	273,628.76

4.6 DETAILED FINDINGS—COMMERCIAL

4.6.1 Commercial SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (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%	13,188	13,188	100.0%	34.6%	68,211,295	68,211,295	100.0%	Good

Completed desk reviews*
16

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Commercial SOP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for eight projects. Four projects had an adjustment of less than five percent, and four projects had an adjustment of greater than five percent compared to the originally claimed savings. Oncor 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. Further details of the EM&V findings are provided below.

Participant ID 4-5-1-1-36221: An aeronautical manufacturing facility installed interior and exterior *LED lighting* to replace metal halide fixtures. During the desk review, the EM&V team adjusted the installed wattage of 152 fixtures to match the amount on the invoice. The EM&V team also reduced exterior lighting savings because more than 10 percent of the exterior fixtures were non-operational. Overall, these adjustments increased peak demand reduction (kW) and resulted in a realization rate of 102 percent. The adjustments also increased energy (kWh) savings and resulted in a realization rate of 102 percent.

Participant ID 4-5-1-1-36870: A supply store with office and warehouse areas installed interior and exterior *LED* and *lighting controls* to replace existing lighting fixtures. During the desk review, the EM&V team adjusted the pre-retrofit fixture type of one bulb based on inspection reports. The *HVAC* type was also adjusted to *air conditioned* for the *lighting* in the office area of the building. Overall, these adjustments increased peak demand reduction (kW) and resulted in a realization rate of 101 percent. The adjustments also increased energy (kWh) savings and resulted in a realization rate of 101 percent.

Participant ID 4-5-1-1-41868: A new construction warehouse installed 44 packaged rooftop units and four split *HVAC* units. During the desk review, the EM&V team identified the AHRI qualification for two units and added the energy savings to the total. Overall, these adjustments increased peak demand reduction (kW) and resulted in a realization rate of 113 percent. The adjustments also increased energy (kWh) savings and resulted in a realization rate of 118 percent.

Participant ID 4-5-1-1-45813: A manufacturing facility installed *LED lighting* to replace fluorescent lighting and old LED lighting. During the desk review, the EM&V team added adjusted the installed wattage of one light fixture to match its DLC-certified wattage. The quantity of non-operating fixtures was also adjusted, which reduced the non-operable percentage to below 10 percent. Overall, these adjustments increased peak demand reduction (kW) and resulted in a realization rate of 105 percent. The adjustments also increased energy (kWh) savings and resulted in a realization rate of 106 percent.

Participant ID 4-5-1-1-47334: An office building installed a *water-cooled chiller* to replace an existing water-cooled chiller. During the desk review, the EM&V team adjusted the weighted savings for the early retirement calculation based on TRM parameters. This adjustment increased the peak demand reduction (kW) and resulted in a realization rate of 138 percent. This adjustment also increased energy (kWh) savings and resulted in a realization rate that rounded to 800 percent.

Participant ID 4-5-1-1-55443: A new construction warehouse facility installed exterior *LED lighting*. During the desk review, the EM&V team adjusted the installed wattage of two light fixtures to round to the nearest half watt, matching the DLC-certified wattage. Overall, these adjustments slightly increased peak demand (kW) and energy (kWh) savings, and the realization rate rounded to 100 percent.

Participant ID 4-5-1-1-63690: A car dealership installed *LED lighting* and *lighting controls* to replace metal halide lighting in service areas and the exterior. During the desk review, the EM&V team added one baseline fixture to the exterior lighting calculation, based on the documentation and online maps. This adjustment increased the peak demand reduction (kW) and resulted in a realization rate that rounded to 100 percent. The adjustment also increased energy (kWh) savings and resulted in a realization rate that rounded to 100 percent.

Participant ID 4-5-1-1-66254: A hardware retailer installed new *air conditioners* to replace existing units. During the desk review, the EM&V team adjusted the replacement on burnout baseline full- and part-load efficiencies to use the values from TRM v11, which were higher than the baselines used in the reported savings calculation. In addition, two units less than 65,000 Btuh did not have a SEER2/EER2 rating and were adjusted to be ineligible to receive savings in 2024. Overall, these adjustments had a marginal impact on peak demand reduction (kW), which were set at a realization rate of 100 percent. The adjustments increased energy (kWh) savings and resulted in a realization rate of 112 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions (e.g., equipment quantity; equipment capacity; QPL qualifications; AHRI certifications) for the 13 projects that underwent desk reviews because sufficient documentation was provided for the sites. However, a few projects had missing documentation, including missing photos and information on the pre-condition of a few *chiller* replacement projects. Overall, despite the documentation shortfalls, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

4.6.2 Commercial Food Service/Midstream MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
0.1%	243	243	100.0%	0.7%	1,301,901	1,301,901	100.0%	Fair

Completed desk reviews*
1

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Commercial Food Service MTP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for one project, which was greater than five percent compared to the originally claimed savings. Oncor accepted the evaluated results, and the final program realization rate is 100 percent. Further details of the EM&V findings are provided below.

Participant ID 4-5-1-1-71609: A new construction food hall restaurant with multiple kitchens purchased demand-controlled *kitchen ventilation*, *ENERGY STAR ice makers*, and *reach-in refrigerators* through a midstream program. During the desk review, the EM&V team adjusted the savings methodology associated with the *solid* and *glass door reach-ins* to match TRM methodologies, which appear to differ from the savings reported by the eTRM. In addition, one installed unit was not ENERGY STAR certified, but depended on attributes tested and reported by the California Energy Wise Food Service Qualifying Products List. The adjustments increased peak demand reduction (kW) and resulted in a realization rate of 109 percent. The adjustments increased energy (kWh) savings and resulted in a realization rate of 105 percent.

Documentation Score

The EM&V team was only able to verify some key inputs and assumptions (e.g., equipment quantity, QPL qualifications) for the project that underwent desk reviews because sufficient documentation was provided for the site. Project documentation was minimal as a result of this being a Midstream program. The *demand control ventilation equipment* had sufficient equipment and design documents to provide energy savings calculations. However, the deemed measure types did not identify if the equipment was qualified and one item evaluated was qualified as equivalent qualified by the California Energy Wise QPL. This is acceptable but was not documented and discoverable by the EM&V team. Oncor provided the identification of the equivalent qualification when requested, but it was not in the tracking system.. Due to the documentation shortfalls, the EM&V team assigned a program documentation score of *fair* for PY2024 but does not have concerns this will be remedied for PY2025 based on discussions with Oncor.

- **Recommendation***:* Provide equipment qualification and the qualification pathway listing for evaluation of the program measures.

4.6.3 Commercial Strategic Energy Management MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
1.0%	2,334	2,334	100.0%	7.3%	14,466,376	14,466,376	100.0%	Good

Completed desk reviews*
3

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Commercial Strategic Energy Management MTP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for zero projects. Oncor accepted the evaluated results and matched the claimed kWh and kW. The final program realization rate is 100 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions (e.g., equipment quantity; equipment capacity; AHRI certifications, regression parameters) for the three projects that underwent desk reviews because sufficient documentation was provided for the sites. The program also held technical assistance meetings to review projects in the pipeline to confirm that the evaluator understood the energy savings and agreed with the custom energy savings calculation methods. Overall, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

4.7 DETAILED FINDINGS—RESIDENTIAL

4.7.1 Home Energy Efficiency SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
5.4%	12,082	12,082	100.0%	10.7%	21,134,973	21,134,974	100.0%	Good

Completed desk reviews*
6

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Home Energy Efficiency SOP evaluation efforts focused on desk reviews. The number of sampled and completed desk reviews for this program are listed above. Five projects were sampled from the 2024 Home Energy Efficiency SOP subprogram and one project was sampled from the 2024 Home Energy Efficiency Implementer Program.

The EM&V team adjusted the claimed savings for three projects. All three projects had adjustments of less than five percent compared to the originally claimed savings. Oncor accepted the evaluated results, and no projects had significant adjustments; therefore, the final program realization rates are 100 percent. Further details of the EM&V findings are provided below.

Participant ID 38255: The energy efficiency project included the installation of a new *central air conditioner*. During the desk review, the EM&V team included an additional significant figure to the energy savings. Overall, the adjustments resulted in project-level realization rate that rounded to 100.0 percent for energy savings (kWh), while no adjustments were made to the demand reduction (kW) and thus resulted in a realization rate of 100.0 percent.

Participant ID 42675: The energy efficiency project included the installation of a new *central air conditioner*. During the desk review, the EM&V team adjusted the heating capacity from the nominal value to the AHRI rated value for both the *heat pump* and *smart thermostat*

measures. Overall, the adjustments resulted in project-level realization rates of 95.6 percent for demand reduction (kW) and 95.2 percent for energy savings (kWh).

Participant ID 46512: The energy efficiency project included the installation of a new *central heat pump* system and a *smart thermostat*. During the desk review, the EM&V team included an additional significant figure to the energy savings. Overall, the adjustments resulted in project-level realization rate that rounded to 100.0 percent for energy savings (kWh), while no adjustments were made to the demand reduction (kW) and thus resulted in a realization rate of 100.0 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions, including the project scope, baselines, and equipment specifications for all sampled projects that underwent desk reviews. Project documentation included customer agreements, field notes, photos, specification sheets, and certifications. A couple of projects were missing field notes but had enough documentation to verify the key inputs. Also, one project was missing the proof of purchase of the smart thermostat. Overall, despite the documentation shortfalls, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good.*

4.7.2 Hard-to-Reach SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
7.5%	16,867	16,867	100.0%	10.3%	20,348,841	20,348,841	100.0%	Good

Completed desk reviews*
6

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Hard-to-Reach SOP evaluation efforts focused on desk reviews. The number of sampled and completed desk reviews and site visits for this program are listed above.

The EM&V team adjusted the claimed savings for one project. The one project had adjustments of less than five percent compared to the originally claimed savings. Oncor accepted the evaluated results and no projects had significant adjustments; therefore, the final program realization rates are 100 percent. Further details of the EM&V findings are provided below.

Participant ID 56847: The energy efficiency project included the implementation of *air infiltration* and *low-flow showerhead* measures. During the desk review, the EM&V team determined that the savings were adjusted due to rounding. Overall, the adjustments resulted in project-level realization rates that rounded to 100.0 percent for both demand reduction (kW) and energy savings (kWh).

Documentation Score

The EM&V team was able to verify key inputs and assumptions, including the project scope, baselines, and test results for all sampled projects that underwent desk reviews. Project documentation included customer agreement, photos, field notes, and pre and post-test results. However, one project was missing the invoice. There was one project where the post-installation of the ceiling insulation was not provided to verify post-R-value. Overall, despite the documentation shortfalls, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good.*

4.8 DETAILED FINDINGS—LOW-INCOME

4.8.1 Targeted Weatherization Low-Income SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
1.8%	4,078	4,078	100.0%	3.7%	7,270,380	7,270,380	100.0%	Good

Completed desk reviews*
3

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Targeted Weatherization Low-Income SOP evaluation efforts focused on desk reviews. The number of sampled and completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for all three projects. All three projects had adjustments of less than five percent compared to the originally claimed savings. Oncor accepted the evaluated results, and no projects had significant adjustments; therefore, the final program realization rates are 100 percent for both demand reduction (kW) and energy savings (kWh). Further details of the EM&V findings are provided below.

Participant ID 48684: The energy efficiency project included the installation of a new central *heat pump* system. During the desk review, the EM&V team adjusted the capacity from the nominal capacity to the AHRI rated capacity as stipulated by the TRM. Overall, the adjustments resulted in project-level realization rates of 98.3 percent for demand reduction (kW) and 98.5 percent for energy savings (kWh).

Participant ID 41429: The energy efficiency project included the installation of a new *central heat pump system* and a *smart thermostat*. During the desk review, the EM&V team found that the claimed heating capacity was based on the AHRI rated cooling capacity. The EM&V team updated heating capacity to match the AHRI rated heating capacity. Overall, the adjustments resulted in project-level realization rates of 98.8 percent for demand reduction (kW) and 98.9 percent for energy savings (kWh).

Participant ID 64407: The energy efficiency project included the installation of a new *central heat pump system.* During the desk review, the EM&V team adjusted the capacity from the

nominal capacity to the AHRI rated capacity as stipulated by the TRM. Overall, the adjustments resulted in project-level realization rates of 98.8 percent for demand reduction (kW) and 98.9 percent for energy savings (kWh).

Documentation Score

The EM&V team was able to verify key inputs and assumptions, including the project scope, baselines, and equipment specifications for all sampled projects that underwent desk reviews. Project documentation included customer agreement, photos, specification sheets, AHRI certifications, and field notes. Overall, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good.*

4.8.2 Low-Income HVAC Tune-Up MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
1.6%	3,627	3,627	100.0%	4.3%	8,420,114	8,420,114	100.0%	Good

Completed desk reviews*
N/A

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Low-Income HVAC Tune-Up MTP Pilot evaluation had no desk reviews as it was included in the *HVAC tune-up* consumption analysis. The documentation score of *good* is based on the AMI data provided to measure savings.

4.9 DETAILED FINDINGS—LOAD MANAGEMENT

4.9.1 Commercial Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
26.3%	59,260	59,260	100.0%	0.1%	177,780	177,780	100.0%	Good

Completed desk reviews*
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. Claimed savings are conservative as they only include the amount of demand reduction in participation contracts.

The EM&V team evaluated the Oncor Commercial Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, one load management event occurred on the following date and time:

- June 26, 2024, from 3:00 p.m. to 6:00 p.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received the interval meter data and spreadsheets detailing the Oncor-calculated baseline load, event load, and savings results for the 11 sponsors across 852 sites. One hundred and ninety-one sites did not participate in the scheduled event. All sponsors had at least one site that curtailed during the scheduled event.

- The cooperation level was 78 percent.
- **Recommendation**: Investigate ways to increase cooperation to above 90 percent.

After the EM&V team applied the *High 5 of 10* baseline calculation method, it was found that the evaluated kW savings matched the kW savings Oncor provided for all sites except those with negative savings. While reviewing individual meter savings differences, the EM&V team found that Oncor uses a conservative approach by not setting savings to zero in cases where the calculation methodology produced negative savings. Per the TRM, the negative savings can be set to zero for cases that produce negative savings.

After calculating the kW savings, the kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team's (evaluated) and Oncor's (claimed) calculated kW and kWh savings. Oncor accepted the evaluated results and matched the claimed savings to those of the evaluated savings; therefore, the final program realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

4.9.2 Residential Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
21.2%	47,682	47,682	100.0%	0.1%	143,046	143,046	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the Oncor Residential Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, one load management event occurred on the following date and time:

- June 26, 2024, from 3:00 p.m. to 6:00 p.m. (unscheduled).

The EM&V team received the interval meter data and spreadsheets detailing the Oncor calculated baseline load, event load, and savings results for each service provider and meter. Additionally, Oncor provided documentation for meters that received zero savings from the calculation or had no meter data available during the event but were confirmed as having participated by the service provider. These meters totaled 0.9 percent of the program population and were included for each service provider by applying the average savings (per the TRM, savings may still be calculated for less than two percent of meters that fail to record data sufficient to apply the *High 3 of 5* calculation method).

The number of participating devices was 39,252, with 8,307 devices not achieving savings during the event (zero or negative kW savings).

- The cooperation level was 79 percent.
- **Recommendation**: Investigate ways to increase cooperation to above 80 percent.

After the EM&V team applied the *High 3 of 5* baseline calculation method, it was found that the evaluated kW savings matched the kW savings Oncor provided for all participating meters. The kWh savings for each participating meter were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all meter-level savings.

The table above shows both the EM&V team's (evaluated) and Oncor's (claimed) calculated kW and kWh savings. No adjustments were made to the program savings; however, a negligible difference in kW and kWh was a result of different rounding practices during calculations. The realization rate for both kW and kWh is 100 percent, with a documentation score of *good*.

4.9.3 Commercial Winter Load Management SOP Pilot

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
15.5%	34,778	34,778	100.0%	0.1%	104,334	104,334	100.0%	Good

Completed desk reviews*
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. Claimed savings are conservative as they only include the amount of demand reduction in participation contracts.

The EM&V team evaluated the Commercial Winter Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data were supplied in 15-minute increments. One load management event occurred on the following date and time:

- December 19, 2023, from 7:00 a.m. to 10:00 a.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received the interval meter data and spreadsheets detailing the Oncor-calculated baseline load, event load, and savings results for the six sponsors across 41 sites. Two sites did not participate in the scheduled event. All sponsors had at least one site that curtailed during the scheduled event.

- The cooperation level was 95 percent.

After the EM&V team applied the *High 8 of 10* baseline calculation method optimized for the event across all sites, it was found that the evaluated savings matched the savings provided for all sites except two, using the ten days prior to the event as the baseline[9]. The differences for the two sites were minor and resulted from negative savings. The EM&V team found that Oncor uses a conservative approach by not setting savings to zero in cases where the calculation methodology produced negative savings. Per the TRM, the negative savings can be set to zero for cases that produce negative savings.

The kW savings for each participating site corresponded to the kW reductions that occurred at the scheduled event (no averaging was necessary because each participating site participated in only one event). The kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team (evaluated) and Oncor's (claimed) calculated kW and kWh savings. Oncor accepted the evaluated results and matched the claimed savings to those of the evaluated savings; therefore, the final program realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

4.9.4 Residential Winter Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
7.4%	16,577	16,577	100.0%	0.0%	49,731	49,731	100.0%	Good

Completed desk reviews*
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. Claimed savings are conservative as they only include the amount of demand reduction in participation contracts.

[9] Oncor simplified the approach by using the ten days prior to the event as the baseline instead of optimizing for the scenario that yields the highest savings among the days prior and/or after the event.

The EM&V team evaluated the Residential Winter Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. One load management event occurred on the following date and time:

- December 19, 2023, from 7:00 a.m. to 10:00 a.m. (unscheduled).

The EM&V team received the interval meter data and spreadsheets detailing the Oncor calculated baseline load, event load, and savings results for each service provider and meter. Additionally, Oncor provided documentation for meters that received zero savings from the calculation or had no meter data available during the event but were confirmed as having participated by the service provider. These meters totaled 0.3 percent of the program population and were included for each service provider by applying the average savings (per the TRM, savings may still be calculated for less than two percent of meters that fail to record data sufficient to apply the *High 3 of 5* calculation method).

The number of participating devices was 42,082, with 13,153 devices not achieving savings during the event (zero or negative kW savings).

- The cooperation level was 69 percent.
- **Recommendation**: Investigate ways to increase cooperation to above 80 percent.

After the EM&V team applied the *High 3 of 5* baseline calculation method,[10] it was found that the evaluated kW savings matched the kW savings Oncor provided for all participating meters. The kWh savings for each participating meter were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all meter-level savings.

The table above shows both the EM&V team's (evaluated) and Oncor's (claimed) calculated kW and kWh savings. No adjustments were made to the program savings; however, a negligible difference in kW and kWh was a result of different rounding practices during calculations. The realization rate for both kW and kWh is 100 percent, with a documentation score of *good*.

[10] TRM will be updated for PY2026 to include savings calculation guidance for residential winter programs. For PY2024, the *High 3 of 5* baseline calculation method for residential summer programs was used by Oncor and the EM&V team.

4.10 SUMMARY OF TRACKING-SYSTEM-ONLY EVALUATED PROGRAMS

Table 21 summarizes claimed savings for Oncor's programs in PY2024 that only received a tracking system review for program impacts. The programs' claimed savings were verified against the final PY2024 tracking data provided to the EM&V team for the EM&V database.

Table 21. Oncor's PY2024 Claimed Savings (Tracking-System-Only Evaluated Programs)

Program	Contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Small Business Direct Install/ Tune-Up SOP	0.90%	2,053	2,053	100.00%	1.40%	2,749,088	2,749,088	100.00%
Retail Products MTP	1.60%	3,557	3,557	100.00%	15.50%	30,423,360	30,423,360	100.00%
New Home Program	3.30%	7,426	7,426	100.00%	6.00%	11,779,581	11,779,581	100.00%
Multifamily Smart Thermostat Direct Install MTP	0.00%	0	0	100.00%	1.10%	2,164,409	2,164,409	100.00%
REP Smart Thermostat	0%	0	0	N/A	1.00%	2,066,097	2,066,097	100.00%
Low-Income Multifamily Smart Thermostat Direct Install MTP	0%	0	0	100.00%	1.10%	2,162,933	2,162,933	100.00%
Solar PV SOP (residential)	0.50%	1,202	1,202	100.00%	2.00%	3,885,537	3,885,537	100.00%

5.0 TEXAS-NEW MEXICO POWER COMPANY

5.1 KEY FINDINGS AND RECOMMENDATIONS

In addition to Volume 1 recommendations that apply to all IOUs, Table 22 summarizes Volume 3 recommendations specific to Texis-New Mexico Power Company (TNMP). Key findings that do not have a recommendation illustrate the type of program information to highlight in future EEPRs.

Table 22. TNMP Key Findings and Recommendations

Report Section	Key finding	Recommendation
5.2.1 Portfolio Key Findings	PY2024 resulted in TNMP's lowest level of energy savings in the past five years.	Respond to this report with likely drivers of this drop and an action plan to increase energy savings.
	TNMP has met its legislated demand reduction goal since PY2020 with energy efficiency alone.	
5.2.2 Commercial Savings	HVAC projects accounted for around two-thirds of PY2024 commercial program energy savings and demand reduction from energy efficiency.	Share best practices for increasing commercial *HVAC* projects while minimizing free-ridership at a future EEIP meeting.
	TNMP had low free-ridership overall, with less than 10 percent free-ridership for *HVAC*.	
	TNMP's savings from *'other'* measures decreased significantly in PY2024.	Respond to this report with likely drivers of this drop and an action plan to increase commercial energy savings from *'other'* measures.
5.2.3 Residential Savings	Growth in *HVAC* and *new homes* measures contributed the most toward TNMP's increase in residential energy savings and demand reduction in PY2024.	
5.9 Load Management Impact Evaluation Results	Winter load management evaluated savings did not match the claimed savings for most sites.	Apply the High 8 of 10 baseline calculation method to yield consistent savings at the event level, not the customer level, for the varying winter load management baseline.
	The cooperation rate for the Summer Load Management SOP was less than 90 percent. Past or other IOU load management programs have achieved 90 percent cooperation rates. TNMP's Winter Load Management SOP achieved a 100 percent cooperation rate.	Respond to this report with program strategies to increase average cooperation to above 90 percent.

TNMP's PY2024 highlights include:

- TNMP surpassed its legislated demand reduction goal by the largest margin compared to the five most recent prior years.
- TNMP's commercial programs saw decreased energy savings over prior years while residential energy efficiency programs had improved performance.
- TNMP had its lowest performance against its energy savings goal compared to the five most recent prior years.
- TNMP achieved most energy efficiency demand reductions and energy savings through Commercial MTP, followed by Residential SOP programs.
- TNMP continues to diversify its measure mix; *envelope* savings grew while *other* savings decreased in the commercial portfolio.
    - Commercial and residential programs saw significant increases in savings associated with *HVAC* measures, which remains largely dominant.
    - *New homes* measures grew within TNMP's residential portfolio.

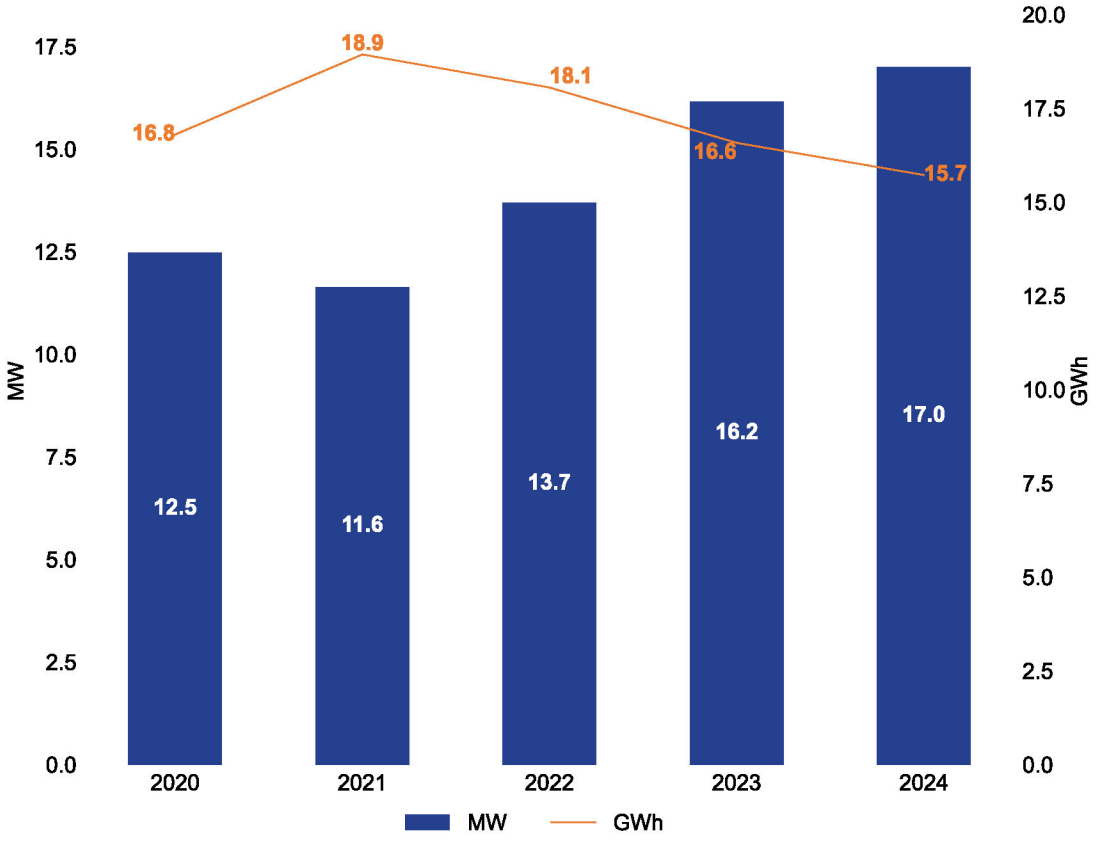
5.2 PY2020 THROUGH PY2024 COMPARISONS

5.2.1 Portfolio Key Findings

PY2024 saw a slight increase in demand reductions and a slight decrease in energy savings across TNMP's portfolio (Figure 31).

- Demand reduction is primarily attributed to load management programs. Since PY2021, energy savings have trended downwards, while demand reduction has steadily increased.

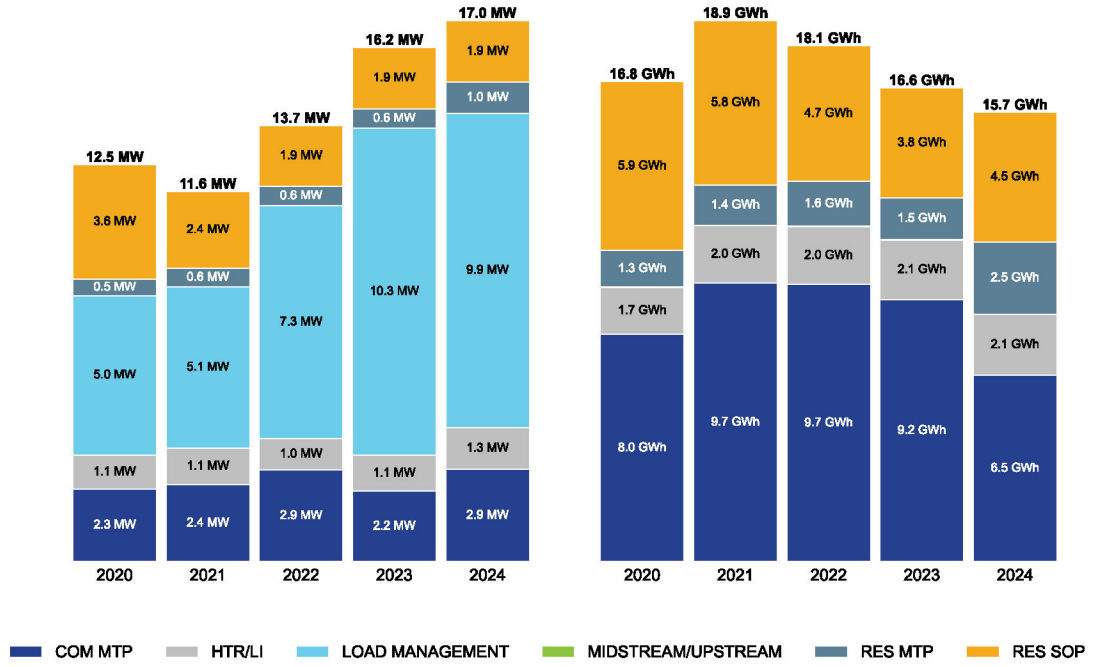
Figure 31. TNMP's Demand Reductions (MW) and Energy Savings (GWh) PY2020-PY2024



Commercial MTP (Figure 32, right graph) accounted for 41 percent of energy savings in PY2024, though it achieved the lowest total energy savings from PY2020 to PY2024. While TNMP's load management programs accounted for the majority (58 percent) of demand reduction, Commercial MTP delivered the most demand reduction through energy efficiency, followed by Residential SOP (Figure 32, left graph).

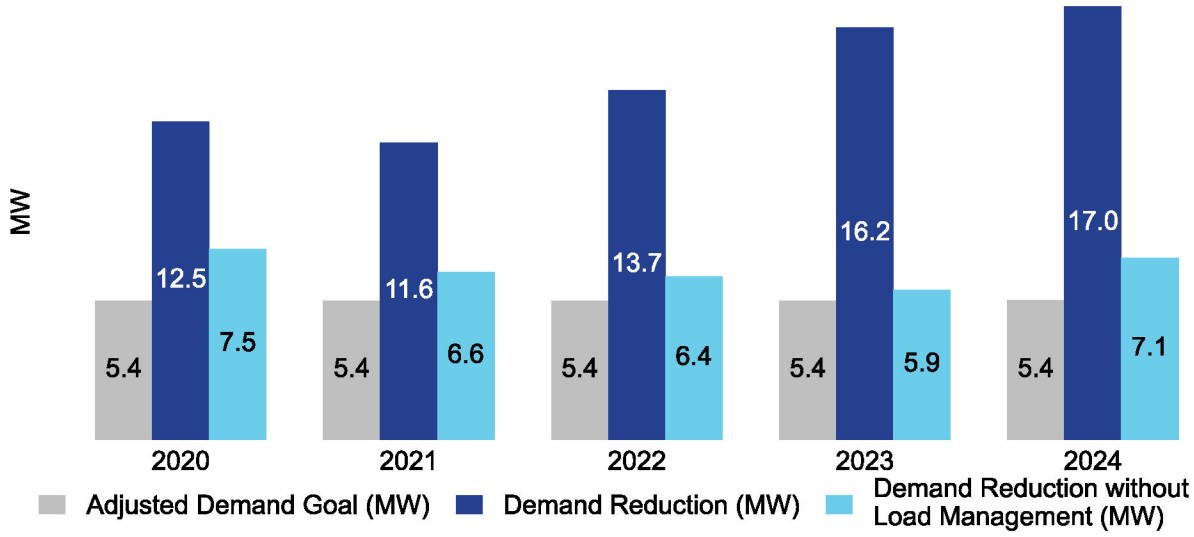
- PY2024 demand reduction achieved through TNMP's energy efficiency programs either increased or remained steady compared to PY2023.

Figure 32. TNMP's Demand Reductions (MW) and Energy Savings (GWh) by Program Type PY2020-PY2024



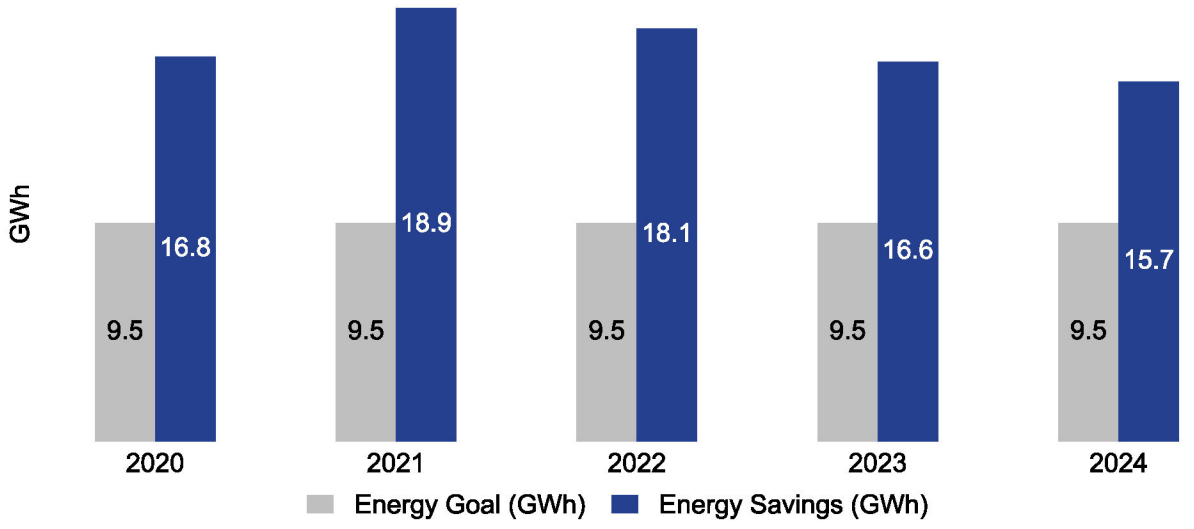
TNMP consistently meets legislated goals through energy efficiency alone (Figure 33). In PY2024, TNMP exceeded its legislated demand reduction goal by 31 percent without load management.

Figure 33. TNMP's Legislated Demand Reduction (MW) Goal PY2020–PY2024



TNMP has met its goal annually since PY2020, though total energy savings have decreased slightly each year since PY2021 (Figure 34). In PY2024, TNMP exceeded its goal by 65 percent.

Figure 34. TNMP's Energy Savings (GWh) Goal PY2020–PY2024



5.2.2 Commercial Savings

The PY2024 gross savings from TNMP's commercial sector programs (excluding load management) were the following:

- Demand reductions of 2.9 MW, and
- Energy savings of 6.5 GWh.

Figure 35 shows that TNMP had a substantial decrease in energy savings through commercial programs from PY2023. This marks the lowest achieved energy savings through commercial programs from PY2020-PY2024.

At the same time, energy efficiency demand reduction increased in PY2024; this MW reduction was consistent with PY2022 performance.

Figure 35. TNMP's Demand Reduction (MW) and Energy Savings (MWh) by Program Year—Commercial Programs Excluding Load Management, PY2020–PY2024

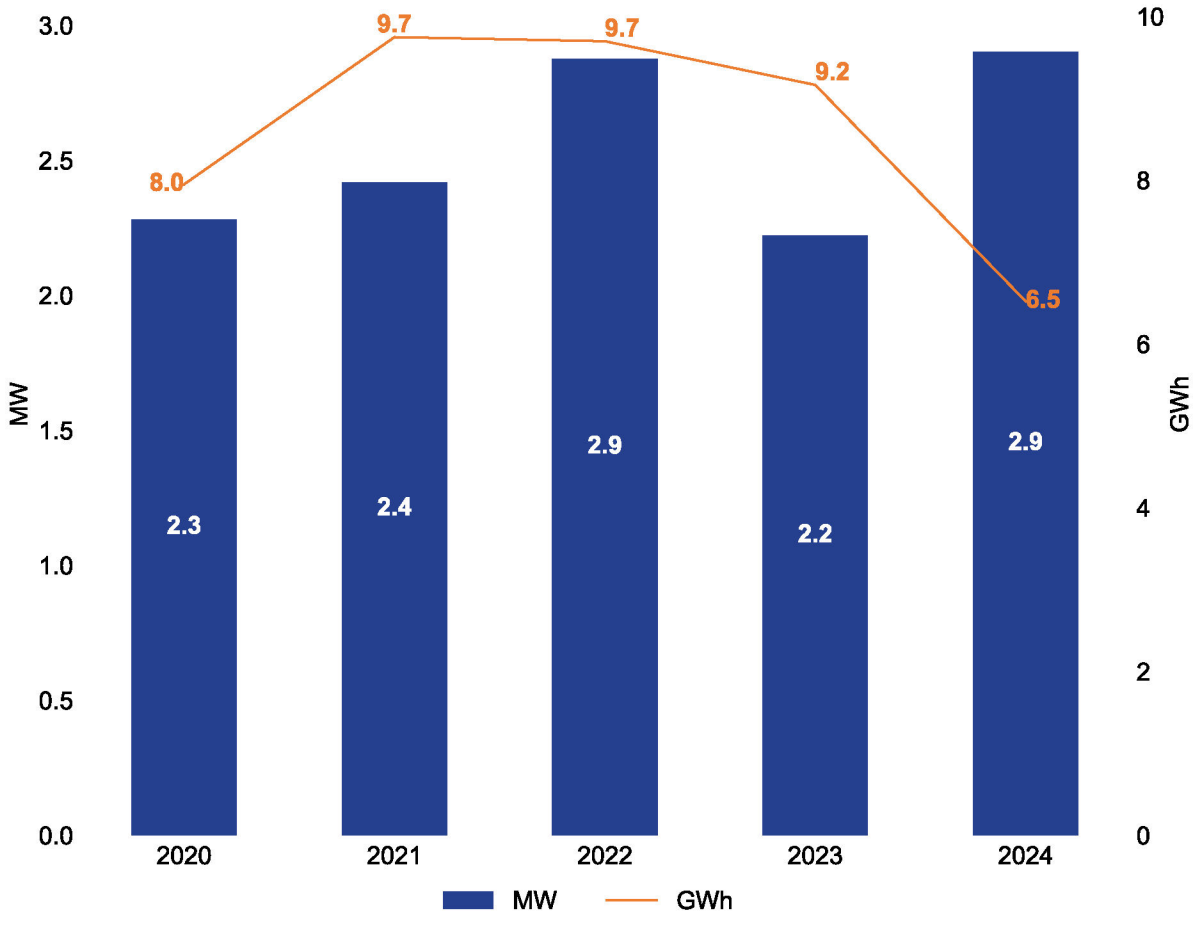
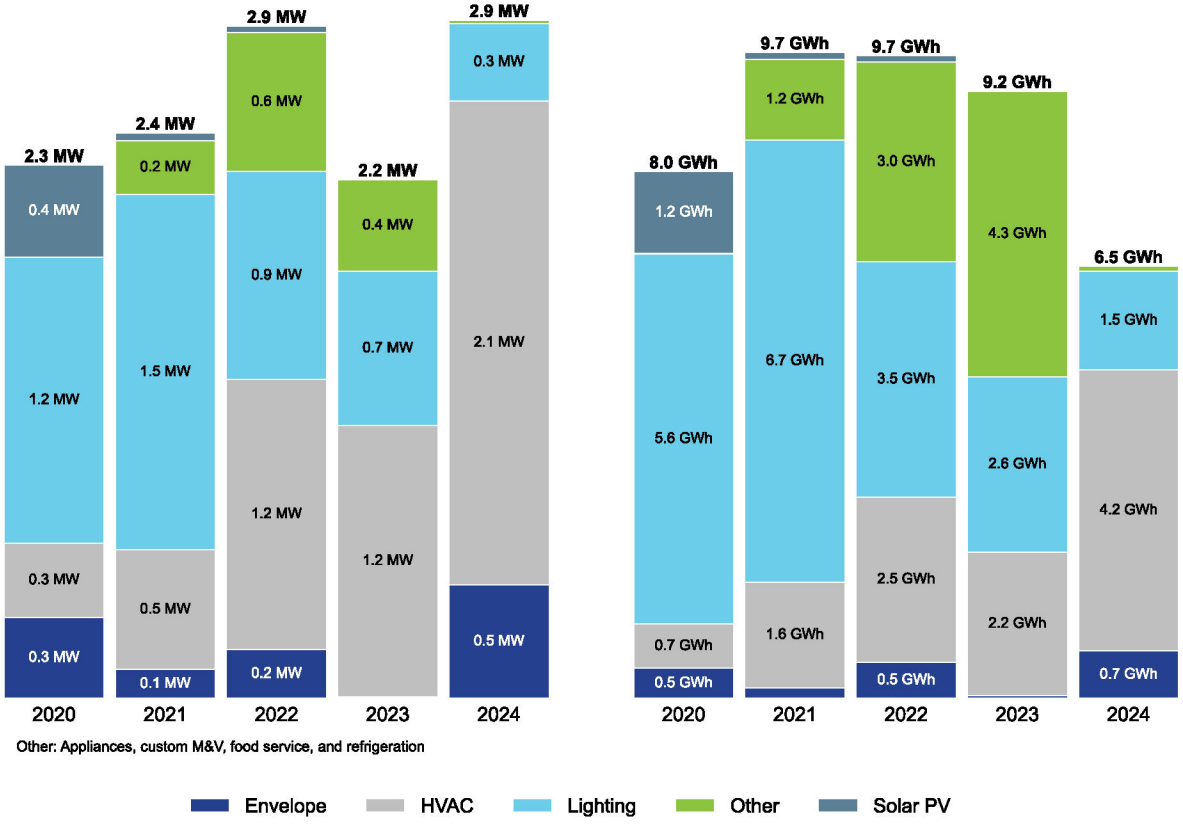


Figure 36 highlights demand reduction and energy savings through commercial programs by measure.

- *HVAC* measures accounted for 72 percent of demand reduction (Figure 36, left graph) and 65 percent of energy savings (Figure 36, right graph) in PY2024. *HVAC* led to increased demand reduction from energy efficiency,
- *Lighting* measures continue to decrease, which also led to decreased energy savings, and
- *Envelope* measures accounted for 17 percent of demand reduction in PY2024, the highest from PY2020-PY2024.

Figure 36. Distribution of TNMP's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Commercial Programs Excluding Load Management PY2020–PY2024



5.2.3 Residential Savings

The PY2024 gross savings from TNMP's residential sector programs (excluding load management) were the following:

- Demand reduction of 4.2 MW, and
- Energy savings of 9.2 GWh.

Figure 37 shows the residential demand reduction achieved in PY2024 increased from PY2023. Energy savings also increased from PY2023. TNMP saw the highest energy savings and second-highest demand reduction through residential programs in the last five years.

Figure 37. TNMP's Demand Reduction (MW) and Energy Savings (GWh) by Program Year—Residential Programs PY2020–PY2024

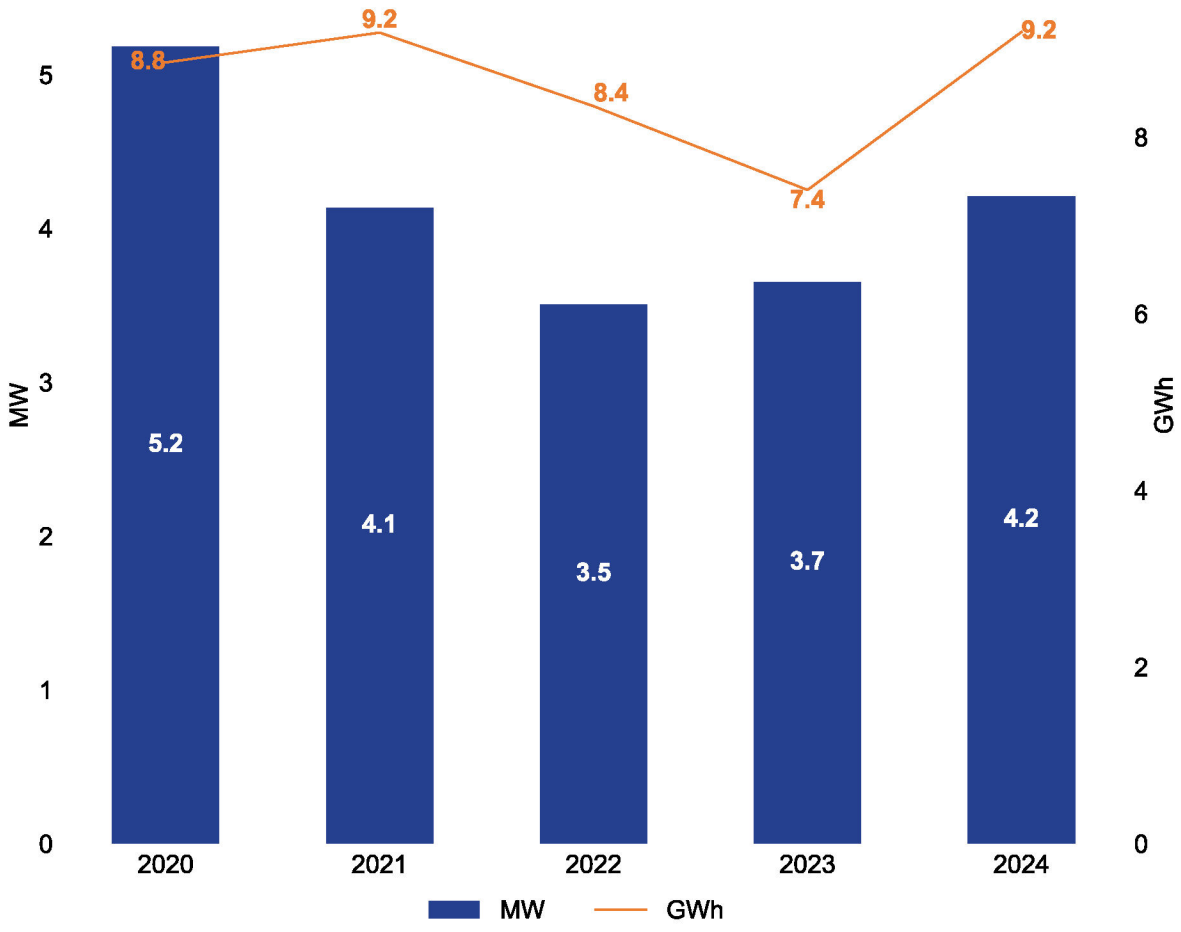
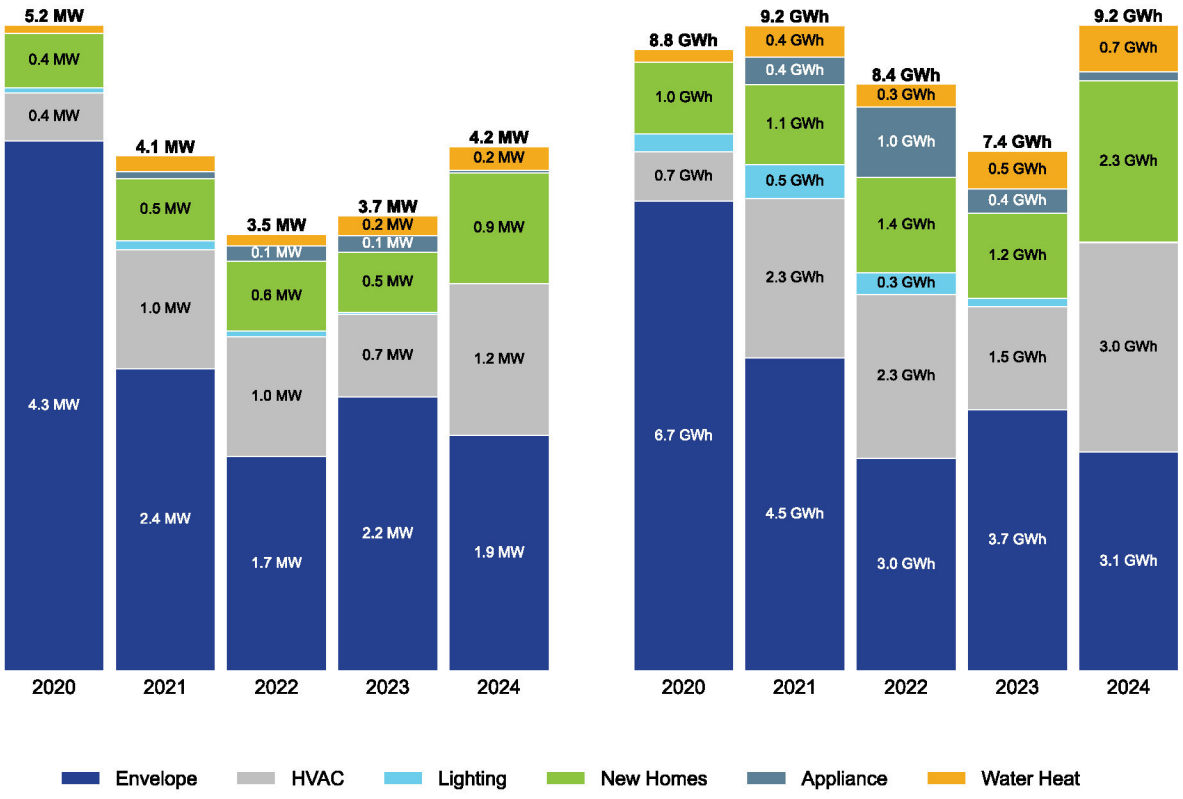


Figure 38 shows residential demand reduction and energy savings by measure. Each measure's share of total demand reduction and energy savings has been relatively consistent since PY2021.

- *Envelope*, *HVAC*, and *New Homes* measures accounted for the majority of demand reduction (Figure 38, left graph)—45 percent, 29 percent, and 21 percent, respectively,
- *Envelope* and *HVAC* measures each accounted for about a third of energy savings (Figure 38, right graph)., and
- *Water heating* demonstrated promising growth in energy savings.

Figure 38. Distribution of TNMP's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Residential Programs PY2020–PY2024



5.2.4 Load Management Savings

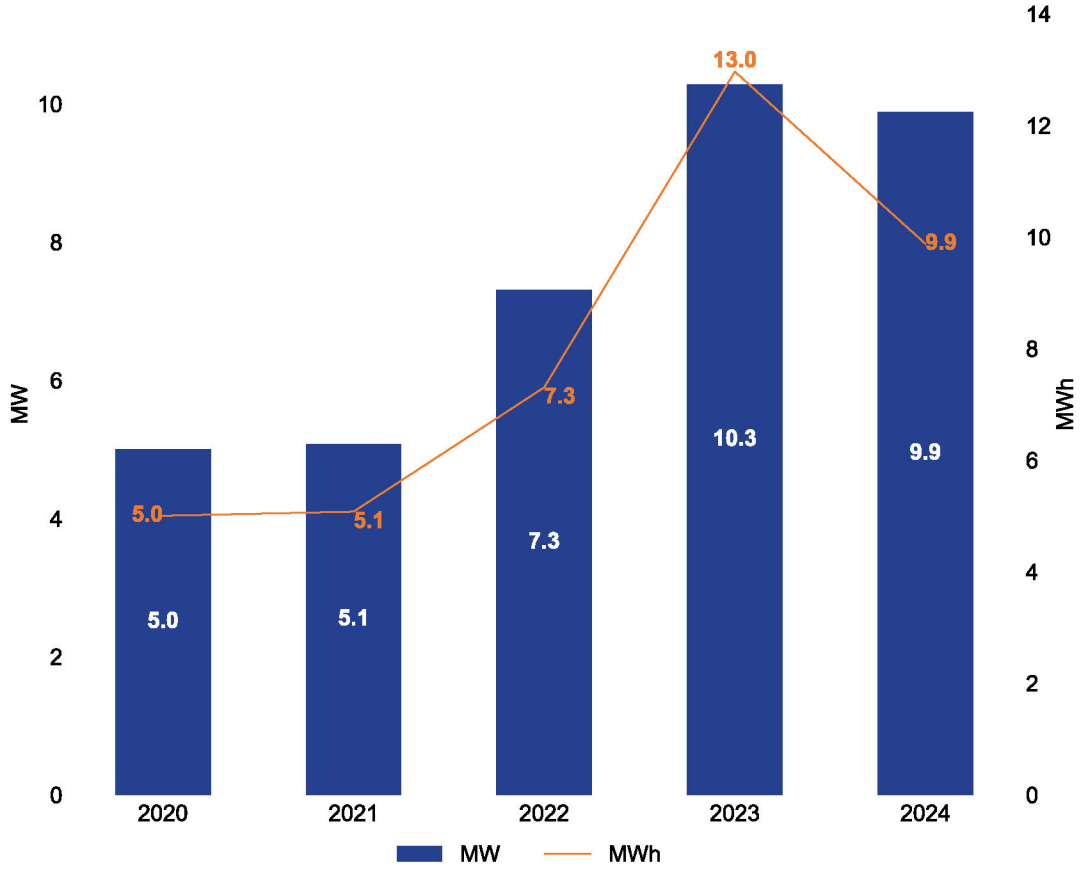
The PY2024 gross savings from TNMP's load management programs were the following:

- Demand reduction of 9.9 MW, and
- Energy savings of 9.9 MWh.

Figure 39 shows the demand and energy savings for TNMP's load management programs. In PY2024, demand reduction decreased from PY2023, though the introduction of the winter load management program in PY2023 has kept demand reduction high as compared to PY2020-2022.

Energy savings depend upon the number and duration of curtailment events called each year. Overall, energy savings have followed the demand reduction pattern over the past several years.

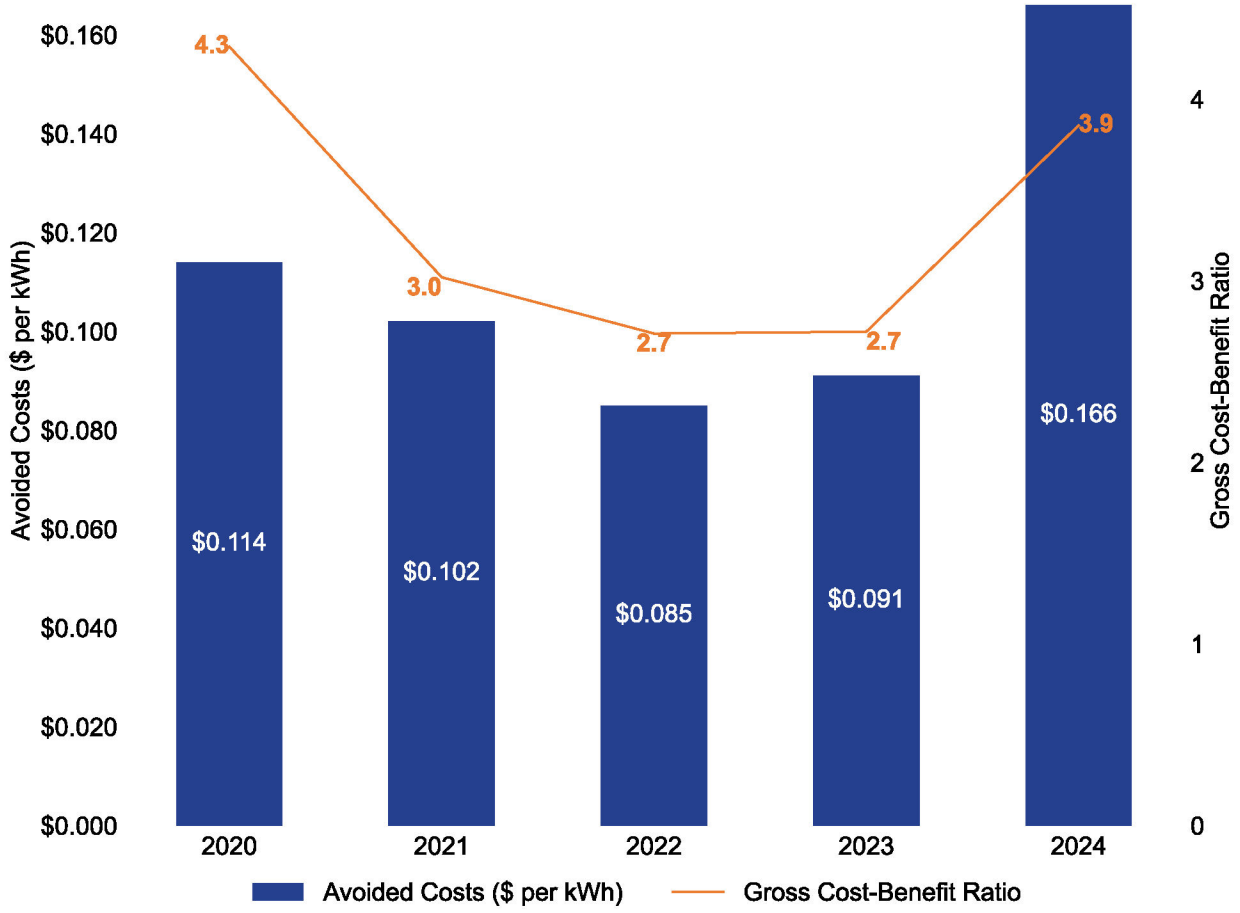
Figure 39. TNMP's Demand Reduction (MW) and Energy Savings (MWh) by Program Year—Load Management Programs PY2020–PY2024



5.3 COST-EFFECTIVENESS

Figure 40 shows the avoided costs for all IOUs and TNMP's cost-effectiveness ratios over the last five years. The overall cost-effectiveness ratio has consistently remained above 2.0 for TNMP. PY2020 saw a high of 4.3, and the cumulative cost-effectiveness of TNMP's programs was 3.9 in PY2024. The significant increase in cost-benefit ratio from PY2023 to PY2024 is due to increased avoided cost of energy in the ERCOT market.

Figure 40. TNMP's Gross Cost-Benefit Ratio and Avoided Cost by Program Year



5.4 PY2024 IMPACT EVALUATION RESULTS

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

5.4.1 Evaluated Savings

TNMP's evaluated savings for program year PY2024 were 16,991 kW in demand reduction and 15,723,649 kWh in energy savings. The overall kW and kWh portfolio realization rates are approximately 100 percent. TNMP adjusted claimed savings based on EM&V results (see Table 27), supporting healthy realization rates.

Table 23 shows the claimed and evaluated demand reduction for TNMP's portfolio and broad customer sector and program categories. Table 24 shows the claimed and evaluated energy savings for TNMP's portfolio and broad customer sector and program categories for PY2024. For both Table 23 and Table 24, the review for the load management program included a census review of equations and interval meter data to estimate the baseline usage and level of load curtailment for each event for all participants. Also, total portfolio numbers may not equal the sum of all program sector totals due to rounding.

Table 23. TNMP's PY2024 Claimed and Evaluated Demand Reduction (kW)

Level ofanalysis	Percentage portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)
Total portfolio	100.0%	16,991	16,991	100.0%
Commercial	17.1%	2,903	2,903	100.0%
Residential	21.3%	3,621	3,621	100.0%
Low-income	3.5%	588	588	100.0%
Load management	58.1%	9,879	9,879	100.0%

Table 24. TNMP's PY2024 Claimed and Evaluated Energy Savings (kWh)

Level of analysis	Percentage portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Total portfolio	100.0%	15,723,649	15,723,649	100.0%
Commercial	41.5%	6,522,155	6,522,155	100.0%
Residential	51.1%	8,029,147	8,029,147	100.0%
Low-income	7.4%	1,162,469	1,162,469	100.0%
Load management	0.1%	9,879	9,879	100.0%

Program-level realization rates are discussed in the detailed findings subsections. However, these results should only be viewed qualitatively due to the small sample sizes at the utility program level. Program-level realization rates also include a qualitative rating of *good*, *fair*, and *limited* associated with the level of program documentation received from the utility.

- TNMP received *good* documentation scores for the Commercial Solutions MTP, SCORE/City Smart MTP, Residential SOP, Hard-to-Reach SOP, Low-Income Weatherization, and Commercial Load Management programs.

5.4.2 Program Funding and Cost-Effectiveness Results

TNMP's total portfolio funding for PY2024 was $5,458,247, excluding research and development, EM&V, and its performance bonus; its portfolio had a cost-effectiveness score of 3.9, or 4.1, excluding low-income programs, based on the PACT.

The most cost-effective programs based on claimed and evaluated savings were the High-Performance Homes program and the SCORE/CitySmart MTP; the least cost-effective programs were the Summer Load Management SOP and Winter Load Management SOP. All of TNMP's programs were cost-effective in 2024.

The lifetime cost of evaluated savings was $0.025 per kWh and $16.28 per kW. 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.

Table 25. TNMP's Cost-Effectiveness Results

Level of analysis	Claimed savings results	Evaluated savings results	Net savings results
Total portfolio	**3.86**	**3.86**	**2.97**
Total portfolio excluding low-income programs	**4.10**	**4.10**	**3.07**
Commercial	**3.81**	**3.81**	**2.94**
Small Business MTP	2.35	2.35	1.90
SCORE/CitySmart MTP	5.00	5.00	4.07
Commercial Solutions MTP	3.42	3.42	2.39
Residential	**4.62**	**4.62**	**3.35**
High-Performance Homes MTP	7.84	7.84	3.84
Residential SOP	3.99	3.99	3.25
Hard-to-Reach SOP	3.10	3.10	3.10
Low-income*	**4.48**	**4.48**	**4.48**
Low-Income Weatherization*	4.48	4.48	4.48
Load management	**1.79**	**1.79**	**1.79**
Summer Load Management SOP	1.75	1.75	1.75
Winter Load Management SOP	1.92	1.92	1.92

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

5.4.3 Net-to-Gross Results

TNMP's NTG ratio was updated for its Commercial Solutions MTP in PY2024 through participant surveys. TNMP's Commercial Solutions MTP NTG ratio is 77.1 percent for kWh and 79.1 percent for kW, calculated as 1-free-ridership (excluding spillover).

TNMP's free-ridership rate for MTP of 22.9 percent for kWh and 20.9 percent for kW slightly increased from the PY2021 commercial MTP NTG free-ridership estimate of 19 percent for kWh and 20 percent for kW.

Table 26 shows TNMP's free-ridership results by program and end-use. While the small number of completed surveys for some measure types is qualitative, end-use free-ridership provides useful insight for IOU's program design considerations. *HVAC* equipment measures had the lowest free-ridership rate.

Table 26. TNMP's Free-Ridership by Program and End-Use

Program and end-use	Completed surveys	kWh free-ridership	kW free-ridership
Commercial Solutions MTP			
HVAC equipment	13	10.2%	7.7%
HVAC tune-up	7	22.3%	20.3%
Lighting	6	41.8%	39.4%
Total	**26**	**22.9%**	**20.9%**

5.5 SAVINGS DIFFERENCES

As discussed above, utilities are provided the opportunity to adjust savings at the project level based on interim EM&V findings. This section summarizes the savings differences identified by the EM&V team. The EM&V team requests that utilities adjust projects when evaluated and claimed savings differ by more than five percent. TNMP adjusted claimed savings for all projects with any differences found by the EM&V team and included these adjustments in its June 1 filing.

- Overall, TNMP's claimed demand reduction (kW) and energy savings (kWh) increased due to recommended evaluation adjustments.

Table 27. TNMP's Claimed Demand Reduction (kW) and Energy Savings (kWh) Adjustments by Program

Program	EM&V demand claimed savings adjustments (kW)	EM&V energy claimed savings adjustments (kWh)
Commercial Solutions MTP	0.78	806
SCORE/City Smart MTP	12.22	37,309
Low-Income Weatherization	0.01	12.96
Total	**13.01**	**38,127.96**

5.6 DETAILED FINDINGS—COMMERCIAL

5.6.1 Commercial Solutions MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
7.1%	1,204	1,204	100.0%	15.9%	2,492,210	2,492,210	100.0%	Good

Completed desk reviews*
3

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Commercial Solutions MTP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for one project. That project had an adjustment of greater than five percent compared to the originally claimed savings. TNMP accepted the evaluated results and adjusted savings for all measures to match the claimed kWh and kW savings. The final program realization rate rounds to 100 percent. Further details of the EM&V findings are provided below.

Participant ID 5-1-1-1-80131: This project involved a supermarket completing an early retirement of rooftop *HVAC* units. During the desk review, the EM&V team adjusted the capacity of the baseline and retrofit units to use the AHRI-certified capacities. This adjustment increased peak demand reduction (kW) and resulted in a realization rate of 107 percent. The adjustment also slightly increased energy (kWh) savings and resulted in a realization rate of 103 percent.

Documentation Score

The EM&V team was able to verify key inputs and assumptions (e.g., equipment quantity, equipment capacity, qualified products list (QPL) qualifications, and AHRI certifications) for the three projects that underwent desk reviews because sufficient documentation was provided for the sites. Project documentation included invoices, QPL qualifications or AHRI certifications, pre-inspection and post-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. Overall, the EM&V team was satisfied with the project documentation provided and assigned a program documentation score of *good*.

5.6.2 SCORE/CitySmart MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
7.0%	1,193	1,193	100.0%	20.7%	3,262,518	3,262,518	100.0%	Good

Completed desk reviews*
3

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 SCORE/CitySmart MTP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for two projects. One project had an adjustment of greater than five percent compared to the originally claimed savings, while the other project had minor adjustments of less than five percent compared to the originally claimed savings. TNMP accepted the evaluated results and adjusted savings to match the claimed kWh and kW savings for all projects. The final program realization rate is 100 percent. Further details of the EM&V findings are provided below.

Participant ID 5-1-1-1-77964: A new construction high school installed an *air-cooled chiller*, *DX AC* and *heat pump units*, and interior and exterior *LED lighting*. During the desk review, the EM&V team adjusted the exterior lighting zone from Zone 3 to Zone 2, the installed wattage for one light to match its ENERGY STAR certified rating, and the *lighting* baseline to match PY2023 when the project started. These adjustments increased peak demand reduction (kW) and resulted in a realization rate of 113 percent. The adjustments also increased energy (kWh) savings and resulted in a realization rate of 117 percent.

Documentation Score

The EM&V team verified key inputs and assumptions (e.g., equipment quantity, equipment capacity, QPL qualifications) for the three projects that underwent desk reviews because sufficient documentation was provided for the sites. Project documentation at these sites included invoices, QPL qualifications, pre-installation and post-installation inspection notes, project savings calculators, engineering drawings, and photographic documentation of existing and new equipment, which are significant efforts by the utility to verify equipment conditions and quantities. Overall, the EM&V team assigned a program documentation score of *good*.

5.7 DETAILED FINDINGS—RESIDENTIAL

5.7.1 Residential SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
11.4%	1,934	1,934	100.0%	28.8%	4,529,999	4,529,999	100.0%	Good

Completed desk reviews*
2

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Residential SOP evaluation efforts focused on desk reviews. The number of completed desk reviews for this program is listed above.

For a sample of projects, desk reviews were completed to check that measure data and documentation collected by contractors aligned correctly with that in the tracking system, and savings were calculated in accordance with the TRM.

The EM&V team did not have any adjustments from the desk reviews, resulting in 100 percent realization rates.

Documentation Score

The EM&V team was able to verify key inputs and assumptions for the two projects that underwent desk reviews. Project documentation at these sites included customer agreements, equipment specification sheets, and photographic documentation of pre- and post-conditions. 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*.

5.7.2 Hard-to-Reach SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
4.2%	714	714	100.0%	6.1%	966,589	966,589	100.0%	Good

Completed desk reviews*
1

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Hard-to-Reach SOP evaluation efforts focused on desk reviews. The number of completed desk reviews for this program is listed above.

For a sample of projects, desk reviews were completed to check that measure data and documentation collected by contractors aligned correctly with that in the tracking system, and savings were calculated in accordance with the TRM.

The EM&V team did not have any adjustments from the desk reviews, resulting in 100 percent realization rates.

Documentation Score

The EM&V team was able to verify key inputs and assumptions for the one project that underwent desk reviews. Project documentation at these sites included customer agreements, and photographic documentation of pre- and post-condition. Overall, the EM&V team assigned a program documentation score of *good*.

5.8 DETAILED FINDINGS—LOW-INCOME

5.8.1 Low-Income Weatherization Program

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
3.5%	588	588	100.0%	7.4%	1,162,469	1,162,469	100.0%	Good

Completed desk reviews*
1

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Low-Income Weatherization evaluation efforts focused on desk reviews. The number of completed desk reviews for this program is listed above.

For a sample of projects, desk reviews were completed to check that measure data and documentation collected by contractors aligned correctly with that in the tracking system, and savings were calculated in accordance with the TRM.

The EM&V team adjusted savings for one measure within one project. TNMP adjusted savings to match the evaluation results, resulting in 100 percent realization rates. Further details of the EM&V findings are provided below.

Participant ID 78090: The energy efficiency project included the implementation of an *advanced power strip (APS)*, *ceiling insulation*, *duct sealing*, and *water heater pipe insulation* measures. During the desk review, the EM&V team was unable to determine the slight adjustment in *duct sealing* and *lighting* savings. The remaining measures had no adjustment. Overall, the adjustments increased the energy savings slightly and resulted in project-level realization rates of 100.7 percent for demand reduction (kW) and 100.6 percent for energy savings (kWh).

Documentation Score

The EM&V team was able to verify key inputs and assumptions for the one project that underwent desk reviews. Project documentation included customer agreements, test results, equipment specification sheets, and photographic documentation of pre- and post-condition. Overall, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

5.9 DETAILED FINDINGS—LOAD MANAGEMENT

5.9.1 Summer Load Management SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
42.6%	7,244	7,244	100.0%	0.0%	7,244	7,244	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the TNMP Summer Load Management SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. In PY2024, load management events occurred on the following dates and times:

- June 4, 2024, from 3:00 p.m. to 4:00 p.m. (scheduled), and

- June 7, 2024, from 3:00 p.m. to 4:00 p.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received interval meter data and a spreadsheet that summarized the event-level savings for the seven sponsors across 122 sites. Thirty-one sites did not participate in any of the scheduled events. All sponsors had at least one site that curtailed during each event.

- The cooperation level was 76 percent.
- **Recommendation**: Increase cooperation to above 90 percent.

After the EM&V team applied the *High 5 of 10* baseline calculation method, it was found that the evaluated savings matched the savings provided for all sites. The kW savings for each participating site corresponded to the kW reductions that occurred during the scheduled event (no averaging was necessary because each participating site participated in only one event). The kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team's (evaluated) and TNMP's (claimed) calculated kW and kWh savings. No adjustments were made to the program savings. The realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

5.9.2 Winter Load Management (Pilot) SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
15.5%	2,635	2,635	100.0%	0.0%	2,635	2,635	100.0%	Good

Completed desk reviews*
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.

The EM&V team evaluated the TNMP Winter Load Management (Pilot) SOP by applying the TRM calculation methodology to interval meter data. The meter data was supplied in 15-minute increments. Load management events occurred on the following dates and times:

- December 6, 2023, from 8:30 a.m. to 9:30 a.m. (scheduled), and
- December 6, 2023, from 9:00 a.m. to 10:00 a.m. (scheduled).

There were no unscheduled events in PY2024. The EM&V team received interval meter data and a spreadsheet that summarized the event-level savings for the three sponsors across 20 sites. All sites participated in their associated scheduled event.

- The cooperation level was 100 percent.

After the EM&V team applied the *High 8 of 10* baseline calculation method optimized for each event across all sites, it was found that the evaluated savings did not match the savings provided for most sites. The claimed savings were calculated using the scenario that yields the highest savings at the customer level, not the event level. In this case, different baseline days (prior and/or after the event) were used for the same event. The EM&V team decided to accept the claimed savings and update the TRM for PY2026 to add more clarity to the *High 8 of 10* baseline calculation method for winter load management programs.

The kW savings for each participating site corresponded to the kW reductions that occurred at the scheduled event (no averaging was necessary because each participating site participated in only one event). The kWh savings for each participating site were calculated by multiplying the kW reductions by the total number of event hours. Program-level savings were calculated by adding all site-level savings.

The table above shows the EM&V team's (evaluated) and TNMP's (claimed) calculated kW and kWh savings. As discussed above, the claimed program savings were accepted with no adjustments. Therefore, the realization rate for kW and kWh is 100 percent, with a documentation score of *good*.

- **Recommendation**: Apply the *High 8 of 10* baseline calculation method at the event level, not the customer level. In other words, use the same baseline days to be used across all sites for the same event.
- The EM&V team will add guidance to the TRM for PY2026 to the *High 8 of 10* baseline calculation method for winter load management programs to apply at the event-level instead of the customer-level.

5.10 SUMMARY OF TRACKING-SYSTEM-ONLY EVALUATED PROGRAMS

Table 28 summarizes claimed savings for TNMP's low evaluation priority programs in PY2024, including the programs' overall contribution to portfolio savings. Low priority programs' claimed savings were verified against the final PY2024 tracking data provided to the EM&V team for the EM&V database.

Table 28. TNMP's PY2024 Claimed Savings (Tracking-System-Only Evaluated Programs)

Program	Contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Contribution to portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Small Business MTP	3.0%	506	506	100.0%	4.9%	767,427	767,427	100.0%
High-Performance New Homes MTP	5.7%	973	973	100.0%	16.1%	2,532,559	2,532,559	100.0%

APPENDIX A: EVALUATION, MEASUREMENT, AND VERIFICATION APPROACH

This appendix describes the PY2024 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 PY2024 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 B.

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.

A.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. 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.

A.2 TRACKING SYSTEM AND DESK REVIEWS

The EM&V team reviewed the program tracking system and its link 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.

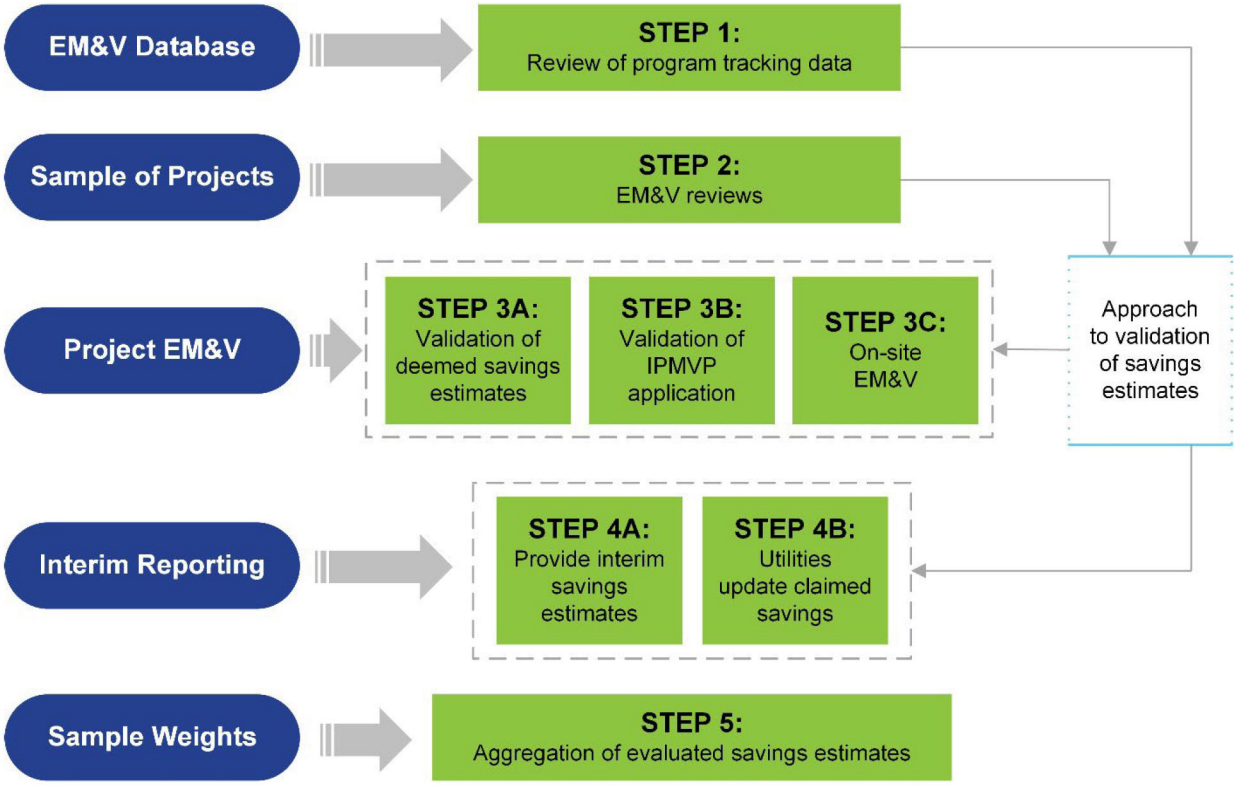
Our review accomplished two primary objectives. First, it ensured that the measures installed were consistent with those listed in the tracking system. Second, it verified that the savings estimates in the tracking system were consistent with the savings calculated in the deemed calculation tools, tables, 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.

A.3 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 evaluated 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 41.

Figure 41. Realization Rate Flowchart



A.4 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.

A.5 COST-EFFECTIVENESS TESTING

The EM&V team conducted cost-effectiveness testing using the PACT method and PY2023 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 29 lists the required inputs to the cost-effectiveness model and the sources of information.

Table 29. Cost-Effectiveness Model Inputs and Sources

Model input	Measurement level	Source
Reported energy savings and demand reduction	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[11]	Portfolio	Energy efficiency cost recovery factor (EECRF)
Avoided costs	Statewide	PUCT (utilities)
Weighted average cost of capital (WACC)	Utility	Utilities
Line loss factor (outside-of-ERCOT utilities only)	Utility	Utilities
Realization rates	Program	Evaluation results

The EM&V team conducted PY2023 cost-effectiveness tests separately using claimed gross savings and evaluated gross savings. The model produces results at the portfolio, program category,[12] 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.

[11] Performance bonuses as an input into cost-effectiveness testing came into effect in 2012.

[12] 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 testing the low-income programs.

Portfolio-level cost-effectiveness analyses are based on the PACT and are shown in each Utility's report section, including and excluding low-income and low-income/hard-to-reach customers.

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

Also, the EM&V team reported the cost-per-lifetime kWh and kW. 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.

A.6 REPORTING

There are two EM&V report deliverables per PY: (1) impact evaluation reports and (2) the Annual Statewide Portfolio Report. There are also several 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.

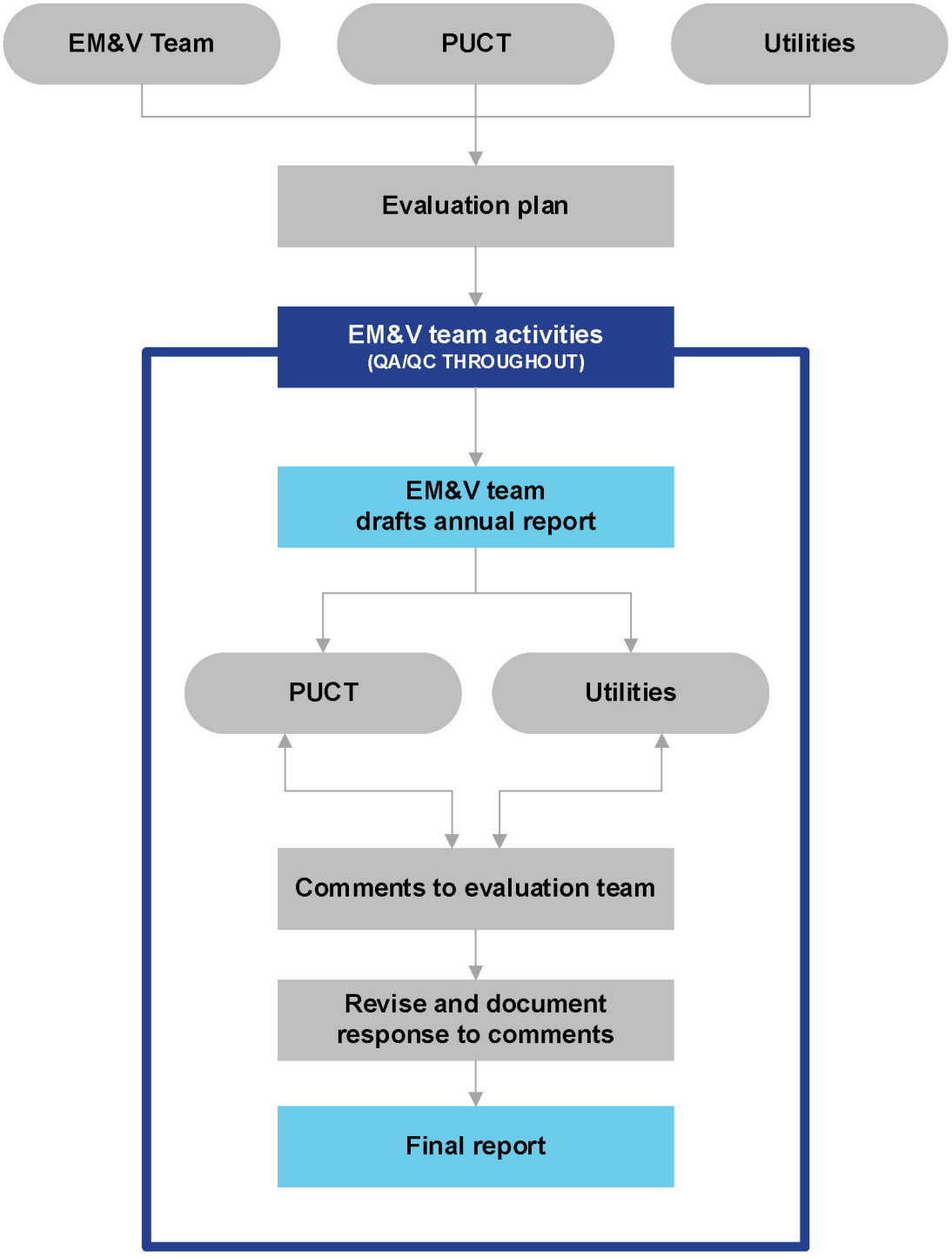
For PY2024, the recommendations in the reports are based on the following metrics: the programs' gross savings realization rate and associated program documentation score; tracking system and interval meter data reviews; desk reviews; on-site M&V findings, including site-specific realization rates; and the programs' cost-effectiveness.a

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 D.

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 42 describes the general reporting process flow.

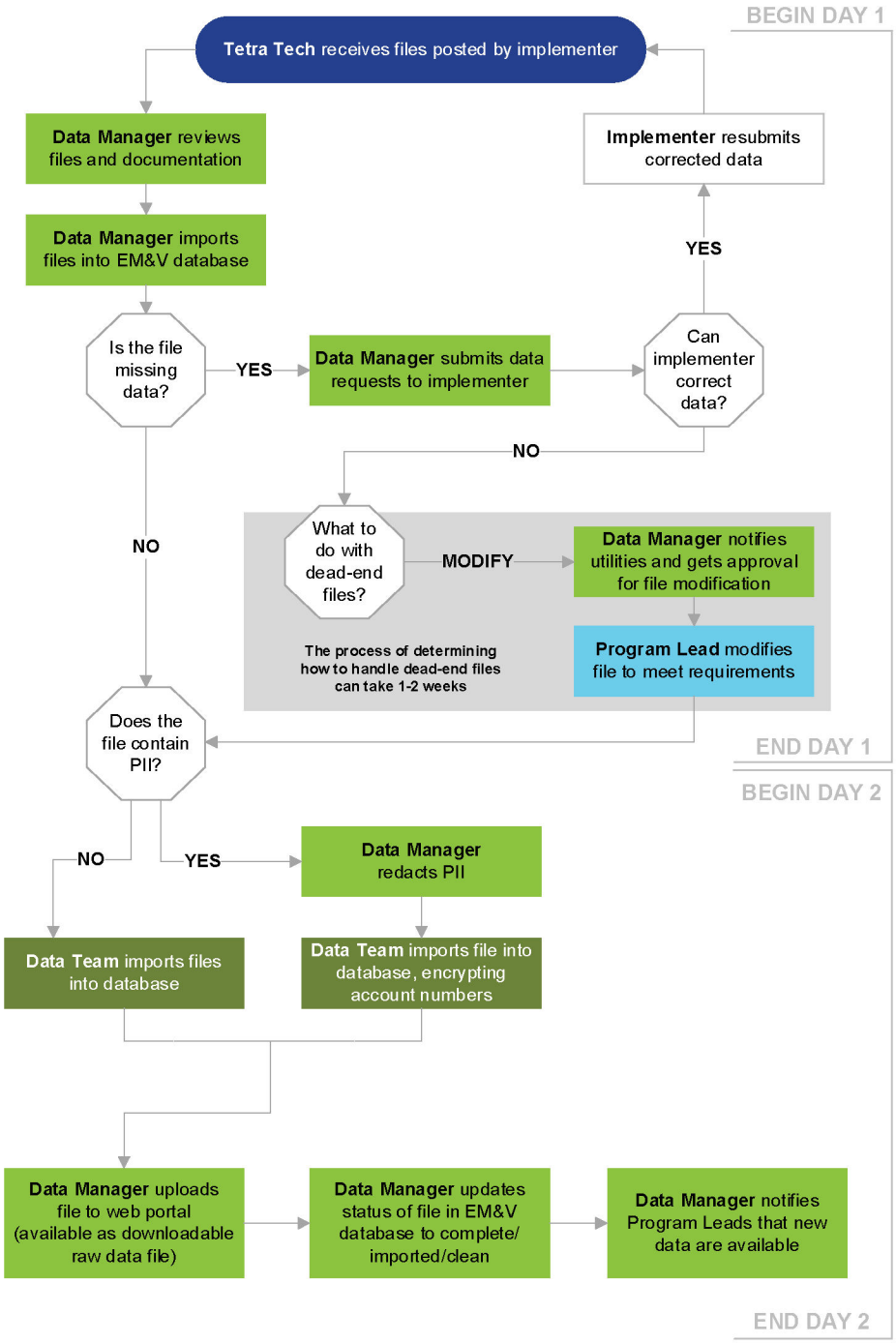
Figure 42. Reporting Flowchart



APPENDIX B: DATA MANAGEMENT PROCESS

Figure 43 details the data management process.

Figure 43. Data Management Process



APPENDIX C: COST-EFFECTIVENESS CALCULATIONS

This appendix describes the calculations used for modeling cost-effectiveness. This approach provides the PUCT with a consistent methodology for evaluating cost-effectiveness across the utilities.

C.1 APPROACH

The approach to the EM&V team's benefit-cost testing is based on 16 Tex. Admin. Code § 25.181, where costs and benefits are defined in section (d):

> *"The cost of a program includes the cost of incentives, measurement and verification, any shareholder bonus awarded to the utility, and actual or allocated research and development and administrative costs. The benefits of the program consist of the value of the demand reduction and energy savings, measured in accordance with the avoided costs prescribed in this subsection. The present value of the program benefits shall be calculated over the projected life of the measures installed or implemented under the program."*

This description is consistent with the PACT. Based on this definition, we collected the costs reported in the utilities' 2020 Energy Efficiency Plan and Reports, filed on April 1, 2020.[13] The program benefits must be calculated at a measure level in order to apply individual effective useful lives. Therefore, the savings were derived from the EM&V database, which is a comprehensive, centralized source of the utilities' program tracking data.

The present value of the benefits is calculated separately for energy and demand as follows:

$$PV = \frac{AC}{WACC - E}\left[1 - \left(\frac{1+E}{1+WACC}\right)^{n}\right]$$

Where:

AC is the avoided cost of the benefit (energy or demand).

The discount rate, *WACC*, is the utility's weighted average cost of capital.

E is the escalation rate.

n is the effective useful life of the measure.

This calculation was modified from the original evaluation plan in order to allow for including an escalation rate. The EM&V team has provided results for benefit-cost calculation using an escalation rate of two percent and without an escalation rate.

[13] PUCT filing number 50666.

The benefit-cost ratio is calculated as:

$$BC = \frac{PV_e + PV_d}{C}$$

Where:

PV_e is the present value of the avoided energy costs.

PV_d is the present value of the avoided demand costs.

C is the total program cost, including incentives, administrative, EM&V, shareholder bonus, and research and development (R&D) costs.

Some costs are reported by the utilities at the portfolio level, such as R&D and shareholder bonus costs. These costs are attributed to individual programs based on each program's incentive costs as a percentage of the portfolio.

C.2 SAVINGS-TO-INVESTMENT RATIO

Targeted low-income energy efficiency programs are run by all unbundled transmission and distribution utilities. These programs are evaluated using the SIR rather than the PACT described above.

The SIR is significantly different in both the benefits and costs included. The benefits are comprised of the customer's avoided energy costs, which means that the retail electric rate is used, rather than the utility's avoided cost, and there is no cost associated with avoided demand. Rather than the WACC, the SIR uses a societal discount rate of three percent. The only costs included are the incentives paid to the weatherization agencies.

Table 30 lists the average retail rates paid by customers. These rates are based on data collected by Frontier Energy through weatherization agencies. The rates are updated annually based on data from the Energy Information Administration, the Bureau of Labor Statistics, and the PUCT.

Table 30. Average Energy Cost by Utility

Utility	Average kWh rate
AEP Texas	$0.17
CenterPoint	$0.17
Oncor	$0.17
TNMP	$0.17
Xcel SPS	$0.16

C.3 NET-TO-GROSS RATIOS

The following net-to-gross (NTG) ratios were used to calculate cost-effectiveness based on net savings. The EM&V team determines the NTG ratios through primary research periodically (approximately every four to five years), as indicated in the table below. NTG ratios were updated for the Residential SOP, in 2022. NTG ratios were updated Commercial SOP, Commercial MTP, SCORE/CitySmart MTP, Solar PV MTP, and Retro-Commissioning programs in 2025. Note that the NTG ratios are conservative and represent 1-free-ridership (excluding spillover).

Table 31. Net-to-Gross Ratios Used to Calculate Cost-Effectiveness

Program	kWh NTG	kW NTG	Research year
Commercial			
Commercial SOP	0.81	0.75	2025
Commercial Solutions MTP	0.85	0.84	2025
SCORE/CitySmart MTP	0.82	0.80	2025
CoolSaver Tune-Up MTP	0.91	0.91	2025
Solar PV MTP	0.81	0.78	2025
Small Business	0.81	0.81	2015
Upstream Lighting	0.50	0.50	2020
Retro-Commissioning	0.74	0.80	2025
Residential			
Residential SOP, non-HVAC measures	0.89	0.90	2022
Residential SOP, HVAC measures	0.75	0.76	2022
Residential SOP, overall	0.81	0.83	2022
Solar PV SOP	0.86	0.86	2014
New Homes	0.49	0.49	2020
Upstream Lighting	0.50	0.50	2020
A/C Tune-Up/Residential MTP	0.80	0.80	2014
Hard-to-Reach SOP	1.00	1.00	N/A—industry standard is to set at 1.0
Midstream MTP	0.50	0.50	2014
Appliance Recycling	0.76	0.76	2015

Low-income			
Targeted Low-Income	1.00	1.00	N/A—industry standard is to set at 1.0
Load management			
Commercial Load Management SOP	1.00	1.00	N/A—industry standard is to set at 1.0
Residential Load Management SOP	1.00	1.00	N/A—industry standard is to set at 1.0

APPENDIX D: QUALITY ASSURANCE/QUALITY CONTROL PROTOCOLS

This appendix documents the QA/QC protocols established for the PUCT EM&V team for reporting claimed and evaluated impacts. Although quality control is a function of all evaluation stages (e.g., populating the EM&V database, sampling, analysis), this appendix focuses on the QA/QC processes within the reporting stage.

Below we summarize the specific activities that will be subject to QA/QC processes. Note that these QA/QC processes focus on the accuracy of data; this section does not address methodological issues.

Accuracy of ex ante program data. The EM&V team houses data, analysis, and reporting functions within the EM&V database. Data is provided by program implementers, read into the database in raw form, and organized for analysis. The database centrally stores the claimed (ex ante) savings, which are used for sampling and reporting those claimed savings. Data are provided to the EM&V team quarterly. The EM&V team characterizes the data received in terms of energy savings and demand reduction and participants served and reports the information within the detailed research plans; these detailed research plans are delivered to the utilities for review and confirmation that the population data is accurate. Inaccurate population data may indicate missing data, errors in the data importation process, or a misunderstanding of the data fields.

Responsibility: program leads
Accountability: QA/QC team
Consulted: utility staff, implementation contractors, and EM&V project manager

Application of verification rates and NTG ratios. The impacts are generated in the EM&V database. The database categorizes measure-level information in the format it was provided to the EM&V team per the data acquisition process. Although projects may be sampled and verified at the measure level, the EM&V team conducts impact evaluations to obtain and report verification and NTG estimates at the utility and program type level, which then are aggregated and reported at the program group level.

These impact estimates are provided by the program leads and stored in two locations. First, the program leads enter the impact results within an Excel tracking sheet stored on the SharePoint site. The Excel tracking sheet includes the following fields—program year (PY), utility, program group, program type, measure group, program lead, verification rate, NTG ratio, report source of verification rate, report source of NTG ratio, and modification date. Only one sheet maintains current impact information. Should data be updated throughout the process, the outdated records are moved to a separate worksheet within that file. Doing so ensures one sheet maintains the correct rates and that any modifications are documented, including the reason for the modification.

Second, the EM&V database includes an interface where program leads directly enter impact results. These results are then stored and applied against the claimed savings to calculate the evaluated gross and evaluated net results for the annual reporting.

By creating a two-stage impact reporting process, the EM&V team builds a point of verification of the data into the process. The evaluated and net savings results are directly calculated out of the EM&V database using the rates supplied within the web interface. The EM&V team then verifies that the results are as expected using the values documented within the Excel impact reporting file. Should the results differ, the QA/QC team will be able to refer to the original source to verify the results.

Responsibility: program leads
Accountability: QA/QC team
Consulted: impact leads, EM&V data lead, and project manager

Accuracy of reported savings. As documented in the report outline, program impacts are aggregated and reported in various ways. At the most aggregate level, the data are reported by program group overall and then by utility. At the most granular level, the data are reported by program group for each utility. The annual report will, therefore, represent impacts in over 100 tables. It is critical to spend considerable time conducting QA/QC against those reported values.

The EM&V database calculates the full year claimed savings by utility, program type, and program group. Although claimed savings are documented in quarterly detailed research plans, adjustments made in claimed savings are likely to occur throughout the year. Therefore, it is necessary to calculate the full PY claimed savings and verify results against the utility claimed data, which is reported to the PUCT. The EM&V team requests that the utilities provide draft claimed savings to verify against the reported claimed savings within the EM&V database. Any differences in the evaluation and utility claimed savings are clearly documented within the report.

All results tables are cross-referenced to ensure the results are true and are consistent with each other. For example, the sum of all residential MTPs evaluated net savings documented within the utility-specific sections should equal the residential MTP results captured in Technical Reference Manual (TRM) Volume 1. The QA/QC team develops a checklist of tables to be cross-checked against which sources and will systematically go through this checklist throughout the report-proofing process.

Although not a specific QA/QC function, the team's development of these reporting functions with the overarching goal of ensuring transparency inherently allows for ad hoc QA/QC checks by the PUCT, utilities, implementation contractors, or other interested parties. For example, the EM&V database can export results and resulting calculations within easy-to-use Excel files. In addition, impact-related reports tie back to results clearly for a secondary review.

Responsibility: utilities (for providing claimed savings) and program leads (for verifying claimed impacts provided)
Accountability: QA/QC team (for final review and cross-checks of impact tables)
Consulted: impact leads, EM&V data lead, utilities, and EM&V project manager

Public Utility Commission of Texas

Volume 3. Outside-of-ERCOT Utility-Specific Energy Efficiency Report Program Year 2024—DRAFT

TETRA TECH

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

September 2025

720 Brazos Street, Suite 210, Austin, TX 78701

tetratech.com

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

GLOSSARY: ACRONYMS/ABBREVIATIONS/DEFINITIONS

Acronym	Description
AC	Air conditioner
AEP Texas	American Electric Power Texas
AHRI	Air Conditioning, Heating, and Refrigeration Institute
C&I	Commercial and industrial
CF	Coincidence factor
CMTP	Commercial market transformation program
CNP	CenterPoint Energy Houston Electric, LLC
CSOP	Commercial standard offer program
DHP	Ductless heat pump
DI	Direct install
DLC	DesignLights Consortium
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
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
ETI	Entergy Texas, Inc.
EUL	Estimated useful life
EUMMOT	Electric Utility Marketing Managers of Texas
GSHP	Ground-source heat pump
GW	Gigawatt
GWh	Gigawatt-hour
HCIF	Heating/cooling interactive factor
HOU	Hours of use
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

Acronym	Description
LI	Low-income
LI/HTR	Low-income/hard-to-reach
LM	Load management
M&V	Measurement and verification
mcf	1,000 cubic feet
MF	Multifamily
MTP	Market transformation program
MW	Megawatt
MWh	Megawatt-hour
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
SEM	Strategic energy management
SIR	Savings-to-investment ratio
SOP	Standard offer program
SRA	Self-report approach
SWEPCO	Southwestern Electric Power Company
TEESI	Texas Energy Engineering Services, Inc.
TMY	Typical meteorological year
TNMP	Texas-New Mexico Power Company
TRM	Technical reference manual
WACC	Weighted average cost of capital
Xcel SPS	Xcel Energy Southwest Public Service, Inc.

1.0 INTRODUCTION

This document presents the third-party evaluation, measurement, and verification (EM&V) for the outside-of-ERCOT utilities – specifically, the impact evaluation results for energy efficiency portfolios implemented in program year 2024 (PY2024).[1] Each section begins with a past five-year trend analysis for the utility energy efficiency portfolio in order to provide additional context for PY2024 results.

The PY2024 scope includes targeted impact evaluations of the savings for the least certain results from the prior year or changes in programs or technologies. Targeted impact evaluations focus on certain commercial and residential programs, including different end-use measures (e.g., *HVAC*, *lighting*, *refrigeration*). Interval meter data analysis and tracking system reviews provide a due diligence verification of claimed savings of each utility's portfolio.

The reviews also independently assess claimed savings and verify the program data's accuracy. The following program documentation and data were reviewed:

The EM&V plans[2] for PY2024 were based on EM&V prioritization of programs of a similar type across utilities. Programs were reviewed by type and prioritized (*high*, *medium,* or *low*) based on the following considerations:

- magnitude of savings—the percentage contribution of the programs' impact to the total utility portfolio (e.g., more than ten percent of portfolio savings are from a measure or program),
    - *high or medium* priority assigned to programs or measures with larger savings
- level of relative uncertainty in estimated savings,
    - *high or medium* priority assigned to programs with savings uncertainty
- quality assurance/quality control (QA/QC), and verification data from on-site inspections completed by utilities or by their contractors,
    - *high or medium* priority assigned to programs or measures when QA/QC or verification data improvements were identified
- program or subprogram stage (e.g., pilot, early implementation, mature),
    - *high or medium* priority assigned to mature programs and programs moving from pilot to early implementation
- importance to future portfolio performance (may be a significant contributor to savings in the future), and
    - *high or medium* priority assigned to programs or measures important to future portfolio performance
- priorities for PUCT and utilities, prior EM&V results, and upcoming changes in the markets.
    - *high or medium* priority assigned to programs or measures identified as priorities

[1] Volume 2 presents similar data for the ERCOT utilities.

[2] Public Utility Commission of Texas EM&V Plans for Outside-of-ERCOT Utilities' Energy Efficiency and Load Management Portfolios—Program Year 2024, February 2025. Project No. 38578, item 154. Interchange - Documents

Section 1.1 describes the Impact Evaluation methodology, with detailed methodology available in Appendix B.

Section 2.0 through Section 5.0 presents the utility-specific portfolio EM&V results.

Appendix A contains a visual representation of the EM&V database import, review, and validation process. Appendix B contains the cost-effectiveness calculations methodology used for the program administrator cost test (PACT[3]), which is the cost-effectiveness test used by Texas EM&V. Appendix C contains the quality assurance plan for the reported evaluated savings.

1.1 IMPACT EVALUATION METHODOLOGY OVERVIEW

The EM&V database with complete PY2024 program tracking data requested from the utilities was the foundation for the evaluation process. The EM&V database allowed the EM&V team to complete the following:

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

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

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. See Appendix A for details.

The impact evaluations are used to calculate gross savings 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.

1.1.1 Net Savings

Net-to-gross (NTG) ratios, which are applied to claimed savings to calculate net savings, are researched for each IOU portfolio at the sector and program level. The NTG ratio is calculated as 1-free-ridership. For example, an IOU commercial MTP with a free-ridership rate of 20 percent would have an NTG ratio of 80 percent. Free-ridership represents energy savings that would have occurred in the absence of the programs.

NTG ratios researched prior to PY2024 reflect average NTG ratios across the applicable IOU program type and include spillover estimates. While NTG ratios starting in PY2024 are more conservative because they exclude spillover, IOUs' claimed savings are based on gross savings in Texas. Therefore, NTG ratios of 1-free-ridership are more useful to the objectives of the NTG research in Texas, which is to assess the effectiveness of programs in minimizing free-ridership.

The EM&V team updated commercial MTP and commercial standard offer program (SOP) NTG ratios in PY2024. The EM&V team's commercial participant survey research used an industry-

[3] Also known as the utility cost test (UCT).

standard self-report approach methodology, which was also similar to the PY2021 commercial participant survey methodology to allow trend analysis. See Appendix B in Volume 1 for additional details.

1.1.2 Cost-Effectiveness

The EM&V team conducts cost-effectiveness testing using the PACT using actual results except for LI programs, as discussed below. IOU program cost-effectiveness tests compare the benefits of the programs to the costs – a ratio over 1.0 representing a cost-effective program. The EM&V team conducts cost-effectiveness tests separately using verified claimed savings and net savings as determined by an NTG ratio discussed in 1.1.1 above.

All benefits and costs are expressed in PY dollars. Benefits resulting from energy savings occurring in future years are net-to-PY dollars using the utility's weighted average cost of capital (WACC) as the discount rate.

When tests are conducted at a more disaggregated level than where data are available, allocations are made proportionate to costs. For example, the utility performance incentive is calculated for the overall portfolio and allocated to individual programs proportionate to the programs' costs associated with meeting demand and energy goals. Program costs include program administrative and incentive costs; portfolio-level costs include the utility performance earned for that PY; and EM&V, administrative, and R&D costs.

LI programs are evaluated using the savings-to-investment ratio (SIR). This model only includes net incentive payments compared to program costs. Only LI programs are evaluated using the SIR methodology.

Portfolio-level cost-effectiveness analyses are based on the PACT and shown both including and excluding LI programs.

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

In addition, the EM&V team calculates the average cost per lifetime kilowatt-hour (kWh) and kilowatt (kW); this is calculated by attributing costs to energy savings and avoided demand based on their portion of total benefits and then applying that proportion to the total program costs.

2.0 ENTERGY TEXAS, INC.

2.1 KEY FINDINGS AND RECOMMENDATIONS

In addition to Volume 1 recommendations that apply to all IOUs, Table 1 below summarizes Volume 3 key findings and recommendations specific to Entergy Texas, Inc. (ETI). Key findings that do not have a recommendation illustrate the type of program information to highlight in future EEPRs.

Table 1. ETI Key Findings and Recommendations

Report Section	Key finding	Recommendation
2.2.1 PY2020-PY2024 Portfolio Key Findings	Most energy savings were achieved by ETI's Commercial market transformation program (CMTP). ETI does not offer a Commercial Standard Offer Program (SOP).	Pilot a Commercial SOP if there are areas of ETI's territory with sufficient market infrastructure.
2.2.2 Commercial Savings	ETI has been successful in diversifying the commercial savings beyond *lighting*.	
2.2.3 Residential Savings	ETI's residential demand reduction and energy savings were primarily derived from *HVAC* measures followed by *envelope* measures.	
2.2.4 Load Management	ETI had increases in load management events and duration in PY2023 and PY2024.	Respond to this report with reasons for increase in events and durations in recent years.
	ETI's residential load management pilot was a subprogram within the Residential MTP.	To comply with the TRM, track and report load management programs separate from other programs.
2.6 Commercial Impact Evaluation Results	Poor project documentation: • *Lighting* - missing quantities, model numbers or no certifications and specification sheets • Strategic Energy Management - calculator missing hourly weather data, M&V plans missing capital improvement projects	Address documentation issues.
2.7 Residential Impact Evaluation Results	Missing photo documentation of the pre- and/or post-conditions of multiple Hard-to-Reach (HTR) SOP projects.	Address pre- and post-condition photo documentation issues with contractors.
2.8 Load Management Impact Evaluation Results	Less than 90 percent cooperation rate[4] for the Commercial Load Management SOP. Past and other IOU commercial load management programs have achieved 90 percent.	Respond to this report with strategies to increase cooperation to above 90 percent.

[4] The cooperation rate is the percent of load management program participating customers who curtailed during a curtailment event.

ETI's PY2024 highlights:

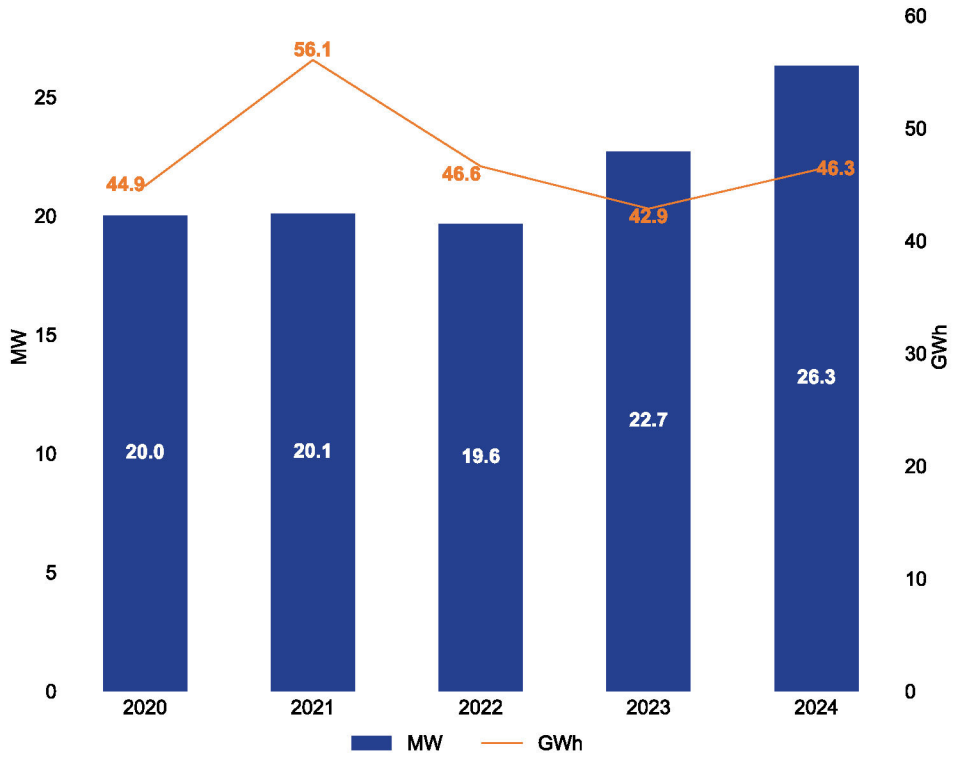
- Achieved the most demand reduction through energy efficiency programs,
  - 66.5 percent,[5]
  - Successful programs included Commercial MTP, Residential and Hard-to-Reach SOPs,
- Achieved most energy savings through Commercial MTP.

2.2 PY2020 THROUGH PY2024 COMPARISONS

2.2.1 Portfolio Key Findings

ETI's portfolio in PY2024 saw a slight increase in total demand reduction and energy savings (Figure 1) driven by residential increases. The residential load management pilot program was erroneously included within the Residential Market Transformation Program (MTP), and that contributed to the increase in ETI's demand reduction.[6] The High-Efficiency New Homes program, also within the Residential MTP, increased ETI's energy savings.

Figure 1. ETI's Demand Reduction (MW) and Energy Savings (GWh) PY2020-PY2024



[5] In comparison, ERCOT utilities achieved 30.3 percent and outside-of-ERCOT achieved 50.3 percent. ERCOT, Volume 1, Executive Summary, Figure 4 and outside-of-ERCOT, Figure 5.

[6] ETI reported its residential load management as a separate program in its PY2026 plan, but it should be reported separately in PY2025 to be in compliance with the TRM.

In PY2024, ETI achieved most of its demand reduction goals through energy efficiency programs (Figure 2, left graph).

In PY2024, ETI's Commercial MTP achieved the most energy savings (Figure 2, right graph) ETI does not offer a Commercial SOP.

In PY2024, demand reduction and energy savings across program years by program type have remained relatively consistent, with a small decrease in PY2024 in upstream/midstream offerings and an increase in Residential MTP offerings.

Figure 2. ETI's Demand Reductions (MW) and Energy Savings (GWh) by Program Type PY2020-PY2024

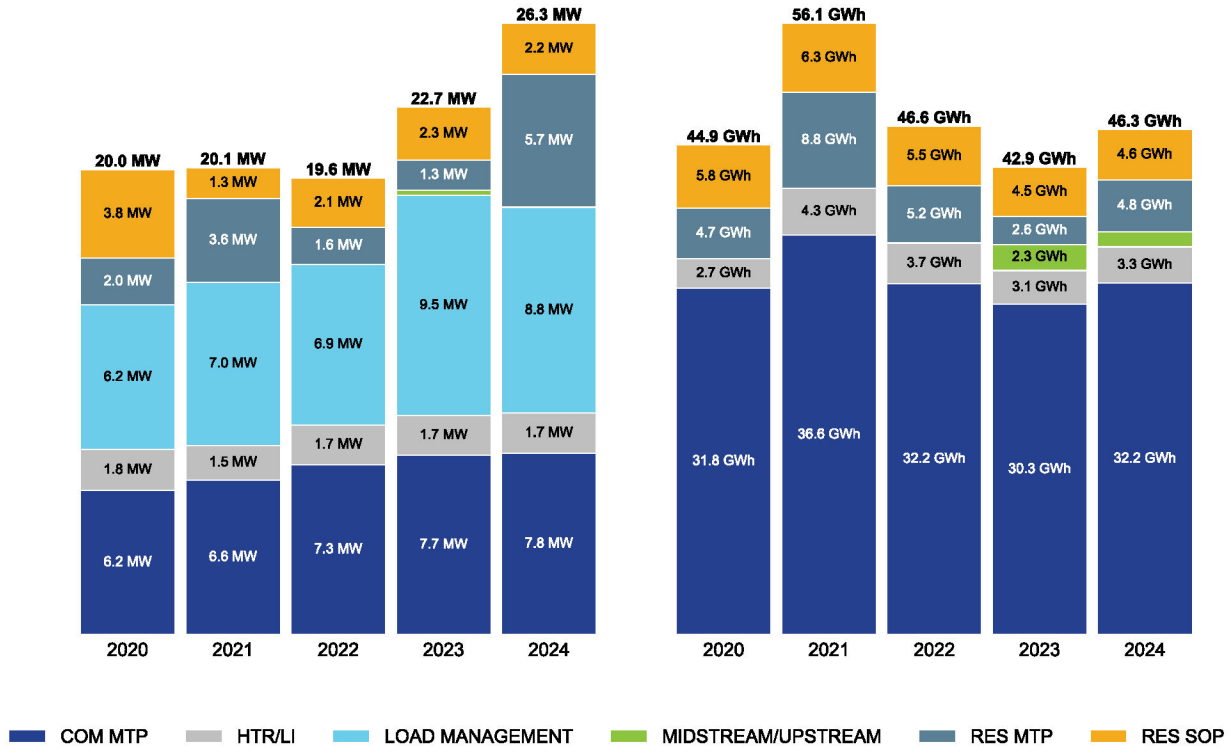
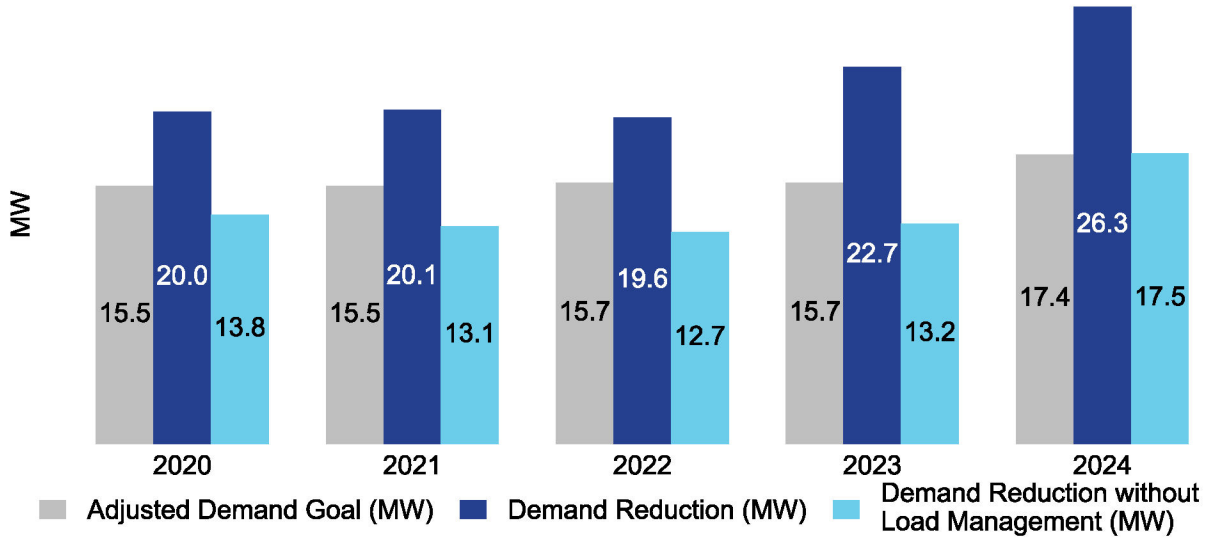


Figure 3 shows that ETI successfully met its legislated demand reduction goals with energy efficiency programs.

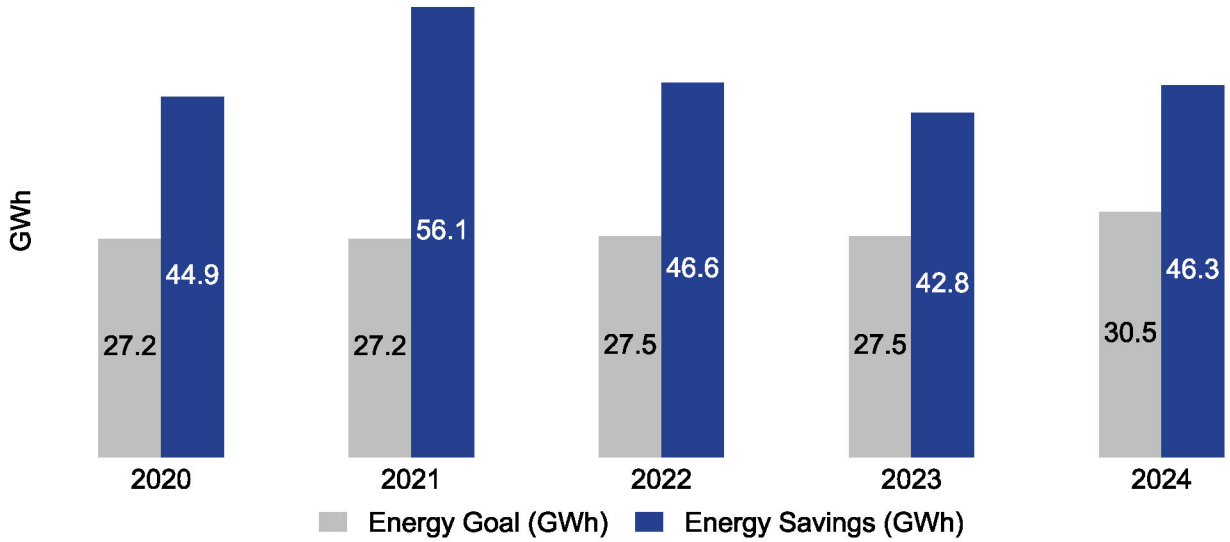
Figure 3. ETI's PY2020–PY2024 Legislated Demand Reduction (MW) Goals



ETI's PY2024 energy goals and savings:

- ETI has significantly exceeded its energy goals for the past five years (Figure 4),
- In PY2024, ETI exceeded its PY2024 energy goal by approximately 52 percent. ETI.

Figure 4. ETI's PY2020–PY2024 Energy Savings (GWh) Goals



2.2.2 Commercial Savings

The PY2024 gross savings from ETI's commercial sector programs were the following:

- Demand reduction of 7.8 megawatts (MW), and
- Energy reduction of 32.2 gigawatt-hours (GWh).

Figure 5 shows that ETI's demand reduction consistently increased by about 0.5 MW year over year from PY2020 to PY2023, while PY2024 results were similar to PY2023. The energy savings do not show the same growth pattern year over year. This variation between the patterns in demand reduction and energy savings is a result of the measure mix in the commercial program.

Figure 5. ETI's Demand Reduction (MW) and Energy Savings (GWh) by Program Year—Commercial Programs Excluding Load Management, PY2020–PY2024

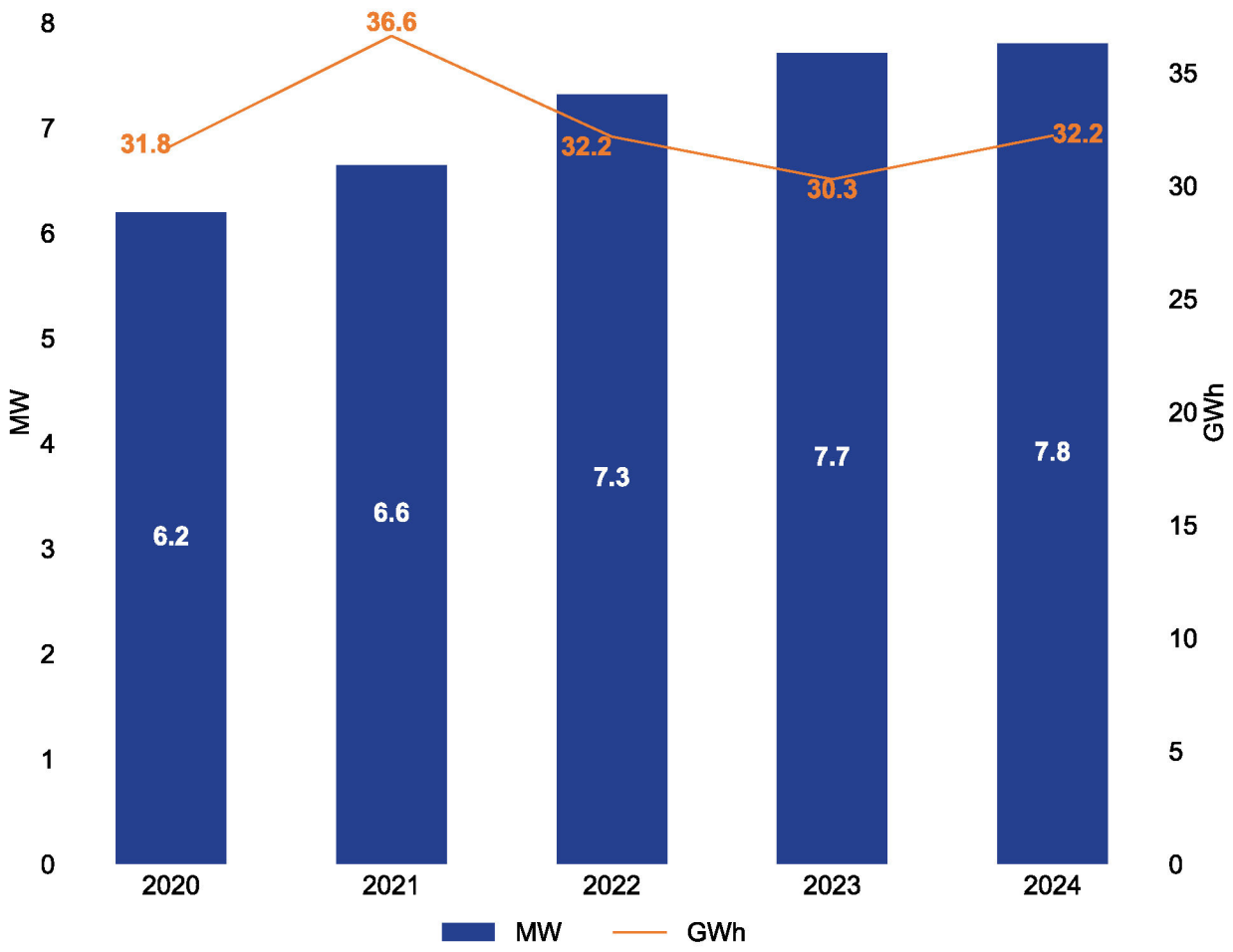
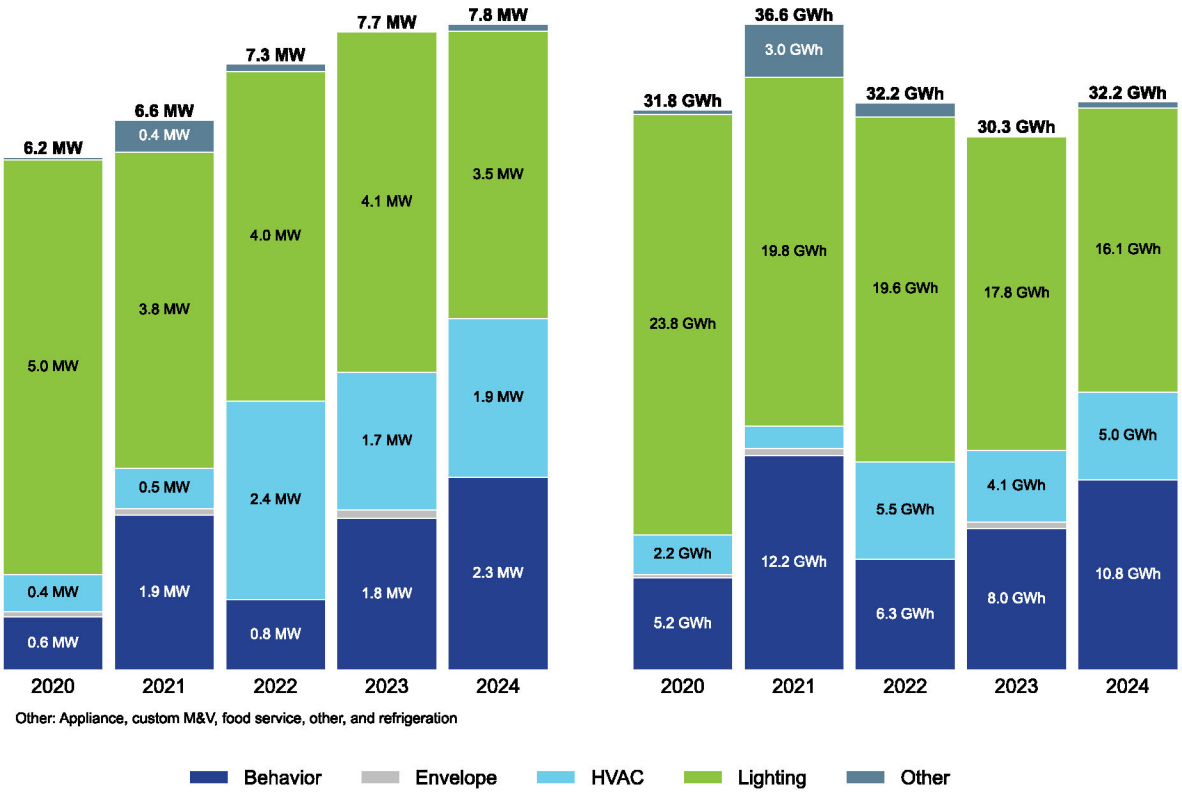


Figure 6 shows the variation in the relative savings of the commercial measure categories--*lighting* measures accounted for less than one-half of the demand.

- ETI utilized diverse measure savings,
- The *behavior* measures made up the second largest percentage of demand reduction (45 percent, Figure 6 left graph) and one-half of the energy savings (50 percent, Figure 6 right graph), and
- For the first time in five years, *HVAC* also increased in both demand reduction and energy savings.

Figure 6. Distribution of ETI's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Commercial Programs Excluding Load Management PY2020–PY2024



2.2.3 Residential Savings

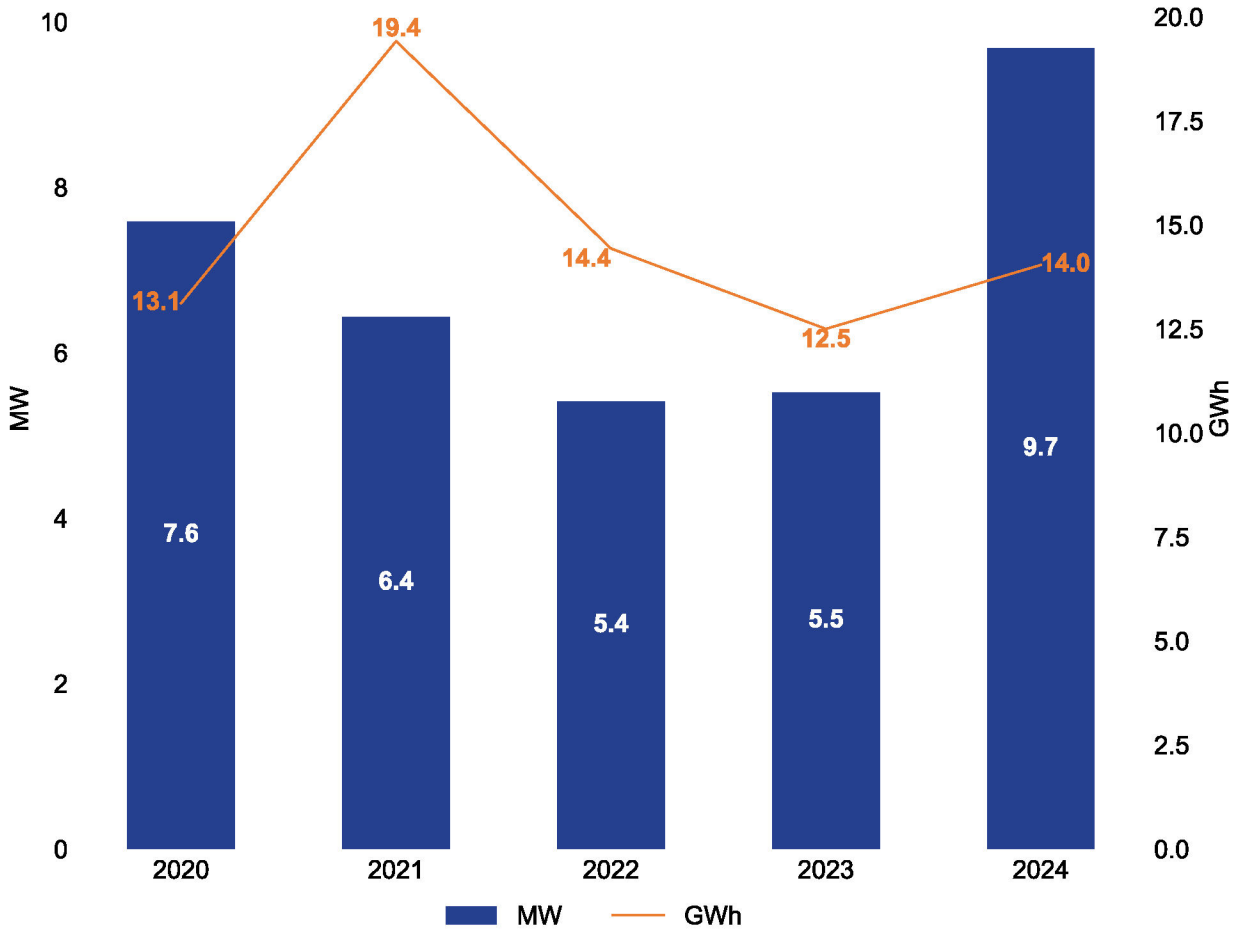
The PY2024 gross savings from ETI's residential sector programs were the following:

- Demand reduction of 9.7 MW, and
- Energy savings of 14.0 GWh.

PY2024 (Figure 7) is ETI's highest residential demand reduction in the last five years.

- The large increase in demand reduction in PY2024 was mostly attributable to the Residential MTP program,
- The Residential Load Management pilot and the High-Efficiency New Homes program were programs within the Residential MTP, and
- ETI's energy savings for PY2024 were the third highest in the last five years.

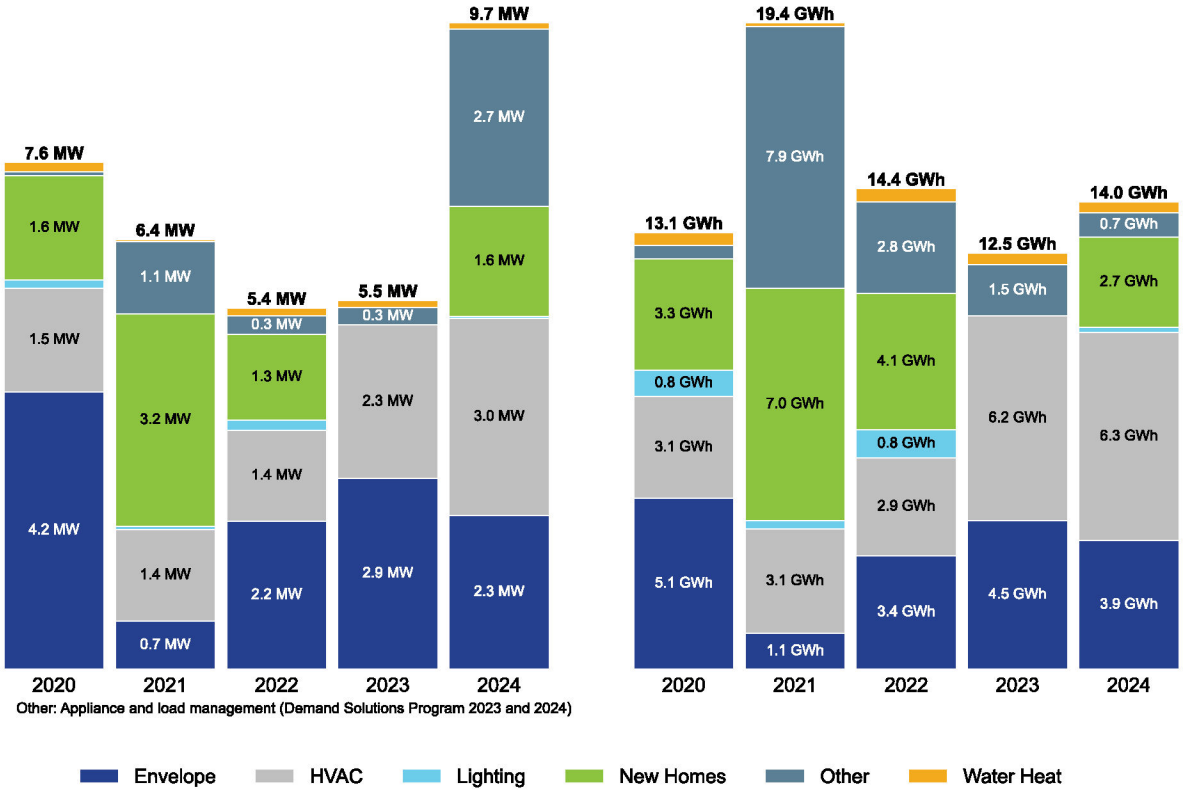
Figure 7. ETI's Demand Reduction (MW) and Energy Savings (GWh) by Program Year—Residential Programs PY2020–PY2024



For PY2024, ETI's residential demand reduction (Figure 8, left graph), and energy savings (Figure 8, right graph), were primarily derived from *HVAC* measures (Figure 8):

- *HVAC* represented approximately one-third of demand reduction and about forty-five percent of energy savings in PY2024,
- ETI's *new homes* is reflected in the *other* category, which contributed to the second highest demand reduction within the residential programs excluding the load management pilot erroneously reported under Residential MTP, and
- *Envelope* measures were the next highest contributor to energy savings and contributor to demand reduction.

Figure 8. Distribution of ETI's Demand Reduction (MW) and Energy Savings (GWh) by Measure Category—Residential Programs PY2020–PY2024



2.2.4 Load Management Savings

The PY2024 gross savings from ETI's load management program were the following:

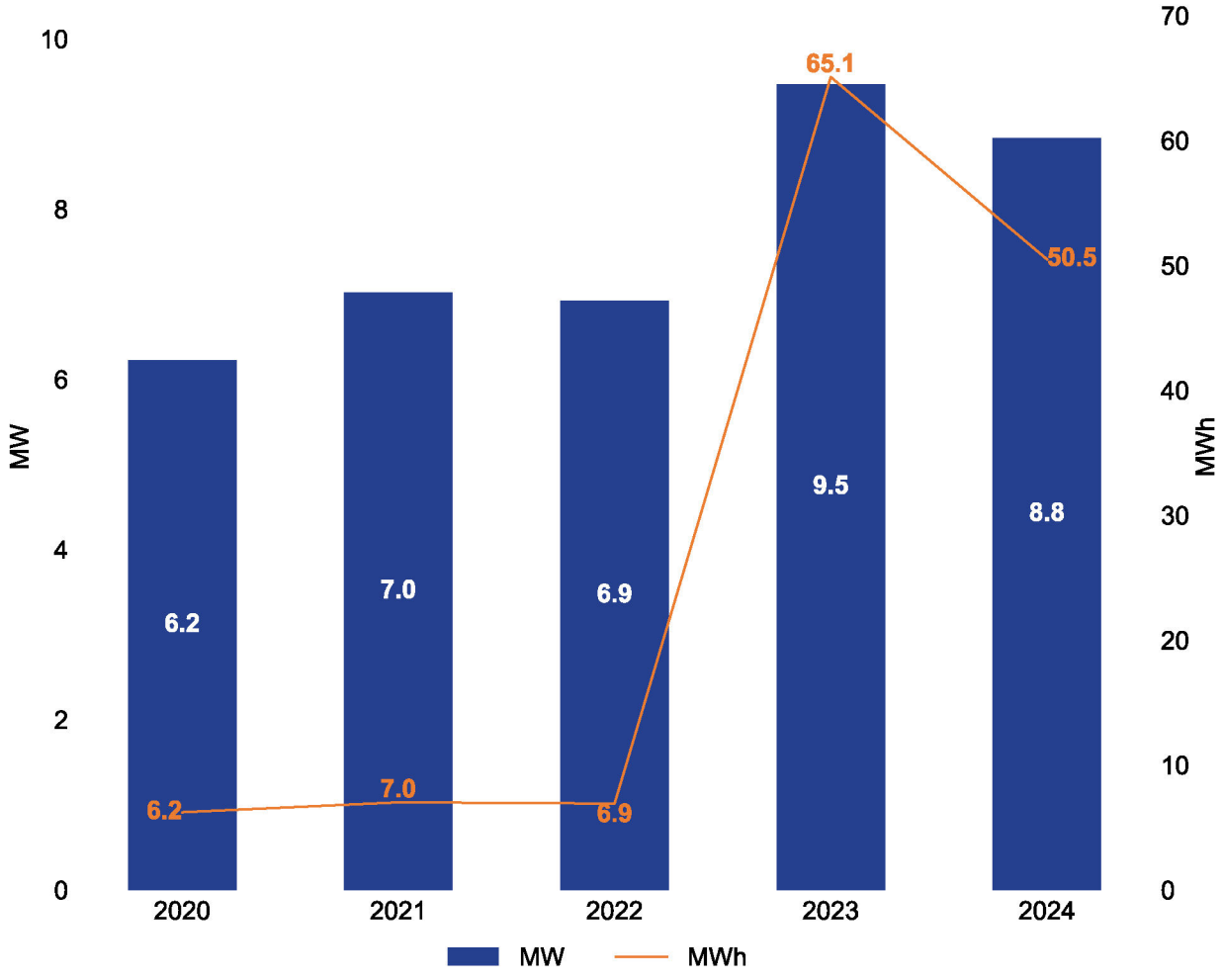
- Demand reduction of 8.8 MW, and
- Energy savings of 50.5 megawatt-hours (MWh).

Figure 9 summarizes the fairly stable demand reduction and energy savings over the past five years for ETI's load management programs. Compared to the previous three years, PY2023 saw a significant increase in number of participants in the load management program. In PY2024, participation remained the same as PY2023.

Demand reduction and energy savings depend upon the number of curtailment events and their duration. PY2023 and PY2024 had the highest number of events.

ETI's residential load management pilot is not included in the load management section. In PY2023 and PY2024, residential load management pilot was a subprogram in the Residential MTP. Starting in PY2025, demand reduction from any load management programs that are subprograms with energy efficiency programs will not be counted towards demand reduction goals in compliance with the TRM.

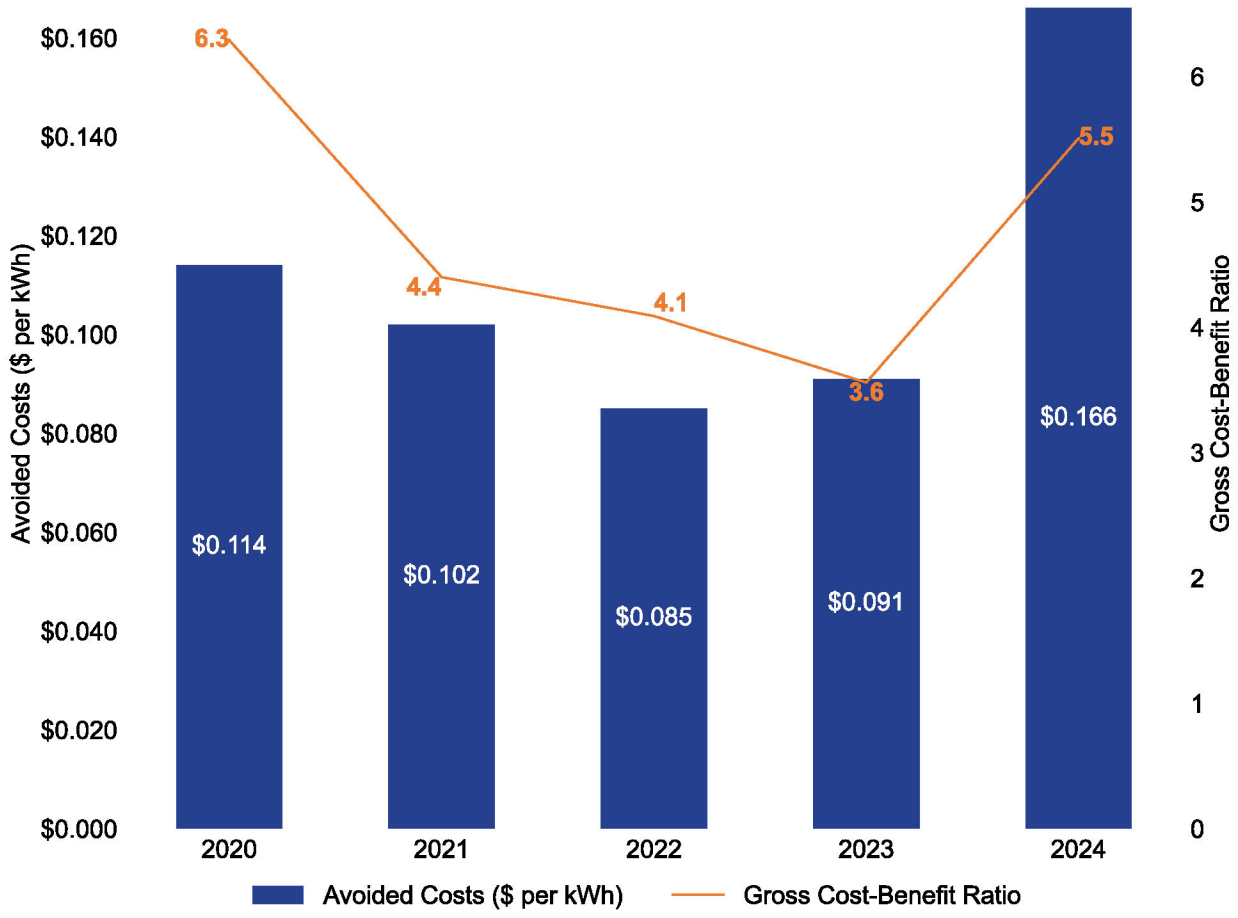
Figure 9. ETI's Demand Reduction (MW) and Energy Savings (MWh) by Program Year—Load Management Programs PY2020–PY2024



2.3 COST-EFFECTIVENESS

Figure 10 shows the avoided costs for all investor-owned utilities and ETI's cost-effectiveness ratios over the last five years. The overall cost-effectiveness ratio has consistently remained above 3.0 for ETI. PY2020 saw a high of 6.3, and the cumulative cost-effectiveness of ETI's programs was 5.5 in PY2024. The significant increase in cost-benefit ratio from PY2023 to PY2024 is attributable to increases in avoided cost of energy in the ERCOT market.

Figure 10. ETI's Gross Cost-Benefit Ratio and Avoided Cost by Program Year



2.4 PY2024 IMPACT EVALUATION RESULTS

This section presents the evaluated savings and cost-effectiveness results for ETI's energy efficiency portfolio. The key findings are summarized first, followed by details for each program with a *high* or *medium* evaluation priority.

2.4.1 Evaluated Savings

ETI's evaluated savings for PY2024 were 26,312 kW in demand reduction and 46,303,237 kWh in energy savings. The overall kW and kWh portfolio realization rates are approximately 100 percent. ETI adjusted claimed savings based on EM&V results (see Table 6), supporting healthy realization rates.

Table 2 shows the claimed and evaluated demand reduction for ETI's portfolio and broad customer sector and program categories. Residential and load management results are based on census reviews; therefore, precision calculations are not applicable (N/A). For both Table 2 and Table 3, the review for the load management program included a census review of equations and interval meter data to estimate the baseline usage and level of load curtailment for each event for all participants. Also, total portfolio numbers may not equal the sum of all program sector totals due to rounding.

Table 2. ETI's PY2024 Claimed and Evaluated Demand Reduction (kW)

Level of analysis	Percentage portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)
Total portfolio	**100.0%**	**26,313**	**26,312**	**100.0%**
Commercial	29.7%	7,803	7,803	100.0%
Residential	36.8%	9,679	9,679	100.0%
Load management	33.6%	8,831	8,830	100.0%

Table 3 shows the claimed and evaluated energy savings for ETI's portfolio and broad customer sector and program categories for PY2024.

Table 3. ETI's PY2024 Claimed and Evaluated Energy Savings (kWh)

Level of analysis	Percentage portfolio savings (kWh)	Claimed energy savings (kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)
Total portfolio	**100.0%**	**46,303,236**	**46,303,237**	**100.0%**
Commercial	69.6%	32,215,641	32,215,641	100.0%
Residential	30.3%	14,037,100	14,037,100	100.0%
Load management	0.1%	50,496	50,497	100.0%

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

Program-level realization rates also include a qualitative rating of *good*, *fair*, and *limited* associated with the level of program documentation received from the utility.

- ETI received *good* documentation scores for the Commercial Solutions MTP, Residential SOP, Residential Solutions MTP, and Commercial Load Management SOP.
- ETI received a *fair* documentation score for the Hard-to-Reach SOP.
    - **Recommendation**: Improve programs with a *fair* documentation score. See HTR project and program-specific recommendations in program impact results.

2.4.2 Program Funding and Cost-Effectiveness Results

ETI's total portfolio funding for PY2024 was $8,185,193, excluding research and development, EM&V, and its performance bonus; its portfolio had a cost-effectiveness score of 5.5 based on the PACT.

The most cost-effective programs based on claimed and evaluated savings were the Commercial Solutions MTP and the Residential Solutions MTP; the least cost-effective programs were the Commercial Load Management SOP and the Hard-to-Reach SOP. All of ETI's programs were cost-effective in 2024.

The lifetime cost of evaluated savings was $0.020 per kWh and $12.14 per kW. 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.

Table 4. ETI's Cost-Effectiveness Results

Level of analysis	Claimed savings results	Evaluated savings results	Net savings results
Total portfolio	**5.51**	**5.51**	**4.43**
Commercial	**8.57**	**8.57**	**7.53**
Commercial Solutions MTP	8.57	8.57	7.53
Residential	**4.00**	**4.00**	**2.83**
Residential SOP	3.42	3.42	2.79
Residential Solutions MTP	5.38	5.38	2.64
Hard-to-Reach SOP	3.13	3.13	3.13
Load management	**1.55**	**1.55**	**1.55**
Commercial Load Management SOP	1.55	1.55	1.55

2.4.3 Net-To-Gross Results

ETI's NTG ratio was updated for its Commercial Solutions MTP in PY2024 through participant surveys. ETI's IOU Commercial Solutions NTG ratio is 87.9 percent for kWh and 87.2 percent for kW, calculated as 1- free-ridership (excluding spillover).

ETI's free-ridership rate of 12.1 percent for kWh and 12.8 percent for kW decreased from the PY2021 commercial MTP NTG free-ridership estimate of 19 percent for kWh and 20 percent for kW.

Table 5 shows ETI's free-ridership results by program and end-use. While the small number of completed surveys for some measure types is qualitative, end-use free-ridership provides useful insight for IOU's program design considerations. Lighting and HVAC equipment had the lowest free-ridership rate, with tune-ups around a quarter free-ridership.

Table 5. ETI's Free-Ridership by Program and End-Use

Program and end-use	Completed surveys	kWh free-ridership	kW free-ridership
Commercial Solutions MTP			
HVAC equipment	29	11.8%	10.3%
HVAC tune-up	10	24.0%	24.0%
Lighting	22	11.2%	10.4%
Total	**61**	**12.1%**	**12.8%**

2.5 SAVINGS DIFFERENCES

As discussed above, utilities are provided the opportunity to adjust savings at the project level based on interim EM&V findings. This section summarizes the savings differences identified by the EM&V team, which ETI also used to adjust its claimed savings. The EM&V team requests that utilities adjust projects when evaluated and claimed savings differ by more than five percent. ETI adjusted claimed savings for all projects with a difference of more than five percent found by the EM&V team prior to its May 1 EEPR filing.

- Overall, ETI's claimed demand reduction (kW) decreased, and energy savings (kWh) increased due to recommended evaluation adjustments.

Table 6. ETI's Claimed Demand Reduction (kW) and Energy Savings (kWh) Adjustments by Program

Program	EM&V demand claimed reduction adjustments (kW)	EM&V energy claimed savings adjustments (kWh)
Commercial Solutions MTP	82.74	1,072,191.00
Hard-to-Reach SOP	-0.159	-245.81
Residential Solutions MTP	-1,282.70	-3,844.16
Residential SOP	-.003	.004
Total	**-1,200.12**	**1,068,101.04**

2.6 DETAILED FINDINGS—COMMERCIAL

2.6.1 Commercial Solutions MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate(kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings(kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
29.7%	7,803	7,803	100.0%	69.6%	32,215,641	32,215,641	100.0%	Good

Completed desk reviews*
9

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Commercial Solutions MTP evaluation efforts focused on desk reviews. The sample of completed desk reviews for this program is listed above.

The EM&V team adjusted the claimed savings for eight projects. Four projects had adjustments greater than five percent compared to the claimed energy or demand reduction, and four projects had adjustments of less than five percent. ETI accepted the evaluated results and matched the claimed savings to those of the evaluations for all projects; therefore, the final program realization rate is 100 percent. Further details of the EM&V findings are provided below:

Participant ID 3-1-0-1-30418: The project involved a school district that replaced *air conditioners* and *heat pumps* with more efficient units at three locations: an elementary school, a combined middle and high school, and a Boys and Girls Club building. During the desk review, the EM&V team adjusted the baseline full-load efficiency levels to use the appropriate baseline efficiencies for the incentivized units. This adjustment decreased peak demand reduction (kW) and resulted in a realization rate of 80 percent. The energy savings (kWh) were not adjusted and resulted in a realization rate of 100 percent.

Participant ID 3-1-0-1-30447: The project involved an elementary school that installed *LED lighting* to replace fluorescent and metal halide lighting. During the desk review, the EM&V team adjusted the installed wattages to match DesignLights Consortium (DLC)-rated values. These adjustments increased peak demand reduction (kW) and energy savings (kWh) and resulted in a realization rate of 102 percent.

Participant ID 3-1-0-1-30481: The project was a strategic energy management (SEM) program at a manufacturer that completed low-cost and no-cost improvements and behavioral adjustments and claimed savings through a measurement and verification (M&V) analysis of consumption. During the desk review, the EM&V team adjusted the energy savings methodology to incorporate weather variables that better modeled the facility's energy consumption and demand. These adjustments increased peak demand reduction (kW) and resulted in a realization rate of 269 percent. The adjustments also increased energy savings (kWh) and resulted in a realization rate of 394 percent.

Participant ID 3-1-0-1-30498: The project was a high school that installed interior and exterior *LED lighting* and an *air-cooled chiller* to replace existing lighting and a chiller. During the desk review, the EM&V team adjusted the installed wattages of a couple lights to match DLC-rated values. The wattage and installed controls of two field adjusted lighting output fixtures were also adjusted to follow the 2024 TRM methodology. These adjustments increased peak demand reduction (kW) and resulted in a realization rate of 101 percent. The adjustments also increased energy savings (kWh) and resulted in a realization rate of 102 percent.

Participant ID 3-1-0-1-30503: The project involved installing *LED lighting* in a parking garage to replace fluorescent lighting. During the desk review, the EM&V team adjusted the installed wattage of one light to match DLC-rated values. This adjustment increased peak demand reduction (kW) and resulted in a realization rate of 104 percent. The adjustments also increased energy savings (kWh) and resulted in a realization rate of 104 percent.

Participant ID 3-1-0-1-30625: The project involved a new construction high school installing energy-efficient *HVAC* and *lighting* equipment. During the desk review, the EM&V team adjusted the installed wattages of several lights to match DLC-rated values. The adjustments decreased peak demand reduction (kW) and resulted in a realization rate of 80 percent. The adjustments also decreased energy savings (kWh) and resulted in a realization rate of 92 percent.

Participant ID 3-1-0-1-30646: The project was an SEM program at a university that completed low-cost and no-cost improvements and behavioral adjustments and claimed savings through an M&V analysis of consumption. During the desk review, the EM&V team adjusted the energy savings methodology to incorporate normalized weather files in the baseline and performance period regression models. These adjustments decreased peak demand reduction (kW) and resulted in a realization rate of 75 percent. The adjustments also decreased energy savings (kWh) and resulted in a realization rate of 72 percent.

Participant ID 3-1-0-2-30791: The project involved a new construction hotel installing energy-efficient *HVAC* and *lighting* equipment. During the desk review, the EM&V team adjusted the outdoor zone from *Zone 4* to *Zone 3* because it is located in a standard commercial area, not the high activity intensity of Zone 4. The adjustment decreased energy savings (kWh) and resulted in a realization rate of 98 percent.

Documentation Score

The EM&V team was mostly able to verify key inputs and assumptions for the nine projects that underwent desk reviews because sufficient documentation was provided for the sites. Project documentation included M&V plans, invoices, Qualified Products List (QPL) qualifications or Air Conditioning, Heating and Refrigeration Institute (AHRI) certifications, equipment specification sheets, pre-inspection and post-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. However, some *lighting* projects included invoices that did not show quantities and model numbers for all lighting products installed at the site or did not provide all the DLC/ENERGY STAR® certifications and specification sheets. One SEM project reviewed had a calculator that did not include hourly weather data, which should be available for most projects, and M&V plans that did not fully list prior capital improvement projects. Overall, the EM&V team was satisfied with the project documentation provided and assigned a program documentation score of *good*.

- **Recommendation**: Document the available energy consumption meter data during the measurement period for SEM or M&V projects. This includes the consecutive monthly billing data and all available advanced hourly consumption meter data.

2.7 DETAILED FINDINGS—RESIDENTIAL

2.7.1 Residential SOP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings(kWh)	Evaluated energy savings (kWh)	Realization rate (kWh)	Program documentation score
8.4%	2,210	2,210	100.0%	10.0%	4,606,241	4,606,241	100.0%	Good

Completed desk reviews*
2

*Confidence intervals are not reported at the utility program level due to the small sample sizes.

The PY2024 Residential SOP evaluation efforts focused on desk reviews. The number of sampled and completed desk reviews for this program is listed above. The desk reviews were completed to check that the measure data and documentation collected by contractors aligned correctly with that in the tracking system and that savings were calculated in accordance with the TRM.

The EM&V team adjusted the claimed savings for both projects evaluated. Both projects had an adjustment of less than five percent compared to the originally claimed savings. ETI accepted the evaluated results and matched the claimed savings to the evaluation for all projects; therefore, the final program realization rate is 100 percent. Further details of the EM&V findings are provided below:

Participant ID 29554: The energy efficiency project consisted of *advanced power strips* (*APS*), *duct sealing*, and *LED lighting* measures. During the desk review, the EM&V team determined that the slight adjustment in savings was due to rounding. The adjustment resulted in a realization rate that rounded to 100.0 percent for both demand reduction (kW) and energy savings (kWh).

Participant ID 30845: The energy efficiency project consisted of the installation of *ceiling insulation.* During the desk review, the EM&V team determined the slight adjustment in savings was due to rounding. The adjustment resulted in a realization rate of 99.8 percent for demand reduction (kW) and 100.0 percent for energy savings (kWh).

Documentation Score

The EM&V team verified most key inputs and assumptions, including the project scope, test results, and equipment specifications for all sampled projects that underwent desk reviews.

Project documentation included the invoice, field report, nameplate photos, *APS* location photos, and photos of the pre- and post-CFM measurements. However, the tracking system made several assumptions that were not documented, including the blower motor type, blower power factor, and fan curve. The photos showed that the *APS*s were installed; however, they did not show the products connected to the *APS*s. Also, one *APS* had only one device connected to it. Overall, despite the documentation shortfalls, the level of sufficient documentation remained above 90 percent, and the EM&V team assigned a program documentation score of *good*.

2.7.2 Residential Solutions MTP

Program contribution to portfolio savings (kW)	Claimed demand reduction (kW)	Evaluated demand reduction (kW)	Realization rate (kW)	Program contribution to portfolio savings (kWh)	Claimed energy savings(kWh)	Evaluated energy savings(kWh)	Realization rate (kWh)	Program documentation score
21.8%	5,733	5,733	100.0%	13.2%	6,109,730	6,109,730	100.0%	Good

Completed desk reviews*
6

*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 PY2024 Residential Solutions MTP evaluation efforts focused on desk reviews of the ETI Distributed Products component and a census review for the Residential Demand Solutions component.

ETI Distributed Products Component

For the ETI Distributed Products component, the number of sampled and completed desk reviews for this program is listed above. The desk reviews were completed to check that the measure data and documentation collected by contractors aligned correctly with that in the tracking system and that savings were calculated in accordance with the TRM.

The EM&V team adjusted the claimed savings for the one project evaluated for the ETI Distributed Products component. The adjustment was less than five percent compared to the originally claimed savings. ETI accepted the evaluated results and matched the claimed savings to the evaluation for all projects; therefore, the final program realization rate is 100 percent. Further details of the EM&V findings are provided below:

- **Participant ID 32666:** The energy efficiency project included the replacement of two burnt-out central *air conditioners* at a single-family home. During the desk review, the EM&V team could not determine the savings discrepancy between the claimed and evaluated savings. Overall, the adjustments resulted in project-level realization rates of 99.9 percent and 100.1 percent for demand reduction (kW) and energy savings (kWh), respectively.

Documentation Score for the ETI Distributed Products Component

The EM&V team verified most key inputs and assumptions, including the project scope, baselines, and equipment specifications for the sampled project with a desk review. Project