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Public Utility Commission of Texas

TO: Energy Efficiency Implementation Project Participants and Interested Persons

FROM: Therese Harris, Infrastructure Division

DATE: February 7, 2022

RE: Project No. 38578, *Energy Efficiency Implementation Project under 16 TAC §25.181*(q) Draft Volume 5, Texas Technical Reference Manual Version 9.0

Attached is the Texas Technical Reference Manual (TRM) Version 9.0, Volume 5, Implementation Guidance, approved by Commission staff as required under 16 TAC §25.181(o)(6)(C).

TRM Version 9.0, Volumes 1 - 4, were approved by Commission staff as required under 16 TAC §25.181(o)(6)(C). TRM Version 9.0, Volume 4, was effective December 1, 2021 and Volumes 1-3, was effective January 1, 2022.

On March 11, 2021, Commission staff hosted an energy efficiency implementation project (EEIP) meeting and requested at the meeting that proposed updates to the TRM be submitted by May 1, 2021.

On March 12, 2021, Commission staff provided a reminder notice to the EEIP email listserv of the May 1, 2021 deadline for submission of proposed TRM updates.

On October 12, 2021, Commission staff hosted a second EEIP meeting and provided the draft TRM Volumes 1 - 4 for review with comments due by October 31, 2021. The draft was filed in this project and a link to the draft was sent to the EEIP email listserv.

On November 2, 2021, Commission staff provided the Commission's Evaluation, Measurement and Contractor's update to the TRM 9.0 commercial load management methodology found in TRM Volume 4 for review and comments due by November 16, 2021. The draft was filed in this project and a link to the draft was sent to the EEIP listserv.

On December 8, 2021, Commission staff provided the draft TRM Volume 5.0 for EEIP review and comments due by December 22, 2021. The draft was filed in this project and distributed to the EEIP listserv. No additional edits or comments were received. The approval date for Volume 5 was January 1, 2022.

Public Utility Commission of Texas

Texas Technical Reference Manual

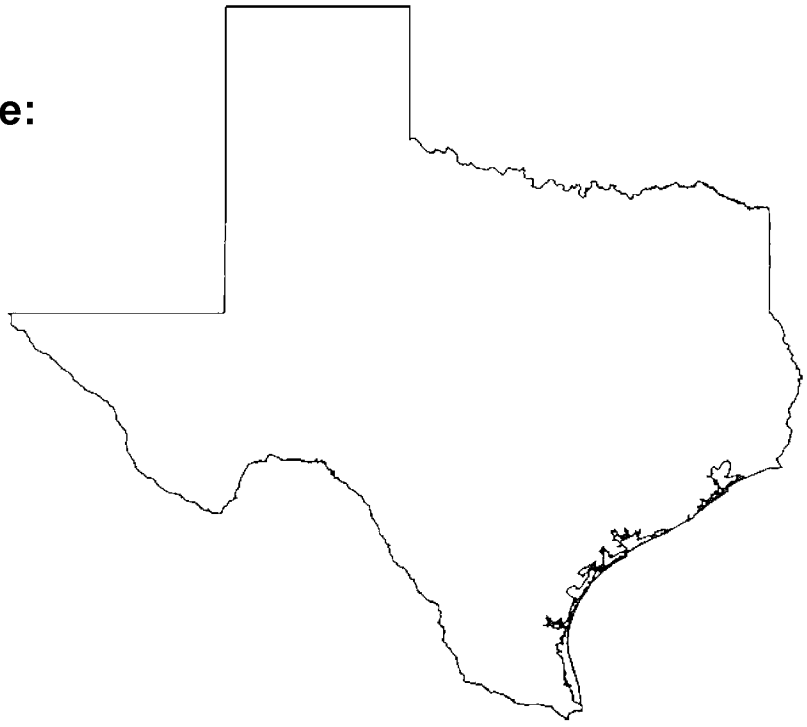
Version 9.0

Volume 5: Implementation Guidance

Program Year 2022

Last Revision Date:

December 2021



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Acknowledgments

The Texas Technical Reference Manual (TRM) is maintained by the Public Utility Commission of Texas' (PUCT) independent evaluation, monitoring, and verification (EM&V) contractor, Tetra Tech.

This version of the TRM was primarily developed from program documentation and measure savings calculators used by the Texas electric utilities and their energy efficiency services providers (EESPs) to support their energy efficiency efforts, and original source material from petitions filed with the Public Utility Commission of Texas by the utilities, their consultants, and EESPs such as Frontier Associates (TXu 1-904-705), ICF, CLEAResult, and Nexant. Certain technical content and updates were added by the EM&V team to provide further explanation and direction as well as consistent structure and level of information.

TRM Technical Support

Technical support and questions can be emailed to the EM&V team's project manager (lark.lee@tetratech.com) and PUCT staff (therese.harris@puct.texas.gov).

1. INTRODUCTION

This volume of the technical reference manual (TRM) contains evaluation, measurement, and verification (EM&V) team recommendations regarding program implementation that may affect claimed savings. The EM&V contractor drafts guidance memos for the electric utilities' energy efficiency programs to provide clear direction on calculating or claiming savings. Guidance memos are consistent with the Energy Efficiency Rule P.U.C. SUBSET. R. 25.181 (16 TAC §25.181) and the TRM but address areas where additional direction is needed for consistency and transparency across utilities' claimed savings from the programs. This volume compiles the various guidance memos produced during the EM&V effort.

Implementation guidance contained in this volume is summarized by sector below:

Commercial

- Project documentation
- Additional savings
- New construction

Residential

- Low-Income Income-Eligible verification forms

Cross-Sector

- Load management programs
- Commercial and residential HVAC split-systems without AHRI certification
- Measurement and verification claimed savings
- Upstream/midstream program cross-sector savings
- Data model

2. COMMERCIAL

2.1 PROJECT DOCUMENTATION

This section summarizes the progress and current status of the evaluation, measurement, and verification (EM&V) team's assessment of the utilities' efforts to meet and conform to project documentation standards and provides additional guidance for areas still in need of improvement as part of the annual EM&V statewide report.

2.1.1 Background

For all energy efficiency programs, critical inputs and methodologies needed to replicate claimed savings calculations are captured in a combination of the TRM, program manuals, program tracking data systems, and individual project documentation. Project-level documentation is critical to the transparency of claimed savings and facilitates efficient third-party EM&V at the project, program, and portfolio levels. This section specifically addresses individual project documentation needs; individual project documentation includes all relevant site-specific details (e.g., audit reports, worksheets, program applications, invoices, project overviews and descriptions, photos, installation reports).

We provide detail on documentation best practices currently incorporated into many Texas programs (based on information gathered during PY2014 evaluation activities) and recommendations for improvement. The objective is to support the utilities in achieving industry-standard degrees of documentation rigor, clarity, and efficacy; these standards are necessary to organize and manage such information to yield transparency and facilitate efficient and effective evaluation.

2.1.2 Additional Documentation Guidance

In this section, we provide guidance geared specifically to help improve CSOP program documentation scores. However, the guidance may also be used to support the continued improvement of program documentation for other programs.

Recommendation 1: Clearly organize project files.

Organized project files are critical for many reasons, including:

- clear and transparent reporting of documentation used to support claimed savings,
- ease of identification of related program project files that may not have made the data transfer,
- backup support for information within tracking data systems,
- support custom parameter usage, and
- support deviation or enhancement of methodologies to gain greater accuracy.

An important part of organized project folders, files, and documents is clear naming conventions; this helps keep files organized and improves consistency in document placement and locating critical documents to support the EM&V efforts. Below are some examples of the difficulty the EM&V team has had with project-level folders and files received:

- The project folders often contained inconsistencies regarding file and document names, locations, and contents. Files with similar names often contained disparate information, while seemingly identical files contained dissimilar information.
- The project folders included multiple copies of project documents. Locating the final documents used to support the reported savings proved difficult for many projects. For example, when numerous photos are provided, locating those that support the key savings assumptions is difficult. Distinguishing between pre- and post-equipment photos was also, at times, difficult.
- Project folders contained documents labeled as verification reports when they were still actually measurement and verification (M&V) plans with no completed verification data. Such plans provided the methodology to verify project savings estimates yet did not document that project savings estimates were complete.

The project file organization example below provides a list of potential project subfolders and documents that would be ideal for collecting information to determine whether a pre- and post-inspection has been completed. Many documents listed are key elements necessary to support custom project assumptions and review.

Table 1. Project File Organization Example

Stage	Retrofit and new construction
Pre-project*	• Pre-project calculator • Plans (e.g., drawings, fixture list) • Pre-project inspection photos • Pre-project audit reports • Project descriptions, sponsor agreements, etc.
Post-project	• Post-project inspection calculator • Post-inspection field notes • Post-project inspection photos • As-built plans • Installation reports
Supporting documents	• Calculators (old and archived) • Spreadsheets or other backup documentation (especially those to support custom calculations) • Specifications, cut sheets, certifications • Check requests to utility • Partner letters or savings summaries • Material purchase orders and invoices • Email communication • M&V plan for custom key input assumptions (e.g., operating hours) or custom savings methodologies
Final documents**	• Final calculator • Final M&V plan for custom projects • Final verification documents for custom projects • Final project notes

* New construction projects may not necessarily include these documents.
** These documents also support EM&V on-site minimum requirements for data collection needs.

Recommendation #2: Use photo verifications to support key measure assumptions.

When on-site fieldwork is complete—whether by trade allies, implementation staff, or utility staff—representative photos can help document and support key measure attributes and assumptions. Most programs include some form of photo documentation to support projects. Some programs in Texas even use tablets in the field whereby the project site and equipment photos are taken by trade allies and automatically uploaded to tracking systems and project folders. The table below outlines how photos can support project documentation for some of the most common commercial project types (i.e., lighting- and HVAC-based projects).

Table 2. Project Verification Applications and Examples

Stage	Lighting projects*	HVAC projects
Pre-project	• Existing lighting system types (e.g., lamp, ballast, fixture) • Existing lighting equipment quantities • Existing control type • Existing lighting equipment operability and inoperability • Building type • Air conditioning type	• Existing HVAC equipment types and sizes • Existing HVAC equipment quantities • Existing HVAC equipment operability and inoperability (e.g., setpoint, load display shots) • Building type
Post-project	• New lighting system types (e.g., lamp, ballast, fixture) • New lighting equipment quantities • New control type • New control schedule automation (e.g., building and lighting automation system screenshots) • New lighting equipment operability • Building type • Air conditioning type	• New HVAC equipment types and sizes • New HVAC equipment quantities • New HVAC equipment operability (e.g., setpoint, load display shots) • Building type

* Note that some of these project parameters may not be possible to capture for all lighting quantities for large lighting projects. In these cases, alternative project documentation types may be preferred.

Recommendation #3: Include clear descriptors of measure type as well as quality assurance/quality control (QA/QC) inspections in the tracking system.

Different projects (e.g., retrofit versus new construction projects, inspected versus not inspected sites) have different documentation needs. Capturing participant descriptors can aid evaluation efforts immensely, keep cost burdens low, and facilitate transparency.

Many commercial programs continue to track and describe measure-level savings at the measure-category level (or savings calculator level) instead of the measure-specific level. For example, the tracking system will document the savings associated with a lighting project captured within a lighting calculator (e.g., Lighting Equipment Survey Form version 9.02). However, the calculator includes many different lighting fixture types, effective useful lives, and related savings. Tracking project data at the measure-specific level (e.g., integrated-ballast LED lamps, linear fluorescent, lighting controls) rather than the measure-category level will improve the data's transparency to readily assess measure types and individual claimed savings. This structure also supports ease for calculating cost-effectiveness.

As another example, new construction projects may not have pre-inspection forms or field notes. In contrast, retrofit projects may have many pre-project documentation types (e.g., pre-project calculator, pre-project plans, pre-inspection photos). Providing information regarding "greenfield" or complete demolition and rebuild projects as a differentiator from retrofits and small remodels upfront is a valuable population segmenting descriptor. When tracking systems use descriptors like these, they become a valuable screening tool; they can inform evaluators not to request certain documentation (that may not exist), which can misdirect time and resources. It also allows better budgeting and allocation of resources, improving overall efficacy. Another example is those sites or program participants that receive internal QA/QC versus those that do not. Some programs have modified their tracking systems to begin logging this data and provide a list as part of the EM&V data collection process; this list notifies the EM&V team that a site will not have specific project-level documentation because it was not site-inspected or verified, etc.

Recommendation #4: Complete M&V plans and reports needed for custom projects.

The industry standard for M&V plans and reports is based on the guidelines of Efficiency Valuation Organizations (EVO) International Performance Measurement and Verification Protocol (IPMVP). IPMVP Volume I EVO 10000-1:2012 is the current version available; it includes clear recommendations for meeting the minimum information requirements for complying with IPMVP protocols, including those specific to the M&V plan contents summarized in Chapter 5 and M&V reporting summarized in Chapter 6.

Utilities and their implementation contractors are encouraged to engage and collaborate with the EM&V team to discuss issues and options, obstacles, and possible solutions for M&V plans as new technologies or offerings become part of the Texas portfolios.

2.2 INCENTIVES AND CLAIMED SAVINGS

This section provides guidance on claiming savings when a financial incentive does not cover all project savings during the implementation of energy efficiency measures.[1]

2.2.1 Background

To meet various program objectives, it is common practice for utilities to set a ceiling or cap for the financial incentive any one energy efficiency service provider (EESP) or project can receive. These "individual incentive caps" are set as an overall percentage of the total incentive budget or as a dollar amount. The established caps vary by utility and are noted in their program manuals.

Individual incentive caps are different from a "set incentive." During the application phase, utilities calculate a project incentive based on pre-installation estimated savings; reserving incentive funds are at that time. Once the project is complete, there may be some variation in the initial agreed-upon savings estimates while setting the incentive and the actual post-installation savings. This variation is due to changes in efficiency levels, quantities, or equipment types that take place between the project planning phase and the project implementation phase.

2.2.2 Considerations

In the case of incentive caps, the EM&V team has some concerns regarding claiming all project savings when reaching an incentive cap. Since all project savings are not being incentivized at the project planning phase, claiming all project savings may result in increased free-ridership. A free-rider is "a program participant who would have implemented the program measure or practice in the absence of the program." (16 TAC § 25.181 (c) (24)).[2]

In the case of set incentives, the EM&V team has some concerns that spillover could be claimed incorrectly during post-project inspections. Spillover is "reductions in energy consumption and demand caused by the presence of an energy efficiency program, beyond the program-related gross savings of the participants and without financial or technical assistance from the program." ((16 TAC § 25.181 (c) (53)). Spillover is a component of net savings, and claimed savings are based on gross savings. Therefore, spillover should not be included in claimed savings if found on-site during post-project inspections.

[1] This guidance does not apply to behavioral, code or other market transformation programs where the primary program strategy is technical assistance and/or education that results in behavioral or operational changes for energy and demand savings.

[2] In addition to the incentive caps or set incentives at the individual EESP or customer-level, utilities may also set caps on incentives a customer can receive at the measure level. For example, a utility may cap lighting incentives at 50 percent of the total project incentive. The EM&V team does not have the same concerns regarding free-ridership for measure-level caps and the recommendations in this memo do not apply to these situations.

2.2.3 Recommendations

Establish greater consistency in the treatment of projects where claimed savings exceed incentive amounts and most accurately represent the savings results from these projects. The EM&V team recommends utilities either only claim the savings from the incentivized measures or the utilities apply the most updated net-to-gross (NTG) research[3] to the total project savings for the claimed savings[4] as follows:

For projects where the *claimed savings are more than 10 percent higher than the "set incentive*," the NTG ratio inclusive of free-ridership and spillover should be applied to the total project savings. No NTG ratio should be applied for projects where the set incentive and claimed savings differ by 10 percent or less to allow for normal variation between project planning and implementation.

For projects where *claimed savings exceed the "incentive cap" savings up to 20 percent of incentivized savings*, the NTG ratio inclusive of free-ridership and spillover should be applied to the total project savings.

$$NTG\ ratio_{projects\ exceeding\ set\ incentive} = 1 - Free\ Ridership + Spillover$$

Equation 1

For projects where total *claimed savings exceed the "incentive cap" by more than 20 percent of incentivized savings*, the NTG ratio only accounting for free-ridership should be applied to the total project savings. Applying the NTG ratio that is also inclusive of spillover to projects that exceed incentive amounts by a percentage of incentivized savings this large would likely result in double-counting spillover.

$$NTG\ ratio_{projects\ exceeding\ incentive\ cap} = 1 - Free\ Ridership$$

Equation 2

The PY2017 EM&V research updated NTG ratios for the commercial standard offer (CSOP) and market transformation programs (CMTPs). The PY2017 NTG research accounts for both free-riders and spillovers. The CSOP NTG ratio is 91 percent for kWh and 89 percent for kW. The CMTP NTG ratio is 86 percent for kWh and 99 percent for kW.

Table 3. PY2017 Commercial Statewide NTG Ratios by Program Type

Program type/weighting	Free-ridership (%)	Spillover (%)	NTG (%)
CSOP kWh	33	24	91
CSOP kW	32	21	89
CMTP kWh	36	22	86
CMTP kW	33	32	99

[3] The use of a net to gross adjustment to account for free-riders is addressed in § 25.181 (e)(5)(B)(ii).
[4] This recommendation does not apply to behavioral, code or other market transformation programs where the primary program strategy is technical assistance and education that results in behavioral or operational changes for energy and demand savings.

Projects might have multiple measures with different effective useful lives (EULs) that are taken into account when calculating lifetime savings; for these cases, the EM&V team provides the following additional guidance for adjusting claimed savings that exceed incentive levels:

1. Determine the total calculated savings by EUL.
2. Determine the percent of total project savings attributed to each EUL.
3. Adjust savings as recommended above.
4. Distribute adjusted savings to various project EULs using the percentages calculated in step 2.

The following is an example of a project with 50 kW and 50,000 kWh of calculated savings. An RTU HVAC project with a 15-year EUL attributes twenty percent of those savings, and a chiller project with a 25-year EUL attributes the remaining 80 percent. The adjusted savings are 40 kW and 40,000 kWh. Those adjusted savings would be attributed to each EUL as follows:

1. 40 kW x 20% = 8 kW and 40,000 kWh x 20% = 8,000 kWh attributed to the 15-year EUL
2. 40 kW x 80% = 32 kW and 40,000 kWh x 80% = 32,000 kWh attributed to the 25-year EUL

2.3 NEW CONSTRUCTION

This section provides additional guidance to select the appropriate baseline for commercial new construction projects.

2.3.1 Overview

Utility programs include incentives for a variety of projects applicable to commercial new construction such as lighting, HVAC, and roofs. To effectively implement new construction energy efficiency projects, utility programs need to reach decision-makers during the project design phase. However, it is common for several years to pass between the project design phase and project completion in commercial new construction. Since baselines change, this situation raises the question of what baseline utilities should use commercial new construction projects to claim savings. For example, in PY2016, Texas' new construction baseline was IECC 2009 based on the state code in effect at that time. In PY2018, the baseline is now IECC 2015 based on the state code in effect.

2.3.2 Recommendation

For commercial new construction projects, utilities should use the building permit date to determine the applicable version of the Texas TRM and baseline to calculate savings.

3. LOW-INCOME

3.1 LOW-INCOME INCOME-ELIGIBLE VERIFICATION FORMS

This section provides implementation recommendations for the Program Year (PY) 2022 eligibility verification for low-income and hard-to-reach programs.

3.1.1 Background

Texas utilities provide energy efficiency services to low-income customers through a combination of hard-to-reach and low-income programs as specified in 16 Tex. Admin. Code (TAC) § 25.181, relating to the energy efficiency goal. All regulated Texas electric utilities are required to achieve no less than 5 percent of their total demand reduction goal through programs serving hard-to-reach customers (16 TAC § 25.181(e)(3)(F)). In addition, the ERCOT utilities are required to spend no less than 10% of each program year's energy efficiency budget on a targeted low-income efficiency program (16 TAC § 25.181(r)). The qualifying income level of 200% federal poverty level is the same for hard-to-reach and low-income programs though the programs are implemented differently.

The utilities use program eligibility certification forms maintained by the PUCT on their website. The forms differ by single-family and multi-family, but both include a way to qualify for the programs through other low-income programs and services (Category 1) as well as through self-reported income (Category 2). The PUCT has revised the income eligibility annually based on updated federal poverty level information, but the forms have not had major changes for over a decade. Due to the importance of these forms in determining program eligibility, PUCT Staff and the EM&V team agreed to incorporate the forms into Volume 5 of the Texas Technical Reference Manual (TRM) starting with program year (PY) 2022. Forms will be updated as part of the annual TRM update process. As part of integrating the eligibility certification forms into the TRM, PUCT Staff and the EM&V team worked with the utilities to review the forms and certification processes in-depth. Appendix A contains the Single-Family and Multifamily Income Eligibility for Full-Incentive Energy Efficiency Services forms.

The objectives of the in-depth process review were to, "Revise low-income/hard-to-reach eligibility verification to increase the confidence program services are going to intended customers, improve program outreach and address participation barriers, and develop efficient administration processes," as presented at the March 2021 Energy Efficiency Implementation Project (EEIP) meeting. The PY2022 TRM forms expand Category 1 options to support streamlined participation through an expanded list of qualifying programs and services (1A), direct social service or community action agency qualification (1B), and geographic qualification (1C). If a customer does not qualify through any of the three options, income information may be used to determine eligibility (Category 2). Both Category 1A and Category 2 require customers to submit supporting documentation. Because Category 2 requires income information, all parties recognize this information can be more sensitive for customers to provide and for service providers to store securely although all personal identifying information (PII) should be redacted, except name and address of customer. Given concerns about income information as a participation barrier, Category 1 is the preferred method to verify customer eligibility whenever possible.

3.1.2 Quality Assurance/Quality Control (QA/QC)

Utilities should audit a minimum of 10% of all program year projects submitted through each category (1A, 1B, 1C and 2) to ensure the processes are working correctly and the required documentation was submitted and verified to be correct. In the cases where utilities find an error in the process or documentation during their QA/QC processes, utilities should identify a solution to remedy the error. The EM&V team encourages utilities to integrate the program eligibility audit into their existing QA/QC practices to the extent possible to facilitate the most streamlined and effective implementation of this recommendation.

While utilities are not required to store customer documentation on their systems audited as part of the QA/QC process, they should provide contact information of the auditor who has verified the documentation through a visual inspection.

While audit processes can differ to best integrate with utilities' current QA/QC processes, the following are recommended practices by category:

- Category 1A: Verify form is completed and supporting program documentation was provided
- Category 1B: Verify form is completed and signed by social service or community action agency
- Category 1C: Verify address of serviced home is within one of the two qualifying geographic designations; forms are not required for geographical qualification under 1C as long as the relevant information is in the tracking data (service address, geographic qualifier)
- Category 2: Verify form is completed and supporting income information was submitted to service provider/landlord/property manager

Utilities can either conduct the audits themselves or hire a third-party to do so on their behalf. The EM&V team will request a summary of audit results at the end of each program year. The audit result summary should identify solutions to address any errors found during the audit.

A. Program Tracking and Documentation

Utilities should add a field(s) to their program tracking data to clearly track how a low-income and hard-to-reach participant was qualified for the program (Category 1A, 1B, 1C and 2). This will allow both the utility and the EM&V team to sample projects from each category for auditing purposes.

For Category 1A, 1B and 2, all completed forms and supporting documentation, if applicable, should be stored for all projects. Forms are not required for geographical qualification under 1C as long as the relevant information is in the tracking data (service address, geographic qualifier). Forms and supporting documentation should be maintained for a minimum of 24 months.

B. Claiming Master-Metered Savings

Because master-metered complexes are a commercial rate class, costs and savings should be claimed in the commercial sector. However, if the master-metered complex qualifies for hard-to-reach or low-income program services, these costs and savings may be counted toward the utilities' goals (5 percent of total demand reduction goal for hard-to-reach customers (16 TAC §

25.181(e)(3)(F)), and no less than 10% of each program year's energy efficiency budget on a targeted low-income efficiency program (16 TAC § 25.181(r)).). To avoid double-counting, master-metered projects counted toward the goal should be a separate line item.

3.1.3 New Program Strategies

Some utilities are working on partnerships to distribute energy efficiency measures to low-income and hard-to-reach customers such as distributing LEDs at food banks. In these cases, utilities should meet with the EM&V team to agree on an approach for verifying customer eligibility and claiming savings, which will then be presented to Commission Staff. The goal of these discussions is to support the new strategies in keeping with the overall objective of the in-depth process review stated above.

4. CROSS-SECTOR

4.1 LOAD MANAGEMENT PROGRAMS

This section summarizes guidance from the EM&V team on two load management issues raised by one or more utilities during PY2014–PY2015 EM&V: (1) rounding of demand impacts and (2) meter issues.

4.1.1 Rounding

During the EM&V contractor's evaluation efforts on commercial load management programs, the EM&V contractor has found some differences in rounding in the commercial load management programs' demand impacts. These rounding differences are minor and are not a concern in the accuracy of the reporting of impacts. However, in response to a request for guidance to address rounding consistently, the EM&V team recommends utilities round commercial load management impacts consistently with how incentives are awarded, which is at the customer level.

4.1.2 Meter Issues

Utilities are responsible for calling a test event each program year for the load management programs. The test event has several purposes, including assuring the proper functioning of program meters. Utilities are responsible for maintaining working program meters.

Commercial load management programs. Without complete interval meter data to calculate the baseline and event impacts, savings may not be claimed. However, if a customer has alternate interval meter data available, it can be used in lieu of program meter data to calculate claimed savings. Using customer meters for the load management program savings requires that the data meet interval metering requirements presented in the version of the Texas TRM for the program year. In general, it is recommended that customer-owned interval meters should only be used if utility interval meters fail. Data from each meter should not be combined for claiming savings for a specific event and must cover both the event day data and the baseline data.

The EM&V team requests utilities notify them in these circumstances. All calculations and data stemming from the use of customer meters should be provided as part of the EM&V data request, similar to using program meter data. If requested by the utility, the EM&V team is available to review the use of customer meter data in advance of a program claiming savings from customer meters.

Residential load management programs. If there are random, non-systematic errors in smart meter data for less than one percent of total participants, the average savings from a similar group of participants (e.g., single-family, multifamily) may be used for claimed savings if: (1) the control event technology and intervention are the same and (2) the control event intervention can be confirmed based on standard program practices for event confirmation.

The EM&V team requests utilities notify them in these circumstances to discuss the approach for determining and applying average savings for those customers with incomplete meter data.

4.2 COMMERCIAL AND RESIDENTIAL HVAC SPLIT-SYSTEMS WITHOUT AHRI CERTIFICATION

This section provides guidance to determine efficiency levels of eligible HVAC split systems that do not have AHRI certification. The methodology outlined in this memo can be used starting in PY2021.

Constructing AC and heat pump systems can be done using outdoor units and indoor units from different manufacturers; not all these combinations are certified by AHRI. Savings should be calculated and reported consistently across utilities and in agreement with industry-standard practice and the Energy Efficiency Rule 16 TAC § 25.181.

Projects in PY2020 are affected by changes in supply chains due to COVID-19, leading to project equipment and timeline adjustments; it is expected that supply chain issues will continue into PY2021. In addition to the AHRI certification, the process outlined in this guidance memo may guide HVAC project efficiency calculations impacted by supply chain issues. Coordination with the evaluation team for alternate applications of the process is recommended.

4.2.1 Background

Texas TRM 7.0 allows air conditioning and heat pump split systems to be either AHRI-certified or listed on the DOE Compliance Certification Management System (CCMS). Split systems consist of an outdoor unit and an indoor unit, which can be made by the same manufacturer or separate manufacturers. The system's efficiency and size are driven primarily by the outdoor unit, although various indoor units can slightly affect the system efficiency.

Texas TRM 8.0 clarifies the allowable efficiency levels for outdoor and indoor unit pairs listed in the DOE CCMS and not AHRI-certified. The TRM states that the claimed efficiency for these non-certified pairs should not exceed the AHRI-certified pairs' average. The guidance below provides an example to identify the not-to-exceed value.

4.2.2 Guidance

The following guidance should be applied if paired outdoor and indoor HVAC units are not in the AHRI certification list and only have DOE CCMS testing results. In that case, the high-efficient condition's capacity and efficiency shall not exceed the average of the AHRI-certified pair listing for the matching outdoor (condenser) unit. The DOE CCMS listing provides documentation of the results that are on the AHRI certification listing and can be downloaded and filtered based on listings that use a similar condenser and various indoor units.

The following is an example scenario designed to direct the user on interpreting the guidance in this memo.

Example: A split system is listed in DOE CCMS and is not AHRI certified.

Analysis scenario: A high-efficiency split-system heat pump is installed with a Goodman GSZ16 outdoor unit (condenser) and a third-party indoor unit (air handler). The specific pair is not listed in the AHRI database.

Step 1: Access the DOE CCMS[5] and select the appropriate measure category for the product pair. In this example, it is the *Air Conditioners and Heat Pump – Central* measure category.[6] Search for the critical component to the system's efficiency (the outdoor unit (condenser)), with model number GSZ160241B*. The * is added near the end of the model number to allow for different condenser unit variations.

Step 2: Identify the specific air handler match and record the specifications from the DOE CCMS. In this example, the Airmark GES244 indoor unit pairs with the Goodman GSZ160241B outdoor unit with the following specifications:

Table 4. Specification of an Example Split System

Cooling capacity (Btu/h)	24,000
Heating capacity (Btu/h)	24,000
SEER	16
EER	13
HSPF	9
Link to FTC Energy Guide label	(blank)*

*(blank) indicates the pair is not listed in the AHRI database.

The *Link to FTC Energy Guide Label* column will identify other certifications obtained by this equipment pair. In the example, the column is blank, indicating it is not listed in the AHRI database.

Step 3: Filter the DOE CCMS database to match the specification of the installed pair. Filter the *product code description*, *cooling capacity*, and *Link to FTC Energy Guide Label* to find a representative sample of similar AHRI-listed units. Table 5 details the filter selected for the example. Figure 1 shows the filter on the CCMS database interface.

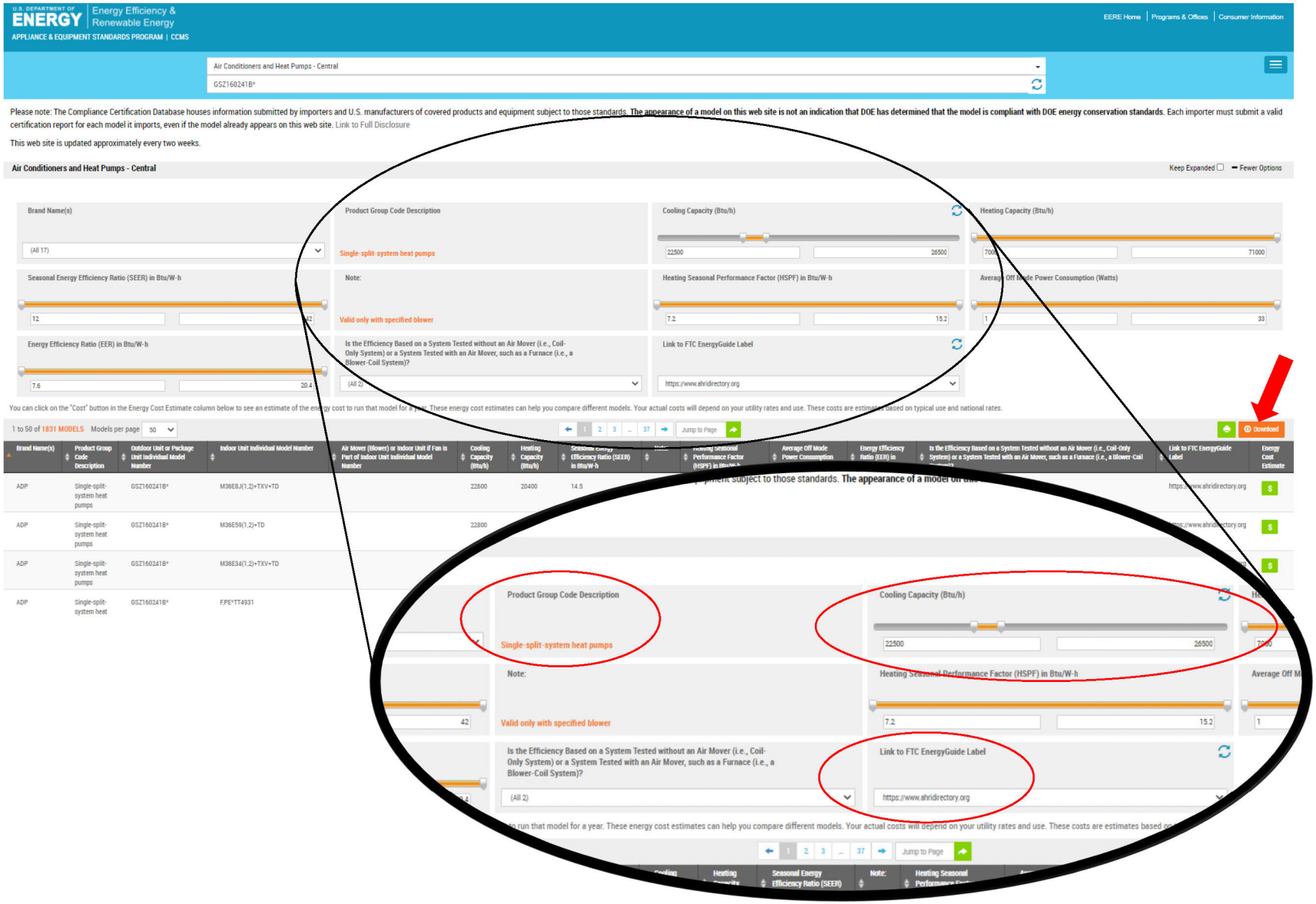
Table 5. Example DOE CCMS Filter to Similar Equipment

Product code description	Single-split-system-heat-pump
Cooling capacity	22,500 to 26,500
Link to FTC Energy Guide Label	www.ahridirectory.org

[5] DOE Compliance Certification Database. https://www.regulations.doe.gov/certification-data/#q=Product_Group_s%3A*

[6] Note that the measure categories are based on technology and not use. The example is for a split system, but the category in the database is central system because the condenser technology meets that definition.

Figure 1. Example Filter of DOE CCMS Database

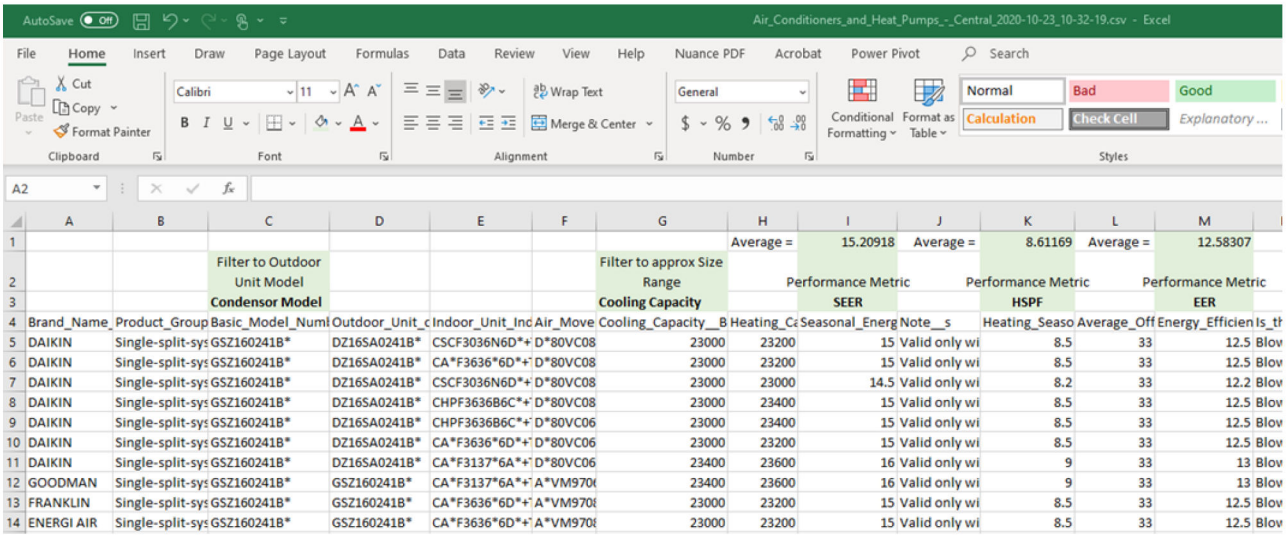


Step 4: Download the filtered database using the *download* button on the right side of the screen. A .csv spreadsheet will download. Project documentation should include a copy of the downloaded .csv file with the download date in the file name. Since the DOE CCMS is constantly updated, this file is the record of the DOE CCMS entries on the date of application review.

Figure 2 below shows the downloaded spreadsheet with three rows added above. Rows 2 and 3 identify the filters and the performance metric columns. Column C is the filter to the outdoor unit in Step 1. Column G and Q (not shown) are the filters applied in Step 3.

Columns I, K, and M contain the performance metrics for the filtered products and represent the AHRI-certified performance metrics for similar split-system pairs with the matching outdoor unit (condenser).

Figure 2. Sample Downloaded Spreadsheet with Calculation



	A	B	C	D	E	F	G	H	I	J	K	L	M	
1								Average =	15.20918	Average =	8.61169	Average =	12.58307	
2			Filter to Outdoor Unit Model				Filter to approx Size Range		Performance Metric		Performance Metric		Performance Metric	
3			Condensor Model				Cooling Capacity		SEER		HSPF		EER	
4	Brand_Name_	Product_Group	Basic_Model_Numl	Outdoor_Unit_c	Indoor_Unit_Inc	Air_Move	Cooling_Capacity__B	Heating_Ca	Seasonal_Energ	Note__s	Heating_Seaso	Average_Off	Energy_Efficien	Is_th
5	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CSCF3036N6D*+	D*80VC08	23000	23200	15	Valid only wi	8.5	33	12.5	Blov
6	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CA*F3636*6D*+	D*80VC08	23000	23200	15	Valid only wi	8.5	33	12.5	Blov
7	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CSCF3036N6D*+	D*80VC08	23000	23000	14.5	Valid only wi	8.2	33	12.2	Blov
8	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CHPF3636B6C*+	D*80VC08	23000	23400	15	Valid only wi	8.5	33	12.5	Blov
9	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CHPF3636B6C*+	D*80VC06	23000	23400	15	Valid only wi	8.5	33	12.5	Blov
10	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CA*F3636*6D*+	D*80VC06	23000	23200	15	Valid only wi	8.5	33	12.5	Blov
11	DAIKIN	Single-split-sys	GSZ160241B*	DZ16SA0241B*	CA*F3137*6A*+	D*80VC06	23400	23600	16	Valid only wi	9	33	13	Blov
12	GOODMAN	Single-split-sys	GSZ160241B*	GSZ160241B*	CA*F3137*6A*+	A*VM970(	23400	23600	16	Valid only wi	9	33	13	Blov
13	FRANKLIN	Single-split-sys	GSZ160241B*	GSZ160241B*	CA*F3636*6D*+	A*VM970	23000	23200	15	Valid only wi	8.5	33	12.5	Blov
14	ENERGI AIR	Single-split-sys	GSZ160241B*	GSZ160241B*	CA*F3636*6D*+	A*VM970	23000	23200	15	Valid only wi	8.5	33	12.5	Blov

Column I, K, and M are the DOE CCMS logged values of SEER, HSPF, and EER, respectively. Row 1 uses the *=Average()* function in Microsoft Excel to identify the average performance metrics from the data in the database. Record these values rounded to one decimal point.

Table 6. Average Performance Metrics of Similar Certified Units

SEER (AHRI average)	15.2
EER (AHRI average)	12.6
HSPF (AHRI average)	8.6

Step 5: Identify the performance metrics used for TRM energy efficiency calculations. The installed unit pair's performance metrics for the calculation shall not exceed the similar-sized unit pair's performance metrics in the AHRI database.

Table 7. TRM Calculation Performance Metrics Determination

Performance metric	DOE CCMS (actual)	AHRI certification average	TRM calculation value[7]
SEER	16	15.2	15
EER	13	12.6	12.5
HSPF	9	8.6	8.6

Step 6: Complete the TRM energy savings calculation using the TRM calculation values determined in Table 7.

Include (1) the additional documentation of the original downloaded .csv file and (2) the average efficiency calculation spreadsheet file with the project documentation required in TRM Volume 2 and Volume 3.

[7] TRM calculation was determined using the rounding for EER and HSPF values to matched deemed tables. If the calculator can handle more detail, using the values rounded to the nearest tenth is acceptable.

4.3 MEASUREMENT AND VERIFICATION CLAIMED SAVINGS

This section provides guidance on claiming savings for projects implemented in one program year with measurement and verification (M&V) methodologies across two program years. This guidance aims to balance the level of savings claimed in the same year as the project activities with savings claimed once the M&V is completed.

4.3.1 Introduction

The annual reporting of program savings poses a challenge to accurately estimate impacts when the M&V methodology requires information across program years (such as 12 months of post-project consumption data to see seasonal effects or summer peak metering to estimate kW reductions). Projects extending beyond program years are a common challenge for behavioral programs and complex custom commercial and industrial projects.

Volume 4 of the TRM includes an M&V protocol for behavioral programs based on 12 months of pre-install and post-install data to determine energy savings accurately. Although savings can be estimated through custom calculations, the final amount of energy savings needs to be *trued-up* once all 12 months of post-install data is collected and analyzed. Trueing-up project savings is also common for custom commercial projects where M&V is required across program years. Utilities have employed the standard practice for custom projects of awarding 40 percent of the incentives and claiming 40 percent of the savings in the first program year based on the initially-estimated savings. In the subsequent program year, when M&V post-install data is fully collected and analyzed, the remaining 60 percent, or *trued-up* amount, is awarded and savings claimed. We refer to this as a *40/60* split though the percentage claimed in the second year may be less than or greater than 60.

In addition to these two common examples, this claimed savings guidance could also apply to any program wanting to claim savings through an M&V protocol as opposed to TRM deemed savings.

4.3.2 Recommendation

We recommend a 40/60 split of incentives and claimed savings is employed whenever M&V spans two program years. In other words, award 40 percent of incentives and savings claimed in the first program year—and the true-up, whether it is greater or less than 60 percent—would be awarded and claimed the second program year. The true-up is required, whether it is to claim the remainder of the estimated savings or increases and decreases to the previously claimed energy savings. For example, if a project is estimated to reduce the peak kW by 100 kW, the project should claim 40 kW at project completion. Once the M&V is completed, the full savings may be claimed. For this example, we assume the M&V found the peak demand reductions were 110 kW. The true-up claim would be 70 kW in the second program year instead of the 60 kW as initially estimated in the 40/60 split. However, if the completed M&V analysis instead finds the total peak demand reduction is 30 kW, the true-up claim would be negative 10 kW.

This 40/60 split balances the first program year implementation of the measure and its planned savings with what savings are found actually to be in the second year once M&V is complete.

There may be instances when a utility feels a different balance, such as a 50/50 split, which may be more appropriate. The utility should seek the PUCT EM&V contractor's review and approval of a different split of incentives and claimed savings across program years than the standard recommendation of 40/60 in this guidance section.

4.4 UPSTREAM/MIDSTREAM PROGRAM CROSS-SECTOR SAVINGS

This section provides guidance to calculate and allocate savings at the sector-level for upstream and midstream programs where installation location is not identified. The methodology that was reviewed and approved for use in PY2021 is also outlined.

4.4.1 Background

TRM v8.0 updated methods to calculate and allocate savings for lighting equipment sold through participating upstream and midstream programs. The TRM v8.0 method attempted to simplify the process for equipment sold when installation location is not known, although several unintended consequences require adjustment. The recommendations below apply to programs when installation location must be generalized. If location installation is known at the time of sale, the assumptions for building type and lamp watts from the TRM should be used.

4.4.2 Recommendations

Claimed savings by sector. To account for the cross-over between commercial and residential applications in an upstream or midstream delivery method, the EM&V team recommends that five percent of upstream and midstream lighting program benefits and costs are allocated to commercial customers, with the remaining 95 percent allocated to residential customers. This recommendation replaces the recommendation on page 13 of PY2021 TRM v8 Volume 2 and agrees with the guidance memo put forth by the EM&V team, dated April 28, 2016.

Residential savings. The EM&V team recommends that the calculation methodology outlined in TRM v8.0 Volume 2 be used for the residential portion of the savings. Savings should be calculated using the TRM stipulated average HOU per year for residential applications, 803 hours, and the coincidence factors summarized in Table 5 and Table 14. The blended HOU and coincidence factors summarized in Table 7 and Table 16 of section 2.1.1 and 2.1.2, respectively, should not be used to calculate savings. The EM&V team will clarify these assumptions in the TRM 9.0 update.

Residential low-income savings determination. Programs that are able to determine low-income and hard-to-reach eligibility by collecting customer information are permitted to use the 10-year low-income EUL to claim savings. For PY2021, utilities should continue documenting low-income accounts using the program eligibility certification forms maintained by the PUCT. Updated requirements are incorporated when implemented.

Commercial savings. The commercial lighting savings per lamp can be determined using commercial midstream assumptions identified in Table 12 and Table 13 of PY2022 TRM v9.0 Volume 3. These tables identify the annual operating hours (AOH), coincidence factors, and in-service rates (ISR). Table 8 below is an updated version of Table 12 in PY2022 TRM v9.0 Volume 3 and is recommended to determine assumptions for energy savings calculations.

Table 8. Upstream/Midstream Assumptions by Lamp Type[8]

Lamp type	AOH	Coincidence factors					ISR
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	
General service lamp	3,748	0.69	0.69	0.73	0.73	0.71	0.98
Directional/reflector	3,774	0.78	0.79	0.78	0.79	0.82	1.00
LED tube	3,522	0.74	0.75	0.84	0.84	0.76	1.00
High-bay fixture	3,796	0.78	0.79	0.83	0.84	0.80	1.00
Garage	7,884	1.00	1.00	1.00	1.00	1.00	1.00
Outdoor	4,161	0.67	0.71	0.61	0.75	1.00	1.00

The interactive effects should be standardized across all commercial midstream lamp types. All locations should be considered refrigerated air, see Table 9 below (Table 11 from PY2022 TRM v9.0 Volume 3 of the TRM is unchanged by this guidance).

Table 9. Deemed Energy and Demand Interactive HVAC Factors[9]

Space conditioning type	Energy interactive HVAC factor	Demand interactive HVAC factor
Refrigerated air	1.05	1.10
Evaporative cooling[10]	1.02	1.04
Medium temperature refrigeration (33 to 41ºF)	1.25	1.25
Low temperature refrigeration (-10 to 10ºF)	1.30	1.30
None (unconditioned/uncooled)	1.00	1.00

[8] 2012 CBECS and 2014 MECS.
[9] PUCT Docket 39146. Table 7 (page 17) and Table 12 (page 24).
[10] These factors are only applicable for projects in climate zones 1 and 5. They are derived by taking a ratio of total HVAC energy use for spaces with evaporative and refrigerated cooling then applying that ratio against the IEF factors specified for refrigerated air.

4.5 DATA MODEL

With the goal of easing the interpretation of the TRM by database and tracking system developers, the EM&V team worked with EUMMOT and Texas eTRM providers (i.e., Frontier Energy, ANB Systems) to develop a standard data model that outlines common data collected for each prescriptive measure. As of PY2021 TRM v8.0, the data model is for all residential measures in Volume 2. A data model for Volume 3 commercial measures may be completed in the future.

For example, the current data model for an ENERGY STAR® clothes dryer includes weather zone, unit type (front-loading, top-loading, compact), capacity (standard, compact), quantity installed, and date of purchase.

A benefit of a standard data model is to improve program and project analytics across service providers and implementers. A standard data model will also standardize project collection forms (e.g., on-site inspection forms) and reduce time cleaning large data sets.

For more information, please contact an EUMMOT representative.

APPENDIX A: LOW-INCOME INCOME-ELIGIBLE VERIFICATION FORMS

Single-Family (four or less units or owner-occupied)
Income Eligibility for Full-Incentive Energy Efficiency Services

This statement is made to verify my household income eligibility. The Public Utility Commission of Texas has authorized energy efficiency programs to reduce the utility bills of income-eligible households. Contractors participating in the programs receive higher incentive payments when you are income-eligible. The purpose of the higher payment is to enable the contractor to provide the improvements at a very low cost or no cost to you. **Participating in this program will not affect your eligibility for other program benefits listed below**.

The information provided below will be used solely for the purpose of determining household eligibility and will be kept confidential by the investor-owned utility contractor or other representative and by the Public Utility Commission of Texas and their contractor. It will not be sold or provided to any other party.

Name		
Street Address	Apartment Number	
City	State TX	Zip Code
Phone Number with Area Code ( ) -	Number of Persons in Household	

☐ **Category 1A:** Eligible through other programs or services

At least one member of my household received benefits from one or more of the programs listed below (☑ check all that applies, **digital or paper copy of proof of participation such as award letter required with this form):**

- ☐ Bureau of Indian Affairs (BIA) General Assistance
- ☐ Federal Public Housing Assistance (FPHA)
- ☐ Food Distribution Program on Indian Reservations (FDPIR)
- ☐ Health Benefit Coverage under Child Health Plan (CHIP)
- ☐ Low-Income Energy Assistance Program (LIHEAP) or Comprehensive Energy Assistance Program (CEAP)
- ☐ Medicaid (includes CHIP)
- ☐ Medicare, Qualified Beneficiary
- ☐ National School Lunch Program—Free Lunch Program
- ☐ Section 8 Housing Voucher
- ☐ Supplemental Nutrition Assistance Program (SNAP) (Food Stamps)
- ☐ Supplemental Security Income (SSI)
- ☐ Temporary Assistance for Needy Families (TANF)
- ☐ Texas Lifeline Discount
- ☐ Tribal Head Start (only households that meet the income-qualifying standard)
- ☐ Tribal Temporary Assistance for Needy Families (Tribal TANF)
- ☐ Veterans Pension Benefit or Survivors Pension Benefit
- ☐ Veterans Pension or Survivors Benefit Programs

Your signature is required on the last page of this form.

☐ **Category 1B:** Eligible through community action or social service agency
(COMPLETED BY UTILITY, COMMUNITY ACTION, OR SOCIAL SERVICE AGENCY)

I certify the named household participates in one of the programs in Category 1A or other low-income program service (such as Weatherization Assistance), which our agency qualifies participation.

Agency Name	Contact Name	Contact Phone Number with Area Code ( ) -

☐ **Category 1C:** Eligible through geographic location
(COMPLETED BY UTILITY OR THEIR REPRESENTATIVE OR PROVIDER)

(☑ check box if applicable): Form is not required for geographical qualification as long as the relevant information is in the utility's tracking data (service address, geographic qualifier).

☐ Housing and Urban Development (HUD) Low-Income Housing-Qualified Census Tract or Block—GEO ID:_____

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Single-Family (four or less units or owner-occupied)
Income Eligibility for Full-Incentive Energy Efficiency Services

☐ **Category 2:** Eligible through income verification
(DO NOT COMPLETE IF 1A, 1B, OR 1C COMPLETED ABOVE)

*To accurately determine your **household income**, you must include the income of all persons residing in your home from all sources. To determine the amount of income in each category, enter the amount(s) on the check or benefit statement.* **Supporting documentation must be provided (all personal identifying information may be redacted except name and address).**

STEP 1: Fill out the Income Calculation table below.

Amounts listed are shown (☑ check one): ☐ Annually ☐ Monthly ☐ Weekly

Income Calculation Table

Source of income	Amount ($)
Wages from full- or part-time employment as shown on a paystub or W-2 form	
Unemployment or worker's compensation	
Social security	
Retirement income	
Child support or alimony	
All other earnings	
Total household income *(add the amount entered on each line to figure your total household income)*	

STEP 2: Compare your total household income per week, month, or year to the amount shown in the table below for the number of persons in your household.

If your total household income is equal to or less than the amount shown in the table, you are income-eligible.

200 Percent of Health and Human Services (HHS) Poverty Guidelines

Size of family unit	Annual income	Monthly income	Weekly income
1	$ 27,180	$ 2,265	$ 523
2	$ 36,620	$ 3,052	$ 704
3	$ 46,060	$ 3,838	$ 886
4	$ 55,500	$ 4,625	$ 1,068
5	$ 64,940	$ 5,412	$ 1,249
6	$ 74,380	$ 6,198	$ 1,431
7	$ 83,820	$ 6,985	$ 1,612
8	$ 93,260	$ 7,772	$ 1,794
Each additional person, add:	$ 9,440	$787	$ 182

* **Notice:** Income ceilings are for February 1, 2022—January 31, 2023.
Annual updates are posted on http://www.puc.texas.gov/industry/electric/forms/

(Electronic) By typing my name below, I certify the above statements to be true and correct to the best of my knowledge, and that this information can be used for the purpose of processing my Single-Family Income Eligibility for Full-Incentive Energy Efficiency Services Form.
(Non-Electronic) If filling out the delineation by hand, please provide your original signature and date.

I understand that the information is subject to audit and investigation by the investor-owned utility or representative providing the program services.

Applicant Signature	Date
Contractor Signature	Date

Keep a copy of this form for your records.

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Multifamily Apartment Complex (five or more units)
Income Eligibility for Full-Incentive Energy Efficiency Services

This form is to verify that at least 75 percent of the units are rented by income-eligible customers. The Public Utility Commission of Texas has authorized energy efficiency programs to reduce the utility bills of income-eligible tenant households. Contractors participating in the programs receive higher incentive payments when at least 75 percent of the tenants qualify as income-eligible. **One form must be filled out for <u>each</u> qualifying multifamily apartment complex.**

The information provided below will be used solely for the purpose of determining household eligibility and will be kept confidential by the investor-owned utility contractor or other representative and by the Public Utility Commission of Texas and their contractor. It will not be sold or provided to any other party.

Name of Applicant (Property Owner or Agent)	Name of Property Owner	
Name of Multifamily Apartment Complex	Number of Units in Complex	
Name of Management Company	Name of On-Site Property Manager	
Complex Street Address	Suite Number	
City	State: TX	Zip Code
Property Owner or Agent's Phone Number with Area Code: ( ) -	Fax Number with Area Code: ( ) -	
Management Company's Phone Number with Area Code: ( ) -	Fax Number with Area Code: ( ) -	

☐ **Category 1A:** Eligible through other programs or services

The multifamily apartment complex qualifies in one or more of the programs listed below (☑ check all that apply, **digital or paper copy of proof of participation such as the land use restriction agreement required with this form**):

- ☐ Affordable Housing Disposition Program
- ☐ HOME Rental Housing Development
- ☐ Low-Income Housing Tax Credit Program (with less than 25 percent of units at market rate)
- ☐ Multifamily Bond Program (with less than 25 percent of units at market rate)
- ☐ Public Housing Authority (Texas Housing Association)
- ☐ Project-Based Section 8
- ☐ Rural Rental Section 515 (FMHA)
- ☐ Section 811 Project Rental Assistance Program
- ☐ Texas Housing Trust Fund
- ☐ Other income-qualifying housing program
  Program name: _____

Your signature is required on the last page of this form.

☐ **Category 1B:** Eligible through community action or social service agency
(COMPLETED BY UTILITY, COMMUNITY ACTION, OR SOCIAL SERVICE AGENCY)

I certify the named multifamily complex or 75 percent or more of tenants participate in one of the programs in Category 1A or other low-income program service (such as LIHEAP/CEAP and Weatherization Assistance), which our agency qualifies participation.

Agency Name	Contact Name	Contact Phone Number with Area Code: ( ) -

☐ **Category 1C:** Eligible through geographic location
(COMPLETED BY UTILITY OR THEIR REPRESENTATIVE OR PROVIDER)

(☑ check box if applicable): Form is not required for geographical qualification as long as the relevant information is in the utility's tracking data (service address, geographic qualifier).

☐ Housing and Urban Development (HUD) Low-Income Housing-Qualified Census Tract or Block—GEO ID: _____

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Multifamily Apartment Complex (five or more units)
Income Eligibility for Full-Incentive Energy Efficiency Services

☐ **Category 2:** Eligible through income verification
(DO NOT COMPLETE IF 1A, 1B, OR 1C COMPLETED ABOVE)

For an apartment complex to be eligible, at least 75 percent of the tenant household incomes before taxes are at or below 200 percent of the federal poverty guidelines.

STEP 1: Fill out the Apartment Complex Income Calculation Worksheet.
(Excel or hard copy must be included with this form)
*To accurately determine tenant **household income,** you may use the tenant rental application showing the number of individuals residing in the unit and the household income dated from within the past 18 months. If the rental application does not show the required information or the information is over 18 months old, then the tenant(s) must complete the **Single-Family Income Eligibility for Full-Incentive Energy Efficiency Services** form.* Supporting documentation for each unit must be available for utility audit.

STEP 2: Compare the tenant's total household income per week, month, or year to the amount shown in the table below for the number of persons residing in the unit.
If the total household income is equal to or less than the amount shown in the table, the unit is income-eligible for the full incentive. If the unit is not income-eligible, the unit is eligible for the residential incentive level.

200 Percent of Health and Human Services (HHS) Poverty Guidelines

Size of family unit	Annual income	Monthly income	Weekly income
1	$ 27,180	$ 2,265	$ 523
2	$ 36,620	$ 3,052	$ 704
3	$ 46,060	$ 3,838	$ 886
4	$ 55,500	$ 4,625	$ 1,068
5	$ 64,940	$ 5,412	$ 1,249
6	$ 74,380	$ 6,198	$ 1,431
7	$ 83,820	$ 6,985	$ 1,612
8	$ 93,260	$ 7,772	$ 1,794
Each additional person, add:	$ 9,440	$787	$ 182

* **Notice:** Income ceilings are for February 1, 2022—January 31, 2023.
Annual updates are posted on http://www.puc.texas.gov/industry/electric/forms/

STEP 3: Fill out the Apartment Complex Income Calculation Summary below.

Apartment Complex Income Calculation Summary

Apartment complex income calculation summary	Number of units
Number of income-eligible units	
Number of non-income-eligible units, including vacant units	
Total number of units	
Percentage of income-eligible units *(income-eligible units divided by the total number of units)*	

STEP 4: If "percentage of income-eligible units" is 75 percent or higher, please certify the eligibility of the apartment complex with your signature below.

(Electronic) By typing my name below, I certify the above statements to be true and correct to the best of my knowledge and that this information can be used for the purpose of processing my Multifamily Apartment Complex Income Eligibility for Full-Incentive Energy Efficiency Services Form.
(Non-Electronic) If filling out the delineation by hand, please provide your original signature and date.

I understand that the information is subject to audit and investigation by the investor-owned utility or representative providing the program services.

Applicant Signature (Property Owner or Agent)	Date
Contractor Signature	Date

Keep a copy of this form for your records.

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The Apartment Complex Income Calculation Worksheet is posted on Texas PUC Sharepoint.