

Public Utility Commission of Texas

Texas Technical Reference Manual

Version 7.0

Volume 5: Implementation Guidance

Program Year 2020

Last Revision Date:

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TRM Technical Support

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1. INTRODUCTION

This volume of the Technical Reference Manual (TRM) contains 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 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 course of the EM&V effort.

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

Commercial

- Project documentation
- Additional savings
- New construction

Cross-Sector

- Load management programs

2. COMMERCIAL

2.1 PROJECT DOCUMENTATION

This section summarizes the progress and current status of the 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 PY2015 EM&V.

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 as well as facilitates efficient third-party EM&V at the project, program, and portfolio levels. This memo specifically addresses individual project documentation needs. Individual project documentation includes all relevant site-specific detail (e.g., audit reports, worksheets, program applications, invoices, project overview/description, photos, installation reports).

Documentation guidance was originally provided in PY2012 with additional status and recommendations in PY2013 as part of the evaluation activities and utility action plan discussions. The sufficiency of program documentation has improved from PY2012 to PY2014 across almost all utilities and programs, as noted in the PY2014 Statewide Portfolio Report. However, for some utilities, there is still a need to increase the sufficiency of program documentation for the Commercial Standard Offer Programs (CSOP).

Next, we provide further detail on documentation best practices currently incorporated into many of the 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 necessary to clearly organize and manage such information to yield transparency and facilitate efficient and effective oversight.

2.1.2 Additional Documentation Guidance

The reader is referred to PY2012 and PY2013 Annual Statewide Portfolio Reports for prior program documentation guidance. In this section, we provide additional guidance geared specifically to help improve CSOP program documentation scores, though 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 the use of custom parameters
- Support deviation or enhancement of methodologies to gain greater accuracy.

An important part of organized project folders, files, and documents are clear naming conventions. This assists in keeping files organized and improves consistency in document placement and ease in 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/files received:

- The project folders often contained inconsistencies regarding file/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- versus post-equipment photos was also at times difficult.
- Project folders contained documents labeled as verification reports when they were still actually M&V plans with no verification data completed. Such plans provided the methodology to verify project savings estimates, yet do not document that they were ever completed.

The project file organization example below provides a list of potential project subfolders and documents that would be ideal for collecting whether a pre- and/or post-inspection is 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*	<ul style="list-style-type: none"> • Pre-project calculator • Plans (e.g., drawings, fixture list) • Pre-project/inspection photos • Pre-project audit reports • Project descriptions, sponsor agreements, etc.
Post-project	<ul style="list-style-type: none"> • Post- project/inspection calculator • Post-inspection field notes • Post-project/inspection photos • As-built plans • Installation reports
Supporting Documents	<ul style="list-style-type: none"> • Calculators—old and archived • Spreadsheets or another backup (especially those to support custom calculations) • Specifications, cut sheets, certifications • Check requests to utility • Partner letters or savings summaries • Material purchase orders/invoices • Email communication • M&V plan—for custom key input assumptions (e.g., operating hours) or custom savings methodologies

Stage	Retrofit and New Construction
Final Documents**	<ul style="list-style-type: none"> • 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 completed, whether by trade allies, implementation staff, or utility staff, *representative* photos can assist in documenting and supporting 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 project site and equipment photos are taken by trade allies and automatically uploaded to tracking systems and project folders. Guidance for how photos can assist in supporting documentation of projects is more fully described in the table below for some of the most common commercial project types, lighting, and HVAC based projects.

Table 2: Project Verification Applications and Examples

Stage	Lighting Projects*	HVAC Projects
Pre-project	<ul style="list-style-type: none"> • Existing lighting system types (e.g., lamp, ballast, fixture) • Existing lighting equipment quantities • Existing control type • Existing lighting equipment operability/inoperability • Building type • Air conditioning type 	<ul style="list-style-type: none"> • Existing HVAC equipment types and sizes • Existing HVAC equipment quantities • Existing HVAC equipment operability/inoperability (e.g., setpoint, load display shots) • Building type
Post-project	<ul style="list-style-type: none"> • New lighting system types (e.g., lamp, ballast, fixture) • New lighting equipment quantities • New control type • New control schedule automation (e.g., building/lighting automation system screenshots) • New lighting equipment operability • Building type • Air conditioning type 	<ul style="list-style-type: none"> • New HVAC equipment types and sizes • New HVAC equipment quantities • New HVAC equipment operability (e.g., setpoint, load display shots) • Building type

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

Recommendation #3: Include clear descriptors of measure type as well as 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 as

captured within a lighting calculator (e.g., Lighting Equipment Survey Form version 9.02), but the calculator itself 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 level of transparency in the data as the types of measures and individual savings being claimed can then be readily assessed. This structure also supports ease for calculating cost-effectiveness.

As another example, new construction projects may not have pre-inspection forms or field notes, whereas retrofit projects may have many types of pre-project documentation (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 descriptors like these are used in tracking systems, they become a valuable screening tool and 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 have received internal QA/QC, versus those that did not. Some programs have modified their tracking systems to begin logging this data and/or providing a list as part of the EM&V data collection process that 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 are 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, which 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 where a financial incentive does not cover all project savings from 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 total incentive budget or as a dollar amount. The established caps vary by utility and are noted in their program manuals.

This is a different situation from a “set incentive.” During the application phase, utilities calculate a project incentive based on pre-installation estimated savings, the incentive funds are reserved at this time. There may be some variation in the initial savings estimates that were agreed upon in setting the incentive and the actual post-installation savings once the project is completed. This is due to changes in efficiency levels, quantities, or equipment types that take place from the project planning phase to the project implementation phase.

2.2.2 Considerations

In the case of incentive caps, the EM&V team has some concern regarding claiming all savings in projects where an incentive cap is reached. 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 concern that spillover could be claimed incorrectly during post-project inspections. Spillover is “reductions in energy consumption and/or 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.

2.2.3 Recommendations

To 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

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.

or the utilities apply the most updated net-to-gross (NTG) research³ to the total project savings for the claimed savings⁴ 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 this large of a percent of incentivized savings would likely result in double-counting spillover.

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

Equation 2

The PY2017 EM&V research updated net-to-gross (NTG) 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.

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.

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%
CMTF kWh	36%	22%	86%
CMTF kW	33%	32%	99%

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 example is provided for a project with 50 kW and 50,000 kWh of calculated savings. 20 percent of those savings are attributed to a RTU HVAC project with a 15-year EUL, and the remaining 80 percent are attributed to a chiller project with a 25-year EUL. The adjusted savings are 40 kW and 40,000 kWh. Those adjusted savings would be attributed to each EUL as follows:

1. $40 \text{ kW} \times 20\% = 8 \text{ kW}$ and $40,000 \text{ kWh} \times 20\% = 8,000 \text{ kWh}$ attributed to the 15-year EUL
2. $40 \text{ kW} \times 80\% = 32 \text{ kW}$ and $40,000 \text{ kWh} \times 80\% = 32,000 \text{ kWh}$ 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, in the case of commercial new construction, it is common that there may be several years between the project design phase and project completion. This situation raises the question of what utilities should use as the baseline for commercial new construction projects to claim savings since baselines change. 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 be used to calculate savings.

3. CROSS-SECTOR

3.1 LOAD MANAGEMENT PROGRAMS

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

3.1.1 Rounding

During the EM&V contractor's effort of evaluating 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.

3.1.2 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, this 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 should not be combined for claiming savings for a specific event and must be able to cover both the event day data and 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 similarly to when program meter data is used. 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.