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SUBJECT: Program Year 2025 Texas Technical Reference Manual (TRM) Version 12.0

DATE: July 01, 2024

Maintenance of the statewide Texas Technical Reference Manual (TRM) is one of the primary objectives of the Public Utility Commission of Texas' (PUCT) evaluation, measurement, and verification (EM&V) of the investor-owned utilities' energy efficiency programs. This memo summarizes the proposed updates for the program year (PY) 2025 (PY2025) Texas TRM 12.0 (PY2025 TRM 12.0), including the stakeholder input process through the Energy Efficiency Implementation Project (EEIP).

TRM Overview

The first TRM was created in 2013 for use in PY2014. Annual updates have taken place since that time; the PY2025 TRM is the twelfth update. Commission staff, the EM&V team, the utilities, and the Electric Utility Marketing Managers of Texas (EUMMOT)¹ contractor work collaboratively to prioritize and implement updates (hereafter referred to as "the TRM Working Group"). In addition, public input for new measures or updates is solicited through the EEIP in the spring of each year. Following the TRM Working Group's updates, public input is again sought in the fall of each year. The redlined, updated TRM has historically been filed in the EEIP Project No. 38578. Starting with the PY2025 TRM, a Project Number specific to the TRM, 56768, will be used. The TRM updates are reviewed as part of the fall EEIP meeting. A two-week comment period then follows the fall EEIP meeting to allow additional review comments before the TRM is finalized and Commission staff approve the TRM for use in the next program year.

The TRM is divided into five separate documents for ease of use:

- **Volume 1: TRM Overview and User Guide** covers the process for TRM updates and version roll-outs, weather zones, TRM structure, and the format of the TRM measure overviews.
- **Volume 2: Residential Measures** contains the measure descriptions and deemed savings estimates for measures installed in residential dwellings.
- **Volume 3: Nonresidential Measures** contains the measure descriptions and deemed savings estimates for measures installed in nonresidential facilities.
- **Volume 4: M&V Protocols** has standardized measurement and verification (M&V) protocols for technologies and new program types.
- **Volume 5: Implementation Guidance** contains EM&V recommendations regarding program implementation that may affect claimed savings. Volume 5 also includes the single-family and multifamily Low-Income (LI)-Eligibility Verification Forms.

¹ EUMMOT is the Texas electric utilities collaborative group.

PY2025 TRM 12.0 Call for Updates

Commission staff issued a call for PY2025 TRM updates at the spring EEIP meeting held on February 28, 2024, with a follow-up email to the EEIP *listserv* on March 12, 2024. Stakeholders are to submit suggestions by May 1, 2024. Table 1 includes the details of the TRM suggestions received for PY2025 TRM 12.0. Any suggestions not incorporated into PY2025 TRM 12.0 Scope Summary are documented in the TRM Tracker Repository for consideration in future TRM updates.

A list of acronyms used in the TRM Tracker and this memorandum is attached to this memorandum.

Table 1. Suggestions Received for PY2025 TRM 12.0 Updates

TRM volume	Measure	Description	Originator
2	2.3.9 Solar screens	Consider expanding measure eligibility to include window films and insulating curtains.	Oncor
2	2.5.3 ENERGY STAR® clothes dryers	Consider adding a higher savings tier for heat pump dryers.	TNMP
2	2.5.11 ENERGY STAR electric vehicle supply equipment	Investigate incorporating a Level 1 charging baseline based on the results of the AEP Texas/Frontier M&V study.	AEP Texas
2	Ventilation fans	New measure based on ENERGY STAR specification.	Oncor
2	Dehumidifiers	New measure based on ENERGY STAR specification.	Oncor
2	Water coolers	New measure based on ENERGY STAR specification.	Oncor
3	2.1.1 Lamps and fixtures	Reconsider whether non-operational fixture adjustment is still applicable.	Oncor
3	2.2.2. Split & packaged air conditioners/heat pumps (AC/HP)	Review building type classification for <i>middle/junior high schools</i> . Existing mapping aligns with primary school, but some campuses align better with <i>secondary</i> in terms of after-school offerings, occupied hours, and campus size.	TNMP
3	2.2.3 HVAC chillers	Investigate the addition of energy savings tied to water consumption reduction.	EUMMOT
3	Electric deck ovens	New measure.	AEP Texas

TRM volume	Measure	Description	Originator
3	Contact conveyor toasters	New measure.	AEP Texas
3	Radiant conveyor toasters	New measure.	AEP Texas
3	Refrigerated chef bases	New measure.	AEP Texas
3	Hand wrap machines	New measure.	AEP Texas
3	Induction soup wells	New measure.	AEP Texas
3	2.7.5 Lodging guest room occupancy controls	Investigate whether the measure should be applicable to new construction.	AEP Texas
4	2.6.1 Residential load management	Review current measure configuration to ensure compatibility with other end-uses (e.g., domestic hot water).	Armada Power

PY2025 TRM 12.0 Scope Summary

The TRM scope is created each year through a collaborative process within the TRM Working Group, along with public input from stakeholders for new measures or updates solicited through the EEIP Project twice each year, both in the spring for update suggestions and in the fall for review of completed redlined updates.

The TRM Working Group assessed the need to change or update future TRM deemed savings based primarily on (1) feedback from the organizations that use the TRM values and equations for planning or reporting purposes, (2) EUMMOT's or the EM&V team's assessment of changes in measure technology and measure baselines due to changes in common practices, codes, and/or performance standards, and (3) EM&V results that indicate reasonable updates could improve the accuracy of savings estimates.

A total of 149 changes have been proposed for PY2025 TRM 12.0, impacting 36 existing residential measures in Volume 2 and 28 existing commercial measures in Volume 3. Additionally, 4 new residential and 14 new commercial measures are proposed for the same volumes of the PY2025 TRM 12.0. The new measures proposed are shown in Table 2 below. These updates do not include additional updates identified in the PY2023 EM&V scope, such as TRM recommendations that may result from the residential retrofit consumption analysis. Those additional recommendations will be included in the annual Investor-Owned Utilities Energy Efficiency Portfolio Report, which will be distributed to EEIP in September 2024. TRM updates resulting from the EM&V recommendations will be presented and reviewed at the fall EEIP meeting consistent with the other updates summarized in this memo.

Table 2. New Measures Suggestions received for PY2025 TRM v12.0 Updates

Measure	Volume 2 Residential section	Volume 3 Nonresidential section
Ventilation fans	2.5 Appliances	
Dehumidifiers	2.5 Appliances	
Water coolers	2.5 Appliances	
Heat pump pool heaters	2.5 Appliances	2.7 Miscellaneous
Dedicated outdoor air systems (DOAS)		2.2 HVAC
Induction cooking		2.4 Food Service Equipment
Electric deck ovens		2.4 Food Service Equipment
Contact conveyor toasters		2.4 Food Service Equipment
Radiant conveyor toasters		2.4 Food Service Equipment
Refrigerated chef bases		2.4 Food Service Equipment
Hand wrap machines		2.4 Food Service Equipment
Induction soup wells		2.4 Food Service Equipment
Refrigeration coil cleaning		2.5 Refrigeration
Water pumps		2.7 Miscellaneous
Irrigation pump variable frequency drives (VFD)		2.7 Miscellaneous
Low-pressure irrigation		2.7 Miscellaneous
High-efficiency battery chargers		2.7 Miscellaneous

The PY2025 TRM 12.0 scope also includes three proposed changes to the Volume 1 TRM Overview and 11 proposed changes to Volume 4 M&V Protocols, which are outside of the annual updates completed in these volumes each year.

The TRM Working Group held its kick-off meeting on June 18, 2024. The following tables include the high-level details of the TRM suggestions and prioritization proposed by EUMMOT and PUCT's EM&V contractor to be included in the PY2025 TRM 12.0 scope. Several deemed savings updates and additions are included in the TRM 12.0 proposed scope for incorporation into Volumes 1, 2, 3, 4, and 5 and are summarized in Tables 4–8, 9–14, 15, and 15, respectively.²

A priority level is assigned to each measure to assist in determining the order in which proposed changes will be addressed by the TRM Working Group. The five priority levels assigned are described below:

Table 3. Priority Levels Applied to PY2025 TRM 12.0 Proposed Changes

Priority level	Description of priority
A	TRM updates impacting existing high-volume measures, measures with a high level of stakeholder involvement, or measures identified during EM&V activities.
B	TRM updates impacting higher-priority new measures or existing measures due to codes and standards changes.
C	TRM updates impacting existing lower-volume measures or new measures not included in A or B.
D	TRM updates impacting references and tables included in existing measures.
E	TRM updates are minor cleanup of existing measures content.

Table 4. PY2025 TRM 12.0 Volume 1—TRM Overview Proposed Updates by Measure—Lighting

Measure	Proposed change(s)	Priority
3.2 History and status of weather station applications	Review update to Typical Meteorological Year 3 (TMY3) weather files.	B
4.3 PDPF Top 20 Hours Method Example 3	Correct the values in Table 8 in the TRM to achieve correct hourly demand reductions.	A
4.8 <i>Peak Probability Analysis</i> (PPA) tables	Incorporate updated weather data.	B
	Consider increasing off-peak critical hour probabilities to encourage program and measure development.	B

² See the PY2025 TRM 12.0 Tracker for full details on the proposed updates: [TRM 12.0 Measure Status Tracker As of 2024June18.xlsx](#). The PY2025 TRM 12.0 Tracker can be requested from the EM&V team by anyone that does not have access to the Texas EM&V SharePoint site.

Table 5. PY2025 TRM 12.0 Volume 2—Residential Proposed Updates by Measure—Lighting

Measure	Proposed change(s)	Priority
2.1.1 General service lamp LEDs	Review and incorporate DOE Final Rule, effective 7/3/24, and published 4/19/24.	B
2.1.2 Specialty LEDs	Consider whether updated program-specific in-service rates (ISR) are comparable to other state TRMs.	B
	Update program delivery type options to include <i>midstream/upstream</i> and modify program tracking requirements.	D
	Update the specification URL and add a reference to the current specification version and effective date.	D
2.1.3 LED nightlights	Review 7 W baseline.	D
	Add manufacturer and model number to documentation requirements.	D

Table 6. PY2025 TRM 12.0 Volume 2—Residential Proposed Updates by Measure—HVAC

Measure	Proposed change(s)	Priority
2.2.1 AC and HP tune-ups	Update URL for ENERGY STAR maintenance checklist.	A
	Determine a plan and timeline to update this measure to address new seasonal energy efficiency ratio 2 (SEER2) efficiency ratings.	A
	Clarify whether refrigerant charge adjustment is required to use prescriptive savings; consider the impact of recent refrigerant standards.	A
2.2.2 Central and mini-split AC and HPs	Update URL for ENERGY STAR maintenance checklist.	A
	Determine a plan and timeline to update this measure to address new SEER2 efficiency ratings.	A
	Clarify whether refrigerant charge adjustment is required to use prescriptive savings; consider the impact of recent refrigerant standards.	A
	Revisit rightsizing documentation requirements and penalties.	A

Measure	Proposed change(s)	Priority
	Consider calculating summer demand savings using SEER2 rather than EER2; consider whether adjustments to capacity or EFLH/CF are also needed.	A
	Consider an updated reference for the ENERGY STAR EFLH values.	A
	Consider whether AHRI capacity and HSPF2 ratings are more applicable to winter peak calculation.	A
	Clarify documentation requirements.	A
	Merge the two separate SEER and SEER2 versions of this measure's revision history tables to maintain the original version history.	A
	For missing ER heat documentation, incorporate the 0.75 adjustment factor into the savings algorithms rather than only mentioning it in the program tracking requirements.	A
2.2.5 ENERGY STAR ground-source heat pumps (GSHP)	Investigate the appropriateness of comparing an ASHP SEER2 baseline to a GSHP EER efficiency rating.	B
	Determine if GSHP savings are understated.	B
2.2.6 Large capacity split and packaged AC/HP	Incorporate updated COM HVAC baselines.	B
2.2.8 ENERGY STAR connected thermostats	Update the <i>when applying default age</i> language in Tables 61 and 62 in the TRM.	C
	Define the heating capacity to use for the AC condenser replacement with the electric heat equipment replacement scenario from Table 65 in the TRM.	C
	Update midstream heating type weighting assumptions from 2015 RECS to the current 2020 version.	C
	Update documentation requirements: <ul style="list-style-type: none"> • For HVAC type, in addition to collecting AC/HP, distinguish between split/package • Remove EER2 • Consider whether to add resistance heat documentation and adjustment factor. 	C

Measure	Proposed change(s)	Priority
2.2.9 Smart thermostat load management	Consider whether to retire the measure or expand to other utilities.	B

*Multiple HVAC measures may be impacted by Tetra Tech's Residential Consumption Analysis recommendations.

Table 7. PY2025 TRM 12.0 Volume 2—Residential Proposed Updates by Measure—Building Envelope

Measure	Proposed change(s)	Priority
2.3.1 Air infiltration 2.3.2 Ceiling insulation 2.3.3 Attic encapsulation 2.3.4 Wall insulation 2.3.5 Floor insulation 2.3.6 Duct insulation 2.3.7 Radiant barriers 2.3.10 ENERGY STAR windows 2.3.11 ENERGY STAR low-E storm windows	For missing ER heat documentation, incorporate the 0.75 adjustment factor into the savings algorithms rather than only mentioning it in the program tracking requirements.	C
2.3.9 Solar screens	Consider expanding measure eligibility to include window films and insulating curtains.	C

Table 8. PY2025 TRM 12.0 Volume 2—Residential Proposed Updates by Measure—Water Heating

Measure	Proposed change(s)	Priority
2.4.1 Water heater installations—electric tankless and fuel substitution	Update table reference included in UEFpre coefficient definition.	C
2.4.2 ENERGY STAR HPWHs	Add early retirement baseline; consider whether to add for solar DHW measures.	B
	Update ENERGY STAR qualified products link (QPL) to direct to the main DHW landing page.	C

Measure	Proposed change(s)	Priority
2.4.3 ENERGY STAR solar water heaters	Update ENERGY STAR QPL link to direct to the main DHW landing page.	C
	Determine whether ENERGY STAR's use of an SUEF of 99 is appropriate for the savings calculation.	C
2.4.4 Water heater tank insulation	Correct headings in both the <i>Deemed Summer/Winter Demand Savings</i> tables.	E
	Update conditioned space average temperatures from 2015 RECS to the current 2020 version.	D
2.4.5 Water heater pipe insulation 2.4.6 Faucet aerators 2.4.7 Low-flow showerheads	Update conditioned space average temperatures from 2015 RECS to the current 2020 version.	D
2.4.8 Showerhead temperature-sensitive restrictor valves 2.4.9 Tub spout and showerhead temperature-sensitive restrictor valves	Extend RECS 2020 updated the number of showerheads to this measure.	D

Table 9. PY2025 TRM 12.0 Volume 2—Residential Proposed Updates by Measure—Appliances

Measure	Proposed change(s)	Priority
2.5.2 ENERGY STAR clothes washers	Confirm the effective date and incorporate updated federal standard.	B
2.5.3 ENERGY STAR clothes dryers	Update baseline section based on new federal standard, effective 7/10/24 (compliance required starting 3/1/28).	B
	Add a higher savings tier for heat pump dryers.	C
2.5.4 ENERGY STAR dishwashers	Update baseline section based on new federal standard, effective 8/22/24 (compliance required until 4/23/27).	B
	Monitor pending ENERGY STAR Specification 7.0.	B
2.5.5 ENERGY STAR refrigerators	Update baseline section to include compliance dates for updated federal standards, which are 1/31/2029 and 1/31/2030.	B

Measure	Proposed change(s)	Priority
2.5.6 ENERGY STAR freezers	Update early retirement average energy consumption and product class weighting from 2015 RECS to the current 2020 version.	D
2.5.9 ENERGY STAR pool pumps	Update the <i>Baseline Condition and High-Efficiency Condition</i> table titles.	E
2.5.10 Advanced power strips	Remove legacy references to the peripheral device savings path from the <i>Demand and Energy Savings Methodology</i> section.	B
2.5.11 ENERGY STAR electric vehicle supply equipment (EVSE)	Investigate incorporating a Level 1 charging baseline based on the AEP Texas/Frontier M&V study results.	C

Table 10. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure—Lighting

Measure	Proposed change(s)	Priority
2.1.1 Lamps and fixtures	Investigate whether to reorganize this measure for comprehension.	C
	Update guidance requiring fixtures be reported as <i>multiple</i> control types to IT, NLC, or direct to use reduced wattage with applicable control type.	C
	Reconsider whether non-operational fixture adjustment is still applicable.	C
	Review local code adoption. Consider adding multiple baseline LPDs to the TRM.	C
	Clarify the language to highlight the documentation path to justify Climate Zone 3 and Climate Zone 4.	C
	Incorporate ISR into retrofit savings algorithms.	B
	Update <i>midstream</i> building type weighting assumptions from 2012 CBECS to the current 2018 version.	C
	Update building type selection guidance so that all buildings except greenhouses and parking structures should use the predominant square footage as the single building type.	C
	Adjust new construction savings algorithms to reduce pre-AOH/CFs by applying occupational sensor control factors.	C
	Consider whether to remove the reflector line or clarify the labeling of the GSL description.	C

Measure	Proposed change(s)	Priority
	Update the EAF/PAF coefficient label to match the new CAF designation.	C
	Update the EAF/PAF coefficient label to match the new CAF designation.	C
2.1.2 Lighting controls	Update the EAF/PAF coefficient label to match the new CAF designation.	C

Table 11. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure—HVAC

Measure	Proposed change(s)	Priority
2.2.1 AC and HP tune-ups	Update the URL for the ENERGY STAR maintenance checklist. Consider whether to update the checklist.	D
	Update to address new SEER2 efficiency ratings; determine when this adjustment is appropriate.	A
	Clarify whether a refrigerant charge adjustment is required to use prescriptive savings.	A
2.2.2. Split and packaged AC/HPs	Review ER baseline tables; the first year has not been incremented to align with when RUL goes to zero.	A
	Corrections: <ul style="list-style-type: none"> remove language referring to the HP exception in TRM 9.0 footnotes referencing the federal standard are missing < 5,000 and 65,000–759,999 Btuh systems Update Table 33. 	A
	Review and incorporate the updated test procedure from the Final Rule issued on 4/16/24; review and incorporate updated standards from the Final Rule issued on 5/21/23, including the future shift from IEER/COP to IVEC/IVHE.	A
	Review local code adoption for new construction HVAC efficiencies; consider whether adjustments to baseline efficiencies are needed.	A
	Review downsizing beyond 20 percent instructions to cap baseline tonnage at the 20 percent level.	A
	The current cap guidance does not align entirely with the <i>High-Efficiency Condition</i> section's ±20 percent requirement for early retirement projects; update that criteria to reflect new cap guidance.	A
	Update the examples footnote in Table 34 of the TRM and add the URL to the source material; investigate sub-category mapping to determine if further references are needed.	A

Measure	Proposed change(s)	Priority
	Review building type classification for middle/junior high schools.	A
	Update <i>midstream</i> building type weighting assumptions from 2012 CBECS and 2014 MECS to the current 2018 versions.	A
2.2.3 HVAC chillers	Review local code adoption for new construction chiller efficiencies. Consider whether adjustments to baseline efficiencies are needed.	A
	Update <i>midstream</i> building type weighting assumptions from the 2012 CBECS and 2014 MECS to the current 2018 versions.	A
	Provide guidance for building types that are not in the chiller building type list.	A
	Investigate the addition of energy savings tied to water consumption reduction.	A
2.2.4 Packaged terminal AC/ packaged terminal heat pumps	Review local code adoption for new construction HVAC efficiencies; consider whether adjustments to baseline efficiencies are needed.	C
	Update <i>midstream</i> building type weighting assumptions from the 2012 CBECS and 2014 MECS to the current 2018 versions.	C
2.2.5 Computer room ACs (CRAC)	Update the TRM <i>High Efficiency Condition</i> section table cross-reference from Table 33 to Table 79.	C
	Review local code adoption for new construction CRAC efficiencies; consider whether adjustments to baseline efficiencies are needed.	C
	Review whether DOE's new Final Rule amending test procedure and adopting net-sensible coefficient of performance (NSenCOP) will replace or supplement existing SCOP standards.	B
	Review the use of <i>seasonal</i> vs. <i>sensible</i> COP to ensure consistency.	D
	Update the existing ER baseline to reflect the previous IECC 2015 baseline.	B
2.2.7 HVAC VFDs	Review hours of operation for fans and pumps; recalculate savings to reflect any updated hours of operation assumptions.	B
	Update the <i>Top 20 Peak Hours</i> to exclude weekends; we do not anticipate that the overall demand savings will be affected much by this change.	B
	Review derivation of wet bulb temperature for cooling towers.	B

Measure	Proposed change(s)	Priority
	Investigate why Climate Zone 2 and Climate Zone 3 demand savings are often a lower order of magnitude than other zones.	B
	Add cooling tower fans to application types in program tracking data.	B
2.2.9 High-volume low-speed fans	Add building types for generic commercial and/or warehouse; correct the title of the hours table.	C
2.2.11 Small commercial smart thermostats	Update footnote for COP conversion.	D
Dedicated Outdoor Air Systems (DOAS)	New measure; determine if this should be a new measure or incorporated into the existing DX measure.	B

Table 12. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure — Building Envelope

Measure	Proposed change(s)	Priority
2.3.2 Window treatments	Consider whether windows with interior solar screens (fixed or roll-up) are eligible.	C
2.3.3 Entrance and exit door air infiltration	Adjust calculation to incorporate a factor for existing weatherstripping value.	C

Table 13. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure— Foodservice

Measure	Proposed change(s)	Priority
2.4 Foodservice	Review and incorporate updated input assumptions from the current ENERGY STAR calculator.	B
2.4.1 ENERGY STAR combination ovens	Consider reduced coefficients for K–12 schools.	C
2.4.2 ENERGY STAR electric convection ovens		
2.4.3 ENERGY STAR dishwashers	Consider reduced coefficients for K–12 schools.	C
	Add machine type to documentation requirements.	D
	Provide guidance for 'dual' sanitizing dishwashers when the high-temperature sanitizing option should be used for energy savings.	D

Measure	Proposed change(s)	Priority
2.4.4 ENERGY STAR electric griddles	Update the <i>High-Efficiency Condition</i> table title to match the other table headers.	D
	Consider reduced coefficients for K-12 schools.	C
	Update the <i>griddle size</i> column to specify a range based on the normal rounding convention.	B
2.4.5 ENERGY STAR electric fryers	Consider reduced coefficients for K-12 schools.	C
2.4.6 ENERGY STAR electric steam cookers		
2.4.7 ENERGY STAR hot food holding cabinets		
2.4.8 ENERGY STAR ice makers	Update minimum efficiency requirements to levels at or above ENERGY STAR requirements depending on the effective date of the federal standard change.	B
2.4.9 Demand-controlled kitchen ventilation	Update the percentage of buildings with electric resistance and heat pump heat to reference the current CBECS 2018 version.	C
2.4.10 Pre-rinse spray valves	Update building type names in Table 175.	E
Induction cooking	New measure. ENERGY STAR Commercial Electric Cooktops Version 1.0 is now available.	B
Electric deck ovens	New measure.	B
Contact conveyor toasters	New measure.	C
Radiant conveyor toasters	New measure.	C
Refrigerated chef bases	New measure.	C
Hand wrap machines	New measure.	C
Induction soup wells	New measure.	C

Table 14. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure — Refrigeration

Measure	Proposed change(s)	Priority
2.5.2 Electronically commutated motors (ECM) evaporator fan motors	Determine whether to add <i>PSC motor</i> as an alternative baseline, remove it from Table 182, or retain it for reference.	C
	Determine whether to add a permanent magnet synchronous (PMS) efficiency case.	C
	Clarify whether motor efficiency refers to ECM efficiency and update Table 182.	C
2.5.6 Solid and glass door reach-ins	Update Table 193.	E
2.5.10 High-Speed doors for cold storage	Consider increasing the 5-year estimated useful life (EUL) based on the manufacturer warranty to a 15-year value.	C
Refrigeration coil cleaning	New measure. Condenser coil cleaning on commercial refrigeration equipment using a vacuum system.	B

Table 15. PY2025 TRM 12.0 Volume 3—Nonresidential Proposed Updates by Measure—Water Heating and Miscellaneous

Measure	Proposed change(s)	Priority
2.6.1 HPWHs	Clean up the gallons-per-year (GPY) coefficient definition, GPY assumptions, column headings, and units in Table 217.	C
2.7.4 ENERGY STAR pool pumps	Investigate whether to adjust the single-speed pool pump as an applicable baseline based on recent DOE Standards that may make certain single-speed products obsolete; recalculate savings to reflect any updated baseline.	C
2.7.5 Lodging guest room occupancy controls	Investigate whether the measure should be applicable to new construction.	C
2.7.13 Hand dryers	Confirm savings calculations.	C
Water pumps	New measure. Specifically for clean water pumps.	C
Irrigation pump VFD	New measure.	C
Low-pressure irrigation	New measure.	C
High-efficiency battery chargers	New measure.	C
Heat pump pool heaters	New measure.	C

Table 16. PY2025 TRM 12.0 Volume 4—M&V Protocols Proposed Updates by Measure

Measure	Proposed update	Priority
2.1.1 AC tune-ups	Change measure name to AC and HP tune-ups to match TRM Volume 2 and 3 measures.	E
	Clarify savings inputs, calculations, and evaluation requirements.	A
2.1.3 Variable refrigerant flow (VRF) systems	Update VRF HP in Table 13.	B
2.2.1 Residential new construction	Reconsider the HERS index compliance path. Investigate local code adoption for baseline updates	C
2.2.2 Smart home energy management systems	Update ISR to match GSL LEDs.	B
2.3.1 Residential energy code compliance	Incorporate Xcel evaluation results.	C
2.5.3 Non-residential custom	Clarify the EUL of VFDs used in non-HVAC applications.	B
2.5.6 Non-residential M&V	Update the <i>Program Delivery Type</i> and <i>Revision History</i> table titles to match the new measure name. Review the statistical requirements and modeling guidance for Peak kW to determine if any updates are needed.	B
2.5.5 Energy storage	Update the <i>Revision History</i> table title to remove "thermal" to match the new measure name.	E
2.5.6 ENERGY STAR uninterruptible power supply (UPS)	Review and incorporate DOE Final Rule, effective 7/3/24, pertaining to test procedures for UPS.	D
2.6.1 Residential load management	Review current measure configuration to ensure compatibility with other end-uses (e.g., DHW).	B
2.6.2 Nonresidential load management	Confirm utility program details in Table 66.	B

Table 17. PY2025 TRM 12.0 Volume 5—Implementation Guidance Updates by Sector

Sector	Guidance category	Update
Low-income	Appendix A	Update Low-Income Eligibility Verification forms in January 2025 once the Federal Poverty Income Levels are released for 2/1/2025–1/31/2026.

GLOSSARY: ACRONYMS/ABBREVIATIONS/DEFINITIONS

Acronym	Description
AC	Air Conditioner
ACCA	Air Conditioning Contractors of America
ACE	Air Conditioning Evaluator calculator
AHRI	Air Conditioning, Heating, and Refrigeration Institute
AOH	Annual Operating Hours
APS	Advanced Power Strip
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BTUH	British Thermal Units per Hour
CAF	Control Adjustment Factor
CBECS	Commercial Buildings Energy Consumption Survey
CEE	Consortium for Energy Efficiency
CEER	Combined Energy Efficiency Ratio
CF	Coincidence Factor
COM	Commercial
COP	Coefficient of Performance
CPUC	California Public Utilities Commission
DOAS	Dedicated Outdoor Air Systems
DHW	Domestic Hot Water
DLC	DesignLights Consortium
DOE	United States Department of Energy
DSE	Deemed Savings Engine
DX	Direct Expansion
EAF	Energy Adjustment Factor
ECM	Electronically Commutated Motor
EEIP	Energy Efficiency Implementation Project
EER	Energy Efficiency Ratio
EFLH	Equivalent Full Load Hours
EM&V	Evaluation, Measurement, & Verification
ER	Early Retirement or Electric Resistance
ERCOT	Electric Reliability Council of Texas

Acronym	Description
ES	ENERGY STAR
EUL	Estimated or Effective Useful Life
EUMMOT	Electric Utility Marketing Managers of Texas
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FALO	Field Adjustable Light Output
FE	Frontier Energy
FSTC	Food Service Technology Center
GPY	Gallons per year
GSHP	Ground Source Heat Pump
GSL	General Service Lamp
HERS	Home Energy Rating System
HP	Heat Pump or Horsepower
HPWG	Heat Pump Working Group
HPWH	Heat Pump Water Heater
HSPF	Heating Seasonal Performance Factor
HVAC	Heating, Ventilation, & Air Conditioning
IECC	International Energy Conservation Code
IEER	Integrated Energy Efficiency Ratio
IEF	Interactive Effects Factor
IMEF	Integrated Modified Energy Factor
ISR	In-Service Rate
IT	Institutional Tuning
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light Emitting Diode
LFSH	Low-Flow Showerheads
LSF	Lighting Survey Form calculator
MECS	Manufacturing Energy Consumption Survey
M&V	Measurement & Verification
NC	New Construction
NEEP	Northeast Energy Efficiency Partnership
NLC	Networked Lighting Control

Acronym	Description
NREL	National Renewable Energy Laboratory
ORNL	Oak Ridge National Laboratory
PAF	Power Adjustment Factor
PDPF	Peak Demand Probability Factor
PNNL	Pacific Northwest National Laboratory
PTAC	Packaged Terminal Air Conditioner
PTHP	Packaged Terminal Heat Pump
PUCT	Public Utility Commission of Texas
PV	Photovoltaic
QPL	Qualified Product Listing
RAC	Room Air Conditioner
RECS	Residential Energy Consumption Survey
RES	Residential
RESNET	Residential Energy Services Network
ROB	Replace on Burnout
R&D	Research and Development
SEER	Seasonal Energy Efficiency Ratio
SMEMS	Smart Home Energy Management System
SUEF	Solar Uniform Energy Factor
TRM	Technical Reference Manual
TSRV	Temperature Sensitive Restrictor Valve
TT	Tetra Tech
UEF	Uniform Energy Factor
UPS	Uninterruptible Power Supply
URL	Uniform Resource Locator
VFD	Variable Frequency Drive
VRF	Variable Refrigerant Flow
VSHHP	Variable Speed Heat Pump