California Statewide Deemed Measures

Measure Development and Peer Review QA/QC Guidelines

DRAFT

VERSION 0.4

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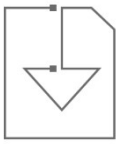

Preface

Historically, the California investor-owned utilities (IOUs) have developed and submitted new energy efficiency measures (the technical analysis, inputs, and impact estimates documented in "workpapers") to the California Public Utilities Commission (CPUC) for approval. Prior to the consolidation of utility-specific deemed measures to statewide measures, energy efficiency measures met the specific needs of the "sponsor" or "lead" IOU, and measure developers and other IOU staff followed the internally-developed guidelines, review requirements, and governance procedures established by the IOU prior to submitting workpapers to the CPUC.

In late 2016, the CPUC staff directed the IOUs to develop *statewide workpapers* for new measures.[1] That is, the measure definition, technical analyses, inputs, applicable markets, building types, etc. need to represent the interests of "more than one" program administrator (PA). Moreover, the CPUC, non-IOU PAs, and other third parties expect non-IOU entities to to propose new measures in the near future.

The California Technical Forum (Cal TF) proposes the *Measure Development and Peer Review QA/QC Guidelines* ("Guidelines") to ensure each statewide measure in the eTRM meets all data specification requirements and that measure development and QA/QC guidelines are established for measure developers and reviewers. The ultimate objective is to ensure high-quality measures that embody an appropriate level of technical rigor, represent industry best-practices, are well documented, and are transparent with respect to methodologies and inputs. In addition to clarifying expectations for the eTRM fields, the Cal TF provides various tools and resources that are intended to increase measure quality, accuracy, transparency, and standardization.

These guidelines were developed based on extensive Cal TF Staff review of internal guidelines for workpaper development, reviews, and approvals provided by Southern California Edison (SCE), Pacific Gas and Electric (PG&E), and San Diego Gas and Electric (SDG&E). Cal TF Staff also reviewed the CPUC ex ante review team feedback on utility-developed workpapers, issues and trends that the CPUC ex ante review team identified with the IOU non-DEER workpapers, workpaper dispositions, preliminary and final workpaper reviews, abstract reviews, and the ESPI scoring reports for each IOU for year-end 2015 and mid-year 2016. Finally, these Guidelines were informed by Cal TF Staff experience with utility-developed workpapers and insights gained through the statewide measure consolidation efforts.

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[1] Specifically, the guidance states that "[o]nly one workpaper may be submitted for each set of programs/measures which are adopted by more than [one] program administrator; such workpapers have been termed "statewide workpapers" and program administrators have been directed to collaborate on such efforts."

Commission ex ante team. "2017 Workpaper Guidance." Memorandum submitted to California Energy Efficiency Program Administrators. November 14, 2016. Accessed at:
http://deeresources.com/files/2013_14_exante/downloads/2017_Workpaper_Guidance_Memo_OUT.pdf

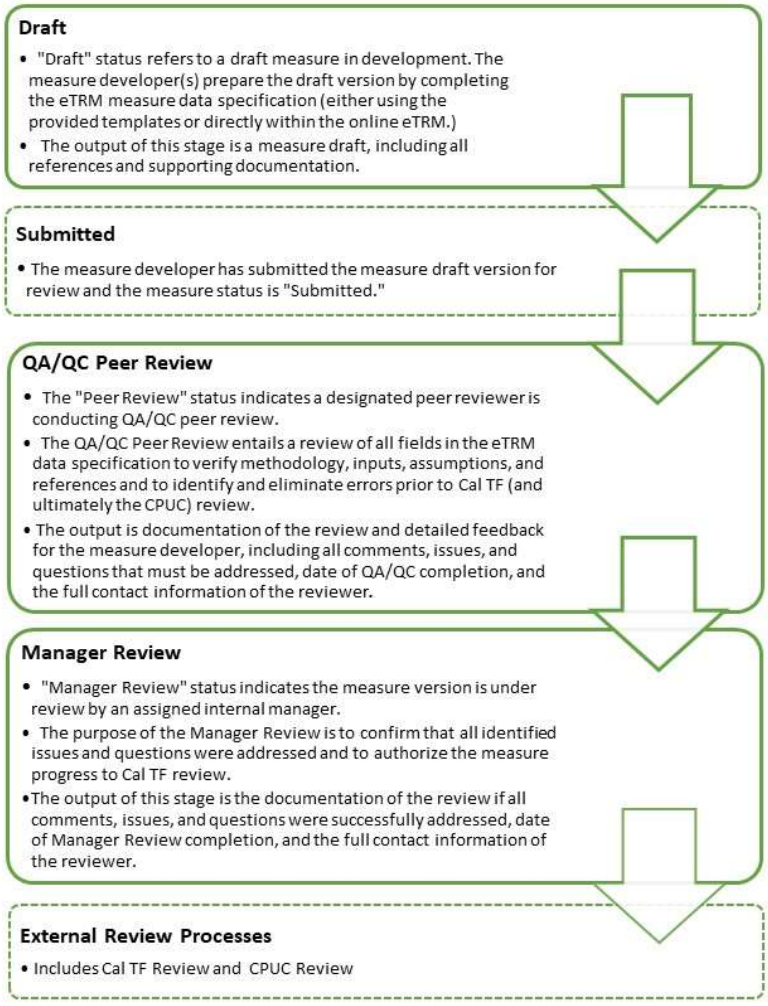
Table of Contents

Overview

The *Measure Development and Peer Review QA/QC Guidelines* ("Guidelines") provides specific guidance for measure development, quality assurance and quality control (QA/QC), and management approval of a statewide deemed measure before the measure is advanced to review by the California Technical Forum (Cal TF). These Guidelines are not intended to replace existing governance procedures within organizations that develop deemed measures; rather, they are intended to supplement any such existing procedures to ensure standardization, transparency of statewide measures in the eTRM.

The Guidelines provided herein are applicable to the development of a new measure, as well as to the revision of an existing measure to reflect state or federal code changes, dispositions and guidance issued by the California Public Utilities Commission (CPUC) Energy Division (or its consultants), updated EM&V or other research, and/or other changes.

The eTRM measure development stages for the eTRM are depicted in the figure. The stages that are the subject of these Guidelines are the QA/QC Peer Review and Manager Review stages. After measure approval at the Manager Review stage, the measure will advance to the external review stages during which the measure will be reviewed by the Cal TF and then the CPUC. The final "external review" stages are not addressed in these Guidelines.



Guidelines for Characterization Fields

This section provides a description of each field for the Characterization tab in the eTRM, as well as guidance for the Peer Review QA/QC. Collectively, these narrative fields describe the measure and explain the data sources and methodology to derive energy use, energy and demand impacts, and other cost effectiveness metrics.

Measure developers can utilize the Measure Characterization Template, as well as the Guidelines for Measure Documentation for specific guidelines for expectations for documentation for all assumptions, values, inputs, and references utilized for the measure.

Effective Date

Measure Developer

The Effective Date is automatically generated by the eTRM to the date that a measure status is changed to "Published."

Peer Review QA/QC

☐ None.

Technology Summary

Measure Developer

The Technology Summary presents a detailed technical description of the measure and its market potential, includes summaries of relevant studies (i.e., EM&V, market, baseline studies) that collectively document the development and demonstration of the technology and its applications. The Technical Summary should include justification if the measure is proposed as an Emerging Technology (ET) and/or if the ET net-to-gross ratio is specified.

This field should also include concise summaries of any relevant studies that were utilized to develop the base case and measure case specifications, and that informed the measure development (even if the study did not directly inform calculations).

Peer Review QA/QC

☐ Review for completeness.

Measure Case Description

Measure Developer

The Measure Case Description provides a narrative description of the measure case technology, key drivers of energy savings and demand reduction, and key attributes that distinguish the measure from other similar technologies. This field also specifies minimum efficiency requirements for the measure case and specifies all measure offerings.[2]

Peer Review QA/QC

☐ Review for completeness.

[2] A measure offering is represented by a unique combination of measure determinants that are specifically defined for each measure. A high-efficiency clothes washer measure, for example, might include numerous measure offerings defined by combinations of configuration (front or top loading) and tub capacity.

Base Case Description

Measure Developer

The Base Case Description provides a narrative description of base case technology and specifies the base case for each measure offering. This description includes any insights related to industry standard practice (ISP) that could affect the base case for the measure.

Peer Review QA/QC

- ☐ Review for completeness.

Code Requirements

Measure Developer

Standards and regulations can impact the assumptions and inputs of the energy savings and demand reduction calculations.

The Code Requirements field specifies all federal and/or state regulations that govern the minimum energy use requirements of the measure. This field includes a narrative description of the minimum requirements of applicable state and federal codes and a clear definition of the code efficiency level for the calculation of measure impacts.

Commonly referenced sources include (but are not limited to): California Building Energy Efficiency Standards (Title 24), California Appliance Efficiency Program Codes (Title 20), and Title 10 of the Code of Federal Regulations.

Peer Review QA/QC

- ☐ Review for completeness.
- ☐ Confirm that the most recent versions of the State and Federal standards are referenced.
- ☐ Check that each referenced code specifies the relevant section/subsection(s) and effective date(s) are provided.
- ☐ Check that a complete citation of the applicable code reference(s) is(are) provided.
- ☐ If state and/or federal or state codes do not apply, “n/a” is indicated in the summary table.

Program Requirements

Measure Developer

The Program Requirements field provides all eligibility requirements for implementation of the measure. Elements of this field include:

Measure Implementation Eligibility: Designates the installation types, delivery type, and sector combinations for which impacts have been developed.

Eligible Products: Specifies attributes of eligible products, particularly that related to Measure Case Description

Eligible Building Types and Vintages: Specify all eligible building types and vintages and include explanation of building types that are particularly relevant for the measure and/or represent biggest opportunities for energy savings/demand reduction.

Eligible Climate Zones: Specify all eligible climate zones. Note that statewide measures should be eligible in all California climate zones.

Peer Review QA/QC

- ☐ Review for completeness.
- ☐ Confirm accuracy of each installation type/delivery type/sector combination in the Implementation Eligibility table.
- ☐ Review for inclusion of all implementation requirements such as preponderance of evidence (POE) requirements, pre/post verification requirements, and other requirements needed for application review, rebate processing, and evaluation.
- ☐ Review for correct designation of eligible products, building types and vintages, and climate zones.
- ☐ Confirm the measure is applicable for statewide implementation (i.e., all California climate zones).

Program Exclusions

Measure Developer

The Program Exclusions field shall state any rules or restrictions that limit the eligibility of the measure, such as markets, building types that are excluded for this measure. If no exclusions, state “None.”

Peer Review QA/QC

☐ Review for completeness.

Data Collection Requirements

Measure Developer

This field documents data requirements and timeline if additional data is needed to improve robustness and precision of measure energy and demand impact estimates. This field shall also include a summary of sensitivity analyses that identify variables that are key drivers of measure impacts and/or cost effectiveness. Key considerations to identify future data collection needs are:

- The level of rigor and statistical significance of current data/estimates
- When current data will become out-of-date (e.g. costs due to changing market)
- Appropriateness of current data to the measure (i.e. geography, business type, technology, intended target market)
- If current data meets minimum industry best practices of “best available data”
- Additional data/information that is needed to substantiate, augment, or replace current data
- Availability of more recent studies/data (completed or in progress)
- How additional data might impact the inputs and the resultant energy and demand impact estimates. (For example, new measures may require data collection as part of program implementation or for longer-term studies, and products may start out as low impact but move to high impact later.)
- The timeline required for additional data collection (particularly in relation to measure updates

Peer Review QA/QC

☐ Review for completeness.

Use Category

Measure Developer

Specify the statewide end-use category that is applicable for the measure. Available end-use categories are available in the UseCategory shared measure parameter table of the eTRM.

Peer Review QA/QC

☐ Confirm the correct Use Category is assigned to the measure.

Electric Savings

Measure Developer

The Electric Savings and Gas Savings fields provide a detailed, all-inclusive, and defensible explanation of methodology and inputs to derive estimates of unit electric energy consumption (UEC) and unit energy savings (UES). The methodologies must be presented in a logical order and need to be understood by a variety of energy

Peer Review QA/QC

☐ The narrative thoroughly documents methods to derive the estimates of energy savings and demand impacts. All methods must be reproducible.

Measure Developer

efficiency professionals.

The contents of this field will necessarily explain and cite all relevant DEER, EM&V reports, past workpaper dispositions, and all other sources of inputs, assumptions, and methods. If applicable, the DEER Measure and DEER Run IDs should be the first source considered to substantiate energy savings estimates, unless the measure developer believes the relevant DEER values do not represent the "best available data." If the measure developer does not use the applicable DEER values or data, the DEER values must still be presented along with alternate values and data, as well as an explanation of why the developer believes the non-DEER values represent "best available data."

Unit energy savings (UES) are most commonly estimated through either a simple calculation, modeled with energy use simulation software such as DOE/DOE2, or modeled using the measure analysis controller (MASControl). The general organization and guidelines for the Electric Savings field content for each of these approach types are outlined below.

Simple UES Calculation

- Narrative explanation of the methodology and key drivers.
- Presentation of equations that represent the calculation of base and measure case UEC and UES. All variables are defined with units following each equation.
- One or more tables with input values and assumptions (corresponding to all variables in the presented equations) for the calculation of savings, accompanied by a discussion of the source/derivation of each.
- Sample calculation

DEER/DOE2 Modeled UEC

- Introductory statement that explains the UEC is derived from energy use simulations of the base and measure case and specifies the DEER measure ID for each measure offering
- Description of base case model and list of key model attributes
- Description measure case model, list of key model attributes, and "key word" differences from base model
- Documentation includes weather data files and model input files and output files

Modeled UEC with Analysis Controller (MASControl)

- Specify MASControl version number and Tech ID of modeled measure offerings
- Specification of building model selections/characteristics – building type, climate zones, vintages, HVAC type, etc.
- Specification of base case and measure case options (how base and measure case are defined)
- Documentation includes weather data files and model input files and output files

Peer Review QA/QC

- ☐ The methodology is presented in a logical manner and will be easily followed and understood.
- ☐ The methodology represents industry best practices and accepted engineering and statistical principles.
- ☐ All calculations are accurate (if applicable).
- ☐ All calculations are reproducible (if applicable).
- ☐ All simulations are documented and reproducible (if applicable).
- ☐ If a retrofit or early retirement measure, the UES calculations are provided for both baseline periods.
- ☐ All UES estimates are normalized to the appropriate unit of measurement.
- ☐ All data sources and references are appropriately cited.
- ☐ All data sources and cited references and data files are provided.
- ☐ A sample calculation is provided and accurate (if applicable).

Peak Electric Demand Reduction

Measure Developer

See Electric Savings.

The demand reduction calculations/estimates must consider the peak demand period as specific summer weekday periods delineated by climate zone.

Peer Review QA/QC

- ☐ See Electric Savings.
- ☐ Confirm application of correct peak demand period.

Gas Savings

Measure Developer

See Electric Savings.

Peer Review QA/QC

- ☐ See Electric Savings.

Life Cycle

Measure Developer

The estimated useful life (EUL) describes an estimate of the median number of years that the measures installed under the program are still in place and operable. The remaining useful life (RUL) is an estimate of the median number of years that a measure being replaced under the program would remain in place and operable had the program intervention not caused the replacement.

This field provides an explanation of the source and derivation of the EUL and the RUL, if applicable.

If an EUL or RUL does not exist for the measure, research and recommend an appropriate value. Documentation and rationale for recommended value(s) should be included in this Characterization field.

Peer Review QA/QC

- ☐ Review for completeness.
- ☐ Confirm correct designation of measure and host equipment.
- ☐ Review for consistency of assigned EUL and RUL with “like” measures.
- ☐ Confirm original source of the EUL and basis for RUL (if applicable) are cited.
- ☐ Confirm all documentation of cited references are provided and verified.

Base Case Material Cost

Measure Developer

This field provides a detailed description of base case cost estimation methodology and data sources. Measure developers can utilize values and methodologies from the 2010-2012 WO017 Ex Ante Measure Cost Study conducted by Itron, Inc. If the WO017 costs are determined to be incorrect, not applicable, or out of date, the description shall fully explain and cite all data sources and research utilized to estimate the base case material cost, as well as explanation why the WO017 is not applicable. Other sources for cost data include (but are not limited to):

- Cost studies by PAs or the CPUC consultants
- Program and invoice data from PAs and vendors
- Online retailers (web-scraped data) and point-of-sale data
- Wholesale costs supplemented by bulk purchase discounts, contractor mark-ups
- Warranties, and other factors that determine the retail price
- Construction estimation resources, such as RS Means
- DOE or Title 24 rulemaking technical support documents

Peer Review QA/QC

- ☐ Confirm material costs do not include installation labor or maintenance costs.
- ☐ Review for completeness and that the derivation of costs is fully explained.
- ☐ Determine that cost sources and analysis methodology meet industry best practices.
- ☐ Costs are normalized to the correct unit of measurement.

Measure Case Material Cost

Measure Developer

See Base Case Material Cost

Peer Review QA/QC

- ☐ See Base Case Material Cost.

Base Case Labor Cost

Measure Developer

The Base Case Labor Cost field documents the installation/labor cost estimation methodology and sources, including all assumptions and calculations. Measure developers shall utilize values and methodologies from the 2010-2012 WO017 Ex Ante Measure Cost Study conducted by Itron, Inc., if possible. If the WO017 labor costs are determined to be incorrect or not applicable, this field shall include an explanation and cite all data sources and research utilized to estimate the base case labor cost, as well as explanation why the WO017 is not applicable.

Note that for most normal replacement measures, the installation labor cost for the base and measure cases will be the same and should be noted as such.

Peer Review QA/QC

- ☐ Review for completeness and that the derivation of costs is fully explained.
- ☐ Determine that labor cost sources and analysis methodology meet industry best practices.
- ☐ Costs are normalized to the correct unit of measurement.

Measure Case Labor Cost ($/unit)

Measure Developer

See Base Case Labor Cost

Peer Review QA/QC

- ☐ See Base Case Labor Cost

Net-to-Gross (NTG)

Measure Developer

This field provides a generic definition of the NTG ratio and includes an explanation of derivation and source of the NTG ratio(s) specified for the measure.

Peer Review QA/QC

- ☐ Confirm specification of the correct and approved NTG ratio(s).
- ☐ Confirm original source of the NTG ratio(s) is(are) cited.
- ☐ Confirm all documentation of cited references are provided and verified.

Gross Savings Installation Adjustment (GSIA)

Measure Developer

This field includes an explanation of the derivation/source of the gross savings installation adjustment (GSIA) rate and the justification for the measure.

The GSIA factor combines the *realization rate* and the *installation rate*. It is dependent on the measure technology and how the measure is delivered.

The installation rate is the ratio of verified installations of a measure to the number of claimed installations. Typically, the installation

Peer Review QA/QC

- ☐ Ensure specification of the correct and approved GSIA factor(s).
- ☐ Confirm original source of the GSIA factor(s) is(are) cited.
- ☐ Confirm all documentation of cited references are provided and verified.

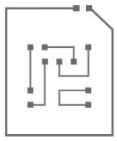
Measure Developer	Peer Review QA/QC
rates applied on an ex ante basis are based upon previous ex post evaluations. The realization rate represents the ratio of achieved impacts to predicted impacts.	

Non-Energy Impacts

Measure Developer	Peer Review QA/QC
This field explains the methodology and associated inputs and assumptions to derive non-energy impacts, such as water savings. Completion of this field should follow guidance provided for the Electric Savings field. If non-energy impacts have not been derived or are not applicable, this field should state “Non-energy impacts have not been derived for this measure.” or “Non-energy impacts are not applicable for this measure.”	☐ See Electric Savings.

DEER Differences Analysis

Measure Developer	Peer Review QA/QC
This field provides a summary table of DEER-based inputs and methods, and the rationale for inputs and methods that are not DEER-based.	☐ Review the DEER Difference Summary table for completeness and consistency with inputs and methods adopted to develop the measure.



Guidelines for Data Fields

This section provides a description of and peer review QA/QC guidance for each data field of the eTRM measure data specification. Many data fields have a companion field in the Characterization that explains the source, inputs, and methodology to derive the data value. For ease of navigation, the data fields are presented in the following groupings:

Measure Summary

Measure Detail ID

Measure Developer

This field is populated with an auto generated identifier created as a concatenation of the Statewide Measure ID and other key attributes for each measure (e.g. SWFS001-NC-Each-Any-Any-Any-IOU-Any-NonUpStrm-Standard-IOU-Deemed-Cook_equip-OvenConv-FoodServ-Cooking-Annual-Any-Gas-Half-None-Def-GSIA-None-Ag)

Peer Review QA/QC

☐ None.

Statewide Measure ID

Measure Developer

The Statewide ID identifies a unique measure in the eTRM. This ID is automatically generated by the eTRM and is based on the Use Category chosen by the measure developer.

The nomenclature of this identifier is shown below for reference. This naming convention is tied to CEDARS categories.

This field is automatically populated to ensure that the next available number is used for a given category.

Peer Review QA/QC

☐ Review the Statewide ID and verify that the correct “Use Category” was chosen for the measure

SWAP001v00				
Statewide Designator	**Use Category**	**Measure Number**	**Version Designator**	**Version Number**
SW	**AP** Appliance **BE** Building Envelope **CR** Commercial Refrigeration **CA** Compressed Air **FS** Food Service **HC** HVAC **LG** Lighting **MI** Miscellaneous **PR** Process **RE** Recreation **SV** Service **WH** Water Heating **WP** Water Pumping / Irrigation	Automatically assigned, starts at 001 for first measure in the end use category	**v**	Automatically assigned, starts at 00 for original version of the measure

Measure Name

Measure Developer

Develop a short concise descriptor of the measure; append a sector designation after the measure name only if the measure is strictly applicable for a single specific sector. Measure Name should remain singular. (e.g., Boiler, Commercial)

Peer Review QA/QC

☐ Confirm the measure name is consistent with guidance.

Offering ID

Measure Developer

Offering ID is a unique identifier for each unique measure offering, based on unique combinations of measure determinants which will be defined for each measure.

Peer Review QA/QC

☐ Verify that offering IDs created for each unique measure offering of the measure.

Permutation Characterization

First Base Case Description

Measure Developer

Concatenated description based upon permutation parameters; Description should uniquely describe each permutation with parameters that varies impacts (ie, savings, cost, life, net results, cost effectiveness).

Peer Review QA/QC

☐ Review for completeness and consistency with guidance.

Second Base Case Description

Measure Developer

Concatenated description based upon permutation parameters; Enter "NA" if no second baseline exists for this measure (ie, only used for ER, REA measure application types).

Peer Review QA/QC

☐ Review for completeness and consistency with guidance.

Measure Case Description

Measure Developer

Concatenated description based upon permutation parameters; Description should uniquely describe each permutation with parameters that varies impacts (ie, savings, cost, life, net results, cost effectiveness).

Peer Review QA/QC

- ☐ Review for completeness and consistency with guidance.

Common Measure Parameters

Measure Application Type

Measure Developer

Measure application type, also called installation type, classifies an energy efficiency activity and dictates the appropriate baseline treatment, measure effective useful life, eligibility, documentation requirements, and cost calculation methodology.

Peer Review QA/QC

- ☐ Verify that all proposed measure application types are specified.

Building Type

Measure Developer

A building type refers to the prototypical building that is meant to represent an average building in California. There are 24 commercial buildings (in the commercial, industrial and agricultural sectors) and 4 residential buildings that comprise the primary types of building that exist for California measures.

The Building Type that represents the weighted average of *all* commercial or *all* residential building types is designated as either 'Com' and 'Res', respectively.

The 'Any' Building Type designation should be used to specify measures for which savings do not depend upon Building Type.

Only Building Type on the CEDARS building type list are eligible; do not assign "non-standard" building types.

Peer Review QA/QC

- ☐ Verify consistency with guidance for the specific building type identified.
- ☐ If the weighted average Building Type is assigned, (Com or Res) confirm if appropriate.
- ☐ If 'Any' is assigned, confirm if appropriate and that savings of the measure do not depend on building type.

Building Vintage

Measure Developer

Describes the construction of the building, which is typically limited to existing (Ex) or new (NC). However, existing buildings are representative of a weighted average of code-based vintage constructions. The term 'Any' should be used to describe cases where savings do not depend upon Vintage. (Note that a limited number of measures may warrant a sub-vintage category.)

Peer Review QA/QC

- ☐ Verify consistency with guidance: building construction existing (Ex) or new (NC) specified, for existing buildings specific building vintage or sub-vintage identified or "Any" used in cases where savings do not depend on building type.

Building Location

Measure Developer

Describes the location of the building by its California climate zone. The zone that represents a weighted average of the climate zones is referred to as IOU. The term 'Any' should be used to describe cases where savings are not weather dependent.

Peer Review QA/QC

- ☐ Verify correct designation of applicable climate zones.

Normalized Unit

Measure Developer

Defines unit of measure that savings and costs are applied to. Values should be consistent across similar measures in a use category.

Peer Review QA/QC

- ☐ Confirm the normalizing unit is appropriate for the measure.
- ☐ Confirm the normalizing unit is consistent with similar measures in the use category

Sector

Measure Developer

A sector refers to a group of customers that share common characteristics and barriers upon which energy efficiency strategies are based. The primary sectors are consistent with CEDARS: Residential, Commercial, Industrial, and Agricultural.

For consistency with CEDARS, 'NonRes' or 'Crosscutting' should not be designated.

Peer Review QA/QC

- ☐ Verify applicable sector(s) are properly identified.

Program Administrator Type

Measure Developer

This field designates if permutations are applicable specifically to an 'IOU' or 'POU'. If impacts do not vary by IOU/POU area, designate 'Any'.

Peer Review QA/QC

- ☐ Verify properly identified.
- ☐ IF 'IOU' or 'POU' is designated, confirm impacts differ across IOU/POU territories.

First Baseline Energy Savings

First Baseline – Peak Electric Demand Reduction (kW)

Measure Developer

Peak kW reduction per normalized unit during first baseline period. Should conform to the California peak demand definition.

This data field is populated with a calculated value.

Methodology is included in the Peak Electric Demand Reduction Characterization field.

Peer Review QA/QC

- ☐ Verify peak demand reduction calculation is correct and correct values are aligned in the correct permutation.

First Baseline – Electric Savings (kWh/yr)

Measure Developer

Annual electric unit energy savings (UES) kWh per normalized unit during first baseline period.

This data field is populated with a calculated value.

Methodology is included in the Electric Savings Characterization field.

Peer Review QA/QC

☐ Verify UES calculation is correct and correct values are aligned in the correct permutation.

First Baseline – Gas Savings (therms/yr)

Measure Developer

Annual gas therm savings per normalized unit during first baseline period.

This data field is populated with a calculated value.

Methodology is included in the Gas Savings Characterization field.

Peer Review QA/QC

☐ Verify UES calculation is correct and correct values are aligned in the correct permutation.

Second Baseline Energy Savings

Second Baseline – Peak Electric Demand Reduction (kW)

Measure Developer

Peak kW reduction per normalized unit during second baseline period. Should conform to the California peak demand definition.

This data field is populated with a calculated value.

The value should equal "0" for measure without a second baseline (ROB, REA and NC).

Methodology is included in the Peak Electric Demand Reduction Characterization field.

Peer Review QA/QC

☐ Verify peak demand reduction calculation is correct and correct values are aligned in the correct permutation.

Second Baseline – Electric Savings (kWh/yr)

Measure Developer

Annual electric kWh savings per normalized unit during second baseline period.

This data field is populated with a calculated value.

The value should equal "0" for measure without a second baseline (ROB, REA and NC).

Methodology is included in the Electric Savings Characterization field.

Peer Review QA/QC

☐ Verify UES calculation is correct and correct values are aligned in the correct permutation.

Second Baseline – Gas Savings (therms/yr)

Measure Developer

Annual gas therm savings per normalized unit during second baseline period.

This data field is populated with a calculated value.

The value should equal "0" for measure without a second baseline (ROB, REA and NC).

Methodology is included in the Gas Savings Characterization field.

Peer Review QA/QC

☐ Verify UES calculation is correct and correct values are aligned in the correct permutation.

Costs

First Baseline Labor Cost (USD)

Measure Developer

Base Case labor cost per normalized unit applicable to first baseline period. Cost is represented by a typical cost.

Cost is equal to "0" when an existing conditions base case is used to represent full measure cost (DI, ER, REA, and RC).

Cost data and methodology is included in the Base Case Labor Cost Characterization field.

Peer Review QA/QC

☐ Confirm labor cost data meets “best available data” guidelines (i.e., valid source, age of data, size of sample, etc.)

First Baseline Material Cost (USD)

Measure Developer

Base Case material cost per normalized unit applicable to first baseline period. Cost is represented by an average cost.

Cost is equal to "0" when an existing conditions base case is used to represent full measure cost (ER, REA, and RC).

Cost data and methodology is included in the Base Case Material Cost Characterization field.

Peer Review QA/QC

☐ None.

First Baseline Incremental Cost (USD)

Measure Developer

Calculated value of incremental cost per normalized unit (Measure cost - 1st base case cost).

This data field is populated with a calculated value.

Peer Review QA/QC

☐ Verify incremental cost calculation is correct.

Measure – Labor Cost (USD)

Measure Developer

Measure labor cost per normalized unit. Cost is represented by a typical cost. (Generally, Measure and Base Labor cost are identical, in which case, they would cancel out of the incremental cost analysis.)

Cost data and methodology is included in the Measure Case Labor Cost ($/unit) Characterization field.

Peer Review QA/QC

☐ Verify correct labor cost(s).

Measure – Material Cost (USD)

Measure Developer

Measure material cost per normalized unit. Cost is represented as an average cost.

Cost data and methodology are included in the Measure Case Material Cost Characterization field.

Peer Review QA/QC

☐ Verify correct material cost(s).

Second Baseline – Labor Cost (USD)

Measure Developer

Base Case labor cost per normalized unit applicable to second baseline period. Cost is represented as a typical cost.

Cost data and methodology are included in the Base Case Labor Cost Characterization field.

Peer Review QA/QC

☐ Verify correct labor cost(s).

Second Baseline – Material Cost (USD)

Measure Developer

Base Case material cost per normalized unit applicable to second baseline period. Cost is represented as an average cost.

Cost data and methodology confirmed in QA/QC of Base Case Material Cost Characterization field.

Peer Review QA/QC

☐ Verify correct material cost.

Second Baseline – Incremental Cost (USD)

Measure Developer

Calculated value of incremental cost per normalized unit (Measure cost - 2nd base case cost).

This data field is populated with a calculated value.

Peer Review QA/QC

☐ Verify correct calculation of incremental cost.

Locational Cost Adjustment ID

Measure Developer

Identifies the locational cost adjustment by category. When combined with a Climate Zone value, this ID will separately specify adjustments to material and labor. eTRM costs currently do not use this field. If this field is not applicable, "None" should be entered.

eTRM does not currently utilize this field.

Peer Review QA/QC

☐ None.

eTRM does not currently utilize this field.

Life Cycle

Effective Useful Life ID

Measure Developer

The EUL describes an estimate of the median number of years that the measures installed under the program are still in place and operable.

This field specifies the identifier that maps to the appropriate effective useful life (EUL) value of the measure.

Peer Review QA/QC

☐ Verify the proper EUL ID has been specified

Remaining Useful Life ID

Measure Developer

The RUL is an estimate of the median number of years that a measure being replaced under the program would remain in place and operable had the program intervention not caused the replacement.

This field specifies the identifier that maps to the appropriate remaining useful life (RUL) of the energy efficiency measure.

For an early retirement (ER) measure, the RUL ID refers to the measure equipment.

For retrofit add-on (REA) and retro-commissioning (RC) measures, the RUL ID refers to the host equipment.

For other measure application types (ROB, NC), 'NA' should be used because the RUL is not applicable.

If appropriate RUL ID does not exist for the measure, research and recommend an appropriate value. Include documentation and rationale for selection in the Life Cycle Characterization field.

Peer Review QA/QC

☐ Verify the proper RUL ID has been specified.

☐ If a new RUL is proposed, review data and recommended value.

First Baseline – Life Cycle (yr)

Measure Developer

Measure life, in years, applicable to first baseline period (equal to RUL value for ER, REA measures).

Measure life source and estimation approach is included in the Life Cycle Characterization field.

Peer Review QA/QC

☐ Verify correct measure life is assigned to the measure

Second Baseline – Life Cycle (yr)

Measure Developer

Measure life, in years, applicable to the measure. For application types that include a RUL in the first baseline period, the second baseline period is defined by the difference in these terms (EUL-RUL).

Measure life source and estimation approach is included in the Life Cycle Characterization field.

Peer Review QA/QC

- ☐ Verify correct measure life is assigned to the measure.

Energy Use

First Baseline – UEC kW (kW)

Measure Developer

This field includes the calculated peak kW value per normalized unit during first baseline period. The calculation of this value should conform to the California peak demand definition.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECkWbase1 should equal UnitkW1stBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.

First Baseline – UEC kWh (kWh/yr)

Measure Developer

This field includes the calculated UEC of annual electric kWh usage per normalized unit during first baseline period.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECkWhbase1 should equal UnitkWh1stBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.

First Baseline – UEC therm (therms/yr)

Measure Developer

This field includes the calculated UEC of annual gas therm usage per normalized unit during first baseline period.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECthermbase1 should equal Unittherm1stBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.

Second Baseline – UEC kW (kW)

Measure Developer

This field includes the calculated peak kW value per normalized unit during second baseline period. The calculation of this value should conform to the California peak demand definition.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECkWbase2 should equal UnitkW2ndBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.
- ☐ If no second baseline confirm value is '0'.

Second Baseline – UEC kWh (kWh/yr)

Measure Developer

This field includes the calculated UEC for annual electric kWh usage per normalized unit during second baseline period.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECkWhbase2 should equal UnitkWh2ndBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.
- ☐ If no second baseline confirm value is '0'.

Second Baseline – UEC therm (therms/yr)

Measure Developer

This field includes the calculated UEC annual therm usage per normalized unit during second baseline period.

If only whole-building data is only available, efforts should be made to isolate the usage associated with the specific measure. If this is not possible, UECthermbase2 should equal Unittherm1ndBaseline.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC calculation is correct and the table is mapped correctly.
- ☐ Ensure units are consistent with normalized unit.
- ☐ If no second baseline confirm value is '0'.

Measure UEC kW (kW)

Measure Developer

This field includes the calculated peak kW value per normalized unit during measure case period. The calculation of this value should conform to the California peak demand definition.

If only whole-building data is available, efforts should be made to isolate the UEC associated with the specific measure. If this is not possible, the value of UECkWmeas should equal '0'.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Validate the UEC demand calculation is correct and correct values are aligned in the correction permutation.

Measure UEC kWh (kWh/yr)

Measure Developer

This field includes the calculated UEC for annual electric kWh usage per normalized unit during measure case period.

If only whole-building data is available, efforts should be made to isolate the UEC associated with the specific measure. If this is not possible, the value of UECkWhmeas should equal '0'.

This data field is populated with a calculated value.

Peer Review QA/QC

☐ Validate the UEC calculation is correct and correct values are aligned in the correction permutation.

Measure UEC therm (therm/yr)

Measure Developer

This field includes the UEC for annual gas therm usage per normalized unit during measure case period.

If only whole-building data is available, efforts should be made to isolate the UEC associated with the specific measure. If this is not possible, the value of UECthermmeas should equal '0'.

This data field is populated with a calculated value.

Peer Review QA/QC

☐ Validate the UEC calculation is correct and correct values are aligned in the correction permutation.

Implementation Parameters

Delivery Type

Measure Developer

Delivery Type refers to the market channel to which program services are targeted (also referred to as the “delivery channel”).

Peer Review QA/QC

☐ Verify correct delivery type(s) is(are) specified.

Net to Gross Ratio ID

Measure Developer

The net-to-gross (NTG) ratio is the ratio of net program impacts to gross or total impacts. The NTG ratio represents extent of free-ridership, or the portion of energy or demand impacts that would have occurred in the absence of the program. The NTG ratio typically varies by sector but can also vary by other parameters like delivery type.

This field specifies the identifier that maps to the value of the NTG ratio in the Net to Gross Ratio shared value table that is associated with the measure.

Peer Review QA/QC

☐ Verify correct NTG ID(s) is(are) specified.

NTGR kWh (ratio)

Measure Developer

This field contains the lookup value from Net to Gross Ratio shared value table associated with the Net to Gross Ratio ID that will be applied directly to the Gross kWh savings value.

Peer Review QA/QC

☐ None.

NTGR kW (ratio)

Measure Developer

This field contains the lookup value from Net to Gross Ratio shared table associated with the Net to Gross Ratio ID that will be applied directly to the Gross kW reduction value.

This value is typically defined as the NTGR kWh (ratio).

Peer Review QA/QC

☐ None.

NTGR Therms (ratio)

Measure Developer

This field contains the lookup value from Net to Gross Ratio shared table associated with the Net to Gross Ratio ID that will be applied directly to the Gross therms savings value.

Peer Review QA/QC

☐ None.

NTGR Cost (ratio)

Measure Developer

This field contains the lookup value from Net to Gross Ratio shared value table associated with the Net to Gross Ratio ID that will be applied directly to the Gross cost value.

This value is typically taken directly from the NTG kWh or NTG therm value depending upon whether the measure is primarily focused on electric or gas savings.

Peer Review QA/QC

☐ None.

GSIA ID

Measure Developer

This field specifies the identifier that maps to the GSIA value for the measure.

The correct ID may be dependent upon other measure attributes, such as building type.

Peer Review QA/QC

☐ Verify correct GSIA ID(s) is(are) specified.

GSIA Value (ratio)

Measure Developer

This field includes the lookup value associated with the GSIA ID from the GSIA shared table.

Peer Review QA/QC

☐ None.

Cost Effectiveness Parameters

Electric Impact Profile ID

Measure Developer

This field specifies the identifier of load shapes used for portfolio lifecycle cost analysis.

A load shape indicates the distribution of a measure energy savings over one year. A load shape is a set of fractions summing to unity, with one fraction per hour (or other time period). Multiplying a savings value by the load shape value for a particular hour yields the energy savings for that particular hour.

Peer Review QA/QC

- ☐ Verify proper electric impact profile ID is specified.

Gas Impact Profile ID

Measure Developer

This field specifies the identifier of load shapes used for portfolio lifecycle cost analysis.

A load shape indicates the distribution of a measure energy savings over one year. A load shape is a set of fractions summing to unity, with one fraction per hour (or other time period). Multiplying a savings value by the load shape value for a particular hour yields the energy savings for that particular hour.

Peer Review QA/QC

- ☐ Verify proper gas impact profile ID is specified.

Market Effects Benefits

Measure Developer

The default market effects setting is 5% in the CET tool.

The numeric value in this field should be in whole percentages (i.e., 5% should be entered as 0.05; 0.05 should be used rather that 0.055). If no specific value is applicable, this field should be left blank because any value entered will over-ride the portfolio level value.

Peer Review QA/QC

- ☐ If this field is blank, verify the default value (5%) is desired.
- ☐ If a specific value different from the default is applicable, verify the value meets the guideline.

Market Effects Costs

Measure Developer

The default market effects setting is 5% in the CET tool. Whole percentages should be used within this field (ie, 5% should be entered as 0.05; 0.05 should be used rather that 0.055). If no specific value is applicable, this field should be left blank because any value entered will over-ride the portfolio level value.

Peer Review QA/QC

- ☐ If this field is blank, verify the default value (5%) is desired.
- ☐ If a specific value different from the default is applicable, verify the value meets the guideline.

Measure Inflation

Measure Developer

This optional CET field defines the measure inflation percentage. Whole percentages should be used within this field (ie, 2% should be entered as 0.02; 0.02 should be used rather that 0.025).

Peer Review QA/QC

- ☐ This is an optional field. If it is used, verify the value is in the appropriate format.

Combustion Type

Measure Developer

This optional CET field defines the combustion type used:

- Large Boilers (>100 MMBtu/hr Heat Input):Uncontrolled
- Large Boilers (>100 MMBtu/hr Heat Input):Controlled Low NOx Burner
- Large Boilers (>100 MMBtu/hr Heat Input):Controlled – Flue Gas Recirculation
- Small Boilers (<100 MMBtu/hr Heat Input):Uncontrolled
- Small Boilers (<100 MMBtu/hr Heat Input):Controlled Low NOx Burner
- Small Boilers (<100 MMBtu/hr Heat Input):Controlled – Flue Gas Recirculation
- Residential Furnaces (<0.3):Uncontrolled

If this field is not applicable, "NA" should be entered.

Peer Review QA/QC

- ☐ This is an optional CET field. If used, verify the value is in the appropriate format.
- ☐ if it is not applicable, verify ‘NA’.

Measure Impact Calculation Type

Measure Developer

Defines the calculation methodology used to quantify measure savings. Five valid options are available:

- Cross-Measure Weighted (CrossMeasWtd): Energy impacts for multiple measures are weighted to create a new set of measure impacts.
- Direct Impacts (DirectIE): Energy impacts are specified with "Direct Impacts" and modified by Interactive-Effects tables.
- Scaled (Scaled): Whole-building energy impacts are specified by a reference to a "Scalable" Energy Impact ID along with a Scale Value.
- Scaled Direct Impacts (ScaledDirectIE): End-Use energy impacts are specified by a reference to a "Scalable" Energy Impact ID along with a Scale Value, Whole Building impacts are determined by applying a specified Interactive-Effects tables to the end-use impacts.
- Standard (Standard): Energy impact are looked up in the Energy Impact table based on a specified EnergyImpactID.

Peer Review QA/QC

- ☐ Verify that proper "Measure Impact Calculation Type" has been specified based on the descriptions for the five options available.

Upstream Flag (true/false)

Measure Developer

Calculated field based upon the delivery type. If type is "PreRebUp", the flag is set to 'yes'.

This field is automatically populated.

Peer Review QA/QC

- ☐ None

Version

Measure Developer

This field designates the eTRM version based, on Commission policy.

Peer Review QA/QC

- ☐ Verify correct eTRM version is specified.

Other

Water Savings (gal/yr)

Measure Developer

Annual water savings, if applicable, associated with measure. Value should be whole number per normalized unit; If no savings known, "NULL" should be entered.

This data field is populated with a calculated value.

Peer Review QA/QC

- ☐ Methodology confirmed in QA/QC of the Non-Energy Impacts Characterization field.
- ☐ Validate the water savings calculation is correct and confirm correct values are aligned in the correction permutation.

Technology Group

Measure Developer

Technology Group defines the highest-level measure categorization in terms of what equipment comprises this measure.

This field facilitates EESTATS data categorization.

Peer Review QA/QC

- ☐ Confirm correct specification and consistency with like measures.

Technology Type

Measure Developer

Technology Type is a subcategory to Technology Group to further specify the measure in terms of what equipment comprises this measure.

This field facilitates EESTATS data categorization.

Peer Review QA/QC

- ☐ Confirm correct specification of and consistency with like measures.

Use Category

Measure Developer

Select the most appropriate end-use category for the measure. When in doubt, review other measures within the category to ensure the correct fit.

Use Subcategory should be identified to ensure that the fit is correct. This field facilitates EESTATS data categorization.

Peer Review QA/QC

- ☐ Confirm correct specification and consistency with like measures.

Use Subcategory

Measure Developer

The Sub-Use Category acts as a subcategory to Use Category to further specify the measure in terms of how the measure is used.

This field facilitates EESTATS data categorization.

Peer Review QA/QC

- ☐ Confirm correct specification and consistency with like measures.

Building HVAC

Measure Developer

Building HVAC system describes if the measure savings are applicable to a specific type of HVAC system. When a weighted average approach is followed, special IDs designate the weighted average residential building type (rWtd) or commercial building type (cWtd).

Peer Review QA/QC

- ☐ Confirm if savings identified as applicable to specific HVAC system types is appropriate. If so, verify correct ID(s) is(are) specified.

Is IE Factor Applied? (yes/no)

Measure Developer

This flag designates whether interactive effects are applied to the measure.

Interactive effects are defined as the secondary energy and demand impacts that result from a measure to a secondary system or equipment not directly involved in the retrofit activity (e.g., cooling or heating energy impacts resulting from the installation of efficient lighting fixtures).

Peer Review QA/QC

- ☐ Verify correct designation of interactive effects.

IE Table Name

Measure Developer

This field identifies appropriate Interactive Effects shared table to apply to permutation.

If interactive effects are not applied to this measure, enter ‘None’.

Peer Review QA/QC

- ☐ If interactive effects are applied, ensure that the proper Interactive Effects shared table has been chosen.
- ☐ If interactive effects are not applied to the measure, confirm that "None" is entered.

Measure Qualifier

Measure Developer

The Measure Qualifier is a descriptive field to define the source of savings. If this field not applicable, 'None' should be entered.

Peer Review QA/QC

- ☐ Review the descriptive to field to verify that is identifies the source and timing of the savings.
- ☐ If field not applicable, confirm that "None" is entered.

Energy Impact ID

Measure Developer

The Energy Impact ID is an identifier specified to link the measure with impacts in the ex ante database.

Peer Review QA/QC

- ☐ Verify correct ID is specified.

Measure Cost ID

Measure Developer

The Measure Cost ID is an identifier specified to link the measure with costs in the ex ante database.

Peer Review QA/QC

- ☐ Verify correct ID is specified.

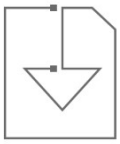
Guidelines for the Manager Review

The primary objective of the Manager Review is to assess if the measure analysis and presentation is complete and accurate and to authorize the measure progress to next measure status – external review by Cal TF. This review entails a higher-level of QA/QC than the Peer Review and the Manager Review is not intended to duplicate the peer review summarized previously.

The manager review shall include (but should not be limited to) the following:

Manager Review

- ☐ Verify that all Peer Review comments were adequately addressed.
- ☐ Document the extent of statewide coordination for measure development.
- ☐ Document that the measure impacts and cost effectiveness metrics have been derived for implementation in all California climate zones.
- ☐ If the measure was previously reviewed by Cal TF, confirm issues and comments were properly addressed and documented.
- ☐ If the measure was previously reviewed the CPUC, confirm issues and comments properly addressed and documented.



Guidelines for Measure Documentation

Measure documentation refers to the sources of inputs, assumptions, data, and other information used to derive energy consumption, energy usage, energy and demand impacts, costs, and other cost effectiveness inputs. Such documentation includes (but is not limited to): previous workpaper/measure versions, technical analyses, calculation spreadsheets, field studies, EM&V studies, laboratory test results, and market studies. Although studies within California will be the most relevant, studies from outside of the State should be considered and utilized, particularly for non-weather sensitive measures.

The Peer Review and QA/QC necessarily includes confirmation of appropriate documentation such that all aspects of the measure are transparent, and the derivation of impacts and cost effectiveness metrics are reproducible. Specific guidelines pertaining to documentation that apply to any and all fields are provided below.

Measure Developer

All assumptions, input values, data must be appropriately cited, and all cited references must be provided as measure documentation in the eTRM.

The cited reference should be the original source of data/information if available, rather than a secondary source.

Internet links to documents are not accepted, as URLs may change or become inactive/no longer in service and/or the information presented on a website may be modified after it is referenced.

Personal communication is not a valid reference for inputs used to derive UEC, UES, costs, or other cost effectiveness inputs. Personal communication for descriptive or supporting information is acceptable if correctly documented with the name, organization, title of the contact, as well as the date and subject of the communication.

A proprietary reference or data file must be appropriately cited and available throughout the measure review and approval process and upon request by authorized staff thereafter.

All proprietary data that is not authorized for the eTRM reference library but is necessary to accompany the measure through the review process shall be clearly identified as Proprietary.

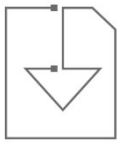
Peer Review QA/QC

- ☐ Validate all values/inputs/assumptions in the cited reference. Flag all values/inputs/assumptions that are not supported by the cited reference.
- ☐ Ensure each cited reference conforms to standards of “best available data”. Flag any values/inputs/assumptions for which the reference does not meet “best available criteria”.
- ☐ A copy of each cited reference is submitted with the measure. A cited reference for which the reference file is not provided should be flagged as such.
- ☐ Verify that all reference citations are accurate and complete. Flag incomplete citations that do not conform to the eTRM Style Guide.
- ☐ Identify all assumptions, claims, data for which a reference and citation are required but not provided. Flag an input, assumption, statistic, finding, or claim that is not supported by a reference.
- ☐ Verify that all reference materials can be uploaded in the eTRM reference library. Flag all citations/references that include proprietary data/information and cannot be uploaded to the eTRM reference library.

The following table lists appropriate documentation for types of references that are commonly used for measure documentation.

Reference Type	Examples	Documentation
Saturation Study	Commercial End Use Survey (CEUS) Residential Appliance Saturation Survey (RASS)	Copy of the report and appendices.
Regulatory documents (i.e., Decision, Resolution, Disposition)	Resolution E-4818 Comprehensive Workpaper Disposition for: Screw-in Lamps.	Preferred: Copy of the regulatory document Minimum: Decision/Resolution number and proceeding number Referenced location (i.e., page #, table #, ordering paragraph)
California standards	Appliance Efficiency Regulations (Title 20) Building Energy Efficiency Standards (Title 24)	Preferred: Copy of the document Minimum: Agency Standard or report year Standard or report name Report number Referenced location (i.e., section, page #, table #)
Federal Regulations	Code of Federal Regulations Energy Policy Act	Preferred: Copy of the document Minimum: Agency Regulation title and number Section and/or table number
Test Standards or Industry Guidelines	ASHRAE handbook	Agency Publication title Standard date Standard title, number, and section
Laboratory Test Report	Food Service Technology Center (FSTC) Appliance Performance Report	Copy of the report and all appendices
Qualified/Certified Product List	FSTC Qualified Product List (QPL)	Preferred: File with download of dataset Date of download Minimum: Authoring organization Database/specification name URL Parameters used to filter or develop list Parameter bounds/values Date of download

Reference Type	Examples	Documentation
Calculation Tool Model	Motor Master AirMaster Plus ENERGY STAR calculator	Preferred: Downloaded tool/calculator Date of download Version number Minimum: Authoring organization Tool name Version number URL Input parameters and values used Date of download/accessed
DEER	Unit energy consumption (UEC) Unit energy savings (UES) NTG EUL GSIA Measure costs	Copy of regulatory directive (resolution, disposition) that directed the adoption of value(s). For UES values from DEER: DEER ID MASControl version CSV file of values Any filters applied Documentation of any adjustments (interpolation, extrapolation, etc.) Engineering equation For NTG, EUL, GSIA, cost from DEER: DEER update report and/or spreadsheet Original source of DEER value Master documentation spreadsheet
Evaluation	Impact Evaluation of 2013-14 Upstream and Residential Downstream Lighting Programs.	Copy of the evaluation report and all appendices. If appropriate, copy of regulatory directive (resolution, disposition) that directed the adoption of value(s).
Other Study Types Potential Study Measure Cost Market Briefing	Commercial Refrigeration Potential Study Measure Cost Study	Copy of the report and appendices.
Field Monitoring Study	Emerging Technology study	Copy of the report and all appendices.
Conference Paper	Paper in ACEEE Summer Study on Energy Efficiency in Buildings Proceedings	Copy of the paper with proceedings title, issue, issue/volume number, page number of proceedings.
Journal Article	ASHRAE Journal	Copy of the article with publication title, date, issue/volume and page #.
Memorandum	KEMA memo on EULs	Copy of the memo and any appendices or support documents. If appropriate, copy of the regulatory directive to adopt memo results, analysis, and/or recommendations.
Dataset	Program tracking data Web-scraped cost data Weather data California Energy Commission (CEC) Modernized Appliance Efficiency Database System (MAEDS)	Data set in Excel or other common format, with clear documentation of author, contents, date, and source. If derived from online databases or product listings, a download of the data should be provided along with the URL, the filter parameters, and access date. If a download is not available, record the URL, the filter parameters, and access date.



Resources

To support measure development and peer review QA/QC, the Cal TF provides the following tools and resources for measure developers and reviewers.

The eTRM Characterization Template is a Word document that contains all Characterization fields. A measure developer can use this template to draft content of some or all of the Characterization fields. This template includes "boilerplate" text and tables for some fields that can be customized to ensure standardization and consistency across eTRM measures. (Note that this template does not support automatic uploading of Characterization fields; Characterization fields in the eTRM must be done manually.)

The eTRM Measure Data Upload Template is an Excel file that a measure developer can populate for uploading data fields into the eTRM.

The Peer Review Checklist and Approval and the Manager Review Checklist and Approval forms should be used by the peer reviewer and manager reviewer, respectively, to document their reviews and approval for a measure to advance to the next stage of development.

The eTRM Style Guide provides guidelines for writing conventions, such as word and number usage, expressions of common units of measurement, and citation style.

All measure development resources will be posted on the Cal TF website and are available in the eTRM by clicking on the User Guide link.