

**California Statewide Deemed Measures**

 **Statewide Measure
Characterization Template**

**VERSION 5.0 0.4**

***Last Updated* October 13, 2023**

**VERSION 0.4 0.4**

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**Revision Log**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Publish Date** | **Description of Revisions** | **Owner** |
| 1.0 | 11.28.2018 | Initial version.  | Jennifer Holmes, Cal TF Staff |
| 2.0 | 04.30.2021 |  | Jennifer Holmes, Cal TF Staff |
| 3.0 |  | Inserted new logo on cover pageUpdated instructionsUpdated format to align with other measure developer resources`Added sample table(s) and calculation(s) that are standard in each fieldAdded section for DEER measures (Section 4)Incorporated boilerplate text for WEN measures into Electric Savings and Gas Savings field.Incorporated boiler plate text in the Non-Energy Impacts field for measures with RACCRemoved “Revision History” (revision history is logged in the Change Description field in eTRM) Minor edits and clarifications | Jennifer Holmes, Cal TF Staff |
| 4.0 | 12.14.2022 | Added CPUC Disposition placeholder language to the Measure Case Description section.Added boilerplate text to the Data Collection Requirements section.Update references for Energy Efficiency Policy Manual 5 -> Energy Efficiency Policy Manual 6.Added additional conventions for the Measure Offering IDs and DEER Measure IDs value table.Updated the Calculation of IOU Embedded Energy Savings language and moved the section from the Electric Savings section to the Non-Energy Impacts section. | Tomas Torres-Garcia |
| 5.0 | 10.11.2023 | Statewide team updates include:Data collection requirement section boiler plate text.Fuel substitution boiler plate text. | Ayad Al-Shaikh with input from PA Stakeholders |

**Intended Use & Instructions**

**Intended Use**

This *Statewide Measure Characterization Template* is intended to aid the development of the measure characterization text for a statewide deemed measure.

This template provides “boilerplate” or standardized text to facilitate the standardization of measure characterization field contents. Including applicable boilerplate text also helps to reduce measure development time by providing text that is common across multiple measures.

This template is intended to be used in conjunction with the *Statewide Measure Development and QA/QC Guidelines*, which serves as a data dictionary and provides instructions for developing the contents for each field included in this template (available for download at <http://www.caltf.org/tools>).

*It is strongly recommended that the measure developer refer to a similar measure as a model to follow.*

**Instructions**

Save a separate version of this file for your measure.

Draft each measure characterization field following template instructions (as well as the Style Guide and Statewide Measure Development and QA/QC Guidelines).

Delete all highlighted and gray instructions/markers.

Delete all comments.

Delete cover sheet, revision log, and all instruction pages.

**Section 1: Standard Measure Template** includes all measure characterization fields. The measure developer should use this template first.

**Sections 2 thru Section 4 present exceptions to the standard measure template for specific measure types.** Replace the applicable fields from the Standard Measure Template with fields from these sections if applicable.

Section 2: “Calculated” Energy Savings & Demand Impacts Fields – provides guidance for completing the Electric Savings (kWh), Peak Electric Demand Reduction (kW), and Gas Savings (therms) fields for the measure characterization of a measure for which unit energy consumption, unit energy savings and unit demand reduction were derived from engineering calculations.

Section 3: “Modeled” Energy Savings & Demand Impacts Fields – provides guidance for completing the Electric Savings (kWh), Peak Electric Demand Reduction (kW), and Gas Savings (therms) fields for the measure characterization of a measure for which unit energy consumption, unit energy savings and unit demand reduction were derived from energy use simulations.

Section 4: “DEER” Measure Energy Savings & Demand Impacts Fields – provides guidance for completing the Electric Savings (kWh), Peak Electric Demand Reduction (kW), and Gas Savings (therms) fields for the measure characterization of a measure for which unit energy consumption, unit energy savings and unit demand reduction were derived from a DEER measure.

The format of each measure characterization field elements presented in this template are depicted below:

This is the top-level heading in the eTRM measure characterization. Measure characterization fields are fixed and cannot be changed because they are fields in the statewide measure data spec.

**Field Name**

Shaded text in brackets denotes an instruction or suggestion or cue to the measure developer.

Do not transfer this shaded text to measure characterization in eTRM.

Shaded text in brackets]

Indicates “boilerplate” or standardized text. The text following this marker should be included if applicable and modified only if necessary for a specific measure.

(Do not transfer this highlighted marker to measure characterization in eTRM.)

[Boilerplate text] à

Subheadings within each field should be included and followed for consistency across measures. Exact wording should be followed and only changed if applicable.

Subheadings must be created and formatted manually by the user.

SUBHEADING

**Subheading**

Dynamic Table or Calculation

Dynamic tables or calculations are embedded into the measure characterization as objects.

Dynamic table and calculation names are hyperlinks to the source and are automatically formatted by eTRM as green underlined font.

Static tables or calculations are created within the measure characterization. Names and the corresponding table/calculation must be created and formatted manually by the user.

Static Table or Calculation

Inserted Reference

The green reference badge with the white eTRM reference number is automatically created when the user inserts a reference in the measure characterization text, or in a value table. Reference badges in boilerplate text should be inserted with the boilerplate text.

**Additional Resources**

The figure below depicts the suite of resources and tools available for eTRM Users and those who are involved in developing, updating, and reviewing energy efficiency measures for the California IOU and POU portfolios. Resources specific to measure characterization fields are indicated.



*This document*





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Section 1: Standard Measure Template

Technology Summary

[Enter Technology Summary text]

[**Emerging Technology (ET):** If measure research funded through the Emerging Technology Program, add the following text and create and embed the following dynamic table. Exclude if not applicable.]

[Boilerplate text for ET funded measure à] The [insert study sponsor name] sponsored numerous projects in the Emerging Technology Program to evaluate the energy performance of [insert measure name], as indicated in table below.

Emerging Technologies

| Project Number | Program Funding Year | Year Introduced to Programs |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Measure Case Description

[Enter Measure Case Description text]

[Create and embed the following dynamic table]

Offering ID

| [Parameter] | Statewide measure Offering ID | Measure Offering Description |
| --- | --- | --- |
|  |  |  |
|  |  |  |

[Embed the CPUC Disposition placeholder reference after the Offering ID value table, as an embedded reference]

Base Case Description

[Enter Base Case Description text]

[Create and embed the following dynamic table]

Base Case Descriptions

| [Parameter] | Existing Description | Standard Description |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Code Requirements

[Statement of applicable state and federal standards]

[Create the following static table. Add additional rows to include other applicable codes/standards:]

Applicable State and Federal Codes and Standards

| Code | Applicable Code Reference | Effective Date |
| --- | --- | --- |
| CA Appliance Efficiency Regulations – Title 20  |  |  |
| CA Building Energy Efficiency Standards – Title 24  |  |  |
| Federal Standards |  |  |

[If applicable, provide details of state and federal standards]

Program Requirements

Measure Implementation Eligibility

[Include this subsection for all measures, create and embed the dynamic table:]

[Boilerplate text à] All measure application type, delivery type, and sector combinations established for this measure are specified below. Measure application type is a categorization based on the circumstances and timing of the measure installation; each measure application type is distinguished by its baseline determination, cost basis, eligibility, and documentation requirements. Delivery type is the broad categorization of the delivery channel through which the market intervention strategy (financial incentives or other services) is targeted. This table also designates the broad market sector(s) that are applicable for this measure.

[Boilerplate text à] *Note that some of the implementation combinations below may not be allowed for some measure offerings by all program administrators.*

Implementation Eligibility

| Measure Application Type | Delivery Type | Sector |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Accelerated Replacement Requirements

[Include this subsection for measure(s) with **AR application type** offerings; exclude this subsection if not applicable]

[Boilerplate text à] Preponderance of evidence (POE) must be documented for all accelerated replacement application types. Notably, programs shall gather a Customer Affidavit Statement and additional documentation for all accelerated replacement deemed measures as described in the CPUC POE Guidance Memo (insert reference to Draft Guidance memo). Upstream and midstream delivery of AR deemed measures is not permitted- including point-of-sale midstream offerings- since the viability of the existing equipment cannot reasonably be expected to meet the “preponderance of evidence” threshold. The Required Deemed Measure Customer Affidavit Statement must be completed by every customer implementing the accelerated replacement of a deemed measure- except for Small-Sized Business customers and hard-to-reach customers- regardless of the customer incentive level.

To document POE, the provided Exhibit 1. Required Customer Affidavit Statement must be completed (insert reference to Draft Guidance memo). For all projects from which a Deemed Measure Customer Affidavit Statement is required, additional evidence requirements for deemed applications are as described in the CPUC POE Guidance Memo (insert reference), dependent upon the calculated incentive amount.

Fuel Substitution Requirements

[Include this subsection for all **fuel substitution measures**; exclude this subsection if not applicable]

*[Boilerplate text à]* Per Decision 19-08-009 in Rulemaking 13-11-005, *Decision Modifying the Energy Efficiency Three-Prong Test Related to Fuel Substitution*, all fuel substitution measures must “not increase total source energy consumption when compared with the baseline comparison measure available utilizing the original fuel.” R1086, OP1 Also, the measure “must not adversely impact the environment compared to the baseline measure utilizing the original fuel.” Fuel substitution calculations were conducted using the CPUC “Fuel Substitution Calculator” to confirm all measure offerings pass Parts One and Two of the Fuel Substitution Test. [The reference for the measure-specific fuel substitution calculator .xlsx file must be inserted here.]

Upstream and Midstream Delivery Type Requirements

[Include this subsection for all **fuel substitution measures with upstream and midstream delivery types**; exclude this subsection if not applicable]

[Boilerplate text à] For upstream/midstream delivery types, the participant baselines and spillover effects are unknown. The manufacturer or distributor will not be aware if the purchased measure is replacing a gas or an electric baseline appliance. Claimed savings for these delivery types will be adjusted using [state the source for the adjustment]. These ratios will be determined from [state the source of the adjustment]. [Insert reference for source here]. The implementer shall survey 10% of the midstream installations to determine actual gas/electric baseline proportions, and the program administrator shall adjust claimed savings based upon these survey results.” This survey will be conducted annually. A sample survey questions are as follows:

*“What was the fuel source of the equipment you replaced?”
(Gas/Electric/I don’t know/I’m not sure)*

In addition, for midstream delivery, the implementer should provide the retailer or distribution location where the product was sold, rated capacity, and proposed building type where the product will be installed.

A survey will not be issued for upstream delivery types.

Downstream and Direct Install Delivery Requirements

[Include this subsection for all **fuel substitution measures with downstream and/or direct install delivery types**; exclude this subsection if not applicable]

[Boilerplate text à For downstream deemed and downstream direct-install delivery types, in addition to the standard information such as building type, climate zone, and capacity of the units, the following data must be submitted with each project application by the project developer:

* What is the existing fuel type?
* Did the site require any electric infrastructure upgrades for the proposed electrification measure? If yes, provide the itemized invoices with infrastructure upgrade costs.
* Did the owner install any other electrification measures at this site? If yes, list the measures and provide the itemized invoices with infrastructure upgrade costs (if any).

Per CPUC Decision 19-08-009 and Fuel Substitution Technical Guidance V.1.1, building infrastructure costs shall be collected for fuel substitution measures with downstream and direct install delivery types.  Only costs for work done within the building are required to be reported. For clarity, the following upgrades may be required for measure installation and shall be reported if completed for a project:

* New electrical outlets
* New or upgraded wiring
* Conduit from the electrical panel the new equipment
* Added or upgraded circuit breakers
* New or upgraded electrical panels
* Capping and/or demolishing natural gas supply lines

When invoices include disaggregated or detailed costs, those should be provided. Otherwise, the total costs of the infrastructure work should be provided.

Incentive Amounts

[Include this subsection for **all fuel substitution measures**; exclude this subsection if not applicable]

The adoption of fuel substitution measures is inhibited by market barriers, including consumer market failures and supplier market failures.R1225

Incentive Requirements

[Include this subsection for **all fuel substitution measures**; exclude this subsection if not applicable]

Deployment of the program may require rebates or financial incentives to participants that exceed the incremental measure cost (IMC). (Originally defined in D.92-09-080, the dual test was last modified in D.05-04-051.) Incentives or rebates that exceed the IMC for a measure must be justified by individual program administrators and/or third-party implemented programs as applicable in addendum for CPUC approval to document standard practice prior to program implementation.

Eligible Products

[Enter text to explain eligibility. Refer to Measure Case Description as necessary.]

Eligible Building Types and Vintages

[Enter text to explain eligible building types and vintages.]

Eligible Climate Zones

[Boilerplate text, modify as needed à] This measure is applicable in all California climate zones.

[If measure is not eligible in all climate zones, explain.]

Program Exclusions

[Enter text to explain specific exclusions from eligibility.]

Data Collection Requirements

[For all measures, enter text to explain data and information that must be collected during implementation. The below listed equipment specifications and customer site information are not fixed and are not comprehensive. Measure package author and contributors may select the appropriate data collection requirements for the measure package. Additionally, note that Resolution E-5221 states, “At a minimum, the data collected must be sufficient to allow an evaluator to better track the installed equipment that received a rebate. These include Site Identifier, Equipment Identifier, and Quantity per sales transaction, project, or site.” Although Resolution E-5221 is directed towards upstream and midstream, note that the data collection requirements are applied to all delivery types.]

Text included in red font should be modified based upon your particular measure package. It may not always be correct to include Base or Measure Case equipment information for data collection requirements.

[Boilerplate text, modify as needed à]

Data Collection requirements are described in DEER Resolutions E-5152 and E-5221 with the objectives of: *R1503 R2026*

1. Better tracking of the installed equipment that received a rebate,
2. Ensuring that eligible measures are submitted in applications,
3. Proper evaluation and application of savings are performed per California EM&V Protocols
4. Cost effectiveness values are properly/correctly applied for each application/project.

|  |  |  |
| --- | --- | --- |
| **DATA COLLECTION REQUIREMENTS** | **REQUIRED FOR** **UPSTREAM**  | **REQUIRED FOR DOWNSTREAM AND DIRECT INSTALL** |
| Site ID - unique identifier for the shipping destination (upstream) or installed location (Midstream/Downstream/DI) of the incentivized equipment (e.g., site address) | Yes | Yes |
| Quantity per Site – Total units of incentivized equipment located at the site or project | Yes | Yes |
| Measure equipment ID1 - unique identifier for each unit of incentivized equipment (e.g., serial number) | Yes | Yes |
| Measure equipment model number | Yes | Yes |
| Measure equipment manufacturer | Yes | Yes |
| Measure equipment energy efficiency rating | Yes | Yes |
| Base equipment fuel type (gas or electric) | Yes2 | Yes |
| Base equipment type (*list options here*) | Yes2 | Yes |
| Climate Zone | Yes | Yes |
| Building Type | Yes | Yes |

1. Exemptions to the equipment identifier requirement will be made for measure package offerings where leveraging a serial number or other practical unique identifier is infeasible. Exemptions will need to be approved by the CPUC in advance.

Electric Savings (kWh)

[If unit energy savings values were derived from **engineering calculations or a calculation tool**, go to “Section 2: Calculated Measure Energy Savings and Demand Impacts Fields” of this template]

[If unit energy consumption and unit energy savings values were derived from a **building energy use simulation model**, go to “Section 3: Modeled Measure Energy Savings & Demand Impacts Fields” of this template]

[If unit energy consumption and unit energy savings values were derived from a **DEER Measure**, go to “Section 4: DEER Measure Energy Savings & Demand Impacts Fields” of this template]

Peak Electric Demand Reduction (kW)

[If a **fuel substitution** measure, enter:]

[Boilerplate text for fuel substitution measureà] In accordance with the requirements of the Fuel *Substitution Technical Guidance* issued by the California Public Utilities Commission (CPUC) (October 31, 2019), there will not be any peak demand reduction or penalty towards peak demand goal achievement from fuel substitution measures. R1087

[All other measures:]

[If demand impacts were derived from **engineering calculations or a calculation tool**, go to “Section 2: Calculated Measure Energy Savings and Demand Impacts Fields”]

[If demand impacts were derived from a **building energy use simulation model**, go to “Section 3: Modeled Measure Energy Savings & Demand Impacts Fields”

[If demand impacts were derived from a **DEER Measure**, go to “Section 4: DEER Measure Energy Savings & Demand Impacts Fields”

Gas Savings (Therms)

[If demand impacts were derived from **engineering calculations or a calculation tool**, go to “Section 2: Calculated Measure Energy Savings and Demand Impacts Fields”]

[If demand impacts were derived from a **building energy use simulation model**, go to “Section 3: Modeled Measure Energy Savings & Demand Impacts Fields”

[If demand impacts were derived from a **DEER Measure**, go to “Section 4: DEER Measure Energy Savings & Demand Impacts Fields”

Life Cycle

[All measures boilerplate text à] Effective useful life (EUL) is an estimate of the median number of years that a measure installed through a program is still in place and operable. Remaining useful life (RUL) is an estimate of the median number of years that a technology or piece of equipment replaced or altered by an energy efficiency program would have remained in service and operational had the program intervention not caused the replacement or alteration.

[All measures except for AOE and AR measures, boilerplate text, à] Note that RUL is only applicable for add-on equipment and accelerated replacement measures and not applicable for this measure.

[AOE and AR measures only, boilerplate text à] The methodology to calculate the RUL conforms with Version 6 of the Energy Efficiency Policy Manual, which recommends “one-third of the effective useful life in DEER as the remaining useful life until further study results are available to establish more accurate values.” R1270 This approach provides a reasonable RUL estimate without the requiring any a priori knowledge about the age of the equipment being replaced.R181  Further, as per *Resolution E-4807*, the California Public Utilities Commission (CPUC) revised add-on equipment measures so that the EUL of the measure is equal to the lower of the RUL of the modified system or equipment or the EUL of the add-on component.” R236 p13

[Special case AOE only, boilerplate text à] *Resolution E-5152* allows exceptions to the EUL limit on the life of the Add on Equipment (AOE) measure application type if the life of the add-on measure is not affected by the life of the host equipment.R1503 This is done on a case by case basis where appropriate. [Justify how the measure meets the criteria to use the equipment full EUL Yrs]

[Explain derivation of any proposed EUL/RUL value if and EUL ID for the measure does not exist or if adopting an EUL ID of a different measure.]

[Create and embed the following dynamic table.

Only include the “RUL Yrs” column if the measure has AR or AOE MAT **and** if the EUL ID = Host EUL ID

Note: if the measure is using an old version of this shared value table, then some of the columns may be unavailable. In this case, just include the columns that are available]

Effective Useful Life and Remaining Useful Life

| EUL ID | EUL Description | Sector | EUL Yrs | RUL Years (optional) | Start Date | Expire Date |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |

[If the measure has **AR or AOE MAT** and if the **EUL ID ≠ Host EUL ID**, create and embed the following dynamic table.

Only include the “RUL Yrs” column if the measure has AR or AOE MAT **and** if the EUL ID = Host EUL ID

Note: if the measure is using an old version of this shared value table, some of the columns may be unavailable. In this case, just include the columns that are available]

Effective Useful Life and Remaining Useful Life - Host

| Host EUL ID | EUL Description | Sector | RUL Yrs | Start Date | Expire Date |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |

Base Case Material Cost ($/unit)

[Enter text]

[Create and embed the following dynamic table if costs are calculated in the eTRM; remove if not applicable (i.e., there is only one value table for all material and labor cost fields]

Base Case Material Cost - Calculation Inputs

| Parameter | Inputs 1 | Inputs 2 |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Measure Case Material Cost ($/unit)

[Enter text]

[Create and embed the following dynamic table if costs are calculated in the eTRM; remove if not applicable (i.e., there is only one value table for all material and labor cost fields]

Measure Case Material Cost - Calculation Inputs

| Parameter | Inputs 1 | Inputs 2 |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Base Case Labor Cost ($/unit)

[Enter text to explain how labor cost was derived and data source(s).]

[Create and embed the following dynamic table if costs are calculated in the eTRM; remove if not applicable (i.e., there is only one value table for all material and labor cost fields

Labor cost calculation inputs should include hourly labor rate and qty of labor hours; embed reference]

Base Case Labor Cost - Calculation Inputs

| Parameter | Input 1 | Input 2 |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Measure Case Labor Cost ($/unit)

[Enter text to explain how labor cost was derived and data source(s).]

[Create and embed the following dynamic table if costs are calculated in the eTRM; remove if not applicable (i.e., there is only one value table for all material and labor cost fields

Labor cost calculation inputs should include hourly labor rate and qty of labor hours; embed reference]

Measure Case Labor Cost - Calculation Inputs

| Parameter | Input 1 | Input 2 |
| --- | --- | --- |
|  |  |  |
|  |  |  |

Net-to-Gross

[Boilerplate text à] The net-to-gross (NTG) ratio represents the portion of gross impacts that are determined to be directly attributed to a specific program intervention. [Explain source and rationale for NTG value(s)]

[If use **NTG ID Default >2yrs**, use the following boilerplate text and embed the applicable dynamic table]

[Boilerplate text for **Default >2yrs** à] These NTG values are based upon the average of all NTG ratios for all evaluated 2006 – 2008 [list applicable sectors] sector programs, as documented in the *2011 DEER Update Study* conducted by Itron, Inc. These sector average NTGs (“default NTGs”) are applicable to all energy efficiency measures that have been offered through [list applicable sectors] sector programs for more than two years and for which impact evaluation results are not available.

[Embed the following dynamic table **for agricultural, commercial, or industrial sector default NTG IDs**:]

**Net to Gross Ratio - Nonresidential**

| Net To Gross Ratio ID | NTGkWh | NTGTherm | Expire Date |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

[Embed the following dynamic table for **residential sector default NTG ID**:]

Net to Gross Ratio - Residential

| Net To Gross Ratio ID | NTGkWh | NTGTherm | Expire Date |
| --- | --- | --- | --- |
|  |  |  |  |

[If use other default NTG(s), use applicable boilerplate text and embed the applicable dynamic table]

[If **new to portfolio less than 2 years**, boilerplate text for ID **All-Default<=2yrs** à] This NTG is applicable to all energy efficiency measures that have been offered for less than two years and for which impact evaluation results are not available, as documented in the *2011 DEER Update Study* conducted by Itron, Inc.

[If **emerging technology**, boilerplate text for ID **ET-Default NTG** à] The NTG value adopted for this measure is designated specifically for emerging technologies by the California Public Utilities Commission (CPUC).R237

[If **fuel substitution** measure, boilerplate text for **FuelSubst-Default NTG** à] The NTG for fuel substitution measures was stipulated in Decision 19-08-009, Decision Modifying the Energy Efficiency Three-Prong Test Related to Fuel Substitution, issued by the California Public Utilities Commission (CPUC). R1086 “When a fuel substitution measure passes the Fuel Substitution Test, it shall be included in the cost-effectiveness analysis of the portfolio with a net-to-gross (NTG) ratio assumption of 1.0, until such time as evaluated NTG information is available, when the assumption shall be updated on a prospective basis.”

[Embed the following dynamic NTG table:

Note: if the measure is using an old version of this shared value table, then some of the columns below may be unavailable. In this case, just include the columns that are available]

Net to Gross Ratio

| Net To Gross Ratio ID | NTG Description | NTG Electric (or NTGkWh) | NTG Gas (or NTGTherm) | Start Date | Expire Date |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |

Gross Savings Installation Adjustment

[Boilerplate text à]  The gross savings installation adjustment (GSIA) rate represents the ratio of the number of verified installations of the measure to the number of claimed installations reported by the utility. This factor varies by end use, sector, technology, application, and delivery method.

[If use **default GSIA (Def-GSIA)**, use boilerplate text and insert dynamic table below:]

[Boilerplate text for **default GSIA**à]  This GSIA rate is the current “default” rate specified for measures for which an alternative GSIA has not been estimated and approved.R1270

Gross Savings Installation Adjustments

| GSIA ID | GSIA Value |
| --- | --- |
| Def-GSIA | 1.000 |

[All other **GSIA IDs**, explain source and rationale for GSIA value(s) and insert dynamic table below:]

Note: if the measure is using an old version of this shared value table, then some of the columns below may be unavailable. In this case, just include the columns that are available]

Gross Savings Installation Adjustments

| GSIA ID | GSIA Description | GSIA Value | Start Date | Expire Date |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |

Non-Energy Impacts

[If non-energy impacts are not provided:]

[Boilerplate text. Modify accordingly if non-energy impacts such as water savings have been estimatedà] Non-energy impacts for this measure have not been quantified.

[If non-energy impacts are provided, insert explanation of methodology:]

[**If measure has RACC** include the following boilerplate text. Exclude for all other measures.]

[Boilerplate text for RACC measures. à] *Resolution E-5152* requires IOU program administrators to report refrigerant leakage avoided costs (RLAC) for all energy efficiency measure claims for which the retrofit involves *adding* (not replacing) equipment that uses refrigerant, such as fuel substitution and electric resistance to heat pump measures, or measures for which low global warming potential (GWP) refrigerant measure benefits will be claimed, such as a change in the type or amount of refrigerant.R1503  E-5152 requires RLAC to be calculated from the CPUC refrigerant avoided cost calculator (RACC), the Deemed Measure RACC Workbook.RXXXX

The RLAC for this measure were calculated with version 1.3-Rev4 of the Deemed Measure RACC Workbook. An addendum provided to the CPUC describes the calculations and the outputs are presented below.RXXXX

[Refrigerant Avoided Cost Calculations Outputs](https://urldefense.com/v3/__https%3A/stage.caetrm.com/measure/SWWH025/04/value-table/192457/__;!!LFxIGwQ!jqdCjpkupEi2BddksBA90YS2zN2WelABSRu_lIIfmFek8IPBpScdZXlcdKItzWnYg04wC4eU$) RXXXX

| REFRIGERANT NPV BENEFITS -  PREEXISTING BASELINE (USD) | REFRIGERANT NPV BENEFITS - STANDARD BASELINE (USD) | REFRIGERANT NPV BENEFITS - MEASURE (USD) | REFRIGERANT NPV COSTS - PREEXISTING BASELINE (USD) | REFRIGERANT NPV COSTS - STANDARD BASELINE (USD) | REFRIGERANT NPV COSTS - MEASURE (USD) | UNIT REFRIGERANT COST (USD) | UNIT REFRIGERANT BENEFITS (USD) |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |

[**If a water-energy measure,** include this boilerplate text. Exclude for all other measures.]

[Boilerplate text for water-energy measures. à]

**CALCULATION OF EMBEDDED ENERGY SAVINGS**

The water management cycle requires significant amounts of energy. This "embedded" energy represents the energy inputs required for the extraction, conveyance, treatment, and distribution of water, as well as the energy required to collect and treat wastewater. As water consumption is reduced through the implementation of water efficiency measures, the embedded energy is also reduced. Much of the embedded energy is provided by IOUs, but some of the energy is also provided by other sources.

With Decision 15-09-023, the CPUC adopted the water energy calculator (W-E calculator), which provides an estimate of the embedded energy savings associated with the water efficiency measures, as well as the avoided embedded energy cost and the avoided water capacity cost. R387 Since the W-E calculator was approved in 2015, new insights have emerged about opportunities to improve the W-E calculator utility and function, as well as how to evaluate water efficiency measures. An updated version of the calculator, hereafter referred to as W-E calculator 2.0, was approved in December 2021.

The W-E Calculator 2.0 estimates the IOU and non-IOU embedded energy savings that result from water energy efficiency measures. The W-E Calculator 2.0 was used to calculate an energy intensity value that can be applied to specific types of measures that have a water savings component.

###### [Water Energy Intensity](https://www.caetrm.com/measure/SWRE001/00-12/value-table/205090/) R1655  R1652

| WATER MEASURE TYPE | TOTAL IOU EMBEDDED WATER ENERGY INTENSITY (KWH / KGAL) | TOTAL NON-IOU EMBEDDED WATER ENERGY INTENSITY (KWH / KGAL) |
| --- | --- | --- |
|  |  |  |
|  |  |  |

The energy intensity *was* multiplied by the annual water savings to estimate the IOU*, and/or non-IOU,* embedded energy savings for this measure.

|  |
| --- |
| EQUATION (KWH / YR) |
| *waterEnergyIntensity*\_\_*IOU*∙(*UWS/1000*) |

[IOU Embedded Energy Savings](https://www.caetrm.com/measure/SWRE001/00-12/calculations/#iou-embedded-energy-savings)

waterEnergyIntensity\_\_IOU = Total IOU embedded water energy intensity (kWh/kgal)
UWS = Annual unit water savings (gal/year)1000 = Conversion factor, (gal/kgal)

[Non-IOU Embedded Energy Savings](https://www.caetrm.com/measure/SWRE001/00-12/calculations/%22%20%5Cl%20%22iou-embedded-energy-savings)

|  |
| --- |
| EQUATION (KWH / YR) |
| *waterEnergyIntensity*\_\_non*IOU*∙(*UWS/1000*) |

waterEnergyIntensity\_\_nonIOU = Total non-IOU embedded water energy intensity (kWh/kgal)
UWS = Annual unit water savings (gal/year)1000 = Conversion factor, (gal/kgal)

The *total* embedded energy sa*vings are calculated as the sum of the IOU embedded energy savings and the non-IOU embedded energy savings*.

[Total Embedded Energy Savings](https://www.caetrm.com/measure/SWRE001/00-12/calculations/%22%20%5Cl%20%22iou-embedded-energy-savings)

|  |
| --- |
| EQUATION (KWH / YR) |
| i*OUEmbedUES + nonIOUEmbedUES* |

iOUEmbedUES = *IOU embedded energy savings (kWh/yr)*nonIOUEmbedUES = Non-*IOU embedded energy savings (kWh/yr)*

DEER Differences Analysis

[Boilerplate text à] This section provides a summary of DEER-based inputs and methods, and the rationale for inputs and methods that are not DEER-based.

[Create and fill in static table below:]

DEER Difference Summary

| DEER Item | Commment |
| --- | --- |
| Modified DEER methodology |  |
| Scaled DEER measure |  |
| DEER Base Case |  |
| DEER Measure Case |  |
| DEER Building Types |  |
| DEER Operating Hours |  |
| DEER eQUEST Prototypes |  |
| DEER Version |  |
| Reason for Deviation from DEER |  |
| DEER Measure IDs Used |  |



Section 2: Calculated Measure Energy Savings & Demand Impacts Fields

This section provides specific guidance for completing the following fields for the measure characterization of a measure for which unit energy savings and demand reduction were derived from engineering calculations:

Electric Savings (kWh)

Peak Electric Demand Reduction (kW)

Gas Savings (therms)

All other measure characterization fields in Section 1 are also required.

*It is strongly recommended that the measure developer refer to a similar measure as a model.*

Electric Savings (kWh)

[Boilerplate text. It is preferable to calculate the unit energy consumption values, but if that is not possible, modify the text accordingly à] The annual electric unit energy savings (UES) is calculated as the difference between the baseline and measure case unit energy consumption (UEC).

[Add explanation if further adjustment is made to derive the final UES value (persistence factor, etc.)]

Annual Electric Unit Energy Consumption

[This section will explain the methodology to derive the annual unit energy consumption (UEC).]

1. Provide a general description the UEC calculation. (Typically, this is “The UEC was calculated as …” or “The UEC is a function of …”)
2. Briefly explain each step in the calculation procedure – state which variables and/or mathematical functions were used in the equation.

Example, in SWFS001, “Cooking energy is a function of the pounds of food cooked per day, the energy absorbed per pound of food product during cooking, and the measured heavy load cooking energy efficiency.”

1. Embed the relevant dynamic calculation(s) to calculate the baseline and measure UECs
	* Follow naming conventions for calculations, APIs (See Measure Developer and QA/QC Guidelines, available for download at <http://www.caltf.org/tools>.)
	* If the baseline and measure UEC calculations are identical, it is only necessary to include the baseline UEC calculations, but it must be clearly stated that the measure case calculations can be viewed on the calculations tab. See SWFS001 as an example.
2. Provide a definition for each variable below each calculation. Variable definitions should be presented in the order they appear in the calculation, left to right, top to bottom.
	* Follow convention for variable definitions
	* Variable definitions are indented and italicized

Annual Electric Unit Energy Savings

[This section will explain the methodology to derive the annual unit energy savings (UES)]

1. Provide a general description the UES calculation. (Typically, this is “The annual UES is calculated as the difference between the baseline and measure case annual UEC.)
2. Briefly explain additional calculations to convert to normalizing unit, if necessary
3. Embed the relevant dynamic calculation(s)
	* Follow naming conventions for calculations and APIs
4. Provide a definition for each variable below each calculation. Variable definitions should be presented in the order they appear in the calculation, left to right, top to bottom.
	* Follow convention for variable definitions

[Boilerplate text, modify the text accordingly à] The annual UES is calculated as the difference between the baseline and measure case annual UEC.

Inputs and Assumptions

[This section will explain all inputs and assumptions for the calculation of the UEC and UES values and willspecify all references for such inputs and assumptions.]

1. Provide a brief description of each input or assumption and explain the source and how each input/assumption was derived.
	* Focus on the constants, calculation inputs values, load shapes, and any standards or codes used for the calculations
	* Do not include values within the body text.
	* All values should be presented in a dynamic value table if used in a calculation, or in a static table
2. Create value tables of inputs
	* Embed the reference that substantiates each value/assumption in the table
	* Common reference files and examples are listed below

Calculation File:

* + - Calculation file naming convention: Measure ID-Version\_Calcs\_File.xlsx
		- NOTE: Calculation files should provide weighting and any calculations needed to derive UEC/UES
		- Indicate specific tab in Excel file if applicable. Example: SWHC030: **R1022** - Southern California Edison (SCE). 2019. “SWHC030-01\_Calcs\_Files.xlsx”

External Studies/Databases:

* American Society for Testing and Materials (ASTM) conducted by Food Service Technology Center (FSTC) for food service measures
* Residential Appliance Saturation Study (RASS) for residential water heating or appliance plug measures.
* Emerging Technologies (ET) Program study
* ENERGY STAR
* National Labs
* Program Data/Survey
1. Embed value table(s) in measure characterization field

[Boilerplate Text.à]The inputs for the calculation of the UES are specified below.

Sample Calculation

[Provide sample calculation (static) if needed]

Peak Electric Demand Reduction (kW)

[This section will explain the methodology to derive the annual unit energy savings (UES)]

1. Provide a general description the peak demand calculation. (
2. Embed the relevant dynamic calculation(s)
	* Follow naming conventions for calculations and APIs
3. Provide a definition for each variable below each calculation. Variable definitions should be presented in the order they appear in the calculation, left to right, top to bottom.
	* Follow convention for variable definitions

[Boilerplate text, modify the text accordingly à] The peak demand reduction was calculated as the difference between the baseline and measure case peak demand.

Average Demand

[If measure operates at constant load throughout the day, this section will include the methodology to derive the average demand and average demand. Remove subheading and section if not applicable]

1. Provide a general description the calculation. (Typically, this is “The average demand was calculated as …” or “The average demand is a function of …”)
2. Briefly explain each step in the calculation procedure – state which variables and/or mathematical function were used in the equation.
3. Insert the relevant equation after each step and provide a definition for each variable (either a static equation or a dynamic equation, which is pulled from the Calculation tab) (if applicable)

Inputs and Assumptions

[This subsection will present and explain all inputs and assumptions for the calculation of the peak demand reduction and will specify all references for all inputs and assumptions.]

1. Provide a brief description of each input or assumption and explain the source and how each input/assumption was derived.
	* Focus on the constants, calculation inputs values, load shapes, and any standards or codes used for the calculations
	* Do not include values within the body text.
	* All values should be presented in a dynamic value table if used in a calculation, or in a static table
2. Create value tables of inputs
	* Embed the reference that substantiates each value/assumption in the table

Calculation File:

* + - Calculation file naming convention: Measure ID-Version\_Calcs\_Files.xlsx
		- NOTE: Calculation files should provide weighting and any calculations needed to derive peak demand
		- Indicate specific tab in Excel file if applicable.
		- Coincident Demand Factor

Load Shape

HVAC Interactive Effects

1. Embed value table(s) in measure characterization field

[Boilerplate Text.à] The inputs for the calculation of the peak demand reduction are specified below.

Sample Calculation

[Provide sample calculation (static) if needed]

Gas Savings (therms)

[If gas savings were derived using same methodology as electric savings, boilerplate text. à] Gas unit energy savings (UES) values were derived using the methodology presented in Electric Savings.

[Provide sample calculation (static) if needed]



Section 3: Modeled Measure Energy Savings & Demand Impacts Fields

This section provides specific guidance for completing the following fields for the measure characterization of a measure for which unit energy savings and demand reduction were derived from energy use simulations:

Electric Savings (kWh)

Peak Electric Demand Reduction (kW)

Gas Savings (therms)

*It is strongly recommended that the measure developer use fields of a similar measure as a model.*

All other measure characterization fields in Section 1 are also required.

Instructions for each table are provided in a comment. Remove instruction comments after the draft is complete.

All tables in this template are required unless marked as ***optional*** in the instructions.

Do not modify the table names.

Do not modify the structure of tables; keep all columns, column headings, and rows intact unless the instructions indicate that columns or rows can be removed (or added).

Do not delete or change contents of shaded cells in a table.

The cell contents of tables in this template are intended to serve as examples.

Do not modify the names of calculations. Sample calculations are provided and should be modified as necessary to represent the calculations used to derive the final unit energy savings (UES).

Electric Savings (kWh)

Overview

[Boilerplate Text à] The electric unit energy savings (UES) of this measure were derived from building energy use simulation results and were calculated as the difference between the baseline and measure building unit energy consumption (UEC). Building energy use and demand were estimated using [specify model software and version here].

[Insert citation for the simulation model files. All input and output files should be provided in a compressed zip file.]

* + - Zip file naming convention: “Measure ID-Version\_Model\_Files.zip”
		- All modeling files should either be INP and/or PD2 and attached within a zip folder for DOE2 models

Unit Energy Consumption (UEC) Modeling Tool Summary

| Platform | DOE-2 | ENERGYPLUS |
| --- | --- | --- |
| Model Type | DEER *or* DEER Modified *or* IOU Modeled | DEER models are ONLY in DOE-2 format. Use “DEER Modified” or “IOU Modeled” for engines other than DOE-2. |
| Energy Modeling Engine | DOE-2.3 version X.Y *or* DOE-2.2R version X.Y | EnergyPlus version X.Y |
| Energy Modeling Interface | eQUEST version 3.65-7175 | IDF Editor version X.X/Openstudio version X.X/DesignBuilder version X.X /Text Editor for raw input files |
| Batch Processor | MASControl3 | EnergyPlus Parametric PreProccessor/OpenStudio Parametric Analysis Tool/Params/Manually edited input file modifications |
| Weather files | CEC CZ2010 | CEC CZ2010 |
| Prototype Source | … | … |

[Add the table below if Relationship is Matched or Base Model]

[Measure Offering IDs and DEER Measure IDs](https://www.caetrm.com/measure/SWBE006/draft/value-table/89712/)

| STATEWIDE MEASURE OFFERING ID | DEER Measure ID | RELATIONSHIP | VERSION SOURCE |
| --- | --- | --- | --- |
| A | … | Matched *or* Base Model | D20v1 |
| B | … | Matched *or* Base Model | D20v1 |

[Add the table below if the Relationship is Modified for at least one Statewide Measure Offering ID]

[Measure Offering IDs and DEER Measure IDs](https://www.caetrm.com/measure/SWBE006/draft/value-table/89712/)

| STATEWIDE MEASURE OFFERING ID | DEER Measure ID | RELATIONSHIP (with Custom ID) | VERSION SOURCE |
| --- | --- | --- | --- |
| A | … | Matched *or* Base Model | D20v1 |
| B | … | Modified to [insert new customized ID if applicable] | WaterHeater-Calculator-v4.1 |

[Add paragraph to explain Unit Energy Consumption key drivers and specify key parameters]

[Sample Text, modify accordingly à]Electric savings vary by building type, building vintage, and climate zone. All DEER “Com” building types as well as the “existing” vintage (“Ex”, weighted DEER vintages) and all climate zones were used.

[Add text to explain how UECs vary by the parameters specified above. Were all building types, building vintages and climate zones modeled? If not, please state which combinations were excluded and why.]

[Include the tables below to specify building types, building vintages, climate zones, HVAC Type, Thermostat Options, and Case Options. For each line item indicate if modeled (Yes or No)]

Building Type Description

Commercial Building Types

| BUILDING TYPE | Building Type CODE | MODELED |
| --- | --- | --- |
| Assembly | Asm | Yes |
| Community College | ECC | Yes |
| Primary School | EPr | Yes |
| Relocatable Classroom | ERC | Yes |
| Secondary School | ESe | Yes |
| University | EUn | Yes |
| Grocery | Gro | Yes |
| Hospital | Hsp | Yes |
| Nursing Home | Nrs | Yes |
| Hotel | Htl | Yes |
| Motel | Mtl | Yes |
| Manufacturing Biotech | MBT | Yes |
| Manufacturing Light Industrial | MLI | Yes |
| Office - Large | OfL | Yes |
| Office - Small | OfS | Yes |
| Restaurant - Fast-Food | RFF | Yes |
| Restaurant - Sit-Down | RSD | Yes |
| Retail - Multistory Large | Rt3 | Yes |
| Retail - Single-Story Large | RtL | Yes |
| Retail - Small | RtS | Yes |
| Storage - Conditioned | SCn | No |
| Storage - Unconditioned | SUn | No |
| Warehouse - Refrigerated | WRf | Yes |
| Greenhouse | GHs | No |

Residential Building Types

|  |  |  |
| --- | --- | --- |
| BUILDING TYPE | Building Type CODE | MODELED |
| Residential Single Family | SFm | No |
| Residential Multi-family | MFm | No |
| Residential Mobile Home | DMo | No |

Vintage

Non-Mobile Home Vintages

| VINTAGEERA | VINTAGE | VINTAGE CODE | MODELED |
| --- | --- | --- | --- |
| Old (Old) | 1975 | Before 1978 | No |
| 1985 | 1987 - 1992 | No |
| 1996 | 1993 - 2001 | No |
| Median (Ex) | 2003 | 2002 - 2005 | Yes |
| 2007 | 2006 - 2009 | Yes |
| 2011 | 2010 - 2013 | Yes |
| 2015 | 2014 - 2016 | Yes |
| Recent (Rec) | 2017 | 2017 – 2019 | No |
| 2020 | After 2019 | No |
| New (New) | New | New Construction | No |

Mobile Home Vintages

|  |  |  |  |
| --- | --- | --- | --- |
| Old (Old) | MH72 | Before 1976 | No |
| MH85 | 1976 – 1994 | No |
| Median (Ex) | MH00 | 1995 – 2005 | Yes |
| MH06 | 2006 – 2014 | Yes |
| Recent (Rec) | MH15 | After 2014 | No |
| New (New) | New | New Construction | No |

Climate Zone

| CLIMATEZONE | CLIMATE ZONE DESCRIPTION | MODELED |
| --- | --- | --- |
| 1 | Arcata Area (CZ01) | Yes |
| 2 | Santa Rosa Area (CZ02) | Yes |
| 3 | Oakland Area (CZ03) | Yes |
| 4 | Sunnyvale Area (CZ04) | Yes |
| 5 | Santa Maria Area (CZ05) | Yes |
| 6 | Los Angeles Area (CZ06) | Yes |
| 7 | San Diego Area (CZ07) | Yes |
| 8 | El Toro Area (CZ08) | Yes |
| 9 | Pasadena Area (CZ09) | Yes |
| 10 | San Bernardino Area (CZ10) | Yes |
| 11 | Red Bluff Area (CZ11) | Yes |
| 12 | Sacramento Area (CZ12) | Yes |
| 13 | Fresno Area (CZ13) | Yes |
| 14 | China Lake Area (CZ14) | Yes |
| 15 | Blythe Area (CZ15) | Yes |
| 16 | Mount Shasta Area (CZ16) | Yes |

HVAC Type

| HVAC TYPE | HVAC Description | MODELED |
| --- | --- | --- |
| cDXGF | AC Unit with Gas Heat | Yes |
| cNCGF | AC Only Unit | Yes |
| cDXHP | Heat Pump | Yes |
| cPVVG | Variable Volume AC Unit with Gas Heat | Yes |
| rDXGF | Central AC with gas furnace | No |
| rDXHP | Central heat pump with electric resistance backup | No |
| rNCEH | No cooling, electric baseboard heating | No |
| rNCGF | No cooling, gas furnace | No |

Thermostat Options

| Thermostat options | modeled |
| --- | --- |
| t0 | Yes |
| t1 | Yes |
| t2 | Yes |
| t3 | Yes |
| t4 | Yes |
| t5 | Yes |

Case Options

| DESCRIPTION | CODE | MODELED |
| --- | --- | --- |
| Preexisting | Pre | Yes |
| Standard Practice | Std | Yes |
| Measure | Msr | Yes |

Baseline Energy Use Simulation

[If **DEER Prototypes were used/modified**à State which DEER prototypes were used. Add text to describe modifications that were made to the DEER prototypes (and explain the rationale for such modifications. Explain if other parties were consulted to determine if/how to modify the prototypes. (For example, California Public Utilities Commission (CPUC) Energy Division Ex-Ante Review Team) Cite references.]

[Add text to introduce the following table and briefly explain key characteristics/source of baseline parameters.]

Baseline Parameter Modifications

| Parameter | Parameter description | DEER VALUE / assumption | MODIFIED BASELINE VALUE/assumption |
| --- | --- | --- | --- |
| DAY-SCHEDULE:VALUES[#] | Defines the hourly profile for a particular type of day (such as weekday, weekend day, or holiday)VALUES = An optional keyword that accepts a list of values corresponding to a range of hours | If > 0.9 | 0.9 Only in daily schedules being used for space occupancy |
| SYSTEM:ECONO-LIMIT-T | SYSTEM = Specifies the data for a secondary HVAC distribution system | Varies | Varies by climate zone from 69°F to 75°F, depending on Title 24 2019 Table 140.4-E requirement |
| … |  | … | … |

Baseline Parameters

| Parameter | parameter description | DESIGN VALUE / assumption | SOURCE |
| --- | --- | --- | --- |
| SUPPLY-KW/FLOW | Design full-load power of the supply fan per unit of supply air flow rate | Varies | DEER2020 prototypes default  |
| SUPPLY-MTR CLASS  orSUPPLY-MTR-EFF | Specifies the motor class (efficiency) of the HVAC supply fan | PREMIUM | Code of Federal Regulations at 10 CFR 431 Subpart C. |
| … |  | … | … |

Measure Case Energy Use Simulation

[Add text here to introduce the following table and to describe modifications implemented for the measure case simulations with respect to the baseline model.]

Measure Parameter Modifications

| Parameter | PARAMETER DESCRIPTION | DEER VALUE / assumption | Measure VALUE/assumption |
| --- | --- | --- | --- |
| SYSTEM:FAN-EIR-FPLR | Takes the U-name of a linear, quadratic, or cubic curve that gives the ratio of fan electric energy to full-load fan electric energy, as a function of part-load ratio | One-speed\_basecaseFan EIR fPLR | Two-speed\_standard Fan EIR fPLRTwo-speed\_NEMA Fan EIR fPLRTwo-speed\_PMM Fan EIR fPLR |
| SYSTEM:AIR/TEMP-CONTROL | Used for systems which incorporate multiple steps or stages of capacity | VARIABLE | STAGED-VOLUME |
| … |  | … | … |

Measure Parameters

| Parameter | PARAMETER DESCRIPTION | DESIGN VALUE / assumption | SOURCE |
| --- | --- | --- | --- |
| SUPPLY-KW/FLOW | Design full-load power of the supply fan per unit of supply air flow rate | SUPPLY-KW/FLOW[baseline] \*adjustment factor | DEER2020 default adjusted for increased motorefficiency to 92.5% typical for 2 hp and 3 hp SRM.Southern California Edison (SCE). 2019. “SWHC041-01 SRM Datasheets.zip.”  |
| … |  | … | … |

Calculation of Unit Energy Savings

[This section will include an explanation of how unit energy savings (UES) were derived from the modeled building baseline and measure case energy use.]

1. Provide a general description the UES calculation. (Typically, this is “The UES is calculated as the difference between the baseline and measure case UEC values generated by the simulations described above.”)
2. Explain if weights used to calculate savings. Explain the weighting factors (CZ weights, BT weights, etc.) and explain the following:
* The rationale for weighting the UES values (For example, if programs do not track the specific building type of an installation, building weights are required …)
* The source of the weighting factors, how weighting factors were developed, and the original source. (Note that the weighting factors file(s) and any associated information should be provided as a reference and will be included within the “Inputs and Assumptions” section below)
* How the weighting factors were applied to the UES values. (For example, DEER 2020 building weights can be used to calculate the weighted average of UES values for a specific building type across several vintages.)
* If the weighting factors are a function of any parameters. (Program administrator (PA), building type, building location (CZ), building vintage, etc.)
1. Include any relevant tables and associated explanation, such as the Climate Zone – IOU Service Area mapping provided below.

Climate Zone – IOU Service Area Mapping

| PROGRAM ADMINISTRATOR | CLIMATE ZONE |
| --- | --- |
| SCE (or SCG) | CZ06, CZ08, CZ09, CZ10, CZ14, CZ15, CZ16 |
| PG&E | CZ01, CZ02, CZ03, CZ04, CZ05, CZ11, CZ12, CZ13 |
| SDG&E | CZ07 |

1. Briefly explain the procedure to calculate UES values – explain how normalizing units, climate zones, building types and building vintages were utilized in the calculation and how the whole-building UEC or UES were converted to the normalized unit.
2. Insert UES calculation and provide a definition for each variable (either a static equation or a dynamic equation, which is pulled from the Calculation tab) (if applicable)

State the parameters that correspond to the UES calculation. For example, SWSV001: “Savings values were reported by building type (residential single family, multifamily, and mobile home) and climate zone. For this measure, the “existing (weighted DEER vintages)” building vintage was specified.”

Include the following calculation:

* + - Annual Unit Energy Savings – Electric (kWh/yr)
		- NOTE: The eTRM documents both Baseline UEC and Measure Case UEC whenever possible, so savings should be calculated as the difference of these two usage values rather than just stated.

If applicable, insert one or more calculations that require modifying the UES. An adjustment factor is commonly used to calculate the UES of a DEER Modified measure. (The dynamic calculation from SWSV003 provided below as an example)

Annual Unit Energy Savings - Electric, Adjusted

|  |
| --- |
| EQUATION (KWH / YR) |
| *UES\_RCA\_\_YrkWh* x *adjFac* |

Inputs and Assumptions

[This section will explain all inputs and assumptions for the calculation of the final UES values and will specify all references for such inputs and assumptions.]

1. Provide a brief description of each input or assumption. Inputs/assumptions may be presented in tabular form; for some measures or for some specific inputs/assumptions it may be more appropriate to explain in narrative format.
2. For each input/assumption, cite the reference from which it was obtained or derived.
3. Common reference files and examples are listed below

Calculation File:

* + - Calculation file naming convention: Measure ID-Version\_Calcs\_Files.xlsx
		- NOTE: Calculation files should provide weighting and any calculations needed to derive UES
		- Indicate specific tab in Excel file if applicable
		- Example: SWHC030: R1022 - Southern California Edison (SCE). 2019. “SWHC030-01\_Calcs\_Files.xlsx”

Weighting File: Weight file(s) and any associated information should be provided as a reference

* + - Example: SWSV010: R957 - Pacific Gas and Electric Company (PG&E). 2019. “SWSV010-01 Econ Control Vintage Weighted Savings.xlsx”

Weather Data Files: Include CEC CZ weather files (if applicable):

* + - Example: R123 - California Energy Commission (CEC). 2011. “CZ2010 Weather Files.xlsx.”
1. If DEER Modified measure: Explain why and how savings needed to be modified. State if the adjustment factor varies by a parameter, such as vary by climate zone or building type. State the requirements that necessitated the modification/adjustment. (For example, a code change - 2016 Title 24, 2013 Title 20)
2. Explain if the savings values and/or input assumptions were approved in a DEER update resolution? If so, specify and provide section/page/table number. (For example, E-4952, E-4867, E-5009)
3. Explain how the input/assumption is derived.
	* + Focus on the constants, parameter values, load shapes, eQUEST input variables, energy use and cooling capacity data, thermostat multipliers, performance curves and any standards or codes used for the calculations/modeling
		+ Provide tables of the data used (either static or pulled from the Supporting Data tab)
		+ Provide a sample of the assumptions used in the DEER simulation prototypes
4. Provide the original references and documentation that substantiates all inputs and assumptions. Examples provided below:

2004-2005 DEER Update Study conducted by Itron, Inc.

May 2013 NRQM Disposition, May 2013 RQM Disposition

HVAC Impact Evaluation FINAL Report WO32 conducted by DNV GL (“WO32 Study”)

Emerging Technologies (ET) Program study

Residential Appliance Saturation Survey (RASS) data

Reference within a sentence:

* + - SWBE006: “Per the DEER 2004-2005 Update Study Final Report, the overall ceiling U-Factors for the measure, baseline and code baseline are listed in the Residential Roof Insulation Table (ResRoofInsMeasures Sheet of 2005DEERResidentialMeasuresList\_05-08-15.xls).”
		- Note that if an input or assumption was approved in a DEER Resolution, the Resolution is typically not the original source for the value. The Resolution should be cited in addition to the original source.

Peak Electric Demand Reduction (kW)

[Boilerplate text à] Peak demand reduction values were derived using the methodology presented in Electric Savings. The peak demand reduction was calculated as the difference between the baseline and measure case average hourly peak demand for the 15 hours of the peak period from 4:00 p.m. to 9:00 p.m. during the three consecutive weekday period within the dates of June 1 through September 30 that was defined within each climate zone by having the highest algebraic sum of the average temperature over the three-day period from 12 noon to 6 p.m. R622, OP1

Gas Savings (therms)

[Boilerplate text à] Gas unit energy savings (UES) values were derived using the methodology presented in Electric Savings.



Section 4: DEER Measure Energy Savings & Demand Impacts Fields

This section provides specific guidance for completing the following fields for the measure characterization of a measure for which unit energy savings and demand reduction were derived from a DEER measure:

Electric Savings (kWh)

Peak Electric Demand Reduction (kW)

Gas Savings (therms)

*It is strongly recommended that the measure developer use fields of a similar measure as a model.*

Electric Savings (kWh)

[Boilerplate text à] The electric unit energy savings (UES) of this measure were retrieved directly from the Database of Energy Efficient Resources (DEER). The version used to calculate savings for these measures is [specify DEER version].

[Create and embed Measure Offering IDs and DEER Measure IDs table:]

[Add the table below if Relationship is Matched or Base Model]

[Measure Offering IDs and DEER Measure IDs](https://www.caetrm.com/measure/SWHC027/01/value-table/170937/)

| Statewide Measure Offering ID | Deer Measure ID | Relationship | Version Source |
| --- | --- | --- | --- |
|  |  | Base Model |  |
|  |  | Matched |  |
|  |  |  |  |

[Add the table below if the Relationship is Modified for at least one Statewide Measure Offering ID]

[Measure Offering IDs and DEER Measure IDs](https://www.caetrm.com/measure/SWBE006/draft/value-table/89712/)

| STATEWIDE MEASURE OFFERING ID | DEER Measure ID | RELATIONSHIP (with Custom ID) | VERSION SOURCE |
| --- | --- | --- | --- |
|  | … |  |  |
|  | … | Modified to [insert new customized ID if applicable] |  |

[If DEER savings values were scaled or modified, explain approach and include table of scaling factor(s)]

Peak Electric Demand Reduction (kW)

[Boilerplate text à] The peak demand reduction values of this measure were retrieved directly from the Database of Energy Efficient Resources (DEER). See Electric Savings.

[If DEER savings values were scaled or modified, explain approach and include table of scaling factor(s)]

Gas Savings (therms)

[Boilerplate text à] Gas unit energy savings (UES) values were derived using the methodology presented in Electric Savings.