# RTR Appendix

This Appendix contains the Responses to Recommendations in the report:

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| **Study Title:** | PY 2016-2018 Building Codes Advocacy Program Evaluation Volume II – Final Report |
| **Program:** | Codes & Standards |
| **Author:** | Opinion Dynamics; Guidehouse; Market Logics |
| **Calmac ID:** | CPU0235.02 |
| **ED WO:** | 17PS5017 |
| **Link to Report:** | https://www.calmac.org/publications/C&S-Report_Del_13A_Vol2_FINAL_04-20-23.pdf |

The RTR reports demonstrate the Utility/Utilities' plans and activities to incorporate EM&V evaluation recommendations into programs to improve performance and operations, where applicable. The Joint IOUs' approach is consistent with the CPUC Decision (D.) 07-09-043[1].

Individual RTR reports consist of a spreadsheet for each evaluation study. Recommendations were copied verbatim from each evaluation's "Recommendations" section.[2] In cases where reports do not contain a section for recommendations, the Joint IOUs attempted to identify recommendations contained within the evaluation. Responses to the recommendations were made on a statewide basis when possible, and when that was not appropriate (e.g., due to utility-specific recommendations), the Joint IOUs responded individually and clearly indicated the authorship of the response.

The Joint IOUs are proud of this opportunity to publicly demonstrate how programs are taking advantage of evaluation recommendations, while providing transparency to stakeholders on the "positive feedback loop" between program design, implementation, and evaluation. This feedback loop can also provide guidance to the evaluation community on the types and structure of recommendations that are most relevant and helpful to program managers. The Joint IOUs believe this feedback will help improve both programs and future evaluation reports.

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1 Attachment 7, page 4, "Within 60 days of public release, program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings as they relate to potential changes to the programs. Energy Division can choose to extend the 60 day limit if the administrator presents a compelling case that more time is needed and the delay will not cause any problems in the implementation schedule, and may shorten the time on a case-by-case basis if necessary to avoid delays in the schedule."

2 Recommendations may have also been made to the CPUC, the CEC, and evaluators. Responses to these recommendations will be made by Energy Division at a later time and posted separately.

**Response to Recommendations (RTR) in Impact, Process, and Market Assessment Studies**

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| | | | | If incorrect, please indicate and redirect in notes. | Choose: Accepted, Rejected, or Other | Examples:<br>Describe specific program change, give reason for rejection, or indicate that it's under further review. |
| 1 | 61 | Documentation for ISSM parameters can be inconsistent from CASE reports to IOU documentation to CEDARS claims. | Provide all ISSM parameter data with claims. This recommendation was proposed (and agreed to) during the standards advocacy evaluation (Volume I). It is included here as a reminder that transparency of these data and their underlying assumptions supports continuous improvement for evaluation and forecasting. | C&S Program Administrator and CPUC | Other | The recommendation to which PG&E agreed for the Title 20 evaluation study was to include summary tables of ISSM inputs with the CCSRs. CCSRs are developed based on information provided in CASE reports, additional information from other C&S advocacy records, and estimated ISSM data not included in CASE reports. As needed, CCSRs include relevant updates after CASE reports are completed. Therefore, CCSRs may not be completely aligned with the CASE reports. CASE reports support C&S advocacy with the California Energy Commission (CEC), meeting the CEC's criteria for content in the format they require and are not structured to be used directly as savings claim support documentation with the CPUC evaluators. In the subsequent code cycles after the 2016 update, summary reports called "Results Reports" were created to help clarify the difference between what was proposed and what was adopted.<br><br>CASE reports provide estimation of unit energy savings and annual installation, but not an estimation of compliance rates, normally occurring market adoption rates, and program attribution scores, which are needed to develop CEDARS claims. For Title 24, Part 6 (Energy Code) CASE report development, annual installations need to be based on new construction and building stock forecasts provided by the CEC. For annual energy savings claims with the CPUC, IOUs provide true-up energy savings estimations. Accordingly, annual installation needs to be updated to reflect actual building construction rates. This and past C&S evaluation studies all acknowledged that actual building construction rates can be significantly different from those based on CEC's forecast.<br><br>IOUs can improve documentation of ISSM parameters used for CEDARS claims. For reasons explained above, it is not practical to have consistent documentation of ISSM parameters between CASE reports and CEDARS claims. The existing CEDARS system does not include relevant fields for reporting all ISSM parameters. For the most updated data, the IOUs can provide ISSM parameters used to develop CEDARS claim and documentation of relevant data sources and assumptions to C&S evaluators through response to a data request from the CPUC. |
| 2 | 61 | We found documentation, especially for nonresidential whole building savings, to be convoluted and in some instances contradictory with other IOU-produced documentation. | Provide a step-by-step analysis to present a clearer mapping of whole building assumptions and savings. Typically, there is confusion among evaluators, regulators, and other data users about how whole building savings are derived. To address this, we recommend including interim steps with savings per square foot by climate zone and building type in documentation. This will | C&S Program Administrator | Rejected | For 2016 and for subsequent Energy Code update cycles, the IOUs developed unit energy savings for whole-building measures based on the California Energy Commission's (CEC) Title 24 Impact Analysis study, which assesses energy savings from newly adopted measures based on simulation models for representative non-residential and residential building types. This methodology is established, and accepted by past evaluation teams. The IOUs are happy to discuss this methodology upon request. Unfortunately, no IOU program staff were interviewed for this evaluation, and were not aware of this confusion. The CEC impact analysis was based on whole-building energy simulation of representative building prototypes, not based on energy savings provided in individual CASE reports. There are no interim steps between the CEC 2016 Title 24 impact analysis and the claim unit energy savings for whole building measures. |

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| | | | streamline the evaluation process and provide value to other data users.<br>. We've included two simplified examples of potential approaches to take that combine all code savings with a usable audit trail.<br>Example 1: Combine code savings by end use and weight the savings for each end use by energy use as reported by the California Commercial End-Use Survey available from the California Energy Commission.<br>Example 2: Generate simulations models for all building types for all climate zones under the preceding and current code cycle and develop a weighted average per square foot. | | | Given the complexity of building energy use characteristics and energy simulation approaches, there are differences in energy impact analysis between whole building and individual measures. These differences have been documented by the 2013-2015 C&S evaluation report (Section 2.1.4 "Relationship Between Whole Building Estimates and Individual Standards"), which also discussed approaches to reconcile these differences, but also discusses the pros and cons of each approach.<br><br>While the IOUs will provide better documentation on ISSM parameters for whole building measures in the future, we recommend that for future evaluations, the CPUC C&S evaluators include interviews with the IOUs, the Implementers, and the CEC to gain a better understanding of the CEC's Title 24 Impact Analysis. |
| 3a | 62 | Economic conditions seem to be changing more frequently than in the past. Forecasts of housing units or commercial square feet are produced and updated frequently as well. There are two main options for source data on housing units in California depending on the use case.<br>1. The California Energy Commission Demand Analysis Office produces data on building stock and additions for residential housing units and stock and addition square feet for nonresidential buildings. The California Energy Commission forecast includes low-, mid-, and high-range scenario forecasts. Given the lag time between forecast and IOU filings, we do not recommend a specific scenario, but it should be identified in documentation for consistency and clarity.<br>2. The California Department of Finance compiles data on building permits issued for residential single-family and multifamily new construction and the dollar value of alterations. Multifamily new construction can be further broken down by number of units by using US Bureau of Census data. | For consistency across programs and studies, we recommend the continued use of California Energy Commission Demand Analysis Office forecasts on building stock and additions for residential housing units and additional square footage for nonresidential buildings. As each dataset has pros and cons; however, we recommend the data set used should be explicitly stated, along with an explanation of why it reflects the most expected outcome. | C&S Program Administrator | Accept | The IOUs aim to provide accurate savings estimation for annual energy savings claim to reflect installations of C&S measures. As revealed by this C&S evaluation study, actual building construction rates can be different from those provided in the CEC's construction rate forecast due to dynamic market conditions. For accurate savings estimations, IOUs need to update building construction rates according to market conditions, instead of solely relying on CEC's forecast, which were developed several years before the corresponding effective year of the Energy Code they were used to develop.<br><br>Final annual savings claims for each year are filed with the CPUC at the beginning of the following year, when actual building construction rate data for the prior year is not yet available. The IOUs will document market condition assumptions used to update building construction rate estimates. |
| 3b | 62 | | Consider using number of dwelling units when forecasting multifamily savings rather than total square feet. Using number of dwelling units is more relatable than square feet and aids in understanding of housing trends for policy makers and other stakeholders. | C&S Program Administrator | Accept | The CASE reports developed to support the advancement of the 2016 Energy Code use per unit savings for multifamily buildings, as well as for the 2019 and 2022 code cycles. The Program plans to continue the practice of estimating statewide impacts for the first year by multiplying per-dwelling unit savings estimates by statewide construction forecasts for new dwelling units that the Energy Commission provides. |

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| 4a | 62 | Codes cycles are not equal in terms of new codes (or standards) approved, impact on industry, and energy savings generated. Some cycles include aggressive changes, other cycles may only be comprised of minor updates due to focus on other related issues or to allow the industry to "catch-up." Consequently, each evaluation will not produce the same value in terms of supporting the State's goal of reducing greenhouse gas emissions. | Review the changes to codes or standards before initiating an evaluation of the C&S advocacy programs. Do the potential savings warrant a full impact evaluation? | CPUC | | |
| 4b | 62 | | Consider individual studies for individual sectors or building types. For example, a study can focus on a certain sector and building type. Going forward we recommend a focus on multifamily dwellings. Multifamily dwellings are becoming the more common type of residential new construction structure in California. Highrise and larger low- to mid-rise developments promise to become even more common as available land decreases and urban infill becomes more necessary to stay coordinated with the State's climate goals. | CPUC | | |
| 5 | 62 | The C&S advocacy evaluation is really four separate studies that each require different skill sets and a broad set of participants (experts from various industries and property owners/operators). These four studies include macroeconomic research and engineering simulation modeling (Potential savings), plan review and field studies (Compliance), market research (NOMAD) and process evaluation (Attribution). | After reviewing IOU savings and assumptions for a given Title 24 code cycle, we recommend deciding which study or studies to commission. The IOUs are scheduled to provide all ISSM parameters along with their annual claim filings. These parameters, along with an analysis of the new building code, can be the basis for determining the study or studies to commission. | CPUC | | |
| 6 | 63 | The most time-consuming and costly task for the C&S evaluation is identifying and recruiting participant buildings, particularly residential homes. The COVID-19 pandemic of 2020– 2021 and unoccupied buildings, due mainly to remote working, were two of the highest hurdles we had to access buildings. Building owners and | Going forward, consider an alternate evaluation approach that does not rely heavily on access to homes and businesses. For example, the results from single-family evaluations have been consistent over time. ESAF rates for residential codes hover at or near 100%. As a result, under most code cycles, visiting homes is not worth the time or monetary investment compared to the value of information collected. Where plans with Title 24 Certificate of Compliance documents can be accessed, those could be reviewed for energy budgets and | CPUC | | |

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| | | homeowners were often offsite, outside the city or even state. Even with a $100 incentive, homeowners were understandably reluctant to let anyone into their home. Additionally, building departments were closed or working at minimal staffing levels for nearly two years. We found in most cases that digitized plans were rare before 2018. Due to this, jurisdictions tended to store plans offsite, and these older plans could only be accessed physically. Even then, legal issues of confidentiality and State agency access had to each be dealt with on an individual jurisdiction-by-jurisdiction basis. | types of equipment. In addition, homes could be accessed virtually to review basic equipment (e.g., lighting and cooking) using real estate websites or other public data websites. Alternatively, to simplify the evaluation procedure and reduce the required time to complete all data collection, the ISSM calculation "compliance"/ESAF rate could be stipulated. For example, at 70%. | | | |