

RTR Appendix

Southern California Edison, Pacific Gas and Electric, Southern California Gas, and San Diego Gas and Electric (“Joint Utilities” or “Joint IOUs”) developed Responses to Recommendations (RTR) contained in the evaluation studies of the 2013-2015 Energy Efficiency Program Cycle and beyond. This Appendix contains the Responses to Recommendations in the report:

<i>RTR for the Custom, Industrial, Agricultural, and Commercial 2020-21 Impact Evaluation</i> (Calmac ID #CPU0363.01)
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The RTR reports demonstrate the Joint 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.) 07-09-043¹ and the Energy Division-Investor Owned Utility Energy Efficiency Evaluation, Measurement and Verification (EM&V) Plan² for 2013 and beyond.

Individual RTR reports consist of a spreadsheet for each evaluation study. Recommendations were copied verbatim from each evaluation’s “Recommendations” section.³ 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.

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 Page 336, “Within 60 days of public release of a final report, the 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. The IOU responses will be posted on the public document website.” The Plan is available at <http://www.energydataweb.com/cpuc>.

³ 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
SDG&E Response

Study Title: Custom Industrial, Agricultural, and Commercial (CIAC) 2020-21 Impact Evaluation
Program: N/A
Author: DNV GL
Calmac ID: CPU0363.01
ED WO: Custom Industrial, Agricultural, and Commercial (CIAC) 2020-21 Impact Evaluation
Link to Report: https://www.calmac.org/publications/CIAC_2020-2021_Evaluation_Final_Report.pdf

MANAGEMENT APPROVAL AFTER REVIEWING ALL IOU RESPONSES		
	Name	Date
SDG&E Engineering	John Zwick	12/21/2023
SDG&E Operations	Kelvin Valenzuela	12/26/2023

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				If incorrect, please indicate and redirect in notes.	Choose: Accepted, Rejected, or Other	Examples: Describe specific program change, give reason for rejection, or indicate that it's under further review.
Gross Savings; Custom Non-Lighting Conclusions and Recommendations						
1	45	Impacts of on-site generation or non-IOU delivered fuels: In several projects with on-site generation of power, the PA did not consider the impacts of photovoltaic (PV) on-site generation appropriately while estimating the savings. In some cases, the customer was only using PA grid power for three months in a year, but full annual savings credit was claimed, and incentives were paid accordingly to the customer. Similar situations were found for projects where non-IOU fuels were delivered, where the PA did not adjust reported savings to only claim savings for grid impacts. In some cases, non-IOU delivered fuels accounted for over 90% of building usage.	The PAs should consider the impact of the on-site generation and only claim savings for periods the customer is purchasing power from the PA: PAs should calculate incentive payment to the customer based on the grid impact of energy savings.	All	Accepted	SDG&E agrees with the recommendation and has been following the CPUC guidance document "Energy Efficiency Savings Eligibility at Sites with non-IOU Supplied Energy Sources".
2	46	Incorrect or outdated baseline information: Many sources used for baseline information were based on old and/or inaccurate information, including ISP studies that were no longer relevant. Measures that fell into this category included HVAC fans for cow barns, for example. This lack of an appropriate, informed ISP required us to conduct "mini-ISPs," where we reached out to multiple equipment vendors to determine an appropriate baseline at the time of installation. We also found instances where ISPs were decided using hypothetical situations such as the transfer of used equipment from other locations or scenarios in which equipment would be modified or repaired perpetually to increase production output. We point out that the CPUC	PAs should ensure appropriate baselines and ISPs are being used at the time of project approval: Prior to approving normal replacement and capacity expansion projects, the PAs should ensure that the current standard practice is identified and applied. If available ISP studies are used, the PAs should ensure that those are less than five years old at the time of project application and approval. Older ISP studies should be reassessed for continued applicability or replaced with updated standard practice. If a project is delayed, the PA should revisit the ISP before granting project extensions to ensure the continued applicability of standard practice. This is also critical when a project using	All	Other	SDG&E agrees that appropriate baselines should be used at the time of project approval. SDG&E does not support the recommendation that new ISPs are required every 5 years, nor that new ISPs are required when projects are extended due to installation delays.

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		resolution E-4818 has removed repair indefinitely as the baseline category and this category is rolled in the accelerated replacement (AR) measure type. Using repairs and retrofits as justification for capacity expansion projects is not appropriate as doing so is considered accelerated replacement. Further, used equipment or retrofitted equipment has not been authorized as a baseline by the CPUC for capacity expansion or new construction as technical, economic, and functional performance equivalence for such actions cannot be reasonably estimated.	pre-existing conditions as the baseline is delayed because the baseline should be represented by the operation of the equipment prior to implementation. The delayed project may no longer reflect the initially used preexisting conditions or measurements. The CPUC should consider requiring re-baselining projects if they are delayed 24 months past the initial approval similar to the NMEC projects that require re-baselining for projects delayed by more than 18 months.			
3	46	PAs should ensure that contract extensions are granted annually as required in the customer agreement: CPUC requires that project savings be claimed in the year of installation unless savings measurement and true-up requirements are likely to delay the savings claim to a year different from the year the project was installed. Numerous projects were found to have been installed past the approved installation date without contract extensions and/or lacked continuing measurement requirements in the customer agreement. This resulted in projects being zeroed out based on the CPUC guidance rule violations. Informal grant of extensions via emails, often sent years after the initially approved installation date and without adjustment of the baseline conditions, was commonly seen.	PAs should ensure that projects are installed on the approved installation date and savings are claimed within the approved installation year; if projects cannot be installed, provide written extensions to be filed annually: PAs should formalize the extension process to ensure that proper procedures are followed when extensions are granted. Further, all measurement and savings true-up requirements should be formally specified in the customer agreement.	All	Accepted	SDG&E reports savings in the year of installation.
4	46	PAs should ensure that contract extensions are granted annually as required in the customer agreement: CPUC requires that project savings be claimed in the year of installation unless savings measurement and true-up requirements are likely to delay the savings claim to a year different from the year the project was installed. Numerous projects were found to have been installed past the approved installation date without contract extensions and/or lacked continuing measurement requirements in the customer agreement. This resulted in projects being zeroed out based on the CPUC guidance rule violations. Informal grant of extensions via emails, often sent years after the initially approved installation date and without adjustment of the baseline conditions, was commonly seen.	PAs should screen projects for eligible measures: We found many instances where measures ineligible per the statewide custom program manual were installed, such as VFDs less than 100 HP installed on HVAC fans.	All	Other	SDG&E agrees that measures must be eligible to be included. However, where guidance is not definitive and up to date for a specific measure, SDG&E may have a different engineering interpretation than the evaluation team.

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5	47	Equipment found to be operating at pre-existing conditions: There were many instances of projects, especially those classified as BRO-RCx where equipment was found to be operating at pre-installation conditions. Many of these projects reverted during the periods of COVID-19 operation for reasons such as increased air ventilation requirements, building schedules, minimum outdoor air requirements, etc., but were never re-programmed to settings as implemented to save energy, resulting in heavy reductions in evaluated savings or even zero savings in some cases.	PAs should ensure proper education on equipment and controls is provided to the customer, especially for BRO-RCx based measures: This will maximize the persistence of savings and reduce the chance of equipment and control sequences being changed drastically or reverted to pre-installation conditions.	All	Accepted	SDG&E agrees that proper education on equipment and controls should be provided to the customer. SDG&E will continue to work with its implementers to emphasize the need for proper education.
6	47	Inappropriate assignment of incentives for deemed/custom projects: For many projects, the evaluation team found that deemed measures were part of a custom project package. In many instances, the deemed measures were paid custom incentives or claimed custom-calculated savings.	The PAs should ensure that a deemed rebate is paid when available, and deemed savings are claimed for deemed measures bundled with a custom project.	All	Accepted	SDG&E agrees that a deemed rebate should be paid when available and has asked its implementers to avoid bundling deemed measures with a custom project.
7	47	As-built conditions not used to update savings models: The PAs should ensure that savings calculations are based on post-installation equipment-use schedules and reflect any changes to operating parameters (such as flow rates, temperatures and set points, system pressures, production rates, and power measurements). The PAs should always include a quality control check on engineering inputs such as equipment operating hours, operational parameters and production levels, and ensure that data used to derive operating profiles is adequately representative of typical operating conditions.	PAs should use post-installation parameters and operating conditions to estimate savings relative to baseline conditions.	All	Accepted	SDG&E agrees with this recommendation, and it is part of SDG&E's standard practice.
8	47	Short-term or limited data was used to inform annual savings: There were several instances where PAs used short-term metered data (1 week), or spot measurements from limited parameters to extrapolate savings. This methodology is not accurate in determining savings as limited data does not inform on potential changes in load from the installation of energy-efficient equipment/practice.	PAs should conduct a longer-term pre- and post- installation M&V that represents a typical operation to develop accurate savings estimates. The PAs should also normalize for production fluctuations (and other variables like weather where applicable) between pre- and post-installation periods.	All	Other	SDG&E does not entirely agree with this recommendation. M&V plans are tailored to each project and affected by the measures installed, project size, and customer profile. SDG&E agrees accurate M&V plans are necessary, but M&V plans should be tailored to the level of customer incentive and specific project circumstances.
9	47	Benefits or penalties for other fuels were not documented: There were some projects where benefits or penalties may have occurred for the other fuel but were not captured as part of the	PAs should capture all associated impacts to the grid including benefits or penalties for the other fuel, if applicable, even if the other fuel supplied is a non-IOU.	All	Other	SDG&E has limited experience with this recommendation in its service territory. However, additional CPUC written policy would be needed to support implementation of this recommendation.

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		claim. This was especially the case if the other fuel provider was a non-IOU.				
10	47	Agricultural pump projects do not normalize to changes in flow: We evaluated numerous agricultural pump projects which consider the efficiency improvements between pre- and post-implementation pump tests to determine savings. Considering the significant changes to demand that rainfall will have for a State burdened by droughts, the PAs do not normalize the use of parameters such as flow, leading to a less accurate determination of savings.	PAs should normalize pre- and post-implementation pump use to flow to consider the changes in demand between each period.	All	Accepted	SDG&E agrees with this recommendation.
Gross Savings; Custom Lighting Conclusions and Recommendations						
11	48	Each lighting-only sampled project provided a savings calculator: Modified Lighting Calculator (MLC), Easy Lighting Calculator (eLC), SCE's Type B TLED Calculator, or GrowGreen Calculator for horticultural projects. All calculators are required to use DEER inputs: hours of use (HOU), coincident demand factor (CDF), and interactive effects (IE.) DEER inputs were developed at business type/climate zone level using historic lighting logger data, whereas LED installations are often limited to specific use areas: grocery, warehouse, hallway, common areas, indoor parking garage, and research labs. Claimed savings for LED installations in spaces that operate 24/7 are always underestimated because the DEER tables have no 24/7 choice.	PAs should use area-specific categories to DEER tables to facilitate correct accounting of savings when installations do not fit the "average business type-specific" criteria. When DEER HOU's are not available, the PAs can conduct a study to develop HOU's, per D.12.05.015.	All	Other	SDG&E utilizes the approved MLC for custom projects and this CPUC-approved calculator is assumed to incorporate relevant technical assumptions. If there is justification to change technical assumptions because they lead to material changes in savings SDG&E agrees the CPUC should update these calculators to reflect updated technical assumptions.
12	48	PA documentation folders were complete and accurate: calculators were present, DLC screenshots were provided for the LEDs installed; invoices matched quantities and technologies in the calculators. Only three out of 50 sampled projects required additional data requests.	We recommend the PAs continue to work with implementers and customers to collect complete documentation.	All	Accepted	SDGE will continue to work with its implementers to collect complete project information and continually review its internal QA processes for custom projects.
13	48	The PAs classified each project as accelerated replacement (AR) – projects in which the existing lights were still viable, normal replacement (NR) projects in which the existing lights were at the end of their natural life, or new construction (NC). AR projects claim significantly higher savings than NR or NC projects. Information collected during customer telephone surveys led to changing the Measure	We recommend the PAs require implementers to provide photos of existing (viable) equipment and demonstrate equipment viability as required in E-5115.	All	Other	SDG&E requires the implementers to provide photos of existing equipment when applicable. However, E-5115 does not require photos for Very Low Rigor projects.

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		Application Type from AR to NR for seven out of 37 projects.				
14	48	Most LED measures installed were eligible according to Custom Project Guidance documents: Only a few projects installed Type A TLEDs without LED drivers which were considered ineligible because they do not meet the “permanent measure” criterion of the statewide custom program and policies manual (they can be easily removed and replaced with T8s).	We recommend that the PAs review technical documentation and calculators to ensure all measures are eligible. This is especially important whenever third parties/community aggregators provide measure installation.	All	Other	SDG&E does not support this recommendation since it goes against the precedent established in deemed measure package requirements for the Type A LED lamps. Type A LED lamps were also approved in previous versions of the MLC.
15	48	Four of the survey respondents indicated that all lighting measures were no longer in operation: one removed all lighting because the lighting quality was not as expected; one building burned down; one horticultural customer changed crops; another horticultural customer closed the business.	PAs can reduce inoperative installations by verifying customer satisfaction and lighting measure persistence for a sample of projects in each program year. Additionally, a better understanding of customer requirements before installation may reduce the frequency of inoperative installations.	All	Other	As programs transition to third-party implementation, SDG&E is requiring its implementers to verify customer satisfaction by sending a ‘Customer Satisfaction Survey.’ The implementer is then responsible for following up and ensuring the customer's satisfaction.
16	49	Claimed Effective Useful Life (EUL) values were generally accurate , with only three projects using a generic rated life of 20,000 hours instead of the actual 50,000 hours for the installed LED measure to cap EUL	PAs should use DEER EULs when available or the rated life of the installed measure from the DLC data and include screenshots as supporting evidence.	All	Rejected	SDG&E utilizes the approved MLC and feels the calculator should be sufficient evidence of compliance.
17	49	Claimed Remaining Useful Life (RUL) for AR projects was calculated as 1/3 of the claimed EUL. In many cases, this was consistent with the MLC Report tab found in pre-2021 versions of the MLC. The correct RUL is 1/3 of the EUL for the measure removed	The PAs should review the claimed RUL for any projects that still use older versions of the MLC, or other legacy calculators. The Reporting tab in the most recent MLC v13.1.1 provides the correct EUL/RULs, so this should not be an issue for projects that use MLC v13.1.1	All	Rejected	SDG&E utilizes the approved MLC and feels the calculator should be sufficient evidence of compliance. Projects should not be subject to retroactivity when using approved calculation tools.
18	49	The GrowGreen calculator (horticultural projects) uses standard practice baseline efficacy values based on a very limited number of high intensity discharge (HID) lighting fixtures. These few fixtures do not correctly account for products that are available for purchase on the California market and that are already commonly used by growers.	The PAs should consider additional research be conducted to 1) show the appropriate lighting technology mix for growing cannabis in California, and 2) find the appropriate baseline efficacy values associated with this technology mix. The survey data collected by Cannabis Business Times annually provide a saturation of various technologies installed every calendar year since 2016.	All	Rejected	SDG&E utilizes approved calculation tools. If calculation tools are determined to be inaccurate, they should be updated.
19	49	The GrowGreen calculator has embedded assumptions for the unit cost of energy (\$/kWh, \$/kW, and \$/Therm). These were not trued up using actual rates at the facility.	Since project cost savings are directly tied to program influence and the customer decision making for each project, horticultural projects should always update the embedded values with the correct rate for each customer.	All	Other	SDG&E utilizes approved calculation tools. It is often impractical to modify standard approved calculation assumptions with site specific parameters. However, if calculation assumptions are determined to require modification because they lead to material changes in savings, the affected approved calculators should be updated.

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20	49	To facilitate customer participation and reduce paperwork, custom projects allow the installation of deemed measures along with custom measures; the PA must claim deemed savings and pay deemed rebates for the deemed portion of such projects. The 2020-2021 lighting-only sample included several projects in which the PA submitted one custom claim (one Claim ID) for the installation of multiple deemed and custom measures. Custom documentation covered all (deemed and custom) measures installed. This complicated evaluation activities.	We recommend claiming the deemed portion of a custom project under a separate deemed claim. PA accounting for deemed claims is much simpler than for custom claims, and the PA tracking systems automatically apply the appropriate deemed savings and incentives to each measure. Having separate Claim IDs for deemed and custom measures in a custom project also simplifies evaluation efforts.	All	Accepted	SDG&E utilizes separate claim IDs for its deemed and custom measures.
Gross Savings; Savings by Design (SBD) Conclusions and Recommendations						
21	49	Non-reporting of negative energy or demand savings: We came across many instances within the SBD sample where the PAs zeroed out negative energy or demand impacts that were estimated by the PAs' savings calculation models, resulting from the project before entering them into the tracking database. In some cases, the negative impacts that would have existed from the installation of certain measures were not reported; for example, the installation of an energy-efficient electric service water heater in lieu of a Title 24 code baseline natural gas fired water heater would result in natural gas savings, but also additional electricity consumption on the grid, which was not reported as an impact resulting from the measure.	We recommend the PAs estimate and report energy or demand penalties from projects when applicable.	All	Accepted	SDG&E agrees with this recommendation and has already implemented the changes into our processes.
22	50	Absence of permit drawings and permit dates in PA documentation: For most sampled SBD projects, there was no documentation provided by the PAs on AHJ providing building permits, application and approval dates of the building permit, and permit drawings associated with mechanical, architectural, and lighting plans. Evaluators had to spend additional resources trying to identify the AHJ and associated permit dates to ascertain the Title 24 code that would apply to the evaluated project.	We recommend that the PAs include permit drawings that clearly indicate the date the permit was applied and the AHJ approving the permit within project documentation to the evaluation team.	All	Rejected	SDG&E does not believe permit drawings are required if other supporting documentation is provided, such as As-Built specifications.
23	50	Savings claimed for Variable Refrigerant Flow (VRF) measures under Whole Building projects: Incentives for VRF measures are available through mid/upstream offerings for some building types under California's statewide energy efficiency programs. Based on CPUC's Baseline Guidance	We recommend that PAs follow modelling guidelines specified by CPUC and not include savings from measures that might have already been claimed through mid/upstream offerings like VRF systems.	All	Other	SDG&E recommends energy modeling software be reevaluated using a new study to assess whether VRF systems should continue to be modeled as recommended by the evaluators. SDG&E utilizes double dipping reports to identify projects or

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		Document version 1, to avoid double-counting of savings, VRF HVAC systems shall be modelled as a minimally compliant heat pump in both the Baseline Case and the Proposed Case, for both the SBD Eligibility Simulation and SBD Performance Simulation. We identified two projects within the SBD sample that failed to comply with the CPUC baseline guidance for modelling VRF systems.				customers who have already claimed rebates or incentives. Currently, no active deemed measure exists for VRF equipment. It is the responsibility of the downstream program to ensure that incentives and savings claims are not “double counted”
24	50	Inclusion of incorrect occupancy groups under the SBD program to use Title 24 baselines: The current SBD program design utilizes California Building Energy Efficiency Standards (Title 24, Part 6) as a reference baseline for comparison. The provisions of Title 24 Part 6 apply to all buildings that are of occupancy groups defined under Chapter 3 of Title 24, Part 2. The evaluation sample included a federal defense building with International Building Codes that applied to the facility and not Title 24. The reported savings were modelled incorrectly using Title 24 as the baseline.	We recommend that the PAs screen projects going through the SBD program for applicable baselines and include projects only when the building uses Title 24 or other relevant industry standards (e.g., healthcare and data center industry standard practices) to determine reference baselines for comparisons. Additionally, if relevant industry standards are the applicable baselines, the modelling software utilized to estimate savings must be able to override Title 24 baseline parameters appropriately.	All	Rejected	SDG&E utilizes the appropriate modeling tools for savings estimates. Regardless of the permitting baseline, the program design dictates the building be evaluated and compared to Title-24 to determine incentives.
25	50	Use of non-California Energy Commission (CEC)-approved software for estimating reported savings: For every published version of Title 24, the CEC approves a list of energy analysis computer programs that include all Alternative Calculation Methods approved for the Building Energy Efficiency Standards in accordance with the California Code of Regulations: Title 24, Part 1, Article 1, Section 10-109. We identified five projects in the SBD sample that utilized a software not approved by CEC, eQUEST, which was used to model the performance runs and estimate reported savings from the project. It is resource-intensive and an inappropriate use of ratepayer funds to build a performance model using a software that does not have built-in Title 24/SBD modules and requires the modeler to accurately incorporate the Title 24 interpretations into the baseline model. It is also resource and time-intensive for evaluation teams to review the non-CEC-approved baseline models for accuracy.	We recommend that the PAs use CEC-approved software with built-in Title 24/SBD modules for estimating reported savings from whole building SBD projects.	All	Other	SDG&E does not use eQuest for SBD projects; however, we disagree with the justification based on a resource and time intensive review process. The IOUs, in consultation with CPUC Ex Ante staff, are the determining authority for calculations tools and evaluators should make accommodations for tools used. .
26	51	Incomplete updates made to building simulation models per CPR recommendations: We identified two projects in the SBD sample at the same campus that had CPR recommendations to make the chilled	We recommend that PAs work with project design teams to fully and accurately implement CPR recommendations.	All	Accepted	SDGE carefully reviews all CPR feedback and recommendations. SDGE also works with the implementers to incorporate feedback and recommendations to improve the project's quality.

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		water systems energy neutral or modelled as minimally compliant units in both the baseline and the proposed cases. The project design team updated the chiller efficiencies in both cases to account for the same; however, they did not update part load efficiency curves or chiller capacities to make the chiller consumptions energy neutral.				
27	51	We were unable to replicate the PA-reported savings for IES VE projects under 2016 Title 24: For five projects in the SBD sample, IES VE calculated the PA-reported savings utilizing the Title 24 modules that were available in the historical versions of the software. We were unable to replicate the PA savings as the 2016 module of Title 24 was not supported anymore by the software vendor	We recommend that the PAs work with vendors to provide software support at least until when evaluation happens, which could be 3 or 4 years after project implementation to make them evaluable.	All	Other	SDG&E can encourage its vendors to provide software support until an evaluation happens, however, if the vendor no longer has an active contract, it may not be feasible or cost-effective to require software support following project implementation. SDG&E does not use IES VE for SBD projects; however, we disagree with the justification based on a resource and time intensive review process. The IOUs, in consultation with CPUC Ex Ante staff, are the determining authority for calculations tools and evaluators should make accommodations for tools used. .
28	51	Facilities that are part of larger campuses not sub-metered: The evaluation of SBD projects that were implemented in 2020 and 2021 included numerous buildings that were part of larger campuses and did not have separate metering for their electricity and natural gas consumptions, making it impossible for evaluators to calibrate the as-built simulation models with the facility's energy usage	We recommend that the PAs to consider submetering for SBD whole building projects involving individual buildings on larger campuses that are not utility metered.	All	Rejected	SDG&E does not accept this recommendation. Reasonable estimates should be used to evaluate savings and sub-metered data is not needed.
Net Savings; Custom Conclusions and Recommendations						
29	51	Project decision makers should see improved NTGRs if they implement better project decision making screening processes: Mandatory corporate policies, regulatory compliance requirements, and standard maintenance and market practices are key drivers of projects with high free-ridership. Project decision-makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to have their energy efficiency projects driven by these types of pre-established or compulsory practices. Another key contributor to free-ridership is the frequent failure of the PAs and implementers to engage with customers before decisions are made to install energy-efficient equipment. Project decision makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to report that the decision to install their energy-efficient measures was made	The PAs should engage with customers early in the decision-making process and improve project screening practices to ensure that the decisions to go forward with the project were not already made, and/or where mandatory corporate policies or regulatory compliance are not driving project implementation.	All	Other	As programs transition to third-party implementation, the third-party implementer becomes responsible for engaging with the customer and not PAs. SDG&E agrees that the implementer should engage the customer early in the decision-making process, and SDG&E will continue to review its project screening processes.

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		before they began discussions with the PAs regarding incentive or technical assistance availability.				
30	51	Project decision makers should see improved NTGRs if they implement better project decision making screening processes: Mandatory corporate policies, regulatory compliance requirements, and standard maintenance and market practices are key drivers of projects with high free-ridership. Project decision-makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to have their energy efficiency projects driven by these types of pre-established or compulsory practices. Another key contributor to free-ridership is the frequent failure of the PAs and implementers to engage with customers before decisions are made to install energy-efficient equipment. Project decision makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to report that the decision to install their energy-efficient measures was made before they began discussions with the PAs regarding incentive or technical assistance availability.	Better identification of projects for which incentives serve as the “tipping point” should improve NTGRs in the future: Project decision makers in the highest NTGR quartile were much more likely than those in the lowest NTGR quartile to mention the importance of the program incentives and payback/ROI considerations. Eighty-seven percent of the respondents in the upper NTGR quartile said the program incentives were an important program driver compared to only 32% of the lower NTGR quartile respondents. Similarly, 81% of the upper NTGR quartile respondents cited an acceptable ROI or payback as an important driver compared to only 56% of those in the DNV – www.dnv.com Page 52 bottom NTGR quartile. Part of this difference could be related to the trend discussed above: that low NTGR projects are more likely to be driven by pre-established or compulsory energy efficiency practices. If projects must go forward due to corporate policies or regulatory requirements, then the projects’ payback periods or ROI calculations become less important.	All	Accepted	SDG&E continues to work with the program implementers to document and collect project influence documentation.
31	52	Project decision makers should see improved NTGRs if they implement better project decision making screening processes: Mandatory corporate policies, regulatory compliance requirements, and standard maintenance and market practices are key drivers of projects with high free-ridership. Project decision-makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to have their energy efficiency projects driven by these types of pre-established or compulsory practices. Another key contributor to free-ridership is the frequent failure of the PAs and implementers to engage with customers before decisions are made to install energy-efficient equipment. Project decision makers in the bottom NTGR quartile were much more likely than those in the top NTGR quartile to report that the decision to	The PAs should pursue more projects where incentives are critical in driving the decision to select energy-efficient equipment over less efficient alternatives.	All	Other	As programs transition to third-party implementation, the third-party implementer becomes responsible for engaging customers and pursuing projects and not the PAs. SDG&E agrees that implementers should pursue projects where incentives are critical in driving the decision to select energy-efficient equipment over less efficient alternatives.

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		install their energy-efficient measures was made before they began discussions with the PAs regarding incentive or technical assistance availability.				
32	52	The Custom programs should continue to emphasize feasibility studies and technical assistance: Project decision makers in the highest NTGR quartile were much more likely (53% of respondents) to say that feasibility studies and technical assistance were important project factors than project decision makers in the lowest NTGR quartile (26%).	PAs should continue the support of feasibility studies and technical assistance, which are key factors in influencing the decision to implement energy efficiency projects.	All	Accepted	SDG&E continues to work with the program implementers to document and collect project influence documentation, including feasibility studies and technical assistance.
Net Savings; Savings by Design (SBD) Conclusions and Recommendations						
33	52	N/A	Diversify the program participation pool: Many SBD program participants were universities that had been repeat program participants with corporate policies already driving building practices.	All	Other	SDG&E's SBD program is no longer open for new enrollments. All customers must now participate in the Statewide new construction and university partnership programs.
Overall Conclusions and Recommendations						
34	52	Lack of PA documentation to identify the scope of some projects: Project documentation received from the PAs in response to data requests was often not complete or clear in describing the project and the savings estimates shown in the tracking data. In some cases, the PAs have chosen to provide extracts of project documentation that was hard to follow, while customers or vendors, when asked, have provided much more thorough project documentation, which the PAs should have provided originally. This documentation included files and savings calculations. In other cases, PAs provided the same set of documentation when requested to provide missing documentation. For some SBD whole building projects, there was notable missing documentation needed to support inputs and assumptions for the model. The missing information included as-built mechanical drawings equipment specifications, cut sheets, and lighting plans.	PAs should provide all relevant project files for each associated claim including native as-built calculations that match final tracking numbers, project applications, associated customer agreement extensions to support CPUC policy requirements, and a clear detailed project scope and documentation. This will allow evaluators to see a clear trail from the project documentation to the tracking savings estimates and provide a much more efficient pathway to evaluate projects.	All	Accepted	SDG&E agrees that all relevant project files for each claim should have the necessary documentation in order to support the evaluation. SDG&E will continue to strive to provide all relevant project files.
35	52	Discrepancy between the tracking data and the reported savings in the PA documentation: In a number of cases, it was difficult to trace savings from the project documentation through to the tracking system, and in some cases, it was not	The PAs should thoroughly document project files and associated calculations that align with the tracking data before sending files to the evaluators. If there are notable discrepancies, the PAs should point them out in the files	All	Accepted	SDG&E agrees with this recommendation and will continue to strive to ensure that associated calculations align with tracking data.

Item #	Page #	Findings	Best Practice / Recommendations (Verbatim from Final Report)	Recommendation Recipient	Disposition	SDG&E Disposition Notes
		possible to reconcile the savings estimates, or as-built calculations did not match final tracked savings.				
36	53	Incorrectly applied MATs. We found instances of incorrectly applied MATs, such as RCx projects, which were documented as NR: These projects did use the correct EULs but did not have proper MATs applied, which should be flagged during project file review or engineering QC	PAs should apply appropriate MATs to each claim	All	Accepted	SDG&E will continue to make efforts to comply.
37	53	Absence of final energy model for review: Several projects used simulation models such as eQuest or Energy-Pro or IES to develop ex ante savings. For some of these projects, the models that were provided as part of the documentation request could not be rerun to get the same savings estimates that were included in the project files or the tracking data. This suggests that the PAs did not deliver a final version of the model to the evaluation team as part of the data response.	The PAs should provide the final as-built version of the energy model and should clearly identify the version of the simulation tool so that the model can be simulated with the appropriate version of the modelling tool to exactly generate the same results as the tracking data. The PAs should even go a step further to re-run the model on their own to ensure that the as-built model generates savings that are in line with the tracking claim, and if there is a discrepancy to identify it when providing project files to evaluators.	All	Accepted	SDG&E reruns calculation models, making necessary updates, using the equipment specifications and documentation after project installation if changes are identified.
38	53	Hardcoded or locked ex-ante analysis spreadsheets: In several projects, PAs only provided hardcoded savings analysis in PDF or Excel format or provided password protected files where it was unclear to determine how savings were calculated and where inputs and assumptions were being derived. Without the native unlocked analysis spreadsheets, it was difficult to verify the ex-ante savings estimate, and in some cases, forced the evaluator to create a custom savings model which may have not been necessary if the applicant-provided model was accessible and deemed viable for use in the evaluation.	PAs should provide native unlocked analysis files which clearly document calculations, inputs, and assumptions that match tracking reported savings as part of the evaluation data requests. This will ensure the ex-ante savings can be verified and replicated readily.	All	Accepted	SDG&E agrees with this recommendation and makes every effort to provide unlocked tools to the evaluation team.
39	53	Incentive and cost discrepancy: Paid incentives for several projects were found to be over the capped percentage of the reported project costs. In some cases, the source of the incremental cost was not provided for review.	PAs should provide supporting documentation of incremental and installed costs and ensure the appropriate incentive cap is used. PAs should document the source of the cost for the evaluator's review.	All	Accepted	SDG&E agrees with this recommendation, and we strive to provide accurate cost elements for all projects.
40	53	Incorrect or missing customer contact information: Many projects did not have accurate customer contact information, and in some cases, was missing entirely. Accurate customer contact information is crucial to gross and net recruitment. DNV recruiters	PAs ought to regularly update customer contact logs through customer outreach prior to sending them to the evaluator. Updating contact logs will help expedite the recruitment process, which will allow for longer data	All	Reject	SDG&E requires that customer contact information be collected as part of the project's application. Therefore, a contact log is unnecessary. While contacts may change over time, maintaining continual outreach following a project's completion is overly burdensome.

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		often had to review project documentation to obtain new contact information.	collection periods during the evaluation. We can provide a standardized template so that the PAs can complete all fields.			